DANUBE RIVER BASIN MANAGEMENT PLAN (2025-2030)

June 2024

LIST OF ABBREVIATIONS

AWB	artificial water body
BOD	biochemical oxygen demand for 5 days
BUVR	basin water resources management administration
CMU	Cabinet of Ministers of Ukraine
COD	chemical oxygen demand
EEA	European Environment Agency
EEC	European Economic Commission for Europe UN
EGWR	estimated groundwater resources
EQS	environmental quality standards
EU	European Union
GDP	gross domestic product
GRP	gross regional product
GVA	gross value added
GWB	groundwater body
HMWB	heavily modified water bodies
HPP	hydroelectric power plant
IBRD	International Bank for Reconstruction and Development
LLC	limited liability company
ME	utility company
MEPNR	Ministry of Environmental Protection and Natural Resources of Ukraine
MSW	municipal solid waste
NAS	National Academy of Sciences of Ukraine
NERC	National Commission for State Regulation of Energy and Public Utilities
NGO	non-governmental organization
NPP	nuclear power plant
NRF	nature reserve fund
NSDC	National Security and Defense Council of Ukraine
OSCE	Organization for Security and Cooperation in Europe
PE	population equivalent
PJSC	private joint-stock company
PoM	program of measures
PrJSC	private joint-stock company
RBD	river basin district
RBMP	river basin management plan
RCPs	Representative Concentration Pathways
ROVR	regional water resources office
SAUEZM	State Agency of Ukraine on Exclusion Zone Management
SAWR	State Agency of Water Resources of Ukraine
SEA	strategic environmental assessment
SES	State Emergency Service of Ukraine
SN	Sewerage network
SPZ	sanitary protection zone
STP	sewage treatment plant
SWB	surface water body
SWMI	significant water management issues
TC	territorial community
TPP	thermal power plant
UN	United Nations Organization
USSR	Union of Soviet Socialist Republics
VAT	value added tax
WDS	waste disposal sites
WFD	Water Framework Directive of the European Union
WPZ	water protection zone

1 GENERAL CHARACTERISTICS OF SURFACE AND GROUNDWATER

1.1 Description of the river basin

1.1.1 Hydrographic and water management zoning

The Danube transboundary basin is located on the territory of 19 countries: Austria, Bulgaria, the Czech Republic, Germany, Hungary, Slovakia, Slovenia, Romania, Croatia, Bosnia and Herzegovina, Moldova, Montenegro, Serbia, Ukraine, Italy, Poland, Albania, Macedonia, and Switzerland.

The catchment area of the basin within Ukraine is 30.4 km^2. The basin covers 5% of Ukraine's territory.

The Danube River Basin area is located within four oblasts of Ukraine (Zakarpattia, Ivano-Frankivsk, Chernivtsi and Odesa oblasts). The Tisza sub-basin is located entirely within Zakarpattia Oblast, the Prut and Siret sub-basins are located in Ivano-Frankivsk and Chernivtsi Oblasts, and the Lower Danube sub-basin is located in Odesa Oblast.

The hydrographic network of the basin includes 335 rivers with a catchment area of more than 10 km^2 and 16 lakes (with a catchment area of more than 0.5 km^2).

1.1.2 Climate

The Danube RBD is entirely located in temperate latitudes and is characterised by a temperate climate, but its fragmentation means that the manifestation of the temperate climate will vary between sub-basins. The Tisza, Prut and Siret sub-basins are located in the forested Atlantic-Continental region, while the Lower Danube sub-basin is located in the steppe Atlantic-Continental region.

A significant part of the Tisza, Prut and Siret sub-basins is located in the Ukrainian Carpathians. This part of the Danube RBD receives an average of 1200 mm of precipitation, with up to 1650 mm in some years. Within the Transcarpathian lowlands, the Tisza sub-basin can receive 690-1100 mm per year, and in the Carpathian sub-basins of the Prut and Siret rivers - 650-890 mm. For the Lower Danube sub-basin, annual precipitation ranges from 370 to 520 mm, but averages 500 mm. The largest amount of precipitation falls during the warm season (April-October) - 60-70%. During this period, 800-1000 mm falls in the Ukrainian Carpathians, 550-600 mm in the Transcarpathian lowlands, and 475-600 mm in the Carpathian region. The Lower Danube sub-basin receives 275-325 mm in the warm season.

During the cold season (November-March), precipitation rarely exceeds 30-40% of the annual total. For example, in the Ukrainian Carpathians, up to 500-600 mm fall during the cold season. The Transcarpathian lowland of the Tisza sub-basin receives up to 250-300 mm. In the Carpathian part of the Prut and Siret sub-basins, up to 175-300 mm fall during the cold season. The Lower Danube sub-basin receives up to 200 mm during the cold season.

The duration of snow cover varies from 70 to 150 days in the Tisza, Prut and Siret sub-basins, with the longest duration in the mountainous parts of these sub-basins. In the Lower Danube sub-basin, the annual snow cover duration rarely exceeds 40-50 days.

The distribution of air temperature in the Danube RBD is also not uniform. The average long-term air temperature in the Lower Danube sub-basin is the highest in the basin, at around 10.5°C. In the sub-basins of the Tisza, Prut and Siret rivers in the Ukrainian Carpathians, the average annual temperature is around 4.0°C, but southwest of the mountains, the average annual temperature rises to 8.0-9.0°C within the Transcarpathian lowlands of the Tisza sub-basin. To the north-east of the mountains, within the Carpathian region, the average annual temperature rises to 7.0°C.

1.1.3 Relief

Tisza River sub-basin

The majority of the sub-basin is located in the mountains and foothills of the Carpathians, with the remainder in the Hungarian Plain (Transcarpathian Lowland).

The sub-basin is cut by three groups of ridges separated by longitudinal depressions. The main central group is the chain of the Polonyn Mountains, with the Gorgany Mountains to the north and the Vygorlat Gutyn (volcanic) range to the south. In the extreme south-east, the Hutsul Alps stand out separately.

The Transcarpathian lowland, which occupies about 35% of the basin, is a plain with some manes and hills. In the area of the city of Berehove, mountains formed by volcanic rocks are located on the plain.

Sub-basins of the Prut and Siret rivers

The Prut River sub-basin is divided into three parts based on the nature of its surface: mountainous, foothill and plain. The mountainous part of the sub-basin consists of medium-altitude ranges of the Ukrainian Carpathians, which run almost parallel to each other from northwest to southeast, like the entire arc of the Carpathians. The mountainous part is divided into three zones: the axial zone, the Central Carpathians zone and the Skibovy Carpathians zone.

The Siret River sub-basin is unevenly distributed in terms of altitude zones. The south-western part of the basin up to the village of Berehomet is located on the spurs of the Carpathians. The watersheds are separated by separate ridges, with mountain peaks reaching 1000-1300 m. The ranges have rounded flat peaks, steep slopes are dissected by numerous river valleys. Gradually, the mountains are replaced by a strip of foothills (Prykarpattia-Bukovyna) with elevations of 500-600 m, which pass into the Podilske plateau. Landslides contribute to the formation of soft surface forms. Part of the Siret sub-basin is located in the Eastern Carpathians, in the Pokutsko-Bukovyna Carpathians and on the Bukovyna foothills**.**

Lower Danube sub-basin

The sub-basin is distinguished by the Black Sea lowland, with an absolute height of 130-150 m. The lowland gradually slopes down to the Black Sea. There are landforms of various genesis in the area: accumulative, erosion, denudation, subsidence, and artificial. The northern and north-eastern parts of the basin are characterised by wide watersheds (primary-accumulative plains). In the southeast, there are Upper Pliocene marine terraces. Along the sea coast, there are marine accumulative landforms such as beaches, spits, and spits. Some of the sea shores, estuaries and lakes are abrasive, landslide and sometimes landslide.

In terms of tectonic structure, the lowland is part of the Black Sea Basin, filled with almost horizontal thick layers of sedimentary rocks, mainly marine sediments of the Paleogene and Neogene (clays, sands, sandy-clay and sandy-limestone rocks, limestone), overlying continental sediments of anthropogenic age - red-brown clays, loess, loess-like loams.

1.1.4 Geology

Tisza River sub-basin

The sub-basin is located within the young (alpine) folded structure of the Carpathians and covers the central part of the Ukrainian segment of the folded Carpathians with the adjacent Transcarpathian internal trough.

The geological structure of the territory is made up of two structural layers. The lower structural floor forms the foundation of the Transcarpathian Trough and the Folded Carpathians. The basement of the trough contains intensively deposited sedimentary, volcanogenic and metamorphic formations of the Paleozoic and Mesozoic-Cenozoic periods.

The Folded Carpathians are formed by carbonate-terigenous and terrigenous Mesozoic-Cenozoic formations that comprise several structural and facies zones. They are intensively dislocated and form covering structures.

Internal Carpathians: Transcarpathian Internal Trough, Vygorlat-Hutyn Ridge and Berehove Uplift and "buried" volcanoes (rhyolites, andesites, basalts, their tuffs and tuff rocks). Peninsular zone of rocks: The Pennine zone (limestones, mudstones, sandstones with gravels and conglomerates). Marmara rock zone: Monastiretske and Vezhanske rocks (conglomerates, marls, sandstones, mudstones with gravelites, limestones, siltstones). Marmarosh massif: Dilove and Bilopotocky rocks (gneisses, shales of various compositions, quartzites, marbles and marbled limestones, limestones and dolomites, granite porphyries, granite gneisses, amphibolites, gabbro, tuffs, phyllites, mudstones, siltstones, sandstones, tuffs, coal, conglomerates). External Carpathians: Magury and Rakhiv rocks (flysch, massive sandstones with limestones in some places), Kamianopotocky rocks and Krosnenska zone (sandstones, limestones, mudstones, spilites, diabases and their tuffs in some places), Porkulets, Dukliany, Chornohora and Skibovy rocks (flysch, mudstones, marls, sandstones, siltstones).

The sediments of the upper structural floor fill the Zakarpattia Internal Trough. These are Neogene-Quaternary sedimentary, volcanogenic and volcanomictic, sometimes coal-bearing molasses formations, which lie mainly subhorizontally and form a cover complex.

Sub-basins of the Prut and Siret rivers

The sub-basin of the Siret River is located within the young (alpine) folded structure of the Carpathians and the Precarpathian trough, the sub-basin of the Prut River is located within the young (alpine) folded structure of the Carpathians and the Precarpathian trough, and the north-eastern part is located within the Volyn-Podilska plate, whose sediments in this part are represented by Neogene, Cretaceous, Devonian and older rocks.

Part of the Prut sub-basin is located in the Carpathians and is composed of Mesozoic sediments (shale, quartzite) overlain by a flysch (sandstones, clays, marls and limestones) of Paleogene and Cretaceous age and a thickness of Quaternary alluvial gravel and pebble deposits. An analysis of the geological structure of the Prut sub-basin has shown that the most water-rich aquifers are in the southern part of the Precarpathian Trough. In the areas along the left bank of the Prut, water is associated with alluvial deposits of the Eopleistocene and Lower Pleistocene. The water-bearing rocks here are sands and pebbles of the floodplain terraces up to 20 m thick.

The mountainous part of the Siret River sub-basin is composed of Paleozoic mica and other metamorphic shales, the foothill part is composed of sandstones, clay shales and limestones (mainly Cretaceous), and the plain part is composed of sandstones, marls, limestones and clay shales. Aquifers with water suitable for drinking and other technical purposes are confined to the sand and sandstone layers at a depth of 250-300 m, but they are not widespread.

Lower Danube sub-basin

It is located in the Black Sea depression. The area has a two-member structure typical of the ancient East European platform: the Dovendian crystalline basement and the platform cover. The basement is composed of Archean-Lower Proterozoic rocks. Sedimentary and volcanogenic-sedimentary structural-formational complexes of the Vendian, Paleozoic, Mesozoic and Cenozoic rocks are involved in the structure of the cover. The ancient rocks are located at a considerable depth, and the upper part of the section is composed of a thick thickness of Miocene terrigenous carbonate formations represented by interbedded clays, limestones, marls, sands, sandstones and siltstones. The section ends with alluvial Pliocene and Quaternary formations developed in the Danube Valley and composed of sands, siltstones, loams with interbedded clays and pebbles.

1.1.5 Hydrogeology

Tisza River sub-basin

The Tisza River sub-basin is located within two hydrogeological regions - the Transcarpathian artesian basin and the Carpathian hydrogeological fold region

The Zakarpattia artesian basin is confined to the Zakarpattia Internal Trough, filled with a powerful complex of Neogene molasse, which lie on a complex heterogeneous basement and are overlain by Quaternary and Quaternary-Pliocene aquifers. The thickness of the molas, burdened by salt rods, is represented by clay, sandy-clay, debris, chemogenic (rock salt) and volcanic formations.

The Transcarpathian artesian basin is complicated by superimposed volcanogenic formations of Miocene-Pliocene age of the Vyhorlat-Gutynsky ridge.

The territory is hydrogeologically rather complex, with uneven distribution of aquifers, complex relationships between them in the section and uneven water saturation of water-bearing rocks, based on structural features, geological structure, watering and filtration properties of hydrogeological units. Only the widespread alluvial aquifers of Quaternary and Quaternary-Pliocene age overlie bedrock and are the main aquifers in the basin. In addition to alluvial formations, the main groundwater resources include the Neogene effusive deposits of the Ilnytsia Formation and the Vygorlat-Gutynsky Ridge. The salinity of these waters usually does not exceed 1.0 g/dm3, which ensures their widespread use for domestic water supply.

Groundwater of the Carpathian hydrogeological folded area is confined to the upper fractured zone of the indigenous flysch rocks of the Paleogene and Cretaceous, which extends to a depth of 80-100 m. The hydrogeological conditions of the territory are characterised by uneven and generally low water enrichment, which is determined by low filtration properties of water-bearing rocks and their intensive dislocation. The most promising are alluvial deposits represented by gravel and pebble formations. Groundwater is recharged by precipitation and discharged by a hydrographic network.

Sub-basins of the Prut and Siret rivers

The sub-basins are located within three hydrogeological regions: the Carpathian hydrogeological fold region, the Precarpathian and Volyn-Podolsk artesian basins.

Groundwater of the Carpathian hydrogeological folded area is confined to the upper fractured zone of the indigenous flysch rocks of the Paleogene and Cretaceous, which extends to a depth of 80-100 m. The hydrogeological conditions of the territory are characterised by uneven and generally low water enrichment, which is determined by low filtration properties of water-bearing rocks and their intensive dislocation. The most promising are alluvial deposits represented by gravel and pebble formations. Groundwater is recharged by precipitation and discharged by a hydrographic network

The hydrogeological conditions of the Precarpathian artesian basin are characterised by the presence of separate water-bearing sand and sandstone layers in the bedrock of the Neogene poorly permeable clay deposits, the water-bearing capacity of which is low. The waters associated with these layers are usually characterised by high salinity, which makes it impossible to use them for water supply. Only groundwater associated with alluvial Pliocene-Quaternary sediments is suitable for domestic drinking water use.

In the sub-basins of the Prut and Siret rivers within the Volyn-Podilskyi artesian basin, aquifers are common in Paleozoic, Mesozoic and Cenozoic sediments. The main aquifers in this area are aquifers and complexes in alluvial Quaternary sediments and Miocene formations.

Lower Danube sub-basin

The sub-basin is part of the Black Sea artesian basin and is characterised by complex hydrogeological conditions. This is due to the diversity and irregular distribution of both water-bearing and water-resistant sediments, facies and lithological variability of rock composition, and the diversity of groundwater quality. Groundwater is contained in the Paleozoic, Mesozoic and Cenozoic sediments and is characterised by a variety of depths, extraction methods and availability, distribution and quality. Within the Lower Danube basin, groundwater of drinking quality is found in sandy Pliocene-Quaternary sediments and predominantly carbonate formations of the Upper Sarmatian-Miocene.

1.1.6 Soils

Tisza River sub-basin

Varieties of sod-podzolic soils prevail in the lowlands, brown mountain-forest and meadow-forest soils in the mountains, and meadow and meadow gley soils on the floodplain terraces of rivers.

Within the mountainous part of the territory, the vertical differentiation of soils is clearly visible. In the highland tier, mountain-meadow-brown soils are common at altitudes of 1100-1200 m; in the treeless areas - meadows - sod-brown soils are common.

The gentler mountain slopes are covered with loamy brown earth-podzolic soils. On gentle slopes and in river valleys, meadow-brown loam soils are formed.

The Transcarpathian lowland is covered with soddy- podzolic gley and gley or brown gley soils.

In the valleys of the Borzhava and Irshava rivers, bog-gley and meadow-gley soils prevail. Light brown forest soils were formed in the upper reaches of the Uzh, Latorytsia, and Rika rivers, and brown mountain-forest soils in the upper reaches of the Borzhava, Tereblya, Teresva, Chorna, and Bila Tisa rivers. The dominant soil type in the lower reaches of the Uzh, Latorytsia and Borzhava rivers is soddy- podzolic clayey soils.

Sub-basins of the Prut and Siret rivers

In the Prut River valley, black soils are becoming more widespread: podzolised, shallow and deep low-humus soils. In the lower reaches, moisture deficit has led to the spread of southern chernozems and chestnut soils with signs of salinity.

The part of the Prut sub-basin within the mountains consists of sandy-light and medium loamy, sometimes sod-podzolic soils in combination with podzolic, occasionally mountain peat-podzolic soils. The channel is composed mostly of sandy-pebble and pebble-stony soils.

The mountainous part of the Siret sub-basin is dominated by medium-podzolic and mountain podzolic soils, while in the foothills and on the plain they are replaced by soddy-medium podzolic surface-ashy soils, and in the river valleys by soddy-podzolic-ashy soils in combination with meadow podzolic soils. By their mechanical composition, the soils in the mountains are sandy-medium loamy, and on the plains - light loamy. The underlying layer has low water permeability.

Lower Danube sub-basin

The soil in the region is made up of ordinary and southern chernozems; in the Danube terraced plain and in the south-west of the watershed plain, it is exclusively micellar carbonate.

The chernozems were formed under fescue-fescue and wormwood-fescue-fescue vegetation in combination with some annual and biennial grasses. The region's chernozems are distinguished by high biological activity, which contributes to the mineralisation of organic matter, a well-defined and strong "coprogenic" structure, high porosity (up to 50-55%) and water permeability (filtration coefficient of 1.5-3.5 mm/min).

The grain-size distribution of ordinary chernozems is heavy loamy, with a slightly lighter composition towards the south, and medium loamy varieties of southern chernozems dominate the terraced plain. In the profile of ordinary chernozems at a depth of 85-120 (130) cm, the white-eye horizon (usually the Phca horizon) is well defined, while in southern chernozems it approaches a depth of 65-90 cm. The carbonate content in this horizon reaches 17-22%. The gypsum horizon is not visible in the profile of chernozems up to a depth of 2-3 m. Primary chernozems are not saline to a depth of 5-7 m, and often deeper.

1.1.7 Flora

Tisza River sub-basin

There are altitudinal zones of vegetation: foothill oak, lowland beech, upper mountain spruce, subalpine shrub and meadow, and alpine.

The foothill zone, which rises to 400-500 (700) m, is dominated by oak forests, spruce-beech forests and derivative hornbeam forests, beech forests, smoky forests, aspen-willow forests are also common. The lowland belt on different slopes rises from 500-700 m to 1000-1200 m and 1350-1450 m, and is dominated by tall-stemmed beech, spruce-beech, hornbeam-beech and oak-beech forests. Pure spruce forests occupy the upper parts of the slopes of Chornohora, the Rakhiv Mountains, and the Gorgan Mountains. In the subalpine zone at altitudes of 1200-1500 m and 1650-1850 m, there are thickets of mountain pine, juniper shrubs, green alder, East Carpathian rhododendron, cereals and herbaceous meadows. The alpine belt includes herbaceous and shrubby communities above 1800-1850 m; they are fragmented.

Sub-basins of the Prut and Siret rivers

About 35% of the Prut sub-basin is covered by broadleaf and coniferous forests. The forested Carpathians have a pronounced landscape zonation. The foothill zone is characterised by oak and hornbeam forests, where winter oak and Western European beech, typical for Western Europe, grow alongside summer oak.

The lower slopes of the mountains (300-600 m) are occupied by broadleaf forests (summer oak, hornbeam, beech, maple, linden, sometimes with spruce and fir). Such forests are also found above 600 m, but are somewhat modified. With increasing altitude, beech begins to predominate and the role of conifers increases. Spruce forests dominate at an altitude of 1350-1600 m. The mountain tops are occupied by subalpine meadows, mountain pine and alder thickets. The left-bank part of the Prut sub-basin is mostly open, ploughed and with sparse forests.

A significant part of the Siret River sub-basin (41% of the total area) is covered by forests. The foothills and mountain slopes up to an altitude of 600 m are predominantly oak forests, above and up to 1000 m beech forests prevail, and even higher, up to 1300 m, coniferous forests. The upper reaches of some mountains are open and represent subalpine meadows - polonines. In the lowlands, forests have been preserved only in some places, while the rest of the area has been ploughed and covered with meadows.

Lower Danube sub-basin

The vegetation of the sub-basin is predominantly steppe. According to the current geobotanical zonation, the area is part of the Danube-Dniester geobotanical district with fescue-fescue and wormwood-fescue-fescue steppes in combination with halophytic communities and saline meadows. The Danube geobotanical floodplain-deltaic region with sedge and reed beds - floodplains - stands out separately.

Floodplain meadows are developed in the river valleys and floodplain of the Danube River. The Danube lowlands are occupied by floodplains, which are characterised by a complex of aquatic and coastal vegetation with tall grasses (reeds, reeds, cattails), grass bogs and floodplain forests of white willow.

The southern steppe sub-zone is characterised by the predominance of fescue-fescue associations in the grass stand and a decrease in the proportion of steppe herbs, which are represented by ephemerals (cereal grass, veronica), ephemeroids (goose onions, tulips, steppe hyacinth), and in lower reliefs by moisture-loving species (Romanian alfalfa, dry steppe sage, etc.). On the Black Sea coast, the grassland is dominated by Welsh fescue, crested rye, spikelet feather grass, and wormwood. Many of the plants are listed in the Red Book of Ukraine (water walnut, astragalus, cuckoo's feet, feather grass, etc.).

1.1.8 Fauna

Tisza River sub-basin

The total number of fauna species in the region is over 30 thousand. Both invertebrate and vertebrate species are common in the region. Invertebrates include representatives of more than 20 types of organisms, most of which are protozoa. There are about 400 species of vertebrates, including 80 species of mammals, 287 species of birds, including 197 breeding birds, 10 species of reptiles, 16 amphibians, 60 fish, and 100 molluscs. The most common species in Zakarpattia are: mole, fox, wolf, hare, squirrel, ermine, forest marten, wild boar, roe deer, red deer. Among the rare species, it is worth mentioning the Danube salmon, sterlet, eagle owl, golden eagle, alpine owl, lynx, and otter.

Endangered species include the red-winged sparrow, the hairy owl, big and small horseshoe bats, Bechstein's, pond, Natterer's, tricoloured and other bats. The number of species of fauna listed in the Red Book of Ukraine has increased: grouse, forest cat, black stork and brown bear. New species have appeared in the breeding bird fauna: crested and white-eyed ducks. The population of the spotted salamander is stable. A relict fish species, the Kramer umber, has been preserved in the lowland areas in the system of reclamation canals.

Sub-basins of the Prut and Siret rivers

The fauna in the sub-basins is diverse. The vertebrate fauna within the Ukrainian Carpathians alone comprises 435 species. These include the inhabitants of Central European broadleaf forests, such as red deer, European roe deer, and marsh turtle; representatives of the Mediterranean Sea, such as green frogs and spotted salamanders; and inhabitants of the Siberian taiga, such as grouse and black grouse.

There are many endemic species, such as the Carpathian squirrel and the Carpathian newt. Brown bears migrate from the river valleys to subalpine bushes for the summer. Predators include martens, ferrets, lynxes, and wolves.

Almost 200 species of birds live in forests, gardens, fields and water bodies. Most of them are forest dwellers (numerous species of passerines: woodpeckers, pigeons). Wetlands are inhabited by coots, waders, herons, and storks. There are also mountain plover, jay, mountain chickadee, and Carpathian grouse.

The rivers of the sub-basins are home to a variety of fish species: Ukrainian lamprey, sterlet, brook trout, rainbow trout, pike, roach, verizub, bleak, rudd, tench, bream, pike perch, perch, goby, crucian carp, bream, catfish, ruff, carp, chub, silver bream, burbot, minnow, and sucker. The fast current, rocky, liquid muddy bottom, poor plankton and poorly developed vegetation determined the composition of the fish fauna. Rhyophilous, omnivorous species are common here, laying their eggs on rocky or shaved sandy substrates.

Lower Danube sub-basin

The Danube Delta is one of the richest places in modern Europe in terms of fauna species. The fauna of the sub-basin is represented by steppe, forest-steppe and intrazonal species, including birds, mammals, reptiles and fish. Within the area, there are two zoogeographic districts - the Danube-Dniester and the Black Sea districts and one zoogeographic area - the Lower Danube Delta intrazonal area.

The entire territory of the sub-basin belongs to the Black Sea-Azov steppe province, which is divided into two zoogeographical districts. In the Danube-Dniester zoogeographical district, the main faunal complex is steppe, and in agroecosystems - forest. There are many birds here, including field harrier, blackbird, steppe lapwing, pheasant, grey partridge. Mammals include wild rabbits, hamsters, white-toothed snipe, and steppe ferret (light).

The fauna of the Lower Danube, which forms the Lower Danube Delta Intrazonal Area, is extremely rich. Several dozen species of fauna are listed in the Red Book of the World and the Red Book of Ukraine and are subject to protection.

1.1.9 Hydrological regime

Given the physical and geographical location of the Danube River Basin region and its climatic conditions, the hydrological regime of its watercourses varies considerably across the territory. The Danube River Basin region is divided into three hydrological areas based on the specifics of the river's water regime: the Zakarpattia (Tisza River sub-basin), the Predkarpattya (Prut River sub-basin, Siret River sub-basin) and the Black Sea (Lower Danube sub-basin).

The rivers of the Tisza, Prut and Siret sub-basins (Zakarpattia and Predkarpattya districts) are characterised by mixed feeding depending on snowmelt conditions in winter and spring, as well as on the amount of precipitation and its intensity in spring and summer. The rivers of the Tisza sub-basin are characterised by a low spring flood, and the water regime is characterised by flood runoff in warm and cold periods. Floods in the cold season generally exceed those in the warm season. On the rivers of the Prut and Siret sub-basins, the spring flood is more pronounced. It begins mainly in the second or third decade of March. The maximum spring flood on the rivers of the Prut and Siret sub-basins is recorded in the late third decade of March - early first decade of April. The end of the flood occurs in the second or third decade of April. The duration of floods on the rivers of the Precarpathian region (Prut sub-basin, Siret sub-basin) is about 30-40 days. Floods on the rivers of these sub-basins occur mainly in the warm season. The rivers of the Lower Danube sub-basin are also characterised by a mixed runoff supply, with a distinct spring flood lasting 15-25 days on small rivers. The duration of the flood on the Danube River exceeds 50-60 days and is formed during the spring and summer.

This diverse nature of the water regime determines the extremely varied intra-annual distribution of river flows in each of the sub-basins of the Danube River Basin region. The rivers of the Tisza sub-basin are characterised by floods from March to August, during which time 55-70% of the annual runoff is generated. In winter, 10-15% is generated. Spring runoff in the Prut and Siret sub-basins is 40-45%, and 20% in summer. The watercourses of the Lower Danube sub-basin are characterised mainly by spring runoff, which in some years can reach 60-80%.

Hydrological observation network. In the Danube River basin, the hydrological monitoring network comprises 60 hydrological stations located on 32 rivers out of 310 watercourses. Of the 60 hydrological stations, 6 are located on the Danube River in the Lower Danube sub-basin, 40 hydrological stations are located on the watercourses of the Tisza sub-basin, 13 hydrological stations are located on the rivers of the Prut sub-basin and only 1 hydrological station is located in the Siret sub-basin.

1.1.10 Specifics of the river basin

The Danube RBD on the territory of Ukraine consists of three sub-basins, which differ in terms of topography, geological formations, soil cover, etc.

The Danube River is the second-longest river in Europe in terms of length and catchment area, with a length of 2,860 km and a catchment area of 174 km^2 in Odesa Oblast, and is the main waterway in southern Ukraine for supplying water to the population and economic sectors (irrigation, drinking water, industry, shipping, etc.).

The specificity of the Ukrainian part of the Tisza RBD is that it is located exclusively within one administrative unit - the Zakarpattia Oblast. This fact has a positive impact on the management of the river sub-basin. The natural specificity of the Tisza river basin is that its Ukrainian part is located in the upper reaches of the basin, and it is here that the chemical composition of the water and most of the river runoff is mainly formed.

An important feature of the Prut and Siret rivers is their high water content. The regimes of the Tisza, Prut and Siret rivers are characterised by frequent floods of varying intensity, which poses a real threat not only to the economic sector but also to the lives of people living in these sub-basins.

The Danube River Basin region is home to Emerald Network sites and wetlands protected under the Ramsar Convention.

1.1.11 Typology of surface water bodies

The SWB typology was developed in accordance with the Methodology for Determining Surface and Groundwater Bodies (Methodology) approved by the Order of the Ministry of Ecology and Natural Resources No. 4 dated 14.01.2019 to detail the hydrographic zoning of Ukraine, prepare a state water monitoring programme, and develop and evaluate the effectiveness of the RBMP implementation.

The Danube RBD defines SWB for five categories of surface waters - rivers, lakes, artificial and significantly modified surface waters, transitional and coastal waters.

For the typology and delineation of rivers and lakes, the EU WFD system A was used (Table 1, Table 2).

Table 1 Descriptors for rivers (system A)

Descriptors		
Catchment height, m	**Catchment area, km^2**	**Geological rocks**
• midlands: over 800 • lowlands: 500 - 800 • upland: 200 - 500 • lowland: < 200	• small: 10 - 100 • average: >100 - 1000 • Large: >1 000 - 10 000 • very large: > 10 000	• limestone • silicate • organic

Table 2 Descriptors for lakes (system A)

Descriptors			
Catchment height, m	**Average depth, m**	**Water mirror area, km^2**	**Geological breeds**
• upland: 200 - 500 • lowland: < 200	• shallow: <3 • average in depth: 3 - 15 • deep: >15	• small: 0,5 - 1 • average: 1 - 10 • large: 10 - 100	• limestone • silicate • organic

The EU WFD system B is used for the typology of SWB of the "transitional waters" and "coastal waters" categories. For "transitional waters", in addition to ecoregion and salinity, an additional indicator is used among the mandatory descriptors - origin (Table 3). This indicator, as an additional descriptor, was included following the example of Romania and Bulgaria.

Table 3 Descriptors for transitional waters (system B)

Eco-region	Salinity, ‰	Origin.
• Black Sea	• oligohaline 0.5 to < 5	• seaside

	• mesogastric 5 to < 18 • polygamous 18 to < 30 • euryhaline < 40	• estuaries are open • estuaries are closed

For "coastal waters", in addition to the ecoregion and salinity, additional indicators are used - exposure (protection from waves and wind), the prevailing composition of bottom sediments (Table 4).

Table 4 Descriptors for coastal waters (system B)

Eco-region	Salinity, ‰	Exposition	Bottom deposits
• Black Sea	• desalinated < 0.5 • oligohaline 0.5 to <5 • mesogastric 5 to <18 • polygamous 18 to <30 • euryhaline 30 to <40	• protected (bays, bays) • open (cape zones, direct coast)	• clay-silt • silty sandy • sandy

The Danube RBD is located within five ecoregions:

- SWB of the "rivers" and "lakes" categories belong to ecoregions: Carpathians (number 10), Hungarian Lowlands (number 11), Pontic Province (number 12), Eastern Plains (number 16);
- SWB of the "transitional waters" and "coastal waters" categories are located in the Mediterranean ecoregion and belong to the sub-region: Black Sea.

The rivers of the basin are classified as small (with a catchment area of less than 100 km^2), medium (100 to 1000 km^2), large (1000 to 10,000 km^2) and very large (>10,000 km^2) rivers by catchment area.

According to the altitude of the catchment area, the rivers of the basin are located in the midlands (over 800 m), lowlands (500 to 800 m), uplands (200 to 500 m) and lowlands (less than 200 m)

The basin's geological rocks are of two types: organic (O) and silicate (Si).

Table 5 Types of SWB s in the "rivers" category

№	Type code	Type
1	UA_R_10_L_1_Si	a large river in the lowlands in silicate rocks
2	UA_R_10_M_1_Si	medium-sized river in the lowlands in silicate rocks
3	UA_R_10_S_1_Si	a small river in the lowlands in silicate rocks
4	UA_R_16_S_3_Si	a small river in the lowlands in silicate rocks
5	UA_R_10_S_2_Si	a small river on a hill in silicate rocks
6	UA_R_10_S_3_Si	a small river in the lowlands in silicate rocks
7	UA_R_10_S_4_Si	a small river in the middle mountains in silicate rocks
8	UA_R_10_M_2_Si	medium-sized river on a hill in silicate rocks
9	UA_R_10_M_3_Si	medium-sized river in the lowlands in silicate rocks
10	UA_R_10_M_4_Si	a medium-sized river in the midlands in silicate rocks
11	UA_R_10_L_2_Si	a large river on a hill in silicate rocks
12	UA_R_11_S_1_Si	a small river in the lowlands in silicate rocks
13	UA_R_11_S_2_Si	a small river on a hill in silicate rocks
14	UA_R_11_M_1_Si	medium-sized river in the lowlands in silicate rocks
15	UA_R_11_L_1_Si	a large river in the lowlands in silicate rocks
16	UA_R_11_XL_1_Si	a very large river in the lowlands in silicate rocks
17	UA_R_12_S_1_Si	a small river in the lowlands in silicate rocks
18	UA_R_12_M_1_Si	medium-sized river in the lowlands in silicate rocks
19	UA_R_12_XL_1_Si	a very large river in the lowlands in silicate rocks
20	UA_R_12_XL_1_O	very large river in the lowlands in organic rocks
21	UA_R_16_S_1_Si	a small river in the lowlands in silicate rocks
22	UA_R_16_S_2_Si	a small river on a hill in silicate rocks
23	UA_R_16_M_1_Si	medium-sized river in the lowlands in silicate rocks
24	UA_R_16_M_2_Si	medium-sized river on a hill in silicate rocks
25	UA_R_16_L_1_Si	a large river in the lowlands in silicate rocks
26	UA_R_16_L_2_Si	a large river on a hill in silicate rocks

The category "lakes" includes 7 types of SWB (Table 6).

Table 6 Type of SWB in the "lakes" category

№	Type code	Type
1	UA_L_12_XL_1_SH_Si	very large lake in the lowlands, shallow in silicate rocks

2	UA_L_12_S_1_SH_Si	a small lake in the lowlands is shallow in silicate rocks
3	UA_L_12_S_1_SH_O	small lake in the lowlands shallow in organic rocks
4	UA_L_12_M_1_SH_Si	The middle lake in the lowlands is shallow in silicate rocks
5	UA_L_12_M_1_SH_O	The middle lake in the lowlands is shallow in organic rocks
6	UA_L_12_L_1_SH_Si	a large lake in the lowlands is shallow in silicate rocks
7	UA_L_12_L_1_SH_O	a large lake in the lowlands is shallow in organic rocks

In the category of "transitional waters", 1 type of SWB was identified (Table 7).

Table 7 Types of IWPs in the "transitional waters" category

№	Type code	Type
1	UA_TW_M5_M_M	mesohaline estuaries

One type of SWB of the "coastal waters" category was identified (Table 8)

Table 8 Types of SWBs in the "coastal waters" category

№	Type code	Type
1	UA_CW_M5_M_SH_D_SS	mesogaline open deep silty-sandy

1.1.12 Reference conditions

The assessment of the ecological state of the SWB is based on a comparison of biological indicators (benthic macroinvertebrates, macrophytes, phytobenthos, phytoplankton and fish) with reference conditions that characterise the state of the SWB, which has not been subjected to anthropogenic impact or is minimal.

Reference conditions are determined on the basis of data obtained from reference sites, through modelling (predictive models or retrospective forecasting methods that take into account historical, paleogeographic and other available data that provide a sufficient level of confidence in the values for reference conditions for each type of SWB) or a combination of these methods or based on expert opinion.

In order to establish reference values for biological indicators based on data from reference sites, it is necessary to establish such sites for each type of SWB in all natural categories. The network should cover a sufficient number of sites to provide a sufficient level of confidence and to account for the variability of values for indicators that correspond to the different ecological status of the SWB type.

Key criteria for selecting reference sites:

- characterise the state of the SWB without anthropogenic impact or with minimal impact;
- There is no industry or intensive agriculture;
- concentrations of specific synthetic pollutants are zero or below the detection limits;
- no morphological changes;
- water intake and flow control cause only minor fluctuations in water levels and do not affect surface water quality;
- the vegetation of the coastal zone is appropriate for the type of SWB and geographical location;
- no invasive species;
- fishing and aquaculture do not affect the functioning of the ecosystem.

In accordance with subpara. 2, clause VII. of the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 5 dated 14.01.2019 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Conditions of a Surface Water Body, as well as Assigning an Artificial [...]", type-specific reference conditions may also be determined based on existing reference sites in other countries for the same type of SWB or by combining the procedures described above.

Given that reference conditions for all types of SWBs are not currently defined in Ukraine, it was proposed to use the reference conditions established for similar or similar types in neighbouring EU countries, namely the Slovak Republic and Romania.

The methodology includes four hydrobiological indicators (benthic macroinvertebrates, phytoplankton, phytobenthos, macrophytes, macroalgae and eukaryotes, respectively) for four natural categories of surface waters (rivers, lakes, transitional waters and coastal waters) that have been identified in Ukraine.

The environmental quality standards (EQS) were approved by Order of the Ministry of Ecology No. 332 dated 01.04.2024 "On Approval of Environmental Water Quality Standards for Determining the Ecological Status of Surface Water Bodies and Amendments to Certain Regulatory Acts".

In the second cycle of the RBMP, it is necessary to revise the reference conditions (including for the fish fauna indicator) using data from state water monitoring.

1.2 Water bodies deleniation

1.2.1 Surface water

In the Danube RBD, the SWBs was determined on 335 rivers and 16 lakes (according to the State Water Cadastre: Accounting of Surface Water Bodies geoportal of the SAWR).

Within the Danube RBD, 885 SWBs have been identified (Annex 1). The designated SWBs belong to the following categories of surface water:

- rivers;
- lakes;
- artificial (AWB) and heavily modified (HMWB);
- transitional waters;
- coastal waters.

Category "rivers"

According to the Methodology, 676 SWBs were identified. The number of identified SWBs by descriptors and types is shown in Tables 9 and 10.

Table 9 Distribution of SWBs of the "rivers" category by descriptors

Descriptor	Indicator.	Number of SWBs
by eco-region	Eastern plains	110
	Pontic province	27
	Hungarian lowlands	34
	Carpathians	505
by catchment area	small (S)	537
	average (M)	101
	large (L)	21
	very large (XL)	17
by the height of the catchment area	in the midlands	115
	in the lowlands	176
	on a hill	244
	in the lowlands	141
by geological type	in silicate rocks	675
	in organic rocks	1

Table 10 Distribution of SWBs **of the "rivers" category by type**

№	Type code	Type	Number of designated SWBs
1	UA_R_10_L_1_Si	a large river in the lowlands in silicate rocks	4
2	UA_R_10_L_2_Si	a large river on a hill in silicate rocks	6
3	UA_R_10_M_1_Si	medium-sized river in the lowlands in silicate rocks	12
4	UA_R_10_S_1_Si	a small river in the lowlands in silicate rocks	37
5	UA_R_10_S_2_Si	a small river on a hill in silicate rocks	123
6	UA_R_10_S_3_Si	a small river in the lowlands in silicate rocks	155
7	UA_R_10_S_4_Si	a small river in the middle mountains in silicate rocks	112
8	UA_R_10_M_2_Si	medium-sized river on a hill in silicate rocks	33
9	UA_R_10_M_3_Si	medium-sized river in the lowlands in silicate rocks	20
10	UA_R_10_M_4_Si	a medium-sized river in the midlands in silicate rocks	3
11	UA_R_11_L_1_Si	a large river in the lowlands in silicate rocks	6
12	UA_R_11_M_1_Si	medium-sized river in the lowlands in silicate rocks	8
13	UA_R_11_S_1_Si	a small river in the lowlands in silicate rocks	14
14	UA_R_11_S_2_Si	a small river on a hill in silicate rocks	4
15	UA_R_11_XL_1_Si	a very large river in the lowlands in silicate rocks	2
16	UA_R_12_S_1_Si	a small river in the lowlands in silicate rocks	9
17	UA_R_12_XL_1_O	very large river in the lowlands in organic rocks	1
18	UA_R_12_XL_1_Si	a very large river in the lowlands in silicate rocks	14
19	UA_R_12_M_1_Si	medium-sized river in the lowlands in silicate rocks	3
20	UA_R_16_L_1_Si	a large river in the lowlands in silicate rocks	2
21	UA_R_16_L_2_Si	a large river on a hill in silicate rocks	3
22	UA_R_16_S_1_Si	a small river in the lowlands in silicate rocks	18

№	Type code	Type	Number of designated SWBs
23	UA_R_16_S_2_Si	a small river on a hill in silicate rocks	64
24	UA_R_16_S_3_Si	a small river in the lowlands in silicate rocks	1
25	UA_R_16_M_1_Si	medium-sized river in the lowlands in silicate rocks	11
26	UA_R_16_M_2_Si	medium-sized river on a hill in silicate rocks	11

Category "lakes"

Sixteen SWB s have been identified (Table 11) in the Danube RBD.

Table 11 SWBs of the "lakes" category

№	Type code	Type	Quantity of the designated MPOs
Ecoregion 12 Pontic Province			
1	UA_L_12_L_1_SH_O	a large lake in the lowlands is shallow in organic rocks	1
2	UA_L_12_L_1_SH_Si	a large lake in the lowlands is shallow in silicate rocks	3
3	UA_L_12_M_1_SH_O	The middle lake in the lowlands is shallow in organic rocks	4
4	UA_L_12_M_1_SH_Si	The middle lake in the lowlands is shallow in silicate rocks	4
5	UA_L_12_S_1_SH_O	small lake in the lowlands shallow in organic rocks	2
6	UA_L_12_S_1_SH_Si	a small lake in the lowlands is shallow in silicate rocks	1
7	UA_L_12_XL_1_SH_Si	very large lake in the lowlands, shallow in silicate rocks	1

Category "transitional waters"

One SWB in the Danube RBD has been identified.

Table 12 Types of SWBs in the "transitional waters" category

№	Type code	Type	Quantity of the designated SWBs
1	UA_TW_M5_M_M	mesohaline estuaries	1

Category "coastal waters"

One MSP in the Danube RBD has been identified.

Table 13 Types of SWBs in the "coastal waters" category

№	Type code	Type	Quantity of the designated SWBs
1	UA_CW_M5_M_SH_D_SS	mesogaline open deep silty-sandy	1

Category "significantly altered surface water bodies"

There are 155 SWBs identified in the basin. The share of HMWB in the total number of SWB in the Danube RBD is 18%. The bulk (95 SWB) are classified as HMWB s due to diversion.

37 SWB are classified as HMWB due to overregulation.

23 SWBs are classified as HMWB due to a combination of regulation and channel straightening (Figure 1).

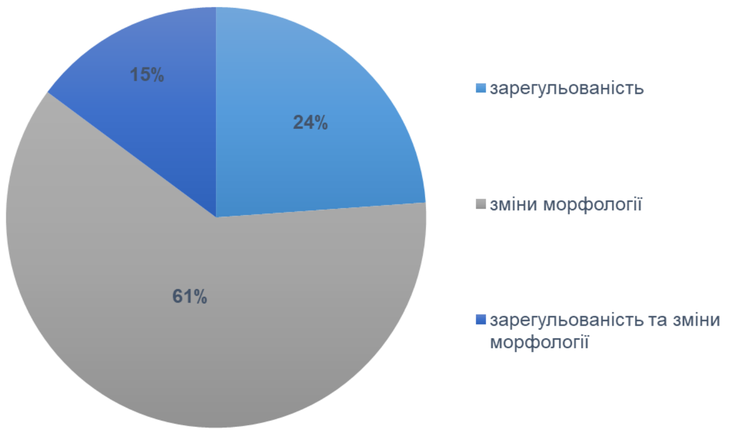

Figure 1. Distribution of HMWB by causes of hydromorphological stress, %.

Category "artificial surface water bodies"

In the Danube basin, 36 AWB have been identified, of which 34 are canals and 2 are floodplains.

The percentage distribution of identified SWB in the Danube RBD by category is shown in Figure 2.

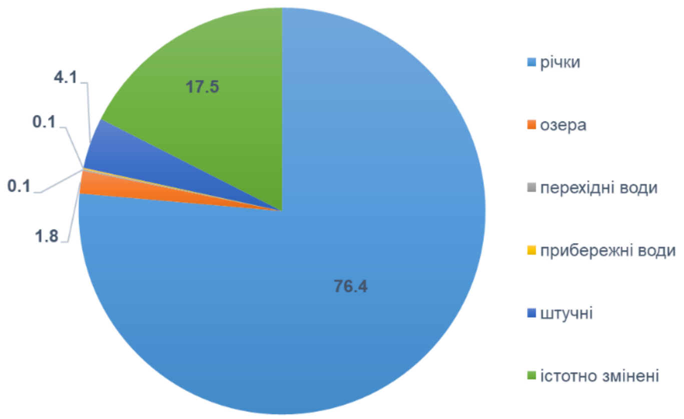

Figure 2. Breakdown of identified SWB by category, %.

Each of the 885 SWB identified in the Danube RBD has been assigned a unique code, which looks like this:

UA_ M5.3.*X_YYYY*

- *UA* - Ukraine;
- *M5.3* - Danube RBD code (according to the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 103 of 29 March 2017 "On Approval of the Boundaries of River Basin Areas, Sub-basins and Water Management Areas");
- *X* - code of the Danube sub-basin (1 - Tisza sub-basin, 2 - Prut sub-basin, 3 - Siret sub-basin, 4 - Lower Danube sub-basin);
- *YYYY is the* unique number of the designated SWB in the Danube RBD.

Each linear SWB (categories "rivers", "AWB" or "HMWB ") has a length (km). The length of the RBD s in the Danube RBZ varies from 0.26 km (UA_M5.3.1_0453 - Bachava River) to 119.7 km (UA_M5.3.2_0007 - Prut River).

Figure 3 shows the distribution of the identified linear SWBs in the Danube RBD by length.

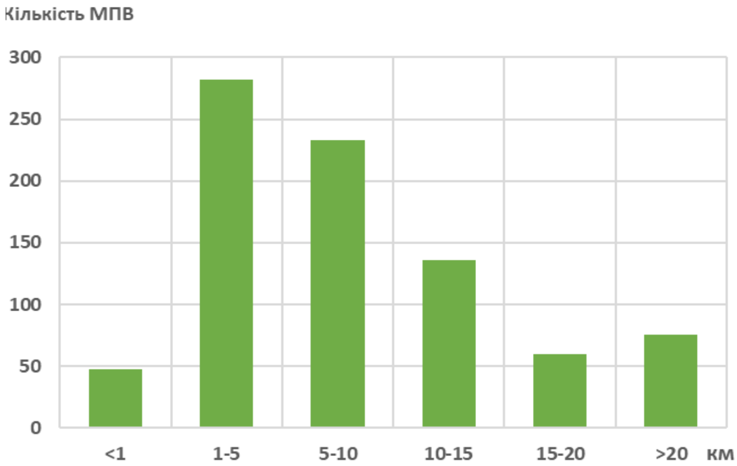

Figure 3. Distribution of identified linear SWBs by length , km

Each polygonal SWB (categories "lakes", " AWB" or "HMWB ", "transitional waters", "coastal waters") has an area (km^2). The area of SWB in the Danube RBD ranges from 0.16 km^2 (UA_M5.3.2_0229 - Glodos reservoir) to 242.4 km^2 (UA_M5.3.4_0105 - transitional waters).

Figure 4 shows the distribution of the identified polygonal SWBs depending on the area.

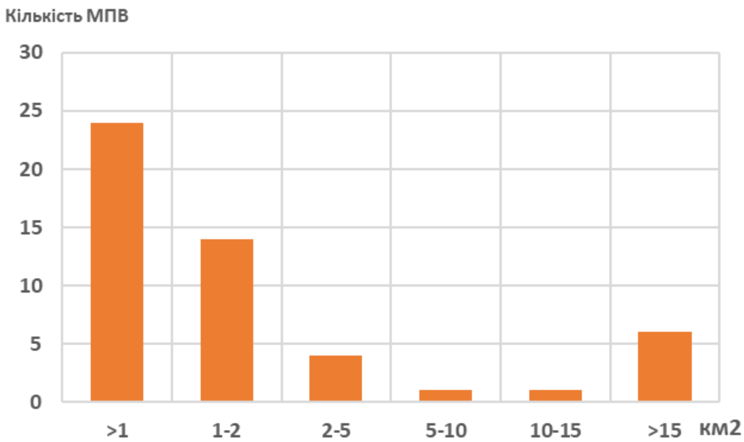

Figure 4. Distribution of identified polygonal SWBs depending on the area , km^2

1.2.2 Groundwater

The determination of the GWB was carried out in accordance with the Methodology for determining surface and groundwater bodies (Methodology), approved by the Order of the Ministry of Ecology and Natural Resources No. 4 dated 14.01.2019.

The definition of an GWB includes the division of aquifers into smaller units, the preliminary establishment of GWB boundaries based on individual characteristics and available knowledge of hydrogeological systems and anthropogenic impacts.

The definition begins with the analysis of geological maps and well data to identify different hydrogeological units within the aquifer. First of all, attention is paid to those aquifer complexes whose reserves can provide water intake of more than 10 m^3 per day.

The youngest aquifers are considered first. As a rule, the boundaries of surface water basins are approximated with the boundaries of groundwater basins, and then the determination of the GWB for deeper aquifer complexes, the boundaries of which go beyond the boundaries of surface water basins, is performed.

The codes of the defining GWB are formed as follows:

UAM5310Q100

- UA - Ukraine,
- M53 is the code for the Danube basin,
- 1 - Tisza River sub-basin, according to the Water Code,
- 0Q - geological system (geological age of water-bearing rocks),
- 100 - the number of the GWB.

GIS technologies were used in the process of identifying the GWB and creating the relevant maps.

According to Guideline No. 9 "On Implementation of Geographic Information Systems (GIS)", river basins, sub-basins and groundwater bodies were depicted on the map as polygons, and observation wells as points, etc.

After analysing the aquifers and complexes that are used or have potential for centralised and agricultural water supply in the Danube basin (within the administrative boundaries of Zakarpattia, Ivano-Frankivsk, Chernivtsi and Odesa oblasts), the following GWB were identified.

Table 14. GWB and groups of GWB in the Danube River basin

№	Unified code of the GWB	Aquifer (complex)	Geological index	Area of the GWB, km^2
		Tisza River sub-basin		
1	UAM5310Q100	Group of GWBs in alluvial Upper Neopleistocene-Holocene sediments of floodplains and first floodplain terraces of rivers of the mountainous part and Solotvynska depression	a P +aH$^{1}_{III}$	1251,0
2	UAM5310Q200	A group of GWBs in weathered crust and other loose Holocene sediments of the mountain slopes of the sedimentary Carpathians	e,p,ed,dcH	7366,0
3	UAM5310Q300	GWB in lacustrine-alluvial middle-upper Neopleistocene-New Member sediments of the Minaya Formation	laP$_{II-III}$ mn	1854,
4	UAM5310Q400	GWB in lacustrine-alluvial Eopleistocene-Lower Neopleistocene sediments of the Chop Formation	laE+P$_{I}$ čp	1090,0
5	UAM5310Q500	GWB in alluvial Pliocene-Lower Neopleistocene sediments of the ninth and tenth overflank terraces (Kopanska terrace)	a N -E$^{9-10}_{2I}$	118,0
6	UAM5310N100	GWB in sediments of the Pliocene Ilnytsia Formation	N$_2$ il	1307,0
7	UAM5310N200	A group of GWBs in volcanogenic Pliocene sediments of the Vygorlat-Gutynsky Ridge	N$_2$ vg	1727,0
		Siret River sub-basin		
8	UAM5330Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	a P$^{1-5}_{III}$ +aH	379,0
9	UAM5330N100	GWBin Miocene sediments	N s$_{11}$, N$_1$ ks, N$_1$ tr, N$_1$ op	844
10	UAM533PG100	GWB in Paleocene-Eocene sediments	P$_{1-2}$	327
11	UAM5330K100	GWB in Upper Cretaceous sediments	K$_2$	78
		Prut River sub-basin		
12	UAM5320Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	a P$^{1-5}_{III}$ +aH	810
13	UAM5320N100	GWB in Miocene sediments	N s$_{11}$, N$_1$ ks, N$_1$ tr, N$_1$ op	5400
14	UAM532PG100	GWB in Paleocene-Eocene sediments	₽$_{1-2}$	252
15	UAM5320K100	GWB in Upper Cretaceous sediments	K$_2$	381
		Lower Danube sub-basin		
16	UAM5340N100	GWB in the Upper Sarmatian sediments	N s$_{13}$	16478

The characteristics of the GWB and groups of GWB are presented in the relevant sections 1.2.2 of the Danube River Sub-basin Management Plans and in Annex 2.

2 SIGNIFICANT ANTHROPOGENIC IMPACTS ON THE QUANTITATIVE AND QUALITATIVE STATUS OF SURFACE AND GROUNDWATER, INCLUDING POINT AND DIFFUSE SOURCES

2.1 Surface water

The Danube basin is located within four regions of Ukraine (Zakarpattia, Ivano-Frankivsk, Chernivtsi and Odesa). The socio-economic structure of the basin creates preconditions for the formation of anthropogenic pressure that affects surface waters. The main factors of anthropogenic pressure include:

- population. The population of the basin is 3.532 million people;
- enterprises in various sectors of the economy;
- Agriculture is one of the main sectors of the basin's economy, characterised by a high level of development;
- Cross structures on small and medium-sized rivers prevent the free passage of water, sediments and migration of aquatic life, and change the transit mode of rivers to an accumulation one.

The characterisation of anthropogenic load and its impact should be carried out on the basis of chemical, physico-chemical and hydromorphological indicators that reflect the conditions of existence of the biotic component of aquatic ecosystems. Changes in these parameters in the event of a significant anthropogenic load may lead to the risk of not achieving a "good" ecological status of water.

The assessment of the anthropogenic load on the SWB was carried out in accordance with the Methodological Recommendations for the Analysis of the Main Anthropogenic Loads and Their Impact on the Surface Water Status, which were approved at the meeting of the Scientific and Technical Council of the SAWR on 20 April 2023, Minutes No. 2.

The methodological basis of the assessment was the DPSIR model developed by the European Environment Agency (EEA)[1] and adapted to the conditions of Ukraine. The determination of anthropogenic pressure was based on a sequential analysis of Drivers/Activities → Pressures → State → Impact → Response (Fig. 5).

Figure 5. Conceptual model of the DPSIR

The risk of not achieving a "good" environmental status of the SWB is determined on the basis of criteria for chemical, physico-chemical and hydromorphological indicators.

Criteria for chemical and physicochemical parameters:

- Disposal of untreated wastewater (point sources) - used for organic matter and nutrients;
- Wastewater fraction (point sources) - used for hazardous substances;
- Soil nitrogen balance (diffuse sources) - to determine the impact of crop production;
- Livestock index (diffuse sources) - to determine the impact of livestock.

Criteria for hydromorphological indicators:

[1] CIS Guidance #3 Pressure and Impact Analysis, EU, 2003

- Disruption of the continuity of water flow and environments due to the presence of transverse artificial structures in the riverbed, disruption of the continuity of water flow and sediment movement and migration of fish and other aquatic life;
- Water intake;
- Flow control;
- Fluctuations in water levels below transverse artificial structures in the channel;
- Morphological changes that reflect a violation of the natural morphological characteristics of rivers.

By comparing the criteria with the thresholds, 3 risk categories are identified:

1. "without risk"
2. "possibly at risk"
3. "at risk"

The overall risk assessment for a SWB is determined by the worst value of any one criterion.

Assessing the risk of not achieving "good" ecological status

The analysis of anthropogenic pressures and related impacts is aimed at determining the probability of compliance/non-compliance of a water body with the objectives of environmental quality of the water environment.

Assessment of the risk of failure to achieve environmental objectives from point sources of pollution

Based on the results of the assessment of anthropogenic pressures from point sources of pollution and their impact on the basin's SWB, the risk of not achieving a "good" ecological status/potential was identified (Fig. 6) for

- 696 SWB - "no risk";
- 90 SWB - "possibly at risk";
- 99 SWB - "at risk".

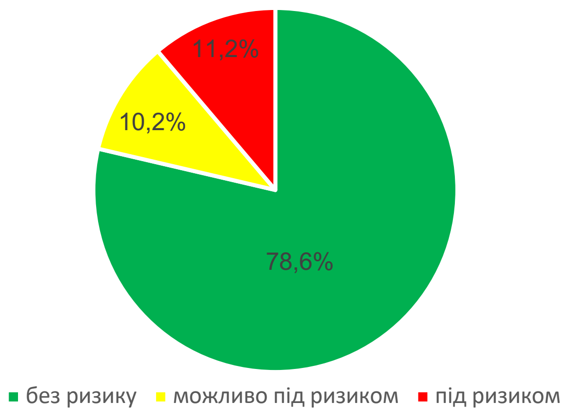

Figure 6. Risk assessment of failure to achieve "good" ecological status/potential based on the results of the assessment of anthropogenic pressures from point sources

Assessment of the risk of failure to achieve environmental objectives from diffuse sources of pollution

Based on the results of the assessment of anthropogenic loads from diffuse sources of pollution and their impact on the basin's SWB, the risk of failure to achieve "good" environmental status/potential was established (Fig. 7) for

- 579 SWB - "no risk";
- 175 SWB - "possibly at risk";
- 131 SWB are "at risk".

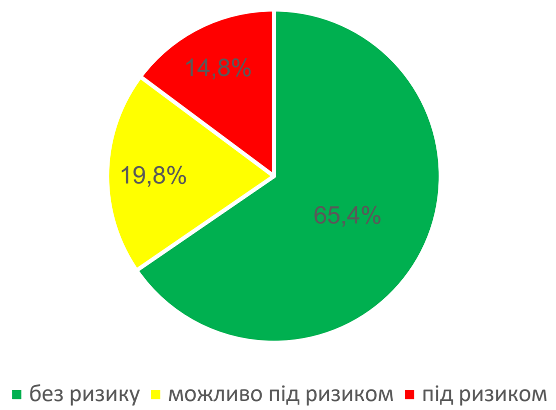

Figure 7. Risk assessment of failure to achieve "good" ecological status/potential based on the results of the assessment of anthropogenic loads from diffuse sources

Assessing the risk of not achieving environmental goals: hydromorphological changes

Based on the results of the assessment of hydromorphological changes,[2] was established:

- 694 SWB - "no risk";
- 155 SWB are "at risk";
- 36 SWB - not defined.

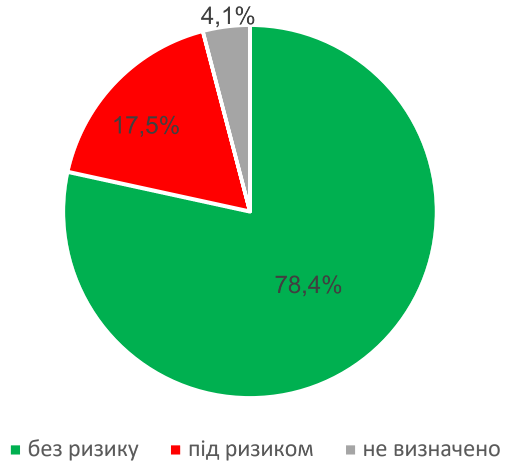

Figure 8. Risk assessment of failure to achieve "good" ecological status/potential based on the results of anthropogenic pressure assessment: hydromorphological changes

Generalised risk assessment of failure to achieve 'good' environmental status/potential

The risk of not achieving a "good" environmental status/potential has been assessed as follows:

- 394 SWB - "no risk";
- 165 SWB - "possibly at risk";
- 326 SWB are "at risk".

[2] The risk of failure to achieve environmental objectives based on hydromorphological changes was not assessed for the AWB

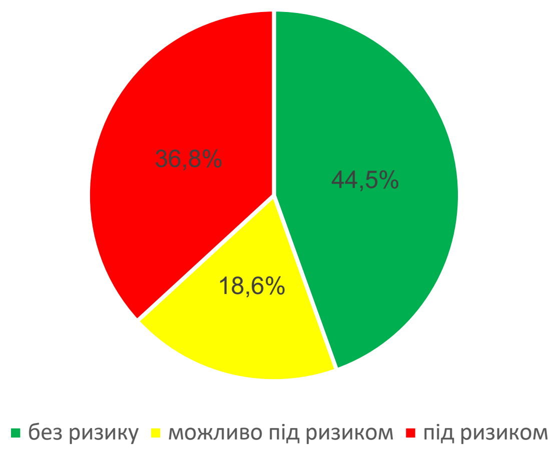

Figure 9. Generalised risk assessment of failure to achieve 'good' environmental status/potential of SWB

Impact of military operations on the state of surface water bodies

In contrast to the Lower Danube sub-basin, the Tisza, Prut and Siret sub-basins have not been affected by military operations.

1. Pollution (organic, biogenic, hazardous) substances caused by:

1.1 destruction, suspension, disruption of the technological process of enterprises (including warehouses, oil product depots)

Data on the destruction, suspension or disruption of the technological process of enterprises as of May 2024 are set out in Annex 3.

1.2 by direct hit of pollutants from missiles, shells of military equipment, their washing, seepage in combat zones

Artillery shells, missiles and other munitions are basically composed of a metal shell filled with an explosive, propellant and a detonator.

Explosives are classified into primary explosives (mercury, lead azide, TNT) and secondary explosives (THE, hexogen, tetryl, TNT, picric acid, plastid-4, ammonites, dynamites, ammonals).

Metals are associated pollutants. The most common is lead, but also antimony, copper, cadmium, chromium, mercury, arsenic, nickel, bismuth and tungsten. As a rule, metals are concentrated in the sinkhole.

Flares burn at high altitude and disperse metals over large areas. Pyrotechnics can contain barium, antimony, strontium, copper, magnesium, manganese, chromium and lead. Unlike explosives and propellants, metals occur naturally in the environment, so their background concentrations need to be measured.

The detonation of rockets, artillery shells and mines produces a number of chemical compounds, including carbon monoxide and carbon dioxide, water vapour, nitrogen oxide, nitrogen, etc. A number of toxic elements, including sulphur and nitrogen oxide, also evaporate.

Monitoring of surface water in the area of active hostilities and recently liberated territories is not currently carried out for security reasons.

2. Impossibility of water monitoring or reduction of its programme (spatially and temporally) in the temporarily occupied territories.

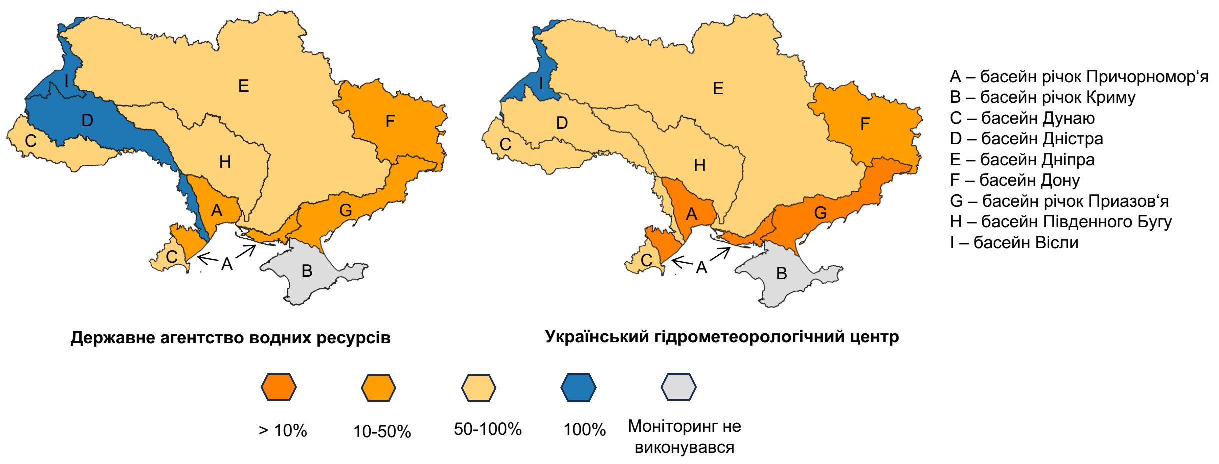

Figure 10. Surface water monitoring by river basin, 2022[3]

3. 3. Impossibility or restrictions on water management in the temporarily occupied territories.

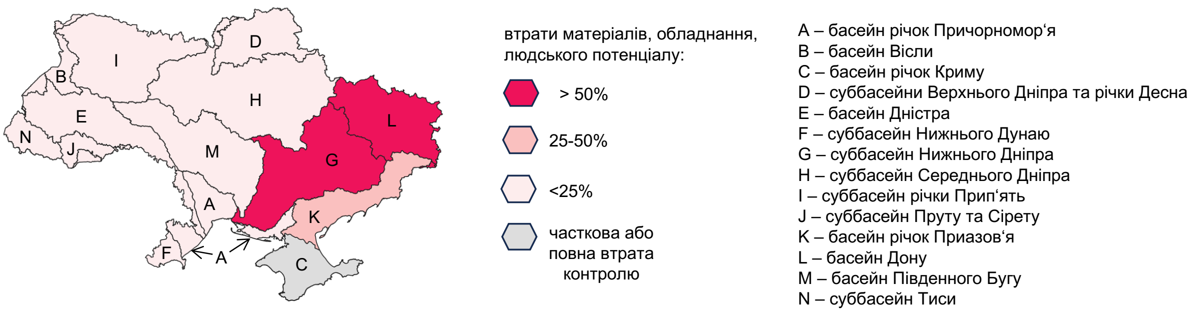

Figure 11: Impact of military operations on the ability to manage water resources[4]

2.1.1 Organic pollution

The main cause of organic pollution is insufficient or no wastewater treatment. Organic pollution can lead to significant changes in the oxygen balance of surface waters and, as a result, to changes in the species composition of aquatic life or even their death. The input of organic matter with wastewater is usually assessed by the indirect indicators of BOD_5 and COD.

Diffuse sources

Organic pollution from diffuse sources is mainly caused by rural households that are not connected to sewerage networks. Such individual households dispose of wastewater by accumulating it in lagoons, from which it is filtered into the nearest groundwater horizons.

The load from the rural population was assessed using the calculation method. For this purpose, we used the coefficients of organic matter intake based on the life activity of 1 person. In European countries, the generation of load from the population is calculated using the following indicators: BOD_5 - 60 g/day/person, COD - 110 g/day/person.

During a calendar year, the total organic matter (BOD_5, COD) inputs to the SWB from distributed sources of pollution in the basin are significantly higher than from point sources. The reason for this is the low level of connection of the basin's population to sewage treatment plants.

In the basin's rural settlements, small towns and some cities, wastewater is discharged into lagoons and storage pits, from where pollutants easily enter groundwater and are transported to surface waters.

The following rivers play a key role in organic pollution of the basin from diffuse sources: the lower reaches of the Tisa (Berehovo district), the Latorytsia (Mukachevo and Uzhhorod districts), the Borzhava (Khust district, Berehovo district (from the village of Velyki Komyaty to the mouth)), the Prut (Khust district,

[3] Information prepared by the Zoy Environmental Network for the OSCE Project Co-ordinator in Ukraine
[4] Information prepared by the Zoy Environmental Network for the OSCE Project Co-ordinator in Ukraine

Berehovo district (from the village of Velyki Komyaty to the mouth)), Prut, Peremyska, Lyubizhna, Oslava, Bila Oslava, Krasna, Tovmachyk, Tovmach, Pistynka, Brusturka, Lyuchka, Akra, Rybnytsia, Volytsia.

Point sources

The main cause of organic pollution is insufficient or non-existent wastewater treatment after use by settlements, industrial and agricultural enterprises. This pollution can affect the composition of aquatic species and their ecological status. The decomposition of organic matter consumes a lot of oxygen, which reduces the water content and causes aquatic organisms to stop living. Organic pollution generated from these sources is assessed by BOD and COD_5

According to the water use reports in the form No. 2TP-Vodkhoz (annual), in 2020, the total volume of wastewater discharged into the surface water bodies of the Danube River basin was 123.690 million m^3, includingincluding: polluted without treatment - 21.936 million m^3, polluted with insufficient treatment - 3.893 million m^3, normatively clean without treatment - 46.009 million m^3 and normatively treated - 51.852 million m^3 (Fig. 12).

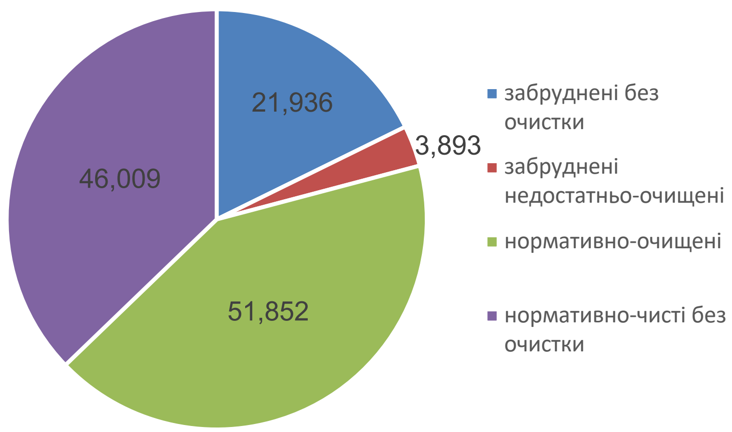

Figure 12. Water discharge in the Danube basin in 2020, million m^3

By economic sector, the discharge of wastewater into surface water bodies of the Danube River basin in 2020 was as follows: agriculture (including fish farming) - 65.733 million m^3, housing and communal services - 52.720 million m^3, industry - 3.141 million m^3, and other - 2.096 million m^3 (Fig. 13).

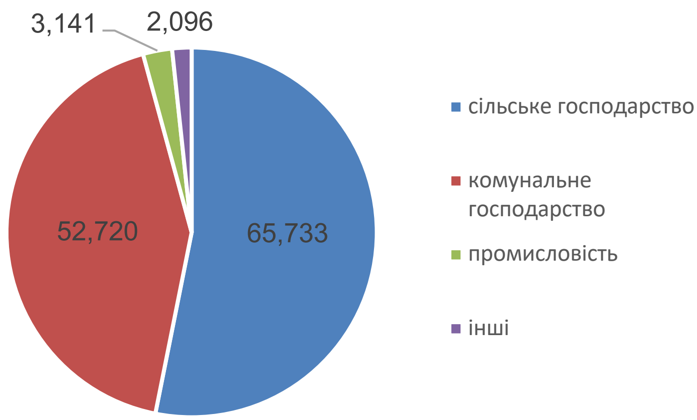

Figure 13. Discharge volumes by economic sectors in the Danube basin in 2020, million m^3

Since the anthropogenic load was assessed based on 2020 data, the data on the total volumes of organic matter discharged into the basin in 2020 are presented below. Thus, the discharge of BOD_5 was 952.3 tonnes, COD - 2116.6 tonnes.

Organic pollution from public utilities

The pollution of the basin's surface waters is caused by point sources, such as utility companies. Most of the agglomerations are connected to the STP. For agglomerations not connected to the STP, wastewater is collected in individual septic tanks or cesspools, which are not treated and can be a potential source of pollution of both surface water and underground aquifers in the basin.

In 2020, organic pollution from municipal point sources amounted to 785.4 tonnes of BOD_5 and 1982.5 tonnes of COD. The largest cities account for the dominant share of organic pollution: Uzhhorod, Chernivtsi, Mukachevo.

The degree of wastewater treatment at STP varies considerably. The STP in most cities are in an extremely dilapidated state, having been built in the Soviet era. Over the last 30 years, urban development has led to an increase in the amount of wastewater that is several times higher than the design capacity of the STP, resulting in a significant amount of insufficiently treated or untreated wastewater entering the Danube basin.

Organic pollution from industrial enterprises and other facilities (water users)

The organic pollution of the SWB of the Danube sub-basins is mainly due to the paper and food industries. Pollution by organic matter from industrial point sources amounts to 9.1 tonnes in terms of BOD_5 and 98.9 tonnes in terms of COD.

Pollution by organic matter from agricultural point sources is insignificant and in 2020 amounted to 1.3 tonnes for BOD_5 and 0.9 tonnes for COD.

2.1.2 Pollution by nutrients

Nutrient inputs to the basin's surface waters are the driving force behind eutrophication, which leads to an increase in primary production and accumulation of organic matter. The enrichment of water with nutrients stimulates the development of autotrophic aquatic organisms, resulting in an undesirable imbalance of organisms in the aquatic environment and a decrease in water quality.

Among biogenic substances, phosphorus and nitrogen compounds play a dominant role, and in some cases, ferrous may have an impact. Of the first two substances, phosphorus has the dominant influence, while nitrogen is much less likely to limit the development of autotrophic organisms, due to the ability of many bacteria and cyanobacteria to fix it.

Nutrients can come from both point and diffuse sources. The main sources are untreated wastewater from municipal and industrial facilities. The widespread use of phosphorus-containing detergents and washing powders with insufficient treatment of waste water increases nutrient pollution. Ukraine has established phosphate content limits in detergents that are in line with European Parliament regulations. The efficiency of phosphorus removal from wastewater at most STP does not exceed 20%, and due to outdated technological equipment, the efficiency of phosphorus removal does not even reach the design values.

Nutrients enter the Danube sub-basins from point sources (agglomerations, industry, agriculture) and diffuse sources (surface runoff, precipitation). Diffuse sources are partly of natural and anthropogenic origin (mainly agriculture).

Diffuse sources

Diffuse sources are defined as the washing away of substances from the surface of the catchment and the soil layer of the soaking zone. This type of pollution is the most difficult to assess, as it cannot be directly measured, but must be estimated through probable pathways. Diffuse runoff can be caused by both natural factors (precipitation, geological structure and soil composition) and anthropogenic factors, which in this case act as indirect factors (degree of ploughing, crop yields).

Land cover type is the dominant factor in the anthropogenic load from diffuse sources.

According to the physical and geographical division, there are clear differences in land cover types, which significantly affects the emission of elements. For example, in the direction from the source to the mouth of the Prut and Siret rivers, there is a decrease in the degree of forest cover, while the share of agricultural land, which provides the main supply of nutrients, is increasing. The disturbance of soil cover due to ploughing leads to significant losses of nutrients due to deflation and water runoff.

Another important indicator of the anthropogenic load from diffuse sources of pollution is the intensity of agriculture, which is expressed primarily in the amount of fertilisers applied. The majority of mineral fertilisers applied to various crops are nitrogen fertilisers.

There is no intensive agricultural production in the upper reaches of the Prut and Siret rivers, in a mountainous area with low temperatures and high rainfall. Meat and dairy farming and sheep breeding are developed here.

The organic fertiliser load is not reported in the statistical information. This indicator is calculated on the basis of data on the number of livestock, manure yields and nitrogen and phosphorus compounds in their composition.

Despite the fact that the livestock industry in Ukraine has shrunk significantly since the change in the economic system and is recovering at a slow pace, there are still a large number of domestic animals, especially birds, in the Lower Danube sub-basin.

In the Tisza sub-basin, diffuse pollution from the territory of former timber and chemical enterprises (Perechyn, Velyky Bychkiv and Svalyava timber and chemical plants) and solid waste disposal sites is a particular danger.

Point sources

Pollution by nutrients from point sources is caused mainly by the discharge of insufficiently treated or untreated wastewater into surface water bodies (after use by settlements, industry and agriculture), which significantly increases their concentration in water bodies.

Within the Danube basin, there were no discharges of wastewater in 2020:

- 182.8 tonnes of ammonium nitrogen;
- 107738.1 kg of total nitrogen;
- 941.4 tonnes of nitrates;
- 27.6 tonnes of nitrite;
- 116101.5 kg of phosphates;
- 17869.9 kg of total phosphorus.

The largest cities account for the dominant share of nutrient pollution: Uzhhorod, Chernivtsi, Mukachevo. Pollution from industrial wastewater is negligible.

A large proportion of pollution is generated by the return (waste) water of healthcare facilities, mainly sanatoriums in Zakarpattia. The composition of the return (waste) water of these institutions is similar to that of municipal enterprises and is characterised by the presence of mainly nitrogen and phosphorus compounds. In most cases, sanatoriums, in addition to health improvement functions, also perform the role of public utilities in the settlements where they are located.

2.1.3 Pollution by hazardous substances

Hazardous substances are priority pollutants subject to control in accordance with the Order of the Ministry of Ecology and Natural Resources of 06.02.2017 No. 45 "On Approval of the List of Pollutants for Determining the Chemical State of Surface and Groundwater Bodies and the Ecological Potential of an Artificial or Significantly Modified Surface Water Bodies" (hereinafter - the Order) and the Order of the Ministry of Ecology and Natural Resources of 14.01.2019 No. 5 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified Surface Water Body".

The available information on the discharge of priority pollutants in the Danube sub-basins is currently quite limited. According to the state water use accounting and reporting on water use in the form No. 2TP-water farm (annual), approved by Order No. 78 of the Ministry of Ecology and Natural Resources of Ukraine on 16.03.2015, for the period 2016-2021, none of the business entities in the Danube basin provided information on the presence of pollutants in the discharges of return (waste) water included in the list of priority pollutants by Order No. 45 of the Ministry of Ecology and Natural Resources of Ukraine.

Monitoring of the content of priority and other hazardous substances in surface waters and sediments of the Tisza, Prut and Siret sub-basins showed that the water and sediments contain organic substances, including priority substances such as pesticides, pharmaceuticals, polyaromatic hydrocarbons, halogenated hydrocarbons, and heavy metals (cadmium, lead, nickel).

The monitoring results showed that the concentration of diphthalates (2-ethylhexyl) (a widely used plasticiser), naphthalene, cadmium, lead and nickel exceeded the environmental quality standard for priority substances in water. In addition, elevated concentrations of polyaromatic hydrocarbons, which are indicators of oil products, were found in each of the surface water samples collected in the Tisa River sub-basin.

In accordance with the Resolution of the Cabinet of Ministers of Ukraine of 19.09.2018 No. 758 "On Approval of the Procedure for State Water Monitoring", the laboratories of the Tisza River Basin and the Prut and Siret River Basin were sampling water on a monthly basis during 2019-2020 to determine chemical and physicochemical parameters at 30/15 (2019), 45/19 (2020), respectively, at the monitoring points of surface water bodies from which water is taken to meet the drinking and household needs of the population.), respectively, at the observation points of surface water bodies, from which water is abstracted to meet the drinking and household needs of the population in a volume of more than 100 m^3 /day; bodies that are at risk due to anthropogenic impacts on the qualitative and quantitative state, and surface water bodies in transboundary areas defined in accordance with interstate agreements on water management in border waters between the Government of Ukraine and the Governments of Hungary, the Slovak Republic, Romania and the Republic of Moldova.

Water samples from surface water bodies were transferred to the water monitoring laboratory of the Western Region of the Dniester BWR in compliance with the requirements of regulatory documents (DSTU ISO 6468-2002, DSTU ISO 10301:2004, DSTU ISO 5667-1:2009, DSTU ISO 5667-2:2009, DSTU ISO 5667-6:2009) for measurements of priority pollutants approved by the relevant Order.

Based on the results of the monitoring of priority pollutants in the Tisza, Prut and Siret sub-basins, 32 hazardous specific pollutants (27 synthetic pollutants and 5 non-synthetic pollutants (heavy metals: cadmium, nickel, mercury, lead, zinc) were identified. The list of hazardous substances is presented in Table 15.

Table 15. Specific pollutants (synthetic pollutants) for the Tisza, Prut and Siret sub-basins

Chemical registration number	Indicators for determining the environmental status of the SWB	Average annual concentration, μg/dm^3	Maximum concentration, μg/dm^3
74070-46-5	Aklonifene mcg/dm^3	-	0,14
62-53-3	Aniline, μg/dm^3	1,5	16,0
98-10-2	Benzenesulfonamide, μg/dm^3	100,0	n.a.
95-16-9	Benzothiazole, μg/dm^3	2,0	n.a.
92-52-4	Biphenyl, μg/dm^3	1,0	3,6
80-05-7	Bisphenol A, μg/dm^3	10,0	460,0
1702-17-6	Clopyralid, μg/dm^3	70,0	300,0
13684-56-5	Desmedipham, μg/dm^3	1,0	15,0
84-74-2	Dibutyl phthalate, μg/dm^3	10,0	48,0
122-39-4	Diphenylamine, μg/dm^3	1,6	31,0
26225-79-6	Etgofumesate, μg/dm^3	6,4	50,0
67-66-3	Trichloromethane (chloroform) μg/dm^3	3,24	-
85-01-8	Phenanthrene, μg/dm^3	0,38	2,0
50-00-0	Formaldehyde, μg/dm^3	5,0	50,0
206-44-0	Fluoranthene μg/dm^3	0,046	0,35
205-99-2	Benzo (b) fluoranthene μg/dm^3	-	0,053
207-08-9	Benzo(k) fluoranthene μg/dm^3	-	0,045
1071-83-6	Glyphosate, μg/dm^3	15,0	n.a.
74-90-8	Cyanides, μg/dm^3	5,0	n.a.
94-74-6	MCPA, μg/dm^3	1,6	15,0
128-37-0	4-methyl-2,6-di-tert butylphenol, μg/dm^3	1,4	17,0
1336-36-3	Polychlorinated biphenyls and their derivatives, μg/dm^3	0,01	n.a.
40487-42-1	Pendimethalin, μg/dm^3	0,3	2,0
79-00-5	1,1,2-trichloroethane, μg/dm^3	300,0	n.a.
108-88-3	Toluene, μg/dm^3	100,0	n.a.
100-42-5	Vinylbenzene (styrene), μg/dm^3	0,63	60,0
1330-20-7	Xylene (isomers), μg/dm^3	10,0	n.a.

The preliminary assessment of synthetic and non-synthetic specific substances will be based on the assessment of compliance with the accepted environmental quality standards and will be displayed as an annual average and as a maximum permissible concentration. Failure to comply with an environmental quality standard will be established if the arithmetic mean of the measured concentrations is higher than the value of the relevant environmental quality standard. When assessing the values of non-synthetic specific substances, background concentrations of heavy metals for each sub-basin SWB should be taken into account.

Control of the content of hazardous pollutants in the discharges of waste water from business entities mainly consists of determining the content of only the parameters stipulated in the draft maximum permissible discharges of water users (mainly pollution with organic and nutrients). The actual presence of hazardous substances, volumes and values need to be additionally verified, confirmed by research monitoring data and screening results of samples of wastewater discharged into sub-basin SWB.

Sources of hazardous pollutants in the Tisza sub-basin may include industrial sources, including machine building, the forestry and chemical industry, mining facilities, livestock and food production, industrial and municipal waste.

2.1.4 Accidental pollution and impact of contaminated areas (landfills, sites, zones, etc.)

There is little "hazardous" industrial activity in the Danube basin, but there are potential sources of accidental pollution from both wastewater discharges and runoff from sites where industrial waste is stored.

The mechanism for preventing and minimising the risk of accidental pollution is established in the EU member states through the implementation of the Seveso-III Directive (Directive 2012/18/EU), the Industrial Waste from Mining Directive (2006/21/EC)10 and the Industrial Emissions Directive-IED (2010/75/EU)11 and for non-EU countries through the implementation of the recommendations of the UNECE Convention on the Transboundary Effects of Industrial Accidents.

The main provisions of the Seveso III Directive (Directive 2012/18/EU) were transposed into Ukrainian legislation in 2021 by amending the Civil Protection Code of Ukraine, the Law of Ukraine "On High Risk Facilities" (the Law) and a number of other laws.

Thus, in accordance with Article 9 of the Law, a business entity identifies high-risk facilities in accordance with the number of threshold masses of hazardous substances. Based on the results of the identification of a high-risk facility, it is assigned a class 1, 2 or 3.

Article 9-1 of the Law provides for the definition and approval of an accident prevention policy for a Class 1 or 2 hazardous facility. According to Article 10 of the Law, for a Class 1 or Class 2 hazardous facility, the operator shall develop and, in cases specified by the Law, review a report on safety measures at the hazardous facility.

Pursuant to Article 11 of the Law, in order to organise the response to accidents at high-risk facilities, operators develop and approve plans for localisation and elimination of accidents and their consequences for each high-risk facility they operate. The plan for localisation and elimination of accidents and their consequences shall be reviewed at least every three years. The procedure for action in the event of an accident at a high-risk facility is set out in Article 14 of the Law. Pursuant to this Article, the Cabinet of Ministers of Ukraine approved the Procedure for Investigation of Accidents at High Risk Facilities by Resolution No. 965 dated 8 September 2023.

Article 15 of the Law stipulates that the operator shall annually submit to the competent authority, local executive authorities, and local self-government bodies information on high-risk facilities owned or operated by the operator by 30 December. At the request of a legal entity or individual or their representatives to obtain information about a hazard that has arisen at high-risk facilities and poses a threat to people and the environment, the operator must submit such information within 48 hours of receiving the request.

According to Article 16 of the Law, damage caused to individuals or legal entities as a result of an accident at a high-risk facility shall be compensated by the operator who owns the high-risk facility on the relevant legal basis, unless he proves that the damage was caused by force majeure or intent of the victim

At the Danube basin level, a list of potential accident risk sites has been developed, which includes operating industrial facilities with a high risk of accidental pollution due to the nature of chemicals stored or used at industrial facilities, contaminated sites, including landfills and dumps located in flood zones. The register includes facilities that pose risks of accidental pollution, primarily, CWS, sites where industrial waste is stored, sludge ponds and tailing pits.

Recent studies in the Tisza, Prut and Siret sub-basins have revealed an excess of synthetic substances: pesticides, pharmaceuticals and substances used in perfumery, polyaromatic hydrocarbons, halogenated hydrocarbons, heavy metals: zinc, copper, cadmium, nickel and lead, which confirms a significant anthropogenic load on the sub-basin SWBs.

The Ministry of Environmental Protection and Natural Resources of Ukraine has launched an electronic service that also contains the Register of Waste Disposal Sites and the List of Facilities that are the largest polluters of the environment in terms of discharging pollutants into water bodies.

Table 16. Register of facilities in the Danube basin that are at risk of accidental pollution

№	Object name
1	Municipal enterprise "Vodokanal Uzhhorod", Uzhhorod
2	Municipal enterprise "Miskvodokanal" of the Mukachevo City Council, Mukachevo
3	Limited Liability Company "Vodokanal Karpatviz", Beregovo
4	Municipal enterprise of the Chop City Council "Vodokanal of Chop. Chop", Chop city
5	"Khust Production Department of Water Supply and Sewerage, Khust

№	Object name
6	Vodokanal municipal enterprise of the Tyachiv City Council, Tyachiv
7	Municipal enterprise of Volovets Village Council "Vodokanalservice", Volovets village
8	"Vynohradiv Production Department of Water Supply and Sewerage, Vynohradiv
9	Communal Service, Velykyi Bereznyi village
10	Mizhhirya Village Council's communal enterprise Mizhhirya VUZHKH, Mizhhirya village
11	Rakhiv municipal enterprise Rakhivteplo, Rakhiv
12	Solotvyno Municipal Utility Company, Solotvyno village
13	Communal Unitary Enterprise "Kommunalnyk", Vyzhnytsia
14	Hlyboka Production Department of Housing and Communal Services, Hlyboka village
15	Kitsman Production Department of Housing and Communal Services, Kitsman
16	Chernivtsi Vodokanal, Chernivtsi city
17	Storozhynets Utility Company, Storozhynets
18	Municipal enterprise Novoselytsia City Heating Network, Novoselytsia
19	Verkhovyna Water Supply and Sewerage Enterprise, Verkhovyna village
20	Kolomyiavodokanal, Kolomyia city
21	Hvizdetsky Combine of Utilities, Hvizdets village
22	Zabolotivskyi KKP, Zabolotiv village
23	Housing and communal services company Technoservice, Pyadyky village
24	Municipal enterprise "Selyshche KP", Vorokhta village
25	Municipal enterprise "Village water worker", Turka village
26	Kommunalnyk, Perechyn, Ukraine
27	PJSC "ICCC", Izmail
28	Municipal enterprise "Svitlo", Kilia

According to the register of waste disposal sites (hereinafter referred to as WDS), there are 85 certified WDS in the Tisza, Prut and Siret sub-basins (62 in Zakarpattia Oblast, 10 in Chernivtsi Oblast, and 13 in Ivano-Frankivsk Oblast):

64 - solid waste disposal sites;
3 - wood waste (sawdust);
7 - landfills;
5 - manure storage facilities;
1 - waste of artificial fur;
1 - oil and sludge pond;
1 - waste industrial oils;
1 - sludge from treated wastewater;
1 - storage of recyclable waste;
1 - refined oil and fat residues.

Waste remains one of the most acute environmental problems (its generation, accumulation, utilisation, disposal, removal to unorganised dumping sites, etc.) Most of the existing landfills have exhausted their capacity, being 80-85% full, and the lifetime of the landfills in the city of Vynohradiv, Zakarpattia Oblast, has reached the end of its useful life. Due to its mountainous nature, high population density, proximity to 4 EU countries, a single water sub-basin of the Tisza River, and protected areas, a number of settlements in Zakarpattia Oblast are deprived of the opportunity to choose land plots for landfills. This applies to cities: Rakhiv, Tyachiv, Vynohradiv, Berehove, Perechyn, Velykyi Bereznyi, and rural settlements in mountainous areas. Centralised collection and disposal of solid waste in the region is carried out by 36 specialised enterprises, the largest of which are: ABE Uzhhorod, ABE Vynohradiv, ABE Mukachevo and Bereg Vertical. These business entities are responsible for the removal of municipal solid waste (MSW) from 199 settlements in the region.

In total, centralised solid waste collection in the region is organised in 491 settlements, which is 80.75% of the total number (608) of settlements in the region. Household waste is also collected from households and business entities independently by enterprises and organisations, some private structures and specialised communal services of territorial communities. There are no household waste disposal facilities.

Separate collection of solid waste (glass, plastic, waste paper and scrap metal) has been introduced in the cities of Uzhhorod, Perechyn, Irshava, Rakhiv, Svaliava, V. Bychkiv and 23 territorial communities (187 settlements in total). Resource-intensive components of solid waste are transferred to specialised enterprises (52 business entities in the region). The collected waste is mostly transferred for disposal outside the region. According to the Main Department of Statistics, there are 1 hazardous waste disposal facility, 24 waste incineration facilities for energy production, 5 waste incineration facilities for thermal processing, and 35 other waste disposal facilities (other than incineration) in the region.

Wood waste is disposed of by briquetting and burning in boilers as an additional energy resource. New technologies for sawdust processing are implemented at the expense of the companies' own funds and investments.

In order to maximise the use of resource-rich waste components, the region is creating appropriate conditions for attracting investment to build waste processing plants, introduce alternative fuel technologies, establish a system for collecting, sorting and recycling solid waste, and reduce the number of waste disposal sites.

There is no storage of unsuitable and banned pesticides and pesticide chemicals in the Zakarpattia region. However, according to the Mukachevo District State Administration, there are 41 reinforced concrete containers in 8 settlements of Mukachevo District that contain chemical plant protection products. In addition, 225 tonnes of pesticide-contaminated soil is stored in Rokosovo village, Khust district, which, according to the Ukrainian Research Institute of Environmental Problems (Kharkiv), is toxic waste of classes I and II hazard to public health and requires urgent removal outside the region.

The main method of solid waste management in Chernivtsi Oblast is landfilling. The majority of solid waste is disposed of at 1 landfill in Chernivtsi and 282 organised landfills with a total area of 260 hectares. Today, the situation has become particularly acute: landfills in the region are a big problem, and their number is growing every year. Landfills are one of the main sources of environmental pollution. Tonnes of garbage are dumped on the sides of roads and forests. The region has separate household waste collection in 39 settlements. 17 enterprises in the region have 50 waste incineration facilities and 3 enterprises - have 4 waste disposal and recycling facilities with a total capacity of 28.7 thousand tonnes per year and 2.3 thousand tonnes per year, respectively.

There are 15 permanent solid waste landfills in Ivano-Frankivsk Oblast, of which 8 have been certified. The largest landfills in the Prut sub-basin are located near Kolomyia and Nadvirna (village of Pniv). Separate solid waste collection has been partially introduced in 57 settlements and 6 cities of regional significance.

Therefore, given the current situation, addressing the problem of solid waste management should be included in the programme of measures to achieve good ecological status of the SWBs.

2.1.5 Hydromorphological changes

Hydromorphological changes are one of the significant water management issue (SWMI) that impede the achievement of the environmental objectives set and enshrined in the RBMP. Hydromorphological changes, as a result of economic activity, affect the conditions of existence of aquatic communities. The presence of hydromorphological changes in SWBs leads to the deterioration of the ecological status of many SWBs in the Danube basin.

Hydromorphological changes are divided into types:

- disruption of the continuity of water flow and habitats - longitudinal disruption of the continuity of rivers and habitats (transverse artificial structures in the river channel, interruption of water flow, disruption of the free flow of rivers, movement of sediments, migration of fish and other aquatic life);
- disruption of the hydraulic connection between river channels and their floodplains;
- hydrological changes (water abstraction, hydropicking/ fluctuations in water levels of artificial origin);
- morphological changes (modification of the morphology of the riverbed, banks, and adjacent parts of the floodplain, e.g. straightening).

Disruption of the free flow of rivers

Dams and other artificial cross structures located in riverbeds were built primarily to accumulate water, with its subsequent use for agricultural, public and industrial purposes. In the Danube basin, 60 SWBs have been identified where the continuity of water flow and the environment is disturbed (overregulation).

The accumulation of water in ponds and reservoirs upstream of dams also provides flood protection for areas downstream of dams. According to the SAWR, a significant number of ponds are in poor technical condition. Most of them were built in 1960-1980 according to simplified design documentation. The dams are earthen, with loose slopes, and many of them are eroded. Spillway structures usually do not meet modern requirements in terms of their technical condition.

The presence of dams and other structures across the river channel disrupts the continuity of water flow and sediment movement, as well as the migration of fish and other aquatic life.

No fish passages have been built in the transverse structures and, as a result, populations of various fish species have declined or disappeared. To date, the construction of fish passages on existing dams in the basin is quite problematic due to the lack of funds and the lack of an economic feasibility assessment.

*Disruption of the hydraulic connection between river channels and their floodplains***.**

The hydraulic connection between the riverbed and the floodplain plays an important role in the functioning of aquatic ecosystems, providing water for important habitats for fish and aquatic life, and has a positive impact on the condition of surface and groundwater.

The assessment of this type of hydromorphological changes is included in the hydromorphological protocol for assessing the SWB used by the SES in the course of state monitoring of surface waters (indicators No. 10: "Interaction between the channel and the floodplain: 10a - Possibility of floodplain inundation, 10b - Limiting factor for the development of horizontal deformations of the channel").

Hydrological changes

Hydrological changes affect water bodies through water abstractions and fluctuations in water levels below dams, and, as a result, lead to changes in the regime and distribution of river flows. Discharges, water abstractions and artificial periodic fluctuations in water levels (hydroelectricity) are key pressures that require compensatory measures to be implemented on a river basin-wide scale.

In the Danube basin, there are no SWBs with hydrological changes.

Decreased natural flows in the context of global warming and natural water scarcity, reduced flow velocities and the formation of stagnant zones contribute to eutrophication processes, and, as a result, lead to the deterioration of biodiversity and degradation of aquatic ecosystems.

Morphological changes

The main factors that negatively affect the natural morphology of the Danube River basin's channels, banks and floodplains are urbanisation, flood protection, agriculture and shipping. As a result of these activities, the rivers in certain areas are straightened, dredged, banks are reinforced, the floodplain adjacent to the channel is ploughed up, and the natural vegetation changes.

118 SWB s in the Danube basin have undergone modification of the river morphology (straightening). Reduced variability in channel depth and width, disruption of the natural balance of erosion and accumulation, narrowing of the inter-dam space and restriction of free meandering lead to an impoverishment of the composition and reduction in the number of biological indicators, such as fish, benthic invertebrates, higher aquatic vegetation and phytoplankton.

The criteria for classifying SWBs as "HMWB" due to hydromorphological changes are:

- disruption of the continuity of water flow and environments (transverse artificial structures in the riverbed, disruption of the continuity of water flow and sediment movement and migration of fish and other aquatic life);
- water withdrawals (small and medium-sized rivers - water withdrawals exceeding 75% of the supply; large and very large rivers - water withdrawals exceeding 90% of the supply);
- water accumulation (ponds with a ponding area of more than 1 km or several ponds with a ponding area of less than 1 km, but their total length is more than 30% of the length of the SWB , as well as reservoirs with a volume of more than 1 million m^3);
- fluctuations in the water level below the dam (water level fluctuations exceeding 0.5 m per day for most of the year);
- disturbance of natural morphological characteristics of rivers (hydromorphological class below the third according to the monitoring results, or straightening of more than 70% of the length of the main river channel in the absence of monitoring data).

Based on the analysis of the main water and environmental problems associated with hydromorphological loads in the Danube basin, it can be concluded that 155 SWBs in the basin, defined as HMWB, require restoration (revitalisation).

2.2 Groundwater

2.2.1 Pollution

The anthropogenic load on the geological environment has a significant impact on the state of groundwater. The main anthropogenic factors affecting the state of the underground hydrosphere include groundwater abstraction for water supply, use of surface water for reclamation purposes, use of mineral fertilisers and pesticides in agricultural production, and discharge of industrial and municipal wastewater.

In the Tisza, Prut and Siret sub-basins, there are no large urban agglomerations or large industrial facilities associated with the extraction and processing of significant amounts of natural resources. Largest cities by population: Uzhhorod, Chernivtsi, Mukachevo, and Kolomyia.

The anthropogenic pressure on the GWB is associated with agricultural activities of the population: intensive farming and gardening with intensive use of fertilisers, pesticides and herbicides prevails. Livestock is raised mainly in stationary conditions.

The mountains are dominated by pasture farming and forestry.

Studies conducted in the early 1990s to investigate the elements of the groundwater regime showed that land reclamation measures disrupt the natural hydraulic and hydrochemical connection between aquifers and cause deterioration in the quality of groundwater and surface water.

When laying main drainage canals, the surface layer of low-permeability rocks was completely or partially destroyed, which led to a deterioration in the protection of the GWB. Negative processes of groundwater quality deterioration are observed during flood filling of the canals and in the post-flood filtration period. Within the reclamation systems, the intensity of surface and groundwater pollution due to agricultural production (mineral and organic fertilisers, pesticides, etc.) is increasing. The filtration of flood water enriched with oxygen from canals leads to an increase in oxidised iron in the water and its accumulation in soils. In addition, during the flood period, there is an increase in groundwater salinity.

At present, a significant part of the reclamation network is out of order: the canals are silted up, overgrown with various vegetation, and the locks are out of order.

The mining and industrial type of anthropogenic load is very common in the development of GWB. It includes water intakes of fresh and mineral groundwater, surface and underground mining workings for the development of mineral resources, and oil and gas exploration sites.

Domestic pollution plays an important role among the types and objects of anthropogenic load that adversely affect the GWB due to the lack of centralised sewage systems with treatment and discharge of domestic wastewater in rural areas and partially in cities. There are solid waste dumps near almost every settlement. There is no industrial-scale sorting and recycling of this waste.

Groundwater resources in non-pressure aquifers within the Lower Danube sub-basin are conditionally protected. Contamination of the aquifers is also possible through defective production wells and irrigation areas. There is spot pollution of groundwater with nitrogenous compounds within settlements.

In addition, the presence of synthetic surfactants, oil products, and pesticides in aquifers is recorded in concentrations that do not exceed the maximum permissible levels. In the areas of intensive exploitation, the impact of technogenesis affects the level regime.

The impact of technogenesis on groundwater bodies in pressure aquifers is mainly reflected in the level regime. As a result of long-term intensive exploitation, depression sinkholes have formed. The reduction in groundwater extraction observed in recent years is contributing to the recovery of groundwater levels.

The groundwater reservoirs in the pressure horizons lie beneath a layer of water-resistant sediments, which significantly hinders their connection with surface ecosystems and provides a relatively high level of protection against surface pollution.

In the pressure aquifers in production wells, there is also spotty contamination of groundwater with nitrogen compounds, and the presence of synthetic surfactants, oil products, and pesticides in concentrations that do not exceed the maximum permissible levels.

2.2.2 Volumes/reserves

Estimated groundwater resources (EGWR) are the volumes of groundwater estimated on the basis of geological surveys that characterise the potential for their extraction from the subsoil in the respective territory. The estimated potential groundwater resources in the Tisza sub-basin (Zakarpattia oblast) amount to 1081.60 thousand m3/day, in the Prut and Siret sub-basins - 590.54 thousand m3/day (in Ivano-Frankivsk oblast - 260.86 thousand m^3/day, in Chernivtsi oblast - 329.67 thousand m^3/day), their distribution over the territory is uneven, which is explained by differences in geological, structural and physical geographical conditions. The exploration of predicted groundwater resources in Ukraine is insignificant - 26%, for Zakarpattia region this figure is 32%, for Ivano-Frankivsk region - 38%, for Chernivtsi region - 43%.

Out of the total number of the EGWR, exploitable groundwater reserves in the amount of 344.10 thousand m^3/day have been explored and approved in Zakarpattia region, 99.13 thousand m3/day in Ivano-Frankivsk region, and 141.76 thousand m^3/day in Chernivtsi region. Operational groundwater reserves are calculated based on the data of geological study of groundwater that can be extracted from the subsoil by rational technical and economic water intakes in a given extraction mode, provided that the quality characteristics of groundwater meet the requirements of their intended use and the permissible degree of environmental impact during the estimated period of water use.

The development of projected groundwater resources is most intensive in densely populated areas with high economic potential. Most groundwater is abstracted in areas with high population density and developed industry. The operational resources of mineral waters amount to about 10.0 thousand m^3/day and belong to 20 types of mineral waters. In 2020, the volume of mineral water consumption did not exceed 10-15% of the total resource. Mineral waters are used for balneology and industrial bottling. The resources of heat and power waters, which are also therapeutic, amount to about 50.0 thousand m^3/day.

According to statistical reporting No. 2TP-Vodkhoz (annual), groundwater abstraction from natural bodies in the Danube basin in 2020 was 27.529 million m^3 (4.7%). The Tisza sub-basin has a high degree of groundwater use (compared to surface water). The water supply in Zakarpattia, as well as in the Prut and Siret sub-basins, is largely dependent on groundwater.

Table 18. Extraction of drinking and technical groundwater and its use in Zakarpattia, Ivano-Frankivsk and Chernivtsi regions

Year	Mining, million m^3/year	Usage, million m^3/year					Groundwater discharge without use, million m^3/year
		Total	Household and drinking water	Production and technical	Agricultural	Irrigation	
Transcarpathian region							
2020	19,415	10,690	8,230	2,352	0,029	0,083	0,167
Chernivtsi region							
2020	5,056	2,075	0,385	1,526	0,164	-	-
Ivano-Frankivsk region							
2020	0,562	0,492	0,122	0,354	0,017	-	-

2.2.3 Impact of hostilities on the state of groundwater bodies

The impact of military operations was recorded in the Lower Danube sub-basin.

Non-pressure GWB. The quality of non-pressure GWB may be affected by the ingress of pollutants (heavy metals, fuels and lubricants, organic pollution, nitrates, etc.) from the surface in the shelling zones. The destruction of industrial facilities may result in the ingress of various pollutants into the soil and rocks of the aeration zone, and in the long term, negatively affect the quality of groundwater.

No changes in the quantitative state of non-pressure GWB are expected due to military operations.

No changes in the quantitative state of pressure vessels are expected due to military operations.

The chemical state of the pressure water treatment plant will also remain stable.

2.2.4 Assessment of the risk of not achieving good GWB status

Risk assessment of failure to achieve good quality (chemical) status

As for non-pressure GWB, their quality condition within settlements is most likely poor (nitrate pollution). There is no data on the chemical composition of non-pressure GWB outside settlements, but a significant anthropogenic load from diffuse sources of pollution within agricultural landscapes and their natural vulnerability allows us to conclude that they are at risk of not achieving good quality (chemical) status. Within agro-landscapes, this risk is caused by the possibility of nitrates and pesticides entering the water. An additional negative impact on the Lower Danube basin is caused by substances that have been or may be released into the environment as a result of military operations, such as heavy metals, nitrates, oil products, as well as elements and compounds released into the environment as a result of the destruction of industrial facilities.

Protected from pollution, the pressure GWB are not at risk of failing to achieve good quality (chemical) status (Table 2.2.4). For example, in the Lower Danube sub-basin, the territory of which is affected by military operations, 1 GWB in the Upper Sarmatian sediments has been identified, but due to its protection, no negative changes in quality are currently predicted.

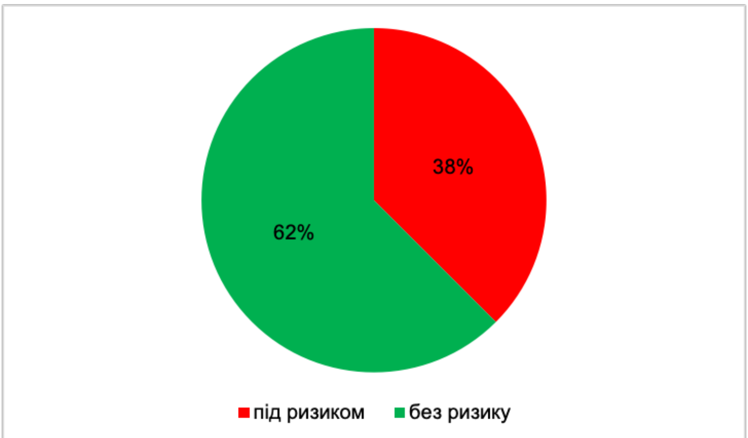

Figure 14. Assessment of the risk of not achieving good chemical condition of the GWB

Assessing the risk of not achieving good quantitative position

There is no negative impact from anthropogenic groundwater abstraction for the pressure and non-pressure GWBs identified in the Danube RBD. Given the reduction in groundwater extraction, there is no risk of failure to achieve good status for both pressurised and non-pressurised GWBs, according to available data.

Table 2.2.4: Risk assessment of failure to achieve good qualitative (chemical) and quantitative status

GWB code	GWB and GWB groups	Quality risk		Quantitative risk	
		without risk at risk	at risk: the reason	without risk/ at risk	at risk: the reason
Tisza River sub-basin					
UAM5310Q100	Group of GWBs in alluvial Upper Neopleistocene-Holocene sediments of floodplains and first floodplain terraces of rivers of the mountainous part and Solotvynska depression	at risk	Nitrogen pollution in agricultural landscapes	risk-free	
UAM5310Q200	A group of GWB in weathering crust and other loose Holocene sediments of the mountain slopes of the sedimentary Carpathians	at risk	Nitrogen pollution in agricultural landscapes	risk-free	
UAM5310Q300	GWB in lacustrine-alluvial Middle-Upper Neopleistocene sediments of the Minaya Formation	at risk	Nitrogen pollution in agricultural landscapes	risk-free	
UAM5310Q400	GWB in lacustrine-alluvial Eopleistocene-Lower Neopleistocene sediments of the Chop Formation	risk-free		risk-free	
UAM5310Q500	GWB in alluvial Pliocene-Lower Neopleistocene sediments of the ninth	at risk	Nitrogen pollution in agricultural landscapes	risk-free	

GWB code	GWB and GWB groups	Quality risk		Quantitative risk	
		without risk at risk	at risk: the reason	without risk/ at risk	at risk: the reason
	and tenth overflank terraces (Kopanska terrace)				
UAM5310N100	GWB in sediments of the Pliocene Ilnytsia Formation	risk-free		risk-free	
UAM5310N200	A group of GWB in volcanogenic Pliocene sediments of the Vygorlat-Gutynsky Ridge	risk-free			
Siret River sub-basin					
UAM5330Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	at risk	Nitrogen pollution in agricultural landscapes	No risk	
UAM5330N100	GWB in Miocene sediments	No risk		No risk	
UAM533PG100	GWB in Paleocene-Eocene sediments	No risk		No risk	
UAM5330K100	GWB in Upper Cretaceous sediments	No risk		No risk	
Prut River sub-basin					
UAM5320Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	at risk	Nitrogen pollution in agricultural landscapes	No risk	
UAM5320N100	GWB in Miocene sediments	No risk		No risk	
UAM532PG100	GWB in Paleocene-Eocene sediments	No risk		No risk	
UAM5320K100	GWB in Upper Cretaceous sediments	No risk		No risk	
Lower Danube sub-basin					
UAM5340N100	GWB in the Upper Sarmatian sediments	No risk		No risk	

Other significant anthropogenic impacts

Climate change

One of the main manifestations of regional climate change against the backdrop of global warming is a significant increase in air temperature, changes in the thermal regime and precipitation patterns, an increase in the number of dangerous meteorological phenomena, extreme weather conditions, and the damage they cause to various sectors of the economy and the population. These trends are typical for Ukraine in general and the Danube sub-basins in particular. The greatest changes have been observed over the past thirty years, which have been the warmest for the period of instrumental weather observations.

The increase in air temperature is observed not only near the Earth's surface but also in the lower troposphere, accompanied by an increase in tropospheric moisture content, and causes an increase in atmospheric instability and convection intensity. Such changes have led to an increase in the frequency and intensity of convective weather phenomena: thunderstorms, showers, hail, squalls, and an increase in the maximum intensity of precipitation and its storm component.

Representative Concentration Pathways (RCPs) of greenhouse gases have different trajectories of emissions and concentrations in the atmosphere, emissions of pollutants and specifics of land use in the 21st century (in particular, changes in the area of forested areas) and their corresponding consequences. Two RCP scenarios were selected for this study: The "soft" scenario of RCP emission reduction scenario 2.6, which, in accordance with the Paris Agreement, provides for a reduction in greenhouse gas emissions, and the "hard" scenario of RCP emission reduction scenario 8.5, which does not take into account any adaptation or mitigation measures. All scenarios demonstrate a steady increase in average annual temperature throughout the 21st century in all regions. By the end of the century, the average annual temperature averaged across regions under different scenarios is expected to increase by 2-5°C. Scenarios of global greenhouse gas emissions (Sources: USGCRP/GlobalChange.gov, UHMI 2014) The study calculated simulated changes in the average annual water flow (flow rate) of the RBD of Ukraine for two future periods (2041-2070 and 2071-2100) under RCP 2.6 and RCP 8.5 scenarios

The water-heat balance of river basins is highly sensitive to climate change. Rising air temperatures and changes in precipitation patterns affect not only the hydrological regime of rivers, but also the overall water resources. Climate change is increasing the frequency of floods and droughts, which makes sectors such as agriculture, energy, transport and the social sphere vulnerable, given their dependence on water resources.

The average annual runoff is expected to fluctuate between 2041 and 2070. Increased water flows in the rivers of the Carpathian region can cause catastrophic floods on mountain rivers and lead to significant economic losses in all sectors of the economy and in territorial communities in the sub-basins of the Tisza, Prut and Siret. Small rivers in the southern regions are experiencing severe water stress as a result of a reduction in surface runoff (by 5-25%) and its redistribution by season.

Pollution of water bodies with solid household waste, including plastic

Pollution of water bodies by solid household waste, primarily plastic, is one of the pressures that leads to the deterioration of the ecological and chemical state of surface waters. This problem is not specific to a particular river basin, but is relevant for the whole country and reflects waste management at both the national and local levels.

Gaps in national legislation, an inefficient system of waste collection, transportation and disposal, and a low level of waste management culture among the population are demonstrated by the large number of unauthorised and spontaneous landfills, including on the banks of rivers. Some of the waste is discharged directly into rivers and water bodies, which is not only an aesthetic problem, but also leads to chemical pollution of water, poisoning of living organisms and deterioration of their living conditions.

The pollution of the rivers of the Tisza sub-basin by municipal waste is a major concern for neighbouring countries. In particular, since 2020, there have been more than 50 cases of municipal waste pollution on Hungarian territory during floods. First and foremost, these are PET bottles, the number of which in the Tisza during floods is 50-100 bottles per minute, sometimes this figure reaches 300 bottles per minute.

Over time, plastic breaks down and turns into microplastics, which get into living aquatic organisms, causing them to accumulate toxins.

Microplastics are less than 5 mm in size and are divided into two groups: primary and secondary. Primary microplastics are part of cosmetic products (toothpastes, scrubs, shower gels, etc.), industrial cleaning products, and are also formed as a result of wear and tear on car tyres and when washing synthetic products.

Recycled plastic is produced by shredding large plastic waste: bottles, disposable tableware, packaging, etc.

As a result of a survey to identify unauthorised landfills on river floodplains and blockages, 32 unauthorised landfills and 23 garbage jams were found on watercourses in Zakarpattia in 2021.

No special studies have been carried out on the amount of waste on the banks and directly in the rivers and water bodies of the Prut and Siret sub-basins and the lower Danube, nor have studies been carried out on their direct impact on the ecological and chemical state of water bodies.

Given the current situation, solving the problem of solid waste management should be included in the programme of measures to achieve "good" environmental status of the Danube sub-basins.

Invasive species

Invasions of alien species outside their "native" habitats are global in nature. The naturalisation and further spread of invaders can cause irreversible environmental damage and undesirable economic and social consequences.

Currently, biological invasions are considered to be biological pollution, but unlike most pollutants that can decompose in natural ecosystems through self-purification processes and whose content is controlled by humans, alien organisms that have successfully invaded begin to multiply uncontrollably and spread rapidly in the environment. This phenomenon can have unpredictable and irreversible consequences.

In addition, the introduction of alien species leads to irreparable losses of biodiversity, both through direct destruction of native species by predators, food and spatial competition, and as a result of displacement of native species, changes in their habitats and hybridisation. The emergence of any alien species is an indicator and, at the same time, a cause of the deterioration of the ecological state of a water body. All this causes a particular danger of invasions and determines the specifics of control measures in terms of the risks of not achieving a "good" ecological status of MPAs where the process of invasion of adventive species is carried out.

The issue of invasion of alien species is legally reflected in the Law of Ukraine "On the Basic Principles (Strategy) of the State Environmental Policy of Ukraine for the Period up to 2030", the Decree of the President of Ukraine of 17 December 2021 No. 668, which put into effect the decision of the National Security and Defence Council of Ukraine of 15 October 2021 "On the Strategy of Biosafety and Biological Protection", the Action Plan for the Implementation of the Strategy of Biosafety and Biological Protection for 2022-2025, approved by the Cabinet of Ministers of Ukraine on 07 July 2022 No. 57Z, and the Convention on Biological Diversity.

In accordance with paragraph 5 of the Action Plan for the Implementation of the Strategy for Biosafety and Biological Protection for 2022-2025, approved by the CMU Resolution No. 573 of 07.07.2022, the Ministry of Ecology approved the "Methodological Recommendations for Assessing the Existing and Potential Impact (Risks) of Invasive Alien Species" by Order No. 290 of 15.03.2024 (https://mepr.gov.ua/nakaz-mindovkillya-290-vid-15-03-2024/).

The Guidelines have been developed with due regard to the Regulation (EU) No 1143/2014 of the European Parliament and of the Council (22 October 2014) on the prevention and management of the introduction and spread of invasive alien species, and Delegated Regulation (EU) 2018/968 of the European Commission of 30 April 2018, supplementing Regulation (EU) No 1143/2014 of the European Parliament and of the Council on the risk assessment of invasive alien species, in order to harmonise approaches to impact (risk) assessment when preparing proposals for the inclusion of alien species in the List of Invasive Alien Species of Flora and Fauna of Ukraine.

The reasons for the appearance of alien species are related to direct anthropogenic impact. Almost half of the identified alien species appeared in the fish fauna as a result of human fishing activities.

The main ways of spreading invasive species are:

- aquaculture or fish farming of commercially valuable fish species;
- Accidental or unintentional introduction of commercial species along with stocking;
- aquarists, which contributed to the spread of species as a result of their deliberate release into natural reservoirs or accidental entry into the latter (sunfish, rotan, silver crucian carp);
- Expansion of the natural ranges of Ponto-Caspian species as a result of hydroelectric construction and global warming (round goby, sand goby, goby, goby, western goby, blunt-nosed goby);
- unauthorised stocking of rivers with alien species without scientific justification and expertise and relevant permits (Danube salmon).

According to the Convention on Biological Diversity (The Hague, 2002), measures aimed at mitigating the effects of invasions by alien species should be mainly preventive, but it is usually not possible to effectively control the process of invasions, primarily due to the lack of a biodiversity monitoring system.

After conducting special studies of alien aquatic species and determining the list of species at the site of their occurrence, the first and most important step is to establish a basin-wide monitoring system for invasions. Monitoring should be focused on:

- identification and analysis of the species composition of alien species, invasive corridors, geography and dynamics of invasions;
- population dynamics of the most significant invasions from emergence to naturalisation, as well as of invasive species that have already been naturalised, and the consequences of their impact on habitats, native species, communities and ecosystems;
- Inventory of possible intrusion sites and their survey (e.g., municipal wastewater leaks from large cities with a developed aquarium services market, discharges of heated water from thermal power plants and large industrial enterprises).

Provision must also be made at the basin level:

- development of regional/basin cadastral lists of alien, threatened (dangerous) species of flora and fauna of Ukraine;
- predicting the emergence of new invasive species that are potentially dangerous for human economic activity or established hydroecosystems;
- development of methods to curb the spread of alien species (e.g. physical removal, weakening the development of species using phytophagous animals, use of herbicides). An example is the programme for monitoring, localising and controlling the number of alien (invasive) plant species in the territory of the territorial community of Stryi City Council for the period 2021-2025.
- making management decisions on the protection and rational use of aquatic bioresources (including introduced ones), including regional lists of invasive species approved by local governments. For example, in 2017 the Zakarpattia Regional Council approved the first official regional list of invasive plant species in Ukraine.

3 ZONES (TERRITORIES) TO BE PROTECTED AND THEIR MAPPING

3.1 Emerald Network sites

The Emerald Network is an ecological network consisting of special areas for the conservation of biological diversity created (designated) in accordance with the Convention on the Conservation of Wild Flora and Fauna and Natural Habitats in Europe (Bern Convention). Its goal is to ensure the long-term survival of species and habitats listed in the Bern Convention that require special protection.

On 30 November 2018, six countries - the Republic of Belarus, Georgia, the Republic of Moldova, Norway, Switzerland and Ukraine - officially approved the lists of Emerald Network sites on their territories. The updated list of Emerald Network sites was approved on 2 December 2022. The Emerald Network of Ukraine includes 377 territories[5], and covers about 8% of Ukraine's territory.

There are 25 Emerald Network sites in the Danube basin, covering approximately 17% (5059.07 km^2) of the basin area.

According to the categories (Fig. 15), the sites of the Emerald Network are divided into:

- Biosphere Reserve - 1;
- Biosphere Reserve - 1;
- a nature reserve - 7;
- protected area - 1;
- reserve - 1;
- National Nature Park - 8;
- regional landscape park - 6.

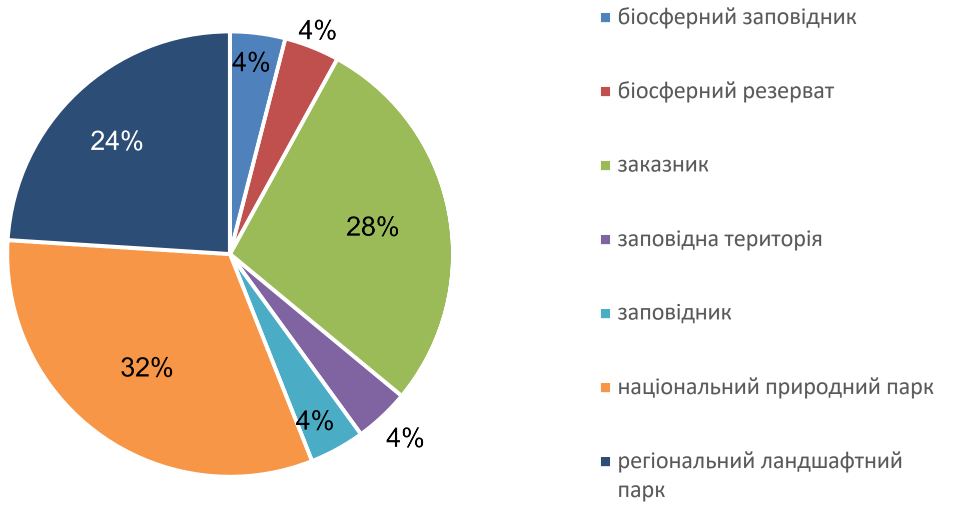

Figure 15. Breakdown of Emerald Network sites by category, %.

None of the sites has a management and development plan in place. A list of the Danube Emerald Network sites is provided in Annex 4.

3.2 Sanitary protection zones

Sanitary protection zones include areas where water intakes for drinking water supply are located. According to the Resolution of the CMU on the legal regime of sanitary protection zones of water bodies No. 2024 of 18 December 1998, these zones are classified as the so-called first zone (strict regime) of compliance with the use regime. The Resolution provides for a number of permitted and prohibited activities within drinking water intakes.

According to the EU WFD (Art. 7), "Member States shall identify in each RBD:

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[5] UPDATED LIST OF OFFICIALLY ADOPTED EMERALD SITES (DECEMBER 2022) https://rm.coe.int/pa10e-2022-updated-list-officially-adopted-emerald-sites/1680a93ca5

- All surface/groundwater bodies used for abstraction of water intended for human consumption, providing on average more than 10 m³ of water per day or supplying water to more than 50 people;
- Those water bodies that are intended for future use for the same purpose."

There are 229 water intakes in the Danube basin that withdraw more than 10 m³ of water per day, including 149 underground water intakes and 80 surface water intakes.

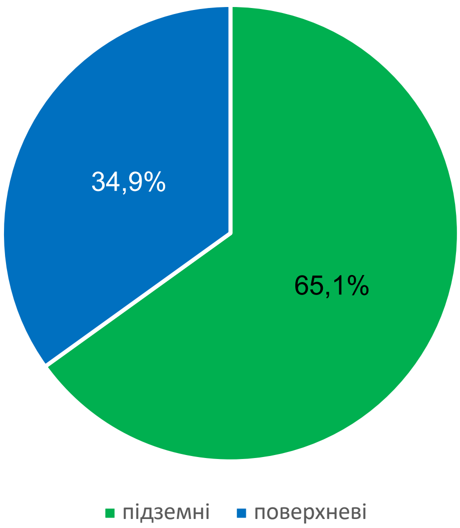


Figure 16. Drinking water withdrawals in the Danube basin, %.

The SAWR is responsible for maintaining state water accounting.

3.3 Protection zones for valuable aquatic bioresources

The zones designated for the protection of economically important aquatic species or zones for the protection of valuable aquatic bioresources include areas where aquatic bioresources of significant economic value are found or cultivated.

Depending on the specifics of the area of protection of valuable aquatic bioresources, the monitoring programme may include additional indicators or sampling frequency.

According to the Resolution of the CMU dated 21.11.2011 No. 1209 "On Approval of Tariffs for Calculating the Amount of Compensation for Damage Caused by Illegal Harvesting (Collection) or Destruction of Valuable Aquatic Bioresources" (as amended by the Resolution of the CMU dated 6 October 2021 No. 1039), the list of valuable bioresources includes both rare and common fish species throughout Ukraine.

At the same time, according to Article 1 of the Law of Ukraine "On Fisheries, Commercial Fishing and Protection of Aquatic Bioresources", a fishery water body (or part thereof) is a water body (or part thereof) that is used or may be used for fisheries purposes.

Thus, taking into account the above, as well as the lack of appropriate legislative and regulatory frameworks, the protection zones for valuable bioresources in Ukraine have not been defined.

3.4 SWBs/GWBs used for recreational, medical, resort and health purposes, as well as water intended for bathing

Recreation areas of water bodies are land plots with adjacent water space intended for organised recreation of the population on the coastal protective strips of water bodies. Places of mass recreation are determined by local governments in accordance with the powers vested in them every year before the start of the summer swimming season. Water protection zones are established along rivers, around lakes, reservoirs and other water bodies, within which land plots are allocated for coastal protection strips.

It is prohibited in water protection zones and coastal protection zones:

- storage and use of pesticides and fertilisers;
- construction of cemeteries, summer camps for livestock, manure storage facilities, cattle cemeteries, waste dumps, filtration fields, liquid and solid waste storage facilities, etc;
- discharge of untreated wastewater;

- construction of any structures (except for hydrotechnical, hydrometric and linear structures), including recreation centres, summer cottages, garages and car parks;
- Washing and maintenance of vehicles and equipment.

Requirements for the location and organisation of water body recreation areas:

- to organise recreational areas on water bodies, their owners or lessees are required to agree the operation of the beach with the State Service of Ukraine for Food Safety and Consumer Protection before the start of each swimming season;
- the recreation area should be located outside the sanitary protection zones of industrial enterprises. The recreation area should be located at the maximum possible distance (at least 500 m) from sluices, hydroelectric power plants, wastewater discharge sites, stables, livestock watering places and other sources of pollution;
- beaches should not be located within the first zone of the sanitary protection belt of drinking water sources.

Environmental objectives for recreational areas:

- The water quality of reservoirs and rivers used in recreational areas must meet the requirements of sanitary legislation;
- the composition and properties of water in the area of recreational water use must meet the requirements for physical, chemical and sanitary-microbiological indicators.

Requirements for water monitoring in recreational areas:

- water sampling for departmental control in water bodies should be carried out annually by local self-government bodies at least 2 times before the start of the swimming season (at a distance of 1 km upstream from the swimming area on watercourses and at a distance of 0.1-1.0 km in both directions from it on water bodies, as well as within the swimming area);
- during the swimming season, such water sampling shall be carried out at least twice a month at at least two points selected in accordance with the nature, length and intensity of use of swimming areas.

Pursuant to CMU Resolution No. 264 of 06.03.2002 "On Approval of the Procedure for Registration of Places of Mass Recreation on Water Bodies", local executive authorities and territorial fishery protection authorities are required to identify on maps and schemes land plots and water areas suitable for the organisation of beaches, boat rental facilities, water attractions, as well as places for water sports and places for amateur and sport fishing in winter.

Approved copies of the map schemes shall be submitted to the emergency rescue services serving water bodies in their area of responsibility and to the regional coordination emergency rescue centres of the State Specialised Emergency Rescue Service on Water Bodies of the State Emergency Service of Ukraine (hereinafter referred to as the SES).

Information on places of mass recreation is submitted annually by 1 April by local governments, and information on places of recreational and sport fishing is submitted on 10 February and 30 October by territorial fish protection authorities to the regional coordination emergency rescue centres of the SES.

As of July-August 2023, there are 8 recreation and leisure facilities in the Danube basin (Annex 5). According to the SES in Odesa Oblast, due to martial law, recreation and leisure areas were not used in the Lower Danube sub-basin in 2022-2023.

3.5 Areas vulnerable to (accumulation of) nitrate

Ukraine has approved a methodology for determining nitrate vulnerability zones (Order of the Ministry of Environment of Ukraine No. 244 dated 15.04.2021), as required by the EU Nitrate Directive. The methodological approach is to use a large amount of high-resolution spatial and temporal data, mainly surface and groundwater monitoring data, but the definition of these zones should also use statistical data such as the number of livestock, fertiliser application and surplus calculations for nitrogen. All this information of high quality and sufficient reliability is necessary to identify nitrate vulnerable areas where mandatory measures to reduce nitrate pollution should be taken. At present, the existing surface water monitoring network is insufficient in terms of its integrity and spatial coverage to apply the developed method, and groundwater monitoring is not carried out at all.

Therefore, given that in Ukraine:

- the highest percentage of arable land in the world (53.9%, 2021 data), while the ploughed-out agricultural land rate is 78.2%;

- lack of representative and reliable information on the content of nutrients in surface and groundwater;
- Eutrophication of water bodies is a widespread phenomenon;

In the short term, it is proposed to designate the entire territory of Ukraine as a nitrate vulnerable area. This approach is in line with the EU WFD, reflects the current very limited availability of the necessary information to identify nitrate vulnerable areas, is used in many EU countries (e.g. Germany, Austria, Lithuania and Romania), is easier to assess, and allows for refinement or identification of nitrate vulnerable areas in subsequent reporting periods based on improved, more reliable information.

This approach avoids competition among farmers in the short term and allows all farmers to be financially supported through future rural development programmes without the need to differentiate between different regions. It also allows for the general measures of the action programme to be applied to the entire territory, but for more stringent action programme measures to be applied only to regions where (based on available data) clear agricultural stress can be proven and specified in a step-by-step manner.

Therefore, in the medium term, it is necessary to focus on substantial and gradual improvement of the monitoring network (both groundwater and surface water) and database to ensure a more detailed approach to zone identification and monitoring, and thus achieve full compliance with the WFD with the identified nitrate vulnerable zones during the second cycle of the RBMP (2031-2036).

3.6 Vulnerable and less vulnerable areas identified in accordance with the criteria approved by the Ministry of Environment

As of 2023, no vulnerable or less vulnerable zones have been identified in Ukraine.

The regulatory document governing this issue is the Order of the Ministry of Ecology and Natural Resources of 14 January 2019 No. 6 (registered with the Ministry of Justice of Ukraine on 5 February 2019 under No. 125/33096) "On Approval of the Procedure for Determining the Population Equivalent of a Settlement and the Criteria for Determining Vulnerable and Less Vulnerable Zones".

Also, in accordance with Article 12. *Powers of Local Self-Government Bodies of the* Law of Ukraine "On Water Disposal and Wastewater Treatment" of 12 January 2023 (entered into force on 07 August 2023), the powers of local self-government bodies in the field of water disposal include:

- upon submission of the central executive body implementing the state policy in the field of water sector development, identification of vulnerable and less vulnerable zones in accordance with the criteria approved by the central executive body ensuring the formation of the state policy in the field of environmental protection.

As of 27 March 2024, local governments, upon the submission of the SAWR, recognised 52 SWBs as vulnerable zones, which is 6% of the total number of SWBs in the Danube basin.

No decision has been made on less vulnerable areas.

4 MAPPING OF THE MONITORING SYSTEM, RESULTS OF MONITORING PROGRAMMES FOR SURFACE WATER (ECOLOGICAL AND CHEMICAL), GROUNDWATER (CHEMICAL AND QUANTITATIVE), AREAS (TERRITORIES) SUBJECT TO PROTECTION

4.1 Surface water

Surface water monitoring is carried out in accordance with the Procedure for State Water Monitoring, approved by CMU Resolution No. 758 of 19 September 2018. The Ministry of Ecology, the SAWR and the SES are the subjects of state water monitoring.

Every year since 2020, state water monitoring programmes have been approved by the relevant orders of the Ministry of Ecology (No. 410 of 31.12.2020, No. 3 of 05.01.2022, No. 27 of 17.01.2023) and enforced by the SAWR.

The state water monitoring programme includes:

- information on the object of state water monitoring (code, name of the object, location and other characteristics);
- biological, physicochemical, chemical and hydromorphological indicators, frequency of monitoring, information on the subject and the performer of water monitoring.

State water monitoring is carried out according to the indicators and frequency specified in Annexes 1-3 of the Procedure.

Depending on the goals and objectives of state water monitoring, the following procedures are established:

- the procedure for diagnostic monitoring of the SWBs and GWBs;
- Procedure for operational monitoring of the SWBs and GWBs;
- the procedure for research monitoring of the SWBs;
- procedure for monitoring marine waters.

Diagnostic monitoring is carried out during the first year of state water monitoring. For SWBs that do not pose a risk of failing to achieve environmental objectives, diagnostic monitoring is carried out additionally during the fourth year of state water monitoring.

Operational monitoring is carried out for SWBs that pose a risk of not achieving environmental goals, as well as for SWBs whose water intake to meet drinking and domestic needs of the population averages more than 100 cubic metres per day.

Operational monitoring is carried out annually between the years of diagnostic monitoring.

The research monitoring is carried out by the state water monitoring entities, which independently determine the monitoring points, the list of indicators and the frequency of their measurement.

4.1.1 Monitoring system

In the Danube basin, in 2020-2023, monitoring was carried out at 101 monitoring sites located at 83 SWBs (Annex 6), including:

- at transboundary SWBs identified in accordance with intergovernmental cooperation agreements - 18;
- 11 at SWBs from which water is abstracted to meet the drinking and domestic needs of the population.

4.1.2 Hydromorphological assessment / status

The hydromorphological status is assessed in accordance with the Methodology approved by Order of the Ukrainian State Geological Survey No. 23 of 19.02.2019 in five classes.

Hydromorphological monitoring was carried out at 58 SWBs in 2021-2023. According to the monitoring results, 25 of the SWBs are classified as nearly natural (high status), and 33 SWBs are classified as slightly modified (Fig. 17).

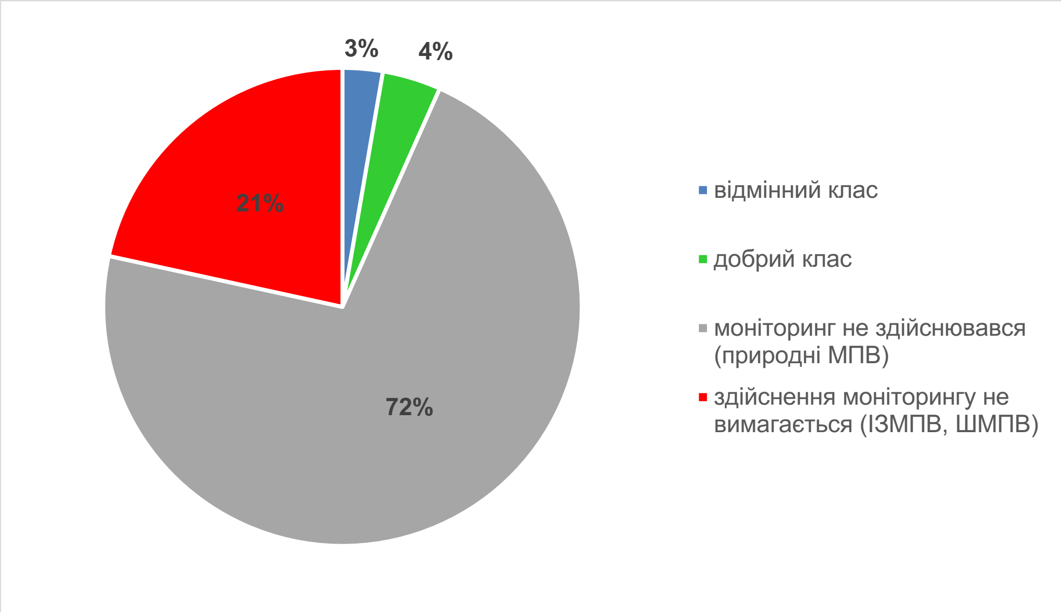


Figure 17. Hydromorphological status of the SWB, %.

4.1.3 Chemical stateus assessment

The assessment of the chemical state of the SWBs is based on determining the concentrations of priority substances specified in Directive 2008/105/EC, taking into account Directive 2013/39/EU250, which sets the limit values of environmental quality standards.

In Ukraine, the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 45 of 6 February 2017, registered with the Ministry of Justice of Ukraine on 20 February 2017 under No. 235/30103, defines a list of indicators for which environmental quality standards are set in Annex 8 of the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 5 of 14.01.2019 No. 5 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified Surface Water Body".

Directive 2009/90/EC (Article 5), which sets out technical requirements/criteria for the processing of monitoring data, was also taken into account when assessing the chemical state of the SWB:

- If the measured value was below the limit of quantification (LOQ), the calculation uses the value of half the LOQ for this indicator
- When summarising the results of individual isomers or mixtures (e.g. polycyclic aromatic hydrocarbons, cyclodiene pesticides, DDT), in the case of values measured below the LOQ, zero "0" should be used to calculate the average concentrations.

In addition, Article 4 of Directive 2009/90/EC stipulates that the methods for measuring the content of indicators must meet the minimum criteria: have a measurement uncertainty value below 50% (k=2) and a quantification limit equal to or below 30% of the relevant environmental quality standard.

Valuation reliability

The reliability of the chemical state assessment was performed using the criteria for establishing the reliability of the correct determination of the ecological and chemical status of the SWBs specified in Annex 11 of the Order of the Ministry of Ecology and Natural Resources of 14.01.2019 No. 5.

According to the established criteria, a three-stage scheme was used to assess the reliability of the correct determination of the chemical state of the SWB:

- A high level of assessment reliability means that most of the requirements have been met, namely: measurement data are available for all indicators specified in the List of Pollutants for Determining the Chemical State of Surface and Groundwater bodies and the Environmental Potential of an Artificial or Heavily Modified Surface Water Bodies in accordance with the Order of the Ministry of Environment No. 45 dated 6 February 2017, hereinafter referred to as the List, that meet the requirements of the Procedure (almost all relevant requirements for the list of indicators, methods and frequency have been met); the aggregation of SWBs demonstrates reliable results;

- The medium level of reliability of the assessment of the state of the SWB is established in the absence of sufficient monitoring data, frequency and measurement of all indicators identified in the List;
- The low level of reliability of the assessment of the state of SWB means that the assessment of the state of SWB was based on risk assessment, transfer of monitoring data through aggregation of SWB according to certain criteria.

To assess the chemical state of the SWB , we used statistically processed data of measurements of pollutant content in surface waters conducted at 109 monitoring points, namely, the average and maximum values.

Background concentrations for non-synthetic substances (mercury, lead, cadmium, nickel) were not taken into account when assessing the chemical state of the SWBs.

Compliance of the measurement results with the environmental quality standards set for the annual average and maximum permissible concentrations is considered to be compliance with the requirements set for the "good" chemical status of the SWBs.

For SWBs where monitoring was not carried out, the chemical state was assessed by interpolating (transferring) the assessment results from SWBs where monitoring was carried out, according to the aggregation of SWBs.

The following indicators were not measured: brominated diphenyl ethers (esters), chloralkanes, **C10-13**, di-(2-ethylhexyl)-phthalate, diuron, isoproturon, pentachlorophenol, tributyltin compounds (tributyltin cation), perfluorooctane sulfonate and its derivatives (PFOS), dioxins and dioxin-like compounds, hexabromocyclo-dodecane (HBCDD).

For the indicators fluoranthene, hexachlorobenzene, hexachlorobutadiene, mercury and its compounds, dicofol, heptachlor and heptachloroepoxide, for which the recommended object of control is biota, due to the lack of technical capabilities and measurement methods, concentrations were determined only in surface water samples.

The chemical state was assessed based on the monitoring data obtained as part of the diagnostic and operational monitoring of the SWBs in 2020-2023 (Annex 8).

The results of the assessment of the chemical status of the SWBs based on monitoring data (Table 19):

- *chemical status is "good":* 32 linear SWBs (4% of the total number of linear SWBs), by SWB length this amounts to 665 km (9% of the total length of linear SWBs); 3 polygonal SWBs (6% of the number of polygonal SWBs), by SWB area this amounts to 4.6 km^2 (0.6% of the area of polygonal SWBs);
- *chemical status of "failure to achieve good":* 45 linear SW s (5% of the total number of linear SWBs), by SWB length this amounts to 1044 km (13% of the total length of linear SWBs); 6 polygonal SWBs (12% of the total number of polygonal SWBs), by SWB area this amounts to 440 km^2 (59% of the total area of polygonal SWBs).

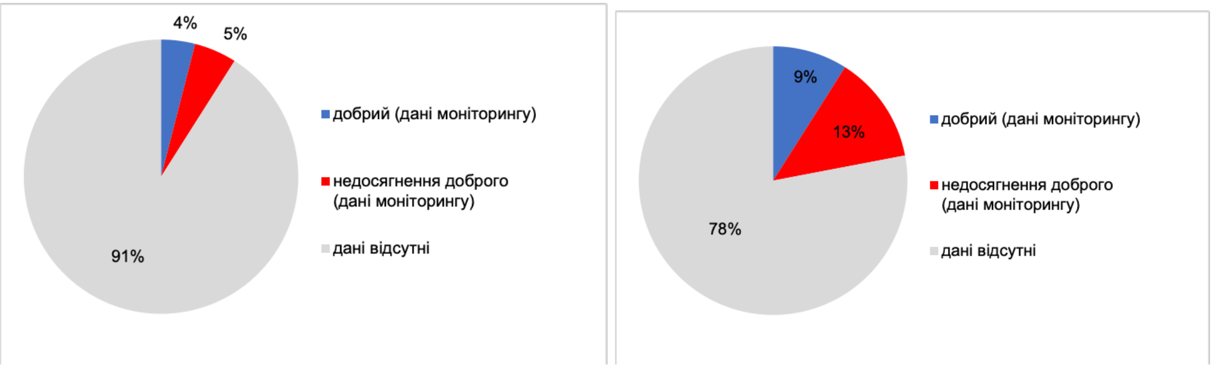
Table 19: Chemical status of the SWB for the period 2020-2023 (based on monitoring data)

Chemical status	number of linear SWBs	general length of the SWBs, km	quantity polygonal SWBs	total area of the SWB, km^2
"good"	32	665	3	4,6
"failure to achieve the good"	45	1044	6	440

The following substances have been found to exceed the maximum permissible concentration and/or the annual average concentration:

- alachlor (for 2 SWBs);
- Cadmium and its compounds (for 13 SWBs);
- fluoranthene (for 17 SWB);
- lead and its compounds (for 2 SWBs);
- mercury and its compounds (for 2 SWBs);
- Nickel and its compounds (for 1 SWB);
- benzo(*a*)pyrene (for 51 SWB);

- benzo(*b*)fluoranthene (for 7 SWB);
- benzo(*k*)fluoranthene (for 6 SWB);
- benzo(*g,h,i)* perylene (for 12 SWB);
- dicofol (for 4 SWBs);
- terbutrin (for 1 SWB);
- lucitrins (for 2 SWBs);
- Cypermethrin (for 5 SWB).



by the number of SWBs *by the length of SWBs*

Figure 142. Chemical state of the Danube RBD linear SWBs

by the number of SWBs *by the area of SWBs*

Figure 142. Chemical state of the Danube RBD polygonal SWB

The interpolation of the results of SWB monitoring to other SWBs was carried out on the basis of SWB aggregation, which was performed in 2022 as part of the implementation of state water monitoring in accordance with the Order of the SAWR dated 06.05.2022 No. 42 "On Approval of the State Agency of Ukraine for Research and Scientific and Technical Development Plan for 2022".

The purpose of SWB aggregation is to combine all SWBs in a river basin into different groups based on reasonable criteria for:

- Interpolation of the results of monitoring of the SWBs to other SWBs that are grouped with them;
- Use the results of aggregation in the development of monitoring programmes for the following years to maximise the interpolation of the assessment results.

The criteria for the aggregation of SWB of the "rivers" and "lakes" category are:

- the type of the defined SWBs;
- assessing the risk of not achieving a good chemical state of the SWB;
- a physical and geographical unit of zoning of the basin to which the IWR belongs;
- the type of landscape where the SWB is located.

The criterion for linear SWB of the "HMWB " and "AWB " categories is:

- assessing the risk of not achieving a good chemical state of the SWB.

The criteria for polygonal SWB of the "HMWB " and " AWB " categories are:

- category;
- the volume of the reservoir;
- water exchange regime of the reservoir.

Based on interpolation of the monitoring results according to the aggregation of SWBs (low level of reliability of the SWBs assessment) (Table 20), the following was established:

- *chemical status is "good":* 101 linear SWBs (12% of the total number of linear SWBs), by SWB length this amounts to 608 km (8% of the total length of linear SWBs); 1 polygonal SWB (2% of the number of polygonal SWBs), by SWB area this amounts to 1.4 km^2 (0.2% of the area of polygonal SWBs).
- *chemical status of "failure to achieve good":* 258 linear SWBs (31% of the total number of linear SWBs), by SWB length this amounts to 2614 km (33% of the total length of linear SWBs); 24 polygonal SWBs (48% of the number of polygonal SWBs), by SWB area this amounts to 16 km^2 (2% of the area of polygonal SWBs).

Table 20. Chemical status of the SWB based on interpolation of monitoring data

Chemical status	number of linear SWBs	total length of the SWBs, km	number of polygonal SWBs	total area of the SWB, km^2
"good"	101	608	1	1,4
"failure to achieve the good"	258	2614	24	16

A general assessment of the chemical status of the SWB for the period 2020-2023 (monitoring data and interpolation of monitoring data) is presented in Table 21 and Figures 18-19 (Annex 9).

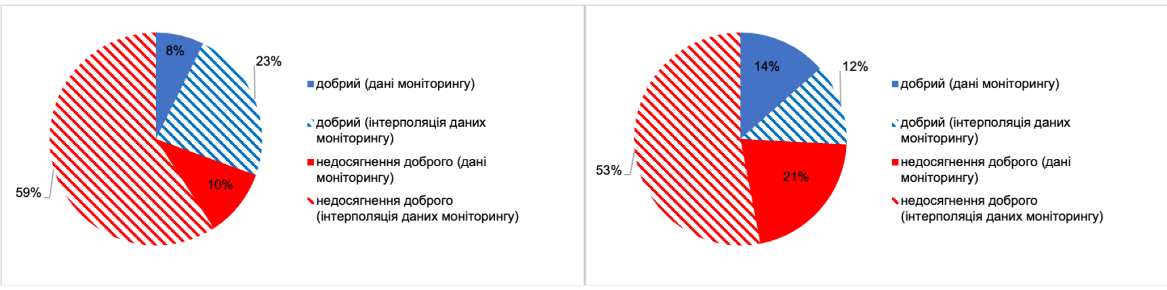
Table 21. General assessment of the chemical status of the SWB for the period 2020-2022 (monitoring data and interpolation of monitoring data)

Chemical status	number of linear SWBs	total length of the SWBs, km	number of polygonal SWBs	total area of the SWB, km^2
"good"	133	1273	4	6
"failure to achieve the good"	303	3658	30	456

For 86 SWBs, the reliability of the assessment of the correct chemical state determination corresponds to an average level of reliability.

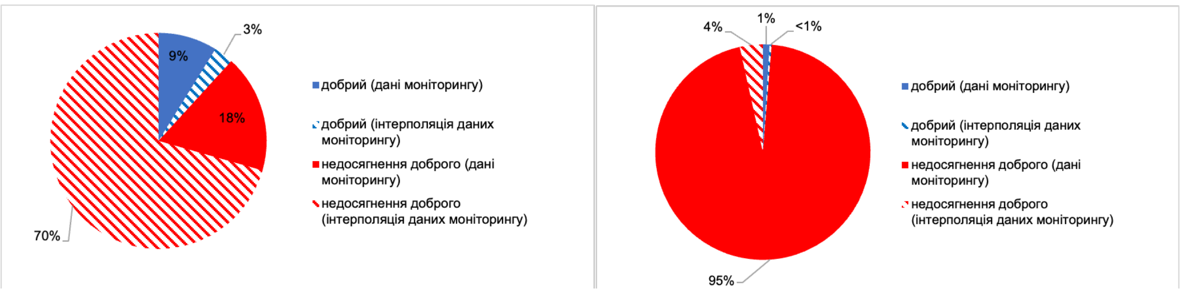
384 SWBs were assessed with a low level of confidence based on the transfer of results obtained from the surface water quality monitoring programme to SWBs where no monitoring was carried out, according to the SWBs aggregation.

Taking into account the interpolation of monitoring data, the chemical state was assessed for 436 linear SWBs, which totals 4,931 km in length, and 34 polygonal SWBs, which totals 462 km^2 in area.



by the number of SWBs *by length of SWBs*

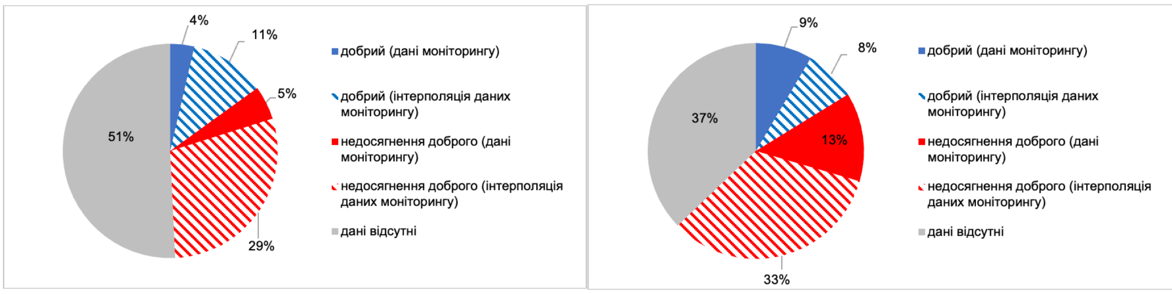
Figure 18. Assessment of the chemical state of linear SWBs (monitoring data and interpolation of monitoring data)



by the number of SWBs *by the area of SWBs*

Figure 19: Assessment of the chemical state of polygonal SWBs (monitoring data and interpolation of monitoring data)

Summarised assessments of the chemical status of the linear SWBs and polygonal SWBs in the Danube basin are shown in Figures 20 and 21.



by the number of SWBs *by the length of SWBs*

Figure 20. Overall assessment of the chemical status of the Danube basin's linear SWBs

by the number of SWBs *by the area of SWBs*

Figure 21. Summary assessment of the chemical status of polygonal SWBs in the Danube basin

4.1.4 Ecological status assessment

Determination of the ecological state of the SWB in accordance with the requirements of the Water Code of Ukraine and the Order of the Ministry of Ecology and Natural Resources of 14.01.2019 No. 5 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Conditions of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified Surface Water Body" is based on the use of a set of biotic and abiotic components inherent in aquatic ecosystems.

The basis for assessing the ecological status of SWB s is based on biological quality indicators that best reflect changes in the aquatic environment, including benthic invertebrates, phytobenthos, macrophytes, phytoplankton and fish. Auxiliary indicators include physicochemical and hydromorphological quality indicators. The assessment of the ecological status also includes specific synthetic and non-synthetic substances that are typical for RBDs.

The classification schemes for biological quality indicators depend on the type of SWB and include possible anthropogenic pressures (e.g., organic and nutrient pollution, hydromorphological changes). The ecological status of an SWB is assessed in relation to a reference value (i.e., the status of an SWB of a certain type without or with minimal anthropogenic pressure). The degree of impact for individual biological quality indicators is converted into an ecological quality coefficient for individual boundaries of the five classes of ecological status of the SWB.

The algorithm for determining the ecological status of SWB based on the type-specific classification being developed for biological, hydromorphological, chemical and physicochemical indicators is provided in the draft Order of the Ministry of Ecology and Natural Resources "On Approval of Environmental Water Quality Standards for Determining the Ecological Status of Surface Water Bodies...". Type-specific classification schemes were developed based on existing schemes in neighbouring EU countries for the respective types of intercalated SWB.

The assessment of physicochemical and chemical indicators took into account the requirements of Directive 2009/90/EC (Article 5), which sets out technical requirements/criteria for the processing of monitoring data.

The results of state water monitoring conducted by the SAWR and the SES of Ukraine as part of diagnostic and operational monitoring were used to assess the environmental condition of the SWB.

If during this period the monitoring of the SWB was carried out more than once at the monitoring point, the assessment was made on the basis of the results of the last year in which the monitoring was carried out.

To assess the ecological state of the SWB, the data on monitoring the content of synthetic and non-synthetic specific substances typical for the Danube RBD were used.

Background concentrations of non-synthetic specific substances were not taken into account when assessing the environmental condition of the SWB.

In the Danube RBD, the ecological status was assessed for 59 linear SWB with a length of 1444.4 km based on 2020-2023 data. The results of the assessment of the ecological status of the SWB are presented in the table and appendix.

Table Ecological status of the SWB

ecological status	Number of linear SWBs	Percentage of the total number of linear SWBs, %	Length of linear SWB, km	Percentage of the total length, %
"high"	6	0,7	256,4	3,3
"good"	31	3,7	635,9	8,1
"moderate"	11	1,3	408,7	5,2
"poor"	11	1,3	143,4	1,8
"bad"	0	0	0	0

The level of confidence in the ecological assessment is average for all assessed SWB.

The ecological status of 6 linear SWB with a total length of 256.4 km is "high", and the ecological status of 31 SWB with a total length of 635.9 km is "good".

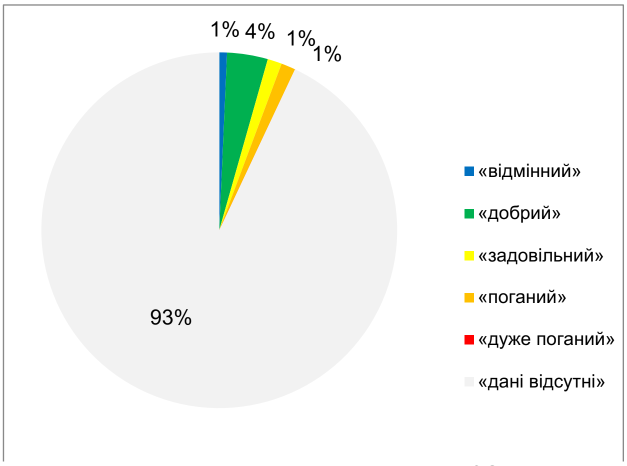
The environmental objectives for achieving "good" ecological status were achieved in 37 SWB, which is 11.4% of the total length of SWB.

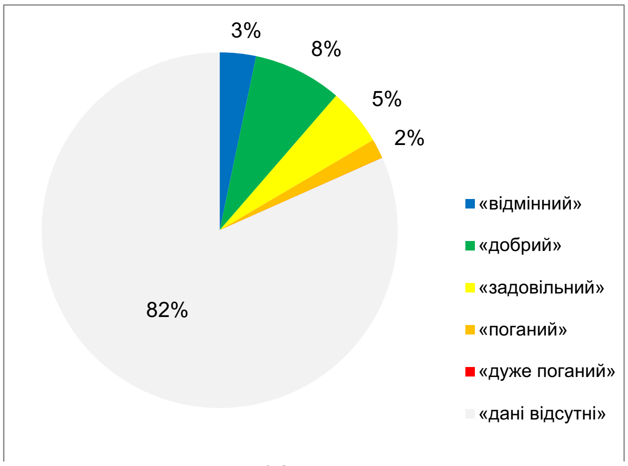
The ecological status of 11 linear SWB with a length of 408.7 km, which is 5.2% of the total length of the Danube RBD, is "moderate". The ecological status of 11 SWBs is classified as "poor", which is 1.8% of the total length of the SWBs. None of the assessed SWBs are in "bad" ecological status.

The SWBs has identified the Danube in "poor" environmental status:

- Kyrgyzs-Kytai (UA_M5.3.4_0063) due to non-compliance with the EQS for vascular plants and benthic macroinvertebrates.
- Sovytsia (Stavchanska) River (UA_M5.3.2.0165), Klokuchka River (UA_M5.3.2.0172), Khukiv River (UA_M5.3.2.0197), Molnytsia River (UA_M5.3.2.0200) due to non-compliance with the EQS for microphytobenthos, vascular plants, and benthic macroinvertebrates.
- Martosh (UA_M5.3.1_0104), Khustets (UA_M5.3.1_0151), Repynka (UA_M5.3.1_0168), Borzhava (UA_M5.3.1_0222), Verke (UA_M5.3.1_0279), Tova (UA_M5.3.1_0393) due to non-compliance with the EQS for microphytobenthos, vascular plants, and benthic macroinvertebrates.

The results of the ecological status assessment are presented for the linear SWB s of the "rivers" category in Figure 5.3.





by the number of SWB *by the area of SWB*

Figure 5.3 Assessment of the ecological status of the Danube RBD linear SWBs

4.1.5 Ecological potential assessment

For an AWB or an HMWB, the environmental objective is to achieve good ecological potential, for which less stringent criteria are applied to determine impacts related to hydromorphological changes. The ecological potential of an AWB or HMWB is determined in accordance with the classification established for determining the status of the SWB of the relevant category (river, lake, transitional waters, coastal waters) to which the AWB or HMWB is most similar in terms of its characteristics.

In the Danube RBD, according to the 2021-2023 data, the environmental potential was assessed for 12 linear SWB s with a length of 159.9 km and 5 polygonal SWBs with an area of 439.1 km^2 . The results of the assessment of the environmental potential of the SWBs are presented in the table and annex.

Table 1 Ecological potential of SWBs (linear)

Ecological potential	Number of linear SWBs	Percentage of the total number of linear SWBs, %.	Length of linear SWBs, km	Percentage of the total length, %.
"good"	5	1,4	79,5	2,4
"moderate"	2	1,6	8,3	0,7
"poor"	3	1,9	52,5	3,8
"bad"	2	0,7	19,6	0,6

Table 2 Ecological potential of SWB (polygonal)

Ecological potential	Number of linear SWBs	Percentage of the total number of linear SWBs, %.	Length of linear SWBs, km	Percentage of the total length, %
"good"	0	0	0	0
"modearate"	4	19,0	385,8	52,6
"poor"	1	4,8	53,3	7,3
"bad"	0	0	0	0

The level of reliability of the ecological potential assessment is average for all assessed SWBs.

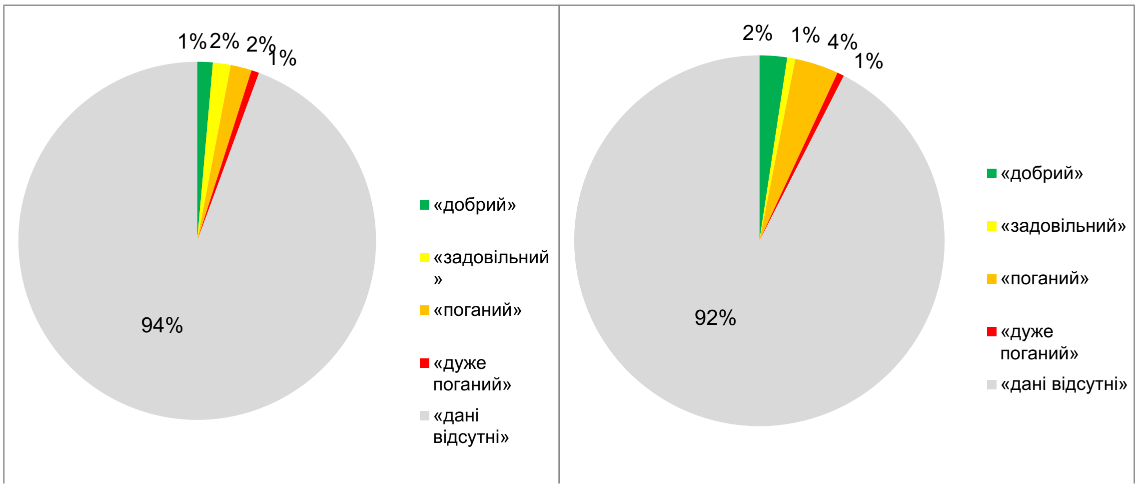
The environmental targets for achieving "good" environmental potential were achieved in 5 linear SWBs, which is 2.4% of the total length of the Danube RBD .

"Moderate" ecological potential was determined for 2 linear SWBs with a length of 8.3 km, which is 0.7% of the total length of SWBs and 4 polygonal SWBs with an area of 385.8 km^2. "Poor" environmental potential was identified on 3 linear SWBs with a length of 52.5 km and 1 polygonal SWB with an area of 53.3 km^2 .

The site has been identified as having "poor" environmental potential:

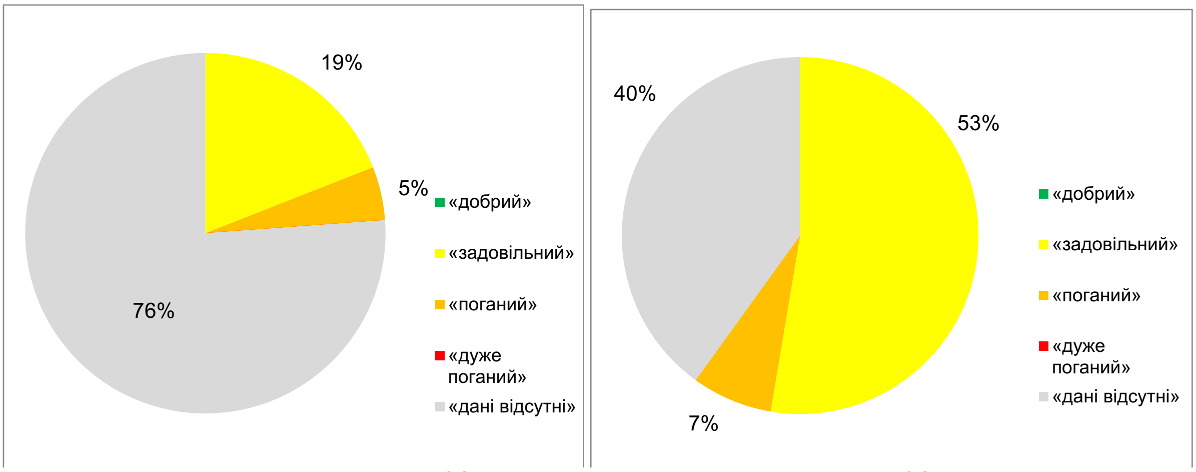
- Karasulak River (UA_M5.3.4_0029) and the China Reservoir (UA_M5.3.4_0086) due to non-compliance with the EQS for biological indicators: phytoplankton, microphytobenthos, vascular plants and benthic macroinvertebrates.
- Sovytsia River (UA_M5.3.2_0166) and the Shubranets River (Potit) (UA_M5.3.2_0175) due to non-compliance with the EQS for the biological indicator benthic macroinvertebrates.
- Kosyno-Bovtradskyi (UA_M5.3.1_0290) due to non-compliance with the EQS for biological indicators: microphytobenthos and benthic macroinvertebrates.

The results of the environmental potential assessment are presented for linear and polygonal SWBs in Figure.



by the number of SWB *by the area of SWB*

Figure Assessment of the ecological potential of the Danube RBD linear SWBs



by the number of SWBs *by the area of SWBs*

Figure Assessment of the ecological potential of the Danube RBD polygonal SWBs

4.2 Groundwater

4.2.1 Monitoring system

The quantitative and chemical state of groundwater is monitored within the framework of the state groundwater monitoring system, and changes in the state are predicted both under natural conditions and under the influence of human activity. Quantitative and chemical monitoring is carried out in the same observation wells. The monitoring is carried out in both non-pressure and pressure aquifers under natural, slightly disturbed and disturbed conditions. The disturbed conditions are investigated within the operational water intakes.

The state groundwater monitoring includes diagnostic and operational monitoring, the indicators and frequency of which are defined in accordance with the WFD and are set out in Annex 2 of the Procedure for State Water Monitoring. The components of state monitoring of groundwater bodies include monitoring of quantitative, chemical and physico-chemical indicators. The Procedure for State Water Monitoring does not define the monitoring network (in particular, the number of monitoring points), but establishes the frequency and indicators to be monitored.

Table XX Procedure for state water monitoring - Indicators and frequency of state monitoring of the GWB

The subject of the monitoring market	Name of the indicator	Frequency.	Notes.
Diagnostic monitoring*.**			
State Geological Survey	levels	one to three times a month	amount of water
	Temperature, redox potential permanganate oxidisability, mineralisation	at least twice a year	
	macro components: - Calcium, magnesium, sodium, potassium, hydrocarbonate ions, total ferric iron, - fluoride	four times a year	
	microcomponents	once a year	the list is determined taking into account the specifics of land use and indicators given in DsanPiN 2.2.4-171-10
	Pollutants according to the list of pollutants for determining the chemical state of surface and groundwater bodies and the environmental potential of artificial or significantly altered surface water bodies approved by the Ministry of Ecology and Natural Resources	four times a year	
	Specific synthetic pollutants (pesticides, pharmaceuticals and other substances)	once every two to six years	the list is determined taking into account the specifics of land use
	Specific non-synthetic pollutants (uranium, radium, radon and other substances)		
Operational monitoring***.			
State Geological Survey	Hydrogeological regime: groundwater levels	one to five times a month	
	total hardness, carbonate, non-carbonate mineralisation	quarterly, at least twice a year	
	phenols oil products synthetic surfactants	once every one to two years	
	macro components: hydrogen carbonate ions, calcium, potassium, magnesium sodium, silicon, total ferric, fluorine	quarterly, at least twice a year	
	microcomponents: aluminium, argentum, beryllium, cobalt, copper, manganese, molybdenum, nickel, selenium, strontium, chromium, zinc	once a year	The list of micro-components is determined taking into account the specifics of land use
	pollutants according to the list of pollutants for determining the chemical state of surface and groundwater bodies and the environmental potential of artificial or significantly altered surface water bodies approved by the Ministry of Ecology and Natural Resources	quarterly, at least twice a year	

The subject of the monitoring market	Name of the indicator	Frequency.	Notes.
	Specific synthetic pollutants (pesticides, pharmaceuticals and other substances);	once every six years	the list is determined taking into account the specifics of the array
	Specific non-synthetic pollutants (uranium, radium, radon and other substances)		

* In the Exclusion Zone and the Zone of Unconditional (Mandatory) Resettlement of the Territory Affected by Radioactive Contamination as a Result of the Chornobyl Disaster, the State Agency of Ukraine on Exclusion Zone Monitoring of Groundwater Resources is responsible for monitoring groundwater resources.

** Data are updated and supplemented taking into account the specifics of the array.

*** Data are updated and supplemented taking into account the specifics of the array and based on the results of diagnostic monitoring

According to Geoinform, as of 01.01.2021, there were 43 state groundwater monitoring sites within the Danube basin, including 23 operational, 6 mothballed, 6 in need of repair, and the status of 8 sites was unknown.

Since the beginning of the Russian military aggression in 2022, the monitoring has been permanently suspended, as the implementation of the State Programme for the Development of Ukraine's Mineral Resources Base until 2030, which included monitoring and funding, was suspended.

The observation network for groundwater monitoring is currently in a dilapidated state. Observations conducted in 2018-2020 did not meet the requirements of the current Procedure for State Water Monitoring in terms of either quantitative or qualitative indicators.

4.2.2 Chemical assessment/risk assessment

Due to the lack of monitoring data, it is impossible to assess the current qualitative and quantitative state of the GWB with sufficient reasonableness.

Based on the information from previous studies, it can be assumed that the water quality of non-pressure GWB is most likely poor due to nitrogen pollution from diffuse sources within agricultural landscapes. As for the water of pressurised WTPs, its quality is mostly good, and the excess of the normative content of some components is of geogenic origin.

4.2.3 Estimation of groundwater volumes/reserves

As for the assessment of the quantitative state of non-pressure GWB, due to generally favourable conditions of groundwater resources formation in the studied basin and insignificant water withdrawal, this state is obviously good. As for the pressure GWBs, according to expert data, despite some cases of significant depression sinkholes within certain areas with intensive and long-term water withdrawal, the overall quantitative status of the identified GWBs can be preliminarily defined as good. The basis for this conclusion is the comparison of forecast resources, operational groundwater reserves and data on the volume of current water withdrawal.

Ways to restore and develop groundwater monitoring

The monitoring network needs to be urgently renewed and improved. The placement of observation points should be based on the principle of representativeness, which in the case of groundwater involves taking into account the prevalence of GWB and the homogeneity/homogeneity of natural and anthropogenic conditions of groundwater resource formation and their changes over time.

Given the long period of no monitoring and the limited number of monitoring sites, it is necessary to carry out diagnostic monitoring of groundwater quality in all identified GWB at all monitoring wells. All designated and within the Danube basin are subject to diagnostic and operational monitoring procedures, as all non-pressure GWB are associated with surface ecosystems, while pressure GWB are used for water supply to the population, and the average water withdrawal from them for drinking and domestic purposes exceeds 100 cubic metres per year.

The Order of the Ministry of Environment No. 78 of 19.01.24 approving the State Water Monitoring Programme provides for groundwater monitoring in 2024, subject to the availability of funding for the relevant work. The annex to the above-mentioned order identifies 42 observation points in the Danube basin (Table 26).

Table 26: Observation points (p.p.) for groundwater monitoring in the basin

Number of points in total	GWB code	Name of the GWB	Number of points on the GWB
43	UAM5320Q100	GWB in alluvial quaternary sediments	11
	UAM5310Q200	GWB in the Quaternary Holocene weathering crust and other loose sediments of the mountain slopes of the sedimentary Carpathians	3
	UAM5310Q300	GWB in the Quaternary Middle-Upper Pleistocene lake-alluvial sediments of the Minaya Formation	21
	UAM5310Q400	GWB in the Quaternary Eopleistocene-Lower Pleistocene lake and alluvial sediments of the Chop Formation	2
	UAM5310Q500	GWB in the Quaternary Pliocene - Lower Epleistocene alluvial deposits of the ninth and tenth floodplain terraces	2
	UAM5340N100	GWB in alluvial Upper Pliocene and Lower Quaternary sediments	2
	UAM5320N100	GWB in Neogene sediments	1

The list of these observation points was compiled on the basis of data received from regional geological enterprises. There is currently no reason to revise them, as there is no newer reliable information on this matter. Obviously, there have been negative changes in recent years due to the consequences of Russian aggression and the final cessation of monitoring, so one of the first tasks should be to re-inventory the observation wells, after which the proposed network will be refined.

In the future, the priority is to resume groundwater monitoring. At present, the resumption of observations on the state network is unrealistic due to lack of funding. The only realistic opportunity to obtain information on the state of the GWB is to use the data of chemical analyses performed at operational water intakes in accordance with the current Procedure for State Water Monitoring (clause 12), which stipulates that for groundwater intakes with a production volume of more than 100 cubic metres per day within the sanitary protection zones and adjacent territories, water users shall set up a local network of observation wells to determine the amount of water, chemical and physicochemical parameters and provide observation data to the State Service of Geology and Subsoil of Ukraine. If this requirement is met, information communication with water users is established, and scientific data processing and analysis is ensured, the state of groundwater monitoring information support could be significantly improved even before funding for observations at the network of wells of the state observation system is restored.

As intensive agricultural production is carried out within the basin, and according to available data, the waters of non-pressure GWB are widespreadly contaminated with nitrogen compounds, special attention should be paid to improving the quality of non-pressure GWB. One of the problems is that the existing observation points for non-pressure GWB are wells located within rural settlements. The information obtained during the inspection of wells sometimes reflects the contamination of the water intake facility, not the aquifer. At the same time, there are virtually no observation points - wells that are better protected from surface contamination and points located within areas with minimal anthropogenic load - that would allow determining the background levels of chemical elements and compounds in the water of non-pressure GWB. Obtaining information on background areas would allow more reasonable determination of the quality of non-pressure GWB and assessment of the risk of their failure to achieve environmental objectives. Obviously, if appropriate funding is available, it is necessary to include new observation points located in protected areas in the monitoring network, and, if possible, to construct new ones (drilling wells) in representative areas that would allow obtaining information that could reasonably be extrapolated to large areas of groundwater distribution.

4.3 Areas (territories) to be protected

The 2023 State Water Monitoring Programme for the Danube Basin includes monitoring sites within one category of protected areas (territories):

- 11 monitoring points related to operational monitoring at the SWBs from which water is abstracted to meet the drinking and household needs of the population (Annex 6).

5 A LIST OF ENVIRONMENTAL OBJECTIVES FOR SURFACE WATERS, GROUNDWATER AND PROTECTED AREAS (TERRITORIES) AND DEADLINES FOR THEIR ACHIEVEMENT (IF NECESSARY, JUSTIFICATION FOR SETTING LESS STRINGENT OBJECTIVES AND/OR POSTPONEMENT OF THEIR ACHIEVEMENT)

Environmental objectives for surface water, groundwater and protected areas (territories) are set separately.

Surface water:

- Prevention of deterioration of all SWBs;
- Achievement/maintenance of good ecological and chemical status of all natural SWBs (rivers, lakes, transitional and coastal waters);
- Achieving/maintaining good ecological potential and chemical status of HMWBs and AWBs;
- Gradual reduction to the complete absence of hazardous substances.

Groundwater:

- Prevention of deterioration of all GWBs;
- Achieving/maintaining good quantitative and chemical status of all GWBs;
- Preventing and limiting groundwater pollution.

Areas (territories) to be protected:

Achieving standards and targets as required by applicable law for:

- Emerald Network facilities;
- sanitary protection zones;
- protection zones for valuable aquatic bioresources;
- surface/ground water bodies used for recreational, medical, resort and health purposes, as well as water intended for bathing;
- areas vulnerable to (accumulation of) nitrates;
- vulnerable and less vulnerable areas identified in accordance with the criteria approved by the Ministry of Environment.

In cases where several objectives are set for a particular SWBs or GWBs, the most stringent ones should be applied, while all other objectives should also be met.

In some cases, the deadlines for achieving environmental objectives or the targets themselves may be postponed as an exception.

It is allowed to postpone the date of achievement of the objective for a period of 6 years (until 2036), but not longer than 12 years (until the end of 2042) from the end of the implementation of the first cycle of the RBMP (2030).

An exemption applied to a particular SWB or GWB should not create a risk of not achieving the environmental objectives of the upstream (for SWB) or downstream (for SWB) and adjacent (for GWB) body or bodies.

The exceptions include:

- **Achieving less stringent objectives or postponing the date of their achievement** due to technical reasons (e.g. lack of a technical solution, technical impracticality or impracticability), disproportionately high cost or the existing natural state of the water body that does not allow for its improvement in a timely manner (e.g. inert groundwater to be restored). The presence or absence of disproportionality is determined by the results of an economic assessment of costs and benefits;

- **Temporary deterioration of the status (objectives) as a result of an unforeseen force majeure of** natural origin (e.g. extreme flood, drought) or anthropogenic (accident);
- **New physical changes to the SWB as a result of infrastructure projects** are permitted if the benefits to society are higher than the environmental benefits and there is no other option to avoid these changes for technical and/or financial reasons. Water pollution from point or diffuse sources is not allowed.

5.1 Environmental objectives for surface water

Based on the results of the assessment of the anthropogenic impact on the SWBs of the Danube basin:

- 394 SWBs are "at no risk" of not achieving "good" environmental status/potential, 165 SWBs are "possibly at risk", and 326 SWBs are "at risk";
- 752 SWBs are "without risk" of not achieving "good" chemical status, 35 SWBs are "possibly at risk", and 98 SWBs are "at risk".

By 2030, 438 SWBs will achieve "good" environmental status/potential, of which 394 SWBs are currently "without risk" (they need to maintain this status), 31 SWBs are 5% of SWBs that are "at risk" or "possibly at risk" of not achieving environmental objectives based on the results of the anthropogenic load assessment and will achieve environmental objectives through the implementation of PoM measures.

The remaining 'at risk' or 'possibly at risk' SWBs in the basin (447 SWBs) could achieve 'good' ecological status/potential by 2036 or 2042, subject to the implementation of remedial measures.

By 2030, 823 SWB s will have achieved "good" chemical status, of which 752 SWB s are currently "no risk" (they need to maintain this status), and 62 SWB s, which are "at risk" or "possibly at risk" according to the results of the anthropogenic load assessment, will achieve the environmental objectives not earlier than 2036 or 2042, subject to the implementation of environmental protection measures.

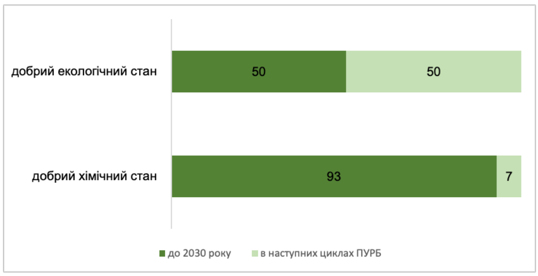


Figure 23: Timeframe for achieving environmental objectives for SWBs, %.

Annex 9 (Table 1) lists the environmental objectives of the SWBs, the timeframe for achieving them, reasons for postponement and setting less stringent targets.

5.2 Environmental objectives for groundwater

Environmental targets are set for each GWB, both in terms of their quantitative and qualitative (chemical) status. According to the WFD, the main objective is to achieve "good" groundwater status.

Additional targets for each individual IWR are determined depending on the existing quantitative and qualitative state of GWB, their use or potential use for water supply to the population, anthropogenic pressure and possible impact on surface ecosystems.

The main criterion for the "good" quantitative state of the GWB should be the absence of groundwater depletion. Depletion is considered to be the state of aquifers in which, under the influence of artificial drainage, the decline in groundwater levels has reached such indicators that exclude the possibility of further use of the horizon to meet the needs of society using traditional technical means.

The assessment of the depletion of an GWB is based on information on the level regime, data on groundwater extraction volumes and their comparison with resources and approved operational reserves. In addition, for non-pressure GWB, the criterion of "good" condition is the appropriate condition of the associated surface water bodies and the absence of negative impact on surface ecosystems, primarily vegetation suppression.

The criteria for the "good" quality (chemical) state of the GWB are the natural background content of chemical elements and compounds, as well as the standards set for drinking water by the State Sanitary Norms and Rules "Hygienic Requirements for Drinking Water Intended for Human Consumption" (hereinafter - SanPiN 2.2.4-171-10).

Quantitative state of non-pressure GWB

The environmental goal is to avoid groundwater depletion and not to deteriorate its quantitative state. Groundwater depletion is an irreversible decrease in groundwater resources due to the excess of groundwater extraction over groundwater recharge.

Qualitative (chemical) state of non-pressure GWB

Non-pressure GWB are used by the rural population to meet their drinking needs, therefore, to assess the quality state, it is necessary to use the standards of Sanitary and Epidemiological Norms 2.2.4-171-10, except for those elements and compounds whose content exceeds the normative value in the natural state. For such components, the values of natural backgrounds should be used.

The environmental objective is compliance with Sanitary and Epidemiological Norms 2.2.4-171-10 and no deterioration of the quality state. It is worth noting that the stability of the quality state is relative, the content of macro- and micro-components in the water of non-pressure GWB is subject to significant fluctuations in space and time, so it is necessary to have information on the intervals of changes in the content and to refine it in the course of monitoring.

Quantitative state of pressure GWB

The quantitative state of pressure GWB is assessed by comparing the volumes of water withdrawal from these GWB at water intakes with the volumes of projected groundwater resources.

The environmental objective is the stability of the quantitative state and the absence of groundwater depletion. At groundwater abstractions, the volume of water withdrawal should not exceed the estimated operational reserves (within groundwater deposits).

Chemical state of pressure GWB

Since groundwater from all the pressure GWB is used for centralised drinking water supply to the population, the criteria for "good" chemical condition was chosen to be compliance of groundwater chemical parameters with the State Sanitary Norms and 10 Rules "Hygienic Requirements for Drinking Water Intended for Human Consumption" (Sanitary Norms and Rules 2.2.4-171-10). Exceptions are indicators that are exceeded in groundwater due to natural factors.

It is necessary to resume groundwater monitoring in the basin, which has been virtually suspended in recent years. In the absence of groundwater monitoring, it is unlikely that all of these objectives will be achieved. The unsatisfactory state of groundwater monitoring over the past decades, and, accordingly, insufficient information on the current state of the GWB, allows us to define environmental objectives only in the most general terms. In the process of monitoring, the environmental objectives for each GWB should be specified.

Appendix 9 (Table 2) lists the environmental targets of the GWB and their groups, the timeframe for achieving them, reasons for postponing them and setting less stringent targets.

Among the currently identified GWBs and their groups of good quantitative and chemical status, all 16 GWBs and groups of GWBs in good quantitative status will reach good quantitative status by 2030, and 10 GWBs will reach good qualitative status. The remaining 6 non-pressure GWB groups may reach good qualitative status by 2042, provided that measures are taken to reduce pollution from diffuse sources within agricultural landscapes.

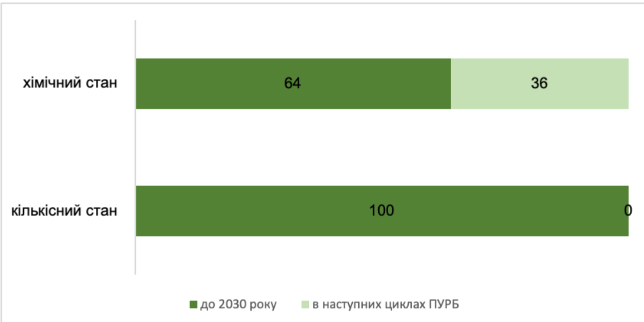


Figure 24. Timeframe for achieving environmental objectives for GWBs, %.

6 ECONOMIC ANALYSIS OF WATER USE

The economic analysis of water use has been prepared in accordance with the schedule of the RBMP development process based on data for 2015-2019. Due to the full-scale military invasion of Ukraine by the Russian Federation, the economic development of the territories and the structure of water use in the Danube basin have undergone significant changes.

6.1 Economic development of the basin area

Territorially, the Danube River Basin area partially covers 3 oblasts and fully 1 oblast, and accounts for 5% of Ukraine's territory (Table 22).

The total population of the river basin is about 3.532 million people, which is 8.5% of Ukraine's population.

Table 22. Share of area and population of oblasts within the Danube RBD[6], %

Oblast	Share of the region's area within the basin	Share of the region's population within the basin
Transcarpathian	100	100
Ivano-Frankivsk	35	30
Chernivetska	81	86
Odesa	21	14

Thus, there is a relative balance between the area of oblasts within the basin and the population living in the oblasts. The majority of the population lives in the Tisza sub-basin, which corresponds to the territory of the Transcarpathian region.

Analysis of the RDB Danube's GRP. In 2019, the RDB Danube's GRP amounted to UAH 164.366 billion. The dynamics of this indicator over the entire study period of 2015-2019 shows a tendency to grow at different rates in different periods - the highest GRP growth rate was observed in 2017 (at 30%), while in 2019 this rate decreased (to 17%). The share of the basin's GRP in the country's total GDP is almost 4% (Table 23).

Table 23: Evolution of GRP of the Danube RBD , 2015-2019[7]

Indicators	2015	2016	2017	2018	2019
GRP in actual prices, UAH billion	71,847	81,921	106,490	127,864	148,910
The share of the river basin's GRP in Ukraine's total GDP, %.	3,6	3,4	3,6	3,6	3,7
Basin GRP growth rate, % compared to the previous year	100	114,0	130,0	120,1	116,5

In the Danube RBD, Zakarpattia region has the largest share of GRP by region (41% of the basin's GRP). Within Chernivtsi region, 24% of the basin's GRP is generated, while Ivano-Frankivsk and Odesa regions account for 17% of GRP each. However, the share of the population is only 14%. This indicates a more developed economic activity in Odesa region.

The GRP per capita in the Danube basin is UAH 54.5 thousand, which is almost half the level of the whole of Ukraine (as of 2019, the GRP per capita was UAH 94.7 thousand).

Danube RBD GVA analysis. The value of GVA in actual prices is UAH 131.092 billion for the basin, or 3.8% of Ukraine's total GVA.

Agriculture, forestry and fisheries account for the largest share of the basin's GVA, accounting for UAH 18.6 billion or 14%, and its share in the total GVA of Ukraine is 5.2%. GVA by economic activity in the Danube basin is shown in Table 24. Among the water-dependent economic sectors, the processing industry has a fairly high share in the overall structure of the basin's GRP - UAH 12.7 billion or 9.7%, which corresponds to 3.0% of Ukraine's total GRP. The share of water-dependent economic activities in the basin is 41.5%. Other, non-water-dependent economic activities in the Danube basin account for almost 60% of the total GVA.

Table 24. GVA of the RDB Danube by economic sector, 2019

[6] Determined by working with shapefiles from the Water Resources of Ukraine geoportal and population using ArcGIS
[7] Calculated based on data from the State Statistics Service of Ukraine http://www.ukrstat.gov.ua/

Sectors of the economy	GVA, million UAH	Share in Ukraine's GVA, %	Share in the basin's GVA, %
Agriculture, forestry and fisheries	18585,2	5,2	14,2
Mining and quarrying	2367,03	1,1	1,8
processing industry	12705,4	3,0	9,7
supply of electricity, gas, steam and air conditioning	5165,77	4,1	3,9
Water supply; sewerage, waste management	511,52	3,5	0,4
transport, warehousing, postal and courier services	15069,2	5,7	11,5
TOTAL water-dependent economic activities	54404	3,9	41,5
Other types of economic activity	76688	3,8	58,5
IN TOTAL ACROSS THE basin	**131092**	3,8	**100**

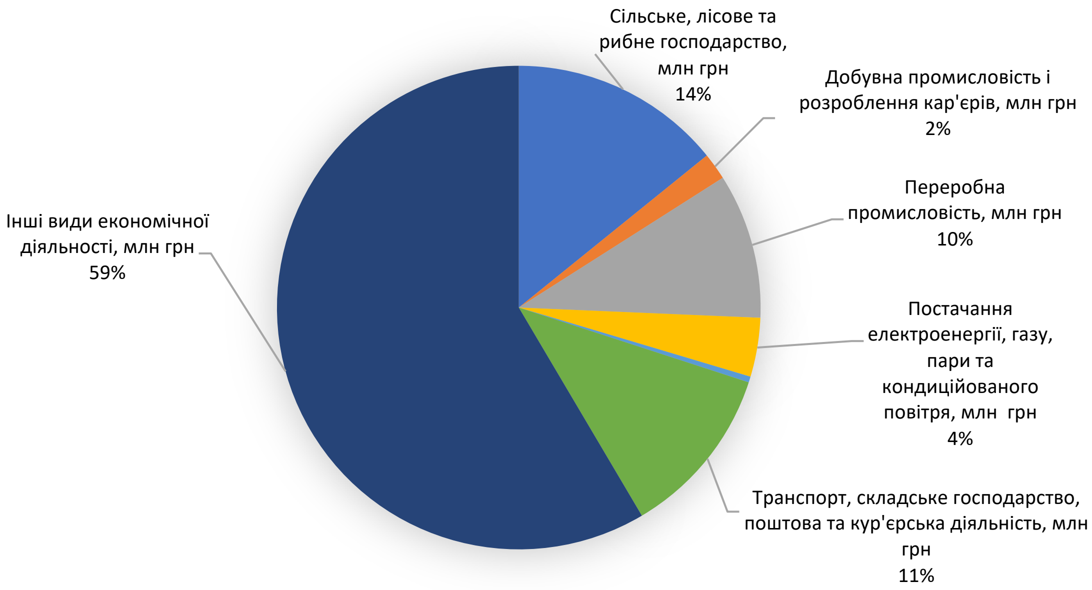


Figure 25: Gross value added by region within the Danube basin by economic sector (2019), %

The dynamics of the GVA of water-dependent economic activities in the Danube River basin in 2015-2019 decreased from 48% in 2016 to 41.6% in 2019 of the basin's GVA and shows a downward trend. The decline in the total value of the GVA of water-dependent sectors was due to the decline in the GVA of agriculture, forestry and fisheries over the past 5 years. Other water-dependent sectors of the economy show fluctuations in GVA, with the processing industry showing a slight increase in its share of GVA. In turn, the growth of the total GVA of the Danube basin is mainly due to other non-water-dependent sectors of the economy.

6.2 Characteristics of modern water use

In 2019, water users abstracted 747.1 million m^3 of water from groundwater and surface water bodies in the Danube basin, which is about 7% of water abstraction in Ukraine.

The main source of water withdrawal is surface water (94% of the Danube basin's water withdrawal). In terms of sub-basins, 95% of surface water abstraction is taken from the Lower Danube sub-basin in Odesa Oblast. In the Tisza, Prut and Siret sub-basins, groundwater abstraction accounts for at least 40% of the total abstraction in the basin.

Figure 27: Sources of water intake in the Danube basin, %.

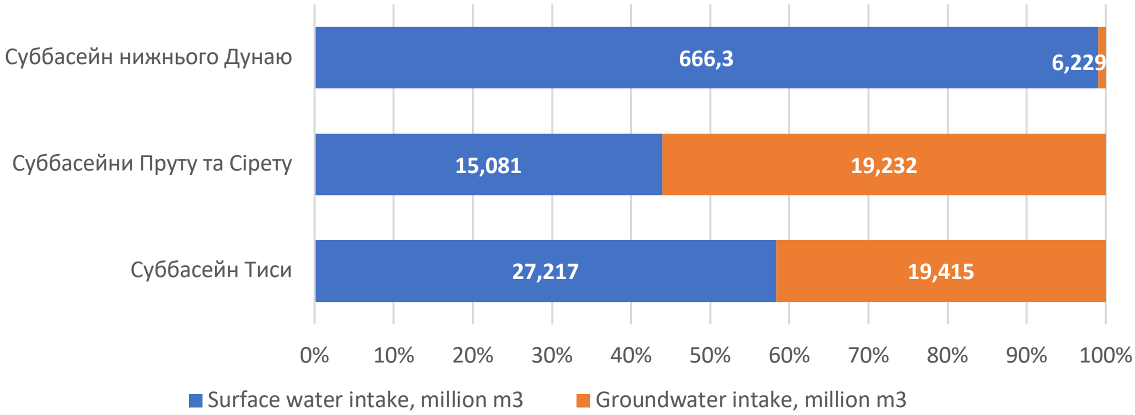


Figure 28. Distribution of water sources by sub-basins, million m^3

The bulk of the water intake is carried out in the Lower Danube sub-basin within the Odesa region, which is associated with water supply for irrigation for agricultural producers.

The main water users within the basin are the following economic sectors: agriculture, housing and communal services, industry and transport.

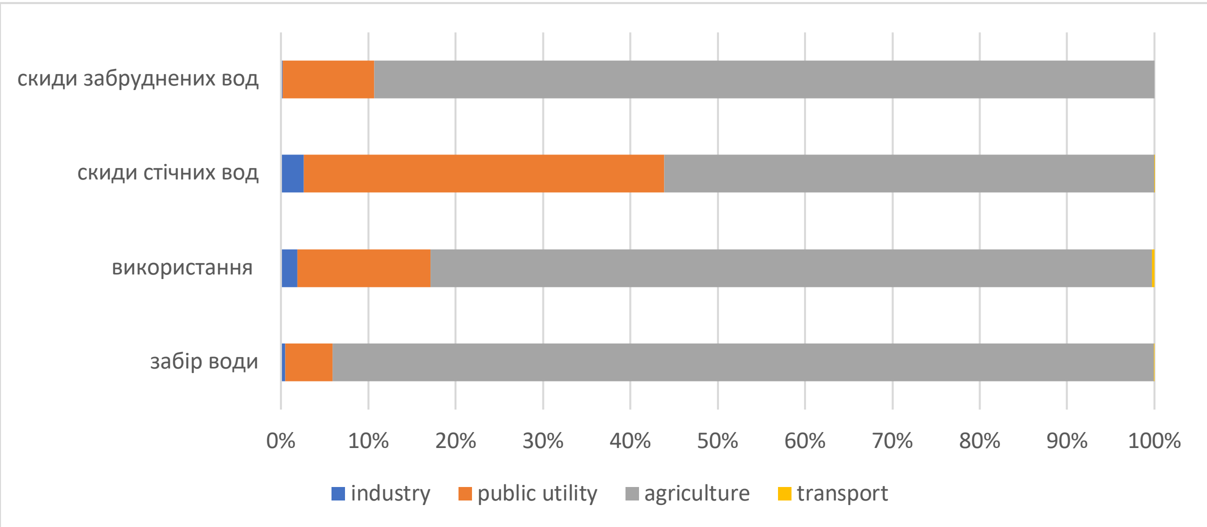


Figure 29: Characteristics of water use in the Danube basin[8], %.

The structure of water use is as follows: 94% of water resources are consumed by agriculture, 5.4% by housing and communal services, and less than 1% by industry, transport and other sectors.

The volume of water used in the basin is 203.9 million m^3.

[8] Data source: State water cadastre data, section "Water use", 2019 State Agency of Water Resources of Ukraine

A detailed description of water use in the Danube basin by economic sector is provided in Annex 10.1.

As for the structure of wastewater disposal, 55% of wastewater is discharged into surface water by agricultural facilities, 40.5% by housing and communal services, and only 2.5% by industrial water users.

About 40% of the wastewater volume is normatively treated at wastewater treatment plants, 31% is normatively clean without treatment and 28% is polluted wastewater.

Almost all (89%) of polluted wastewater comes from agricultural water users.

Information on wastewater discharges into water bodies by categories of discharged water is provided in Annex 11.2.

To assess the socio-economic importance of water for economic sectors, we used a ranking of water users by 5 indicators adapted to the recommendations of the methodology[9]:

- GVA generated by the industry is an economic indicator of the sector's weight in the sub-basin economy;
- the volume of water withdrawn for the needs of the industry;
- water intensity of the industry compared to other industries;
- The industry's dependence on water quality;
- pollution of water bodies by the industry's waste water.

Table 25: Water intensity of economic sectors

Industry sector	Water intake, million m^3	GDP, UAH million	Water intensity of GVA, m^3 /1000 UAH
Industry	3,496	20238,15	0,17
Housing and utilities	40,24	511,52	78,67
Agriculture	699,0	18585	37,61
Transport	0,3	15069	0,02
Total for the pool	**747,1**	**131092**	**0,59**

Table 26. Socio-economic weight of the main water users

Sectors of the economy	Scope of airborne forces creation	Water intake by the industry	Water intensity of the industry	Dependence on water quality	Waste water contamination
Energy	moderate	low	moderate	low	moderate
Ferrous metallurgy	moderate	low	low	low	low
Chemical industry	moderate	moderate	low	low	low
Mechanical engineering and metalworking	moderate	moderate	low	low	moderate
Woodworking	moderate	moderate	low	low	moderate
Food industry	moderate	moderate	moderate	high	moderate
Coal industry	moderate	low	low	low	low
Housing and utilities	moderate	high	high	high	high
Fisheries	high	high	high	moderate	moderate
Operation of irrigation systems (including irrigation)	high	high	high	high	high
Other types of agriculture (including livestock and crop production)	high	moderate	high	high	low
Transport	high	moderate	low	low	moderate
Recreation and healthcare	moderate	low	moderate	high	moderate
Trade	high	low	low	low	low

9 Report of the European Union "The Economic Value of Water - Water as a Key Resource for Economic Growth in the EU"

Based on the results of the dependency assessment based on the five criteria above, the economic sectors are divided into 5 groups according to their socio-economic importance in the Danube basin.

Group 1 "Full dependence" includes water users that are highly dependent on all 5 or 4 indicators - on water quality, high water intensity, have a significant burden on water resources and produce small amounts of GVA, for example, irrigation (operation of irrigation systems) and housing and communal services. Water in these sectors is a key factor in their operations.

Group 2 "Multiple dependence" includes those with high dependence on at least two indicators - fisheries and agriculture.

Group 3, "Specific dependence", includes those with high dependence on one indicator, such as food industry, transport, trade, recreation and healthcare.

Group 4 "Moderate dependence" includes those with moderate dependence on at least 2 indicators - energy, chemical industry, machine building and metalworking, and woodworking.

Group 5, "Dependence without water use", includes economic sectors that use water without abstraction from natural water bodies, generate low volumes of GVA and are minor polluters. This group includes the coal industry and ferrous metallurgy.

According to the assessment of the socio-economic significance of irrigation (operation of irrigation systems) and housing and communal services, they are completely dependent on water resources and are the most water-intensive sectors of the economy (78.67 m^3/1000 UAH).

6.2.1 Municipal water use

The Danube RBF is characterised by different priorities for economic sectors in terms of water use in its sub-basins. For example, in the Tisza, Prut and Siret sub-basins, the main water user is the housing and utilities sector. Whereas in the Lower Danube sub-basin, irrigation (operation of irrigation systems) is predominant.

Municipal water use is aimed at meeting the drinking and domestic needs of the population, household and public utilities, public services, and industrial enterprises in settlements connected to local water supply systems. The volume of municipal water consumption depends on the number of residents, the degree of urbanisation and climatic conditions. Municipal water use is mainly concentrated in large settlements, such as Chernivtsi, Uzhhorod, Kolomyia, Kosiv, Verkhovyna, Yaremche, Sniatyn, Kitsman, Storozhynets, Hlyboka, Mukachevo, Svaliava, Izmail, Bolhrad, Kilia, Vilkovo, etc.

In 2019, water users in the residential and communal sector withdrew 40.24 million m^3 of water (5.4% of the total water withdrawal in the basin) and used 30.37 million m^3 of water.

The largest water users in this sector in the basin are Mukachevvodokanal - 8.978 million m^3, Municipal Enterprise "Vodokanal of Uzhhorod" - 8.749 million m^3, "Chernivtsi Vodokanal" - 4.766 million m^3, "Izmail VUVKG" - 1.862 million m^3, "Vynohradiv VUZHKG" - 1.003 million m^3, Khust VUVKG - 0.740 million m^3, Svalyava RKPVV - 0.705 million m^3, Storozhynets VUVKG - 0.257 million m^3, Kitsman VUVKG - 0.226 million m^3, ME "Svitlo" Kiliya - 0.173 million m^3, Municipal Enterprise of the Bolhrad City Council "Horvodokanal" - 0.141 million m^3, Hlybotske VUZHKG - 0.131 million m^3, Municipal Enterprise "Vilkovo Miskodokanal" - 0.084 million m^3.

Water losses during transportation for own needs in the municipal sector are significant and amount to 14.818 million m^3. The housing and utilities sector is the second largest polluter in the basin after agriculture, as it discharged 3.804 million m^3 of polluted wastewater in 2019 (10.4% of the total discharge of polluted water within the basin).

The rate of physical deterioration of water supply and sewerage facilities outstrips the dynamics of their renewal and development, which directly depends on the capacity of the state and local budgets to finance these activities. The main problems of the housing and communal services sector are the uneven nature of water supply coverage (for example, in the Tisza sub-basin, only 7 cities and 9 villages receive round-the-clock water supply services, while other settlements are supplied with water according to a schedule), insufficient coverage of the population by sewage systems, deterioration of the water supply and sewage network, inefficient operation of treatment facilities, which leads to the supply of inadequate quality water to consumers and discharge of polluted water into water bodies. The current increase in the quantitative indicators of sanitary standards for drinking water necessitates the re-equipment of existing water treatment plants with the introduction of the latest water treatment technologies and the construction of new ones.

6.2.2 Industrial water use (by major water users, including energy)

Water abstraction by industrial water users in 2019 amounted to <1% of the basin (3.496 million m^3). The needs of industrial water users are met both from groundwater bodies and surface water bodies. The water used by industry is 3.691 million m^3.

The largest consumers of water are the forestry and woodworking industry (1.886 million m^3), food processing (0.639 million m^3) and pulp and paper (0.480 million m^3).

The main industrial water users in the basin are the following enterprises: PJSC "Pulp and Cardboard Mill", ALC "Perechyn Timber and Chemical Plant" - 0.502 million m^3, Mamalyhiv Gypsum Plant - 0.284 million m^3, SE "Ukrspirt" Zaluchanske MPD Sniatyn district - 0.213 million m^3, UAP LLC "Fischer-Mukachevo" - 0.120 million m^3, PJSC "Khust Quarry" - 0,108 million m^3, ALC "Svalyava Mineral Waters" - 0.092 million m^3, Gravel and sand quarry (Nepolokivtsi) - 0.071 million m^3, Bukovyna Factory LLC, GKD "Lamel", Krasnoilsk, Storozhynets district - 0.06 million m^3, Chernivtsi Oil and Fat Plant (Chernivtsi) - 0.051 million m^3, Flextronics LLC - 0.040 million m^3, PJSC Ukrnafta Nadvirna oil and gas production division, Nadvirna Nadvirna - 0.031 million m^3, LLC Technobud - 0.023 million m^3, LLC Leonie Varing Systems UA GmbH Kolomyia - 0.022 million m^3.

There are no water losses during transportation for own needs in the industry.

The share of wastewater discharges from industrial water users is only 2.5% (3.281 million m^3), of which 0.077 million m^3.

Analysis of trends in industrial water use in the Danube basin shows a significant reduction over the past 20 years. There are two reasons for this. Firstly, the country's economy as a whole has undergone a significant restructuring, which has caused a significant reduction in industrial production. Secondly, economic factors encourage companies to introduce waterless technologies, switch to water recycling or modern water-saving technologies.

6.2.3 Water use in agriculture

Agriculture is the largest water consumer in the Danube basin. Non-returnable water consumption in agriculture accounts for 56.5% of all non-returnable water consumption in Ukraine.

The main areas of water use in agriculture are irrigation (the main share is concentrated in the Lower Danube sub-basin), watering, fisheries (predominantly in the Tisza, Prut and Siret sub-basins, including trout farms), livestock, crop production and poultry farming. Water use in agriculture is a very important and significant area in its socio-economic development. Unlike in industry, where water can sometimes be replaced in the technological process, in agriculture it cannot be replaced by anything else, and irrigation of crops allows for good results.

According to state water use accounting data for 2019, agricultural entities in the basin withdrew 699.0 million m^3 of water (94% of the total water withdrawal within the basin). The agricultural water supply needs in the basin are met mainly from surface sources. Water was used - 164.0 million m^3.

The largest water use was carried out by: Mayak - 30.166 million m^3 , Debut-2005 LLC - 23.395 million m^3, Rice of Bessarabia LLC - 23.239 million m^3, Kamolino-Holding LLC - 11.206 million m^3, Transcarpathian Fish Factory ALC - 8,770 million m^3, LLC JV "Danube-Agro" - 6.842 million m^3, UTMR Vynogradiv District Organisation - 0.957 million m^3, FG "Konik" - 0.515 million m^3, LLC "Pokuttya-Fruit" - 0.390 million m^3, FOP Isayovych F.F. Isayovych - 0.211 million m^3, Klyachanivskyi Pond - 0.167 million m^3, VK Firm Varto LLC - 0.068 million m^3, Poultry Farm Sniatynska Nova LLC - 0.032 million m^3, Rodnyk Plus LLC - 0.022 million m^3.

In 2019, agricultural water users discharged 71.34 million m^3 of return (wastewater) (55.1% of the total discharge within the basin), of which 32.56 million m^3, 38.76 million m^3, and 0.025 million m^3, which were normatively clean without treatment.

6.2.4 Water use in transport

Water use in transport involves the use of water resources, both surface and groundwater, for various types of transport, including water and land.

In 2019, water users in the transport sector withdrew 0.3 million m^3 of water (<1% of total water withdrawals). Water use by transport in the basin is 0.548 million m^3 .

The largest water users in this sector: Lviv Territorial Administration - 0.712 million m^3, Ivano-Frankivsk water supply distances of Hlyboka-Bukovynska and Storozhynets stations. Storozhynets - 0.056 million m^3, PJSC "Ukrzaliznytsia" Kolomyia state station - 0.036 million m^3, LLC "Gas Transmission System Operator" - 0.018 million m^3, PJSC "Ukrzaliznytsia" state station Korshiv - 0.008 million m^3, separate enterprise "Motor-car depot Kolomyia" - 0.006 million m^3, JSC "Uzhhorod ATP - 12107" - 0.005 million m^3.

Water users in the transport sector discharged 0.021 million m^3 of waste water (<0.1% of the total discharge within the basin), of which 0.021 million m^3 were treated at standardised facilities.

6.2.5 Other types of water use

Other types of water use carry out insignificant water withdrawals in the amount of 4.011 million m^3 of water, which is <1% of the total water withdrawal in the basin. Other sectors of the economy include healthcare, food, trade, logistics, construction, communications, physical education, and education. In 2019, other types of water users discharged 2.272 million m^3 of wastewater, of which 0.089 million m^3 were discharges of polluted wastewater. Other types of water use do not have a significant impact on the state of surface waters, as they account for only 1.8% of the total wastewater in the basin.

6.3 Forecast of water demand by major economic sectors

The forecast of water demand in the basin as a whole by the main sectors of the economy is made for the period of the RBMP (until 2030) under three scenarios: realistic, optimistic and pessimistic.

The basis for the forecast is the total water withdrawals within the basin for the period 2015-2019, their total volume and by economic sector. The forecast of water withdrawals is based on Ukraine's GDP for the same period and its forecast value for the short, medium and long term. The steps of the optimistic and pessimistic scenarios were calculated by determining the average annual deviations for the previous years from the forecast values.

The main factors affecting water use in the Danube basin include the following:

- the spread of the COVID-19 pandemic and the introduction of restrictive measures;
- economic development - mainly agriculture;
- natural and geographical: borders with EU countries, flood-prone regions, climate change → increased irrigation (the Lower Danube sub-basin is mostly used for the operation of irrigation systems (including irrigation).

Forecasting of water intake for the short-term period - for 2021, based on the European Bank for Reconstruction and Development's GDP Forecast for Ukraine for 2021[10].

For the medium-term period - 2021-2023 - the forecast is based on the "Forecast of Economic and Social Development of Ukraine for 2021-2023 of the Ministry of Economy, Trade and Agriculture of Ukraine"[11].

The long-term forecast period - 2024-2030 - was calculated on the basis of analytical materials from USDA, World Bank, IMF, IHS, Oxford Economic Forecasting[12,13], which forecasts Ukraine's GDP growth by 3.2% annually.

The global outlook remains highly uncertain due to the pandemic. With effective strategies for Ukraine's recovery and development, including their high-quality and unimpeded implementation, it is possible to eliminate the effects of the pandemic on the economy and stimulate further development of economic potential in a fairly short period of time.

The method used to forecast water withdrawal rates was to calculate the projected exponential growth based on available data.

Preliminary expert forecasts of water withdrawal trends indicate an increase in water withdrawals in line with the economic recovery.

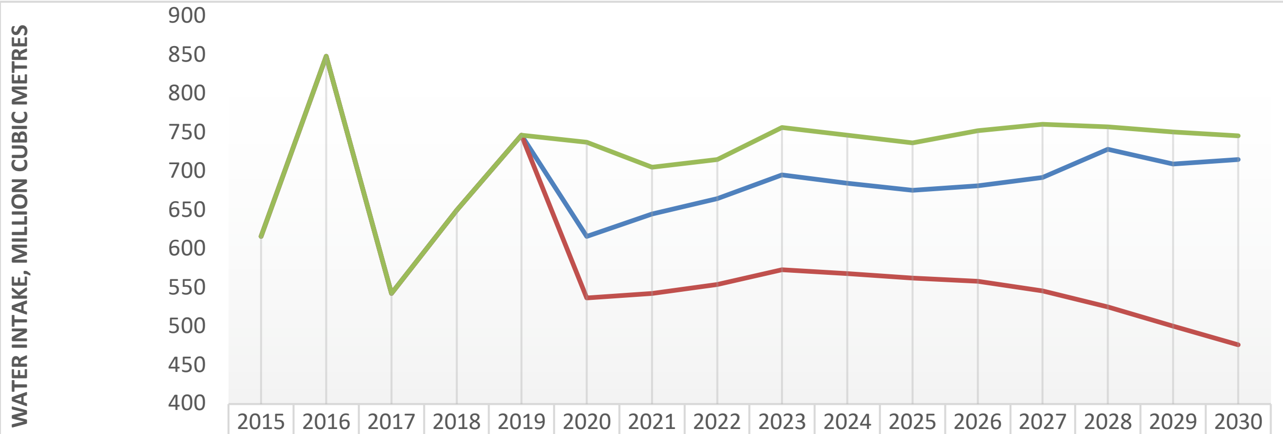
Analysis of Figure 31 shows an increase in water use in the Danube basin in 2021, and this trend continues until 2023. In the period 2026-2028, there is a trend of consistent growth in water intake due to the growing needs of economic sectors.

[10] Anthony Williams. EBRD revises down economic forecasts amid continuing coronavirus uncertainty. European Bank for Reconstruction and Development. URL: https://www.ebrd.com/news/2021/ebrd-revises-down-economic-forecasts-amid-continuing-coronavirus-uncertainty.html.

[11] Forecast of economic and social development of Ukraine for 2021-2023. Ministry for Development of Economy, Trade and Agriculture of Ukraine. URL: https://www.me.gov.ua/Documents/Detail?lang=uk-UA&id=98c3a695-56bb-42ba-b651-60ce1f899654&title=PrognozEkonomichnogoISotsialnogoRozvitkuUkrainiNa2021-2023-Roki.

[12] Forecast of global economic development until 2030. Ukrainian Institute for the Future. URL: https://strategy.uifuture.org/prognoz-rozvitku-sv%D1%96tovoi-ekonom%D1%96ki-do-2030e.html.

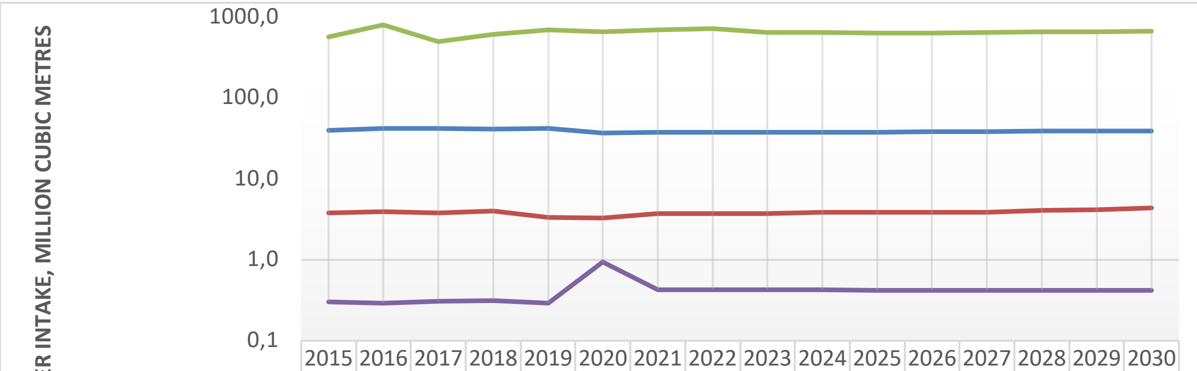
[13] International Macroeconomic Data Set. United States Department of Agriculture. URL: https://www.ers.usda.gov/data-products/international-macroeconomic-data-set.aspx.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
realistic	615,91	848,63	542,7	650,43	746,51	615,94	644,8	664,9	695,2	685,2	675,3	681,2	692,5	728,3	709,3	715
pessimistic	615,91	848,63	542,7	650,43	746,51	536,74	542,9	553,9	573,6	568,4	562,8	558,5	545,7	524,9	500,1	476,4
optimistic	615,91	848,63	542,7	650,43	746,51	737,84	705,8	715,4	756,3	746,9	736,6	752,6	760,7	757,8	751,1	746,2

Figure 31. Forecast of water abstraction in the Danube basin by 2030, million m^3

The results of forecasting water withdrawals in the Danube basin by 2030 by economic sector are shown in Figure 32.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Public utilities	40,0	42,4	42,1	41,2	42,4	37,2	37,8	37,8	37,9	38,1	38,3	38,5	38,9	39,2	39,5	39,7
Industry	3,8	3,9	3,8	4,0	3,3	3,3	3,8	3,8	3,8	3,9	3,9	3,9	3,9	4,1	4,2	4,4
Agriculture	578,2	809,4	502,5	612,6	698,7	670,3	707,2	727,2	657,2	647,1	637,2	642,8	653,7	658,9	669,5	674,7
Transport	0,3	0,3	0,3	0,3	0,3	0,9	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4

Figure 32. Forecast of water withdrawals by economic sectors in the Danube basin by 2030, million m^3

Within the basin, agriculture (mainly the operation of irrigation systems in the Odesa region) is the most developed sector, and it also abstracts the largest volumes of water, which affects the overall forecast of water abstraction in the Danube basin.

The housing and utilities sector is a significant water user in the basin. Water withdrawals by this sector decreased by 12% in 2020. In 2021, there was a slight increase in water abstraction for the needs of the housing and communal services sector, which was affected by quarantine restrictions and hygiene and sanitary innovations due to the impact of the COVID-19 pandemic. Starting in 2022, water withdrawals by the utility sector stabilised.

For the Danube basin industry, the projected water withdrawal volumes from 2021 have increased significantly due to regional economic growth.

Significant growth in water withdrawals by transport sector water users is not expected in the future.

6.4 Tools of economic control

6.4.1 Payback of water resources use

The payback of water resources use is the ratio of funds received from the use of water resources to funds spent on the provision of water services. The description of water services and water use in the Danube basin is presented in accordance with the institutional structure of water services regulation:

I. Centralised water supply and sewerage services.

II. Special water use by economic sectors - payments and fees are paid to the budgets of all levels (rent, environmental tax for discharges into water bodies in Ukraine, lease of water bodies).

III. Water supply services for irrigation.

I. PAYBACK OF CENTRALISED WATER SUPPLY AND SEWERAGE SERVICES

In the Danube basin, centralised water supply and sewerage services are provided by licensees of the National Energy and Utilities Regulatory Commission and organisations licensed by local governments.

In the Lower Danube sub-basin (Odesa region), centralised water supply and sewerage services are provided by more than 10 organisations licensed by local governments.

Water and sewerage companies receive the largest revenues. According to estimates, water and sewerage companies - NEURC licensees in the basin (2 licensees[14]) received about UAH 510 million[15] (including VAT) in 2020.

According to estimates, local government licensees in the Lower Danube sub-basin (Odesa region) received UAH 100.24 million (including VAT) in 2020.

The payback period for water supply and sewerage services in the basin is calculated as the ratio of tariff to cost. Due to the insufficient level of customer payments for services provided, which amounted to >90% in 2020, there is a situation of insufficient coverage of water services by customer payments and a threat to the sustainability of water services. The level of customer payments for the Uzhhorod Water Supply and Sewerage Production Department is 92.4%, and for Chernivtsi Vodokanal - 93.1%, which corresponds to a high level. The condition of water supply and sewerage networks in the Danube basin is unsatisfactory, which affects water quality. The main source of investment in 2020, as in previous years, was depreciation in the amounts stipulated in the tariff structures. Funds were also raised at the expense of the profit provided for in the tariff structure of licensees. However, none of the companies provided for the use of profits to form a reserve fund (capital) for modernisation or for production investments, which should have been provided for in their business activities. According to the NEURC, "the amount of production investments from profits is determined in the amounts necessary for the gradual restoration of networks (improvement of the functioning of water and sewerage enterprises), and taking into account the needs to fulfil the financial obligations of licensees to international financial organisations". However, this level is extremely insufficient.

II. PAYBACK OF THE USE OF WATER RESOURCES IN THE** DANUBE **BASIN

(based on public finance calculations)

1. *REVENUES FOR SPECIAL WATER USE*

In accordance with the principles of "user pays" and "polluter pays" The Tax Code of Ukraine establishes fees for special water use:

A. Rent for water abstraction for different types of water users.
B. Environmental tax on discharges into water bodies.

In addition, there is a fee for the use of water bodies for aquaculture purposes:

C. Rent for water bodies.
D. Payment for special use of water bioresources.

A. Rent for special water use

The state (general and special funds combined) and local (general fund) budgets received a total of UAH 42.645 million from business entities in the Danube basin by administrative region in 2018, UAH 41.221 million in 2019, and UAH 39.624 million in 2020. The maximum rent revenues to the budgets in the Danube basin were observed in 2018. In 2019-2020, there is a downward trend in rent revenues. The Tisza, Prut, and Siret sub-basins are among the lowest in Ukraine in terms of rent revenues for special water use.

Table 28. Dynamics of rent revenues for special water use to the state and local budgets in the Danube basin, UAH million[16] ,[17]

[14] NEURC data in the water supply and sewerage sector

[15] Hereinafter, calculations were made on the basis of available statistics in Ukraine

[16] "Rent for special water use"

[17] Source: Local budget revenue reports, state budget revenue reports

Year/ region/ sub-basin	Tisza sub-basin		Prut and Siret sub-basins				Lower Danube sub-basin		Together	
	Transcarpathian region		Ivano-Frankivsk region		Chernivtsi region		Odesa region			
	state budget	local budgets	state budget	local budgets	state budget	local budgets	state budget	local budgets	state budget	local budgets
2018	8,640	7,077	5,000	4,091	7,940	6,497	3,4	-	**24,98**	**17,665**
2019	8,223	6,745	5,224	4,275	7,455	6,099	3,2	-	**24,102**	**17,119**
2020	9,011	7,378	4,032	3,299	7,086	5,798	3,02	-	**23,149**	**16,475**

B. Environmental tax on discharges of pollutants into water bodies

In the Danube basin, in 2018-2020, the state budget and the special fund of local budgets received a total of UAH 20.966 million in tax revenues for pollutant discharges directly into water bodies. More than half of these funds (55%) are taken by local budgets in accordance with the budget allocation (Table 29). Since 2019, there has been a downward trend in the total amount of environmental tax revenues from discharges of pollutants into water bodies to both the state and local budgets.

Table 29: Dynamics of environmental tax revenues from discharges into water bodies to the state and local budgets in the Danube basin, UAH million[18]

Year/ region/ sub-basin	Tisza sub-basin		Prut and Siret sub-basins				Lower Danube sub-basin		Together	
	Transcarpathian region		Ivano-Frankivsk region		Chernivtsi region		Odesa region			
	state budget	local budgets	state budget	local budgets	state budget	local budgets	state budget	local budgets	state budget	local budgets
2018	0,549	0,671	0,423	0,518	0,288	0,352	4,24	-	**5,5**	**1,541**
2019	0,949	1,160	0,336	0,411	0,348	0,425	3,79	-	**5,423**	**1,996**
2020	0,769	0,940	0,340	0,416	0,365	0,446	3,23	-	**4,704**	**1,802**

C. Payment for the lease of water bodies

The weighted average rent is unified for all water bodies and is constantly increasing. Its dynamics is as follows:

- in the Tisza sub-basin in 2017 - UAH 46,339 thousand, 2018 - UAH 46,668 thousand, 2019 - UAH 67,436 thousand and 2020 - UAH 71,021 thousand;
- in the Prut and Siret sub-basins in 2017 - 156.9 UAH/ha, in 2018-2020 - 162.7 UAH/ha;
- in the Lower Danube sub-basin in 2017 - 156.9 UAH/ha, in 2018-2020 - 162.7 UAH/ha.

The local budgets of the Tisza, Prut and Siret sub-basins are estimated to have received rent for water bodies (parts thereof) in the amount of UAH 194.75-179.67 thousand in 2017-2020. While in the Tisza sub-basin there is a steady trend towards a gradual increase in water body rent (compared to 2017, local budget revenues from water body rent (parts thereof) in 2020 increased by almost 35%), in the Prut and Siret sub-basins there is a downward trend in water body rent (by almost 40% compared to 2017).

According to estimates, local budgets in the Lower Danube sub-basin received rent for water bodies (parts thereof) in the amount of UAH 18.2-214.6 thousand in 2019-2020, including 2019 - UAH 18.2 thousand, 2020 - UAH 214.6 thousand. The dynamics of rent revenues for water bodies to the budgets of the sub-basin regions is positive.

According to the State Tax Service of Ukraine, local budgets of all levels in Ukraine received a total of UAH 10 million for the lease of water bodies in 2017-2018, UAH 13.5 million in 2019, and UAH 14 million in 2020.

18 "Revenues from discharges of pollutants directly into water bodies"

Revenues from rents for water bodies (or parts thereof) to local budgets in the Danube basin are shown in Table 30.

Table 30. Dynamics of rent revenues to local budgets in the Danube basin, UAH[19]

Region/year	2017	2018	2019	2020
Transcarpathian	46393,29	46668,84	67436,08	71021,0
Ivano-Frankivsk	38497,7	55248,9	51027,4	32261,3
Chernivetska	109861,3	93786,8	84309,1	76393,3
Odesa	no information available		18200,0	214600,0
Together	**194752,29**	**195704,54**	**220972,58**	**394275,6**

D. Payment for special use of fish and other aquatic bioresources

Payments for the use of fish and other aquatic bioresources were made in accordance with the Resolution of the Cabinet of Ministers of Ukraine.[20]

According to the report on local budgets, there were no revenues from fees for the special use of fish and other aquatic bioresources (*"Fees for the special use of fish and other aquatic resources") in the* Tisza sub-basin in 2017-2020.

In the Prut and Siret sub-basins, there were no revenues from fees for the special use of fish and other water resources in 2017-2019. In 2020, only Ivano-Frankivsk region (with a 35% share in the sub-basin) received UAH 8.1 thousand.

In the Lower Danube sub-basin, according to the report on local budgets, the fee for the special use of aquatic bioresources amounted to UAH 70.02 thousand in 2018, UAH 184.59 thousand in 2019, and UAH 1574.5 thousand in 2020.

Table 31. Dynamics of revenues from fees for the special use of water bioresources to local budgets in the Danube basin, thousand UAH

Region/year	**2017**	**2018**	**2019**	**2020**
Transcarpathian	-	-	-	-
Ivano-Frankivsk	-	-	-	8,1
Chernivetska	-	-	-	-
Odesa	-	70,02	184,59	1574,5
Together	**-**	**70,02**	**184,59**	**1582,6**

1. *EXPENDITURE ON WATER RESOURCES IN THE DANUBE BASIN*

A. Capital and current expenditures from the state and local budgets for environmental programmes in the field of water resources protection

According to state statistical reports, capital investments and current expenditures are allocated to nine environmental areas, including those directly related to the reproduction and protection of water resources:

- waste water treatment;
- protection and rehabilitation of soil, groundwater and surface water.

The share of the first direction is more significant than the second; together they account for about half of all expenditures from the total amount of capital and current expenditures in all directions. These two areas are funded from the state (including the State Environmental Protection Fund (SEPF)) and local budgets (including local SEPF funds), own funds, and other sources of financing.

Information on capital and current expenditures in 2018-2020 is provided in the state statistical reports. The dynamics of capital and current investments in the Prut and Siret sub-basins and the Lower Danube sub-basins in 2018-2020 is shown in Table 32.

Table 32. Dynamics of capital and current investments in the sub-basins of the Prut and Siret and the Lower Danube, thousand UAH

[19] "Rent for water bodies (parts thereof) provided for use on a lease basis by regional, district and local councils"

[20] Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure for Charging Fees for the Special Use of Water Bioresources and the Amount of Fees for Their Use" of 12 February 2020, No. 125

Area.	2018			2019			2020		
	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water
Ivano-Frankivsk	308718,6	121475,8	33015,8	308718,6	121475,8	33015,8	299001,9	100832,2	71907,7
Chernivetska	123272,9	62401,3	7384,7	123272,9	62401,3	7384,7	196513,2	89997,7	59956,8
Odesa	88024,1	27550,8	209,7	88024,1	27550,8	209,7	176299	30635,2	6223
Together	**520015,6**	**211427,9**	**40610,2**	**520015,6**	**211427,9**	**40610,2**	**671814,1**	**221465,1**	**138087,6**
% of programmes from the total		**40,7**	**7,8**		**40,7**	**7,8**		**33**	**20,6**
A total of 2 water protection programmes		**252038,1**			**252038,1**			**359552,7**	

A total of UAH 369.112 million was allocated to the Danube basin in 2020. In 2020, there was an increase in capital and current expenditures due to capital investments in the area of soil, groundwater and surface water protection and rehabilitation. These expenditures are allocated to flood protection and bank protection measures, given the increased risk and periodic destructive effects of floods and floods in the basin.

B. State budget expenditures for the maintenance of water infrastructure under the management of the State Agency of Water Resources

In the Danube basin, water infrastructure maintenance activities are carried out by organisations under the management of the SAWR - the Tisza River Basin Water Resources Administration, the Prut and Siret River Basin Water Resources Administration, the Dniester River Basin Water Resources Administration (in terms of activities within Ivano-Frankivsk Oblast), and the Black Sea and Lower Danube River Basin Water Resources Administration.

UAH 104624.2 thousand was allocated for the maintenance of the water management complex in Zakarpattia region, including:

- under the programme "Operation of the State Water Management Complex and Water Resources Management" - UAH 70938.5 thousand, of which UAH 65805.1 thousand from the general fund and UAH 5133.4 thousand from the special fund;
- under the programme "Protection from harmful effects of waters of rural settlements and agricultural lands, including in the Tisa River basin in Zakarpattia oblast" (Environmental protection measures) - UAH 20388.9 thousand;
- under the programme "Protection from harmful effects of waters of rural settlements and agricultural lands, including in the Tisa River basin in the Transcarpathian region" - (Reserve Fund of the State Budget) - UAH 13296.8 thousand.

In addition to state funding, in 2020, the Tisza RBMU managed to attract funds from local budgets, business entities, and international grants aimed at developing the water sector and environmental rehabilitation of the Tisza sub-basin:

- implementation of the "Regional Target Programme for the Development of Water Management and Environmental Improvement of the Tisa River Basin in the Transcarpathian Region for 2013-2021" in accordance with the order of the Head of the Transcarpathian Regional State Administration No. 155 dated 19.03.2020 - UAH 10745.1 thousand;
- implementation of international projects in the water sector - UAH 24173.8 thousand.

Total expenses for 2020 amounted to UAH -139543.10 thousand.

Expenditures for the operation of water infrastructure in the Prut and Siret sub-basins are carried out under the comprehensive programme "Operation of the State Water Management Complex and Water Resources

Management" and amounted to UAH 36804.5 thousand in 2020 (UAH 23321.08 thousand for the Prut and Siret sub-basins and UAH 13483.42 thousand for the Dniester sub-basin).

In the Lower Danube sub-basin, expenditures for the operation of water infrastructure are carried out under the comprehensive programme "Operation of the State Water Management Complex and Water Resources Management" and amounted to UAH 10,086.4 thousand in 2020.

DETERMINING THE PAYBACK OF WATER RESOURCES USE IN THE DANUBE BASIN

If the payback ratio of water resources use is calculated using the formula "Revenues / Expenses * 100":

- is more than 100%, this means that all costs are reimbursed by paying tax and non-tax revenues for services to budgets of all levels or by tariffs; budget revenues, if intended, can be used for water resources restoration; enterprises receive profits that can be used for production development - production investments, formation of a reserve fund (capital), etc;
- If the indicator is less than 100%, this indicates a threat to the sustainability of the service, as the costs of budgets or enterprises are not covered by the revenues received. The calculated return on water resources use is 7.4%, which means that costs are higher than tax revenues for water services (Table 33).

Table 33. Balance of revenues and capital expenditures in 2020

SOURCES	amount, thousand UAH	EXPENSES	amount, thousand UAH
Rent for special water use (state and local budgets)	39627,789	Capital investments in water resources restoration and protection	369111,626
Environmental tax on discharges into water bodies (state and local budgets)	6508,117	Expenditures from the state budget for the operation of the state water management complex	277434
Rent for water bodies (parts thereof) provided for use on a lease basis (local budgets)	394,321		
Payment for aquatic bioresources	1582,7		
TOGETHER	**48112,927**	**TOGETHER**	**646545,626**
ROI	**7,4%**		

This level of payback indicates a critical situation in terms of covering the costs of water services. Revenues are significantly lower than expenditures from the state and local budgets. The calculated level of cost recovery indicates that tax mechanisms in the area of cost recovery for the use of water resources in the Danube basin do not ensure the sustainability of service provision

6.5 Water tariffs

6.5.1 Tariffs for centralised water supply and sewerage

In accordance with the requirements of the institutional structure in Ukraine, the following types of tariffs are set by the NEURC and local governments for centralised water supply and sewerage services:

1. tariff for centralised supply (cold water) and sewerage (cold and hot water combined) (calculated by water utilities, approved by the NEURC for its own licensees, local governments for other local licensees) and centralised water supply (hot water) (calculated by Teploenergo enterprises, approved by the NEURC for its own licensees, local governments for other local licensees);

2. tariff for centralised supply (cold water, hot water separately) and sewerage (cold and hot water) using in-building systems.

The NEURC licenses the activities of water supply companies (water utilities) if these companies serve more than 100,000 people, the volume of water supply is more than 300,000 m^3, the volume of water disposal is more than 200,000 m^3.

When setting tariffs, the NEURC is guided by the principle of balancing the interests of consumers, business entities and the state: it limits the planned costs of licensees to an economically justified level that should ensure self-sufficiency of their activities, provided that they are managed efficiently and use resources economically, and at the same time provides for the necessary investments for the safe and sustainable operation of water and sewerage systems.

As of the beginning of 2021, tariffs for centralised water supply and sewerage were set by the NEURC in the Danube basin for 2 licensees (1 in the Tisza sub-basin, 1 in the Prut and Siret sub-basin), which have tariffs for other water utilities (water and wastewater business entities). There are no NEURC licensees in the Lower Danube sub-basin.

The main items in the structure of the NEURC licensees' cost of services in 2020 continued to be labour costs (including social benefits) and electricity purchase. Less significant cost components are depreciation, repair costs, reagents and fuels and lubricants, as well as taxes and fees, including the fee for special use of water (rent), and subsoil use fees for fresh groundwater extraction.

The NEURC is included in the tariff structure of licensees:

- for centralised water supply: labour costs (45-57%); electricity (26-35%), etc;

- wastewater disposal: labour costs (55-63%); electricity costs (20-30%), etc.

Water supply and wastewater services in the Danube basin are provided by enterprises licensed by local authorities - these are communal enterprises of district, city, town and village councils and even some village councils. Local governments have set tariffs for centralised water supply and wastewater disposal for 48 companies in the Danube basin. However, the tariffs differ for different categories of users - households, budgetary organisations and commercial organisations. In general, local tariffs are higher than those of the NEURC licensees. Another peculiarity is that, as a rule, the tariff for wastewater, which includes wastewater treatment, is higher than the tariff for water supply.

The total tariffs for all licensees of the Danube basin local governments are as follows (including VAT):

- for centralised water supply services: the minimum is 5.80 UAH/m³ (for the population of Nepolokovets Communal Utility), the maximum is 45.06 UAH/m³ (for budgetary and other organisations of Sniatynskyi Vodokanal);
- for centralised sewerage services: minimum - 2.21 UAH/m³ (for the population of the Solotvyno Water Utility), maximum 38.00 UAH/m³ (for budgetary and other organisations of the Kitsman City Council).

6.5.2 The cost of water for industrial enterprises

The cost of water is actually paid by industrial enterprises in the form of a mandatory payment for special water use - rent. The object of taxation for rent for special water use is the actual volume of water used by water users. In the case of surface water use, the rental rate depends on the needs of the use, the place and region of consumption, and the actual volume of water used. No rent is paid if the volume of consumption is less than 5 m³/day and the water user does not have its own water intake facilities. The rate of rent for special use of surface water in the Danube River basin is the lowest in Ukraine. In the case of groundwater use, the rates of rent for special water use are set by the Tax Code of Ukraine and are differentiated by region. The rates for groundwater use are among the highest in Ukraine. The rates of rent for special use of surface and groundwater in the Danube basin are set out in Table 35.

Housing and communal enterprises apply a coefficient of 0.3 to rent rates in terms of water volumes of technological standards for the use of drinking water determined in accordance with the legislation on drinking water, drinking water supply and sewerage.

Fees for pollution of water bodies are received in the form of fines and environmental tax for discharges of pollutants into water bodies.

Cost of water supply services for irrigation

The state-owned operators of the irrigation water supply market are water management organisations of the State Agency of Water Resources.

The cost of such services is formed on the basis of a unified approach, which is defined by the order of the State Agency of Ukraine for Water Resources and is determined on the basis of economically justified costs directly related to their provision. The costs include: direct labour costs, direct material costs and other direct costs, general and administrative expenses, including costs of renewal and modernisation of fixed assets used in the amount of 10% of direct costs. This cost is differentiated according to technological features.

The principle of pricing this service is not aimed at making a profit, as the state in the risky farming zone has undertaken to subsidise agricultural production. The service of supplying water for irrigation is a kind of subsidy to agribusiness in the form of reducing the cost of irrigation through state maintenance (operation) of irrigation systems and service personnel.

The peculiarity of cost formation is that the calculation of the cost of this service includes the costs of water supply that are not covered by budget financing (including electricity, salaries, capital expenditures).

The cost of the service does not include the cost of water as a resource, as water management organisations are not primary water users.

The cost of water supply for irrigation as of 2020 varied from 1.08 to 3.51 UAH/m³ (Table 37).

Table 37. Cost of water supply for irrigation in the Danube basin (Lower Danube sub-basin), 2018-2020, UAH/m^3 (excluding VAT)

Oblast	The cost of everything			Including the cost of	
	2018	2019	2020	electricity	own services
Odesa	**0,23-2,48**	**0,64-3,51**	**0,87-2,81**	**0,35-1,85**	**0,52-0,96**
Bolgrad district	1,29-2,48	1,71-3,51	0,87-2,81	0,42-1,85	0,45-0,96
Reni district	1,25-2,19	2,02-2,86	1,54-2,63	0,58-1,67	0,96-0,96
Izmail district	0,23-1,45	1,08-1,84	1,08-2,14	0,47-1,43	0,61-0,71
Kiliya district	0,58-1,22	0,64-1,86	0,87-0,95	0,35-0,42	0,52-0,53
Artsyz district	0,77-1,18	1,59-2,5	1,38-1,51	0,7-0,83	0,68-0,68

Funds received for the provision of paid services are transferred to a special fund of the State Budget of Ukraine and used in accordance with the budget of the water management organisation approved by the SAWR.

7 A REVIEW OF THE IMPLEMENTATION OF PROGRAMMES OR ACTIVITIES, INCLUDING HOW THE OBJECTIVES HAVE BEEN ACHIEVED

This section provides an overview of the implementation of environmental protection measures within the Danube basin, which were funded by national targeted programmes, the State Environmental Protection Fund, relevant regional and local programmes or funds, the State Regional Development Fund, state investment projects, international technical assistance projects, and regional and local infrastructure projects.

Among the numerous national environmental programmes developed in Ukraine, we will first analyse the implementation of the Dnipro Programme activities. Clause 4 of the CMU Resolution No. 336 of 18 May 2017 "On Approval of the Procedure for Developing RBMPs" states that the development of the first RBMPs for each RBD is carried out during the period of implementation of the Dnipro Programme. In accordance with clause 11 of the said Procedure, the measures to develop the first RBMPs for each RBD are financed from the state budget, which is provided for by the same Dnipro Programme within the expenditures envisaged by the State Budget of Ukraine for the respective year, as well as from other sources. The implementation of this Programme is important both in the context of preparing the RBMP and implementing the PoM to achieve the strategic environmental objective for the Danube RBD SWBs.

The purpose of the Dnipro Programme is to define the main directions of state policy in the field of water management, conservation and restoration of water resources, implementation of an integrated water resources management system based on the basin principle, restoration of the role of reclaimed land in the food and resource supply of the state, optimisation of water consumption, prevention and elimination of the consequences of harmful water impact.

The main objectives of the Dnipro Programme are:

- harmonisation of Ukrainian legislation with international standards and improvement of the regulatory framework for innovation and investment development of the water sector; (*partially implemented)*;
- Implementation of an effective, justified and balanced mechanism for the use, protection and reproduction of water resources, ensuring sustainable development of the state water monitoring system in accordance with international standards (*achieved)*;
- Implementation of the integrated water resources management system based on the basin principle, development and implementation of river basin management plans, application of the economic model of targeted financing of activities in river basins, establishment of river basin councils, as well as enhancement of the role of existing and creation of new basin water resource management agencies (*partially implemented)*;
- Improving the technological level of water use, introducing low-water and waterless technologies, developing more rational water use standards, construction, reconstruction and modernisation of water supply and sewage systems (*partially completed)*;
- bank protection and regulation of river channels, construction and reconstruction of hydraulic structures, protective dams, polders, flood control reservoirs, clearing of river channels, arrangement of water protection zones and coastal protection strips, development of schemes for comprehensive flood protection of territories from the harmful effects of water, improvement of methods and technical devices for hydrometeorological observations, flood forecasting (*partially completed*);
- Ensuring the development of land reclamation and improvement of the ecological condition of irrigated and drained lands, in particular, restoration of the water management and reclamation complex, reconstruction and modernisation of reclamation systems and their facilities, engineering infrastructure of reclamation systems with the creation of integrated technological complexes, introduction of new methods of irrigation and land drainage, application of water and energy-saving environmentally safe irrigation and water regulation regimes (*not fulfilled)*.

The creation of a single Dnipro Water Management Programme was intended to consolidate state and local funds for the purpose of achieving its objectives and goals. The estimated amount of its funding was UAH 46478.46 million, including UAH 21029.03 million from the state budget, UAH 9294.2 million from the local budget, and UAH 16155.2 million from other sources not prohibited by law (total dollar equivalent of USD 6.193 billion (as of 01.01.12), USD 688 million annually, 0.4% of Ukraine's gross domestic product (GDP)).

The amount of funding for the Dnipro Programme was determined annually when drafting the State Budget Law of Ukraine for the respective year, taking into account the real possibilities of the state budget, and each year less and less funds were allocated for it. Since the start of the Dnipro Programme's activities, as of 1 January 2019, 26% of the envisaged need has been allocated from budgets of all levels and other sources, and as of 1 January 2020, 17% of the envisaged need, which has led to a significant failure to complete its tasks and activities on time.

The main implementer of the Dnipro Programme was the SAWR. State funds were allocated mainly for the costs of consumption of the water sector, labour remuneration, utilities, the share of which was financed from the state budget, for example, in 2020: from the general fund - 93.5% (UAH 2092158.5 thousand), from the special fund - 81.1% (UAH 2261343.4 thousand). In 2020, total state budget expenditures to finance the Dnipro Programme amounted to UAH 5022671.0 thousand. The lion's share of all funds is used for the operation of the state water management complex and water resources management - UAH 4561352.5 thousand (90.8%).

In the context of the Danube basin, all these generalisations and conclusions on the implementation and financing of the Programme are approximated to the relevant regional water management units. Measures to maintain water infrastructure in the Danube basin are carried out by water management organisations under the management of the SAWR within the respective basin regions: Tisza BUVR (Zakarpattia oblast), Prut and Siret BUVR (Chernivtsi and Ivano-Frankivsk oblasts) and Black Sea and Lower Danube BUVR (Odesa oblast). Expenditures for the operation of water infrastructure are made under the budget programme "Operation of the State Water Management Complex and Water Resources Management" for each separate division of the SAWR, based on the administrative-territorial principle rather than the basin principle, except for the Zakarpattia Oblast, where the Tisa River sub-basin is entirely located within one administrative region. This is the only region in Ukraine where its administrative boundaries coincide with the boundaries of the river basin.

The issue of extending the Programme was resolved by reviewing the amount of funding for the measures and agreeing on their volumes at the central and regional levels. As of 8 June 2021, the Accounting Chamber of Ukraine conducted an audit of the effectiveness of the implementation of the Dnipro Programme activities for the period up to 2021. The purpose of the audit was to identify existing problems with the implementation of the Dnipro Programme and to confirm or deny the need to extend the National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin until 2024.

No less important and necessary was the National Target Programme "Drinking Water of Ukraine for 2011-2020" approved by the Law of Ukraine No. 2455-IV dated 03.03.2005 (hereinafter - the Drinking Water Programme). Its main goal was to ensure the rights of citizens to an adequate standard of living and environmental safety guaranteed by the Constitution of Ukraine by providing drinking water in the required volumes and in accordance with the established standards. To achieve this, the Drinking Water Programme was to ensure the implementation of the state policy on the development and reconstruction of centralised water supply and sewerage systems; protection of drinking water sources; bringing the quality of drinking water in line with the requirements of regulatory acts; regulatory support in the field of drinking water supply and sewerage; development and implementation of research and development using the latest materials, technologies, equipment and devices.

The estimated amount of funding for the Drinking Water Programme was UAH 9,471.7 million (in 2010 prices), of which UAH 3,004.3 million was allocated from the state budget and UAH 6,467.4 million from other sources. Due to the lack of adequate funding over the 10 years of the Drinking Water Programme in Ukraine, there have been no significant positive changes in the provision of drinking water in the required volumes and of the appropriate quality. As of 01.01.2020, about 1% of cities, more than 10% of towns and almost 70% of villages in Ukraine (8.934 million people) were not provided with centralised drinking water supply. Almost 1 in 4 citizens of the country is not provided with centralised water supply. The problem of using imported water covers at least 9 regions of the country and directly affects at least 268,000 people living in 824 settlements. According to global standards for water quantity and quality, Ukraine is classified as a low-water country. Ukraine ranks 37th among 40 European countries in terms of drinking water quality. In terms of water per capita, Ukraine ranks 125th in the global ranking. At the same time, the national target programme "Drinking Water of Ukraine" is not being implemented or financed at all. The last time the Programme was funded was in 2018, when UAH 200 million was allocated from the State Budget of Ukraine, when only water and sewerage companies in Ukraine submitted projects totalling UAH 1.3 billion. Such activity of the companies is caused by their unsatisfactory financial and economic condition, as well as the inability of local governments to provide the necessary support for the renewal of fixed assets from local budgets. Procedures for obtaining grants and loans from international financial institutions are quite lengthy and involve significant risks, so obtaining state funds for the implementation of an infrastructure project was a desirable goal for each water utility. In 2019-2020, the Drinking Water Programme was not funded, and in 2020, it ended altogether.

In 2019, in order to continue supporting water supply and wastewater treatment companies, the Ministry of Regional Development developed and submitted to the central executive authorities and specialised associations a draft law "On Amendments to the Law of Ukraine "On the National Target Programme "Drinking Water of Ukraine" for 2011-2020", which provided for the extension of the Programme for another 5 years. Interagency approval, coordination, and consultations with the Ministry of Finance lasted for 2 years. The Resolution of the Verkhovna Rada of Ukraine No. 980-IX of 5 November 2020 provides for the possibility and expediency of increasing/foreseeing expenditures and providing loans from the general fund of the draft state budget for 2021 under the budget programme "Implementation of the National Target Programme "Drinking Water of Ukraine" for the Ministry of Communities and Territories Development of Ukraine (instead of MinRegion) (clause 2.17.68.).

In accordance with the Decree of the President of Ukraine No. 357 dated 13 August 2021, the decision of the National Security and Defence Council of Ukraine dated 30 July 2021 "On the State of Water Resources of Ukraine" was put into effect, and the Law of Ukraine "On the National Targeted Social Programme "Drinking Water of Ukraine" for 2022-2026" was adopted on 15 February 2022. The purpose of this Programme is to ensure the rights of citizens to an adequate standard of living and environmental safety guaranteed by the Constitution of Ukraine by providing high-quality drinking water in the required volumes and in accordance with the established drinking water quality standards, ensuring the development and reconstruction of centralised water supply and centralised sewerage systems in Ukrainian settlements. A total of UAH 28,588.6 million is to be allocated for the implementation of the Programme, including UAH 16940.3 million from the state budget and UAH 11639.3 million from other sources. The Law of Ukraine "On the State Budget of Ukraine for 2022" provided for funding of the "National Targeted Social Programme "Drinking Water of Ukraine" for 2022-2026" in the amount of UAH 1.0 billion. In accordance with the second paragraph of subparagraph 22 of Section VI "Final and Transitional Provisions" of the Budget Code of Ukraine, the CMU Resolution No. 245 "On Allocation of Funds to the Reserve Fund of the State Budget" dated 10.03.2022 reduced expenditures and lending to the general fund of the state budget, including the budget programme "Implementation of the National Target Social Programme "Drinking Water of Ukraine" for 2022-2026".

In the context of the preparation and implementation of the RBMP, in particular, Section 3, it is very important to have information on the implementation of the National Programme for the Development of Nature Reserves for the period up to 2020, approved by the CMU Resolution No. 70-r dated 08.02.2006 (hereinafter referred to as the NRF Programme). According to the data on the registration of protected areas and objects submitted by the local executive authorities responsible for implementing the state policy in the field of environmental protection (hereinafter referred to as -), as of 01.01.2020, the Ukrainian PAs include 8,512 territories and objects with a total area of 4.418 million hectares within the territory of Ukraine (actual area 4.085 million hectares) and 40,2500.0 hectares within the Black Sea. The ratio of the actual area of the NRF to the area of the state (the "protected area indicator") is 6.77%.

The NRF is managed by the Ministry of Ecology and is funded through the state budget programme "Conservation of protected areas". In 2020, UAH 403734.6 thousand (general fund) and UAH 25644.9 thousand (special fund) were used for measures to conserve and expand the NRF, totalling UAH 429581.5 thousand. In general, the performance indicators under this budget programme were met.

The underfunding of the State Target Programme for the Development of Land Relations in Ukraine for the Period up to 2020, approved by the CMU Resolution No. 743-r of 17.06.2009 (hereinafter referred to as the Land Programme), has resulted in excessive ploughing of agricultural land, which leads to a disruption of the ecologically balanced ratio of agricultural, nature reserve and other environmental, health, recreational, historical, cultural, forestry, water fund lands, an increase in the area of degraded, low-productive, and As of 1 January 2021, more than 500 thousand hectares of degraded, underutilised and technogenically contaminated lands are subject to conservation, 143 thousand hectares of disturbed lands need reclamation, and 294 thousand hectares of underutilised lands need improvement.

The government has established a separate Ministry for Development of Economy, Trade and Agriculture of Ukraine (Ministry of Economy, CMU Resolution No. 838 of 19.09.2019), which will implement the State Target Programme for the Development of Land Relations and National Geospatial Data Infrastructure in Ukraine for the period up to 2030 (Land Programme, CMU Order of 13.04.2021).

Budgetary environmental funds are one of the most important sources of financing environmental activities. Currently, Ukraine has a three-tier system of environmental funds, consisting of the State Environmental Protection Fund (SEPF), regional and local (city, town and village) environmental protection funds. At the regional level, the regional and local environmental funds are a significant source of funding for environmental protection measures. Environmental funds are used for targeted financing of environmental protection measures in accordance with the List of activities that are considered to be environmental protection measures approved by the Cabinet of Ministers of Ukraine on 17.09.1996 No. 1147. In accordance with the Law of Ukraine "On Environmental Protection" dated 25.06.1991 No. 1264-XII (as amended on 18.12.2019), financing of environmental protection measures, including water resources protection, is carried out at the expense of the State Budget of Ukraine, local budgets, funds of enterprises, institutions and organisations, environmental funds, voluntary contributions and other funds.

According to the Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Regulation on the State Environmental Protection Fund" of 7.05.1998 No. 634 (as amended by the Resolution of the Cabinet of Ministers of Ukraine No. 1065 of 4.12.2019), the State Environmental Protection Fund became part of the State Budget of Ukraine. All environmental funds go to the consolidated budget, and environmental protection measures are financed on a residual basis or on the principle of urgent need, when a critical, emergency environmental situation has already occurred. In fact, the entirety of the environmental tax collected is dissipated within the general and special funds of the state and local budgets. According to the Ministry of Finance, in 2018, environmental tax revenues amounted to UAH 2779.6 million, which significantly exceeds the budget expenditures of UAH 361.1 million for targeted environmental protection measures, which has signs of inefficient and misuse of environmental tax and is a violation of the current legislation.

According to 2018 data, the share of environmental revenues (rent, environmental tax, special permits, fines) in the state budget was over UAH 52 billion, of which UAH 4.6 billion was allocated to support the activities of the relevant central government agencies and environmental control, and only UAH 4.2 billion, or only 8% of environmental funds, was allocated to implement environmental protection measures. This also includes the allocation of funds for the national budget programmes Dnipro and Drinking Water, the actual funding status of which is presented above. The distribution of environmental funds among agencies and entities is as follows: the State Agency of Water Resources (38%), local budgets (24%), SAUEZM (22%), the Ministry of Ecology (now the Ministry of Environment) (9%), the State Environmental Inspectorate (4%), and the State Service of Geology and Mineral Resources (2%) received the most.

The State Budget for 2020 allocated UAH 496.356 million to finance environmental protection measures. It is clear that such expenditures cannot play a significant role in solving environmental problems, including addressing the issue of water pollution and depletion, and even more so in fulfilling the obligations assumed by Ukraine to the international community in the field of environmental protection and, in particular, the preparation of the RBMP to achieve "good" environmental status of the Danube River basin. For comparison, on average, EU countries spend 0.8% of their GDP on environmental protection. For example, in Poland, the average annual funding for environmental programmes is EUR 1-1.3 billion. Half of these funds are covered by national funding, and the other half is raised through international financing. The implementation of Ukraine's international commitments in the field of environmental protection is impossible without financial support for the environmental modernisation of business entities themselves, which need to achieve high European standards in their operations. There is already a positive example of this in the Danube basin.

During 2020-2021, the Tisza RBMU implemented the planned activities under the following grant contracts funded by the European Neighbourhood Instrument within the framework of the Hungary-Slovakia-Romania-Ukraine Cross-border Cooperation Programme 2014-2020.

The project "Strengthening cross-border security through joint measures aimed at preventing floods and inland water flooding in the Tisza and Tur rivers" (Grant Contract No. HUSKROUA/1701/LIP/003 dated 13.08.2019). Since the beginning of the Project implementation, international technical assistance funds in the amount of UAH 41198.0 thousand have been attracted, including for the works on the object "Reconstruction of the left-bank dam of the Tisa River in the area of Tekovo village - Hetynia village. Hetynia, Vynogradiv district, Transcarpathian region".

Project "Establishment of a transboundary water quality monitoring network in the Upper Tisa basin with further development and modernisation of the joint Hungarian-Ukrainian hydrographic telemetry system" (Grant contract No. HUSKROUA/1901/6.1/0016 dated 30.04.2021). Since the beginning of the Project implementation, international technical assistance funds in the amount of UAH 774.12 thousand have been attracted. The funds were used to develop a detailed design of the construction project "Reconstruction and expansion of the existing network of hydrometric observation facilities on rivers and other water bodies (AIS-Tysa 2.0)".

The project "Joint measures for the prevention of natural disasters in the transboundary basin of the Uzh River" (Grant contract No. HUSKROUA/1702/8.1/0005 dated 29.08.2019). Since the beginning of its implementation, international technical assistance funds in the amount of UAH 9590.3 thousand have been attracted, including UAH 786.8 thousand for the purchase of a Doppler flow velocity profiler, tender procedures for the development of flood zones and risks for the Uzh River basin and the city of Uzhhorod, and the development of a feasibility study for the construction of a regulatory structure on the Uzh River within the city of Uzhhorod.

The State Ecological Inspectorate in Zakarpattia region, together with the government administration of Szabolcs-Szótmar-Bereg region (Hungary), EUROPOLIS Agency and the Transylvanian Carpathians Association (Romania), is implementing the project "Environmental Assessment of the Upper Tisza River

Basin with the aim of developing a monitoring network and developing an Action Plan for the Protection of Natural Values", which is being implemented under the HUSKROUA ENI CBC Cross-border Cooperation Programme 2014-2020. The total cost of the project is EUR 504943.06, of which EUR 454454.14 are EU funds. The project has the overall goal of protecting natural ecosystems and water quality in the cross-border Ukrainian-Hungarian-Romanian area of the upper Tisza River basin.

Instead, public investment projects in Ukraine once again proved to be inefficient and highly dependent on state funding. In 2019-2020, the State Fund for Regional Development (hereinafter referred to as the SFRD) was much better funded, with funds allocated for specific investment projects in the regions, although the share of environmental projects, in particular, water supply and sewerage construction/reconstruction projects, was negligible. The SFRD was established in 2012 with the aim of increasing the competitiveness of regions by unlocking their own potential. The SFRD is the main instrument of the state for financing social, economic, infrastructure, cultural and sports projects in the country.

With regard to the review of the financing of regional local programmes and the implementation of environmental measures, it can be stated that in all 4 Danube sub-basins (Tisza, Prut, Siret and Lower Danube) and, in particular, in each of the 4 administrative regions that are part of the sub-basins (Zakarpattia, Ivano-Frankivsk, Chernivtsi and Odesa), targeted regional programmes have been developed and approved by the sessions of the regional councils in accordance with the national target programmes. For Zakarpattia oblast, where the Tisa sub-basin is entirely located within the oblast, the allocated environmental funds were used to address the main water and environmental problems of the Tisa RBD. For the other 3 oblasts, where the Danube sub-basins partially occupy the territory, the funds were distributed among other river basins within the administrative territories of the oblasts. This distribution of allocations in each administrative region was different and was not determined by the needs of a particular river basin, but rather by local, municipal administrative-territorial needs, in a haphazard manner, without taking into account the basin principle of management decision-making.

Traditionally, each oblast has developed its own environmental development programme, adding the specifics of the region. While the administrative-territorial regions of the Tisza, Prut and Siret sub-basins focused on protection against the harmful effects of water (flood protection), restoration of the hydrological regime of rivers, preservation and expansion of protected areas, and increase in forest cover, Odesa region of the Lower Danube sub-basin gave priority in its environmental targeted programmes to the development of the agro-industrial complex, provision of water resources for irrigation, development of water transport and protection of land resources in the region. Each oblast had its own specifics in terms of programme titles, deadlines and implementation stages. Some regional councils made changes to the regional programmes in advance, both in terms of their duration and sources of funding, while others left everything unchanged. Despite the specifics, the names of the regional target programmes, and the changes made, there was little funding from both the state and local budgets to implement the programmes' activities. Some state programmes had not been funded for years, and the burden of addressing urgent environmental and socio-economic problems in the sub-basins fell on local regional programmes.

Since both national and regional programmes are financed on an administrative-territorial basis rather than on a basin basis, in the context of reviewing the implementation of programmes or measures, taking into account the ways to achieve the objectives set out in the Danube RBM, there is reason to believe that their financing at the regional level is practically very different in terms of both the amount of investment and the number of projects implemented. Almost all regional programmes lack consistency and systematic funding for environmental protection measures. The determining element, the prerequisite for financing a particular environmental infrastructure project, is not comprehensive (integrated) water resources management within a sub-basin, but rather a certain "lobbying", "small-townism", party and electoral interests of regional elected officials. It is also worth noting the initiative of local communities and their financial capacity, when funds are allocated from the oblast budget only if there is co-financing from the local budget of the TC.

Of course, given the economic situation in the country, the state budget is unable to finance significant expenditures on water management and reclamation, housing and communal services, or environmental protection, so as of today and in the near future, to address the problems addressed by the regional programmes, some new administrative units (ATCs) have begun to focus on their own investments, to seek internal reserves of enterprises and funds in the regional, district and local budgets, and to attract international technical assistance. And the first thing that should help local ATCs lay the foundation for planning future actions with the involvement of international technical assistance is a regulatory document, a "roadmap" - the first RBMP with a complete list of programmes (plans) for the Danube River Basin region, their content and problems to be solved in 2025-2030.

A detailed overview of the implementation of environmental protection measures by Danube sub-basins, which were funded by existing national targeted programmes, the State Environmental Protection Fund, relevant regional and local programmes or funds, the State Regional Development Fund, state investment projects, international technical assistance projects, regional and local infrastructure projects, etc. is provided in Chapters 7 of the Danube River Sub-basin RBMPs and relevant Annexes 11 (M5.3.1), (M5.3.2, M5.3.3), (M5.3.4).

8 A COMPLETE LIST OF PROGRAMMES (PLANS) FOR THE DANUBE RIVER BASIN REGION, THEIR CONTENT AND THE PROBLEMS TO BE SOLVED

The PoM was developed in accordance with the "Methodological Recommendations for Setting Environmental Objectives, Developing a Programme of Measures and Performing a Cost-Effectiveness Analysis of the River Basin Management Plan" (Methodological Recommendations), approved at the meeting of the Scientific and Technical Council of the SAWR of 12 July 2023. The PoM was developed by the Tisza BUVR within the Zakarpattia region (Tisza sub-basin), the Prut and Siret BUVR within the Ivano-Frankivsk and Chernivtsi regions (Prut and Siret sub-basins) and the Black Sea and Lower Danube BUVR within the Odesa region (Lower Danube sub-basin) in cooperation with local executive authorities, local self-government bodies, non-governmental organisations (NGOs), scientific and educational institutions and other stakeholders, taking into account proposals and decisions of the basin councils of these sub-basins.

The development of the PoM took into account the measures implemented or planned in the national RBMPs of the neighbouring sub-basin countries (Romania, Hungary, Slovakia, Republic of Moldova) and the chemical status of the transboundary SWBs according to the monitoring data for 2022-2023.

The programme is developed for a period of 6 years, starting with the first cycle of the plan for 2025-2030. The start of the measure should be no later than the third year from the beginning of the cycle (no later than 1 January 2028).

In total, 346 measures (291 main and 55 additional) are included in the programme.

A full list of measures by sub-basin and their content is provided in the relevant Annexes 11 of the Danube RBMP.

8.1 Surface water

For surface waters, the PoM includes measures aimed at:

- Reducing organic pollution (diffuse and point sources);
- Reducing nutrient pollution (diffuse and point sources);
- Reducing pollution by hazardous substances (diffuse and point sources);
- Improvement/restoration of the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, and modification of river morphology;
- reducing the impact of planned infrastructure projects on water status.

In addition to these measures, the PoM also includes other measures aimed at addressing other SWMI in the Danube basin, identified in view of the specifics and transboundary nature of the basin.

8.1.1. Measures to reduce pollution by organic matter, nutrients and hazardous substances (diffuse and point sources)

The anthropogenic pressures on the SWB is primarily due to pollution with organic, biogenic and hazardous substances from sewage treatment plants (STPs) and diffuse sources.

Number of measures aimed at reducing pollution (diffuse and point sources):

- organic substances - 207;
- biogenic substances - 212;
- hazardous substances - 209.

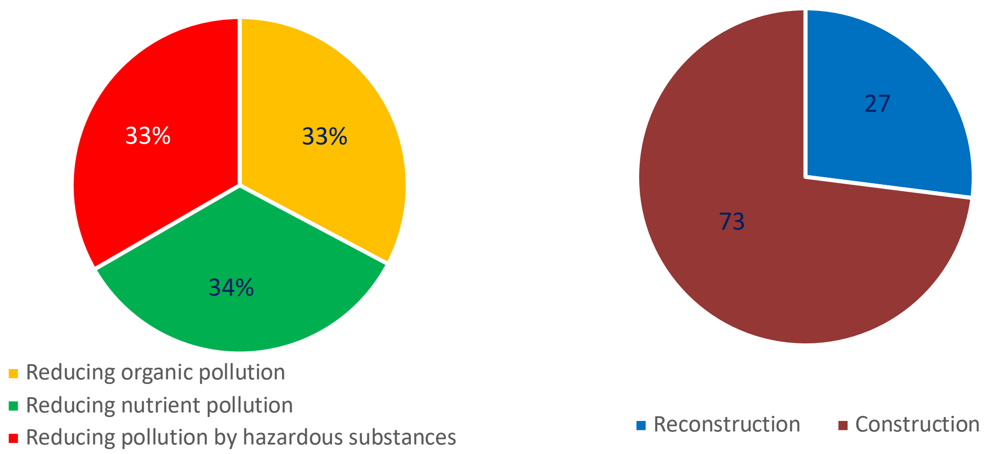


Figure 33. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point and diffuse sources and the way they are implemented (reconstruction or construction of STPs and SN), %

Measures to reduce pollution of the SWBs by nutrients (diffuse sources) include the establishment of water protection zones and bank protection strips in each administrative region of the Danube basin. These measures cover all the SWBs in the Danube basin.

The measure is planned to reduce pollution by organic, biogenic and hazardous substances (point and diffuse sources): "Establishment of wastewater treatment and solid waste disposal facilities in the Danube seaports of five territorial communities of Izmail district, Odesa region" (#3, Annex 11, from the list of measures of the Lower Danube sub-basin). The measure is a pilot project that is planned to be implemented in the communities to achieve/maintain the "good" status of the Lower Danube SWB.

Measures aimed at reducing pollution by nutrients (diffuse sources) include the following: "Assessment, monitoring of changes in the watershed condition and implementation of watershed restoration works in Polyanske forestry, Polyanska territorial community, Mukachevo district, Zakarpattia region" (#71, Annex 11 of the list of Tisza sub-basin measures, only for 8 SWBs on the Pynia, Velyka Pynia and Mala Pynia rivers). The latter measure is a pilot project to be implemented to conserve and protect water resources in the forest fund (forest covers more than 50% of the Tisza sub-basin), and prevent floods and floods.

Measures aimed at reducing pollution by hazardous substances (diffuse sources) include the measure: "Construction of a waste processing plant in the Polyanska territorial community, Mukachevo district, Zakarpattia region" (#98, Annex 11, from the list of measures in the Tisa sub-basin). The plant's capacity will allow processing both new solid waste and raw materials from existing landfills that need to be rehabilitated. The measure will cover three districts of the region (16 communities) and 65 SWBs in the upper reaches of the rivers: Latorytsia, Uzh, Borzhava and Rika.

Activity: "Rehabilitation of the former oil storage facility and prevention of oil pollution in the border area of Reni community, Izmail district, Odesa region" (#2, Annex 11, from the list of measures of the Lower Danube sub-basin), aimed at reducing pollution by hazardous substances (diffuse sources). It envisages a set of measures to prevent oil pollution of the Danube River bank, with an estimated area of 0.35 hectares and a volume of 6.5 thousand metres^3 of contaminated soil.

In accordance with the requirements of the Law of Ukraine "On Wastewater Disposal and Treatment" of 12 January 2023 No. 2887-IX, in order to ensure high-quality centralised wastewater disposal while reducing the impact of return (wastewater) on the SWB, it is planned to build/reconstruct STPs and sewage networks (SNs) in 201 settlements (36%) of the Danube basin with a population equivalent of 2,000 or more. Reconstruction/modernisation of STPs and SNs is envisaged in 31 communities, including 15 communities with tertiary (proper) wastewater treatment with removal of nitrogen and phosphorus compounds. Construction of new STPs is planned in 99 communities, in particular in the Tisza (31), Prut and Siret (66) and Lower Danube (2) sub-basins.

There is a clear trend towards the intention to aggregate (combine) the STPs and SNs of settlements into separate agglomerations (treatment clusters) with single sewage treatment facilities around cities, in particular, rayon centres in the Tisza, Prut and Siret sub-basins. A positive example of solving the issue of a single complex of STPs and SNs is demonstrated by the Polyanska community of Mukachevo district (Tisza sub-basin), which planned to build a single network of wastewater collection and treatment from the community and all sanatorium and resort facilities on its territory.

Among the measures aimed at reducing pollution by organic, biogenic and hazardous substances (diffuse and point sources), 121 measures relate to SWBs that are "at risk" of failing to achieve environmental objectives. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point sources, depending on the risk assessment of the SWB, are presented in Fig. 34.

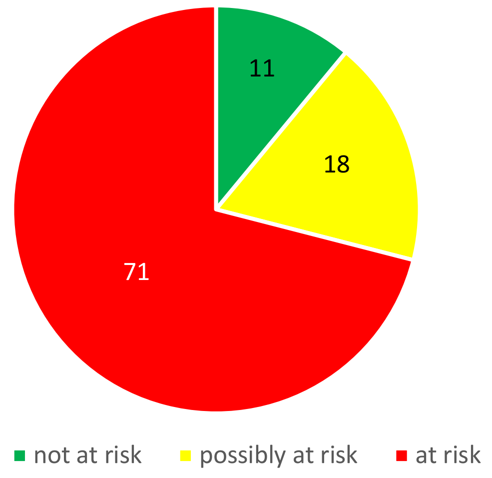


Figure 34. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point sources of pollution depending on the risk assessment of the SWB, %

8.1.2. Measures aimed at improving/restoring the hydrological regime and morphological indicators

73 measures aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, and modification of river morphology. Almost all of them are aimed at mitigating/reducing the negative impact of channel regulation works planned as part of the implementation of the Flood Risk Management Plan for Certain Areas within the Danube River Basin Region for 2023-2030, approved on 8 October 2022 by CMU Resolution No. 895-r (Danube Flood Risk Management Plan). When developing the measures, it was taken into account that the environmental objectives for the SWBs are to maintain the "good" status of 11 SWBs and to achieve "good" status for 50 SWBs where channel regulation works are planned in the sub-basins: Tisza, Prut and Siret. Appropriate measures to improve hydromorphological indicators to achieve "good" potential have been developed for 11 HMWBs in the Lower Danube sub-basin.

Measures aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology, depending on the risk assessment, are presented in Fig. 35.

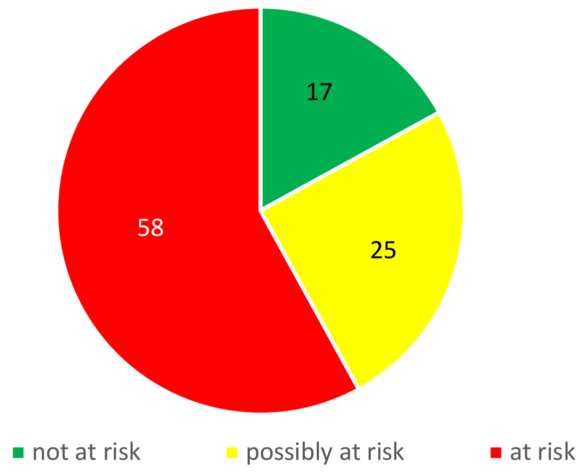


Figure 35. Measures aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of free river flow, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology, depending on the SWB risk assessment, %

In order to improve state accounting of water use, assessment of anthropogenic pressure and regulation of groundwater/surface water abstraction, analysis of hydrological changes, and real-time balancing, the Programme includes measures to improve state accounting of water use within Zakarpattia, Chernivtsi, Ivano-Frankivsk and Odesa oblasts of the Danube basin (#101, Annex 11 for the Tisza sub-basin, #164, Annex 11 for the Prut and Siret sub-basins, and #26, Annex 11 for the Lower Danube sub-basin). All water users in the basin are scheduled to install/upgrade water intake and use metering devices with online data transmission.

8.1.3. Measures to reduce the negative impact of infrastructure projects

The PoM includes two measures aimed at reducing (mitigating) the negative impact on the hydrological regime and morphological indicators of the SWB of infrastructure projects in the Tisza sub-basin:

- "Implementation of mitigation measures for the infrastructure project: "Bridge over the Tisa River on the Teplytsia - Sighetu Marmatiei section", Ukraine-Romania border, #298 - 299, Bila Tserkva village, Solotvyno territorial community, Tyachiv district, Transcarpathian region" (#9, Annex 11 of the list of Tisa sub-basin measures).
- "Implementation of measures to mitigate the infrastructure project: "Construction of a road bridge across the Teresva River on the national road of national importance H-09 "Mukachevo-Rakhiv-Bohorodychany-Ivano-Frankivsk-Rohatyn-Bibarka-Lviv", between the villages of Bedevlya and Teresva, Bedevlyanska and Teresvyanska territorial communities, Tyachiv district, Zakarpattia region" (#24, Annex 11 of the list of Tisa sub-basin measures).

These measures are aimed at reducing the negative impact on the natural hydrological regime and morphological characteristics of watercourses. Both SWBs have been assessed as being "at risk" of not achieving their environmental objectives. In the Prut and Siret sub-basins of the Lower Danube, there are no measures aimed at reducing the negative impact of infrastructure projects.

8.1.4. Measures aimed at reducing pollution and improving/restoring hydrological regime and morphological indicators on transboundary SWBs

The PoM includes measures aimed at reducing pollution of transboundary SWBs in the Danube basin through the reconstruction/construction of STPs and SNs in settlements:

- Rakhiv, Velyky Bychkiv, Solotvyno, Teresva, Tyachiv, Vynohradiv, Pyiterfolvo, Vylok, Chop, Mukachevo, Uzhhorod, Storozhnytsia (Tisa sub-basin);
- Chernivtsi, Novoselytsia, Marshyntsi, Mamalyha, Vanczykivka, Tarasivtsi, Podvirne, Zelena, Podvirivka, Lukachivka, Vashkivtsi (Prut sub-basin);
- Storozhynets, Ropcha, Cherepkivtsi, Petrychanka, Turyatka (Siret sub-basin).

The PoM envisages some measures to improve/restore the hydrological regime and morphological indicators (mitigation of channel regulation works) on transboundary SWBs, which will have a potential impact on neighbouring countries of the basin, in particular,

Romania:

- UA_M5.3.1_0007, UA_M5.3.1_0008 (Tisza River), UA_M5.3.2_0007 (Prut River), UA_M5.3.3_0005 , UA_M5.3.3_0006 (Siret River).

Hungary:

- UA_M5.3.1_00011, UA_M5.3.1_0012, UA_M5.3.1_0014 (Tisa River), UA_M5.3.1_0204 (IZMV, Staryi Batar River).

Slovakia:

- UA_M5.3.1_0300 (Latorytsia River), UA_M5.3.1_0433 (Uzh River).

Republic of Moldova:

- UA_M5.3.2_0231 (IWRM, Patzapule River), UA_M5.3.2_0233, (Zelena River), UA_M5.3.2_0235, (Medvedka River), UA_M5.3.2_0239 (Viliya River), UA_M5.3.2_0242 (IWRM, Lopatynka River).

The number of measures at the transboundary SWBs by Danube basin country is shown in Fig. 36.

Figure 36. Number of measures at transboundary SWBs with neighbouring countries in the basin.

8.2. Groundwater

The programme includes measures aimed at:

- reducing pollution (diffuse and point sources);

- preventing groundwater depletion;

- reducing the impact of planned infrastructure projects on water conditions.

It is mandatory to establish the boundaries of sanitary protection zones for groundwater intakes used for centralised water supply to the population, medical and recreational needs, indicate them in land management documentation, urban planning documentation at the local and regional levels, enter information on the relevant restrictions on land use in the State Land Cadastre and mark these boundaries on the ground with information signs. For groundwater abstractions with a volume of extraction of more than 100 m^3/day within the sanitary protection zones and in adjacent territories, water users shall set up a local network of observation wells to determine the amount of water and chemical and physicochemical parameters and provide observation data to the State Service of Geology and Subsoil of Ukraine.

Due to the cessation of groundwater monitoring since 2018, all measures are considered additional measures that relate not to a separate groundwater monitoring, but to groundwater monitoring in general, namely

1) Inventory of the observation well network. The inventory is necessary to resume monitoring observations and assess the need to drill additional observation wells.

2) Based on the results of the inventory, wells requiring repair, remedial plugging or conservation will be identified.

3) For non-pressure GWBs, it is advisable to arrange new observation points to characterise their quality in areas with minimal anthropogenic impact on the quantitative and qualitative status of groundwater, including from point and diffuse sources (except for the Lower Danube sub-basin, where non-pressure GWBs have not been identified).

4) At water intakes, where operational monitoring is carried out in accordance with the "Procedure for State Water Monitoring", it is necessary to reassess the operational groundwater reserves, which will allow for a more reliable assessment of the quantitative status of the GWBs.

8.3. Other measures

Other measures include legislative and legal, administrative, fiscal, research and development, educational and awareness-raising, new technologies, environmental and communication, project, and other measures.

Other measures include, among other things, awareness-raising activities on the protection, conservation and restoration of water resources in all the basin's communities. It is planned to hold annual Wetlands Day (2 February), International Water Day (22 March), Danube Day (29 June), and Clean Banks Day (third Saturday of September). It is also planned to clean up and restore river leaks, as well as to conduct outreach and education activities with local community groups, NGOs, schoolchildren and youth in the field of solid waste management. Implementation of local measures by local executive authorities to conserve, protect and restore water resources.

Research measures are planned: "Economic and ecological certification of water users in the Lower Danube sub-basin on the basis of digitalisation 16 communities Bilhorod-Dnistrovskyi rayon, Bolhradskyi rayon, Izmailskyi rayon, Odesa oblast", "Development of the Strategy for greening water management activities in the context of sustainable development of the Lower Danube sub-basin 16 communities Bilhorod-Dnistrovskyi rayon, Bolhrad rayon, Izmail rayon, Odesa oblast", "Modernisation of the hydrological infrastructure management system and hydrological monitoring of water management systems "Kyslytskyi arm of the Stepovyi arm - floodplain of the Stepovyi arm - Lake China" Safianivska community, Izmail district, Odesa region", "Modernisation of the hydrological infrastructure management system and hydrological monitoring of the water management systems "Safiany - Katlabukh" Safianivska community, Izmail district, Odesa region", "Modernisation of the hydrological infrastructure management system and hydrological monitoring of water management systems "Kyslytskyi Rukav - Staronekrasivski Plains - Lung Lakes", Izmail community, Izmail district, Odesa region" and "Modelling of water and salt balance and water quality in the Danube Lake Katlabukh, Safianivska community, Izmail district, Odesa region".

8.4. Assessment of the effectiveness of the PoM

The cost-effectiveness analysis (CEA) was conducted only for the main measures.

The largest share of measures is aimed at reducing pollution of SWBs (68%). Some measures have an impact on several SWMI. The vast majority of the main measures, 234 (79%), relate to settlements with a population of 2.0 to 10.0 thousand. For settlements with a population of 10 to 100.0 thousand, only 51 (18%) measures are located in administrative and district centres: Mukachevo, Berehove, Khust, Tyachiv, Rakhiv (Tisa sub-basin); Kolomyia, Yaremche, Vashkivtsi, Storozhynets, Krasnoilsk, Nyzhniy Verbizh, Stopchativ, Miliyevo, Chornohuzy, Slobidka, Velykyi Kuchuriv (Prut and Siret sub-basins); Reni, Kiliya, Izmail (Lower Danube sub-basin). There are only 9 (3%) measures for settlements with a population of more than 100.0 thousand for the urban communities of Uzhhorod and Chernivtsi. This social specificity of the measures is due to the fact that the vast majority of residents of the western regions of Ukraine, in the Tisza, Prut and Siret sub-basins, live in rural areas.

The measures envisaged in the Programme will be financed from the state and local budgets, as well as other sources not prohibited by law. Financing of these measures from the state budget shall be carried out within the expenditures provided for in the State Budget of Ukraine for the relevant year.

The total cost of the main measures for the period 2025-2030 is UAH 19731 million, with UAH 128 million per community (154) (UAH 21.4 million per year) and UAH 5586 per inhabitant of the Danube basin (3.5 million people, 2020 data) (UAH 931 per year). The most costly measures are those related to the reconstruction/modernisation of the STPs and SNS. For example, the implementation of such measures in the cities of Uzhhorod and Mukachevo requires up to UAH 2,363 million, Kolomyia and Chernivtsi - up to UAH 170 million, and Izmail - up to UAH 1,269 million.

No measures with a very high level of effectiveness were identified among the main measures.

There are 7 measures in the high effectiveness group. In the Tisa sub-basin (4 measures): "Reconstruction of Sewage Treatment Facilities and Networks in Uzhhorod, Uzhhorod community, Uzhhorod District, Zakarpattia Oblast", "Reconstruction of Sewage Treatment Facilities and Networks in Mukachevo, Mukachevo TG, Mukachevo District, Zakarpattia Oblast", "Reconstruction of Sewage Treatment Facilities and Sewerage Network in Berehove, Berehove community, Berehove district, Zakarpattia region", "Reconstruction of sewage treatment facilities and sewerage network in Khust, Khust community, Khust district, Zakarpattia region", with a total cost of UAH 3,407 million (34% of the cost of all measures in the sub-basin), one of them with a very high cost of more than UAH 1 billion. There are 2 measures in the Prut and Siret sub-basins: "Reconstruction of sewage treatment facilities and sewage networks in Kolomyia, Kolomyia community, Kolomyia rayon, Ivano-Frankivsk oblast" and "Completion of reconstruction of sewage treatment facilities in Chernivtsi, Chernivtsi community, Chernivtsi rayon, Chernivtsi oblast", with a total cost of UAH 170 million (2% of the cost of all measures in the sub-basin). In the Lower Danube sub-basin, there is 1 measure with a total cost of UAH 1,269 million (48% of the total cost of all measures in the sub-basin), namely "Reconstruction of sewage treatment facilities in Izmail, Izmail community, Izmail district, Odesa region". The total cost of the measures is UAH 4,847 million (24%), and the social impact is 674 thousand people. The measures are aimed at reducing pollution with organic, nutrient and hazardous substances in the Danube basin's SWB (SWMI 1-3). All the objects of the measures belong to the sector of very high water use pressure - the housing and communal sector.

The group with an medium level of efficiency includes 197 measures with a total cost of UAH 11,263 million (57%). The measures are aimed at reducing pollution with organic, nutrient and hazardous substances, hydromorphological changes, and clogging of water bodies with solid waste (SWMI 1-4, 10). Social effect

- 1,494 thousand people. 194 of the implemented measures belong to the sector of very high water use pressure - the housing and utilities sector. This group is the largest in terms of the number of measures.

The group with low efficiency includes 61 measures with a total cost of UAH 3,085 million (16%). These measures are primarily aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, and modification of river morphology (SWMI 4). Social effect - 917 thousand people.

The group with a very low level of effectiveness includes 26 measures with a total cost of UAH 534 million (3%) aimed at improving hydromorphological indicators (SWMI 4). The implementation of these measures will achieve a social effect for 104 thousand people. The economic sector's pressure on water resources is minimal and corresponds to the lowest score.

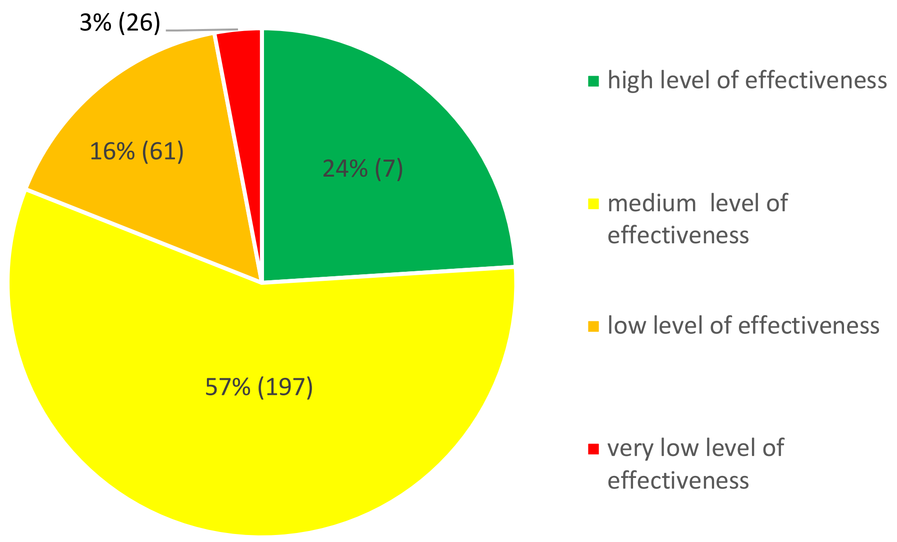


Figure 36. Distribution of main measures with different levels of efficiency by total cost of measures (number of measures in brackets)

A detailed CEA of the measures is provided in Annex 12.

9 REPORT ON PUBLIC INFORMATION AND PUBLIC DISCUSSION OF THE DRAFT RIVER BASIN MANAGEMENT PLAN

The main requirements for the organisation and conduct of public consultations by executive authorities on the formation and implementation of state policy are set out in the Procedure approved by the Cabinet of Ministers of Ukraine on 3 November 2010, No. 996. In accordance with paragraph 5 of the Procedure, public consultations are organised and conducted by the executive body that is the main developer of the draft legal act. In accordance with paragraphs 11 and 12 of the Procedure, public consultations on draft regulatory legal acts that define strategic goals, priorities and objectives in the relevant area of public administration, affect the vital interests of citizens, including those that affect the state of the environment, are mandatory in the form of public discussion and/or electronic public consultations.

In accordance with the second paragraph of clause 7 of the Procedure for Developing a River Basin Management Plan, public discussion of the draft river basin management plan is conducted for at least six months from the date of their publication. In accordance with the first paragraph of clause 8-1, the public has the right to provide comments and suggestions on information on the main anthropogenic impacts on the quantitative and qualitative status of surface and groundwater, including point and diffuse sources, within six months from the date of their publication on the website of the Ministry of Ecology.

The Danube River basin area is located within four regions of Ukraine (Zakarpattia, Ivano-Frankivsk, Chernivtsi and Odesa regions). The Tisza sub-basin is located entirely within Zakarpattia Oblast, the Prut and Siret sub-basins are located in Ivano-Frankivsk and Chernivtsi Oblasts, and the Lower Danube sub-basin is located in Odesa Oblast. Accordingly, the Danube RBMP includes river sub-basin management plans (RBMPs) for the Tisza, Prut and Siret rivers and the Lower Danube. The Tisza River Basin Water Resources Management Authority (BUVR), the Prut and Siret River Basin Water Resources Management Authority (BUVR), and the Black Sea and Lower Danube River Basin Water Resources Management Authority (BUVR) have been designated as responsible for preparing draft RBMPs for the sub-basins.

Consultations in the process of drafting the RBMP

During 2022-2023, the basin authorities held consultations with the public in Zakarpattia, Ivano-Frankivsk, Chernivtsi, and Odesa oblasts on the SWMI of the Tisza, Prut, and Siret sub-basins and the lower Danube, developed a full list of programmes (plans) for the sub-basins, their content and problems to be solved (PoM), and prepared draft RBMPs for 2025-2030.

In order to prepare the Danube RBMP in a timely manner, implement the "Schedule for the Development of the Draft Danube River Basin Management Plan" approved by the Order of the Ministry of Environmental Protection and Natural Resources of Ukraine No. 313 of 27 November 2020, and the Orders of the State Agency of Water Resources of Ukraine No. 44 "On Approval of the Action Plan" of 16 May 2022 and No. 1105 "On Development of Draft River Basin Management Plans" of 18 December 2020, the basin water resource management departments held working meetings with the regional military administrations of the Danube River Basin. Based on the results of the working meetings, instructions were prepared for the district military administrations and executive bodies of local councils to submit proposals to the PoM aimed at addressing the SWMI of river sub-basins (pollution by organic, nutrient and hazardous substances, hydromorphological changes, uncontrolled water use, and clogging) for the appropriate response of state and local authorities.

In order to ensure the preparation of the PoM for the development of the RBMPs for the period 2025-2030, the basin water resource departments held meetings with the heads and representatives of territorial communities and water utilities, and prepared and sent letters to business entities providing water supply and sewerage services (water utilities), industrial enterprises, agricultural enterprises, hotel, tourist and sanatorium complexes of the region that discharge waste water into surface water bodies (SWBs) of sub-basins, to submit their proposals to the PoM aimed at addressing the SWMI of river sub-basins.

Working Groups for the development of RBMPs were established at the meetings of the basin councils, which included representatives of stakeholders (central and local executive authorities, local governments, basin water management authorities, water users, enterprises, institutions, organisations, and public associations).

The working groups processed all proposals aimed at addressing the SWMI of river sub-basins, summarised them and presented the RBMPs for the period 2025-2030 at meetings of the relevant basin councils.

Public consultations of the draft RBMP

The information notice on the public consultations of the draft RBMP (2025-2030) and the draft RBMPs was published on the website of the SAWR on 21 December 2023 at the link: https://davr.gov.ua/informacijne-povidomlennya-pro-provedennya-publichnogo-gromadskogo-obgovorennya-proyektiv-planiv-upravlinnya-richkovimi-basejnami-20252030

Information on the start of public consultations of draft RBMPs and draft RBMPs was published on the website of the Ministry of Ecology on 25 December 2023 at the link: https://mepr.gov.ua/ukrayina-zavershyla-robotu-nad-9-proyektamy-planiv-upravlinnya-richkovymy-basejnamy-rozpochalosya-gromadske-obgovorennya/

According to the information published in the announcement of the public consultations of the draft RBMPs (2025-2030), comments and proposals in hard copy were accepted at the following address: State Agency of Water Resources of Ukraine, 8 Velyka Vasylkivska St., Kyiv, 01024, and in electronic form to the e-mail address rbmp@davr.gov.ua. The deadline for submitting comments and proposals to the draft RBMP was 21 June 2024.

As part of the public discussion, the SAWR, with the support of the EU4Environment project, initiated a number of public engagement activities, which were announced on 28 February 2024 on the website of the SAWR at the following link: https://davr.gov.ua/news/derzhvodagentstvo-iniciyuye-zahodi-iz-zaluchennya-gromadskosti-do-obgovorennya-proyektiv-purb

It should be noted that public consultations were held separately for each sub-basin: Tisza, Prut and Siret and the Lower Danube. The respective BUVRs sent out invitations to water users, all territorial communities and other stakeholders in the Danube RBD. Three separate public consultations were also held, where, in addition to the specifics of the Danube sub-basins, the draft RBMP for the Danube basin as a whole was presented.

In addition to the sub-basin infographics, five infographics were developed to present the overall results of the analysis of the status of SWB in the Danube River Basin and the corresponding PoM: basin location features; ecological status of the SWB (based on biological indicators); chemical status of the SWB; hydromorphological changes; and PoM.

The infographics are published on the website of the SAWR at the link: https://davr.gov.ua/plan-upravlinnya-richkovim-basejnom-dunayu1

The results of the three public consultations are recorded in the relevant Minutes (Annexes 1 and 2 to the report on the results of the public consultations).

The report on the results of the public consultations will be posted on the website of the SAWR and on the website of the Ministry of Environment.

Strategic environmental assessment of the draft RBMP

In accordance with paragraph 7 of the Procedure for the Development of a River Basin Management Plan, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 336 of 18.05.2017, the Ministry of Ecology ensures that strategic environmental assessment of draft river basin management plans is carried out in accordance with the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, ratified by the Law of Ukraine No. 562-VIII of 1 July 2015. The Ministry of Ecology contacted all affected states, but none of them expressed a desire to participate in the transboundary consultations.

The procedure for conducting a strategic environmental assessment (SEA) is set out in the Law of Ukraine "On Strategic Environmental Assessment" No. 2354-VIII dated 20 March 2018. Pursuant to Article 9(3)(1) of the Law, one of the stages of the SEA is public discussion and consultations in accordance with the procedure set out in Articles 12 and 13 of the Law, as well as transboundary consultations in accordance with the procedure set out in Article 14 of the Law. Pursuant to part nine of Article 12 of the Law, "based on the results of the public discussion, the customer shall prepare a certificate on public discussion, which summarises the comments and proposals received and indicates how the state planning document and the strategic environmental assessment report take into account the comments and proposals submitted in accordance with this article (or justify their rejection), and also justifies the selection of this particular state planning document in the form in which it is proposed for approval, among other justified al The certificate shall be accompanied by the minutes of public hearings (if held) and written comments and suggestions received. The certificate on public discussion is public information and is entered by the customer into the Unified Register of Strategic Environmental Assessment."

The certificate of public discussion of the draft Danube RBMP will be entered by the SAWR into the Unified Register of Strategic Environmental Assessment together with the approved RBMP.

10 LIST OF COMPETENT STATE AUTHORITIES RESPONSIBLE FOR IMPLEMENTING THE RIVER BASIN MANAGEMENT PLAN

According to part two of Article 13 of the Water Code of Ukraine, the Cabinet of Ministers of Ukraine, the Council of Ministers of the Autonomous Republic of Crimea, village, town and city councils and their executive bodies, district and regional councils, executive authorities and other state bodies are responsible for public administration in the field of water use and protection and water resources restoration in accordance with the legislation of Ukraine.

The executive authorities in the field of water use and protection and water resources restoration are the Ministry of Ecology, the State Water Agency, the State Geological Survey, the State Ecological Inspectorate and other bodies in accordance with the law.

Table 38. Central executive authorities in the field of water use and protection and water resources restoration

Name of the body (full and abridged)	Legal address	Official website
Ministry of Environmental Protection and Natural Resources of Ukraine (MEPNR)	35, Metropolitan Vasyl Lypkivskyi St., Kyiv, 03035; tel.: (044) 206-31-00, (044) 206-31-15; fax: (044) 206-31-07; e-mail: info@mepr.gov.ua	www.mepr.gov.ua
State Agency of Water Resources of Ukraine (SAWR)	8 Velyka Vasylkivska St., Kyiv, 01024; tel.: fax: (044) 235-31-92; tel. (044) 235-61-46; e-mail: dar@davr.gov.ua	www.davr.gov.ua
State Service of Geology and Mineral Resources of Ukraine (Derzhgeonadra)	16, Anton Tsedik Street, Kyiv, 03057; tel. (044) 536-13-18; e-mail: office@geo.gov.ua	www.geo.gov.ua
State Environmental Inspectorate of Ukraine (SEI)	3, building 2, Novopecherskyi lane, Kyiv, 01042 tel.: fax +38 (044) 521-20-40, tel: (044) 521-20-38; e-mail: info@dei.gov.ua	www.dei.gov.ua

Table 39. Key regulatory acts that define the powers of central executive authorities in the field of water use and protection and water resources restoration

Name of the body (full and abridged)	Legal act	Link on the official web portal of the Verkhovna Rada of Ukraine
Ministry of Environmental Protection and Natural Resources of Ukraine (MEPNR)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Articles 15 and 15^1	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the Ministry of Environmental Protection and Natural Resources of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 25 June 2020, No. 614 (Official Gazette of Ukraine, 2020, No. 59, p. 32, Article 1853)	https://zakon.rada.gov.ua/laws/show/614-2020-%D0%BF#Text

Name of the body (full and abridged)	Legal act	Link on the official web portal of the Verkhovna Rada of Ukraine
State Agency of Water Resources of Ukraine (SAWR)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 16	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Agency of Water Resources of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 20 August 2014, No. 393 (Official Gazette of Ukraine, 2014, No. 71, p. 34, Article 1995)	https://zakon.rada.gov.ua/laws/show/393-2014-%D0%BF#Text
State Service of Geology and Mineral Resources of Ukraine (Derzhgeonadra)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 17	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulations on the State Service of Geology and Subsoil of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 30 December 2015 No. 1174 (Official Gazette of Ukraine, 2016, No. 3, p. 284, Article 192)	https://zakon.rada.gov.ua/laws/show/1174-2015-%D0%BF#Text
State Environmental Inspectorate of Ukraine (SEI)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 15^2	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Environmental Inspectorate of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 19 April 2017 No. 275 (Official Gazette of Ukraine, 2017, No. 36, p. 73, Article 1131)	https://zakon.rada.gov.ua/laws/show/275-2017-%D0%BF#Text
	Regulation on Territorial and Interregional Territorial Bodies of the State Environmental Inspectorate, approved by the Order of the Ministry of Energy and Environmental Protection of Ukraine dated 07 April 2020 No. 230, registered with the Ministry of Justice of Ukraine on 16 April 2020 under No. 350/34633 (Official Gazette of Ukraine, 2020, No. 33, p. 25, Article 1116)	https://zakon.rada.gov.ua/laws/show/z0350-20#Text

In order to ensure the implementation of the state policy in the field of management, use and reproduction of surface water resources within the Tisza River Sub-basin, to direct and coordinate the activities of organisations under the management of the SAWR on the management, use and reproduction of surface water resources within the Tisza River Sub-basin, as well as to ensure the implementation of the state policy in the field of water management within the Transcarpathian region, the SAWR established the Basin Department (BUVR).

In order to ensure the implementation of the state policy in the field of management, use and reproduction of surface water resources within the Prut and Siret river sub-basins, to direct and coordinate the activities of organisations under the management of the SAWR on management, use and reproduction of surface water resources within the Prut and Siret river sub-basins, as well as to ensure the implementation of the state policy in the field of water management within the Chernivtsi region, the SAWR established the Basin Management Department (BUVR).

In order to ensure the implementation of the state policy in the field of management, use and reproduction of surface water resources within the Lower Danube River Sub-basin, to direct and coordinate the activities of organisations under the management of the SAWR on the management, use and reproduction of surface water resources within the Lower Danube River Sub-basin, as well as to ensure the implementation of the state policy in the field of water management within Odesa region, the SAWR created the established the Basin Management Department (BUVR).

Table 40. Representatives of the central executive authority in the field of water use and protection and water resources restoration in the Danube River Basin

Name of the body (full and abridged)	Legal address	Tel./fax	Email.	Website.
Basin water management Tisza River (Tisza BUVR)	5 Slavyanskaya Embankment, м. Uzhhorod, 88018	(0312) 64-61-91	office@buvrtysa.gov.ua	buvrtysa.gov.ua
Basin water resources management of the Prut and Siret rivers (Prut and Siret BUVR)	58013, м. Chernivtsi, 194-b Heroiv Maidanu Street	(0372) 51-14-56	dpbuvr@gmail.com	dpbuvr.gov.ua
The Black Sea and Lower Danube River Basin Water Management Authority (Black Sea and Lower Danube Rivers BUVR)	13, Ivan and Yurii Lypiv Str., Odesa, 65078	(048)766-91-02	buvr_odesa@oouvr.gov.ua	www.oouvr.gov.ua

(Source: https://davr.gov.ua/vodogospodarskiorganizacii)

The names of sub-basins and water management areas within river basin districts and sub-basins are given in the Annex to the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 25 dated 26 January 2017 "On the Allocation of Sub-Basins and Water Management Areas within Established River Basin Districts", registered with the Ministry of Justice of Ukraine on 14 February 2017 under No. 208/30076 (https://zakon.rada.gov.ua/laws/show/z0208-17#Text).

The boundaries of the RBDs and subbbasins were approved by the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 103 dated 03 March 2017, registered with the Ministry of Justice of Ukraine on 29 March 2017 under No. 421/30289 (https://zakon.rada.gov.ua/laws/show/z0421-17#Text).

The Tisza BUVR is a budgetary non-profit organisation that is managed by the SAWR. The Regulation on the Tisza BUVR was approved by the Order of the SAWR No. 83 dated 12 July 2023 (https://buvrtysa.gov.ua/newsite/?page_id=56).

The Prut and Siret BUVR is a budgetary non-profit organisation that belongs to the management of the SAWR. The Regulation on the Prut and Siret River BUVR was approved by the Order of the SAWR dated 30 December 2020 No. 1159 (https://dpbuvr.gov.ua/polozhennia-pro-upravlinnia-2/).

The Black Sea and Lower Danube River BUVR is a budgetary non-profit organisation that is managed by the SAWR. The Regulation on the Black Sea and Lower Danube Rivers BUVR was approved by the Order of the SAWR No. 80 dated 06.07.2023 (https://oouvr.gov.ua/pro-buvr/poloshenya/).

The purpose of the Tisza River Basin Council is to develop proposals and ensure coordination of interests of enterprises, institutions and organisations in the field of water use and protection and water resources restoration within the Tisza river subbasin, to promote integrated water resources management within the Tisza river subbasin, to ensure coordination of interests and coordination of actions of stakeholders in water resources management within the Tisza river subbasin, to promote cooperation between central and local executive authorities, local self-government bodies, enterprises, institutions, organisations, international organisations, and the public. The Tisza River Basin Council is an advisory body of the SAWR within the Tisza river subbasin. The Regulation on the Tisza River basin council was approved by the Order of the SAWR No. 887 dated 26 November 2018 (https://buvrtysa.gov.ua/newsite/wp-content/uploads/2018/08/polojennya.pdf).

To develop proposals and ensure coordination of interests of enterprises, institutions and organisations in the field of water use and protection and water resources restoration within the Prut and Siret sub-basins, to promote integrated water resources management within the Prut and Siret sub-basins, to ensure coordination of interests and coordination of actions of stakeholders in water resources management within the Prut and Siret sub-basins, to facilitate cooperation between central and local executive authorities, local authorities and municipalities. The Prut and Siret Basin Council is an advisory body of the SAWR within the Prut and Siret sub-basins. The Regulation on the Prut and Siret Basin Council was approved by the Order of the SAWR No. 947 dated 18 December 2018 (https://davr.gov.ua/polozhennya-pro-basejnovu-radu-prutu-ta-siretu).

The Lower Danube Basin Council is a consultative and advisory body of SAWR Management of the Lower Danube Sub-basin in order to develop proposals and ensure coordination of interests of enterprises, institutions and organisations in the field of water use and protection and water resources restoration within the Lower Danube Sub-basin area, to promote integrated water resources management within the Lower Danube Sub-basin area, to ensure coordination of interests and coordination of actions of stakeholders in water resources management within the Lower Danube Sub-basin area, to facilitate cooperation between central and local executive authorities, bodies The Lower Danube Basin Council is an advisory body to the SAWR within the Lower Danube Sub-basin area. The Regulation on the Lower Danube Basin Council was approved by the Order of the SAWR No. 972 dated 22.12.2018 (https://oouvr.gov.ua/baseynova-rada-nushnogo-dynayu/yst-docs/).

According to the List approved by Resolution of the CMU No. 1371 dated 13 September 2002 (as amended by Resolution of the CMU No. 1276 dated 30 November 2011) (https://zakon.rada.gov.ua/laws/show/1371-2002-%D0%BF#n38), the Ministry of Environment and/or the SAWR are responsible for fulfilling international obligations in the field of water protection arising from Ukraine's membership in international organisations or in accordance with international treaties concluded by Ukraine.

In addition, pursuant to Article 9 of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (https://zakon.rada.gov.ua/laws/show/801-14#Text), the Government of Ukraine has concluded bilateral agreements on the protection of border/boundary waters, the responsibility for which lies with the SAWR:

- Agreement between the Government of Ukraine and the Government of the Republic of Hungary on Water Management on Boundary Waters of 11 November 1997 (https://zakon.rada.gov.ua/laws/show/348_001-97#Text);
- Agreement between the Government of Ukraine and the Government of the Slovak Republic on Water Management on Boundary Waters of 14 June 1994 (https://zakon.rada.gov.ua/laws/show/703_061#Text);
- Agreement between the Government of Ukraine and the Government of Romania on Cooperation in the Field of Water Management on Boundary Waters of 30 September 1997 (https://zakon.rada.gov.ua/laws/ show/642_059#Text);
- Agreement between the Government of Ukraine and the Government of the Republic of Moldova on the Joint Use and Protection of Boundary Waters of 23 November 1994 (https://zakon.rada.gov.ua/laws/show/498_051 #Text);

The Commissioners of the Cabinet of Ministers of Ukraine for Cooperation on Boundary Waters and their deputies were appointed by the Resolution of the Cabinet of Ministers of Ukraine of 10 March 2017 No. 126 as amended {As amended by the Resolutions of the Cabinet of Ministers of Ukraine No. 489 of 05.06.2019 No. 45 of 13.01.2021 No. 1186 of 18.10.2022) (https://zakon.rada.gov.ua/laws/show/126-2017-%D0%BF#Text).

11 THE PROCEDURE FOR OBTAINING INFORMATION, INCLUDING PRIMARY INFORMATION, ON THE STATE OF SURFACE AND GROUNDWATER

In order to ensure proper organisation of access to public information, implementation of the Law of Ukraine "On Access to Public Information", Presidential Decree No. 547 of 05 May 2011 "Issues of Ensuring Access to Public Information by Executive Authorities", resolutions of the CMU No. 583 of 25 May 2011 "Issues of Implementation of the Law of Ukraine "On Access to Public Information" in the Secretariat of the CMU, Central and Local Executive Authorities", No. 835 of 21 October 2015 "On Approval of the Regulation

To regulate the procedure for access to public information, the SAWR adopted Order No. 163 dated 08.12.2023 "On Certain Issues of Implementation of the Law of Ukraine "On Access to Public Information" in the SAWR".

In accordance with paragraphs 16-18 of the Procedure for State Water Monitoring, approved by Resolution of the Cabinet of Ministers of Ukraine No. 758 of 19 September 2018, the results of state water monitoring are:

- Primary information (observation data) provided by the subjects of state water monitoring;
- Generalised data relating to a certain period of time or a certain territory;
- Assessment of the ecological and chemical state of surface water bodies, the ecological potential of artificial or significantly modified surface water bodies, the quantitative and chemical state of groundwater bodies, the ecological state of marine waters and identification of sources of negative impact on them;
- Forecasts of water conditions and their changes;
- Scientifically based recommendations necessary for making management decisions in the field of water use and protection and water resources reproduction.

Subjects of state water monitoring are obliged to store primary information (observation data) obtained as a result of state water monitoring for an indefinite period of time.

The information obtained and processed by the state water monitoring bodies is official.

Primary information (observation data), generalised data, assessment results, forecasts and recommendations resulting from the state water monitoring are provided free of charge:

- for SWBs (including coastal waters) - to the SAWR and the Ministry of Environment;
- for GWBs – to the State Service of Geology and Mineral Resources and the Ministry of Environment, as well as to the SAWR in terms of generalised data, assessment results and forecasts;
- for marine waters - the Ministry of Environment.

The subjects of state water monitoring shall exchange information with each other on the data and results of state water monitoring on a free-of-charge basis.

The SAWR collects and publishes information on the state of surface waters in the public domain by maintaining the following information resources:

- geoportal "State Water Cadastre: Accounting of Surface Water Bodies" (http://geoportal.davr.gov.ua:81/);
- the web-based system "Monitoring and Environmental Assessment of Water Resources of Ukraine" (http://monitoring.davr.gov.ua/EcoWaterMon/GDKMap/Index).

Automatic data exchange has been set up between these information resources and the Ministry of Ecology's EcoHazard resource.

TISZA RIVER BASIN MANAGEMENT PLAN (2025-2030)

June 2024

1 GENERAL CHARACTERISTICS OF SURFACE AND GROUNDWATER

1.1 Description of the river sub-basin

1.1.1 Hydrographic and water management zoning

The transboundary sub-basin of the Tisza River is located in four countries: Ukraine, Romania, Hungary and Slovakia.

The catchment area of the sub-basin rivers within Ukraine is 12765 km^2. The river sub-basin covers 2.1% of Ukraine's territory.

The Tisa River sub-basin is entirely located within one region of Ukraine - Zakarpattia.

The hydrographic network of the sub-basin includes 165 rivers with a catchment area of more than 10 km^2 and 8 reservoirs.

1.1.2 Climate

Climate research is carried out at 9 meteorological stations and 7 meteorological posts.

The sub-basin has the highest duration of sunshine at 2010 hours per year. The mountainous areas experience fewer sunny days.

The largest annual radiation balance amounts are observed in the plain part of the basin (2000 - 2100 MJ/m^2), with increasing altitude the radiation balance values decrease and amount to 1500 - 1600 MJ/m^2, at the level of the Polonynsky and Vodorozdilny ranges: Gorgany, Svydovets and Chornohora - 1250 - 1300 MJ/m^2.

The general pattern of temperature variation in the sub-basin is as follows: the minimum occurs in January and the maximum in July. The average annual temperature reaches 9.3°C (Uzhhorod). An annual isotherm of 8.5°C separates the lowlands and the southern foothills from the colder mountainous areas. In terms of temperature conditions, the Rika River divides the mountainous area into two equal parts: western and eastern. The western part is warmer, with average annual temperatures ranging from 4.5 to 8.5°C. The eastern part is colder, with average annual temperatures ranging from 3.0 to 6.5°C. The annual amplitude of average monthly air temperatures is highest in the Khust depression (25.1°C) and the Zakarpattia lowland (23.7°C - Chop). The continental climate is most pronounced here.

In mountainous hollows, the continental climate is less pronounced. Winter on the plain is short, mild and unstable. It begins in mid-December. The weather in winter is cloudy, humid with fogs, temperatures around 0°C. In the mountains, winter is more severe and begins in late November and early December. The average temperature in January in Uzhhorod is -2.9°C, with frosts down to -18°C. Average January temperatures are: -4.2°C (Solotvyno), -3.7°C (Khust), -8.9°C in the mountains. The warmest month in Zakarpattia is July. At this time, the average air temperature is: 25.9°C (Uzhhorod), 24.5°C (Khust), 11.5°C (Plymouth). The average daily temperature in July is between 15 and 25°C, with maximums reaching 37°C. In the mountains it is much lower, and in the valleys it is only 7-8°C.

The average long-term precipitation ranges from 870 mm (Velykyi Bereznyi - foothills) to 1600 mm (Plyai - midlands). On the windward slopes of the mountains, the amount of precipitation can reach 1100 - 1200 mm per year. The intra-annual distribution of precipitation in Zakarpattia has two peaks in July and December. In winter, the amount of precipitation decreases.

Most precipitation falls during the warm season. Maximum precipitation in the mountains occurs in summer (60-80%). The amount of precipitation during the warm season varies from 1032 mm (Playa) to 425 mm (Chop). The amount of precipitation in the cold season is much lower and ranges from 618 mm (Playa) to 227 mm (Chop).

The maximum amount of precipitation is observed in the central part of the mountains and on the tops of mountain systems: Chornohora, Gorgany, in the meadows: Runa, Borzhava, Krasna and in the area of the Svydovets ridge.

Autumn is the driest season of the year. The least amount of precipitation during this period falls in the Transcarpathian lowlands. The greatest amount of precipitation (90 to 100 mm) during this period falls on the southwestern slopes, which is associated with the passage of southern cyclones.

1.1.3 Relief

The sub-basin is located within two orographic regions. The majority of it is located in the mountains and foothills of the Carpathians, while the rest is in the Hungarian Plain (Transcarpathian Lowland).

The sub-basin is cut by three groups of ridges separated by longitudinal depressions. The main central group is the chain of the Polonyn Mountains, with the Gorgany Mountains to the north and the Vygorlat-Gutyn (volcanic) range to the south. In the extreme south-east, the Hutsul Alps stand out separately.

The Polonyna Range stretches to the eastern border of the Zakarpattia region, with a length of 180 km. The absolute height increases from northwest to southeast from 1400 m in the Runa valley to 2000 m in the Black Mountains, where the highest mountain in the Zakarpattia region and Ukraine, Hoverla, is located at 2061 m above sea level. The Polonyn Mountains are characterised by wide, flat peaks - polonyny: Runa, Borzhava, Svydovets and others.

The Gorgany are divided by the Mokryanka and Teresva rivers into Western and Eastern Gorgany. The Eastern Gorgany are higher than the Western ones: Boshtul (1698 m), Sivulya (1815 m).

There are several mountain groups in the Vyhorlat-Hutyn range. To the northwest of the Tisza River are the Vygorlat Mountains, with an average height of 800-1000 m. The highest peaks are Poprachnyi Verkh (1020 m) and Velykyi Dil (1081 m). To the north of the Tysa River are the Hutyn Mountains, 700-800 m high. The southern slopes of the Vygorlat-Gutyn Mountains are framed by a 30-40 km wide strip of foothills. The valleys of the tributaries of the Latorytsia and Borzhava rivers divide the foothills into separate escarpments with wide flat peaks.

The Polonyn Mountains are separated from the Gorgan Mountains by the Central Carpathian Depression and from the Vygorlat-Gutyn Mountains by the Internal Carpathian Depression. The Central Carpathian Depression stretches from southeast to northwest. This depression along its entire length up to the Yasynska Basin is a strip of low mountains 700 - 800 m high. The Intra-Carpathian depression is divided into three hollows: Perechyn, Svalyava and Khust depressions.

The Transcarpathian lowland, which occupies about 35% of the Tisza RBD, is a plain with some manes and hills. In the vicinity of the city of Berehove, there are mountains formed by volcanic rocks.

1.1.4 Geology

The sub-basin is located within the young (alpine) folded structure of the Carpathians and covers the central part of the Ukrainian segment of the folded Carpathians with the adjacent Transcarpathian internal trough.

The geological structure of the territory is made up of two structural layers. The lower structural floor forms the foundation of the Transcarpathian Trough and the Folded Carpathians. The basement of the trough contains intensively deposited sedimentary, volcanogenic and metamorphic formations of the Paleozoic and Mesozoic-Cenozoic periods.

The folded Carpathians are formed by carbonate-terigenous and terrigenous Mesozoic-Cenozoic formations that comprise several structural and facies zones. They are intensively dislocated and form covering structures.

Internal Carpathians: Transcarpathian Internal Trough, Vygorlat-Hutyn Ridge and Berehove Uplift and "buried" volcanoes (rhyolites, andesites, basalts, their tuffs and tuff rocks). Peninsular zone of rocks: The Pennine zone (limestones, mudstones, sandstones with gravels and conglomerates). Marmara rock zone: Monastiretske and Vezhanske rocks (conglomerates, marls, sandstones, mudstones with gravelites, limestones, siltstones). Marmarosh massif: Dilove and Bilopotocky rocks (gneisses, shales of various compositions, quartzites, marbles and marbled limestones, limestones and dolomites, granite porphyries, granite gneisses, amphibolites, gabbro, tuffs, phyllites, mudstones, siltstones, sandstones, tuffs, coal, conglomerates). External Carpathians: Magury and Rakhiv rocks (flysch, massive sandstones with limestones in some places), Kamianopotocky rocks and Krosnenska zone (sandstones, limestones, mudstones, spilites, diabases and their tuffs in some places), Porkulets, Dukliany, Chornohora and Skibovy rocks (flysch, mudstones, marls, sandstones, siltstones).

The sediments of the upper structural floor fill the Zakarpattia Internal Trough. These are Neogene-Quaternary sedimentary, volcanogenic and volcanomictic, sometimes coal-bearing molasses formations, which lie mostly subhorizontally and form a cover complex.

1.1.5 Hydrogeology

The Tisza River sub-basin is located within two hydrogeological regions - the Transcarpathian artesian basin and the Carpathian hydrogeological fold region

The Zakarpattia artesian basin is confined to the Zakarpattia Internal Trough, which is filled with a powerful complex of Neogene molasse, which lie on a complex heterogeneous basement and are overlain by Quaternary and Quaternary-Pliocene aquifers. The thickness of the molas, burdened by salt rods, is represented by clay, sandy-clay, debris, chemogenic (rock salt) and volcanic formations.

The Transcarpathian artesian basin is complicated by superimposed volcanogenic formations of Miocene-Pliocene age of the Vyhorlat-Gutynsky ridge.

The territory is hydrogeologically rather complex, with uneven distribution of aquifers, complex relationships between them in the section and uneven water saturation of water-bearing rocks, based on structural features, geological structure, watering and filtration properties of hydrogeological units. Only the widespread alluvial aquifers of Quaternary and Quaternary-Pliocene age overlie bedrock and are the main aquifers in the basin. In addition to alluvial formations, the main groundwater resources include the Neogene effusive deposits of the Ilnytsia Formation and the Vygorlat-Gutynsky Ridge. The salinity of these waters usually does not exceed 1.0 g/dm^3 , which ensures their widespread use for domestic water supply.

Groundwater of the Carpathian hydrogeological folded area is confined to the upper fractured zone of the indigenous flysch rocks of the Paleogene and Cretaceous, which extends to a depth of 80-100 m. The hydrogeological conditions of the territory are characterised by uneven and generally low water enrichment, which is determined by low filtration properties of water-bearing rocks and their intensive dislocation. The most promising are alluvial deposits represented by gravel and pebble formations. Groundwater is recharged by precipitation and discharged through a hydrographic network.

1.1.6 Soil

Due to certain lithological heterogeneity of the bedrock, altitudinal differentiation of the relief, climatic conditions and the tiered vegetation cover, the sub-basin is characterised by a significant diversity and specificity of soil cover.

The sub-basin is dominated by sod-podzolic soils in the lowlands, brown mountain-forest and meadow-forest soils in the mountains, and meadow and meadow gley soils on the floodplain terraces.

Within the mountainous part of the territory, the vertical differentiation of soils is clearly visible. In the highland tier, mountain-meadow-brown soils are common at altitudes of 1100-1200 m; in the treeless areas - meadows - sod-brown soils are common.

The gentler mountain slopes are covered with loamy brown earth-podzolic soils. On gentle slopes and in river valleys, meadow-brown loam soils are formed.

The Transcarpathian lowland is covered with soddy- podzolic gley and gley or brown gley soils.

In the valleys of the Borzhava and Irshava rivers, bog-gley and meadow-gley soils prevail. In the upper reaches of the rivers: Uzh, Latorytsia, Rika, light brown forest soils were formed, and in the upper reaches of the rivers: Borzhava, Tereblya, Teresva, Chorna and Bila Tysa - brown mountain-forest soils. The dominant soil type in the lower reaches of the Uzh, Latorytsia and Borzhava rivers is soddy- podzolic clayey soils.

1.1.7 Flora

The Ukrainian Carpathians belong to the Central European province of broadleaf forests. The land area of the Transcarpathian forest fund is 57.5% of the basin (as of *01.01.2023)*. The dendrological composition includes 10 coniferous and more than 150 deciduous tree and shrub species. The area of the Ukrainian Carpathians covered by forests is 41% spruce and 35% beech. Other species cover smaller areas: oak - 9%, spruce - 5%, hornbeam - 4%. Other species such as birch, maple, ash, and alder cover 6% of the forested area.

There are altitudinal zones of vegetation: foothill oak, lowland beech, upper mountain spruce, subalpine shrub and meadow, and alpine.

The foothill zone, which rises to 400-500 (700) m, is dominated by oak forests, spruce-beech forests and derivative hornbeam forests, beech forests, birch forests, smoky forests, aspen-willow forests. The lowland belt on different slopes rises from 500 - 700 m to 1000 - 1200 m and 1350 - 1450 m, and is dominated by tall-stemmed beech, spruce-beech, hornbeam-beech and oak-beech forests. Pure spruce forests occupy the upper parts of the slopes of Chornohora, the Rakhiv Mountains, and the Gorgan Mountains. In the subalpine zone at altitudes of 1200 - 1500 m, 1650 - 1850 m, there are thickets of mountain pine, juniper shrubs, green alder, East Carpathian rhododendron, cereals and herbaceous meadows. The alpine zone includes herbaceous and shrubby communities above 1800-1850 m; they are fragmented.

1.1.8 Fauna

The total number of fauna species in the region is over 30 thousand. Both invertebrates and vertebrates are common on the territory of the Tisa RBR. Invertebrates include representatives of more than 20 types of organisms, most of which are protozoa. There are about 400 species of vertebrates, including 80 species of mammals, 287 species of birds, including 197 breeding birds, 10 species of reptiles, 16 species of amphibians, 60 species of fish, and 100 species of molluscs. The most common species in Zakarpattia are: mole, fox, wolf, hare, squirrel, ermine, forest marten, wild boar, roe deer, red deer. Rare species include the Danube salmon, sterlet, eagle owl, golden eagle, alpine curlew, lynx, and otter.

Endangered species include the red-winged sparrow, hairy owl, big and small horseshoe bats, Bechstein's, pond, Natterer's, tricoloured and other bats. The number of species of fauna listed in the Red Data Book of Ukraine (the "Red Data Book") increased: grouse, forest cat, black stork and brown bear. The nesting bird fauna includes new species, such as the crested and white-eyed ducks. The population of the spotted salamander is stable. A relict fish species, the Kramer umber, has been preserved in the lowland areas in the system of reclamation canals.

1.1.9 Hydrological regime

The hydrological regime of the sub-basin's rivers is monitored using 50 automated measuring stations (hereinafter referred to as AIS Tisa), 30 of which are hydrometeorological, 13 meteorological, 4 monitoring pumping stations, 2 monitoring locks, and 50 hydrological posts (Transcarpathian Hydrometeorological Centre). The average duration of observations for all hydrological characteristics is more than 50 years. Water flows are measured at 19 hydrological stations.

The surface runoff of the Tisza RBR in Ukraine is formed by the Black and White Tisza, the right tributaries are the Teresva, Tereblya, Rika, Borzhava rivers, which flow directly into the Tisza River, and the Uzh and Latorytsya rivers, which flow into the Laborets and Bodrog rivers in the Slovak Republic, and the latter into the Tisza River in Hungary. Transit surface runoff comes from Romania: the left tributaries of the Viseu, Iza, Sapince and Hungary - the Tur River. In Slovakia, the right tributaries of the Uzh: Ulica and Ubl'a. In addition, surface water runoff from the Beregovo drainage (polder) system comes from Hungary.

A distinctive feature of the intra-annual distribution of runoff in the Upper Tisza basin is the decrease in winter runoff with altitude. Much of the solid precipitation is transferred to the spring or summer seasons. This explains the more intensive growth of runoff in the summer and autumn seasons. The largest share of spring runoff occurs in April (18%) and May (17%), and in total, spring accounts for 40% of the annual runoff. The summer season accounts for 24% of the runoff, with the highest runoff in June (11%). As meltwater is overlaid by rainfall floods, 66% of the annual runoff occurs in the spring and summer, while the autumn season accounts for only 19%. Winter is the season that accounts for the smallest share of the annual runoff - 15%. This season also has the lowest monthly runoff. However, the Borzhava, Latorytsia and Uzh rivers are characterised by a predominance of winter runoff over autumn runoff.

The intra-annual flow regime of the rivers in this sub-basin is characterised by floods occurring between March and August. In low water years, high floods are sometimes observed in autumn and even winter. Due to this complexity of the river flow regime, the definition of the boundaries of the seasons is rather arbitrary, as floods occurring throughout the year make it difficult to identify a boundary period.

Floods on the rivers of the sub-basin are formed by precipitation, which is frequent (165 - 175 days). However, floods begin to form when precipitation exceeds 20 mm per day. In the event of very intense downpours, during which more than 100 mm of precipitation falls, floods become catastrophic. Water levels in mountainous areas rise by 2-4 m, in foothill areas by 5-6 m, and in the Tisza River by 6.5-9.5 m. At the same time, floodwaters are rapidly discharged from mountain watercourses into river valleys, where significant flooding occurs - in a strip of 15-60 m wide in the mountainous area, 115-500 m wide in the foothill area, and in the plains the flood zone increases to 2500 m. Significant slopes of the terrain cause flash floods, during which water levels rise by 1.5-2.5 m in 3 to 4 hours.

An analysis of long-term data on precipitation and hydrological regime in the Tisza RBF shows that the highest water level rises and flows are typical of autumn and winter floods. The share of these floods is on average 20-30% of the number of floods formed during the year.

In addition to floods of mixed origin that occur in the cold season, there are warm-season floods (April - November) that occur as a result of sudden heavy rainfall or siege rains.

Minimum water flows are observed in both warm and cold seasons. The first minimum is recorded in September-October and is associated with a sharp decrease in precipitation, while the second is formed in January-February, when there is no surface runoff and groundwater reserves are depleted. In the mountain rivers of the sub-basin, stable summer low water is observed in 20% of cases, and stable winter low water in 40% of cases. The summer low water period begins in June and July, and ends in early November. The average duration of the summer low water period is 100-160 days. The end of the winter low water period on the basin's rivers occurs in February - March. The average duration of the winter low water period is 45 to 80 days.

The minimum flow characteristics are the average monthly flow (30-day periods with the lowest flow) and the minimum average daily flow in summer, autumn and winter. The minimum average monthly flows of 95% availability are mainly calculated when designing hydroelectric power plants, reservoirs, and ponds, and the minimum average daily flows of 95% availability are used when designing water supply facilities for residential and industrial enterprises.

1.1.10 Specifics of the river basin

The specificity of the Ukrainian part of the Tisza RBD is that it is located exclusively within one administrative unit - the Zakarpattia Oblast. This fact has positive implications for river basin management.

The natural specificity of the sub-basin is that its Ukrainian part is located in the upper reaches of the sub-basin and it is here that the chemical composition of the water and most of the river flow is formed. Floods of varying intensity are common and occur with a recurrence of 3-6 times per year during all seasons.

Volcanogenic sediments within polymetallic deposits and ore occurrences in the Carpathians due to the high solubility of sulphate compounds of heavy metals (chromium, cadmium, copper, etc.) cause an increase in their concentrations in surface and groundwater.

The sub-basin contains mineral deposits, including lead and zinc (Muzhiyevo, Berehivske), mercury (Dubrynychi, Turya Bystra, Vyshkovo), and rock salt (Solotvyno, Tereblya). Enrichment of water with sulphate ions and heavy metal ions is also observed in places of sulphide (kolchedansky) mineralisation in the Marmarosh Rocks area and in the covers of the Marmarosh massif.

The groundwater of the Ukrainian part of the river sub-basin forms a single artesian basin that covers the territory of Hungary and, partially, Slovakia and Romania. The plain part of Transcarpathia is used for transit of groundwater outside Ukraine, while the Panonian Basin in Hungary is a regional discharge area.

Within the Tisa RBR, there are five wetlands of international importance (Ramsar sites), the Carpathian Biosphere Reserve and the Uzhansky National Nature Park, which have international status.

1.1.11 Typology of surface water bodies

The SWB typology was developed in accordance with the Methodology for Determining Surface and Groundwater Bodies (Methodology) approved by the Order of the Ministry of Ecology and Natural Resources No. 4 dated 14.01.2019 to detail the hydrographic zoning of Ukraine, prepare a state water monitoring programme, and develop and evaluate the effectiveness of the RBMP implementation.

In the Tisza sub-basin, three categories of surface water bodies have been identified - rivers, artificial (AWB) and heavily modified water bodies (HMWB).

The EU WFD system A was used for river typology and delineation (Table 41).

Table 41. Descriptors for rivers (system A)

Descriptors		
Catchment height, m	Catchment area, km^2	Geological rocks

• midlands: over 800 • lowlands: 500 - 800 • upland: 200 - 500 • lowland: < 200	• small: 10 - 100 • average: >100 - 1000 • Large: >1 000 - 10 000 • very large: > 10 000	• limestone • silicate • organic

The Tisza sub-basin is located within two ecoregions - the Hungarian Lowlands (number 11) and the Carpathians (number 10).

Based on the catchment area, rivers in the sub-basin are classified as small (with a catchment area of less than 100 km^2), medium (100 to 1000 km^2), large (1000 to 10,000 km^2) and very large (over 10,000 km^2).

According to the height of the catchment area, the rivers of the sub-basin are located in the lowlands (less than 200 m), uplands (200-500 m), lowlands (500-800 m) and midlands (over 800 m).

The geological rocks of the RBD are represented by one type: silicate (Si).

Table 42. Types of SWBs in the "rivers" category

№	Type code	Type
1	UA_R_10_L_1_Si	a large river in the lowlands in silicate rocks
2	UA_R_10_L_2_Si	a large river on a hill in silicate rocks
3	UA_R_10_M_1_Si	medium-sized river in the lowlands in silicate rocks
4	UA_R_10_S_1_Si	a small river in the lowlands in silicate rocks
5	UA_R_10_S_2_Si	a small river on a hill in silicate rocks
6	UA_R_10_S_3_Si	a small river in the lowlands in silicate rocks
7	UA_R_10_S_4_Si	a small river in the middle mountains in silicate rocks
8	UA_R_10_M_2_Si	medium-sized river on a hill in silicate rocks
9	UA_R_10_M_3_Si	medium-sized river in the lowlands in silicate rocks
10	UA_R_11_L_1_Si	a large river in the lowlands in silicate rocks
11	UA_R_11_M_1_Si	medium-sized river in the lowlands in silicate rocks
12	UA_R_11_S_1_Si	a small river in the lowlands in silicate rocks
13	UA_R_11_S_2_Si	a small river on a hill in silicate rocks
14	UA_R_11_XL_1_Si	a very large river in the lowlands in silicate rocks

1.1.12 Reference conditions

The assessment of the ecological state of the SWB is based on a comparison of biological indicators (benthic macroinvertebrates, macrophytes, phytobenthos, phytoplankton and fish) with reference conditions that characterise the state of the SWB, which has not been subjected to anthropogenic impact or is minimal.

Reference conditions are determined on the basis of data obtained from reference sites, by modelling (predictive models or retrospective forecasting methods that take into account historical, paleogeographic and other available data that provide a sufficient level of confidence in the values for reference conditions for each type of SWB) or by a combination of these methods or based on expert opinion.

In order to establish reference values for biological indicators based on data from reference sites, it is necessary to establish such sites for each type of SWB in all natural categories. The network should cover a sufficient number of sites to provide a sufficient level of confidence and to account for the variability of values for indicators that correspond to the different ecological status of the SWB type.

Key criteria for selecting reference sites:

- characterise the state of the SWB without anthropogenic impact or with minimal impact;
- There is no industry or intensive agriculture;
- concentrations of specific synthetic pollutants are zero or below the detection limits;
- no morphological changes;
- water abstraction and flow control cause only minor fluctuations in water levels and do not affect surface water quality;
- the vegetation of the coastal zone is appropriate for the type of SWB and geographical location;
- no invasive species;
- fishing and aquaculture do not affect the functioning of the ecosystem.

In accordance with paragraph 2, clause VII. of the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 5 dated 14.01.2019 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Conditions of a Surface Water Body, as well as Assigning an Artificial [...]", type-specific reference conditions may also be determined on the basis of existing reference sites in other countries for the same type of MWB or by combining the procedures described above.

Given that reference conditions for all types of SWB are not currently defined in Ukraine, it was proposed to use the reference conditions established for similar or similar types in neighbouring EU countries, namely the Slovak Republic and Romania.

The methodology includes four hydrobiological indicators (benthic macroinvertebrates, phytoplankton, phytobenthos, macrophytes, macroalgae and eukaryotes, respectively) for four natural categories of surface waters (rivers, lakes, transitional waters and coastal waters) that have been identified in Ukraine.

The environmental quality standards (EQS) were approved by Order of the Ministry of Ecology No. 332 dated 01.04.2024 "On Approval of Environmental Water Quality Standards for Determining the Ecological Status of Surface Water Bodies and Amendments to Certain Regulatory Acts".

In the second cycle of the RBMP, it is necessary to revise the reference conditions (including for the fish fauna indicator) using data from state water monitoring.

1.2 Water bodies delineation

1.2.1 Surface water

In the Tisa River sub-basin, the SWBs was determined for 165 rivers (according to the State Water Cadastre: Surface Water Bodies Geoportal of the SAWR).

A total of 481 SWBs have been identified within the sub-basin. The identified SWB s belong to the following categories of surface water:

- rivers;
- artificial (AWB) and heavily modified (HMWB).

Category "rivers"

According to the Methodology, 400 SWB were identified. The number of identified SWB by descriptors and types is shown in Tables 43 and 44.

Table 43. Distribution of SWBs of the "rivers" category by descriptors

Descriptor	Indicator	Number of SWBs
by eco-region	Hungarian lowlands (number 11)	34
	Carpathians (number 10)	366
by catchment area	small (S)	327
	average (M)	56
	large (L)	15
	very large (XL)	2
by the height of the catchment area	in the lowlands (1)	83
	on a hill (2)	131
	in the lowlands (3)	115
	in the midlands (4)	71
by geological type	in silicate rocks (Si)	400

Table 44. Distribution of SWBs of the "rivers" category by type

№	Type code	Type	Number of designated SWBs
1	UA_R_10_L_1_Si	a large river in the lowlands in silicate rocks	4
2	UA_R_10_L_2_Si	a large river on a hill in silicate rocks	5
3	UA_R_10_M_1_Si	medium-sized river in the lowlands in silicate rocks	12
4	UA_R_10_S_1_Si	a small river in the lowlands in silicate rocks	37
5	UA_R_10_S_2_Si	a small river on a hill in silicate rocks	96
6	UA_R_10_S_3_Si	a small river in the lowlands in silicate rocks	105

№	Type code	Type	Number of designated SWBs
7	UA_R_10_S_4_Si	a small river in the middle mountains in silicate rocks	71
8	UA_R_10_M_2_Si	medium-sized river on a hill in silicate rocks	26
9	UA_R_10_M_3_Si	medium-sized river in the lowlands in silicate rocks	10
10	UA_R_11_L_1_Si	a large river in the lowlands in silicate rocks	6
11	UA_R_11_M_1_Si	medium-sized river in the lowlands in silicate rocks	8
12	UA_R_11_S_1_Si	a small river in the lowlands in silicate rocks	14
13	UA_R_11_S_2_Si	a small river on a hill in silicate rocks	4
14	UA_R_11_XL_1_Si	a very large river in the lowlands in silicate rocks	2

Category " heavily modified water bodies "

A total of 49 HMWBs have been identified in the basin. The share of HMWBs in the total number of SWB in the sub-basin is 10%. Most of them (39 HMWBs) are classified as HMWBs due to diversion.

9 SWB are classified as HMWBs due to their overregulation.

1 SWB is classified as an HMWBs due to a combination of regulation and channel straightening (Figure 41).

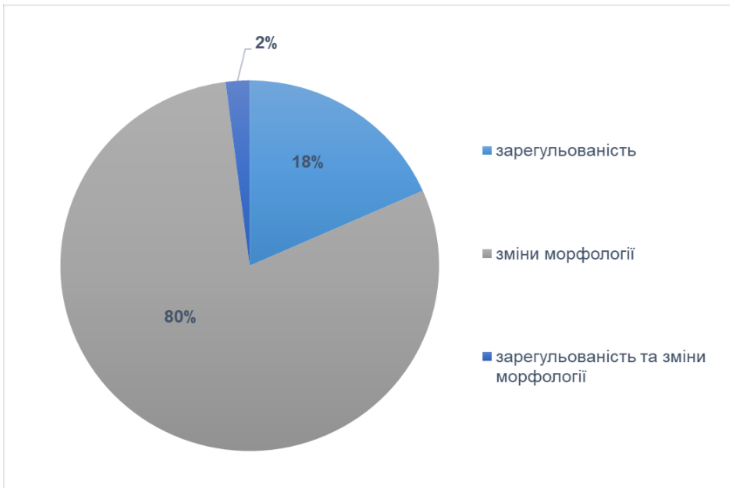


Figure 41. Distribution of HMWBs by hydromorphological pressures, %.

Category "artificial surface water bodies"

The sub-basin has 32 AWBs, which are canals.

The percentage distribution of the identified SWBs in the Tisza sub-basin by category is shown in Figure 42.

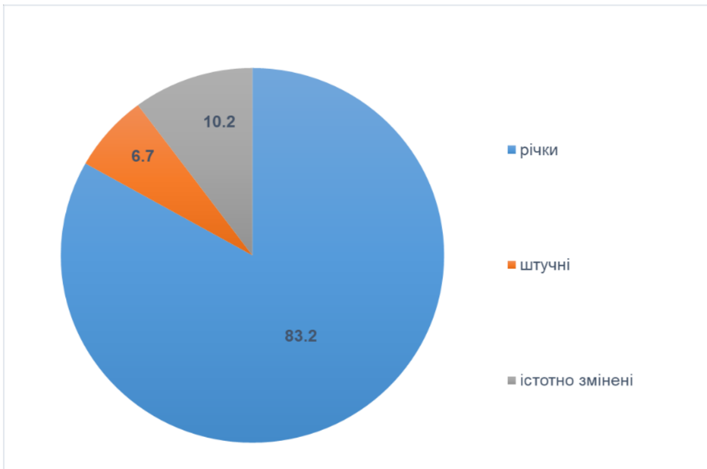


Figure 42. Breakdown of identified SWB by category, %.

Each of the 481 SWB s identified in the sub-basin has been assigned a unique code that looks like this:

UA_ M5.3.1_YYYY

- UA - Ukraine;
- M5.3.1 is the code of the Tisza sub-basin (according to the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 103 of 29 March 2017 "On Approval of the Boundaries of River Basin Areas, Sub-basins and Water Management Areas");
- YYYY *is the* unique number of the designated SWBs in the sub-basin.

Each linear SWB (categories "rivers", "AWB or HMWB") has a length (km). The length of the SWBs ranges from 0.3 km (UA_M5.3.1_0453 - Lyuta River) to 67.3 km (UA_M5.3.1_0300 - Latorytsia River).

Figure 43 shows the length distribution of the identified linear SWBs in the sub-basin.

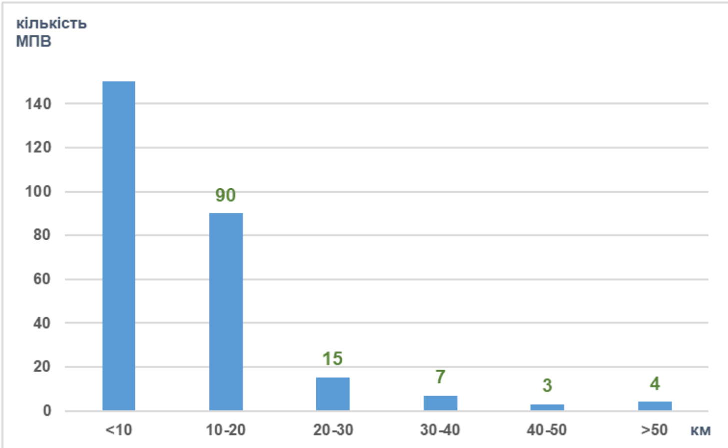


Figure 43. Distribution of the identified linear SWB by length

Each polygonal SWB (category "HMWB") has an area (km^2). The area of the SWB ranges from 0.2 km^2 (UA_M5.3.1_0368 - Bobovyshchanske Reservoir) to 2.1 km^2 (UA_M5.3.1_0413 - Fornosh Reservoir).

Figure 44 shows the distribution of the identified polygonal SWBs in the sub-basin by area.

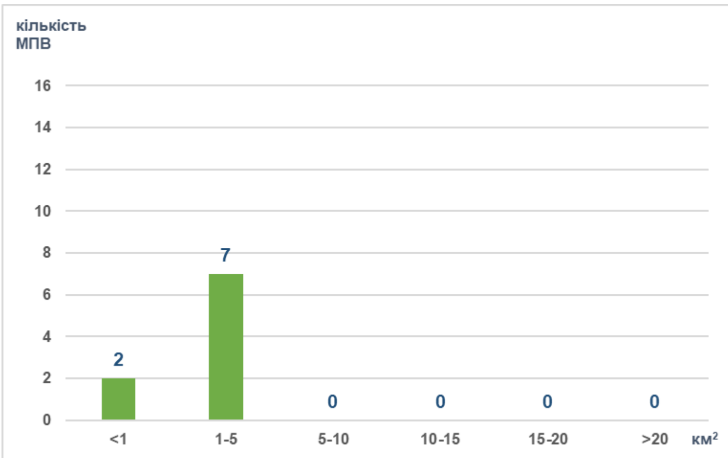


Figure 44. Distribution of identified polygonal SWBs by area

1.2.2 Groundwater

The determination of the GWB was carried out in accordance with the Methodology for determining surface and groundwater bodies (Methodology), approved by the Order of the Ministry of Ecology and Natural Resources No. 4 dated 14.01.2019.

The definition of an GWB includes the division of aquifers into smaller units, the preliminary establishment of GWB boundaries based on individual characteristics and available knowledge of hydrogeological systems and anthropogenic impacts.

The definition begins with the analysis of geological maps and well data to identify different hydrogeological units within the aquifer. First of all, attention is paid to those aquifer complexes whose reserves can provide water intake of more than 10 m^3 per day.

The youngest aquifers are considered first. As a rule, the boundaries of surface water basins are approximated with the boundaries of groundwater basins, and then the determination of the GWB for deeper aquifer complexes, the boundaries of which go beyond the boundaries of surface water basins, is performed.

The codes of the defining GWB are formed as follows:

UAM5310Q100

- UA - Ukraine,
- M53 is the code for the Danube basin,
- 1 - Tisa River sub-basin, according to the Water Code,
- 0Q - geological system (geological age of water-bearing rocks),
- 100 - the number of the GWB.

GIS technologies were used in the process of identifying the GWBand creating the relevant maps. According to Guideline No. 9 "On Implementation of Geographic Information Systems (GIS)", river basins, sub-basins and groundwater bodies were depicted on the map as polygons, and observation wells as points, etc.

In the process of identifying GWBs in the Tisza sub-basin, 7 groups of GWBs with a total area of 14713 km^2 (average area of 2101.9 km^2) were identified (Table 45). In total, 3 non-pressure GWBs, 2 pressure GWBs and 2 pressure-non-pressure GWBs were identified in the sub-basin.

Table 45. Tisza sub-basin GWB

№	Unified code of the GWB	GWB groups	Geological index	Area of the GWB, km^2
1	UAM5310Q100	GWB in alluvial Upper Neopleistocene-Holocene sediments of floodplains and first floodplain terraces of rivers of the mountainous part and Solotvynska depression	$aP + aH_{III}$	1251,0
2	UAM5310Q200	GWB in weathering crust and other loose Holocene sediments of the mountain slopes of the sedimentary Carpathians	e, p, ed, dcH	7366,0
3	UAM5310Q300	GWB in lacustrine-alluvial Middle-Upper Neopleistocene sediments of the Minaya Formation	laPII-IIImn	1854,0
4	UAM5310Q400	GWB in lacustrine-alluvial Eopleistocene-Lower Neopleistocene sediments of the Chop Formation	$laE+P_I$ čp	1090,0
5	UAM5310Q500	GWB in alluvial Pliocene-Lower Neopleistocene sediments of the ninth and tenth overflank terraces (Kopanska terrace)	$a\ N\ \text{-}E^{9\text{-}10}{}_{2I}$	118,0
6	UAM5310N100	GWB in sediments of the Pliocene Ilnytsia Formation	N_2 il	1307,0
7	UAM5310N200	GWBV in volcanogenic Pliocene sediments of the Vygorlat-Gutynsky Ridge	N vg_2	1727,0

A group of GWB in the Quaternary Upper Pleistocene-Holocene sediments of the floodplain and the first overflow terrace of the rivers of the mountainous part and Solotvynska depression (UAM5310Q100)

This group of GWB is associated with alluvial deposits of floodplains and the first floodplain terraces of the middle reaches of the largest rivers of Transcarpathia: Tisa, Teresva, Tereblya, Rika, Borzhava, Latorytsia and Uzh, and sometimes with the alluvium of their lateral tributaries.

The length of the GWB from the upstream areas with absolute elevations of 583-1040 m to the outflow of the rivers to the plain is 53 to 100 km. The width of the GWB ranges from 0.5 km in the upper reaches of the rivers to 10-13 km in the lowlands. The approximate total area of the combined GWB in the valley of the Tisza, Teresva, Tereblya and Rika is approximately 751 km^2 , Borzhava - 157 km^2 , Latorytsia - 190 km^2 , Uzh - 153 km^2 .

In total, there are 4 sustained in area and in the context of the GWB with a total area of approximately 1251 km^2.

The alluvial deposits of the floodplain and the first terrace above the floodplain form a single lithological stratum, often lying on a common basement. The terrace surface is 0.5-5.0 m above the floodplain.

The water-bearing alluvium of the valley bottoms is composed of coarsely rolled boulders, pebbles, gravel and various grains of sand as aggregate. The volume of aggregate reaches 20%. Clay loam material in the context of alluvium is insignificant and sometimes completely absent. A layer of loam with an admixture of boulders and pebbles often lies in the roof of terraces with a thickness of 0.5 to 2 m. This layer of low-permeability rocks can shield the body from episodic pollution with a small volume of pollutant. These cover loams are ineffective for protection against long-term contamination. The thickness of the body ranges from several metres to 14-16 metres. At its base, within the flysch Carpathians, there are Cretaceous and Paleogene sandstones, mudstones, siltstones, and in the volcanogenic Carpathians, tuffs, andesites and dacites.

The identified alluvial water bodies are isolated from each other by parallel mountain ranges. In fact, each individual body in the group is a separate hydrogeological system, but with identical alluvium and identical conditions of formation and discharge of groundwater reserves. The alluvial deposits of the floodplain and the first terrace above the floodplain are hydraulically closely connected with each other and with the river. The bodies are fed by the infiltration of river water into the floodplain. In low water, when river levels are low, alluvial waters are discharged into the river channels.

The prevailing values of the water conductivity coefficient of bodies in the studied water intake areas are 800-1100 m^2/day. The filtration coefficient is 80-400 m/day, the equipotential conductivity is (6.6-9.5)*10^3 m^2/day, and the water yield is 0.12-0.2. The hydraulic resistance of the channel sediments is about 40 m.

The depth of the natural alluvial water table ranges from 1-2 to 4-5.5 metres. The average amplitude of water level fluctuations is about 1.5 m. During catastrophic floods, which occur once every 10-20 years, part of the area of the first floodplain terrace is completely flooded.

The chemical composition of the water is calcium bicarbonate. Mineralisation is in the range of 0.12-0.32 g/dm^3. In terms of the content of macro- and micro-components, the waters generally comply with the standards of Sanitary and Epidemiological Standards 2.2.4-171-10. In the vicinity of settlements, nitrogenous compounds and phosphates may be present in alluvial waters in excess of the normal concentrations, which is associated with domestic pollution. Special environmental studies are required to determine the presence and intensity of pollution.

The water is used by the local population to supply water to private households, public and industrial facilities, and cities.

For local water supply, water is extracted from wells up to 8 metres deep and single wells of greater depth. For the cities of Rakhiv, Vel.Bychkiv, Perechyn and Vel. Bereznyi, there are existing water intakes with operational reserves of 3 to 6 thousand m^3 /day. The depth of production wells at these water intakes is 6.0-32.0 m. The wells have fully penetrated the alluvial stratum and the bedrock cover to construct sumps. The pilot water intake wells have flow rates in the range of 65-1,200 m^3/day with a water level drop of 0.66-6.2 m.

The alluvial waters of the first floodplain terrace are also developed together with groundwater associated with the underlying volcanogenic formations at the Chynadiyivka (Mukachevo) and Rika (Khust) water intakes. The thickness of the waterlogged alluvium is 10.0-23.0 m. Water-bearing andesites and tuffs have been uncovered by wells to a depth of 100-200m.

Experimental water discharges at Chynadiyivka water intake from 238 to 1043 m^3/day with a water level drop of 1.4 to 3.8 m. Water permeability of the entire thickness of water-bearing rocks is 244-342 m^2/day. Experimental flow rates of the Rika water intake are in the range of 1380-2680 m^3/day with a decrease in level to 5.9 m. The chemical composition of water in these areas is calcium bicarbonate, sodium-calcium bicarbonate and magnesium-calcium bicarbonate. Mineralisation is 0.19-0.41 g/dm^3.

Group of GWB in the Quaternary Holocene weathering crust and other Quaternary loose sediments of the mountain slopes of the sedimentary Carpathians (UAM5310Q200)

The majority of the mountain slopes of the sedimentary (flysch) Carpathians have Holocene weathering crust formed as a result of weathering of Cretaceous-Palaeogene bedrock. The body is bounded in the north-east by the main watershed of the Carpathians, and in the south-west by the Transcarpathian trough.

The lithological composition of the bedrock of the slopes is mainly represented by mudstones, siltstones and sandstones. Among the weathering products, the following genetic varieties are common: eluvium (total thickness is mostly up to 10 m), colluvium (thickness reaches tens, sometimes hundreds and more metres), deluvium (maximum thickness of the watered deluvium zone during favourable periods of recharge can reach 3-7 m), proluvium (thickness can reach 10-15 m).

Groundwater in the loose sediments of mountain slopes has not been systematically studied. Only long-term monitoring of 5 springs in representative subdivisions is carried out. Their discharge ranges from 6.7-10.0 m^3 /day in low periods to 72.0-79.0 m^3 /day at maximum recharge. Occasional determinations of the flow rate and water quality of the 3 largest springs in Mizhhirya district were also carried out for the purpose of their industrial bottling. The discharge of these springs is 200-300 m^3 /day.

The mineralisation of the springs' water is in the range of 0.12-0.2 g/dm^3. Chemical composition: magnesium-calcium hydrocarbonate, sodium-calcium sulphate-hydrocarbonate.

Groundwater from weathering crustal deposits is widely used by the local population for domestic and drinking purposes. Almost every private household has built traditional wells, mostly 4-10 m deep. The volume of water extracted from wells is up to 5-7 m^3 /day. Sometimes, household owners jointly exploit the nearest springs after capping them and laying water pipelines. Spring water also provides centralised water supply to some of the existing sanatoriums, recreation centres, public and private institutions in the Carpathians. According to indirect estimates, about 350,000 people use groundwater from the loose sediments of the Carpathian mountain slopes, with a total volume of up to 100-150,000 m /day. [3]

GWB in Quaternary Middle-Upper Pleistocene lake-alluvial sediments of the Minaya Formation (UAM5310Q300)

The GWB in the Quaternary Middle-Upper Pleistocene lake-alluvial sediments of the Minaya Formation (LaPII-IIImn) is distributed in the Transcarpathian alluvial plain (lowland).

In the west and south, the GWB extends into the territory of neighbouring countries: In the northeast, the bodies boundary is mainly the foothills of the Vyhorlat-Hutyn volcanogenic range, while in the central part of the Zakarpattia lowland, the body borders on the foothills of the Berehove hills and the Kopanska terrace. The total area of the body is about 1854 km^2 .

Groundwater is used to supply water to local residents and businesses. Several hundred special wells, including production wells, have been drilled as a result of hydrogeological works. There are also observation wells for regular monitoring of groundwater levels and quality.

Centralised water intakes for the cities of Uzhhorod, Chop, Berehove, Vynohradiv and others have been explored.

The body is the first to be exposed from the earth's surface. It consists of a thick layer of homogeneous waterlogged alluvial sand, gravel, pebble and boulder deposits of the Middle-Upper Pleistocene. From the surface, the body is overlain by a layer of water-resistant clays and loams of low thickness - up to 8-10 m. In the floodplains of the Tysa, Uzh, Latorytsia, Borzhava rivers that cross the plain, there are practically no surface water bodies. The small Holocene (modern) alluvial deposits of the river floodplains and the first floodplain terrace are hydraulically closely connected to the thick thickness of the Mynai alluvium. They form a single groundwater body.

The water-bearing rocks are characterised by a varied lithological composition. There is a natural decrease in the alluvium content of large fractions of debris material with increasing distance from the contact of the body with the foot of the mountains, which is explained by the gradual loss of water flow velocity after they leave narrow mountain valleys for the plain. According to lithological and facies features, several main lithological and facies zones can be traced across the alluvium area.

In the north of the GWB, along the border with Slovakia and partly Hungary near Chop, fine-grained sands (sometimes quicksand) with minor layers of medium-coarse sand fractions prevail. To the east, between the Latorytsia and Uzh rivers, the largely sandy section is gradually replaced by gravel and pebble with inclusions of boulders near Uzhhorod. The thickness of the northern fragment of the body is 50-80 m.

The central part of the groundwater body of the Mynai Formation is dominated by sand and gravel deposits interbedded with clays. In the vicinity of Batyovo, Gut, Gat, Koropets and other settlements, layers of waterlogged alluvium sometimes resemble riverbeds in shape and lithology. The riverbeds buried in the Pleistocene have a northeast orientation. Active water exchange between alluvial layers takes place through "hydraulic windows" in clay layers. The total thickness of the central part of the body is mostly 40-70 m.

The southeastern flank of the body between the towns of Berehove and Vynohradiv is characterised by the widespread occurrence of gravel and large fragmentary alluvium (pebbles and boulders) over a wide area. The largest areas of boulder and pebble alluvium with an admixture of gravel and sand occur in a wide strip on the right bank of the Tysa River in the vicinity of Korolevo-Vynohradovo. Sandy deposits occur only on the left bank near the intersection of the three borders. The thickness of alluvium varies from 10-20 m at the foot of the Berehove hill to 100-120 m southwest of Vynohradiv.

Water-bearing sediments are characterised by high water permeability. The maximum values of the water permeability coefficient (*km) of* 3500 m^2 /day and more were recorded in areas with gravel-pebble-boulder sections. The filtration coefficient (*k*) reaches 70 m/day. In areas dominated by sands with clay admixture, the water permeability coefficient is about 500m^2 /day. The filtration coefficient is about 10-15 m/day. The average approximate values of the equilibrium conductivity coefficient (*a) are* in the range of 5.5 * 10^3 -1.5 * 10^4 m^2/day. The alluvial rocks water drainage coefficient is in the range of 0.08-0.26. The value of the hydraulic resistance of channel sediments, which is taken into account when assessing the operational reserves of coastal water intakes 10-130 m. Modulus of infiltration feeding of the body due to atmospheric precipitation over the body area 140-267 m^3/day/km^2, which is about 10-20% of the average daily precipitation rate over a multi-year period. The general direction of the natural groundwater flow is from north-east to south-west, where it is discharged into the regional drainage - the Tisza River. The groundwater of the body is non-pressure.

The depth of the natural water table is generally 4-7 m. The amplitude of their fluctuations during the year depends on the volume of groundwater supply and discharge and is about 2.5 m.

The chemical composition of the alluvial waters of the Minaya is determined by the conditions of their recharge, transit, discharge, and flows from adjacent aquifers. The groundwater is predominantly calcium hydrocarbonate with an admixture of chlorides, sulphates, sodium and magnesium. Sometimes the content of chlorides and sodium exceeds 20 % equivalent. Sulphates are present in the groundwater composition almost throughout the entire area of the body. This is due to the economic use of the land, as well as the presence of sulphide rocks in the lower deep horizons.

The total water salinity is 0.35-0.6 g/dm^3. In river floodplains, groundwater salinity is somewhat lower - 0.22-0.3 g/dm^3. In terms of macro- and micro-components, the water of the Minaj complies with the standards of Sanitary and Epidemiological Standards 2.2.4-171-10, except for iron and manganese in most areas. The maximum concentrations of these micro-components were recorded in the border area between the settlements of Chop-Vilok. At the municipal water intakes of Berehove and Chop, the content of manganese is 3-5 mg/dm^3 , and of ferrous iron - up to 10-20 mg/dm^3 . Before using these waters for household and drinking purposes in Berehove, they are centrally treated by aeration and then filtered through a zeolite sorbent.

The groundwater of the Mynai body is widely used by the local population for household and drinking water and other needs. The total volume of water production from wells and domestic wells reaches 100 thousand m^3/day, which is about 10% of the total amount of operational reserves and forecasted groundwater resources of the Mynai body.

The production wells' flow rate at their maximum load can reach from 0.5 to 3-4 thousand m^3/day and more in the areas with the highest water availability.

The Mynai Formation GWB is formally considered to be conditionally protected from surface sources of pollution due to the presence of water-resistant clays in the roof with a thickness of more than 3 metres. The protection of the body increases from east to west, where the clay layer is thicker and less exposed to erosion by water flows. In the last century, when drainage canals were laid to drain waterlogged land, the insulating functions of water-resistant rocks were partially disrupted, which negatively affects the ecological state of the body. In addition, almost all of its area is subject to significant anthropogenic pressure. The land is intensively used in agricultural production with the use of mineral fertilisers, pesticides and herbicides.

There are household waste dumps near almost every settlement. There are no facilities for their processing and disposal. Only cities have centralised systems for the disposal, treatment and discharge of domestic wastewater. In general, this gradually leads to a systemic deterioration of groundwater quality.

In the most vulnerable (representative) areas, it is advisable to establish comprehensive environmental monitoring.

GWB in Quaternary Eopleistocene-Lower Pleistocene lake-alluvial sediments of the Chop Formation (UAM5310Q400)

The GWB in the Quaternary Eopleistocene-Lower Pleistocene lake-alluvial sediments of the Chop Formation (laE+P1čp) is widespread in the Transcarpathian alluvial plain.

The body is the second from the earth's surface. It lies beneath a 20-40 m thick layer of waterproof clay, which hydraulically isolates the Chop body from the waterlogged alluvium of the Minaya River.

Hydrogeological conditions of the Chop body have not been studied in detail. The number of hydrogeological wells, including production wells for water, is insignificant.

The lithological composition of alluvial water-bearing rocks is predominantly sandy. The sands occur in the form of lenses and layers, sometimes with the inclusion of pebbles and gravel. Waterlogged rocks are often interbedded with clays and loams. Due to the presence of "hydraulic windows" in the clays, there is vertical filtration throughout the thickness of the waterlogged alluvium of the Chop body. The depth of the roof of the body is 30-117 m, the depth of the basement is 46-303 m. The thickness of the body from east to west increases from several metres to 240-400 m in the area of Chop town, villages. Solona and Svoboda villages.

The GWB is a pressure water storage facility. The head is determined from the roof to the natural piezometric level, which is 2.7-5.8 m deep, slightly higher than the low-water mark.

The filtration parameters of the Chop permeable strata are almost two orders of magnitude lower than those of the Minai alluvium. Water permeability is 3-35 m^2 /day, filtration coefficient is 1-5 m/day.

Well flow rate during short-term pilot pumping ranges from 80 m^3 /day to 260 m^3 /day at 4-44 m water levels.

The chemical composition of the water is calcium bicarbonate. Mineralisation is mainly 0.5-0.8 g/dm^3 . Sometimes, in the foot of the body, above areas with tectonic faults in the underlying Neogene sediments, water mineralisation can reach 1.0 g/dm^3 . Its composition is dominated by chlorine ion, which is explained by the inflow of chloride water into the Chop alluvium through faults from deep aquifers. In terms of ferrous iron content (10-40 mg/dm^3), the waters of the Chop Formation's GWB without deironing are substandard for drinking.

GWB in the Quaternary Pliocene - Lower Epleistocene alluvial deposits of the ninth and tenth floodplain terraces (UAM5310Q500)

The GWB in alluvial deposits of the ninth and tenth floodplain terraces (a N -$E^{10-9}{}_{21}$) is widespread within the so-called "Kopanska" accumulative terrace in the Borzhava-Tisa riverbed near the village of the same name.

The section is composed of perfectly rolled pebbles (up to boulders), red-brown loams, lenses of sands and clays with a total thickness of 52-137 m.

The thickness of aquifers in gravelly-sandy, sandy, sandy-pebbly and boulder-pebbly deposits of high terraces ranges from 5-10 to 50-80 m. The depth of groundwater levels ranges from 1 m to 47 m.

The flow rate of the springs is mainly within 1-10 m^3/day, sometimes more, wells - 1-432 m^3/day at a depression of 4.8 to 18 m. Three sources are monitored. The flow rate of these sources is in the range of 4.3-7.5 m^3/day. Under conditions of enhanced feeding, their flow rate reaches 30 m^3/day.

The chemical composition of the water is calcium-sodium chloride, sodium bicarbonate-chloride and magnesium-calcium-sodium with a salinity of 0.14-0.6 g/dm^3.

In most cases, the groundwater of the GWB in alluvial deposits of high floodplain terraces is naturally conditionally protected, which is ensured by the presence of a 5-10 m thick water-resistant clay and loam cover in the upper part of the section of the deluvial-proluvial cover and a significant (up to 50-70 m) aeration zone.

The water supply to the GWB is provided by infiltration of precipitation.

The aquifer is exploited by individual wells and boreholes to supply water to small industrial and agricultural facilities and households.

Group of GWB in Neogene Pliocene sediments of the Ilnytsia Formation (UAM5310N100)

The group of GWB is developed in large areas of the Transcarpathian trough under Quaternary alluvial strata. In the northeast of its distribution, the GWB borders the slopes of the Vygorlat-Gutyn volcanic ridge with narrow near-surface strips and partially overlaps them.

Water-bearing rocks are interbedded with sands, siltstones, tuffs, conglomerates and tuffs. Often, water-resistant clays lie between these rock complexes. Due to the presence of water reservoirs, the body have localised water pressure.

The thickness in the western part of the horizon is 100-519 m, and 200-590 m in the eastern part.

Approximate values of filtration coefficient are 3-70 m/day and sometimes more. Water salinity in the upper parts of the body section is 0.4-0.8 g/dm^3 . The chemical composition of the water is predominantly calcium-sodium chloride-hydrogen carbonate. At the base of the body and in the zone of tectonic faults, water mineralisation can reach 1.0-1.5 g/dm^3 . Its chemical composition is dominated by chlorides. All these parameters need to be clarified.

The groundwater of the Ilnytsia Mine is practically not used for centralised water supply.

Group of GWB in Neogene Pliocene volcanogenic sediments of the Vygorlat-Gutyn Ridge (UAM5310N200)

The Vygorlat-Gutyn volcanogenic ridge occupies the area between the Transcarpathian alluvial plain and the Carpathian flysch. The ridge continues into Romania and Slovakia. Accordingly, the borders of these countries are taken as the conditional boundaries of the GWB groups developed in the volcanics of the ridge.

The water-bearing rocks of the body are fractured andesites, andesite-basalts, darites, andesite-dacites and tuffs. Vertical and horizontal zonation is observed everywhere in the watered part of the volcanic sediments, which is associated with varying degrees of fracturing throughout the section. In general, two "floors" can be traced in the section of fractured waterlogged volcanics. The "upper floor" (modern weathering crust) of intense fracturing and weathering with a thickness of 20-70 m is associated with pore-fracture and fracture-fracture groundwater. There are many springs in the area, which contribute to part of the surface runoff in the area. The flow rates of the springs range from 4.3 to 346m^3 /day. Well flow rates are up to 350-430 m^3 /day at water levels of up to 16 m. The composition of the "upper floor" groundwater is sodium-calcium bicarbonate with a mineralisation of 0.04 to 0.4 g/dm^3 . Sometimes they contain excessive concentrations of silicon.

The groundwater of the "lower floor" is confined to tectonic fracture zones. They were discovered by wells at depths of 140-300 m. The thickness of the watered zones is from 3-5 m to 20 m. The waters are pressure. Piezometric levels are installed at depths ranging from 9-70 m to 6 m above the ground surface. Well flow rates are 150-560 m^3/day.

The waters of tectonic fracture zones at considerable depths often have elevated temperature and mineralisation, and a specific chemical composition. As a rule, they are enriched with silicon oxides. In a number of areas of the region, they are used as mineral resources. In this regard, the average depth of drinking (fresh) water is 200 metres. These data need to be clarified.

Volcanites are characterised by significant anisotropy in water permeability. As a rule, the water permeability of the bulk of rocks is an order of magnitude lower compared to the water permeability in tectonic fault zones. Its approximate value is from 5-20 m^2/day to 200-250 m^2/day, respectively. Approximate values of filtration coefficients range from 1-3 m/day to 10-30 m/day.

The GWB is fed by precipitation and surface water. Groundwater is discharged into the hydrographic network and alluvial deposits. Significant elevation differences between the feeding areas on mountain slopes and the areas where water is discharged provide for rather high heads.

The groundwater of the volcanogenic rocks of the Vygorlat-Gutynsky Ridge is considered to be naturally unprotected from surface pollution.

The waters are used in conjunction with alluvial waters for the centralised domestic water supply of the cities of Mukachevo and Khust and are often developed in separate individual wells to supply water to industrial and agricultural facilities and households. Mineral waters from deeper horizons are used in balneology and for industrial bottling.

The fresh groundwater of the group is characterised by good drinking quality and significant resources, but due to its difficult accessibility, it is not of widespread practical importance.

2 SIGNIFICANT ANTHROPOGENIC IMPACTS ON THE QUANTITATIVE AND QUALITATIVE STATUS OF SURFACE AND GROUNDWATER, INCLUDING POINT AND DIFFUSE SOURCES

2.1 Surface water

The Tisza River sub-basin is located within one region - Zakarpattia. The socio-economic structure of the sub-basin creates prerequisites for the formation of anthropogenic pressure that affects surface water ecosystems.

The main factors of anthropogenic pressure on the sub-basin's SWBs include:

- **Population (municipal return (waste) water).** According to the administrative-territorial division, the sub-basin includes 6 administrative districts (there were 13 before July 2020), 11 cities, 19 towns, 578 villages and 64 TGs, with a population of about 1.25 million people, and a population density of about 97.5 people/km^2. The population is dominated by rural residents - 63%, urban population - 37%.
- **Enterprises in various sectors of the economy.** The main industrial production sectors include: processing industry, mining and quarrying, chemical and petrochemical industry, food industry, and mechanical engineering. The largest consumers of water are the mining industry (0.276 million m^3), chemical industry (1.044 million m^3) and food industry (0.067 million m^3). The discharge of polluted return (waste) water from industrial water users amounts to 0.466 million m^3 (17.7% of the total discharge), of which 0.255 million m^3 and 0.211 million m^3 are normatively clean.
- **Agriculture.** Agriculture is one of the leading economic sectors in the sub-basin and is characterised by a high level of development. The structure of water withdrawals for agricultural purposes is dominated by fisheries - 92.7% (10.3 million m^3) of the total withdrawals in this category.
- **Hydromorphological changes.** Transverse hydraulic structures on small and medium-sized rivers in the sub-basin make it impossible for water, sediments and aquatic life to pass freely, and change the transit mode of rivers to an accumulation one.

The characterisation of anthropogenic load and its impact was carried out on the basis of chemical, physicochemical and hydromorphological indicators that reflect the conditions of existence of the biotic component of aquatic ecosystems. Changes in these parameters under conditions of significant anthropogenic pressure may lead to the risk of not achieving the "good" ecological status of the SWBs.

The assessment of anthropogenic pressure on the SWBs was carried out in accordance with the "Methodological Recommendations for the Analysis of the Main Anthropogenic Pressures and Their Impacts on the State of Surface Waters" (hereinafter referred to as the Methodology), which were approved at the meeting of the Scientific and Technical Council of the SAWR on 20 April 2023, Minutes No. 2.

The methodological basis of the assessment was the DPSIR model developed by the European Environment Agency (EEA)[21] and adapted to the conditions of Ukraine. The determination of anthropogenic pressure was based on a sequential analysis of Drivers/Activities → Pressures → State → Impact → Response (Figure 45).

[21] CIS Guidance #3 Pressure and Impact Analysis, EU, 2003

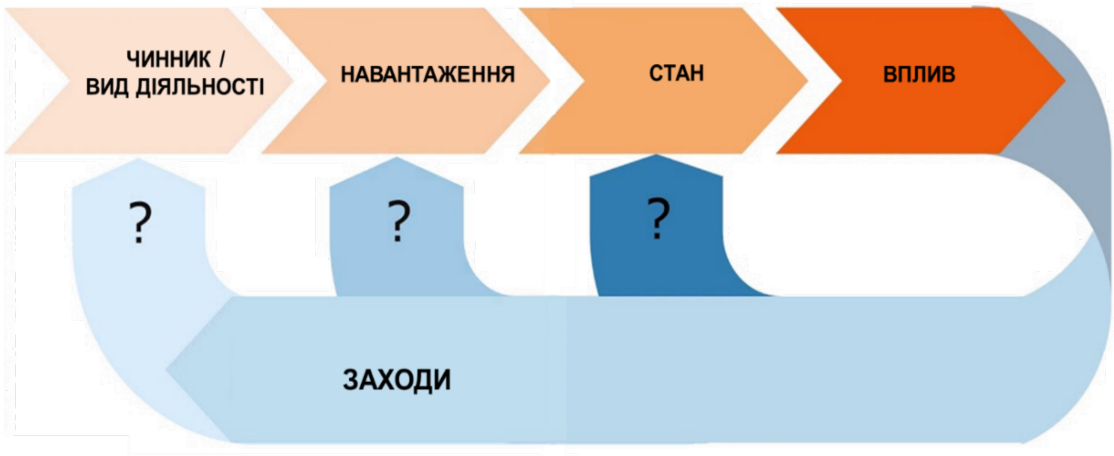


Figure 45. Conceptual model of the DPSIR

The risk of not achieving a "good" ecological status of the SWBs is determined on the basis of criteria for chemical, physico-chemical and hydromorphological indicators.

Criteria for chemical and physicochemical parameters:

- Disposal of untreated wastewater (point sources) - used for organic matter and nutrients;
- Wastewater fraction (point sources) - used for hazardous substances;
- Soil nitrogen balance (diffuse sources) - to determine the impact of crop production;
- Livestock index (diffuse sources) - to determine the impact of livestock.

Criteria for hydromorphological indicators:

- Disruption of the continuity of water flow and environments due to the presence of transverse artificial structures in the riverbed, disruption of the continuity of water flow and sediment movement and migration of fish and other aquatic life;
- Water intake;
- Flow control;
- Fluctuations in water levels below transverse artificial structures in the channel;
- Morphological changes that reflect a violation of the natural morphological characteristics of rivers.

By comparing the criteria with the thresholds, 3 risk categories are identified:

1. "without risk"
2. "possibly at risk"
3. "at risk"

The overall risk assessment for a SWB is determined by the worst value of any one criterion.

Assessing the risk of not achieving "good" ecological status

The risk of not achieving "good" ecological status/potential of an SWB is the risk, for each individual SWB, of not achieving the environmental objectives of the EU WFD by the end of the planning cycle, taking into account the current state of the SWB, the expected changes in the load on the SWB and the possible effects of government programmes and projects already implemented.

To assess the risk, an analysis of the anthropogenic load within the river basin area is carried out, based on chemical and physico-chemical components and hydromorphological changes.

The risk of failure to achieve environmental objectives is assessed separately from diffuse and point sources of pollution, as well as hydromorphological changes.

Assessment of the risk of failure to achieve environmental objectives from point sources of pollution

Based on the results of the assessment of anthropogenic loads from point sources of pollution and their impact on the SWBs of the Tisza sub-basin, the risk of failure to achieve "good" ecological status/potential was established (Fig. 47) for

- 325 SWB - "no risk";

- 76 SWB - "possibly at risk";
- 80 SWB - "at risk".

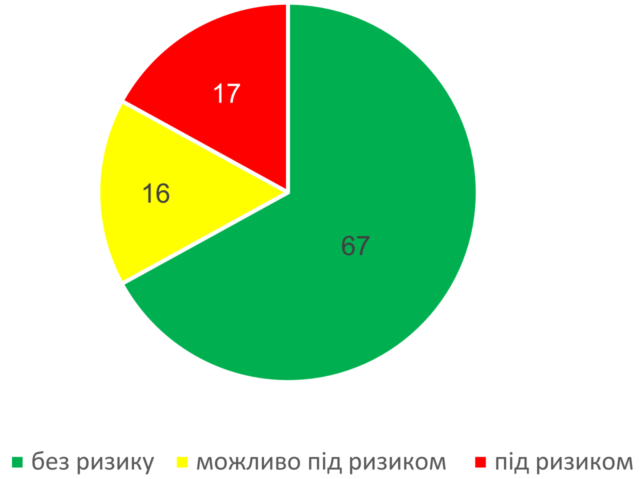


Figure 47. Risk assessment of failure to achieve "good" ecological status/potential based on the results of the assessment of anthropogenic loadings from point sources, %.

Assessment of the risk of failure to achieve environmental objectives from diffuse sources of pollution

Based on the results of the assessment of anthropogenic loads from diffuse sources of pollution and their impact on the sub-basin's SWBs, the risk of failure to achieve "good" ecological status/potential (Fig. 48) was identified for

- 336 SWB - "no risk";
- 100 SWB - "possibly at risk";
- 45 SWB - "at risk".

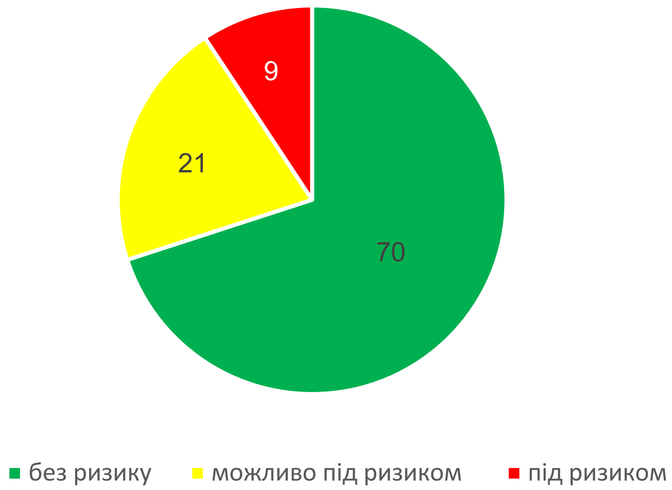


Figure 48. Assessment of the risk of not achieving 'good' environmental status/potential based on the results of the assessment of anthropogenic loads from diffuse sources, %.

Assessing the risk of not achieving environmental goals: hydromorphological changes

Based on the results of the assessment of hydromorphological changes,[22] was established:

- 400 SWB - "no risk";
- 49 SWB - "at risk".

[22] The risk of failure to achieve environmental objectives based on hydromorphological changes was not assessed for the AWB

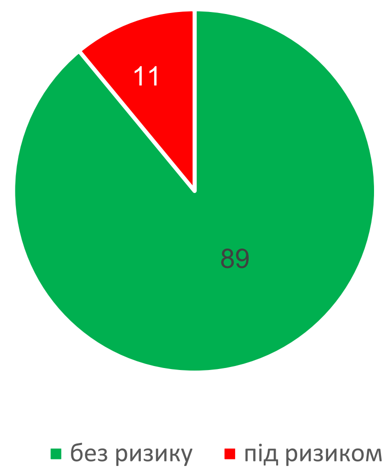


Figure 49. Assessment of the risk of not achieving "good" environmental status/potential Based on the results of anthropogenic load assessment: hydromorphological changes, %.

Generalised risk assessment of failure to achieve 'good' environmental status/potential

The risk of not achieving a "good" environmental status/potential has been assessed as follows:

- 214 SWB - "no risk";
- 111 SWBs - "possibly at risk";
- 156 SWB are "at risk".

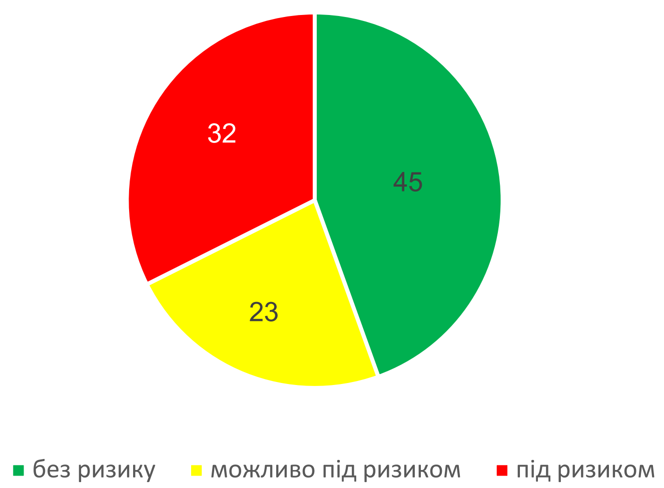


Figure 50. Generalised risk assessment of failure to achieve "good" environmental status/potential of SWB, %.

Impact of military operations on the state of surface water bodies

No cases of military operations impact have been recorded in the Tisza sub-basin.

2.1.1 Organic pollution

The main cause of organic pollution is insufficient wastewater treatment or the absence of sewerage networks (SN) and sewage treatment plants (STP). Organic pollution can lead to significant changes in the oxygen balance of surface waters and, as a result, to changes in the species composition of aquatic life or even their death. The supply of organic matter with wastewater is assessed by indirect indicators of BOD and COD.

Diffuse sources

Organic pollution from diffuse sources is mainly caused by rural households that are not connected to the Wastewater Treatment Plant. Wastewater from such individual households is disposed of by accumulation in lagoons, from which wastewater is filtered into the nearest groundwater horizons.

The load from the rural population was assessed using the calculation method. For this purpose, we used the coefficients of organic matter intake based on the life activity of 1 person. In European countries, the generation of load from the population is calculated using the following indicators: BOD_5 - 60 g/day/person, COD - 110 g/day/person.

During a calendar year, the total organic matter (BOD, COD) discharge to the SWBs from distributed sources of pollution is significantly higher than from point sources. The reason for this is the low level of connection of the population to the WWTP.

In the region's rural settlements, small towns and some cities, wastewater is discharged into sumps and pits, from where pollutants easily enter groundwater and are transported to surface water.

The key role in organic pollution of the sub-basin from diffuse sources is played by the following rivers: the lower reaches of the Tisa (Berehove district), the Latorytsia (Mukachevo and Uzhhorod districts), and the Borzhava (Khust district, Berehove district (from the village of Velyki Komyaty to the mouth)). The Irshava River suffers the most from diffuse organic pollution from villages: Siltse, Zarichchya to its confluence with the Borzhava River.

Point sources

In total, there are 608 settlements in the sub-basin, including 19 settlements with a population[23] > 2000 (Figure 51). Among them, the city of Uzhhorod has a PE > 100,000. Large agglomerations also include the city of Mukachevo with a PE > 84,000 is also a large agglomeration. In total, there are 7 cities in the range of 10,000 - 100,000. The remaining 12 settlements fall into the category of 2000 - 10,000 PE.

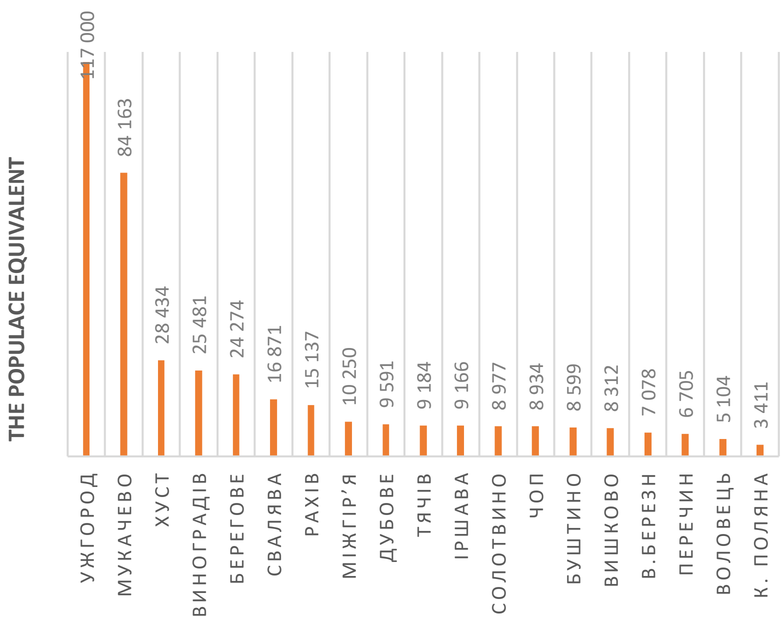


Figure 51. Settlements in the Ukrainian part of the Tisza sub-basin with PE > 2000

In 2020/2019, the total volume of waste water discharged into surface water bodies of the sub-basin was as follows: industry - 0.466/0.364 million m^3, agriculture - 6.232/7.137 million m^3, housing and communal services - 30.060/31.22 million m^3, other (forestry, transport) - 1.376/0.389 million m^3. A diagram of the distribution of discharges by economic sectors is shown in Figure 52.

[23] Population equivalent (PE) is a numerical indicator of the load of wastewater with biodegradable organic substances with a five-day biochemical oxygen consumption of 60 grams of oxygen per person per day

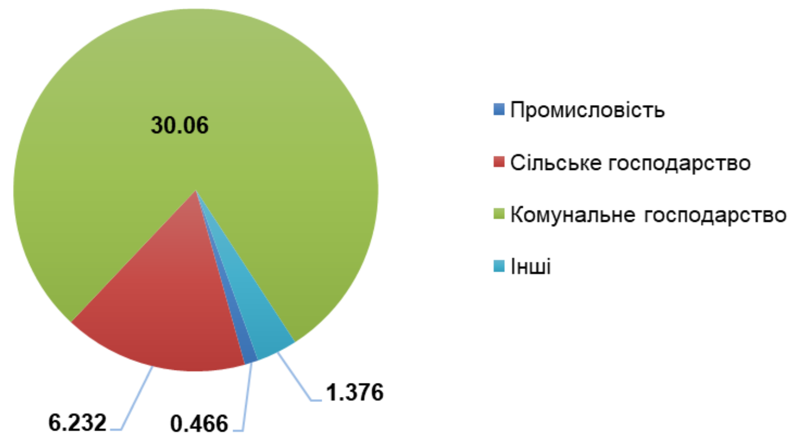


Figure 52. Diagram of discharges by economic sectors, million m^3 (%), 2020

Since the anthropogenic load was assessed based on 2020 data, we present below the data on the total volumes of organic matter discharges to the sub-basin in 2019-2020.

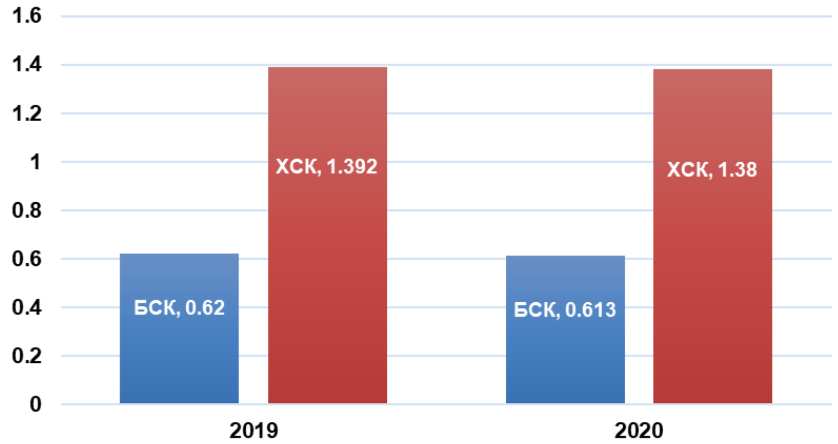


Figure 53. Organic matter discharges, thousand tonnes (2019-2020)

The figure above shows a gradual decrease in the volume of organic matter discharged into surface waters, but the impact of organic pollution remains quite significant. Thus, in 2019, BOD was 0.62 thousand tonnes per year, in 2020 - 0.61 thousand tonnes per year, and COD was 1.39 thousand tonnes per year in 2019 and 1.38 thousand tonnes per year in 2020.

Housing and communal services. Surface water pollution in the sub-basin is caused by point sources, which are utility companies (93% of the total discharges). Wastewater discharges are carried out by 39 municipal enterprises that provide water supply and sewerage services (production departments of housing and communal services), at which the wastewater is pre-treated before being discharged into the sub-basin's river network.

Most of the agglomerations are connected to the WWTP. For agglomerations not connected to the WWTP, wastewater is collected in individual septic tanks or cesspools, which are not treated and may be one of the potential sources of pollution of both surface water and groundwater aquifers in the sub-basin (Figure 54).

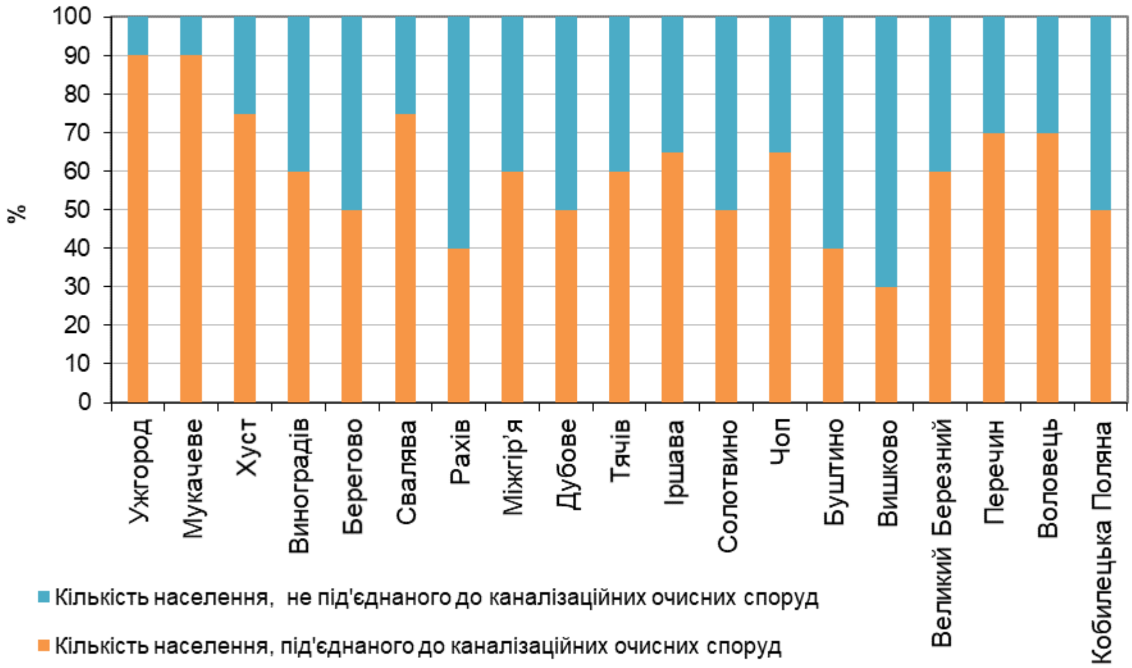


Figure 54. The degree of connection of the population of the cities of the Tisza River sub-basin to the WWTP, as of 01.01.2021

The highest proportion of the population connected to the WWTP is observed in agglomerations with more than 20,000 inhabitants and amounts to 90%. In smaller agglomerations, this figure varies between 30 and 75%.

Table 46. Amount of organic pollutants discharged to the Tisza sub-basin by agglomerations with PE>2000, 2020 data

Settlement, PE	ODS discharges (according to BOD_5), t O_2/year	ODS discharges (by COD), t O_2/year
Uzhhorod, 117000	282,2	958,9
Mukachevo, 84163	109,5	278,2
Khust, 28434	8,9	18,6
Vinogradov, 25481	9,9	18.1
Beregove, 24274	9,2	21.9
Svalyava, 16871	3,3	3.6
Rakhiv, 15137	3,7	7.4
Mizhhirya, 10250	1,8	3.9
Dubove, 9591	0,7	3,4
Tyachiv, 9184	3,8	12.6
Irshava, 9166	2,6	4.8
Solotvyno, 8977	1,3	2,2
Chop, 8934	3,5	5.6
Vyshkovo, 8312	0,7	4,0
Velykyi Bereznyi, 7078	1,9	2.6
Perechyn, 6705	4,1	8.1
Volovets, 5104	1,0	2.0
Kobyletskaya Polyana, 3411	1,2	0,5
TOGETHER	**449,3**	**1356,4**

The results obtained showed that the dominant share of organic pollution is determined by the 2 largest cities: Uzhhorod and Mukachevo, whose wastewater contributes 84% of the OD (according to BOD_5) and 88% of the OD (according to COD).

The degree of wastewater treatment at CWSs varies significantly (Fig. 55).

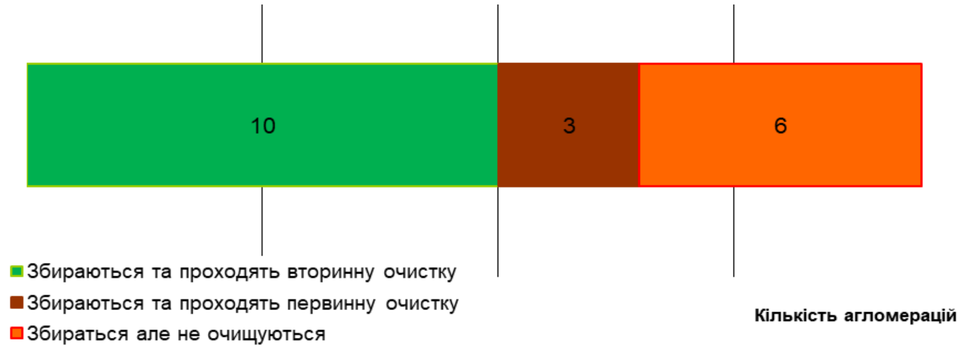


Figure 55. Degree of wastewater treatment in urban agglomerations in the Tisza River sub-basin, 2020

Slightly more than half of the WWTPs carry out secondary biological treatment, mechanical wastewater treatment is provided for 3 cities (16%), and the remaining 32% have only collector systems and their wastewater is not treated at all. The latter include the city of Tyachiv, the villages of Mizhhirya, Dubove, Bushtyno, Vyshkovo and Kobyletska Polyana. The treatment facilities of these settlements were destroyed by the floods of 1998 and 2001 and have not been restored to date.

Wastewater treatment plants in most cities are in an extremely dilapidated state, having been built in Soviet times. Over the past 30 years, urban development has led to an increase in the amount of wastewater that is several times higher than the design capacity of the WWTPs, resulting in a significant amount of insufficiently treated or untreated wastewater entering the Tisza River sub-basin.

In 2020, the total volume of discharges was 38.134 million m^3, of which 0.273 million m^3 and insufficiently treated wastewater - 3.259 million m^3, normatively clean without treatment - 7.073 million m^3 and normatively treated - 27.529 million m^3 (Fig. 56).

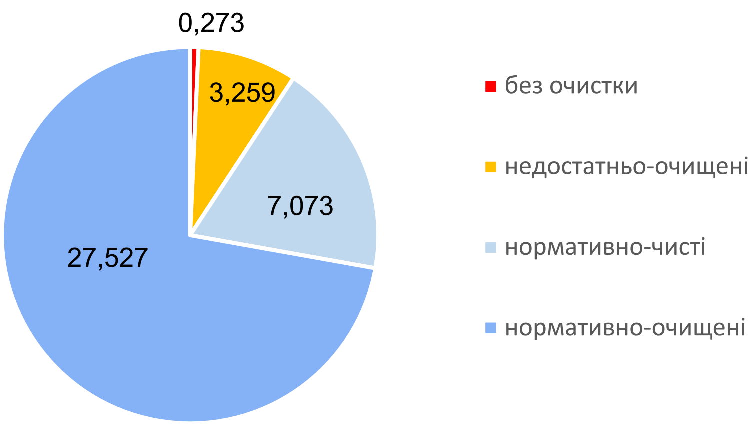


Figure 56. Wastewater disposal volumes, million m^3, 2020

Industry and other facilities (water users) . According to the state statistical reporting on water use, the total number of water users discharging wastewater into the surface water bodies of the Tisa sub-basin in 2020/2019 was 122/145 business entities, of which industrial enterprises (industry) accounted for 25/35, agriculture - 12/11, housing and communal services of the region - 18/18, and others.

Organic pollution from industrial wastewater is insignificant. In 2020/2019, they discharged a total of 0.002/0.001 thousand tonnes of organic matter (BOD) and 0.005/0.003 thousand tonnes (COD). The bulk of the pollution of the IWW with organic substances is formed by the return (wastewater) of housing and communal enterprises, mainly the water utilities of the cities of Uzhhorod and Mukachevo.

2.1.2 Pollution by nutrients

The flow of nutrients into the surface waters of the sub-basin is the driving force behind eutrophication, which leads to an increase in primary production and accumulation of organic matter. Enrichment of water with nutrients that stimulate the development of autotrophic aquatic organisms, resulting in an undesirable imbalance of organisms in the aquatic environment and a decrease in water quality.

Phosphorus and nitrogen compounds play a dominant role among biogenic substances, and in some cases, ferrous may have an impact. Of the first two, phosphorus plays a greater role, while nitrogen is much less likely to limit the development of autotrophic organisms, due to the ability of many bacteria and cyanobacteria to fix it.

Nutrients can come from both point and diffuse sources. The main sources are untreated wastewater from municipal and industrial facilities. The widespread use of phosphorus-containing detergents and washing powders with insufficient treatment of waste water increases nutrient pollution. The efficiency of phosphorus removal from wastewater at most WWTPs does not exceed 18%, and due to outdated technological equipment, the efficiency of phosphorus removal does not even reach the design values.

The sub-basin receives nutrients from point sources (agglomerations, industry, agriculture) and diffuse sources (surface runoff, precipitation). Diffuse sources are partly of natural and anthropogenic origin (mainly agriculture).

Diffuse sources

Diffuse sources are defined as the washing away of substances from the surface of the catchment and the soil layer of the soaking zone. This type of pollution is the most difficult to assess, as it cannot be directly measured, but must be estimated through probable pathways. Diffuse runoff can be caused by both natural factors (precipitation, geological structure and soil composition) and anthropogenic factors, which in this case act as indirect factors (degree of ploughing, crop yields). Diffuse pollution from the territory of former timber and chemical industry enterprises (Perechyn, Velyky Bychkiv and Svalyava timber and chemical plants) and solid household waste disposal sites is a particular danger in the Tisza sub-basin.

Point sources

The main pollutants of surface waters with biogenic substances, as well as organic ones, are:

- agglomeration;
- industry.

Table 47. Amount of nutrients discharged to the Tisza River sub-basin by agglomerations with PE>2000, 2020

Settlement, PE	Dumps N_{total}, t/year	Discounts P_{total}, t/year
Uzhhorod, 117000	77,9	17,22
Mukachevo, 84163	23,56	1,4
Khust, 28434	0,04	1,0
Vinogradov, 25481	0	0
Beregove, 24274	4,037	0,5
Svalyava, 16871	0	0
Rakhiv, 15137	1,4	0
Mizhhirya, 10250	0,5	0,1
Dubove, 9591	0,6	0,1
Tyachiv, 9184	0	0
Irshava, 9166	0	0,1
Solotvyno, 8977	0,1	0,1
Chop, 8934	0	0
Vyshkovo, 8312	0,1	0,1
Velykyi Bereznyi, 7078	0	0
Perechyn, 6705	0	0,1
Volovets, 5104	0,3	0,1
Kobyletskaya Polyana, 3411	0,1	0,1
TOGETHER	**108,7**	**21,02**

The results obtained showed that the dominant share of nutrient pollution is determined by the 2 largest cities in the region: Uzhhorod and Mukachevo, whose wastewater discharges 91% of total nitrogen and 93% of total phosphorus. At the same time, nitrogen comes mainly in the form of nitrate compounds, and phosphorus - in the form of phosphates.

Pollution from industrial wastewater is negligible.

The main share of pollution is formed by the return (waste) water of healthcare facilities, mainly sanatoriums in Zakarpattia. The composition of the return (waste) water of these institutions is similar to that of municipal enterprises and is represented mainly by nitrogen and phosphorus compounds. In most cases, sanatoriums, in addition to health improvement functions, also perform the role of public utilities in the settlements where they are located.

2.1.3 Pollution by hazardous substances

Hazardous substances are represented by priority pollutants subject to control in accordance with the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 45 dated 06.02.2017 "On Approval of the List of Pollutants for Determining the Chemical State of Surface and Groundwater Bodies and the Ecological Potential of an Artificial or Significantly Modified Surface Water Bodies" (hereinafter - the Order) and the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 5 dated 14.01.2019 No. 5 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified Surface Water Body".

The available information on the discharge of priority pollutants in the Tisza sub-basin is currently rather limited. According to the state water use accounting, reporting on water use in the form No. 2TP-water farm (annual), approved by the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 78 of 16.03.2015, for the period 2016-2021, none of the business entities in the Tisza sub-basin indicated information on the presence of pollutants in the discharge of return (waste) water included in the list of priority pollutants by the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 45.

Monitoring of the content of priority and other hazardous substances in surface waters and sediments of the Tisza River sub-basin and its tributaries, conducted as part of the Europaid/114957/C/SV/UA project "Bug, Latorytsia and Uzh River Basin Management" (2002-2005), showed that water and sediments contain organic substances, including priority substances such as pesticides, pharmaceuticals, and heavy metals (cadmium, lead).

The monitoring results showed that the concentration of diphthalates (2-ethylhexyl) (a widely used plasticiser), naphthalene, cadmium and lead exceeded the environmental quality standard for priority substances in water for both the Tisza River and its tributaries. In addition, elevated concentrations of polyaromatic hydrocarbons, which are indicators of petroleum products, were found in each of the surface water samples collected in the Tisza sub-basin.

In accordance with the Resolution of the CMU dated 19.09.2018 No. 758 "On Approval of the Procedure for State Water Monitoring", the Tisa River Basin Laboratory collected water samples on a monthly basis during 2019-2020 to determine chemical and physicochemical parameters at 30 (2019), 45 (2020) monitoring points of surface water bodies) observation points of surface water bodies, from which water is abstracted to meet the drinking and household needs of the population of Zakarpattia region in the volume of more than 100 m^3 /day; bodies that are at risk based on anthropogenic impacts on the qualitative and quantitative state and surface waters bodies in transboundary areas identified in accordance with interstate agreements on water management in border waters between the Government of Ukraine and the Governments of the Republic of Hungary and the Slovak Republic.

Water samples from surface water bodies were transferred to the water monitoring laboratory of the Western Region of the Dniester BUVR in compliance with the requirements of regulatory documents (DSTU ISO 6468-2002, DSTU ISO 10301:2004, DSTU ISO 5667-1:2009, DSTU ISO 5667-2:2009, DSTU ISO 5667-6:2009) for measurements of priority pollutants approved by the relevant Order.

Based on the results of the monitoring of priority pollutants in the Tisza River sub-basin, 26 hazardous specific pollutants (22 synthetic pollutants and 4 non-synthetic pollutants (heavy metals: cadmium, nickel, mercury, zinc) were identified. The list of hazardous substances is presented in Table 48.

Table 48. Specific pollutants (synthetic pollutants) for the Tisza sub-basin

Chemical registration number	Indicators for determining the environmental status of the SWB	Average annual concentration, μg/dm^3	Maximum concentration, μg/dm^3
62-53-3	Aniline, μg/dm^3	1,5	16,0
98-10-2	Benzenesulfonamide, μg/dm^3	100,0	n.a.

Chemical registration number	Indicators for determining the environmental status of the SWB	Average annual concentration, µg/dm³	Maximum concentration, µg/dm³
95-16-9	Benzothiazole, µg/dm³	2,0	n.a.
92-52-4	Biphenyl, µg/dm³	1,0	3,6
80-05-7	Bisphenol A, µg/dm³	10,0	460,0
1702-17-6	Clopyralid, µg/dm³	70,0	300,0
13684-56-5	Desmedipham, µg/dm³	1,0	15,0
84-74-2	Dibutyl phthalate, µg/dm³	10,0	48,0
122-39-4	Diphenylamine, µg/dm³	1,6	31,0
26225-79-6	Etgofumesate, µg/dm³	6,4	50,0
85-01-8	Phenanthrene, µg/dm³	0,38	2,0
50-00-0	Formaldehyde, µg/dm³	5,0	50,0
1071-83-6	Glyphosate, µg/dm³	15,0	n.a.
74-90-8	Cyanides, µg/dm³	5,0	n.a.
94-74-6	MCPA, µg/dm³	1,6	15,0
128-37-0	4-methyl-2,6-di-tert butylphenol, µg/dm³	1,4	17,0
1336-36-3	Polychlorinated biphenyls and their derivatives, µg/dm³	0,01	n.a.
40487-42-1	Pendimethalin, µg/dm³	0,3	2,0
79-00-5	1,1,2-trichloroethane, µg/dm³	300,0	n.a.
108-88-3	Toluene, µg/dm³	100,0	n.a.
100-42-5	Vinyl benzene (styrene), µg/dm³	0,63	60,0
1330-20-7	Xylene (isomers), µg/dm³	10,0	n.a.

The preliminary assessment of synthetic and non-synthetic specific substances will be based on the assessment of compliance with the accepted environmental quality standards and will be displayed as an annual average and as a maximum permissible concentration. Failure to comply with an environmental quality standard will be established if the arithmetic mean of the measured concentrations exceeds the value of the relevant environmental quality standard. When assessing the values of non-synthetic specific substances, background concentrations of heavy metals for each SWB in the Tisza sub-basin should be taken into account.

Control over the content of hazardous pollutants in the discharges of waste water from business entities mainly consists of determining the content of only the parameters stipulated in the draft maximum permissible discharges of water users (mainly pollution with organic and nutrients). The actual presence of hazardous substances, volumes and values need to be additionally verified, confirmed by research monitoring data and screening results of samples of wastewater (return water) discharged into the SWB of the Tisza sub-basin.

The sources of hazardous pollutants in the Tisza sub-basin may include industrial sources, including machine building, the timber and chemical industry, mining facilities, livestock and food production, industrial and municipal waste.

2.1.4 Accidental pollution and impact of contaminated areas (landfills, sites, zones, etc.)

There is little "hazardous" industrial activity in the Tisza sub-basin, but there are potential sources of accidental pollution, both through wastewater discharges and runoff from sites where industrial waste is stored.

The mechanism for preventing and minimising the risk of accidental pollution is established in the EU member states through the implementation of the Seveso-III Directive (Directive 2012/18/EU), the Industrial Waste from Mining Directive (2006/21/EC)10 and the Industrial Emissions Directive-IED (2010/75/EU)11 and for non-EU countries through the implementation of the recommendations of the UNECE Convention on the Transboundary Effects of Industrial Accidents.

The main provisions of the Seveso III Directive (Directive 2012/18/EU) were transposed into Ukrainian legislation in 2021 by amending the Civil Protection Code of Ukraine, the Law of Ukraine "On High Risk Facilities" (the Law) and a number of other laws.

Thus, in accordance with Article 9 of the Law, a business entity identifies high-risk facilities in accordance with the number of threshold masses of hazardous substances. Based on the results of the identification of a high-risk facility, it is assigned a class 1, 2 or 3.

Article 9-1 of the Law provides for the definition and approval of an accident prevention policy for a Class 1 or 2 hazardous facility. According to Article 10 of the Law, for a Class 1 or Class 2 hazardous facility, the operator shall develop and, in cases specified by the Law, review a report on safety measures at the hazardous facility.

Pursuant to Article 11 of the Law, in order to organise the response to accidents at high-risk facilities, operators develop and approve plans for localisation and elimination of accidents and their consequences for each high-risk facility they operate. The plan for localisation and elimination of accidents and their consequences shall be reviewed at least every three years. The procedure for action in the event of an accident at a high-risk facility is set out in Article 14 of the Law. Pursuant to this article, the Cabinet of Ministers of Ukraine approved the Procedure for Investigation of Accidents at High Risk Facilities by Resolution No. 965 dated 8 September 2023.

Article 15 of the Law stipulates that the operator shall annually submit to the competent authority, local executive authorities, and local self-government bodies information on high-risk facilities owned or operated by the operator by 30 December. At the request of a legal entity or individual or their representatives to obtain information about a hazard that has arisen at high-risk facilities and poses a threat to people and the environment, the operator must submit such information within 48 hours of receiving the request.

Pursuant to Article 16 of the Law, damage caused to individuals or legal entities as a result of an accident at a high-risk facility shall be compensated by the operator who owns the high-risk facility on the relevant legal basis, unless he or she proves that the damage was caused by force majeure or intent of the victim.

At the Tisza River sub-basin level, a list of potential accident risk sites has been developed, which includes operating industrial facilities with a high risk of accidental pollution due to the nature of chemicals stored or used at industrial facilities, contaminated sites, including landfills and dumps located in flood zones. The register includes facilities that pose risks of accidental pollution, primarily CWS, sites where industrial waste is stored, sludge ponds and tailing pits.

Recent studies in the Tisza River sub-basin have revealed an excess of synthetic substances: pesticides, pharmaceuticals and substances used in perfumery, heavy metals: zinc and copper, cadmium and nickel, which confirms a significant anthropogenic load on the Tisza's SWB .

The Ministry of Environmental Protection and Natural Resources of Ukraine has launched an electronic service that also contains the Register of Waste Disposal Sites and the List of Facilities that are the Largest Environmental Polluters in terms of Pollutant Discharges into Water Bodies dataset.

The register of business entities with risks of accidental pollution of the Tisza River sub-basin as of 01.01.2023 is presented in Table 49.

Table 49. Register of facilities in the Tisza River sub-basin that are at risk of accidental pollution

№	Object name
1	Municipal enterprise "Vodokanal Uzhhorod", Uzhhorod
2	Municipal enterprise "Miskvodokanal" of the Mukachevo City Council, Mukachevo
3	Limited Liability Company "Vodokanal Karpatviz", Beregovo
4	Municipal enterprise of the Chop City Council "Vodokanal of Chop. Chop", Chop city
5	"Khust Production Department of Water Supply and Sewerage, Khust
6	Municipal enterprise "Vodokanal" of the Tyachiv City Council, Tyachiv
7	Municipal enterprise of Volovets Village Council "Vodokanalservice", Volovets village
8	"Vynohradiv Production Department of Water Supply and Sewerage, Vynohradiv
9	Communal Service, Velykyi Bereznyi village
10	Mizhhirya Village Council's communal enterprise Mizhhirya VUZHKH, Mizhhirya village
11	Rakhiv municipal enterprise Rakhivteplo, Rakhiv
12	Solotvyno Municipal Utility Company, Solotvyno village
13	Kommunalnyk, Perechyn, Ukraine

According to the register of waste disposal sites (WDS), there are 62 certified WDS in the Zakarpattia Oblast:

59 - solid waste disposal sites;
2 - wood waste (sawdust);
1 - waste of artificial fur.

Most of the existing landfills have exhausted their capacity, being 80-85% full, and the life of the landfills in Vynogradiv has expired. Vynogradiv has reached the end of its service life. Due to its mountainous nature, high population density, proximity to 4 EU countries, a single water sub-basin of the Tisa River, and protected areas, some settlements in the region are deprived of the opportunity to choose land plots for landfills. This applies to cities: Rakhiv, Tyachiv, Vynohradiv, Berehove, Perechyn, Velykyi Bereznyi, and rural settlements in mountainous areas. Centralised collection and disposal of solid waste in the region is carried out by 36 specialised enterprises, the largest of which are: ABE Uzhhorod, ABE Vynohradiv, ABE Mukachevo and Bereg Vertical. These entities collect municipal solid waste from 199 settlements in the region. In total, centralised solid waste collection in the region is organised in 491 settlements, which is 80.75% of the total number (608) of settlements in the region. Household waste is also collected from households and business entities independently by enterprises and organisations, some private structures and specialised communal services under village councils. There are no household waste disposal facilities.

Separate collection of solid waste (glass, plastic, waste paper and scrap metal) has been introduced in the cities of: Uzhhorod, Perechyn, Irshava, Rakhiv, Svalyava, V. Bychkiv and in 23 territorial communities (187 settlements in total). Resource-intensive components of solid waste are transferred to specialised enterprises (52 business entities in the region). The collected waste is mostly transferred for disposal outside the region. According to the Main Department of Statistics, there are 1 hazardous waste disposal facility, 24 waste incineration facilities for energy production, 5 waste incineration facilities for thermal processing, and 35 other waste disposal facilities (other than incineration) in the region.

Wood waste is disposed of by briquetting and burning in boilers as an additional energy resource. Production facilities for processing and utilisation of wood waste have been established at the following largest woodworking enterprises in the region: Karpaty LLC (Rakhiv district), Maple LLC (Khust district), Inter-Kashtan (Mukachevo), Synevyr UTOG, Elit Wood LLC (Uzhhorod), etc. New technologies for sawdust processing are introduced at the expense of the companies' own funds and investments.

Production facilities for recycling PET containers and other polymeric waste (plants, presses, crushers) are operated by the following companies: ME "Vody Khustshchyny", PE "Brenner" (Khust), ME "Vtorma", LLC "Karpaty LTD" (Mukachevo), PE "Plastor" (Berehovo district), Recycling Station "Proektna, 3", LLC "Eco Karpaty Plus" (Uzhhorod). Worn-out tyres are disposed of by PE Breza O.O. (Uzhhorod district). Technological equipment for hazardous waste disposal is available at New Ecosvit LLC (Uzhhorod, location: Uzhhorod district, Kinchesh village).

In order to maximise the use of resource-rich waste components, the region is creating appropriate conditions for attracting investors to build waste processing plants, introduce alternative fuel technologies, establish a system for collecting, sorting and recycling solid waste, and reduce the number of waste disposal sites.

The construction of a plant for sorting and mechanical processing of solid household waste with a capacity of 20-30 thousand tonnes per year is underway in Yanoshi village, Berehove district, which will enable the company to process 100% of the total amount of solid waste generated in the district. Negotiations are also underway with foreign investors on the construction of a plant for the storage, sorting, and disposal of solid waste (without the right to burn it) in Tyachiv. In Uzhhorod district, there are intentions to build a solid waste processing facility on the territory of Serednyanska territorial community of Uzhhorod district outside the settlements, which will help solve the problem of solid waste in the area. A waste processing plant is planned to be built on the territory of Polyanske village council. The main goal and objective of the plant is to collect total solid waste from 16 mountainous communities in Zakarpattia Oblast. There are also land plots available for the construction of the waste processing facility in Mukachevo, Krylova Street, and on the territory of the Irshava city community, outside the village of Dubrivka. Waste sorting stations are planned to be installed on the territories of Dragivska and Kolochava TG in Khust district and Yasinyanska TG in Rakhiv district.

According to the Regional Waste Management Plan for Zakarpattia Oblast, the region was divided into 5 clusters. Scenarios for each cluster were developed based on an analysis of the amount of waste generated, existing infrastructure, logistics, and the region's specifics. As a result, 5 options were proposed: the first is when 100% of solid waste is disposed of at landfills. According to experts, this option has a significant disadvantage: - landfills are harmful to the environment and people and are poorly aligned with the goal of waste management reform. The second option is when 100% of solid waste is incinerated at special plants to generate electricity. Options 3, 4 and 5 involve mechanical and biological waste treatment (MBT), differing only in the type of operations performed with the organic fraction - bio-drying, anaerobic digestion or composting. Each of these three options involves the production of dry fuel from waste. The cheapest option is landfilling (€114.4 million), and the most expensive is incineration (€350.6 million). Two options are the most attractive: MBW with anaerobic digestion and MBW with composting of the organic fraction. Investment costs for these options are estimated at €128.3 and €108.6 million. The choice of options will be determined by the communities.

There is no storage of unsuitable and banned pesticides and pesticide chemicals in Zakarpattia Oblast. However, according to the Mukachevo District State Administration, there are 41 reinforced concrete containers in 8 settlements of the Mukachevo district that contain chemical plant protection products. In the places where these containers are stored, there are pungent smells of unknown substances, which negatively affects the health of residents of these settlements and poses a danger to the environment. In addition, 225 tonnes of pesticide-contaminated soil is stored in Rokosovo village, Khust district, which, according to the Ukrainian Research Institute of Environmental Problems (Kharkiv), is toxic waste of I and II classes of hazard to public health and requires urgent removal outside the region. In order to resolve the issue of pesticide-contaminated soil clean-up, the Department submitted proposals to the draft National Waste Management Plan with specific measures, one of which is the removal of pesticide-contaminated soil stored in the village of Rokosovo, Khust district.

Thus, given the current situation, addressing the problem of solid waste management should be included in the programme of measures to achieve good environmental status of the MNEs.

2.1.5 Hydromorphological changes

Hydromorphological changes are one of the significant water management issue (SWMI) that impede the achievement of environmental objectives set and enshrined in the RBMP. Hydromorphological changes, as a result of economic activity, affect the conditions of existence of aquatic communities. The presence of hydromorphological changes in SWBs leads to the deterioration of the ecological status of many SWBs.

Hydromorphological changes are divided into types:

- disruption of the continuity of water flow and habitats - longitudinal disruption of the continuity of rivers and habitats (transverse artificial structures in the river channel, interruption of water flow, disruption of the free flow of rivers, movement of sediments, migration of fish and other aquatic life);
- disruption of the hydraulic connection between river channels and their floodplains;
- hydrological changes (water abstraction, hydropicking/ fluctuations in water levels of artificial origin);
- Morphological changes (modification of the morphology of the riverbed, banks, and adjacent parts of the floodplain, e.g. straightening).

Hydromorphological changes, namely, changes or disturbances in the anthropogenic morphology of the riverbed, banks, floodplain of the Tisza sub-basin, as well as its hydrological regime, are one of the main water and environmental problems (a significant pressure).

The main factors (impact factors or activities) that lead to hydromorphological changes include hydropower, flood protection, land development (urbanisation) and agricultural activities.

*Disruption of the free flow of rivers***.**

Dams and other artificial structures located in riverbeds were built primarily to accumulate water, with the subsequent use of water for irrigation, water supply to the population and industry. The accumulation of water in ponds and reservoirs upstream of dams also provides flood protection for areas downstream.

Dams, weirs and other structures that cross the riverbed from one bank to the other disrupt the free flow of the river and restrict the migration of fish and other living organisms. The criterion for classifying a structure as one that disrupts flow and migration is a structure height of more than 0.3 m for rivers dominated by carp fish and 0.8 m for rivers dominated by salmonid species.

Disruption of the hydraulic connection between river channels and their floodplains.

The hydraulic connection between the riverbed and the floodplain plays an important role in the functioning of aquatic ecosystems, providing water for important habitats for fish and aquatic life, and has a positive impact on the condition of surface and groundwater.

The assessment of this type of hydromorphological changes is included in the hydromorphological protocol for assessing the SWB used by the SES in the course of state monitoring of surface waters (indicators No. 10: "Interaction between the channel and the floodplain: 10a - Possibility of floodplain inundation, 10b - Limiting factor for the development of horizontal deformations of the channel").

Hydrological changes

Housing and communal services, agriculture, and industry are the main factors that negatively affect the hydrological regime of rivers. This is manifested in water abstraction and flow regulation (ponds and reservoirs).

Reduced natural flows in the context of global warming and natural water scarcity, reduced flow velocities and the formation of stagnant zones contribute to eutrophication processes, leading to a deterioration in biodiversity and degradation of aquatic ecosystems.

Modification of river morphology.

The main factors that adversely affect the natural morphology of the sub-basin's river channels, their banks and floodplains are urbanisation, flood protection and agriculture. As a result of these activities, rivers in certain areas are straightened, dredged, banks are reinforced, the floodplain adjacent to the channel is ploughed up, and its natural vegetation is changed.

In sub-basin 40, the river morphology has been modified (straightening). Reduced variability in channel depth and width, disturbance of the natural balance of erosion and accumulation, narrowing of the inter-dam space and restriction of free meandering lead to an impoverishment of the composition and reduction in the number of biological indicators, such as fish, benthic invertebrates, higher aquatic vegetation, and phytoplankton.

The criteria for classifying SWB s as "HMWB" due to hydromorphological changes are:

- disruption of the continuity of water flow and environments (transverse artificial structures in the riverbed, disruption of the continuity of water flow and sediment movement and migration of fish and other aquatic life);
- water withdrawals (small and medium-sized rivers - water withdrawals exceeding 75% of the supply; large and very large rivers - water withdrawals exceeding 90% of the supply);
- water accumulation (ponds with a ponding area of more than 1 km or several ponds with a ponding area of less than 1 km, but their total length is more than 30% of the length of the SWB , as well as reservoirs with a volume of more than 1 million m);[3]
- fluctuations in water levels below the dam (water level fluctuations exceeding 0.5 m per day for most of the year);
- disturbance of natural morphological characteristics of rivers (hydromorphological class below the third according to the monitoring results, or straightening of more than 70% of the length of the main river channel in the absence of monitoring data).

2.2 Groundwater

2.2.1 Pollution

There are no large urban agglomerations or large industrial facilities related to the extraction and processing of significant amounts of natural resources in the Zakarpattia region. The largest cities by population are: Uzhhorod and Mukachevo.

Anthropogenic pressure on the GWB is associated with agricultural activities of the population. Intensive farming and horticulture with intensive use of fertilisers, pesticides and herbicides prevails within the Zakarpattia Plain. Cattle are raised mainly in stationary conditions. In the mountains, pasture farming and forestry predominate.

Studies conducted in the early 1990s to investigate the elements of the groundwater regime showed that land reclamation measures disrupt the natural hydraulic and hydrochemical connection between aquifers and cause deterioration in the quality of groundwater and surface water.

When laying main drainage canals, the surface layer of low-permeability rocks was completely or partially destroyed, which led to a deterioration in the protection of the GWB. Negative processes of groundwater quality deterioration are observed during flood filling of the canals and in the post-flood filtration period. Within the reclamation systems, the intensity of surface and groundwater pollution as a result of agricultural production (mineral and organic fertilisers, pesticides, etc.) is increasing. The filtration of flood water enriched with oxygen from canals leads to an increase in oxidised iron in the water and its accumulation in soils. In addition, during the flood period, an increase in groundwater mineralisation and soil salinity was observed in a number of areas.

At present, a significant part of the reclamation network is out of order - the canals are silted up, overgrown with various vegetation, and the locks are out of order.

The mining and industrial type of anthropogenic load is very common in the development of the GWB of the region. It includes water intakes of fresh, mineral and thermal groundwater, open and underground mining, and oil and gas exploration sites.

An important place among the types and objects of technogenic (anthropogenic) load that negatively affects the MEW is occupied by domestic pollution due to the lack of centralised sewage systems with treatment and discharge of domestic wastewater in rural areas and partially in cities. Some rural households have absorption tanks. There are solid waste dumps near almost every settlement. There is no industrial-scale sorting and recycling of this waste.

2.2.2 Volumes/reserves

Estimated groundwater resources (EGWR) are the volumes of groundwater estimated on the basis of geological surveys, which characterise the potential for their extraction from the subsoil in the relevant territory. In the Zakarpattia region, the estimated groundwater resources amount to 1081.60 thousand m^3/day, and their distribution over the territory is uneven, which is explained by the difference in geological, structural and physical geographical conditions. The exploration of forecasted groundwater resources in Ukraine is insignificant - 26%, for the Zakarpattia region this figure is 32%. It is necessary to conduct a detailed assessment of the current state of anthropogenic pressure on the GWB.

Out of the total number of the EGWR, the operational groundwater reserves in the amount of 344.10 thousand m^3/day have been explored and approved. Operational groundwater reserves are calculated based on the data of geological study of groundwater that can be extracted from the subsoil by rational technical and economic indicators of water intake in a given extraction mode, provided that the quality characteristics of groundwater meet the requirements of their intended use and the permissible degree of environmental impact during the estimated period of water use.

The development of projected groundwater resources is most intensive in densely populated areas of the region with high economic potential. Most groundwater is extracted in areas with high population density and developed industry. The operational resources of mineral water amount to about 10.0 thousand m3/day and belong to 20 types of mineral water. In 2020, the volume of mineral water consumption did not exceed 10-15% of the total resource. Mineral waters are used for balneology and industrial bottling . The resources of heat and power waters that are also therapeutic are about 50.0 thousand m3/day.

According to the statistical reporting of 2TP-Vodkhoz (annual), the share of groundwater abstraction from natural objects was 19.415 (49%) in 2020, which indicates a high degree of groundwater use (compared to surface water) in Zakarpattia region. The water supply of Zakarpattia largely depends on groundwater.

State accounting of groundwater extraction and use from explored, preliminary explored deposits and subsoil areas with unevaluated reserves within the Zakarpattia region is carried out. Groundwater extraction is subject to mandatory accounting based on the statistical reporting data of 2TP-water farm (annual) of the State Agency of Ukraine for Water Resources.

The region's current water supply is based on a network of centralised and dispersed water intakes and a dense network of individual production wells located in large settlements and rural areas.

Table 51. Extraction of drinking and industrial groundwater and its use in the Zakarpattia region

Year	Production, million m^3/year	Use, million m /year^3					Groundwater discharge without use, million m^3/year
		Total	Household and drinking water	Production and technical	Agricultural	Irrigation	
2020	19,415	10,690	8,230	2,352	0,029	0,083	0,167

2.2.3 Impact of hostilities on the state of groundwater bodies

The impact of military operations in the Tisza sub-basin has not been recorded and is not expected.

2.2.4 Assessment of the risk of not achieving good status

Risk assessment of failure to achieve good quality (chemical) status

As for non-pressure GWB, their quality condition within settlements is most likely poor (nitrate pollution). There is no data on the chemical composition of non-pressure GWB outside of settlements, but a significant anthropogenic load from diffuse sources of pollution within agricultural landscapes and their natural vulnerability and relative protection allows us to conclude that they are at risk of not achieving good quality (chemical) status. Within agricultural landscapes, this risk is caused by the possibility of nitrates and pesticides entering the water.

Protected from contamination, the pressure water treatment plant is not at risk of failing to achieve good quality (chemical) condition (Table 52).

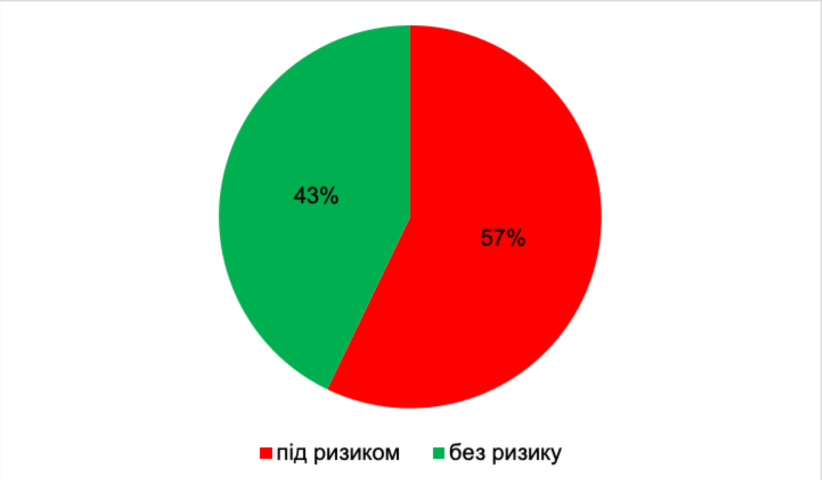


Figure 57. Assessment of the risk of not achieving good chemical condition of the GWB

Assessing the risk of not achieving good quantitative position

There is no negative impact from anthropogenic groundwater abstraction for the pressure and non-pressure GWBs identified in the Tisza sub-basin. Given the reduction in groundwater extraction, there is no risk of failure to achieve good quantitative status for both pressurised and non-pressurised GWB, according to available data.

Table 52: Risk assessment of failure to achieve good qualitative (chemical) and quantitative status

GWB code	GWB and GWB groups	Quality risk		Quantitative risk	
		without risk at risk	at risk: the reason	without risk/ at risk	at risk: the reason
UAM5310Q100	Group of GWBs in alluvial Upper Neopleistocene-Holocene sediments of floodplains and first floodplain terraces of rivers of the mountainous part and Solotvynska depression	at risk	Nitrogen pollution in agricultural landscapes	risk-free	
UAM5310Q200	A group of GWB in weathered crust and other loose Holocene sediments of the mountain slopes of the sedimentary Carpathians	at risk	Nitrogen pollution in agricultural landscapes	risk-free	
UAM5310Q300	GWB in lacustrine-alluvial Middle-Upper Neopleistocene sediments of the Minaya Formation	at risk	Nitrogen pollution in agricultural landscapes	risk-free	

GWB code	GWB and GWB groups	Quality risk		Quantitative risk	
		without risk at risk	at risk: the reason	without risk/ at risk	at risk: the reason
UAM5310Q400	GWB in lacustrine-alluvial Eopleistocene-Lower Neopleistocene sediments of the Chop Formation	risk-free		risk-free	
UAM5310Q500	GWB in alluvial Pliocene-Lower Neopleistocene sediments of the ninth and tenth overflank terraces (Kopanska terrace)	at risk	Nitrogen pollution in agricultural landscapes	risk-free	
UAM5310N100	GWB in sediments of the Pliocene Ilnytsia Formation	risk-free		risk-free	
UAM5310N200	A group of GWB in volcanogenic Pliocene sediments of the Vygorlat-Gutynsky Ridge	risk-free			

Other significant anthropogenic impacts

Climate change

One of the main manifestations of regional climate change against the backdrop of global warming is a significant increase in air temperature, changes in the thermal regime and precipitation patterns, an increase in the number of dangerous meteorological phenomena and extreme weather conditions, and the damage they cause to various sectors of the economy and the population. These trends are typical for Ukraine in general and the Tisza River sub-basin in particular. The greatest changes have been observed over the past thirty years, which have been the warmest for the period of instrumental weather observations.

The rise in air temperature is observed not only near the Earth's surface but also in the lower troposphere, accompanied by an increase in tropospheric moisture content, and causes an increase in atmospheric instability and convection intensity. Such changes have led to an increase in the frequency and intensity of convective weather phenomena: thunderstorms, showers, hail, squalls, and an increase in the maximum intensity of precipitation and its storm component.

Representative Concentration Pathways (RCPs) of greenhouse gases have different trajectories of emissions and concentrations in the atmosphere, emissions of pollutants, and specifics of land use in the 21st century (in particular, changes in the area of forested areas) and their corresponding consequences. Two RCP scenarios were selected for this study: "soft" scenario 2.6, which, in accordance with the Paris Agreement, provides for a reduction in greenhouse gas emissions, and "hard" scenario 8.5, which does not take into account any adaptation or mitigation measures. All scenarios demonstrate a steady increase in average annual temperature throughout the 21st century in all regions. By the end of the century, the average annual temperature averaged across regions under different scenarios is expected to increase by 2-5°C. Global greenhouse gas emissions scenarios (Sources: USGCRP/GlobalChange.gov, UHMI 2014) The study calculated simulated changes in the average annual river flow (flow rate) of the RBD of Ukraine for two future periods (2041-2070 and 2071-2100) under RCP 2.6 and RCP 8.5 scenarios.

The projections for the Tisza sub-basin show an increase in water flows during the winter months in both future periods from 4% to 42% under RCP 2.6 and from 9% to 42% under RCP 8.5. In June, river flows will increase slightly (by 5%), while in other months they will decrease from 4% to 17% in both periods under RCP 2.6. If the "hard" scenario under RCP 8.5 is realised, flows in the period from April to November will decrease in the range of 7% to 21% in the middle of the century and 17% to 35% at the end of the current century.

The water-heat balance of river basins is highly sensitive to climate change. Rising air temperatures and changes in precipitation patterns affect not only the hydrological regime of rivers, but also the overall water resources. Climate change is increasing the frequency of floods and droughts, which makes agriculture, energy, transport and the social sector vulnerable, as they depend on water resources.

In the period 2041-2070, the average annual runoff is expected to fluctuate. During this period, the flow of the rivers in the Tisza basin will be within the long-term norm. The deviation will be only 0.7 to 4.0%. However, the intra-annual distribution of runoff may change significantly. It will be characterised by a significant increase in water flow in the rivers of the sub-basin during the winter months in both future periods from 4%

to 42% under RCP 2.6 and from 9% to 42% under RCP 8.5. Special studies to assess the impact of climate change on flood risk conducted on rivers in the Carpathian region have shown a significant increase in the intensity of catastrophic floods in the Tisza sub-basin at the end of this century (2071-2100) compared to the control period (1981-2010), ranging from 4.5% to 62%. The increase in water flow in the rivers of the Carpathian region will manifest itself in the formation of catastrophic floods on mountain rivers and may lead to significant economic losses in all sectors of the economy and in the territorial communities of the Zakarpattia region.

Pollution of water bodies with solid household waste, including plastic

The clogging of river channels and floodplains with municipal solid waste (MSW) is one of the main water and environmental problems specific to the Ukrainian part of the Tisza sub-basin. The reason for this is the lack of an effective mechanism and infrastructure for the collection, processing and disposal of household waste in Zakarpattia.

Approximately 80% of the population is covered by waste collection and disposal services, mainly residents of cities and urban-type settlements. The low percentage of service provision is explained by the underdeveloped infrastructure (lack of containers, specialised equipment, etc.), as well as the low density of the rural population and difficult access to some settlements. Moreover, the higher up the mountains, the lower the percentage of the population receiving waste collection services. As a result, spontaneous landfills are common.

Typically, paper, cardboard and wood are disposed of by households (incinerated). Glass and construction waste do not cause chemical pollution of water. It is plastic (polymeric) waste that poses the greatest threat to the environment and water resources in particular. It includes packaging, plastic containers, household products, etc. The decomposition of plastic waste releases toxic substances. Such garbage harms aquatic fauna, which leads to biodiversity degradation and thus negatively affects the state of SWBs. In addition, the aesthetic value of the floodplain is lost, which negatively affects the tourist attractiveness of the region, which positions itself as one of the most visited by tourists.

The pollution of the rivers of the Tisza sub-basin by municipal waste is a major concern for neighbouring countries. In particular, since 2020, there have been more than 50 cases of municipal waste pollution on Hungarian territory during floods. First of all, these are PET bottles, the number of which in the Tisza during floods is 50-100 bottles per minute, sometimes this figure reaches 300 bottles per minute. In 2021, surveys were carried out on the watercourses of Transcarpathia to identify unauthorised landfills on floodplains and blockages, and 32 unauthorised landfills and 23 garbage jams were found.

Given the current situation, addressing the problem of solid waste management should be included in the programme of measures to achieve good environmental status of the Tisza sub-basin.

Invasive species

Invasions of alien species outside their "native" habitats are global in nature. The naturalisation and further spread of invaders can cause irreversible environmental damage and undesirable economic and social consequences.

Currently, biological invasions are considered to be biological pollution, but unlike most pollutants that can decompose in natural ecosystems through self-purification processes and whose content is controlled by humans, alien organisms that have successfully invaded begin to multiply uncontrollably and spread rapidly in the environment. This phenomenon can have unpredictable and irreversible consequences.

In addition, the introduction of alien species leads to irreparable losses of biodiversity, both through direct destruction of native species by predators, food and spatial competition, and as a result of displacement of native species, changes in their habitats and hybridisation. The emergence of any alien species is an indicator and, at the same time, a cause of the deterioration of the ecological state of a water body. All this causes a particular danger of invasions and determines the specifics of control measures in terms of the risks of not achieving a "good" ecological status of SWBs where the process of invasion of adventive species is carried out.

The issue of invasion of alien species is legally reflected in the Law of Ukraine "On the Basic Principles (Strategy) of the State Environmental Policy of Ukraine for the Period up to 2030", the Decree of the President of Ukraine of 17 December 2021 No. 668, which put into effect the decision of the National Security and Defence Council of Ukraine of 15 October 2021 "On the Strategy of Biosafety and Biological Protection", the Action Plan for the Implementation of the Strategy of Biosafety and Biological Protection for 2022-

2025, approved by the Order of the Cabinet of Ministers of Ukraine No. 57Z of 07 July 2022, and the Convention on Biological Diversity.

In accordance with paragraph 5 of the Action Plan for the Implementation of the Strategy for Biosafety and Biological Protection for 2022-2025, approved by the CMU Resolution No. 573 of 07.07.2022, the Ministry of Ecology approved the "Methodological Recommendations for Assessing the Existing and Potential Impact (Risks) of Invasive Alien Species" by Order No. 290 of 15.03.2024 (https://mepr.gov.ua/nakaz-mindovkillya-290-vid-15-03-2024/).

The Guidelines have been developed with due regard to the Regulation (EU) No 1143/2014 of the European Parliament and of the Council (22 October 2014) on the prevention and management of the introduction and spread of invasive alien species, and Delegated Regulation (EU) 2018/968 of the European Commission of 30 April 2018, supplementing Regulation (EU) No 1143/2014 of the European Parliament and of the Council on the risk assessment of invasive alien species, in order to harmonise approaches to impact (risk) assessment when preparing proposals for the inclusion of alien species in the List of Invasive Alien Species of Flora and Fauna of Ukraine.

The study of alien aquatic species in the Tisza sub-basin is carried out more systematically than in other river basins. In 2017. the Transcarpathian Regional Council approved the first official regional list of invasive plant species in Ukraine.

The ichthyofauna of the main rivers of the Carpathian region includes 83 species of roundworms and fish, with 22 alien fish species and 1 species of roundworm present in the rivers of the Carpathians. Native species make up the majority - 73%, invasive species - 28%. The Tisza basin has a significant number of invasive species - 12.

The reasons for the appearance of alien species in the rivers of the Carpathian region of Ukraine are related to direct anthropogenic impact. Almost half of the identified alien species appeared in the fish fauna as a result of human fisheries activities.

The main ways of spreading invasive species are:

- aquaculture or fish farming of commercially valuable fish species;
- Accidental or unintentional introduction of commercial species along with stocking;
- aquarists, which contributed to the spread of species as a result of their deliberate release into natural reservoirs or accidental entry into the latter (sunfish, rotan, silver crucian carp);
- Expansion of the natural ranges of Ponto-Caspian species as a result of hydroelectric construction and global warming (round goby, sand goby, goby, goby, western goby, blunt-nosed goby);
- unauthorised stocking of rivers with alien species without scientific justification and expertise and relevant permits (Danube salmon).

According to the Convention on Biological Diversity (The Hague, 2002), measures aimed at mitigating the effects of invasions by alien species should be mainly preventive, but it is usually not possible to effectively control the process of invasions, primarily due to the lack of a biodiversity monitoring system.

After conducting special studies of alien aquatic species and determining the list of species in the area of their occurrence, the first and most important step is to establish a basin-wide monitoring system for invasions. Monitoring should be focused on:

- identification and analysis of the species composition of alien species, invasive corridors, geography and dynamics of invasions;
- population dynamics of the most significant invasions from emergence to naturalisation, as well as of invasive species that have already been naturalised, and the consequences of their impact on habitats, native species, communities and ecosystems;
- Inventory of possible intrusion sites and their survey (e.g., municipal wastewater leaks from large cities with a developed aquarium services market, discharges of heated water from thermal power plants and large industrial enterprises).

Provision must also be made at the basin level:

- development of regional/basin cadastral lists of alien, threatened (dangerous) species of flora and fauna of Ukraine;

- predicting the emergence of new invasive species that are potentially dangerous for human activities or established hydroecosystems;
- development of methods to curb the spread of alien species (e.g. physical removal, weakening the development of species using phytophagous animals, use of herbicides). An example is the programme for monitoring, localising and controlling the number of alien (invasive) plant species in the territory of the territorial community of Stryi City Council for the period 2021-2025.

3 ZONES (TERRITORIES) TO BE PROTECTED AND THEIR MAPPING

3.1 Emerald Network sites

The Emerald Network - is an ecological network consisting of special areas for the conservation of biological diversity created (designated) in accordance with the Convention on the Conservation of Wild Flora and Fauna and Natural Habitats in Europe (Bern Convention). Its goal is to ensure the long-term survival of species and habitats listed in the Bern Convention that require special protection.

On 30 November 2018, six countries - the Republic of Belarus, Georgia, the Republic of Moldova, Norway, Switzerland and Ukraine - officially approved the lists of Emerald Network sites on their territories. The full list of Ukraine's Emerald Network includes 271 sites[24] , and the network covers about 8% of Ukraine's territory.

There are 12 Emerald Network sites in the Tisza sub-basin, covering approximately 16% (2028 km^2) of the sub-basin area.

By category (Fig. 58), the sub-basin's Emerald Network sites are divided into:

- reserve - 1;
- Biosphere Reserve - 1;
- national natural park - 5;
- regional landscape park - 5.

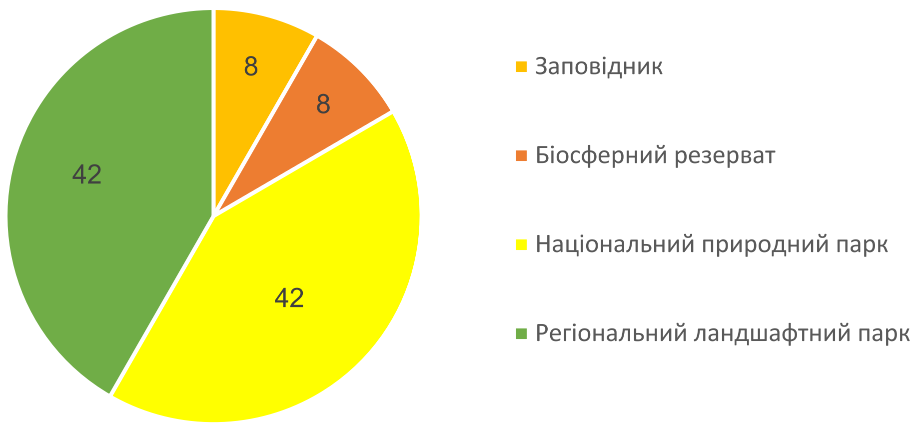


Figure 58. Breakdown of Emerald Network sites by category, %.

None of the sites has a management and development plan in place.

3.2 Sanitary protection zones

Sanitary protection zones include areas where water intakes for drinking water supply are located. According to the Resolution of the CMU "On the Legal Regime of Sanitary Protection Zones of Water Bodies" No. 2024 dated 18.12.1998, these zones are classified as the so-called first zone (strict regime) of compliance with the use regime. The Resolution provides for a number of permitted and prohibited activities within drinking water intakes.

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24 UPDATED LIST OF OFFICIALLY ADOPTED EMERALD SITES (NOVEMBER 2018) Document prepared by the Directorate of Democratic Participation and Marc Roekaerts (EUREKO) **https://rm.coe.int/updated-list-of-officially-adopted-emerald-sites-november-2018-/16808f184d**

Member States should identify in each RBD:

- SWBs/GWBs that are used to collect water intended for human consumption, provide an average of more than 10 m³ of water per day or supply water to more than 50 people;
- SWBs/GWBs intended for future use for the same purpose.

State accounting of water use in Ukraine, which is carried out through the submission of reports on water use in the form No. 2TP-vodhosp (annual), provides for reporting only by those water users who withdraw water from surface and groundwater bodies in the amount of 5.0 m³/day or more (the diagram in Figure 59 is based on 2020 data, when only water users who withdrew water in the amount of 10.0 m³/day reported).

There are 64 water intakes in the Tisza sub-basin that withdraw more than 10.0 m³/day. Of these, 52 (81%) are groundwater intakes and 12 (19%) are surface water intakes.

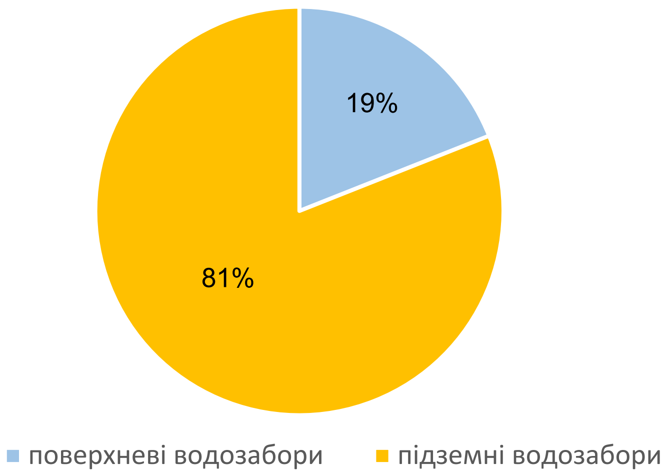


Figure 59. Water intakes in the Tisza sub-basin, %.

The SAWR is responsible for maintaining state water accounting.

3.3 Protection zones for valuable aquatic bioresources

Areas designated for the protection of economically important aquatic species or areas for the protection of valuable aquatic bioresources include those areas where such aquatic resources of significant economic value are found or cultivated.

Depending on the specifics of the protection zone for valuable aquatic bioresources, the monitoring programme may include additional indicators or sampling frequency.

According to the Resolution of the CMU No. 1209 "On Approval of Tariffs for Calculating the Amount of Compensation for Damage Caused by Illegal Harvesting (Collection) or Destruction of Valuable Aquatic Bioresources" dated 21.11.2011 (as amended by the Resolution of the CMU No. 1039 dated 06.10.2021), the list of valuable bioresources includes both rare and common fish species throughout Ukraine.

At the same time, according to Article 1 of the Law of Ukraine "On Fisheries, Commercial Fishing and Protection of Aquatic Bioresources", a fishery water body (or part thereof) is a water body (or part thereof) that is used or may be used for fisheries purposes.

Thus, taking into account the above, as well as the lack of an appropriate legislative and regulatory framework, the protection zones for valuable bioresources in Ukraine have not been defined.

3.4 SWBs/GWBs used for recreational, medical, spa and health purposes, as well as water intended for bathing

Recreation areas of water bodies are land plots with adjacent water space intended for organised recreation of the population on the coastal protective strips of water bodies. Places of mass recreation are determined by local governments in accordance with the powers vested in them every year before the start of the summer swimming season. Water protection zones are established along rivers, around lakes, reservoirs and other water bodies, within which land plots are allocated for coastal protection strips.

It is prohibited in water protection zones and coastal protection zones:

- storage and use of pesticides and fertilisers;
- construction of cemeteries, summer camps for livestock, manure storage facilities, cattle cemeteries, waste dumps, filtration fields, liquid and solid waste storage facilities, etc;
- discharge of untreated wastewater;
- construction of any structures (except for hydrotechnical, hydrometric and linear structures), including recreation centres, summer cottages, garages and car parks;
- Washing and maintenance of vehicles and equipment.

Requirements for the location and organisation of water body recreation areas:

- To organise recreational areas on water bodies, their owners or lessees are required to agree the operation of the beach with the State Service of Ukraine for Food Safety and Consumer Protection before the start of each swimming season.
- the recreation area should be located outside the sanitary protection zones of industrial enterprises. The recreation area should be located at the maximum possible distance (at least 500 m) from sluices, hydroelectric power plants, wastewater discharge sites, stables, livestock watering places and other sources of pollution.
- beaches should not be located within the first zone of the sanitary protection belt of drinking water sources.

Environmental goals for recreational areas:

- The water quality of reservoirs and rivers used in recreational areas must meet the requirements of sanitary legislation.
- the composition and properties of water in the area of recreational water use must meet the requirements for physical, chemical and sanitary-microbiological indicators.

Requirements for water monitoring in recreational areas:

- water sampling for departmental control in water bodies should be carried out annually by local authorities at least 2 times before the start of the bathing season (at a distance of 1 km upstream of the bathing area on watercourses and at a distance of 0.1-1.0 km in both directions from it on water bodies, as well as within the bathing area).
- during the swimming season, such water sampling shall be carried out at least twice a month at at least two points selected in accordance with the nature, length and intensity of use of swimming areas.

Pursuant to CMU Resolution No. 264 of 06.03.2002 "On Approval of the Procedure for Registration of Places of Mass Recreation on Water Bodies", local executive authorities and territorial fishery protection authorities are required to identify on maps and schemes land plots and water areas suitable for the organisation of beaches, boat rental facilities, water attractions, as well as places for water sports and places for amateur and sport fishing in winter.

Approved copies of the maps are submitted to the emergency rescue services that serve water bodies in their area of responsibility and to the regional coordination emergency rescue centres of the State Specialised Emergency Rescue Service on Water Bodies of the Ministry of Emergencies (currently the State Emergency Service).

Information on places of mass recreation is submitted annually by 1 April by local governments, and information on places of recreational and sport fishing is submitted on 10 February and 30 October by territorial fish protection authorities to regional coordination emergency and rescue centres of the SES.

According to the SES of Ukraine in Zakarpattia Oblast, as of August 2023, there are 3 officially designated places of recreation and leisure in the Tisa sub-basin (Annex 5 (M5.3.1)).

3.5 Areas vulnerable to (accumulation of) nitrate

Ukraine has approved a methodology for determining nitrate vulnerability zones (Order of the Ministry of Ecology of Ukraine No. 244 dated 15.04.2021), as required by the EU Nitrate Directive. The methodological approach is to use a large amount of high-resolution spatial and temporal data, mainly surface and groundwater monitoring data, but the definition of these zones should also use statistical data such as the number of livestock, fertiliser application and surplus calculations for nitrogen. All of this information of high quality and sufficient reliability is needed to identify nitrate vulnerable areas where mandatory measures to reduce nitrate pollution should be taken. At present, the existing surface water monitoring network is insufficient in terms of its integrity and spatial coverage to apply the developed method, and groundwater monitoring is not carried out at all.

Therefore, given that in Ukraine:

- the highest percentage of arable land in the world (53.9%, 2021 data), while the ploughed-out agricultural land rate is 78.2%;
- lack of representative and reliable information on the content of nutrients in surface and groundwater;
- Eutrophication of water bodies is a widespread phenomenon;

In the short term, it is proposed to designate the entire territory of Ukraine as a nitrate vulnerable area. This approach is in line with the EU WFD, reflects the current very limited availability of the necessary information to identify nitrate vulnerable areas, is used in many EU countries (e.g. Germany, Austria, Lithuania and Romania), is easier to assess, and allows for refinement or identification of nitrate vulnerable areas in subsequent reporting periods based on improved, more reliable information.

This approach avoids competition among farmers in the short term and allows all farmers to be financially supported through future rural development programmes without the need to differentiate between different regions. It also allows for the general measures of the action programme to be applied to the entire territory, but for more stringent action programme measures to be applied only to regions where (based on available data) clear agricultural stress can be proven and specified in a step-by-step manner.

Therefore, in the medium term, it is necessary to focus on substantial and gradual improvement of the monitoring network (both groundwater and surface water) and database to ensure a more detailed approach to zone identification and monitoring, and thus achieve full compliance with the WFD with the identified nitrate vulnerable zones during the second cycle of the RBMP (2031-2036).

3.6 Vulnerable and less vulnerable areas identified in accordance with the criteria approved by the Ministry of Environment

In accordance with the Law of Ukraine "On Wastewater Disposal and Treatment" dated 12.01.2023 No. 2887-IX (the Law), the vulnerable zone is the SWB and inland sea waters that are affected by wastewater discharge and where eutrophication is observed or may be eutrophic if no preventive measures are taken.

Pursuant to Article 12 of the Law, the SWB is defined as a vulnerable zone, and inland sea waters are defined as a less vulnerable zone by a decision of a local self-government body upon submission of the State Agency of Ukraine for Water Resources, in accordance with the Criteria for determining vulnerable and less vulnerable zones (hereinafter - the Criteria), approved by the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 6 dated 14.01.2019, registered with the Ministry of Justice of Ukraine on 5 February 2019 under No. 126/33097.

As of 27 March 2024, local governments, upon the submission of the SAWR, recognised 15 SWBs as vulnerable zones, which is 3% of the total number of SWBs in the Tisza sub-basin.

No decision has been made on less vulnerable areas.

4 MAPPING OF THE MONITORING SYSTEM, RESULTS OF MONITORING PROGRAMMES FOR SURFACE WATER (ECOLOGICAL AND CHEMICAL), GROUNDWATER (CHEMICAL AND QUANTITATIVE), AREAS (TERRITORIES) SUBJECT TO PROTECTION

4.1 Surface water

Surface water monitoring is carried out in accordance with the Procedure for State Water Monitoring, approved by CMU Resolution No. 758 of 19 September 2018. The Ministry of Ecology, the SAWR and the SES are the subjects of state water monitoring.

Every year since 2020, state water monitoring programmes have been approved by the relevant orders of the Ministry of Ecology (No. 410 of 31.12.2020, No. 3 of 05.01.2022, No. 27 of 17.01.2023) and enforced by the SAWR.

The state water monitoring programme includes:

- information on the object of state water monitoring (code, name of the object, location and other characteristics);
- biological, physicochemical, chemical and hydromorphological indicators, frequency of monitoring, information on the subject and the performer of water monitoring.

State water monitoring is carried out according to the indicators and frequency specified in Annexes 1-3 of the Procedure.

Depending on the goals and objectives of state water monitoring, the following procedures are established:

- the procedure for diagnostic monitoring of the SWBs and GWBs;
- Procedure for operational monitoring of the SWBs and GWBs;
- the procedure for research monitoring of the SWBs;
- procedure for monitoring marine waters.

Diagnostic monitoring is carried out during the first year of state water monitoring. For SWBs that do not pose a risk of failing to achieve environmental objectives, diagnostic monitoring is carried out additionally during the fourth year of state water monitoring.

Operational monitoring is carried out for SWBs that pose a risk of not achieving environmental goals, as well as for SWBs whose water intake to meet drinking and domestic needs of the population averages more than 100 cubic metres per day.

Operational monitoring is carried out annually between the years of diagnostic monitoring.

The research monitoring is carried out by the state water monitoring entities, which independently determine the monitoring points, the list of indicators and the frequency of their measurement.

4.1.1 Monitoring system

In the Tisza sub-basin, in 2023, monitoring was carried out at 45 monitoring sites located at 41 SWBs (Annex 6 (M5.3.1)), including:

- at transboundary SWBs identified in accordance with intergovernmental cooperation agreements - 8;
- at the IWPs SWBs which water is abstracted to meet the drinking and household needs of the population - 3;
- to determine the reference conditions - 3.

4.1.2 Hydromorphological assessment/status

The hydromorphological status is assessed in accordance with the Methodology approved by the Order of the Ukrainian State Geological Survey No. 23 of 19.02.2019, in five classes.

Hydromorphological monitoring was carried out at 31 SWBs (Annex 7 (M5.3.1)). According to the monitoring results: 8 SWBs are classified as nearly natural, 23 SWBs are classified as slightly modified (Fig. 60).

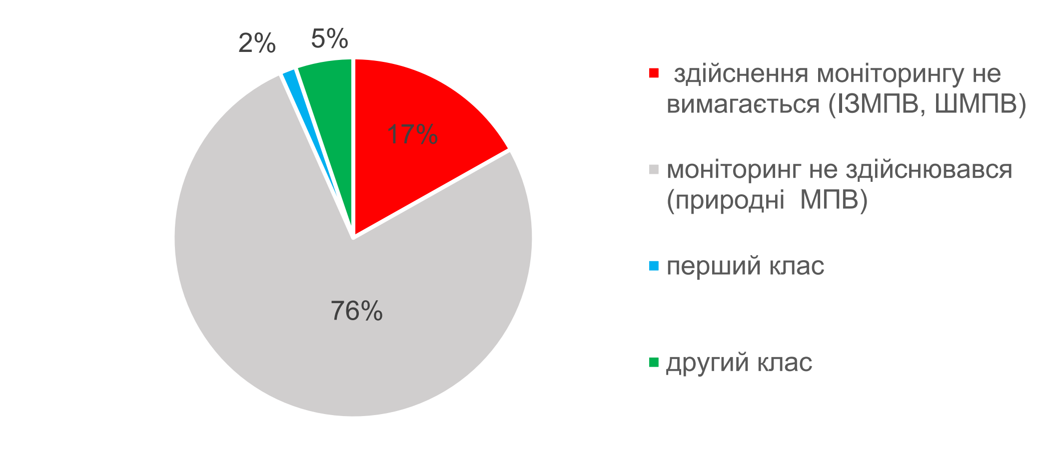


Figure 60. Hydromorphological status of the SWB

4.1.3 Chemical status assessment

The assessment of the chemical state of the SWBs is based on determining the concentrations of priority substances specified in Directive 2008/105/EC, taking into account Directive 2013/39/EU250, which sets the limit values of environmental quality standards.

In Ukraine, the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 45 of 6 February 2017, registered with the Ministry of Justice of Ukraine on 20 February 2017 under No. 235/30103, defines a list of indicators for which environmental quality standards are set in Annex 8 of the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 5 of 14.01.2019 No. 5 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified Surface Water Body".

Directive 2009/90/EC (Article 5), which sets out technical requirements/criteria for the processing of monitoring data, was also taken into account when assessing the chemical state of the SWB:

- If the measured value was below the limit of quantification (LOQ), the calculation uses the value of half the LOQ for this indicator
- When summarising the results of individual isomers or mixtures (e.g. polycyclic aromatic hydrocarbons, cyclodiene pesticides, DDT), in the case of values measured below the LOQ, zero "0" should be used to calculate the average concentrations.

In addition, Article 4 of Directive 2009/90/EC stipulates that the methods for measuring the content of indicators must meet the minimum criteria: have a measurement uncertainty value below 50% (k=2) and a quantification limit equal to or below 30% of the relevant environmental quality standard.

Valuation reliability

The reliability of the chemical state assessment was performed using the criteria for establishing the reliability of the correct determination of the ecological and chemical status of the SWBs specified in Annex 11 of the Order of the Ministry of Ecology and Natural Resources of 14.01.2019 No. 5.

According to the established criteria, a three-stage scheme was used to assess the reliability of the correct determination of the chemical state of the SWB:

- A high level of assessment reliability means that most of the requirements have been met, namely: measurement data are available for all indicators specified in the List of Pollutants for Determining the Chemical State of Surface and Groundwater bodies and the Environmental Potential of an

Artificial or Heavily Modified Surface Water Bodies in accordance with the Order of the Ministry of Environment No. 45 dated 6 February 2017, hereinafter referred to as the List, that meet the requirements of the Procedure (almost all relevant requirements for the list of indicators, methods and frequency have been met); the aggregation of SWBs demonstrates reliable results;

- The medium level of reliability of the assessment of the state of the SWB is established in the absence of sufficient monitoring data, frequency and measurement of all indicators identified in the List;
- The low level of reliability of the assessment of the state of SWB means that the assessment of the state of SWB was based on risk assessment, transfer of monitoring data through aggregation of SWB according to certain criteria.

To assess the chemical state of the Danube RBD (Tisza sub-basin), statistically processed data of measurements of pollutant content in surface waters conducted at 50 monitoring sites were used, namely the average and maximum values (Annex 7 (M5.3.1)).

Background concentrations for non-synthetic substances (mercury, lead, cadmium, nickel) were not taken into account when assessing the chemical state of the SWB.

The compliance of the EQS measurement results with the established annual average and maximum permissible concentrations is considered to be in line with the requirements established for the good chemical condition of the SWB.

For SWBs where monitoring was not carried out, the chemical state was assessed by interpolating (transferring) the assessment results from SWBs where monitoring was carried out, according to the aggregation of SWBs.

The following parameters were not measured: brominated diphenyl ethers (esters), chloralkanes, **C10-13,** di-(2-ethylhexyl)-phthalate, diuron, isoproturon, pentachlorophenol, tributyltin compounds (tributyltin cation), perfluorooctane sulfonate and its derivatives (PFOS), dioxins and dioxin-like compounds, hexabromocyclo-dodecane (HBCDD) (Annex 7 (M5.3.1)).

For the indicators fluoranthene, hexachlorobenzene, hexachlorobutadiene, mercury and its compounds, dicofol, heptachlor and heptachloroepoxide, for which the recommended object of control is biota, due to the lack of technical capabilities and measurement methods, concentrations were determined only in surface water samples.

The chemical state was assessed on the basis of monitoring data obtained as part of the diagnostic and operational monitoring of the SWB in 2020-2023 for 44 SWB (Annex 8).

The results of the assessment of the chemical state of the MPW based on monitoring data (Table 52):

- *chemical status is "good":* 17 linear SWBs (3.6% of the total number of linear SWBs), by SWB length it is 320.6 km (8.5% of the total length of linear SWBs); 3 polygonal SWBs (33.3% of the number of polygonal SWBs), by SWB area it is 4.6 km^2 (43.4% of the area of polygonal SWBs);
- *chemical status "not achieving good":* 23 linear SWBs (4.9% of the total number of linear SWBs), by SWB length this amounts to 428.0 km (11.3% of the total length of linear SWBs); 1 polygonal SWB (11.1% of the total number of polygonal SWBs), by SWB area this amounts to 1.2 km^2 (11.3% of the total area of polygonal SWBs).

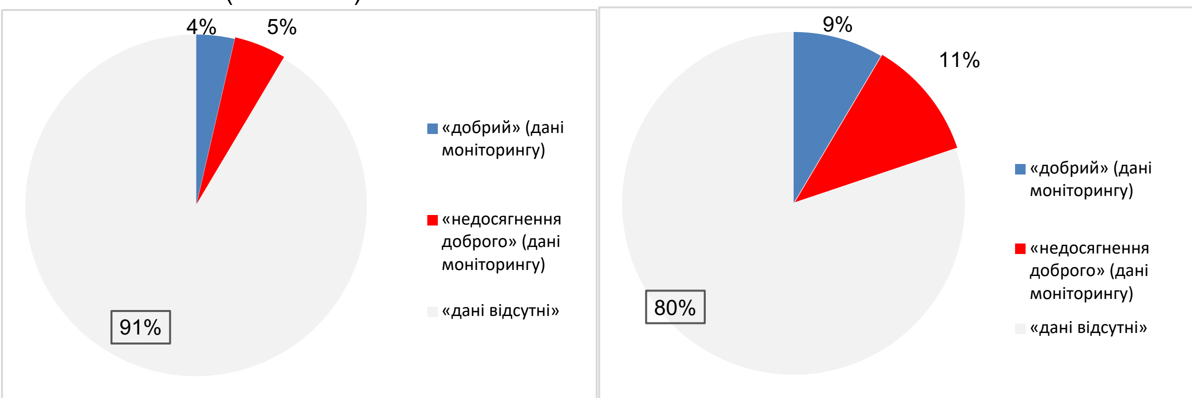
Table 52. Chemical state of the SWBs for the period 2020-2023 (according to monitoring data)

Chemical status	number of linear SWBs	general length of the SWBs, km	quantity polygonal SWBs	general area of the SWB, km^2
"good"	17	320,6	3	4,6
"failure to achieve the good"	23	428,0	1	1,2

The following substances have been found to exceed the maximum permissible concentration and/or the annual average concentration:

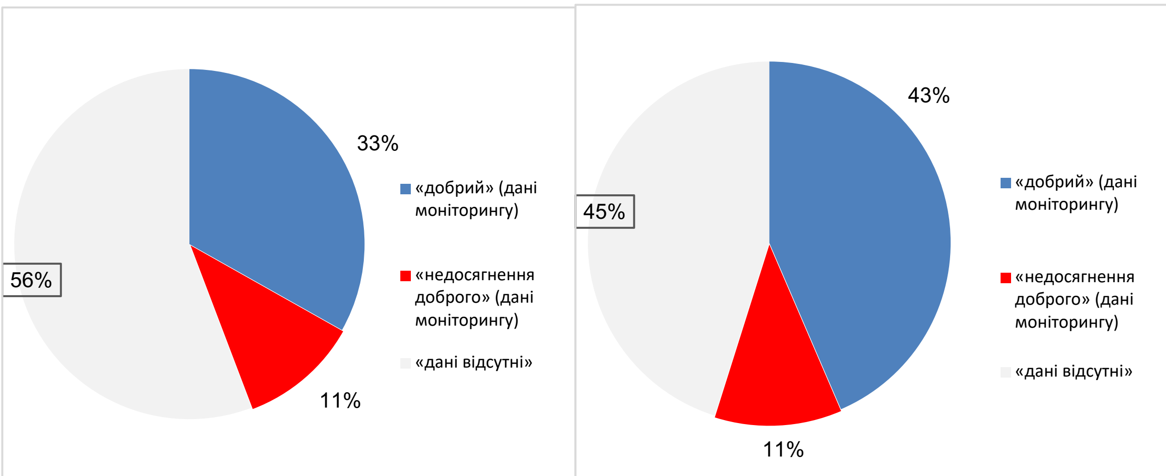
- alachlor (for 1 SWB);

- cadmium (for 1 SWB);
- fluoranthene (for 2 SWB);
- benzo(*a*)pyrene (for 20 SWB);
- benzo(*b*)fluoranthene (for 2 SWB);
- benzo(*k*)fluoranthene (for 1 SWB);
- benzo(*g,h,i)* perylene (for 6 SWB);
- dicofol (for 1 SWB);
- terbutrin (for 1 SWB).



by the number of SWBs *by the length of SWBs*

Figure 61. Assessment of the chemical status of linear SWBs (monitoring data)



by the number of SWBs *by the area of SWBs*

Figure 62. Assessment of the chemical status of polygonal SWBs (monitoring data)

The interpolation of the results of SWB monitoring to other SWBs was carried out on the basis of SWB aggregation, which was performed in 2022 as part of the implementation of state water monitoring in accordance with the Order of the SAWR dated 06.05.2022 No. 42 "On Approval of the State Agency of Ukraine for Research and Scientific and Technical Development Plan for 2022".

The purpose of SWB aggregation is to combine all SWB in a river basin into different groups based on reasonable criteria for:

- Interpolation of the results of monitoring of the SWB to other SWB that are grouped with them;
- Use the results of aggregation in the development of monitoring programmes for the following years to maximise the interpolation of the assessment results.

The criteria for the aggregation of SWB of the "rivers" and "lakes" category are:

- the type of the defined SWB;
- assessing the risk of not achieving a good chemical state of the SWB;
- a physical and geographical unit of zoning of the basin to which the SWB belongs;
- the type of landscape where the SWB is located.

The criterion for linear SWB of the "HMWB" and "AWB" categories is:

- assessing the risk of not achieving a good chemical state of the SWB.

The criteria for polygonal SWB of the "HMWB" and "AWB" categories are:

- category;
- the volume of the reservoir;
- water exchange regime of the reservoir.

Based on interpolation of the monitoring results according to the aggregation of SWB (low level of reliability of the IAPs assessment) (Table 53), the following was established:

- chemical status is "good": 84 linear SWB (18% of the total number of linear SWB), by SWB length this amounts to 486 km (13% of the total length of linear SWB); 1 SWB (11% of the number of polygonal SWB), by SWB area this amounts to 1.4 km^2 (13% of the area of polygonal SWB);
- *chemical status of "failure to achieve good":* 133 linear SWB(28% of the total number of linear SWB), by SWB length this amounts to 1190 km (31% of the total length of linear SWB); 4 SWB (44% of the number of polygonal SWB), by SWB area this amounts to 3.35 km^2 (32% of the area of polygonal SWB).

Table 53. Chemical status of the SWB based on interpolation of monitoring data

Chemical status	number of linear SWBs	total length of the SWBs, km	number of polygonal SWB	is the total area of the SWB, km^2
"good"	84	486	1	1,4
"failure to achieve the good"	133	1190	4	3,35

The assessment of the chemical state of the SWB for the period 2020-2023 (monitoring data and interpolation of monitoring data) is presented in Table 54, Annex 6 (M5.3.1) and Figures 61 - 62.

Table 54. Assessment of the chemical status of the SWB for the period 2021-2023 (monitoring data and interpolation of monitoring data)

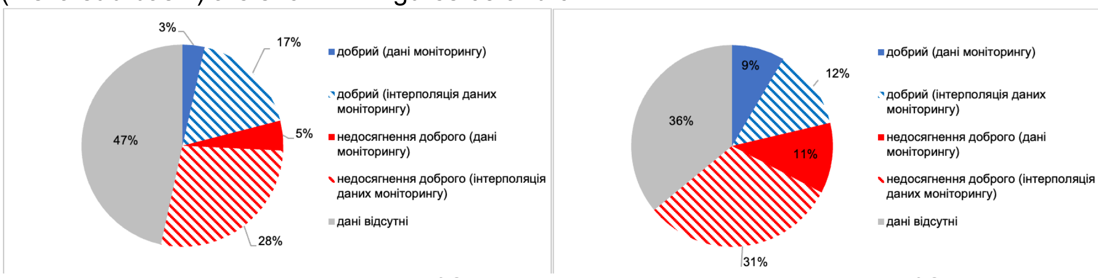
Chemical state	number of linear SWB	total length of the SWB, km	number of polygonal SWBs	total area of the SWB, km^2
"good"	101	807	4	6
"failure to achieve the good"	156	1618	5	4,6

For 44 SWBs, the reliability of the assessment of the correct chemical state determination corresponds to the average level of reliability.

222 SWBs were assessed with a low level of reliability based on the transfer of results obtained under the surface water quality monitoring programme to SWBs where no monitoring was carried out, according to the aggregation of SWBs.

Taking into account the interpolation of monitoring data, the chemical state was assessed for 257 linear SWBs, which is 2425 km in length, and 9 polygonal SWBs, which is 10.6 km^2 in area.

Summarised assessments of the chemical state of linear SWBs and polygonal SWBs in the Danube RBD (Tisza sub-basin) are shown in Figures 63 and 64.



by the number of SWBs *by the length of SWBs*

Figure 63. Summary assessment of the chemical status of the linear SWBs of the Danube RBD (Tisza sub-basin)

by the number of SWBs *by the area of SWBs*

Figure 64. Summary assessment of the chemical status of landfill sites in the Danube RBD (Tisza sub-basin)

4.1.4 Ecological status assessment

The determination of the ecological status of SWBs in accordance with the requirements of the Water Code of Ukraine and Order of the Ministry of Ecology and Natural Resources No. 5 dated 14 January 2019 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified Surface Water Body" is based on the use of a set of biotic and abiotic components inherent in aquatic ecosystems.

The basis for assessing the ecological status of SWB s is based on biological quality indicators that best reflect changes in the aquatic environment, including benthic invertebrates, phytobenthos, macrophytes, phytoplankton and fish. Auxiliary indicators include physicochemical and hydromorphological quality indicators. The assessment of the ecological status also includes specific synthetic and non-synthetic substances that are typical for RBDs.

The classification schemes for biological quality indicators depend on the type of SWB and include possible anthropogenic pressures (e.g., organic and nutrient pollution, hydromorphological changes). The ecological status of an SWB is assessed in relation to a reference value (i.e., the status of an SWB of a certain type without or with minimal anthropogenic pressure). The degree of impact for individual biological quality indicators is converted into an ecological quality coefficient for individual boundaries of the five classes of ecological status of the SWBs.

The algorithm for determining the ecological status of SWB based on the type-specific classification being developed for biological, hydromorphological, chemical and physicochemical indicators is provided in the draft Order of the Ministry of Ecology and Natural Resources "On Approval of Environmental Water Quality Standards for Determining the Ecological Status of Surface Water Bodies...". Type-specific classification schemes were developed based on existing schemes in neighbouring EU countries for the respective types of intercalated SWB.

The assessment of physicochemical and chemical indicators took into account the requirements of Directive 2009/90/EC (Article 5), which sets out technical requirements/criteria for the processing of monitoring data.

The results of state water monitoring conducted by the SAWR and the State Emergency Service of Ukraine as part of diagnostic and operational monitoring were used to assess the environmental condition of the SWBs.

If during this period the monitoring of the SWBs was carried out more than once at the monitoring point, the assessment was made on the basis of the results of the last year in which the monitoring was carried out.

To assess the ecological status of the SWB, the data on monitoring the content of synthetic and non-synthetic specific substances typical for the Danube RBD were used.

Background concentrations of non-synthetic specific substances were not taken into account when assessing the environmental condition of the SWB.

In the Danube RBD (Tisza sub-basin), the environmental status was assessed for 35 linear SWBs with a length of 687.8 km based on the 2021-2023 data. The results of the assessment of the environmental status of the SWBs are presented in the table and appendix.

Table Ecological status of the SWB

Ecological status	Number of linear SWBs	Percentage of the total number of linear SWBs, %	Length of linear SWBs, km	Percentage of the total length, %
"high"	0	0	0	0
"good"	23	4,9	422,5	11,1
"moderate"	6	1,3	169,2	4,5
"poor"	6	1,3	96,1	2,5
"bad"	0	0	0	0

The level of reliability of the ecological status assessment is average for all SWBs.

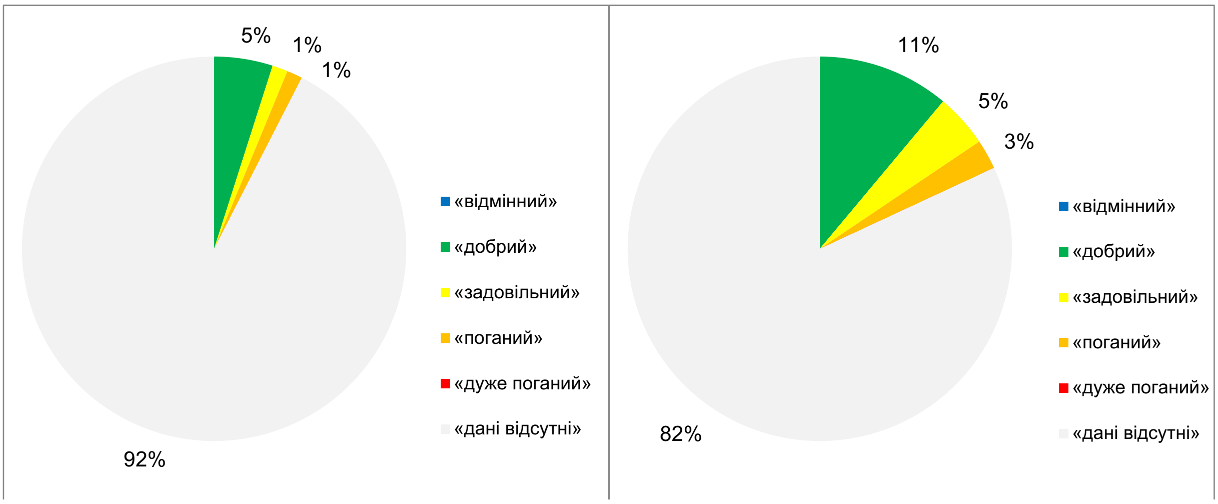
"Good" ecological status was achieved for 23 linear SWBs with a total length of 422.5 km.

The environmental targets for achieving "good" ecological status were met in 23 SWBs, or 11.1% of the total length of the Tisza sub-basin's linear SWBs.

Modearte ecological status was determined for 6 linear SWBs with a length of 169.2 km, which is 4.5% of the total length of SWBs. The ecological status of 6 SWBs is classified as "poor", which is 2.5% of the total length of SWBs. None of the assessed SWBs were classified as in "very poor" ecological status.

In the Danube RBD (Tisza sub-basin), the Martosh River (UA_M5.3.1_0104), Khustets River (UA_M5.3.1_0151), Repynka River (UA_M5.3.1_0168), Borzhava River (UA_M5.3.1_0222), Tova River (UA_M5.3.1_0279), Tovar River (UA_M5.3.1_0302), and Tisza River (UA_M5.3.1_0303) are in "poor" ecological status. Borzhava (UA_M5.3.1_0222), Verke (UA_M5.3.1_0279), Tova (UA_M5.3.1_0393) due to non-compliance with the EQS for microphytobenthos, vascular plants, and benthic macroinvertebrates.

The results of the ecological status are presented for the linear SWBs of the "rivers" category in Figure 5.3.



by the number of SWBs *by the length of SWBs*

Figure 5.3 Assessment of the ecological status of the Danube RBD linear SWBs (Tisza sub-basin)

4.1.5 Ecological potential assessment

For an AWB or an HMWB, the ecological objective is to achieve good ecological potential, for which less stringent criteria are applied to determine impacts related to hydromorphological changes. The ecological potential of an AWB or HMWB is determined in accordance with the classification established for determining the status of the SWB of the relevant category (river, lake, transitional waters, coastal waters) to which the AWB or HMWB is most similar in terms of its characteristics.

In the Danube RBD (Tisza sub-basin), the ecological potential was assessed for 4 linear SWBs with a length of 31.8 km based on the 2021-2023 data. The results of the assessment of the ecological potential of the SWBs are presented in the table and appendix.

Table 3 Ecological potential of SWBs (linear)

Ecological potential	Number of linear SWBs	Percentage of the total number of linear SWBs, %.	Length of linear SWBs, km	Percentage of the total length, %.
"good"	2	0,4	18,6	0,5
"moderate"	1	0,2	3,2	0,1
"poor"	1	0,2	10,0	0,3
"bad"	0	0	0	0

The level of reliability of the ecological potential assessment is average for all assessed MNEs.

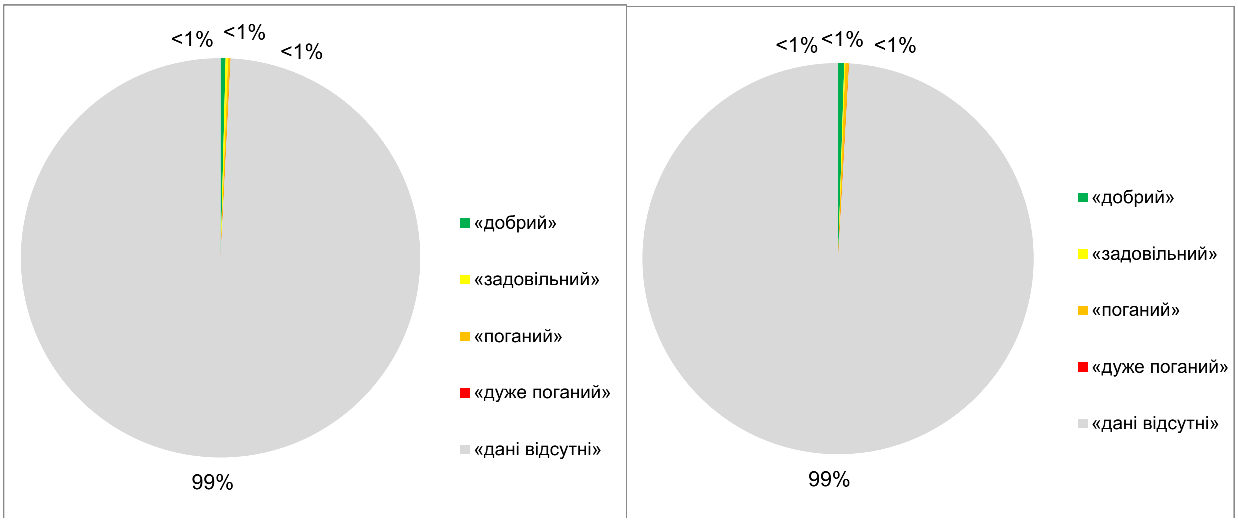
The environmental targets for achieving "good" ecological potential were achieved in 2 linear SWBs with a length of 18.6 km.

"Modearte" ecological potential was determined for 1 linear SWB with a length of 3.2 km, which is 0.1% of the length of linear SWBs.

"Poor" ecological potential was identified on 1 linear SWB with a length of 10.0 km, which is 0.3% of the total length of the SWB. In the Danube RBD (Tisza sub-basin), the Kosyno-Bovtradskyi River (UA_M5.3.1_0290) was assessed as having "poor" ecological potential due to non-compliance with the EQS for biological indicators: microphytobenthos and benthic macroinvertebrates.

None of the assessed SWB were classified as having "very poor" ecological potential.

The results of the ecological potential assessment are presented for linear SWBs in Figure.



by the number of SWBs   by the length of SWBs
Figure Assessment of the ecological potential of the Danube RBD linear SWBs (Tisza sub-basin)

4.2 Groundwater

4.2.1 Monitoring system

The inventory of wells in the Tisza sub-basin was carried out in 2006, when it was established that 31 wells were in working condition (23 - groundwater, 2 - interstitial water, 6 - at the reference sites for studying operational reserves), in 2018 only 19 groundwater wells remained. Since 2018, groundwater monitoring has not been carried out, and the condition of water intake facilities is unknown.

4.2.2 Chemical assessment/risk assessment

As of the end of 2023, no chemical assessment/risk assessment of the GWB site had been carried out.

4.2.3 Estimation of groundwater volumes/reserves

As of the end of 2023, no assessment of groundwater volumes/reserves was made.

4.3 AREAS (TERRITORIES) TO BE PROTECTED

The State Water Monitoring Programme for 2023 for the Tisza sub-basin includes monitoring sites within one category of protected areas (territories):

- 3 monitoring points related to operational monitoring at SWBs from which water is abstracted to meet the drinking and household needs of the population (Annex 6).

5 LIST OF ENVIRONMENTAL OBJECTIVES FOR SURFACE WATER, GROUNDWATER AND AREAS (TERRITORIES) SUBJECT TO PROTECTION AND DEADLINES FOR THEIR ACHIEVEMENT (IF NECESSARY, JUSTIFICATION FOR SETTING LESS STRINGENT OBJECTIVES AND/OR POSTPONEMENT OF DEADLINES FOR THEIR ACHIEVEMENT)

Environmental objectives for surface water, groundwater and protected areas (territories) are set separately.

Surface water:

- Prevention of deterioration of all SWBs;
- Achievement/maintenance of good ecological and chemical status of all natural SWBs (rivers, lakes, transitional and coastal waters);
- Achieving/maintaining good ecological potential and chemical status of HMWBs and AWBs;
- Gradual reduction to the complete absence of hazardous substances.

Groundwater:

- Prevention of deterioration of all GWBs;
- Achieving/maintaining good quantitative and chemical status of all GWBs;
- Preventing and limiting groundwater pollution.

Areas (territories) to be protected:

Achieving standards and targets as required by applicable law for:

- Emerald Network facilities;
- sanitary protection zones;
- protection zones for valuable aquatic bioresources;
- surface/ground water bodies used for recreational, medical, resort and health purposes, as well as water intended for bathing;
- areas vulnerable to (accumulation of) nitrates;
- vulnerable and less vulnerable areas identified in accordance with the criteria approved by the Ministry of Environment.

In cases where several objectives are set for a particular SWBs or GWBs, the most stringent ones should be applied, while all other objectives should also be met.

In some cases, the deadlines for achieving environmental objectives or the targets themselves may be postponed as an exception.

It is allowed to postpone the date of achievement of the objective for a period of 6 years (until 2036), but not longer than 12 years (until the end of 2042) from the end of the implementation of the first cycle of the RBMP (2030).

An exemption applied to a particular SWB or GWB should not create a risk of not achieving the environmental objectives of the upstream (for SWB) or downstream (for SWB) and adjacent (for GWB) body or bodies.

The exceptions include:

- **Achieving less stringent objectives or postponing the date of their achievement** due to technical reasons (e.g. lack of a technical solution, technical impracticality or impracticability), disproportionately high cost or the existing natural state of the water body that does not allow for its improvement in a timely manner (e.g. inert groundwater to be restored). The presence or absence of disproportionality is determined by the results of an economic assessment of costs and benefits;
- **Temporary deterioration of the status (objectives) as a result of an unforeseen force majeure of** natural origin (e.g. extreme flood, drought) or anthropogenic (accident);
- **New physical changes to the SWB as a result of infrastructure projects** are permitted if the benefits to society are higher than the environmental benefits and there is no other option to avoid these changes for technical and/or financial reasons. Water pollution from point or diffuse sources is not allowed.

5.1 Environmental objectives for surface water

Based on the results of the assessment of anthropogenic pressure on the SWB of the Tisza sub-basin:

- 214 SWBs are "not at risk" of not achieving "good" environmental status/potential, 111 SWBs are "possibly at risk", and 156 SWBs are "at risk";
- 445 SWBs are "without risk" of not achieving "good" chemical status, and 36 SWBs are "at risk".

By 2030, 233 SWBs will achieve "good" environmental status/potential, of which 214 SWBs are currently "not at risk" (they need to maintain this status), 19 SWBs are 5% of SWBs that are "at risk" or "possibly at risk" of not achieving environmental objectives based on the results of the anthropogenic load assessment and will achieve environmental objectives through the implementation of PoM.

The remaining "at risk" or "possibly at risk" SWBs in the basin (248 SWBs) could reach "good" ecological status/potential by 2036 or 2042, provided that the PoM are implemented.

By 2030, 445 SWB s will have achieved "good" chemical status, these are those that are currently "without risk" (they need to maintain this status), 36 SWB s, which are "at risk" according to the results of an assessment of anthropogenic load, will achieve environmental objectives no earlier than 2036 or 2042, provided that environmental protection measures are implemented.

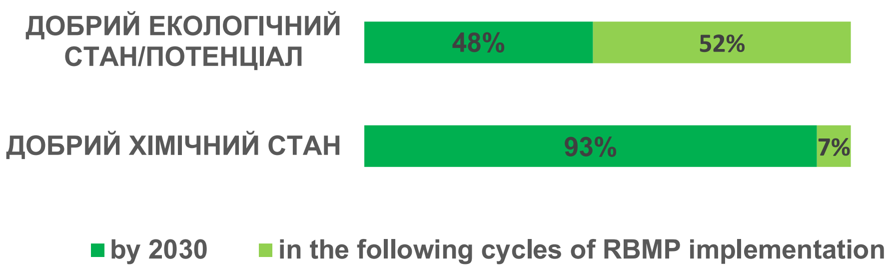


Figure 66. Timeframe for achieving environmental targets for SWBs, %.

Annex 8 (M5.3.1) contains the environmental objectives of the SWB, the timeframe for achieving them, reasons for postponement and setting less stringent objectives.

5.2 Environmental objectives for groundwater

Environmental objectives are set for each GWB, both in terms of their quantitative and qualitative (chemical) status. According to the WFD, the main objective is to achieve "good" groundwater status. Additional objectives for each individual GWB are set depending on the existing quantitative and qualitative state of the GWB, their use or potential use for public water supply, anthropogenic load and possible impact on surface ecosystems.

The main criterion for the "good" quantitative status of the GWB should be the absence of groundwater depletion. Depletion is considered to be the state of aquifers in which, under the influence of artificial drainage, the decline in groundwater levels has reached such indicators that exclude the possibility of further use of the horizon to meet the needs of society using traditional technical means.

The assessment of the depletion of GWB is based on information on the level regime, data on groundwater extraction volumes and their comparison with resources and approved operational reserves. In addition, for non-pressure GWB, the criterion of "good" status is the appropriate condition of the associated surface water bodies and the absence of negative impact on surface ecosystems, primarily vegetation suppression.

The criteria for the "good" quality (chemical) status of the GWB are the natural background content of chemical elements and compounds, as well as the standards set for drinking water by the State Sanitary Norms and Rules "Hygienic Requirements for Drinking Water Intended for Human Consumption" (hereinafter - SanPiN 2.2.4-171-10).

Quantitative state of non-pressure GWB

The environmental objective is to avoid groundwater depletion and not to deteriorate its quantitative state. Given the extremely limited monitoring data, it can be concluded that given the insignificant volumes of water extraction from non-pressure GWB by private water consumers, negative trends in the quantitative state are not expected.

Qualitative (chemical) state of non-pressure GWB

The majority of non-pressure GWB are used by the rural population to meet their drinking needs, therefore, to assess the quality state, it is necessary to use the standards of Sanitary and Epidemiological Norms 2.2.4-171-10, except for those elements and compounds whose content exceeds the normative level in the natural state. For such components, the values of natural backgrounds should be used.

The environmental objective is compliance with Sanitary and Epidemiological Norms 2.2.4-171-10 and no deterioration of the quality state. It is worth noting that the stability of the quality state is relative, the content of macro- and micro-components in the water of non-pressure GWB is subject to significant fluctuations in space and time, so it is necessary to have information on the intervals of changes in the content and to refine it in the course of monitoring. Unfortunately, groundwater monitoring in the Tisza sub-basin has not been carried out in recent years.

Quantitative state of pressure GWB

Environmental objective - avoidance of groundwater depletion and no deterioration of the quantitative state. The lack of data on the results of level measurements at operational water intakes does not allow drawing conclusions/analysis of trends regarding groundwater extraction, depletion and deterioration of the quantitative state of the discharge GWB.

Qualitative (chemical) state of pressure GWB

The environmental objective is to ensure that the content of elements and compounds complies with Sanitary and Epidemiological Norms 2.2.4-171-10, except for those components whose elevated content in groundwater is of natural origin. These are components whose natural background content is close to the maximum permissible concentrations. An additional environmental objective is to avoid deterioration of the quality of the injection groundwater, and conclusions on trends in chemical composition should be based on reliable monitoring data, since the content of components in water is subject to natural fluctuations, which is especially typical for those groundwater bodies that are located closer to the surface. Therefore, for each GWB, it is necessary to have information on the interval of fluctuations in the content of components of the chemical composition of water. Such data is currently not available.

For operational water intakes, changes in water quality are determined by comparing current indicators with those at the time of approval of reserves.

The primary objective is to resume groundwater monitoring in the Tisza sub-basin, which has been virtually suspended in recent years. In the absence of groundwater monitoring, it is unlikely that all of these objectives will be achieved. The unsatisfactory state of groundwater monitoring over the past decades, and, accordingly, insufficient information on the current state of the GWB, allows us to define environmental objectives only in the most general form. In the process of monitoring, the environmental objectives for each GWB should be specified.

Appendix 8 (M5.3.1) (Table 2) lists the environmental targets of the GWB and its groups, the timeframe for achieving them, reasons for postponement and setting less stringent targets.

Taking into account the current situation with groundwater monitoring and a realistic forecast of the timeframe for the possible start of implementation of PoM, the achievement of the specified environmental objectives for the qualitative status of 4 GWB should be expected only in the 2nd RBMP cycle, not earlier than 2042. The "good" quantitative status is predicted to be achieved by all 7 groups of the Tisza sub-basin GWBs by 2030 (Fig. 67).

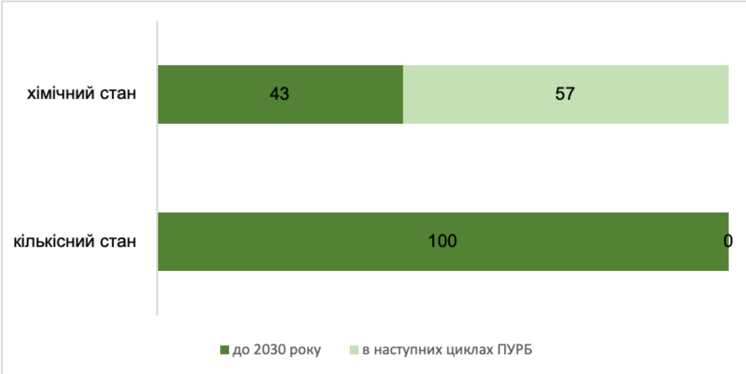


Figure 67. Timeframe for achieving environmental objectives for GWB, %.

6 ECONOMIC ANALYSIS OF WATER USE

The economic analysis of water use has been prepared in accordance with the schedule of the RBMP development process based on the data for 2015-2019. Due to the full-scale military invasion of Ukraine by the Russian Federation, the economic development of the territories and the structure of water use in the Tisza River sub-basin have undergone significant changes.

6.1 Economic development of the sub-basin

In Ukraine, the Tisza River sub-basin is entirely located within one administrative region - Zakarpattia. The Zakarpattia region is small in area and population, but has a favourable economic and geographical location in the heart of Europe, situated in the west of Ukraine and bordering EU member states Poland, Slovakia, Hungary and Romania.

Among the regions of Ukraine, it ranks 24th in terms of territory and 19th in terms of population (according to 2013 statistics). According to the administrative-territorial division, it includes 6 rayons, 11 cities, 19 towns, 578 villages and 64 communities.

The territory of Zakarpattia is densely populated, with a population density of 97.5 people/km^2, which ranks 6th among all regions of Ukraine. The population of the region is 1.25 million people (as of 1 January 2021) and accounts for 2.9% of the population of Ukraine. The population is dominated by rural residents (63%), while the urban population is 37%.

Analysis of the Tisza River sub-basin's GRP

The gross regional product (GRP) is a summary indicator that characterises the level of economic and social development of a region and is measured by the total value of goods and services produced for final use. In 2019, the GRP of the Tisza sub-basin was UAH 61.3 million (data for 2020 has not been published). The dynamics of this indicator over the entire study period of 2015-2019 shows an upward trend with different rates in different periods. The highest growth rates were observed in 2017-2018 (at 3-4%), while in 2019 these rates decreased (to 1%).

Table 55. Dynamics of the gross regional product (GRP) of the Tisza sub-basin in 2015-2019[25]

Indicators.	2015	2016	2017	2018	2019
GRP in actual prices, UAH million	28952	32390	43043	52445	61335
Share of GRP in the Tisza sub-basin in the total GDP of Ukraine, %.	1,5	1,4	1,4	1,5	1,5
GRP growth rate in the Tisza sub-basin to the previous year, %.	93,5	97,3	103,1	104,0	101,5

The GRP within the sub-basin in actual prices in 2019 per capita was UAH 48.9 thousand, which is lower than the total GRP in Ukraine (as of 2019, the GRP per capita was UAH 94.7 thousand).

Analysis of the Tisza River sub-basin

The main component of the gross regional product is gross value added (GVA). As of 2019, the sub-basin's GVA amounted to UAH 53337 million in actual prices (data for 2020 have not been published) in actual prices, and has a share of 1.6% in the total GVA of Ukraine (Table 56).

Table 56. GVA by economic sector in the sub-basin, 2019

Sectors of the economy	GVA, million UAH	Share in Ukraine's GVA, %.	Share in the basin's GVA, %.
Agriculture, forestry and fisheries	7403	2,1	13,9
Mining and quarrying	335	0,2	0,6
Processing industry	4828	1,2	9,0

[25] Calculated based on data from the State Statistics Service of Ukraine http://www.ukrstat.gov.ua/

Sectors of the economy	GVA, million UAH	Share in Ukraine's GVA, %.	Share in the basin's GVA, %.
Supply of electricity, gas, steam and air conditioning	1657	1,4	3,1
Water supply, sewerage, waste management	172	1,2	0,3
Construction	1790	1,7	3,4
Transport, warehousing, postal and courier services	5738	2,2	10,8
Water-dependent economic activities	21923	0,7	41,1
Other economic activities	31414	0,9	58,9
Total in the Tisza sub-basin	53337	1,6	100

Agriculture, forestry and fisheries account for the largest share in the total GRP of the sub-basin - UAH 7403 million or 13.9%, which corresponds to 2.1% of the total GRP of Ukraine. Among the water-dependent sectors of the economy, transport, warehousing, postal and courier activities have a fairly high share in the overall structure of the sub-basin's GRP, accounting for UAH 5,738 million or 10.8%, and their share in the total GRP of Ukraine is 2.2%. The share of the manufacturing industry in the sub-basin's GRP is also quite high, namely 9.0%, which in absolute terms amounts to UAH 4,828 million, and in the total GRP of Ukraine - 1.2%. Other, non-water-dependent economic activities account for UAH 31414 million, which corresponds to 58.9% of the sub-basin's GRP and 0.9% of Ukraine's GRP.

The dynamics of GVA of water-dependent economic activities in the sub-basin during 2015-2019 decreased from 57.8% in 2015 to 55.6% in 2019 of the sub-basin's GVA and shows a gradual downward trend. The decline in the total value of the GVA of water-dependent sectors was due to a decrease in the GVA of agriculture, forestry and fisheries, as well as the processing industry over the past 5 years. The remaining water-dependent sectors of the economy show fluctuations in GVA, with transport showing a slight increase in its share of GVA from 4.6% in 2015 to 7.0% in 2019. In turn, the growth of the total GVA of the Tisza sub-basin is driven by other, non-water-dependent sectors of the economy.

6.2 Characteristics of modern water use

The sub-basin is well provided with water resources. According to the international classification, the Zakarpattia region is classified as a medium-supplied region with 6.19 thousand m^3 of water per capita. The main sources of water supply are surface water and groundwater from the hydrogeological province of the folded Carpathian region.

The total resources of surface runoff in an average water year are 13300 million m^3, in a low-water year - 7290 million m^3. In addition to the surface waters of the sub-basin's rivers, they include 9 reservoirs (total capacity 40.55 million m^3), 645 ponds (total capacity 22.6397 million m^3) and 44 lakes, the largest of which is Lake Synevyr, with a volume of 1.75 million m^3.

Forecasted groundwater resources of drinking quality are 399 million m^3/year, and the level of approved reserves is 124 million m^3/year. At the same time, as of 2020, about 27.6 million m^3/year are used, meaning that the region has significant potential for the development of drinking water supply.

The sub-basin's water consumption is insignificant. In 2020, a total of 46.632 million m^3 of water was abstracted from natural sources, which is almost 8% of the total abstraction in the Danube basin and 0.5% of the total abstraction in Ukraine. Ratio of water use by source of water withdrawal: 58.4% from surface water and 41.6% from groundwater (Figure 70).

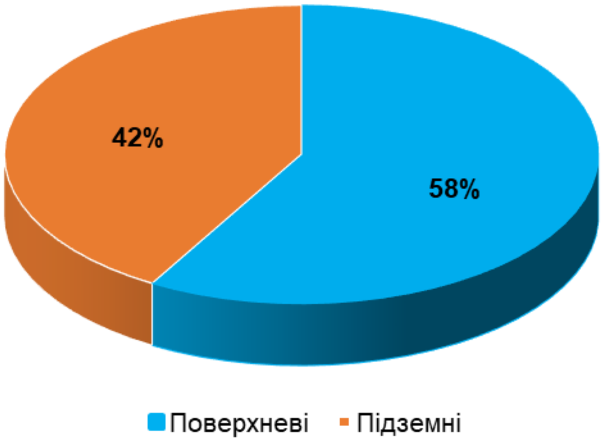


Figure 70. Sources of water intake in the sub-basin, 2020

The peculiarity of the region's economic development is the absence of production and technological complexes that require significant volumes of water, which leads to a characteristic distribution of water use with the dominance of the municipal sector. The relative share of the latter in water intake in 2020 was 47% or 21.9 million m^3 (Fig. 71). The second largest water user is agriculture - 23.8% (11.1 million m^3), while industry in the sub-basin accounts for only 3% (1.4 million m^3). Other sectors of the economy use 26.2% of the abstracted water for their own needs, including transport - less than 1% (0.1 million m^3).

Figure 71. Structure of water withdrawals in the Tisza sub-basin, million m^3 for 2020

The main water users within the sub-basin are the following economic sectors: industry, housing and communal services, agriculture and transport.

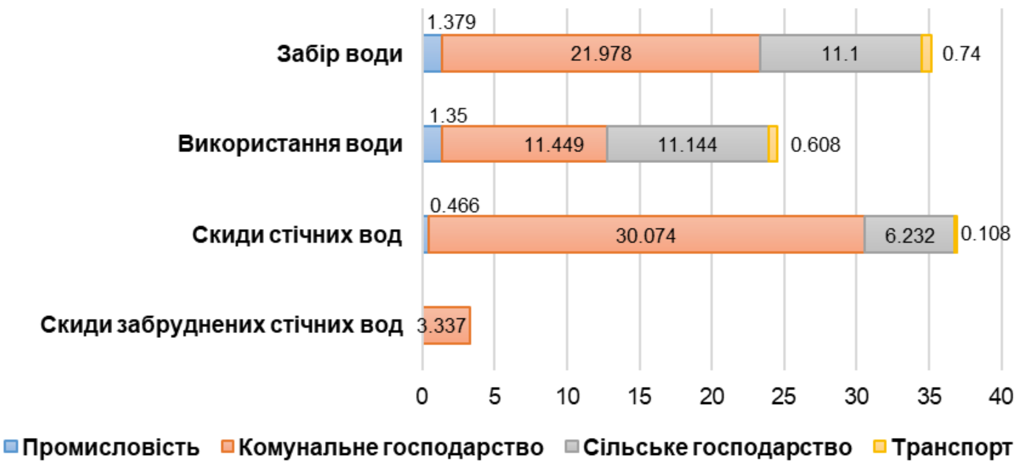


Figure 72. Characteristics of water use in the Tisza sub-basin, 2020

The volume of water use in the sub-basin is 27.6 million m^3. A detailed description of the sub-basin's water use by economic sectors is presented in Annex 9.1 (M5.3.1).

As for the structure of wastewater discharge, more than 78% of wastewater is discharged into surface water bodies by housing and communal services, 16% by agriculture and 1.2% by industrial water users.

Wastewater treated to standard standards at wastewater treatment plants accounts for 72.2%, 18.5% is standard clean without treatment and 9.3% is polluted wastewater. Almost 95% of contaminated wastewater comes from water users in the housing and utilities sector. Information on wastewater discharges into water bodies by categories of discharged water is provided in Annex 9.2 (M5.3.1).

To assess the socio-economic importance of water for economic sectors, the ranking of water users by 5 indicators was used:

- GVA generated by the industry is an economic indicator of the sector's weight in the sub-basin economy;
- the volume of water withdrawn by the industry;
- water intensity of the industry compared to other industries;
- The industry's dependence on water quality;
- pollution of water bodies by the industry's waste water.

Table 57. Water intensity of the sub-basin's economic sectors

Industry sector	Water intake million m^3	GVA, million UAH	Water intensity of GVA, m^3 /1000 UAH
Industry	1,379	5163	0,26
Housing and utilities	21,978	172	127,7
Agriculture	11,10	7403	1,49
Transport	0,740	5738	0,13
Total for the sub-basin	46,6	18476	2,52

Table 58. Socio-economic weight of the main water users in the sub-basin

Sectors of the economy	Scope of airborne forces creation	Water intake by the industry	Water intensity of the industry	Dependence on water quality	Waste water contamination
Energy	moderate	low	moderate	low	moderate
Trade	high	low	low	low	low
Chemical industry	moderate	moderate	low	low	low
Mechanical engineering and metalworking	moderate	low	low	low	low
Food industry	low	low	moderate	high	low
Housing and utilities	low	high	high	high	high
Fisheries	high	high	moderate	moderate	low
Irrigation	high	moderate	moderate	moderate	low
Other types of agriculture (including livestock and crop production)	high	moderate	moderate	moderate	low
Transport	high	moderate	low	low	low
Recreation and healthcare	moderate	low	moderate	high	moderate

Based on the results of the assessment of dependence on the five criteria above, the economic sectors were divided into 5 groups according to their socio-economic importance in the sub-basin.

Group 1 "Full dependence" includes water users that are highly dependent on 4 indicators - water quality, high water intensity, significant pressure on water resources and low volumes of GVA, such as housing and communal services. Water in this sector is a key factor for their operations.

Group 2 "Multiple dependence" includes those with high dependence on at least two indicators, such as fisheries.

Group 3 "Specific dependence" includes those with high dependence on one of the indicators - recreation and healthcare, irrigation and other types of agriculture.

Group 4 "Moderate dependence" includes those with moderate dependence on at least 1 indicator, such as the food industry, trade and transport.

Group 5, "Dependence without water use", includes economic sectors that use water without abstraction from natural water bodies, generate low volumes of GVA and are not significant polluters. This group includes the chemical industry, energy, machine building and metalworking.

According to the assessment of socio-economic importance, the housing and utilities sector is completely dependent on water resources and is the most water-intensive sector of the economy (127.7 m^3/1000 UAH).

Over the period 2017-2020, there is a trend towards a significant decrease in water withdrawals, mainly due to a reduction in industrial and agricultural use.

The permit for special water use includes setting limits for water intake, water use and pollutant discharge. The established limits for water use in the sub-basin are 1.3-2.7 times higher than the actual water withdrawal (Figure 75).

6.2.1 Municipal water use

As of 1 January 2021, 39 companies operate in the field of centralised water supply and/or centralised wastewater disposal, of which 38 companies are licensed by the regional state administration and one utility company, the Uzhhorod Water Supply and Sewerage Production Department, is a licensee of the NEURC.

The water supply system of the region, which is serviced by the enterprises of the industry, includes 48 water intake facilities, 159 water pumping stations (WPS) of the first lift with a capacity of 194,054 thousand m^3 of water per day, 37 WPS of the second lift with a capacity of 141,418 thousand m of water per day. m^3 of water per day, 13 water treatment plants (WTPs) with a capacity of 78.80 thousand m^3 of water per day, 66 clean drinking water reservoirs (CDWR), 191 artesian wells, 1002.6 km of water supply networks, of which 302.84 km or 30.2% are dilapidated and in poor condition. Tap water is used by 37.5% of the region's population from water supply systems of different subordination. Of the 901,574 people living in towns and villages, 48.5 per cent and 14.6 per cent use tap water, respectively. The share of the population living in cities and using centralised water supply systems is 85.4%.

The peculiarities of the sub-basin's orographic structure have led to the fact that groundwater sources provide water supply to the plains, while in the mountainous areas only surface water is available for water consumption. A part of the population and the majority of facilities in rural areas are supplied with water from decentralised water sources (wells, capstans, individual wells). All cities and urban-type settlements in the Tisza sub-basin are provided with centralised water supply. Water is abstracted in the region from surface (58.4%) and underground (41.6%) sources.

In 2020, residential and municipal water users abstracted 47% of the sub-basin's total water withdrawal (21.9 million m^3). The largest water users in the housing and communal sector are the Utility Company "Vodokanal of Uzhhorod" (USREOU 03344556) - 8.749 million m^3, Mukachevvodokanal (03344556) - 8.978 million m^3, Vynogradiv VUZHKG (03344332) - 1.003 million m^3, Svalyava (13587366) - 0.705 million m^3, Khust VUVKG (00432283) - 0.740 million m^3.

Water is supplied from surface sources in Svaliava (4 water intakes), partially in Uzhhorod (right bank part, 1 water intake), Mizhhirya (2), Velykyi Bereznyi (partially, 1) and Volovets (1). In other settlements, water is supplied from underground sources using artesian wells, the water in which generally meets regulatory requirements.

The main problematic issues of water supply in the Tisza sub-basin include:

- quality of drinking water;

As of 1 January 2021, only 32% of the water supplied is treated, with only the water utilities of Uzhhorod, Berehove, Svaliava, Volovets and Mizhhiria having water treatment facilities;

- uneven coverage of the population with water supply;

Only 7 cities and 9 urban-type settlements receive round-the-clock water supply services. Other settlements are supplied with water according to a schedule;

- high losses.

Water losses in water pipelines are caused by a number of factors, the main ones being: consumer losses - losses of water sold, defined as the difference between the volume of water actually sold to consumers and its rational estimated demand; technological losses - losses of water in the process of its extraction, preparation and transportation to consumers.

Technological losses are determined by technologically sound procedures for water extraction, lifting and transportation, as well as unproductive leaks due to depressurisation of water supply networks.

The housing and communal sector is the main polluter of the sub-basin, as it discharges 78.8% of the return (wastewater) in 2020 (30.074 million m^3).

The functioning of the domestic water supply system is directly related to the need for water disposal. The main problems of water disposal in the sub-basin include:

- insufficient coverage of the population, the degree of sewerage coverage in settlements is lower compared to centralised water supply and averages 60.5%. Residents of cities and rural areas that are not covered by the sewerage network discharge untreated wastewater directly into water bodies or into underground septic tanks, from which the water is filtered into deeper horizons;
- discharges of untreated or insufficiently treated wastewater; discharges of wastewater from municipal enterprises enter the surface waters of the Tisa River sub-basin.

Among all urban agglomerations, the cities of Uzhhorod and Mukachevo play a dominant role in the formation of wastewater, discharging 71% and 18% of the total amount of wastewater, respectively. The degree of wastewater treatment in the settlements varies significantly. Only half of them are equipped with second-stage wastewater treatment plants, which provide for biological treatment of wastewater (Volovets, Irshava, Svaliava, Mukachevo, Uzhhorod).

At the same time, in many of these settlements, treatment efficiency is low due to overloading of treatment facilities and non-compliance with industrial wastewater discharge conditions. As a result, part of the wastewater does not undergo regulatory treatment and enters surface waters as insufficiently treated water. The most difficult situation with wastewater treatment is in the towns of Mizhhirya, Vyshkovo, Dubove, Bushtyno, Kobyletska Polyana and Tyachiv. As a result of the floods of 1998-2001, the treatment facilities of these settlements were destroyed and have not yet been restored, and the agglomerations' wastewater is discharged without treatment into the surface water bodies of the Tisa sub-basin. The functioning sewerage network is in an unsatisfactory technical condition, with about 32% of sewerage networks in disrepair, and the share of dilapidated and disrepair sewerage networks reaching >16% (104.6 km). In general, almost 20% of sewerage networks in the Tisza sub-basin require urgent replacement.

6.2.2 Industrial water use (by major water users)

In 2020, water abstraction by industrial water users amounted to 3% in the sub-basin (1.379 million m^3). The needs of water users in the industrial sector are met mainly from groundwater bodies - 63% (0.870 million m^3) and surface water bodies - 37% (0.509 million m^3). According to the state water accounting data, industrial water use in the sub-basin is carried out by water users in the processing industry - 76.5% (1.005 million m^3) and the mining industry - 23.5% (0.324 million m^3). The main industrial water users in the sub-basin are the following enterprises: Perechyn Timber and Chemical Plant ALC *(00274105)* - 0.502 million m^3, Fischer-Mukachevo LLC *(22073637)* - 0.120 million m^3, Khust Quarry PJSC *(05467613)* - 0.108 million m^3, Svalyava Mineral Waters ALC *(00371512)* - 0.092 million m^3, Flextronics LLC *(32221224)* - 0.040 million m^3.

In the sub-basin, 94 industrial facilities are supplied with water according to the 2TP-Vodkhoz (annual) reports. The largest consumers of water are the mining (0.276 million m^3), chemical (1.044 million m^3) and food industries (0.067 million m^3). The discharge of polluted wastewater by industrial water users is 0.466 million m^3 (17.7% of the total discharge), of which 0.255 million m^3 and 0.211 million m^3 are normatively clean.

An analysis of trends in industrial water use in the Tisza sub-basin shows that it has been significantly reduced over the past 20 years. There are two reasons for this. Firstly, the economy of Zakarpattia Oblast, as well as the country as a whole, has undergone significant restructuring, which has resulted in a significant reduction in industrial production. Secondly, economic factors encourage companies to introduce waterless technologies, switch to water recycling or modern technologies for water saving.

6.2.3 Water use in agriculture

In agriculture, water resources are used mainly for water supply for fish farming, forestry, livestock and crop production. As noted above, agriculture ranks second in the region after municipal water supply in terms of water abstraction, with 11.10/11.62 million m^3 of water abstracted in 2020/2019. The agricultural water supply needs in the Tisza River sub-basin are met from surface sources, mainly from the Black Mochar reclamation system (98.6% (10.9 million m^3) and only 1.4% (0.159 million m^3) from groundwater sources. The structure of water abstraction for agricultural purposes is dominated by fisheries - 92.7% (10.3 million m^3) of the total abstraction in this category. Fish farming is a secondary water user of reclamation systems and is cultivated in the reservoirs of the Chornyi Mochar system (Transcarpathian Fish Factory ALC).

Over the past 10 years, the area of land subject to irrigation has been increasing, and the volume of water withdrawn has been increasing accordingly, in 2019/2020 it was 0.683/0.736 million m^3. The introduction of modern technologies, namely drip irrigation (Konik Farm, Blue Berry LLC, Zavydivske LLC, etc.) is gradually being cultivated by individual and farms in the lowland areas of the region.

Water was used the most:

- Transcarpathian Fish Factory ALC (00476636) - 8.770 million tonnes;
- UTMR Vinogradiv district organisation (25440668) - 0.957 million m^3;
- Konik Farm (22075725) - 0.515 million m^3;
- F.F. Isayovich (2524506179) - 0.211 million m^3;
- Klyachanovsky Pond (33379188) - 0.167 million m^3.

In 2020, agricultural water users discharged 6.232 million m^3 of waste water into surface water bodies, which is 16.3% of the total water discharge in the sub-basin. Agriculture does not exert significant pressure on the water resources of the Tisza sub-basin due to the almost absent discharge of polluted water from water users in this sector. The bulk of the wastewater - 6.228 million m^3 (99.9%) - discharged by agricultural water users is normatively clean water without treatment.

6.2.4 Water use in transport

Water use in transport involves the use of water resources, both surface and groundwater, for various types of transport, including water and land transport. According to the list of inland waterways, there are no navigable sections within the Tisza sub-basin. Water use in transport in the sub-basin is carried out for the needs of land and pipeline transport. Water users in the transport sector withdrew 0.740 million m^3 of water (1.6% of the total water withdrawal).

The largest water users in the industry:

- Lviv Territorial Administration (41149437) - 0.712 million m^3;
- Gas Transmission System Operator LLC (00153133) - 0.018 million m^3;
- JSC Uzhhorod ATP - 12107 (03114017) - 0.005 million m^3.

Water users in the transport sector discharged 0.108 million m^3 of waste water into surface water bodies, of which 0.053 million m^3 was normatively clean and 0.055 million m^3 was normatively treated.

6.2.5 Other types of water use

Other types of water use carry out significant water withdrawals in the amount of 12.177 million m^3 of water, which is 26.2% of the total water withdrawals in the sub-basin. The needs of water users are mostly met from surface water - 10.420 million m^3. Zakarpattia region is one of the regions with significant medical and tourism potential. Therefore, among other sectors of the economy, healthcare, catering, and trade can be distinguished, which use surface water sources. In 2020, other types of water users discharged 1.362 million m^3 of wastewater into surface water bodies, of which 0.195 million m^3 was polluted wastewater. Other types of water use do not exert significant pressure on the state of surface waters, as they account for only 3.5% of the total wastewater in the sub-basin.

6.3 Forecast of water demand by major economic sectors

The forecast of water demand in the sub-basin as a whole and by major economic sectors is made for the period of the RBMP (until 2030) under three scenarios: realistic, optimistic and pessimistic.

The basis for the forecast is the total water withdrawals within the sub-basin for the period 2015-2019, their total volume and by economic sector. The forecast of water withdrawals was calculated based on the GDP of Ukraine for the same period and its forecast value for the short, medium and long term.

The forecast of water intake for the short term - for 2021 - is based on the European Bank for Reconstruction and Development's GDP Forecast for Ukraine for 2021[26], which shows a decrease of 5.5%. For the medium-term period - 2021-2023 - the forecast is based on the "Forecast of Economic and Social Development of Ukraine for 2021-2023 of the Ministry of Economy, Trade and Agriculture of Ukraine"[27], which envisages GDP growth of 4.6% in 2021, 4.3% in 2022 and 4.7% in 2023.

The long-term forecast period - 2024-2030 - was calculated on the basis of analytical materials from USDA, World Bank, IMF, IHS, Oxford Economic Forecasting [28,29] , which forecasts Ukraine's GDP growth by 3.4% annually.

Ukraine's GDP forecast indicates a resumption of the positive trend in economic development after the significant losses in 2019-2020 caused by the COVID-19 pandemic, showing rapid growth in 2021-2023 with gradual stabilisation in the subsequent period.

The method used to forecast water withdrawals for the period 2020-2030 was to calculate the projected exponential growth based on available data, i.e. returning the value of y for a sequence of new values of x given the existing values of x and y.

Preliminary expert forecasts of changes in water use trends in the world show that water intake is gradually increasing in the housing and utilities sector[30,31], due to quarantine restrictions, as well as hygiene and sanitation protocols and innovations. At the same time, Ukraine has seen an overall drop in the industrial production index - October 2019/October 2020 (95.5%)[32], which also affects water consumption by industry. The downward trend in economic development is also characteristic of agriculture. Thus, the index of agricultural production in January-October 2019 to January-October 2020 was 85.8%[33]. However, the trends described above are not inherent in all regions, which will be reflected in the forecast.

The main factors affecting the volume of water use in the Tisza sub-basin:

- the spread of the COVID-19 pandemic and the introduction of restrictive measures;
- economic development - agriculture in low-lying areas;
- natural and geographical: borders with EU countries.

The scientific substantiation of the interdependence between the indicators of water abstraction in the Tisza sub-basin and Ukraine's GDP is proved by applying the Pearson linear correlation coefficient (correlation coefficient), which allowed to identify the regularity of dependence. Thus, the degree of dependence between Ukraine's GDP and water abstraction by transport and agriculture is quite high, slightly lower in industry, while housing and communal services have a rather low degree of dependence.

Analysis of Figure 78 shows an increase in water use in the Tisza sub-basin in 2021, and this trend continues until 2022. In the period 2023-2030, there is a gradual increase in water withdrawal within 3%.

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26 Anthony Williams. EBRD revises down economic forecasts amid continuing coronavirus uncertainty. European Bank for Reconstruction and Development. URL: https://www.ebrd.com/news/2021/ebrd-revises-down-economic-forecasts-amid-continuing-coronavirus-uncertainty.html.

27 Forecast of economic and social development of Ukraine for 2021-2023. Ministry for Development of Economy, Trade and Agriculture of Ukraine. URL: https://www.me.gov.ua/Documents/Detail?lang=uk-UA&id=98c3a695-56bb-42ba-b651-60ce1f899654&title=PrognozEkonomichnogoISotsialnogoRozvitkuUkrainiNa2021-2023-Roki.

28 Forecast of global economic development until 2030. Ukrainian Institute for the Future. URL: https://strategy.uifuture.org/prognoz-rozvitku-sv%D1%96tovoi-ekonom%D1%96ki-do-2030e.html.

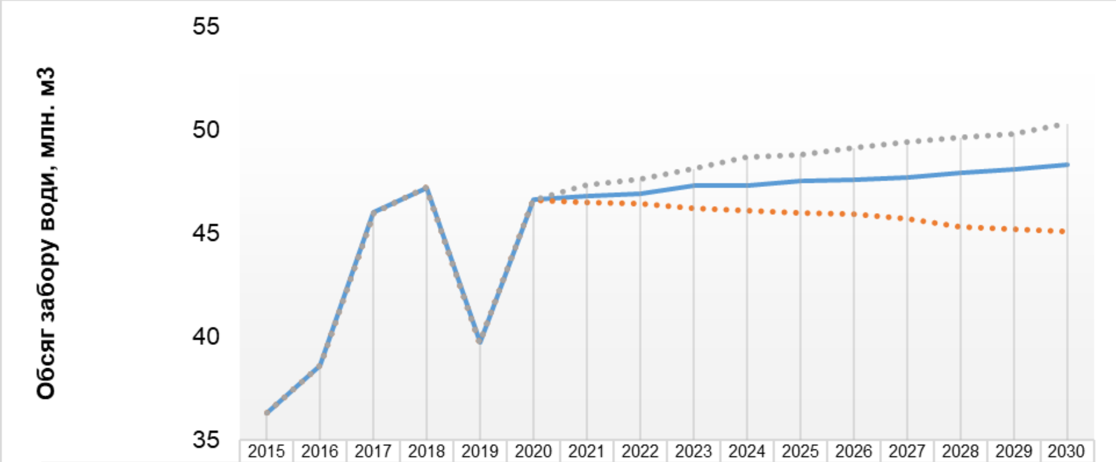
29 International Macroeconomic Data Set. United States Department of Agriculture. URL: https://www.ers.usda.gov/data-products/international-macroeconomic-data-set.aspx.

30 Cooley H. (July 6, 2020). How the Coronavirus Pandemic is Affecting Water Demand. The Pacific Institute. URL: https://pacinst.org/how-the-coronavirus-pandemic-is-affecting-water-demand/

31 (15 Jul 2020) Helping to forecast water demand during Covid-19. WIRED GOV. URL: https://www.wired-gov.net/wg/home.nsf/nav/home?open&id=BDEX-6ZFKSD

32 Industrial production in January-October 2020. Express release. State Statistics Service of Ukraine. URL: http://www.ukrstat.gov.ua/express/expr2020/11/143.pdf.

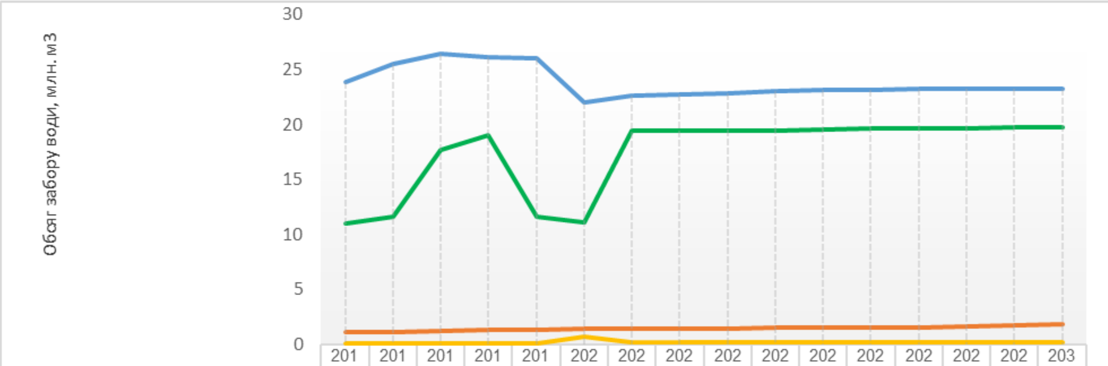
33 Agricultural production index in January-October 2020. Express release. State Statistics Service of Ukraine. URL: http://www.ukrstat.gov.ua/express/expr2020/11/140.pdf.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
реалістичний	36.3	38.6	46	47.2	39.7	46.6	46.8	46.9	47.3	47.3	47.5	47.6	47.7	47.9	48.1	48.3
песимістичний	36.3	38.6	46	47.2	39.7	46.6	46.5	46.4	46.2	46.1	46	45.9	45.7	45.3	45.2	45.1
оптимістичний	36.3	38.6	46	47.2	39.7	46.6	47.3	47.6	48.1	48.7	48.8	49.1	49.4	49.6	49.8	50.3

Figure 78. Forecast of water abstraction in the Tisza sub-basin until 2030

The results of forecasting water withdrawals in the sub-basin by 2030 by economic sector are shown in Figure 79.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Комунальне господарство	23.85	25.48	26.41	26.12	26.03	21.98	22.6	22.7	22.8	23	23.1	23.1	23.2	23.3	23.3	23.3
Промисловість	1.1	1.14	1.21	1.37	1.35	1.38	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.7	1.8
Сільське господарство	11	11.57	17.66	19.01	11.62	11.1	19.4	19.4	19.4	19.4	19.5	19.6	19.6	19.6	19.7	19.8
Транспорт	0.05	0.06	0.07	0.07	0.07	0.74	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Figure 79. Forecast of water abstraction by economic sector in the Tisza sub-basin until 2030.

In 2021-2021, a slight increase in water abstraction for the needs of the housing and communal sector is projected, which was influenced by quarantine restrictions and hygiene and sanitary innovations due to the impact of the COVID-19 pandemic. Starting from 2023, water abstraction by the housing and communal services sector is projected to stabilise, which will be typical for the sub-basin by the end of the forecast period with a gradual slight increase of 2%.

The sub-basin's industry is also expected to grow slightly. In the short-term period of 2021-2023, water withdrawals are forecast to stabilise at 1.4 million m^3/year, while from 2024 to 2030, a gradual increase to 1.8 million m^3/year is possible. The increase in water abstraction can be attributed to the growing industrial production index in some water management areas (WMAs) of the sub-basin, in particular the Uzh River WMA (Uzhhorod) and the Latorytsia River WMA (Mukachevo), due to the investment component, the creation and development of enterprises with foreign investments in woodworking and electrical automation, and the automotive industry.

The forecast of water withdrawals for agricultural needs in the sub-basin tends to increase. Thus, in 2020, water use in this sector was 11.1 million m^3/year, but already in 2021, significant growth and recovery of the sector is forecasted, followed by stabilisation of the forecasted indicators. The projected increase in water abstraction by 2030 can be explained by the expected increase in the agricultural production index in the region due to the restoration/creation of significant areas of agricultural crops, in particular the cultivation of traditional perennial crops for the sub-basin (grapes, pome and stone fruits), as well as the intensive development of fish farming (trout farms).

No significant increase in water withdrawals by transport sector water users is forecast.

6.4 Tools of economic control

6.4.1 Payback of water resources use

The payback of water resources use is a comparison of funds received from the use of water resources to funds spent on the provision of water services. The characteristics of water services and water use in the Tisza sub-basin are presented in accordance with the institutional structure of water services regulation:

I. Centralised water supply and sewerage services.
II. Special water use by economic sectors - payments and fees are paid to budgets of all levels (rent, environmental tax for discharges into water bodies in Ukraine, lease of water bodies).

I. PAYBACK OF CENTRALISED WATER SUPPLY AND SEWERAGE SERVICES

In the sub-basin, centralised water supply and sewerage services are provided by licensees of the National Energy and Utilities Regulatory Commission and organisations licensed by local governments.

The largest revenues are received by water and sewerage companies. According to estimates, water and sewerage companies - NEURC licensees in the sub-basin (1 licensee, only 1% of the Ukrainian market[34]) received about UAH 255 million in 2020[35] (including VAT).

The payback period for water supply and sewerage services, calculated as the ratio of the tariff to the cost price in the sub-basin, is more than 100%. Due to the insufficient level of customer payments for the services provided, which amounted to 92.4% in 2020 (by 90.1% for water supply and 94.8% for sewerage), a situation arises where water services are not sufficiently covered by customer payments and the sustainability of water services is threatened. The level of consumer payments at the Uzhhorod Water Supply and Sewerage Production Department is 92.4%, which corresponds to a high level. The condition of water supply and sewerage networks in the Tisza sub-basin is unsatisfactory, which affects water quality. The main source of investment in 2020 in the Tisza sub-basin, as in previous years, was depreciation in the amounts provided for in the tariff structures. Funds were also raised at the expense of profits provided for in the tariff structure of licensees. However, none of the companies provided for the use of profits to form a reserve fund (capital) for modernisation or for production investments, which should have been provided for in their business activities. According to the NEURC, "the amount of production investments from profits is determined in the amounts necessary for the gradual restoration of networks (improvement of the functioning of water and sewerage enterprises), and taking into account the needs to fulfil the financial obligations of licensees to international financial organisations". However, this level is extremely insufficient.

II. PAYBACK OF THE USE OF WATER RESOURCES IN THE YEW SUB-BASIN

(based on public finance calculations)

1. ***REVENUES FOR SPECIAL WATER USE***

In accordance with the principles of "user pays" and "polluter pays" The Tax Code of Ukraine establishes a fee for special water use:

А. Rent for water intake for different types of water users.
Б. Environmental tax on discharges into water bodies.

In addition, there is a fee for the use of water bodies for aquaculture purposes:

В. Rent for water bodies.
Г. Payment for special use of aquatic bioresources.

A. Rent for special water use

The state (general and special funds combined) and local (general fund) budgets received a total of UAH 14.256 million from business entities in the sub-basin by administrative district in 2017, UAH 15.716 million

[34] NEURC data in the water supply and sewerage sector

[35] Hereinafter, calculations were made on the basis of available statistics in Ukraine

in 2018, UAH 14.967 million in 2019, and UAH 16.388 million in 2020. A decrease in rent revenues to budgets in the Tisza sub-basin was observed in 2019. In 2020, there is an upward trend in rent revenues. The sub-basin is one of the lowest in Ukraine in terms of rent revenues for special water use.

Table 60. Dynamics of rent revenues for special water use to the state and local budgets in the Tisza sub-basin, UAH[36,37]

Year/region/sub-basin	Transcarpathian region, Tisza sub-basin		
	State budget	Local budgets	Together
2017	7 132 728,27	7 124 069,06	14 256 797,33
2018	8 639 667,87	7 076 950,43	15 716 618,30
2019	8 222 569,18	6 744 543,25	14 967 112,43
2020	9 010 797,18	7 378 191,72	16 388 988,90

B. Environmental tax on discharges of pollutants into water bodies

In the sub-basin, in 2017-2020, the state budget and the special fund of local budgets received a total of UAH 6,645 million in tax revenues for pollutant discharges directly into water bodies. More than half of these funds (55%) are collected by local budgets in accordance with the budget allocation (Table 61). Since 2019, there has been a downward trend in the total amount of environmental tax revenues from discharges of pollutants into water bodies to both the state and local budgets.

Table 61. Dynamics of environmental tax revenues from discharges into water bodies to the state and local budgets in the Tisza sub-basin, UAH [38]

Year/region/sub-basin	Transcarpathian region, Tisza sub-basin		
	State budget	Local budgets	Together
2017	321 407,29	1 285 628,62	1 607 035,91
2018	549 355,90	671 436,48	1 220 792,38
2019	949 036,01	1 159 934,34	2 108 970,35
2020	768 741,80	939 574,81	1 708 316,61

C. Payment for the lease of water bodies

The weighted average rent is unified for all water bodies in the Tisza sub-basin and is increasing every year. Its dynamics is as follows: in 2017 - UAH 46,339 thousand, in 2018 - UAH 46,668 thousand, in 2019 - UAH 67,436 thousand and in 2020 - UAH 71,021 thousand.

According to estimates, the local budgets of the sub-basin received rent for water bodies (their parts) in 2017-2020 in the amount of UAH 231.5 thousand, or less than 1% of the national figure. The sub-basin shows a steady trend towards a gradual increase in water body rental fees. Thus, compared to 2017, local budget revenues from rent for water bodies (or parts thereof) in 2020 increased by almost 35%. However, this is one of the smallest revenues in Ukraine. According to the State Tax Service of Ukraine, local budgets of all levels in Ukraine received a total of UAH 10 million for the lease of water bodies in 2017-2018, UAH 13.5 million in 2019 and UAH 14 million in 2020. Revenues from rent for water bodies (or parts thereof) to local budgets in the sub-basin are shown in Table 62.

Table 62. Dynamics of rent revenues to local budgets in the sub-basin, UAH[39]

Year / region / sub-basin	2017	2018	2019	2020
Transcarpathian region, Tisza sub-basin	46 393,29	46 668,84	67 436,08	71 021,00

D. Payment for special use of fish and other aquatic bioresources

The fee for the use of fish and other aquatic bioresources is levied in accordance with the Resolution of the Cabinet of Ministers of Ukraine.[40] According to the report on local budgets from fees for the special use of

36 "Rent for special water use"

37 Source: Local budget revenue reports, state budget revenue reports

38 "Revenues from discharges of pollutants directly into water bodies"

39 "Rent for water bodies (parts thereof) provided for use on a lease basis by regional, district and local councils"

40 Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure for Charging Fees for the Special Use of Aquatic Bioresources and the Amount of Fees for Their Use" of 12 February 2020, No. 125

fish and other aquatic bioresources (*"Fees for the special use of fish and other aquatic resources"),* no fees for the special use of fish and other aquatic resources were collected in the Tisza sub-basin in 2017-2020.

2. EXPENDITURES ON WATER RESOURCES IN THE YEW SUB-BASIN

A. Capital and current expenditures from the state and local budgets for environmental programmes in the field of water resources protection

According to state statistical reports, capital investments and current expenditures are allocated to nine environmental areas, including those directly related to the reproduction and protection of water resources:

- waste water treatment;
- protection and rehabilitation of soil, groundwater and surface water.

The share of the former is more significant than the latter, accounting for about half of all expenditures out of the total capital and current expenditures in all areas. These two areas are funded from the state (including the State Environmental Protection Fund (SEPF)) and local budgets (including local SEPF funds), own funds, and other sources of funding. In 2020, UAH 9558,926 thousand was allocated to the Tisza sub-basin (UAH 5451.4 thousand from the regional ONPS fund and UAH 4107.526 from local ONPS funds).

In 2018 and 2019, the information on capital and current expenditures was provided in the state statistical reports. In 2020, there was an increase in capital and current expenditures due to capital investments in the area of "protection and rehabilitation of soil, groundwater and surface water". These expenditures are allocated for flood protection and bank protection measures, given the increased hazards and periodic destructive effects of floods and floods in the sub-basin.

B. State budget expenditures for the maintenance of water infrastructure under the management of the SAWR

In the sub-basin, water infrastructure maintenance activities are carried out by an organisation under the management of the State Agency of Ukraine for Water Resources - the Tisza River Basin Water Resources Management. UAH 104624.2 thousand was allocated for the maintenance of the water management complex in Transcarpathian region, including:

- under the programme "Operation of the State Water Management Complex and Water Resources Management" - UAH 70938.5 thousand, of which UAH 65805.1 thousand from the general fund and UAH 5133.4 thousand from the special fund;

- under the programme "Protection against harmful effects of waters of rural settlements and agricultural lands, including in the Tisa River basin in Zakarpattia oblast" (Environmental protection measures) - UAH 20388.9 thousand;

- under the programme "Protection against harmful effects of waters of rural settlements and agricultural lands, including in the Tisa River basin in the Transcarpathian region" - (Reserve Fund of the State Budget) - UAH 13296.8 thousand.

In addition to state funding, in 2020, the Tisza BUVR managed to attract funds from local budgets, business entities, and international grants aimed at developing the water sector and environmental rehabilitation of the Tisza sub-basin:

- implementation of the "Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in the Transcarpathian Region for 2013-2021" in accordance with the order of the Head of the Transcarpathian Regional State Administration No. 155 dated 19.03.2020 - UAH 10745.1 thousand;

- implementation of international projects in the water sector - UAH 24173.8 thousand.

DETERMINING THE PAYBACK OF WATER RESOURCES USE IN THE YEW SUB-BASIN

If the payback ratio of water resources use, calculated using the formula "Revenues / Expenses * 100":

- is more than 100%, this means that all costs are reimbursed by paying tax and non-tax revenues for services to budgets of all levels or by tariffs; budget revenues, if used for their intended purpose, can be used for water resources restoration; enterprises receive profits that can be used for production development - production investments, formation of a reserve fund (capital), etc. (part of which will be used to pay income tax);

– If the indicator is less than 100%, this indicates a threat to the sustainability of the service, as the costs of budgets or enterprises are not covered by the revenues received. The calculated return on water resources use is 12.2%, which means that costs are higher than tax revenues for water services (Table 63).

Table 63. Balance of revenues and capital expenditures in 2020

SOURCES	amount, UAH	EXPENSES	amount, thousand UAH
Rent for special water use (state and local budgets)	16 388 988,90	Capital investments in water resources restoration and protection	9558,926
Environmental tax on discharges into water bodies (state and local budgets)	1 708 316,61	Expenditures from the state budget for the operation of the state water management complex	139543,100
Rent for water bodies (parts thereof) provided for use on a lease basis (local budgets)	71 021,00		
Payment for aquatic bio-resources	0		
TOGETHER	**18 168 326,51**	**TOGETHER**	**149102,026**
ROI	**12,2%**		

This level of payback indicates a critical situation in terms of covering the costs of water services. Revenues are significantly lower than expenditures from the state and local budgets. The main share of expenditures is made up of funds from the state and local budgets allocated for measures in the area of "Protection and rehabilitation of soil, groundwater and surface water" (flood protection measures). The calculated level of cost coverage indicates that tax mechanisms in the area of recouping the use of water resources in the Tisza sub-basin do not ensure the sustainability of service provision.

6.5 Water tariffs

6.5.1 Tariffs for centralised water supply and sewerage

According to the institutional structure in Ukraine, the NEURC and local governments set the following types of tariffs for centralised water supply and sewerage services:

1. tariff for centralised supply (cold water) and sewerage (cold and hot water together) (calculated by water utilities, approved by the NEURC for its own licensees, local governments for other local licensees) and centralised water supply (hot water) (calculated by Teploenergo enterprises, approved by the NEURC for its own licensees, local governments for other local licensees);
2. tariff for centralised supply (cold water, hot water separately) and sewerage (cold and hot water) using in-building systems.

The NEURC licenses the activities of water supply companies (water utilities) if these companies serve more than 100,000 people, the volume of water supply is more than 300,000 m³, and the volume of water disposal is more than 200,000 m³.

When setting tariffs, the NEURC is guided by the principle of balancing the interests of consumers, business entities and the state: it limits the planned costs of licensees to an economically justified level that should ensure self-sufficiency of their activities, provided that they are managed efficiently and use resources economically, while at the same time providing for the necessary investments for the safe and sustainable operation of water and sewerage systems.

As of 1 January 2021, tariffs for centralised water supply and sewerage were set by the NEURC in the sub-basin for 1 licensee that has tariffs for other water utilities (business entities in the field of water and wastewater).

In 2020, the main items in the structure of the NEURC licensee's cost of services continue to be labour costs (including social benefits) and electricity purchase. Less significant cost components are depreciation, repair costs, reagents and fuel and lubricants, as well as taxes and fees, including the fee for special use of water (rent), and subsoil use fees for fresh groundwater extraction. In the structure of the weighted average tariffs for centralised water supply and sewerage, the main share is made up of labour costs (56% and 58% in 2020-2021, respectively) and electricity (29% and 25%, respectively).

Water supply and wastewater services in the Tisza sub-basin are provided by enterprises licensed by local authorities - these are communal enterprises of district, city, town and village councils and even individual village councils. The tariffs differ for different categories of users: households, budgetary organisations and commercial organisations.

6.5.2 The cost of water for industrial enterprises

The cost of water is actually paid by industrial enterprises in the form of a mandatory payment for special water use - rent. The object of taxation for rent for special water use is the actual volume of water used by water users. In the case of surface water use, the rental rate depends on the needs of the use, the place and region of consumption, and the actual volume of water used. No rent is paid if the volume of consumption is less than 5 m³ per day and the water user does not have its own water intake facilities. Rental rates in the Tisza sub-basin are among the lowest in Ukraine. In the case of groundwater use, rent rates for special water use are set by the Tax Code of Ukraine and are differentiated by region. In the Tisza sub-basin, the rates are shown in Table 65. The rates for groundwater use are among the highest in Ukraine.

Table 65. Rental rates for special water use as of 1 January 2021[41]

Zakarpattia region, Tisza River sub-basin, including tributaries of all orders	Rent rate, UAH per 100 cubic metres
Surface water	26,17
Groundwater	61,09
Other rates for special water use	
For the needs of hydropower	12.95 per 10 thousand m^3
For the needs of water transport on all rivers - for self-propelled and non-self-propelled freight fleets; - for the passenger fleet in operation.	0.2219 per tonne per day of operation; 0.0215 for 1st place per day of operation
For the needs of fish farming	67.97 per 10 thousand m^3 of surface water; 81.71 per 10 thousand m^3 groundwater
For water used exclusively in beverages	63.22 per 1 m^3 of surface water; 73.73 per 1 m^3 groundwater
For mine, quarry and drainage water	14.64 for 100 m^3

Housing and communal enterprises apply a coefficient of 0.3 to rent rates in terms of water volumes of technological standards for the use of drinking water determined in accordance with the legislation on drinking water, drinking water supply and sewerage.

Charges for pollution of water bodies are received in the form of fines and environmental tax for discharges of pollutants into water bodies. The environmental tax is increased annually, with the last increase in environmental tax rates occurring in 2019: the rates for discharges increased by more than 2.2 times in accordance with the Tax Code of Ukraine. The tax rates for discharges of pollutants into water bodies are presented in Table 66.

Table 66. Environmental tax rates for discharges of certain pollutants into water bodies[42]

Name of the pollutant	Tax rate, UAH per 1 tonne
Ammonium nitrogen	1610,48
Organic substances	644,6

41 Tax Code of Ukraine, Article 255

42 Article 245, Tax Code of Ukraine

(based on biochemical oxygen demand (BOD)5	
Suspended solids	46,19
Petroleum products	9474,05
Nitrates	138,57
Nitrites	7909,77
Sulphates	46,19
Phosphates	1287,18
Chlorides	46,19

In June 2021, the Verkhovna Rada of Ukraine (the "VRU") submitted Draft Law No. 5600 "On Amendments to the Tax Code of Ukraine and Certain Legislative Acts of Ukraine on Ensuring the Balance of Budget Revenues", which provided for changes in rent payment rates. On 13 October 2021, this draft law passed the second reading in the Verkhovna Rada. On 30 November 2021, the draft law was adopted by the Parliament and comes into force on 1 January 2022.

Table 67. Rent rates for special water use from 01 January 2022[43]

Zakarpattia region, Tisza sub-basin, including tributaries of all orders	**Rent rate, UAH per 100 cubic metres, ongoing / project**
Surface water	26,17 / 29,96
Groundwater	61,09 / 69,95
Other rates for special water use	
For the needs of hydropower	12.95 per 10 thousand m^3
For the needs of water transport on all rivers - for self-propelled and non-self-propelled freight fleets; - for the passenger fleet in operation.	0.2219 per tonne per day of operation; 0,0215 / 0,0246 for the 1st place per day of operation
For the needs of fish farming	67.97 per 10 thousand m^3 of surface water; 81.71 per 10 thousand m^3 groundwater
For water used exclusively in beverages	63.22 per 1 m^3 of surface water; 73.73 per 1 m^3 groundwater
For mine, quarry and drainage water	14.64 for 100 m^3

43 http://w1.c1.rada.gov.ua/pls/zweb2/webproc4_1?pf3511=72106

7 A REVIEW OF THE IMPLEMENTATION OF PROGRAMMES OR ACTIVITIES, INCLUDING HOW THE OBJECTIVES HAVE BEEN ACHIEVED

The document (Section 7 of the River Basin Management Plan (RBMP)) contains an overview of the implementation of environmental protection measures within the Tisza sub-basin, which were funded by national targeted programmes, the State Environmental Protection Fund, relevant regional and local programmes or funds, the State Regional Development Fund, state investment projects, international technical assistance projects, regional and local infrastructure projects, etc. (Annex 12 (M5.3.1)).

The National Target Programme for the Development of the Water Sector and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021 (Dnipro Programme)

Paragraph 4 of the CMU Resolution No. 336 of 18 May 2017 "On Approval of the Procedure for Developing RBMPs" states that the first RBMPs for each RBD shall be developed during the period of the Dnipro Programme implementation.

Funding for the development of the first RBMPs for each RBD is provided in accordance with paragraph 11 of the above Procedure at the expense of the state budget, as provided for in the Dnipro Programme within the expenditures envisaged by the State Budget of Ukraine for the relevant year, as well as other sources. The implementation of this programme is important both in the context of preparing the Tisa River RBMP and for implementing measures to achieve the environmental objectives for the Tisa River RBM.

The Dnipro Programme aims to define the main directions of state policy in the field of water management, conservation and restoration of water resources, implementation of an integrated water resources management system based on the basin principle, restoration of the role of reclaimed land in the food and resource supply of the state, optimisation of water consumption, prevention and elimination of the consequences of harmful water impact.

The main objectives of the Dnipro Programme were as follows:

- harmonisation of Ukrainian legislation with international standards and improvement of the regulatory framework for innovation and investment development of the water sector - partially achieved;
- Implementation of an effective, justified and balanced mechanism for the use, protection and reproduction of water resources, ensuring sustainable development of the state water monitoring system in accordance with international standards - achieved;
- Implementation of the integrated water resources management system based on the basin principle, development and implementation of RBMPs, application of the economic model of targeted financing of activities in river basins, establishment of basin councils, and enhancement of the role of existing and creation of new basin water resource management agencies - partially achieved;
- Improving the technological level of water use, introducing low-water and waterless technologies, developing more rational water use standards, construction, reconstruction and modernisation of water supply and sewage systems - partially achieved;
- bank protection and regulation of river channels, construction and reconstruction of hydraulic structures, protective dams, polders, flood control reservoirs, clearing of river channels, improvement of water protection zones and coastal protection strips, development of schemes for comprehensive flood protection of territories from the harmful effects of water, improvement of methods and technical devices for hydrometeorological observations and flood forecasting - partially completed;
- Ensuring the development of land reclamation and improvement of the ecological condition of irrigated and drained lands, including restoration of the water management and reclamation complex, reconstruction and modernisation of reclamation systems and their facilities, engineering infrastructure of reclamation systems with the creation of integrated technological complexes, introduction of new

methods of irrigation and land drainage, application of water and energy-saving environmentally safe irrigation and water regulation regimes - not fulfilled.

The estimated amount of funding for the Dnipro Programme was UAH 46478.46 million, including UAH 21,029.03 million from the state budget, UAH 9,294.2 million from the local budget, and UAH 16,155.2 million from other sources not prohibited by law (in dollar terms, the equivalent of USD 6.193 billion (as of 01.01.12), or an average of USD 688 million annually, or 0.4% of Ukraine's gross domestic product (GDP)). The amount of funding for the Dnipro Programme was determined annually during the drafting of the State Budget Law for the respective year, taking into account the real possibilities of the state budget. Since the start of the Dnipro Programme's activities, as of 1 January 2019, 26% of the envisaged need has been allocated from budgets of all levels and other sources, and as of 1 January 2020, 17% of the envisaged need, which has led to a significant failure to complete its tasks and activities on time.

The main implementer of the Dnipro Programme is SAWR of Ukraine. If we analyse in detail the distribution of state budget expenditures on SAWR of Ukraine over the past 3 years, we can see the following trend. State funds are allocated mainly for the costs of consumption of the water sector, labour remuneration, utilities, the share of which from the state budget, for example, in 2020 was 93.5% (UAH 2,092,158.5 thousand) from the general fund and 81.1% (UAH 2,261,343.4 thousand) from the special fund. In 2020, total state budget expenditures to finance the Dnipro Programme amounted to UAH 5,022,671 thousand. The share of all funds used for the operation of the state water management complex and water resources management is UAH 4,561,352.5 thousand (90.8%).

The Tisza sub-basin water infrastructure is maintained by the Tisza River Basin Water Resources Authority (BUVR), which is part of the SAWR. Expenditures for the operation of water infrastructure are made within the framework of the comprehensive programme "Operation of the State Water Management Complex and Water Resources Management" for each separate division of the SAI.

The issue of extending the Dnipro Programme from 2022 to 2024 to the period of preparation of the RBMP has been resolved for the third year by reviewing the amount of funding for the measures and agreeing on their scope at the central and regional levels. Currently, the SAWR has developed and submitted for inter-agency approval the draft Law of Ukraine "On Amendments to the National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021" to extend the Programme until 2024.

As of 8 June 2021, the Accounting Chamber of Ukraine conducted a regular audit of the effectiveness of the implementation of the Dnipro Programme activities for the period up to 2021. The purpose of the audit is to identify existing problems with the implementation of this Programme and to confirm or deny the need to extend its validity until 2024.

In 2021, the SAWR prepared a draft Law of Ukraine "On Amendments to the National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021" regarding the need to extend the National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2024 until 2024. The Tisza BUVR, together with the Zakarpattia Oblast State Administration, submitted to SAU-EZM their proposals for amendments to the above Programme in the area of "Integrated Flood Protection in the Tisza Basin" for a total amount of UAH 5779.8 million, of which UAH 5302.4 million are state budget funds, UAH 418.4 million are local budget funds and UAH 59.0 million are other funds.

National Target Programme "Drinking Water of Ukraine for 2011-2020" (Drinking Water Programme)

"The National Target Programme "Drinking Water of Ukraine for 2011-2020", approved by the Law of Ukraine No. 2455-IV dated 03.03.2005 (hereinafter referred to as the Drinking Water Programme). Its main goal was to ensure the rights of citizens to an adequate standard of living and environmental safety guaranteed by the Constitution of Ukraine by providing drinking water in the required volumes and in accordance with the established standards. The Drinking Water Programme was intended to ensure the implementation of the state policy on:

- development and reconstruction of centralised water supply and sewerage systems;
- protection of drinking water sources;
- Bringing the quality of drinking water to the requirements of regulatory acts;
- regulatory and legal support in the field of drinking water supply and sewerage;
- development and implementation of research and development projects using the latest materials, technologies, equipment and devices.

The estimated amount of funding for the Drinking Water Programme was UAH 9,471.7 million (in 2010 prices), of which UAH 3,004.3 million was allocated from the state budget and UAH 6,467.4 million from other sources. Due to the lack of adequate funding over the 10 years of the Drinking Water Programme in Ukraine, there have been no significant positive changes in the provision of drinking water in the required volumes and of the appropriate quality.

As of 1 January 2020, about 1% of cities, more than 10% of urban-type settlements and almost 70% of villages in Ukraine (8.934 million people) were not provided with centralised drinking water supply. Almost 1 in 4 citizens of the country is not provided with centralised water supply. The problem of using imported water covers at least 9 regions of the country, and directly affects at least 268,000 people living in 824 settlements.

According to global standards for water quantity and quality, Ukraine is classified as a low-water country. Ukraine ranks 37th out of 40 European countries in terms of drinking water quality. And over the past 10 years, our performance has only been deteriorating. And in terms of water per capita, Ukraine is 125th in the global ranking. At the same time, the national target programme Drinking Water of Ukraine is not being implemented or financed at all. The last time the Drinking Water Programme was funded was in 2018, when UAH 200 million was allocated from the State Budget of Ukraine, with water and sewerage companies alone submitting projects totalling UAH 1.3 billion. This activity of the companies is caused by their unsatisfactory financial and economic condition, as well as the inability of local governments to provide the necessary support for the renewal of fixed assets from local budgets.

In addition, it should be noted that the procedures for obtaining grants and loans from international financial institutions are quite lengthy and involve significant risks, so obtaining public funds for the implementation of a particular infrastructure project was a desirable goal for each water utility. In 2019-2020, the Drinking Water Programme was not funded and ended in 2020.

In order to continue supporting water supply and wastewater treatment companies, in 2019, MinRegion of Ukraine developed and submitted to the central executive authorities and specialised associations a draft law "On Amendments to the Law of Ukraine "On the National Target Programme "Drinking Water of Ukraine" for 2011-2020", which provided for the extension of the Programme for another 5 years.

Interagency approval, coordination, and consultations with the Ministry of Finance lasted for 2 years. The Resolution of the Verkhovna Rada of Ukraine No. 980-IX of 5 November 2020 provides for the possibility and expediency of increasing/foreseeing expenditures and providing loans from the general fund of the draft state budget for 2021 under the budget programme "Implementation of the National Target Programme "Drinking Water of Ukraine" for the Ministry of Communities and Territories Development of Ukraine (instead of MinRegion) (clause 2.17.68). The Drinking Water of Ukraine programme will be extended until 2026.

Thus, under the Decree of the President of Ukraine No. 357 of 13 August 2021, the decision of the National Security and Defence Council of Ukraine of 30 July 2021 "On the State of Water Resources of Ukraine" was put into effect, and the Law of Ukraine "On the National Targeted Social Programme "Drinking Water of Ukraine" for 2022-2026" was adopted on 15 February 2022.

The aim of this programme is to ensure the rights of citizens to an adequate standard of living and environmental safety guaranteed by the Constitution of Ukraine by providing quality drinking water in the required volumes and in accordance with the established drinking water quality standards, and to ensure the development and reconstruction of centralised water supply and centralised sewerage systems in Ukrainian settlements.

A total of UAH 28,588.6 million is to be allocated for the implementation of the Programme, including UAH 16,940.3 million from the state budget and UAH 11,639.3 million from other sources.

The Law of Ukraine "On the State Budget of Ukraine for 2022" provided for the financing of the "National Targeted Social Programme "Drinking Water of Ukraine" for 2022-2026" in the amount of UAH 1.0 billion. In accordance with the second paragraph of subparagraph 22 of Section VI "Final and Transitional Provisions" of the Budget Code of Ukraine, the Resolution of the Cabinet of Ministers of Ukraine No. 245 "On Allocation of Funds to the Reserve Fund of the State Budget" dated 10.03.2022, reduced expenditures and lending to the general fund of the state budget, including the budget programme "Implementation of the National Targeted Social Programme "Drinking Water of Ukraine" for 2022-2026".

The State Target Programme for the Development of Land Relations in Ukraine for the period up to 2020

The programme was approved by the CMU by its Resolution No. 743-r dated 17 June 2009.

The purpose of the Programme is to define and implement the main directions of state policy aimed at improving land relations and creating favourable conditions for sustainable development of land use in urban and rural areas, facilitating the solution of environmental and social problems in rural areas, developing highly efficient competitive agricultural production, and preserving the natural values of agricultural landscapes.

As a result of insufficient funding for the Programme, Ukraine is experiencing excessive ploughing of agricultural land, which leads to a disruption of the ecologically balanced ratio of agricultural, nature reserve and other environmental, health, recreational, historical, cultural, forestry, water fund lands, and an increase in the area of degraded, low-productive, and technologically polluted land (diffuse sources of pollution).

As of 1 January 2021, more than 500,000 hectares of degraded, underutilised and technologically contaminated land are subject to conservation, 143,000 hectares of disturbed land need reclamation, and 294,000 hectares of underutilised land need improvement.

A separate Ministry for Development of Economy, Trade and Agriculture of Ukraine has been established (Ministry of Economy, CMU Resolution No. 838 of 19.09.2019), which will implement the new State Target Programme for the Development of Land Relations and National Geospatial Data Infrastructure in Ukraine for the period up to 2030 (Land Programme, draft CMU Resolution of 13.04.2021).

The National Programme for the Development of Nature Reserves for the period up to 2020 (the NRF Programme)

One of the elements of the RBMP structure is Section 3 "Areas (territories) to be protected and their mapping: Emerald Network sites; sanitary protection zones; protection zones for valuable aquatic bioresources; surface/groundwater bodies used for recreational, medical, resort and health purposes, as well as bathing waters; zones vulnerable to (accumulation of) nitrates", vulnerable and less vulnerable zones identified in accordance with the criteria approved by the Ministry of Ecology, therefore, in the context of preparing and implementing the RBMP, it is very important to have information on the implementation of the National Programme for the Development of Nature Reserves for the period up to 2020, approved by the Cabinet of Ministers of Ukraine on 8 February 2006. No. 70-r (hereinafter referred to as the NRF Programme).

Based on the results of the accounting of NRF territories and objects submitted by the executive authorities at the local level that ensure the implementation of the state policy in the field of environmental protection (hereinafter referred to as the "NRF"), as of 01.01.2020, the NRF of Ukraine comprises 8,512 territories and objects with a total area of 4.418 million hectares within the territory of Ukraine (actual area 4.085 million hectares) and 402,500.0 hectares within the Black Sea. The ratio of the actual area of the nature reserve fund to the area of the state (the "reserve indicator") is 6.77%.

The NRF is managed by the Ministry of Ecology and is funded through the state budget programme "Conservation of Protected Areas". According to the passport of this programme for 2021, UAH 589,326.7 thousand (state fund) and UAH 18,289.8 thousand (special fund) were used for measures to preserve and expand the protected areas, totalling UAH 607,616.5 thousand. In general, the performance indicators under this budget programme were met.

Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021

"The Regional Target Programme for Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021 (hereinafter referred to as the Regional Programme) was developed pursuant to the Law of Ukraine No. 4836-VI of 24 May 2012 "On Approval of the National Target Programme for Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021". The concept of this National Programme was approved by the Cabinet of Ministers of Ukraine in its Resolution No. 1029 of 3 September 2009. The issue of implementation in 2012 of the measures of the State and Regional Programmes for Comprehensive Flood Protection in the Tisa River Basin in Zakarpattia Oblast for 2006-2015 and the objectives of the Regional Target Programme for Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021 was separately considered by the Board of the Oblast State Administration.

The Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021 was approved by the Head of the Zakarpattia Oblast State Administration by Order No. 230 of 17 July 2013, and adopted by the Regional Council session on 27 December 2013, No. 847. The initiator, developer and responsible executor of the Programme is the Tisa River Basin Water Resources Management Authority.

The purpose of the Programme is to define the main areas of activity in the field of water management, conservation and restoration of water resources, restoration of the role of reclaimed lands, optimisation of water consumption, prevention and elimination of the consequences of harmful effects of water with the help of:

- integrated water resources management systems based on the basin principle;
- bank protection and river channel regulation, construction and reconstruction of hydraulic structures, protective dams, polders, reservoirs, river channel clearance, and improvement of water protection zones and coastal protection strips;
- Improving the environmental condition of reclaimed land and introducing efficient use of it;
- Implementation of a reasonable and balanced mechanism for the use, protection and reproduction of water resources;
- Improving the technological level of water use, construction, reconstruction and modernisation of water supply and sewage systems.

Given the situation in the water sector and agriculture in Zakarpattia Oblast, in order to address the extremely acute water and environmental problems, increase the sustainability and efficiency of agricultural production, and reduce its dependence on adverse natural and climatic conditions by restoring the operation of reclaimed land, it was planned to introduce a mechanism for additional state support in these areas, as well as to use the available funds in local budgets more effectively.

The main spending units for the implementation of this Regional Programme were:

- The State Agency of Water Resources of Ukraine (SAWR);
- The State Agency of Land Resources of Ukraine (SLRU);
- The State Emergency Service of Ukraine (SES);
- Transcarpathian Regional State Administration (RSA);
- The Tisza River Basin Water Resources Management (BUVR);
- Local executive authorities (LEAs).

The total funding requirement for the implementation of the Programme for the entire period of its validity was UAH 3911.8 million, including:

- measures to restore reclamation canals and hydraulic structures - UAH 45.0 million;
- reconstruction of drainage systems and reservoirs - UAH 34.3 million.

UAH 1541.5 million was allocated for the first stage of the Regional Programme (2013-2016), including:

- UAH 785.0 million at the expense of the state budget;
- UAH 73.0 million from local budgets;
- UAH 683.5 million at the expense of international projects.

UAH 2,370.3 million was allocated for the implementation of the Regional Programme's activities at the second stage (2017-2021), including:

- at the expense of the state budget - UAH 1,255.9 million;
- UAH 119.4 million from local budgets;
- UAH 995.0 million at the expense of international projects.

The Regional Programme provided for the following funding by area:

- Ensuring the development of land reclamation and improvement of the environmental condition of irrigated and drained lands - UAH 248.3 million;
- water resources management and operational activities - UAH 30.8 million;
- priority provision of centralised water supply to rural settlements - UAH 29.0 million.

A total of UAH 1,835.6 million was planned to be allocated for comprehensive flood protection in the Tisa River basin in Zakarpattia Oblast:

- UAH 1,780.3 million at the expense of the state budget;
- UAH 54.9 million from local budgets.

These funds were allocated for comprehensive flood protection in the Tisa River basin in Zakarpattia Oblast:

- to build and reconstruct dams, bank protection structures and regulate river channels in the amount of UAH 724.9 million;

- to build flood storage tanks in mountainous and lowland parts of rivers, polders and flood control reservoirs in the amount of UAH 840.6 million;
- to improve the regulatory framework and organisational structure of the water sector in the amount of UAH 165.7 million;
- to build and reconstruct landslide and mudflow protection structures in the amount of UAH 58.2 million;
- improve the flood monitoring and forecasting system in the amount of UAH 37.6 million.

Measures to increase fertility, protect soil and improve the environmental condition of agricultural land and settlements were envisaged in the Programme for the Protection and Improvement of Soil Fertility for 2005-2015.

Additional funds for the implementation of the Regional Programme were planned to be obtained:
- at the expense of funds allocated to support crop production and farming in adverse climatic conditions;
- by charging for the use of water resources;
- for the proceeds from the preparation of land management projects;
- for funds received by the state budget in accordance with the Law of Ukraine "On Land Payment" and Article 209 of the Land Code of Ukraine;
- at the expense of the regional environmental protection fund in terms of supplementing the list of activities with measures to combat the harmful effects of water, measures to protect against flooding and flooding of territories, etc., in accordance with the list of activities related to environmental protection measures approved by the Resolution of the Cabinet of Ministers of Ukraine dated 17 September 1996 (as amended).

Environmental Protection Programme of the Transcarpathian region for 2019 -- 2020

In order to solve environmental problems, ensure a balanced economic and social development of the territory, and efficient use of the region's natural resources, the Environmental Protection Programme for Zakarpattia Oblast for 2019-2020 was implemented in 2019-2020, approved by the decision of the Zakarpattia Oblast Council on 13.12.2018, No. 1335 (as amended).

In accordance with Article 43 of the Law of Ukraine "On Local Self-Government in Ukraine", the Laws of Ukraine "On Environmental Protection", "On Environmental Impact Assessment" and the Resolution of the Cabinet of Ministers of Ukraine of 17 September 1996 No. 1147 "On Approval of the List of Activities Related to Environmental Protection Measures" (as amended), the Transcarpathian Regional Council, by its decision of 20.12.2019 No. 1651, amended the "Environmental Protection Programme of the Transcarpathian Region for 2019-2020", approved by the Regional Council of 13

The total amount of financial resources required to implement the Programme is UAH 32389.7 thousand, including: UAH 23752.9 thousand - funds from the oblast budget. The measures envisaged by this Programme shall be financed at the expense and within the limits of expenditures of the regional budget, state, local budgets and own funds of enterprises, investment funds, international technical assistance and grants, other sources not prohibited by the current legislation.

The environmental protection measures were financed from the regional environmental protection fund of the regional budget, and no funds were allocated from the state budget.

Key measures that will improve the situation in the water sector, conservation, protection and restoration of water resources in the Tisza basin:
- construction of wastewater treatment facilities for the residential and municipal sector;
- Reconstruction of existing wastewater treatment facilities in the residential and municipal sector;
- construction of sewage facilities and networks;
- reconstruction of existing sewage facilities and networks.

Programme Developer - Department of Ecology and Natural Resources of the Oblast State Administration, Co-developers - rayon state administrations, municipal executive committees, departments of the Oblast State Administration, Responsible Implementers - structural units of the Oblast State Administration, rayon state administrations, municipal executive committees, territorial units of central executive authorities.

Unfortunately, this Programme was unable to fully address the problem of wastewater treatment and stop pollution of water bodies in the Tisza sub-basin, and did not have sufficient financial support for existing environmental programmes at the national, regional and local levels.

Environmental Protection Programme of Zakarpattia Oblast for 2021-2023

"The Environmental Protection Programme for Zakarpattia Oblast for 2021-2023 was approved by the order of the Zakarpattia Oblast State Administration dated 14 December 2020 No. 730 (as amended) and the decision of the Zakarpattia Oblast Council dated 17 December 2020 No. 66 (as amended). The draft decision of the Zakarpattia Regional Council was prepared in accordance with the Laws of Ukraine "On Environmental Protection", "On Environmental Impact Assessment", Resolution of the Cabinet of Ministers of Ukraine No. 1147 of 17 September 1996 "On Approval of the List of Activities Related to Environmental Protection Measures" (as amended), and is aimed at implementing the provisions of the Regional Development Strategy of Zakarpattia Oblast for 2021-2027.

"The Environmental Protection Programme for Zakarpattia Oblast for 2021-2023 (hereinafter referred to as the Programme) was developed by the Department of Ecology and Natural Resources of the Zakarpattia Oblast State Administration using proposals received from district state administrations, city councils and executive bodies of local councils (TCs), sectoral departments of the Oblast State Administration, departments and organisations of central executive authorities.

The purpose of the Programme is to ensure the implementation of the environmental policy aimed at stabilising and improving the state of the environment in the region, which in turn will lead to a reduction in the negative impact on the environment and will be realised through the implementation of measures to prevent garbage from entering the rivers of the region; ensuring environmentally safe collection, transportation, storage, treatment, utilisation, disposal, neutralisation and burial of waste and hazardous chemicals, elimination of unauthorised

Total amount of financial resources required for the Programme implementation: UAH 19415.0 thousand in total, including the oblast budget funds - UAH 19415 thousand, funds from rayon, city (cities of oblast significance) budgets - not provided.

The programme participants are the Department of Ecology and Natural Resources of the Oblast State Administration, the Tisza River Basin Water Resources Management Authority (upon agreement), the Zakarpattia Oblast Hydrometeorology Centre (upon agreement), the State Environmental Inspectorate in Zakarpattia Oblast (upon agreement), structural units of the Oblast State Administration, District State Administration, executive bodies of local councils (ATCs), and territorial units of central executive authorities.

The main activities of the programme are:

- protection and rational use of land - construction, expansion and reconstruction of anti-erosion, hydraulic, anti-karst, bank protection, landslide, anti-landslide, avalanche and mudflow protection structures, as well as measures to protect against flooding and flooding aimed at preventing the development of hazardous geological processes, eliminating or reducing to an acceptable level their negative impact on territories and facilities (including preparation of design and estimate documentation) - UAH 9000.0 thousand;
- Rational use and storage of production and household waste - ensuring environmentally safe collection, transportation, storage, treatment, disposal, removal, neutralisation and burial of waste, including elimination of unauthorised, spontaneous landfills (including preparation of design and estimate documentation) - UAH 3000.0 thousand;
- Nuclear and radiation safety - UAH 900.0 thousand;
- scientific, educational, environmental information and propaganda, printing, environmental monitoring, support of public environmental organisations - UAH 6,515.0 thousand.

According to the information on the implementation of the Programme for 2021, out of 21 planned tasks, all environmental measures financed by the regional environmental protection fund in 2021 were completed. The total estimated cost of environmental protection measures in 2021 (according to the project) is UAH 2389 thousand, which is 36.2% (the projected amount of funding for the Programme for 2021 is UAH 6605 thousand). The amount of actual expenditures from the regional fund is UAH 2335 thousand and the amount of actual expenditures from other sources is UAH 54.0 thousand.

Also, in 2021, 30 environmental protection measures were planned (4 measures with an extension of the implementation period to 2022), which were financed at the expense of the local environmental protection fund, of which 19 were completed, 6 were partially completed, 4 were under implementation, and 1 was under approval. The total estimated cost (according to the project) is UAH 22,500.6 thousand, the amount of actual expenditures from the regional fund is UAH 225.6 thousand, the amount of actual expenditures from other sources (local) is UAH 5,631.8 thousand.

Regional Programme "Drinking Water of Transcarpathia" for 2006-2020

In accordance with Article 43 of the Law of Ukraine "On Local Self-Government in Ukraine", pursuant to the Law of Ukraine of 20 October 2011 No. 3933-VI "On the National Target Programme "Drinking Water of Ukraine" for 2011-2020", the Transcarpathian Regional Council decided to approve the Regional Programme "Drinking Water of Transcarpathia" for 2006-2020 (as amended by the decision of the Transcarpathian Regional Council of 12 January 2006 No. 690) (as amended by the decision of the Transcarpathian Regional Council of 7 May 2019 No. 1093).

The Programme was aimed at implementing measures to comprehensively address the issue of improving the provision of drinking water of standard quality to the population of the region, increasing the reliability and efficiency of centralised water supply and sewage facilities, reconstructing the existing and building a new water supply and sewage network, improving the social and environmental situation, restoring, protecting and rationally using drinking water sources.

The initiator, developer and responsible executor of the Programme was the Housing and Communal Services Department of the Zakarpattia Oblast State Administration (the same department changed its name several times during the Programme implementation period).

Participants in the Programme included local executive authorities and local self-government bodies, as well as housing and communal services companies in the region.

Areas of activity of the Programme:

- protection of drinking water sources;
- bringing the quality of drinking water to the established standards.

The total amount of funding is UAH 753.6 million, including UAH 576.54 million and 125.52 million from the state and local budgets, respectively, and UAH 51.54 million from other sources.

The National Target Programme "Drinking Water of Ukraine" for 2011-2020 is aimed at addressing the issue of providing the population, social institutions and other consumers with drinking water of appropriate quality, which has not been financed from the state budget in the last years of the Programme's implementation.

As of 1 January 2021, the water supply system of the region (Tisza sub-basin), which is serviced by the industry's enterprises, includes 48 water intake facilities, 159 first-lift water pumping stations with an installed production capacity of 194.054 thousand m^3 of water per day, 37 second-lift pumping stations with an installed production capacity of 141.418 thousand m of water per day. m^3 of water per day, 13 water treatment plants with an installed capacity of 78.80 thousand m^3 of water per day, 66 clean drinking water reservoirs, 191 artesian wells, 1002.6 km of water supply networks, of which 302.84 km, or 30.2%, are outdated and in poor condition.

Tap water from water pipelines of different subordination is used by 37.5% of the region's population. Of the 901,574 people living in settlements and villages, 48.5 per cent and 14.6 per cent use tap water, respectively. The share of the population living in cities and using centralised water supply systems is 85.4 per cent. A part of the population and the majority of facilities in rural areas are supplied with water from decentralised water supply sources (wells, capitals, individual wells). All cities and urban-type settlements are provided with centralised water supply.

Water is abstracted in the region from surface (58.4%) and underground (41.6%) sources. Water is supplied from surface sources in Svaliava (4 water intakes), partially in Uzhhorod (1 water intake, right bank part), Mizhhirya (2), Velykyi Bereznyi (1) and Volovets (1). In other settlements, water is supplied from underground sources using artesian wells, the water in which generally meets regulatory requirements.

The industry operates 16 sewage treatment plants, 11 of which require urgent reconstruction. The design capacity is 43.852 million m^3 /year. There are 68 sewage pumping stations (SPS) in operation with a design capacity of 79.245 million m^3 /year, with an actual capacity of 43.4 million m^3 /year. The length of the main collectors and sewerage network is 681.8 km, of which 191.7 km or 28.1% is in an emergency condition.

Cities are 100% covered by centralised sewerage, urban-type settlements by 78.9%, and villages by 2.8% (Polyana, Gankovytsia). The annual volume of received and discharged wastewater is 30.295 million m^3 (as of 2020). The company provided wastewater services in the amount of 15.218 million m^{33} , including 7.958 million m^{33} (52.3%) to the population, 5.464 million m^{33} (35.9%) to commercial consumers, and the remaining 1.796 million m^{33} (11.8%) to budgetary institutions.

The activities carried out in the water supply and sewerage sector at the expense of local budgets and working capital of water supply companies (water utilities) were mainly aimed at maintaining water supply and sewerage networks and water management facilities (water intakes, NFS, WSS, SSS, and WSC) in working order.

Given that no funds were allocated from the state budget in 2019 under the budget programme "Drinking Water of Ukraine" for 2011-2020, local executive authorities and local self-government bodies took organisational measures to raise funds from other sources of funding.

The total amount of funds raised in 2019 to maintain the water and sewerage facilities in the region in working order and develop the industry was UAH 96.026 million, including UAH 40.910 million from the state budget, UAH 45.234 million from local budgets, UAH 8.910 million from the working capital of water supply companies, and UAH 0.972 million from other sources of funding.

Under the budget programme "Implementation of Environmental Protection Measures", the company attracted state budget funds in the amount of UAH 15.774 million to implement projects for the construction of new and reconstruction of existing sewerage networks in Khust. In 2019, at the expense of the State Fund for Regional Development, on the terms of co-financing from the city budget of Chop, the implementation of the project "Water intake at underground wells on Myr Street in Chop" (construction) continued, for which the state and city budget funds in the amount of UAH 5.213 million were used in the reporting year (construction of the facility is ongoing).

The Fund and co-financing from municipal budgets also financed the construction of a section of the water supply network in Chop (UAH 5.965 million) and the reconstruction of a part of the water supply and sewerage network in Rakhiv (UAH 10.234 million).

In recent years, local executive authorities and local self-government bodies have taken steps to implement project solutions aimed at providing the rural population with quality drinking water. The projects were built at the expense of the State Regional Development Fund and local budgets: "Water supply and sewerage system in Barvinok village, Uzhhorod district" and "Water supply system in Chaslivtsi village, Uzhhorod district". At the expense of the subvention from the state budget to local budgets for the implementation of measures for the socio-economic development of certain territories, the projects "Reconstruction of the sewage system in Vyshkovo, Khust district" and "Reconstruction of the water supply system in Vynohradiv" were implemented.

In 2020, funds in the amount of UAH 68.222 million were allocated for these purposes, including: local budgets - UAH 53.347 million, working capital of water supply companies (water utilities) - UAH 13.405 million, and other sources of funding - UAH 0.759 million. The funds raised from the state and local budgets in the water and sewerage sector were mainly used for the construction of new and overhaul of existing water and sewerage networks, construction of new water intake facilities, construction of new and reconstruction of existing water pumping stations, purchase of special machinery and technological equipment.

According to the information provided, in 2021, the provision of settlements in the region was as follows: centralised water supply - all 11 cities, all 19 urban-type settlements, 191 villages (33%), centralised water supply was absent in 387 villages; centralised sewerage - all 11 cities, 15 urban-type settlements (78.9%), 16 villages (2.8%), centralised sewerage was absent in 4 urban-type settlements (Bushtyno, Kobyletska Polyana, Serednie, Dubove) and 562 villages.

Regional Development Strategy of Zakarpattia Oblast for the period 2021-2027

"The Regional Development Strategy of Zakarpattia Oblast for the period of 2021-2027 was approved by the decision of the Zakarpattia Oblast Council of 20.12.2019 No. 1630 (as amended by the decision of the Oblast Council of 01.10.2020 No. 1840).

The Regional Development Strategy of Zakarpattia Oblast is a tool for harmonising state, territorial and sectoral interests and plans. It is a generalised concept of action, a model for achieving objectives that defines the priorities and main areas of activity of the region's economic sectors. The region needs a clear, consolidated and effective action plan to stimulate economic development, improve the welfare of the population and the quality of life. It will show the priority areas of Zakarpattia's development and guide the activities of state and local authorities in making important decisions for the region.

The purpose of this strategic document is to create conditions for sustainable development of the region and increase its competitiveness. The Regional Development Strategy is an important document that will contribute to the social and economic development of the region for the next seven years and will form the basis for the development of other programmes and projects for the balanced development of the entire region.

The strategy was developed and initiated by the Department of Economic Development and Trade of the Transcarpathian Regional State Administration.

Areas of work of the Zakarpattia Oblast Development Strategy for 2021-2027:
- SWOT analysis of regional development;
- smart specialisation;
- Spatial development of territories;
- development of education, science, healthcare and sports;
- ecology and environmental protection;
- infrastructure development;
- economic development and investment activities;
- Human capital development
- realising the region's tourism and recreational potential;
- development of rural and problematic areas, including mountainous areas; preservation of cultural heritage.

In the context of water resources management in the Tisza sub-basin (Zakarpattia oblast), namely the implementation of the Tisza Sub-basin RBMP Action Programme, it will be important to implement Section 4 "Ecology and Environmental Protection" in 2025-2027." At the first stage of implementation of this Strategy (2021-2023), this section of the Programme has not been practically implemented due to a lack of funds from both the state and local budgets.

Cross-border cooperation development programme of the Zakarpattia Oblast for 2021-2027

In accordance with Articles 6, 17 and 39 of the Law of Ukraine "On Local State Administrations", the Law of Ukraine "On Cross-Border Cooperation", Resolution of the Cabinet of Ministers of Ukraine No. 153 of 15 February 2002 "On the Establishment of a Unified System for Attracting, Using and Monitoring International Technical Assistance", the "Transcarpathian Region Cross-Border Cooperation Development Programme for 2021-2027" was approved by the order of the Head of the Transcarpathian State Administration No. 705 of 03.12.2020.

The purpose of the Programme is to accelerate the socio-economic development of the Zakarpattia region by building good neighbourly relations with the EU member states and other foreign countries in the economic, social, scientific, technological, environmental, cultural and tourism sectors, implementing European integration measures at the regional level, co-financing projects implemented in the Zakarpattia region with the involvement of international technical assistance.

The Programme was developed by the Department of Foreign Economic Relations, Investments and Cross-Border Cooperation of the Transcarpathian Regional State Administration.

The Programme participants are structural subdivisions of the Regional State Administration: Department of Foreign Economic Relations, Investments and Cross-Border Cooperation; Department of Finance; Department of Culture; Department of Health; Department of Ecology and Natural Resources; Department of Infrastructure, Development and Maintenance of the Network of Public Roads of Local Importance and Housing and Communal Services; Department of Tourism and Resorts; Department of Urban Development and Architecture, other interested structural subdivisions

The Tisza River Basin Water Resources Management Authority and its structural units are also participants in the Programme: Tyachiv Interdistrict Water Management Authority (Romania), Vynogradiv, Berehove and Uzhhorod Municipal Water Management Authorities (Hungary), Uzhhorod Municipal Water Management Authority (Slovak Republic) and the State Environmental Inspectorate in Zakarpattia Oblast.

Main objectives and activities of the Programme:
- development of cross-border cooperation and strengthening its institutional support;
- deepening international and cross-border cooperation to support and promote cultural tourism and preserve historical and cultural heritage;
- deepening cross-border cooperation in education, healthcare and social protection;
- development of checkpoints and border infrastructure;
- development of the mountainous border areas of the Carpathians, implementation of the European Union Strategy for the Danube Region and the Danube Transnational Programme;
- attracting international technical assistance and implementing projects under the new financial instrument Neighbourhood, Development and International Cooperation (NDICI).

The Programme is financed from the regional budget, local budgets, international technical assistance and other sources not prohibited by law.

The amount of financing is UAH 53300.0 thousand, including:

Stage I - UAH 29,700.0 thousand, in terms of annual funding:
2021 - UAH 5,600.0 thousand;
2022 - UAH 8,120.0 thousand;
2023 - UAH 8090.0 thousand;
2024 - UAH 7,890.0 thousand;

Stage II - UAH 23,600.0 thousand, in terms of annual funding:
2025 - UAH 7,850.0 thousand;
2026 - UAH 7,850.0 thousand;
2027 - UAH 7,900.0 thousand.

The implementation of the Programme's activities and measures will contribute to the sustainable development of the region and increase its competitiveness. Unfortunately, in 2021, this Programme was funded only at the expense of international technical assistance.

Uzhhorod Environmental Protection Programme for 2018 - 2022

In accordance with paragraph 22 of part 1 of Article 26 of the Law of Ukraine "On Local Self-Government in Ukraine", the Law of Ukraine "On Improvement of Settlements" and the decision of the XIII session of the City Council of the VII convocation of 30 May 2017 No. 655 "On Approval of the Procedure for Development of City Target Programmes, Monitoring and Reporting on their Implementation", the Resolution of the Cabinet of Ministers of Ukraine "On Approval of the List of Activities Related to Environmental Protection Measures" of 17.09.1996 No. 1147 as amended, the "Uzhhorod Environmental Protection Programme" was approved.

The initiator, developer and responsible executor of the Programme is the Department of Municipal Economy of Uzhhorod City Council.

The Programme participants are municipal enterprises of the city and business entities involved in the maintenance of the city.

The Programme implementation period is 2018-2020: Stage 1 - 2018 - 2020, Stage 2 - 2021 - 2022. The source of funding is the city budget and other sources (regional, state fund, investments, grants), the total amount of funding is UAH 8057.40 thousand.

The Programme aims to reduce emissions and discharges of pollutants into the environment, ensure safe management of industrial and household waste, preserve and restore biological diversity, create safe living conditions for people, ensure environmental safety, restore and create nature reserve areas, define protected areas, etc.

In particular, it is proposed to develop and implement greening projects for the city, create new green areas (parks, squares, etc.), provide for the preservation and expansion of green areas in the master plan of Uzhhorod; reconstruct the Bozdosh and Pidzamkovy parks; to ensure the removal of overgrown trees, shrubs and unwanted vegetation; to clear the Uzh riverbed of sediment; to certify lakes in the city area; to create a bank of illustrative and informational materials on environmental issues and their solutions in Uzhhorod, etc.

8 A COMPLETE LIST OF PROGRAMMES (PLANS) FOR THE TISZA RIVER SUB-BASIN AREA, THEIR CONTENT AND PROBLEMS TO BE SOLVED

The PoM has been developed in accordance with the "Methodological Recommendations for Setting Environmental Objectives, Developing a Programme of Measures and Performing a Cost-Benefit Analysis of the River Basin Management Plan" (Methodological Recommendations), approved at the meeting of the Scientific and Technical Council of the SAWR on 12 July 2023. The Guidelines were developed by the Tisza BUVR in cooperation with local executive authorities, local governments, non-governmental organisations (NGOs), scientific and educational institutions and other stakeholders, taking into account the proposals and decisions of the Tisza River Basin Council.

The development of the PoM took into account the measures implemented or planned in the national RBMPs of the neighbouring countries of the Tisza sub-basin (Romania, Hungary, Slovakia) and the chemical status of the transboundary SWBs according to the monitoring data of 2022-2023.

The programme is developed for a period of 6 years, starting with the first cycle of the plan for 2025-2030. The start of the measure implementation should be no later than the third year from the beginning of the cycle (no later than 1 January 2028). In total, the programme includes 120 measures (101 main and 19 additional).

A full list of measures is provided in Annex 11.

8.1 Surface water

For surface waters, the PoM includes measures aimed at:

- reducing organic pollution (diffuse and point sources);
- reducing nutrient pollution (diffuse and point sources);
- reducing pollution by hazardous substances (diffuse and point sources);
- improvement/restoration of the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, and modification of river morphology;
- reducing the impact of planned infrastructure projects on water conditions.

In addition to these measures, the PoM also includes other measures aimed at addressing other SWMI of the Tisza sub-basin, identified in view of the specifics and transboundary nature of the sub-basin.

8.1.1 Measures to reduce pollution by organic matter, nutrients and hazardous substances (diffuse and point sources)

The anthropogenic pressures on the SWBs is primarily due to pollution by organic, biogenic and hazardous substances from sewage treatment plants (STPs) and diffuse sources.

Number of measures aimed at reducing pollution (diffuse and point sources):

- organic substances - 57;
- biogenic substances - 59;
- hazardous substances - 58.

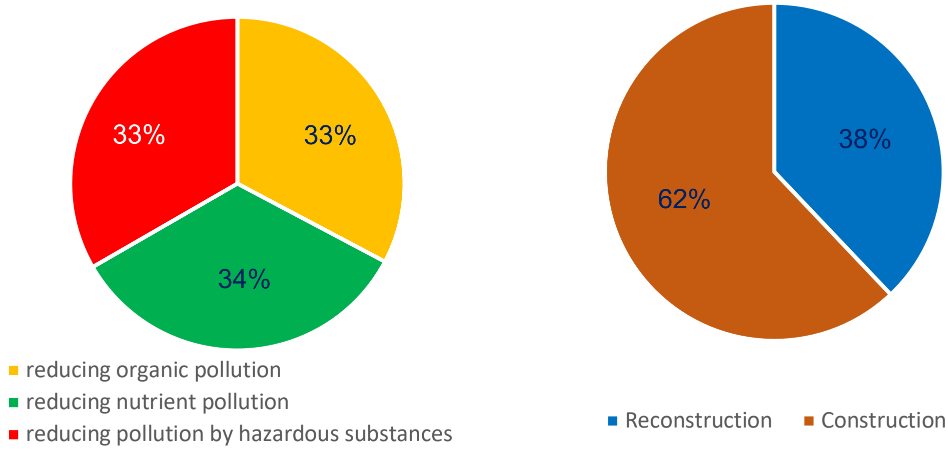


Figure 80. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point and diffuse sources and the way they are implemented (reconstruction or construction of STPs and SN), %

Measures aimed at reducing pollution by nutrients (diffuse sources) also include "Establishment of water protection zones and bank protection strips of water bodies within the Zakarpattia Oblast" (#99, Annex 11) and "Assessment, monitoring of changes in the watershed condition and implementation of watershed restoration works in the Polyanske Forestry, Polyanske Territorial Community, Mukachevo District, Zakarpattia Oblast" (#71, Annex 11, only for 8 SWBs on the Pynia, Velyka Pynia and Mala Pynia rivers). The measure is a pilot project to be implemented to preserve and protect water resources in the forest fund (forest covers more than 50% of the Tisza sub-basin), and prevent floods.

Measures aimed at reducing pollution by hazardous substances (diffuse sources) include the measure "Construction of a waste processing plant in the Polyanska territorial community, Mukachevo district, Zakarpattia region" (#98, Annex 11). The plant's capacity will allow processing new solid waste and raw materials from existing landfills that need to be rehabilitated. The measure will cover three districts of the region (16 communities) and 65 SWBs in the upper reaches of the Latorytsia, Uzh, Borzhava and Rika rivers.

In accordance with the requirements of the Law of Ukraine "On Wastewater Disposal and Treatment" of 12 January 2023 No. 2887-IX, in order to ensure high-quality centralised wastewater disposal while reducing the impact of return (wastewater) on the SWB, the construction and reconstruction of STPs and SN is planned for 50 settlements (34%) in the Tisza sub-basin with a population equivalent (PE) of 2,000 or more. Reconstruction/modernisation of STPs and SN is envisaged in 19 communities, including 10 communities with tertiary (proper) wastewater treatment with removal of nitrogen and phosphorus compounds. Construction of new STPs and SNs is planned in 31 communities. It is planned to create a single sewage treatment complex around the cities of Mukachevo, Svaliava, Khust, Tyachiv with the merger of neighbouring communities. The issue of establishing a single sewage treatment plant on the left and right banks of the Uzh River, which would cover the settlements around the city of Uzhhorod, is being agreed upon by Uzhhorod and neighbouring communities. A positive example of how to address the issue of a single complex of STPs and SN is demonstrated by the Polyanska community of Mukachevo district, which planned to build a single network of wastewater collection and treatment from the community and all sanatorium facilities on its territory.

Among the measures aimed at reducing pollution by organic, biogenic and hazardous substances (diffuse and point sources), 47 relate to SWBs that are "at risk" of failing to achieve environmental objectives. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point sources, depending on the risk assessment of the SWBs, are presented in Fig. 81.

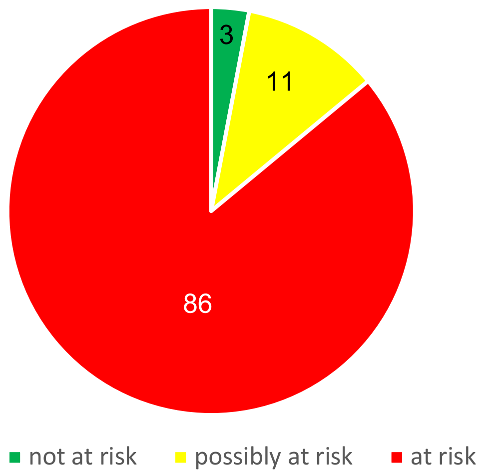


Figure 81. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point sources of pollution depending on the risk assessment of the SWB, %

8.1.2 Measures aimed at improving/restoring the hydrological regime and morphological indicators

39 measures aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, and modification of river morphology. Almost all of them relate to mitigating/reducing the negative impact of channel regulation works planned as part of the implementation of the "Flood Risk Management Plan for Certain Areas within the Danube River Basin Region for 2023-2030", approved on 8 October 2022 by CMU Resolution No. 895-r (Danube Flood Risk Management Plan). When developing the measures, it was taken into account that the environmental objectives are to maintain the "good" status of 8 SWBs and achieve "good" status for 31 SWBs. Measures aimed at improving/restoring the hydrological regime and morphological indicators in case of impaired free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology, depending on the risk assessment of the SWBs, are presented in Fig. 82.

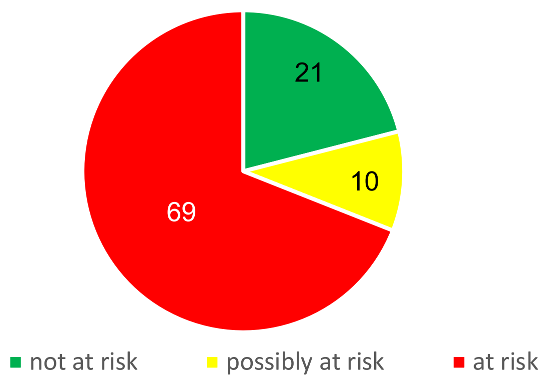


Figure 82. Measures aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology, depending on the assessment of SWB risks, %

In order to improve the state accounting of water use, assessment of anthropogenic pressure and regulation of groundwater/surface water abstraction, analysis of hydrological changes, and real-time balancing, the programme includes the measure: "Improvement of state accounting of water use in the Tisza River sub-basin within the Zakarpattia Oblast" (#101, Annex 11). All water users in the region are scheduled to install/modernise water metering devices with online data transmission.

8.1.3 Measures to reduce the negative impact of infrastructure projects

The PoM includes two measures:

- "Implementation of measures to mitigate the infrastructure project: "Bridge over the Tisa River on the Teplytsia - Sighetu Marmatiei section", Ukraine-Romania border, #298 - 299, Bila Tserkva village, Solotvyno territorial community, Tyachiv district, Zakarpattia region" (#9, Annex 11);
- "Carrying out measures to mitigate the infrastructure project: "Construction of a road bridge over the Teresva River on the national road of state importance H-09 "Mukachevo-Rakhiv-Bohorodychany-Ivano-Frankivsk-Rohatyn-Bibarka-Lviv", between the villages of Bedevlya and Teresva, Bedevlyanska and Teresvyanska territorial communities, Tyachiv district, Zakarpattia region" (#24, Annex 11).

These measures are aimed at reducing the negative impact on the natural hydrological regime and morphological characteristics of watercourses. Both SWBs have been assessed as being "at risk" of failing to achieve environmental objectives.

8.1.4 Measures aimed at reducing pollution and improving/restoring hydrological regime and morphological indicators on transboundary SWBs

The PoM includes measures aimed at reducing pollution (reconstruction/construction of STPs and SNs in cross-border settlements: Rakhiv, Velyky Bychkiv, Solotvyno, Teresva, Tyachiv, Vynohradiv, Pyiterfolvo, Vylok, Chop, Mukachevo, Uzhhorod, Storozhnytsia), restoration of hydrological regime and morphological indicators (mitigation of channel regulation works on the Tisa River, Ukrainian-Romanian border). The measures are planned to be implemented on cross-border SWBs that have a potential impact on neighbouring countries: UA_M5.3.1_0007, UA_M5.3.1_0008 (Tisza River, Ukraine-Romania), UA_M5.3.1_00011, UA_M5.3.1_0012, UA_M5.3.1_0014 (Tisza River, Ukraine-Hungary); UA_M5.3.1_0300 (Latorytsia River, Ukraine-Slovakia), UA_M5.3.1_0433 (Uzh River, Ukraine-Slovakia), and UA_M5.3.1_0204 (Staryi Batar HMWB, Ukraine-Hungary). The number of activities at the transboundary SWBs is shown in Fig. X.

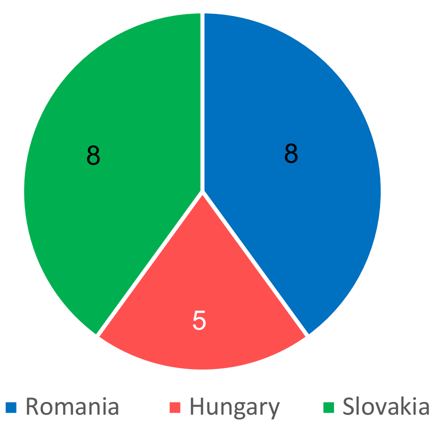


Figure 83. The number of activities on the SWB with neighbouring countries of the sub-basin.

8.2 Groundwater

The programme includes measures aimed at:

- reducing pollution (diffuse and point sources);
- preventing groundwater depletion;
- reducing the impact of planned infrastructure projects on water conditions.

It is mandatory to establish the boundaries of sanitary protection zones for groundwater intakes used for centralised water supply to the population, medical and recreational needs, indicate them in land management documentation, urban planning documentation at the local and regional levels, enter information on the relevant restrictions on land use in the State Land Cadastre and mark these boundaries on the ground with information signs. For groundwater abstractions with an extraction volume of more than 100 m^3/day within the sanitary protection zones and adjacent territories, water users shall set up a local network of observation wells to determine the amount of water and chemical and physicochemical parameters and provide observation data to the State Service of Geology and Subsoil of Ukraine.

Due to the cessation of groundwater monitoring since 2018, all measures are considered additional measures that relate not to a separate groundwater monitoring, but to groundwater monitoring in general, namely

1. Inventory of the observation wells network. According to the inventory, in 2006, 31 wells were found to be in working condition (23 - groundwater, 2 - interstitial water, 6 - at the reference sites for studying production reserves), in 2018, only 19 wells remained. The condition of the wells is currently unknown. The inventory is necessary to resume monitoring observations and assess the need to drill additional observation wells.
2. The inventory will identify wells that need to be repaired, plugged or abandoned.
3. For non-pressure GWBs, it is advisable to arrange new observation points to characterise their quality state in areas with minimal anthropogenic impact on the quantitative and qualitative status of groundwater, including from point and diffuse sources.
4. At water intakes, where operational monitoring is carried out in accordance with the "Procedure for State Water Monitoring", it is necessary to reassess the operational groundwater reserves, which will allow for a more reliable assessment of the quantitative status of the GWB.

8.3 Other measures

Other measures include legislative and legal, administrative, fiscal, research and development, educational and awareness-raising, new technologies, environmental and communication, project, and other measures.

Other measures include, in particular, awareness-raising activities on the protection, conservation and restoration of water resources in all communities of Zakarpattia Oblast. It is planned to hold the Wetlands Day (2 February), International Water Day (22 March), Danube Day (29 June), and Clean Shores Day (third Saturday of September) every year. It is also planned to clean up and restore river sources, as well as to conduct outreach and education activities with local community groups, NGOs, schoolchildren and youth in the field of solid waste management. Implementation of local measures by local executive authorities to conserve, protect and restore water resources.

8.4 Analysis of the cost-effectiveness of the PoM

The cost-effectiveness analysis (CEA) was conducted only for the main measures.

The largest share of measures is aimed at reducing pollution of the SWB (77%). Some measures are aimed at addressing several SWMI. The vast majority of main measures relate to settlements with a population of 2 to 10 thousand, with 82 (82%) of them. For settlements with a population from 10 to 100 thousand, there are 14 measures (14%) in administrative and rayon centres of the region (Mukachevo, Berehove, Khust, Tyachiv, Rakhiv). There are only 4 measures for settlements with a population of more than 100 thousand, and only 4 measures for Uzhhorod. This social specificity of the measures is due to the fact that the vast majority of the region's residents - 63% - live in rural areas. The population of one village in Zakarpattia is on average 1.4 thousand people (the average in Ukraine is 0.7 thousand). A fifth of the population lives in 192 settlements of the region that have the status of mountainous.

The measures envisaged in the PoM will be financed from the state and local budgets, as well as other sources not prohibited by law. Financing of these measures from the state budget shall be carried out within the expenditures provided for in the State Budget of Ukraine for the relevant year.

The total cost of the main measures for the period 2025-2030 is UAH 9,985 million, per AH (64) - UAH 156 million (UAH 26 million per year), per inhabitant of Zakarpattia (1.2 million people, data for 2020) - UAH 7,963 (UAH 1,327 per year). The most costly measures are the reconstruction/modernisation of the STP and SN. For example, up to UAH 2,363 million is needed to implement such measures in the cities of Uzhhorod and Mukachevo.

There are no measures with a very high level of efficiency.

The group with a high level of efficiency includes 4 measures: "Reconstruction of Sewage Treatment Facilities and Networks in Uzhhorod, Uzhhorod community, Uzhhorod Rayon, Zakarpattia Oblast", "Reconstruction of Sewage Treatment Facilities and Networks in Mukachevo, Mukachevo community, Mukachevo Rayon, Zakarpattia Oblast", "Reconstruction of Sewage Treatment Facilities and Sewerage Network in Berehove, Berehove community, Berehove district, Zakarpattia region", "Reconstruction of sewage treatment facilities and sewerage network in Khust, Khust community, Khust district, Zakarpattia region", with a total value of UAH 3,407 million (34%), one of them is very high value, over UAH 1 billion. Social impact is expected for 288 thousand people. These measures are aimed at reducing pollution by organic, biogenic and hazardous substances (SWMI 1 - 3). All the objects of the measures belong to the sector of very high water use pressure (housing and communal services).

The group with an medium level of efficiency includes 50 measures with a total cost of UAH 3,996 million (40%). The measures are mainly aimed at reducing pollution with organic, nutrient and hazardous substances, hydromorphological changes, and clogging of water bodies with solid waste (SWMI 1-4, 10) in small towns and villages in the sub-basin. The social effect is 525 thousand people. 47 of the sites of the measures belong to the sector of very high water use pressure - the housing and communal sector. This group is the largest in terms of the number of measures.

The group with low efficiency includes 27 measures with a total cost of UAH 2,129 million (21%). These measures are primarily aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, and modification of river morphology (SWMI 4). Social effect - 478 thousand people.

The group with a very low level of effectiveness includes 20 measures with a total cost of UAH 454 million (5%) aimed at improving hydromorphological indicators (SWMI 4). The implementation of these measures will achieve a social effect for 59 thousand people. The economic sector's pressure on water resources is minimal and corresponds to the lowest score.

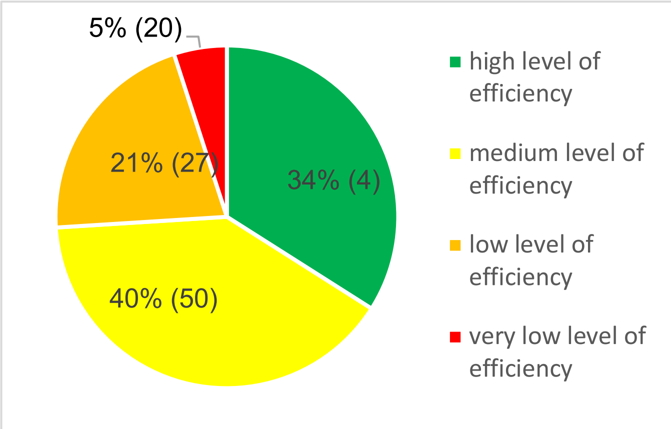


Figure 84. Distribution of main measures with different levels of efficiency by total cost of measures (number of measures in brackets)

A detailed CEA of the measures is provided in Annex 12.

9 REPORT ON PUBLIC INFORMATION AND PUBLIC DISCUSSION OF THE DRAFT RIVER BASIN MANAGEMENT PLAN

The main requirements for the organisation and conduct of public consultations by executive authorities on the formation and implementation of state policy are set out in the Procedure approved by the Cabinet of Ministers of Ukraine on 3 November 2010, No. 996. In accordance with paragraph 5 of the Procedure, public consultations are organised and conducted by the executive body that is the main developer of the draft legal act. In accordance with paragraphs 11 and 12 of the Procedure, public consultations on draft regulatory legal acts that define strategic goals, priorities and objectives in the relevant area of public administration, affect the vital interests of citizens, including those that affect the state of the environment, are mandatory in the form of public discussion and/or electronic public consultations.

In accordance with the second paragraph of clause 7 of the Procedure for Developing a River Basin Management Plan, public discussion of the draft river basin management plan is conducted for at least six months from the date of their publication. In accordance with the first paragraph of clause 8-1, the public has the right to provide comments and suggestions on information on the main anthropogenic impacts on the quantitative and qualitative status of surface and groundwater, including point and diffuse sources, within six months from the date of their publication on the website of the Ministry of Ecology.

Consultations in the process of drafting the RBMP

In 2022-2023, the Tisza River Basin Water Resources Management Authority (Tisza BUVR) consulted with the public in Zakarpattia Oblast on the SWMI of the Tisza sub-basin, the development of a complete list of programmes (plans) for the Tisza sub-basin, their content and problems to be solved (PoM), and the preparation of a draft Danube River Basin Management Plan (Tisza sub-basin) for 2025-2030.

In order to timely prepare the Danube RBMP, approved by the Order of the Ministry of Environmental Protection and Natural Resources of Ukraine of 27 November 2020 No. 313 "Schedule for the development of the draft Danube River Basin Management Plan", to implement the orders of SAWR of 16 May 2022 No. 44 "On approval of the action Plan", of 18 December 2020 No. 1105 "On the development of draft river basin management plans", the Tisa BUVR held a working meeting with the Zakarpattia Department of Housing, Utilities and Energy Conservation. Based on the results of the working meeting, the First Deputy Head of the Zakarpattia Oblast State Administration - First Deputy Head of the Oblast Military Administration prepared and signed an instruction to the district military administrations and executive bodies of local councils to submit proposals for the PoM aimed at addressing the SWMI of the Tisa river sub-basin (pollution by organic, nutrient and hazardous substances, hydromorphological changes, uncontrolled water use, and littering) by 1 October 2022 for appropriate response.

In order to ensure the preparation of the PoM for the development of the Danube RBMP (Tisza sub-basin) for the period 2025-2030, the Tisza BUVR prepared and sent letters to business entities providing water supply and sewerage services (water utilities), industrial enterprises, and agricultural enterprises, hotel, tourist and sanatorium complexes of the region that discharge waste water into SWB of the Tisza sub-basin with a request to submit their proposals to the PoM aimed at addressing the SWMI of the Tisza river sub-basin no later than 1 October 2022.

At the regular meeting of the Tisza River Basin Council, a separate Working Group on the development of the Danube RBMP PoM (Tisza sub-basin) (Working Group) was established. The Working Group included representatives of the Tisza BUVR and the main surface water polluters (by agreement).

The working group processed all proposals aimed at addressing the SWMI of the Tisza river sub-basin, summarised and presented the RBMP for the period 2025-2030 at the meeting of the Tisza River Basin Council on 30 September 2023.

Public consultation of the draft RBMP

The information notice on the public consultation of the draft RBMP (2025-2030) and the draft RBMPs was published on the website of the SAWR on 21 December 2023 at the link: https://davr.gov.ua/informacijne-povidomlennya-pro-provedennya-publichnogo-gromadskogo-obgovorennya-proyektiv-planiv-upravlinnya-richkovimi-basejnami-20252030

Information on the start of public consultation of draft RBMPs and draft RBMPs was published on the website of the Ministry of Ecology on 25 December 2023 at the link: https://mepr.gov.ua/ukrayina-zavershyla-robotu-nad-9-proyektamy-planiv-upravlinnya-richkovymy-basejnamy-rozpochalosya-gromadske-obgovorennya/

According to the information published in the announcement of the public discussion of the draft RBMP (2025-2030), comments and proposals in hard copy were accepted at the following addresses: State Agency of Water Resources of Ukraine, 8 Velyka Vasylkivska St., Kyiv, 01024, and in electronic form to the e-mail address rbmp@davr.gov.ua. The deadline for submitting comments and proposals to the draft RBMP was 21 June 2024.

As part of the public consultation, the SAWR, with the support of the EU4Environment project, initiated a series of public engagement activities, the schedule of which was announced on 28 February 2024 on the website at the link: https://davr.gov.ua/news/derzhvodagentstvo-iniciyuye-zahodi-iz-zaluchennya-gromadskosti-do-obgovorennya-proyektiv-purb

In particular, an invitation to public discussions of the draft RBMP for the Danube River Basin (Tisza sub-basin) was published on the SAWR website for everyone on 20 February 2024 https://davr.gov.ua/news/vidbudetsya-rozshirene-zasidannya-basejnovoi-radi-richki-tisa

The Tisza BUVR sent out invitations to water users, all local communities and other stakeholders. The invitation to the public consultation of the draft Danube RBMP (Tisza sub-basin) was also published on the same day on the BUVR website at the following link: https://buvrtysa.gov.ua/newsite/?p=26455

In order to present the results of the analysis of the status of sWB in the Danube River Basin (Tisza sub-basin) and the relevant PoM, 7 infographics were developed: basin location features; SWMI; ecological status of SWBs (by biological indicators); chemical status of SWBs; hydromorphological changes; and PoM, how to join public consultation.

The infographics are published on the website of the SAWR at the link: https://davr.gov.ua/plan-upravlinnya-richkovim-basejnom-dunayu1

On 27 February 2024, a public discussion of the draft Danube RBMP (Tisza sub-basin) was held in Uzhhorod. The event was attended by 60 participants, including representatives of government agencies, water management organisations, members of the basin council, representatives of local communities, water users in the basin, scientists, NGOs and stakeholders. The event presented the results of the analysis of the above-mentioned basin and the PoM, the vast majority of which relate to the construction or reconstruction of sewage treatment plants. This was followed by a discussion of the proposals and comments made by the participants to the draft RBMP. The results of the discussion are recorded in the Minutes (Annex 1 to the report on the results of the public consultation). Information about the event is available on the SAWR website https://davr.gov.ua/news/vidbuvsya-zahid-z-publichnogo-obgovorennya-proyektu-purb-dunayu-subbasejn-richki-tisa

The report on the results of the public discussion will be posted on the website of the SAWR and on the website of the Ministry of Environment.

Strategic environmental assessment of the draft RBMP

In accordance with paragraph 7 of the Procedure for the Development of a RBMP, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 336 of 18.05.2017, the Ministry of Ecology ensures that strategic environmental assessment of draft RBMPs is carried out in accordance with the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, ratified by the Law of Ukraine No. 562-VIII of 1 July 2015. The Ministry of Ecology contacted all affected states, but none of them expressed a desire to participate in the transboundary consultations.

The procedure for conducting a strategic environmental assessment (SEA) is set out in the Law of Ukraine "On Strategic Environmental Assessment" No. 2354-VIII dated 20 March 2018. Pursuant to Article 9(3)(1) of the Law, one of the stages of the SEA is public discussion and consultations in accordance with the procedure set out in Articles 12 and 13 of the Law, as well as transboundary consultations in accordance with the procedure set out in Article 14 of the Law. Pursuant to part nine of Article 12 of the Law, "based on the results of the public discussion, the customer shall prepare a certificate on public discussion, which summarises the comments and proposals received and indicates how the state planning document and the strategic environmental assessment report take into account the comments and proposals submitted in accordance with this article (or justify their rejection), and also justifies the selection of this particular state planning document in the form in which it is proposed for approval, among other justified al The certificate shall be accompanied by the minutes of public hearings (if held) and written comments and suggestions received. The certificate on public discussion is public information and is entered by the customer into the Unified Register of Strategic Environmental Assessment."

The certificate of public discussion of the draft Danube RBMP (Tisza sub-basin) will be entered by the SAWR into the Unified Register of Strategic Environmental Assessment together with the approved RBMP.

10 LIST OF COMPETENT STATE AUTHORITIES RESPONSIBLE FOR IMPLEMENTING THE RIVER BASIN MANAGEMENT PLAN

According to part two of Article 13 of the Water Code of Ukraine, the CMU, the Council of Ministers of the Autonomous Republic of Crimea, village, town and city councils and their executive bodies, district and regional councils, executive authorities and other state bodies are responsible for public administration in the field of water use and protection and water resources restoration in accordance with the legislation of Ukraine.

The executive authorities in the field of water use and protection and water resources reproduction are the Ministry of Ecology, the SAWR, the State Geological Survey, the State Ecological Inspectorate and other bodies in accordance with the law.

Table 38 Executive authorities in the field of water use and protection and water resources restoration

Title	Address	Address of the official website
Ministry of Environmental Protection and Natural Resources of Ukraine (MENR)	35, Metropolyt Vasyl Lypkivskyi St., Kyiv, 03035 tel.: (044) 206-31-00, (044) 206-31-15, fax: (044) 206-31-07, E-mail: info@mepr.gov.ua	www.mepr.gov.ua
State Agency of Water Resources of Ukraine (SAWR)	8 Velyka Vasylkivska str. Kyiv, 01024 tel./fax: (044) 235-31-92, tel. (044) 235-61-46 E-mail: davr@davr.gov.ua	www.davr.gov.ua
State Service of Geology and Mineral Resources of Ukraine (Derzhgeonadra)	16 Anton Tsedik St., Kyiv, 03057 tel: (044) 536-13-18 E-mail: office@geo.gov.ua	www.geo.gov.ua
State Environmental Inspectorate of Ukraine (SEI)	3, building 2, Novopecherskyi lane, Kyiv, 01042 tel./fax +38 (044) 521-20-40 tel: (044) 521-20-38 E-mail: info@dei.gov.ua	www.dei.gov.ua

Table 39 Main regulatory acts that define the powers of executive authorities in the field of water use and protection and water resources restoration

Name of the body	Legal act	Link on the official web portal of the Parliament of Ukraine
Ministry of Environmental Protection and Natural Resources of Ukraine (MENR)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Articles 15 and 15^1	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the Ministry of Environmental Protection and Natural Resources of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 25 June 2020, No. 614 (Official Gazette of Ukraine, 2020, No. 59, p. 32, Article 1853)	https://zakon.rada.gov.ua/laws/show/614-2020-%D0%BF#Text

Name of the body	Legal act	Link on the official web portal of the Parliament of Ukraine
State Agency of Water Resources of Ukraine (SAWR)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 16	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Agency of Water Resources of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 20 August 2014, No. 393 (Official Gazette of Ukraine, 2014, No. 71, p. 34, Article 1995)	https://zakon.rada.gov.ua/laws/show/393-2014-%D0%BF#Text
State Service of Geology and Mineral Resources of Ukraine (Derzhgeonadra)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 17	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Service of Geology and Subsoil of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 30 December 2015 No. 1174 (Official Gazette of Ukraine, 2016, No. 3, p. 284, Article 192)	https://zakon.rada.gov.ua/laws/show/1174-2015-%D0%BF#Text
State Environmental Inspectorate of Ukraine (SEI)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 15[2]	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Environmental Inspectorate of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 19 April 2017, No. 275 (Official Gazette of Ukraine, 2017, No. 36, p. 73, Article 1131)	https://zakon.rada.gov.ua/laws/show/275-2017-%D0%BF#Text
	Regulations on Territorial and Interregional Territorial Bodies of the State Environmental Inspectorate, approved by the Order of the Ministry of Energy and Environmental Protection of Ukraine dated 07 April 2020 No. 230, registered with the Ministry of Justice of Ukraine on 16 April 2020 under No. 350/34633 (Official Gazette of Ukraine, 2020, No. 33, p. 25, Article 1116)	https://zakon.rada.gov.ua/laws/show/z0350-20#Text

In order to ensure the implementation of the state policy in the field of management, use and reproduction of surface water resources within the Tisza River Sub-basin, to direct and coordinate the activities of organisations under the management of the SAWR on the management, use and reproduction of surface water resources within the Tisza River Sub-basin, as well as to ensure the implementation of the state policy in the field of water management within the Transcarpathian region, the SAWR established the Basin Department.

Table 70. Representative of the central executive authority in the field of water use and protection and water resources restoration in the Tisza River sub-basin

Name of the body	Legal address	Tel./fax	Email.	Website.

(full and abridged)				
Basin water management Tisza River (Tisza BUVR)	5 Slavyanskaya Embankment, Uzhhorod, 88018	(0312) 64-61-91	office@buvrtysa.gov.ua	buvrtysa.gov.ua

(*Source:* https://davr.gov.ua/vodogospodarskiorganizacii)

The names of sub-basins and water management areas within river basin districts (RBDs) and sub-basins are given in the Annex to the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 25 dated 26 January 2017 "On the Allocation of Sub-Basins and Water Management Areas within Established River Basin Districts", registered with the Ministry of Justice of Ukraine on 14 February 2017 under No. 208/30076 (https://zakon.rada.gov.ua/laws/show/z0208-17#Text).

The boundaries of the river basin districts and subbasins were approved by the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 103 dated 03 March 2017, registered with the Ministry of Justice of Ukraine on 29 March 2017 under No. 421/30289 (https://zakon.rada.gov.ua/laws/show/z0421-17#Text).

The Tisza BUVR is a budgetary non-profit organisation that is managed by the SAWR. The Regulation on the Tisza BUVR was approved by the Order of the SAWR No. 83 dated 12 July 2023 (https://buvrtysa.gov.ua/newsite/?page_id=56).

The purpose of the Tisza River Basin Council is to develop proposals and ensure coordination of interests of enterprises, institutions and organisations in the field of water use and protection and water resources restoration within the Tisza RBD, to promote integrated water resources management within the Tisza RBD, to ensure coordination of interests and coordination of actions of stakeholders in water resources management within the Tisza RBD, to promote cooperation between central and local executive authorities, local self-government bodies, enterprises, institutions, organisations, international organisations, and the public. The Tisza River Basin Council is an advisory body of the SAWR within the Tisza RBD. The Regulation on the Tisza River basin council was approved by the Order of the SAWR No. 887 dated 26 November 2018 (https://buvrtysa.gov.ua/newsite/wp-content/uploads/2018/08/polojennya.pdf).

According to the List approved by Resolution of the Cabinet of Ministers of Ukraine No. 1371 dated 13 September 2002 (as amended by Resolution of the Cabinet of Ministers of Ukraine No. 1276 dated 30 November 2011) (https://zakon.rada.gov.ua/laws/show/1371-2002-%D0%BF#n38), the Ministry of Environment and/or the SAWR are responsible for fulfilling international obligations in the field of water protection arising from Ukraine's membership in international organisations or in accordance with international treaties concluded by Ukraine.

In addition, pursuant to Article 9 of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (https://zakon.rada.gov.ua/laws/show/801-14#Text), the Government of Ukraine has concluded bilateral agreements on the protection of border/boundary waters, the responsibility for which lies with the SAWR:

- Agreement between the Government of Ukraine and the Government of the Republic of Hungary on Water Management on Boundary Waters of 11 November 1997 (https://zakon.rada.gov.ua/laws/show/348_001-97#Text)
- Agreement between the Government of Ukraine and the Government of the Slovak Republic on Water Management on Boundary Waters of 14 June 1994 (https://zakon.rada.gov.ua/laws/show/703_061#Text)
- Agreement between the Government of Ukraine and the Government of Romania on Cooperation in the Field of Water Management on Boundary Waters of 30 September 1997 (https://zakon.rada.gov.ua/laws/ show/642_059#Text).
- The Commissioners of the Cabinet of Ministers of Ukraine for Cooperation on Boundary Waters and their deputies were appointed by the Resolution of the Cabinet of Ministers of Ukraine No. 126 of 10 March 2017 as amended (as amended by the Resolutions of the Cabinet of Ministers of Ukraine No. 489 of 05.06.2019, No. 45 of 13.01.2021, No. 1186 of 18.10.2022) (https://zakon.rada.gov.ua/laws/show/126-2017-%D0%BF#Text).

11 PROCEDURE FOR OBTAINING INFORMATION, INCLUDING PRIMARY INFORMATION, ON THE STATE OF SURFACE AND GROUNDWATER

In order to ensure proper organisation of access to public information, implementation of the Law of Ukraine "On Access to Public Information", Presidential Decree No. 547 of 05 May 2011 "Issues of Ensuring Access to Public Information by Executive Authorities", resolutions of the CMU No. 583 of 25 May 2011 "Issues of Implementation of the Law of Ukraine "On Access to Public Information" in the Secretariat of the CMU, Central and Local Executive Authorities", No. 835 of 21 October 2015 "On Approval of the Regulation

To regulate the procedure for access to public information, the SAWR adopted Order No. 163 dated 08.12.2023 "On Certain Issues of Implementation of the Law of Ukraine "On Access to Public Information" in the SAWR".

In accordance with paragraphs 16-18 of the Procedure for State Water Monitoring, approved by Resolution of the Cabinet of Ministers of Ukraine No. 758 of 19 September 2018, the results of state water monitoring are:

- Primary information (observation data) provided by the subjects of state water monitoring;
- generalised data relating to a certain period of time or a certain territory;
- Assessment of the ecological and chemical state of surface water bodies, the ecological potential of artificial or significantly modified surface water bodies, the quantitative and chemical state of groundwater bodies, the ecological state of marine waters and identification of sources of negative impact on them;
- forecasts of water conditions and their changes;
- scientifically based recommendations necessary for making management decisions in the field of water use and protection and water resources reproduction.

Subjects of state water monitoring are obliged to store primary information (observation data) obtained as a result of state water monitoring for an indefinite period of time.

The information obtained and processed by the state water monitoring bodies is official.

Primary information (observation data), generalised data, assessment results, forecasts and recommendations resulting from the state water monitoring are provided free of charge:

- for SWBs (including coastal waters) - to the SAWR and the Ministry of Environment;
- for GWBs – to the State Service of Geology and Mineral Resources and the Ministry of Environment, as well as to the SAWR in terms of generalised data, assessment results and forecasts;
- for marine waters - the Ministry of Environment.

The subjects of state water monitoring shall exchange information with each other on the data and results of state water monitoring on a free-of-charge basis.

The SAWR collects and publishes information on the state of surface waters in the public domain by maintaining the following information resources:

- geoportal "State Water Cadastre: Accounting of Surface Water Bodies" (http://geoportal.davr.gov.ua:81/);
- the web-based system "Monitoring and Environmental Assessment of Water Resources of Ukraine" (http://monitoring.davr.gov.ua/EcoWaterMon/GDKMap/Index).

Automatic data exchange has been set up between these information resources and the Ministry of Ecology's EcoHazard resource.

PRUT AND SIRET RIVER BASIN MANAGEMENT PLAN (2025-2030)

June 2024

1 GENERAL CHARACTERISTICS OF SURFACE AND GROUNDWATER

1.1 Description of the river sub-basin

1.1.1 Hydrographic and water management zoning

The transboundary sub-basins of the Prut and Siret are located in three countries: Ukraine, Romania and the Republic of Moldova.

The catchment area of the Prut sub-basin rivers within Ukraine is 9320 km^2 .

The Prut River sub-basin is located within Ivano-Frankivsk and Chernivtsi regions. The hydrographic network of the sub-basin includes 113 rivers with a catchment area of more than 10 km^2 and 2 reservoirs.

The catchment area of the Siret sub-basin rivers within Ukraine is 2,110 km^2.

The Siret River sub-basin is entirely located within one region - Chernivtsi.

The hydrographic network of the sub-basin includes 20 rivers with a catchment area of more than 10 km^2.

The Prut and Siret sub-basins cover 1.9% of Ukraine's territory.

1.1.2 Climate

The climate is temperate continental, with specific features determined by the location of the sub-basins on the border of Volyn-Podillya and the alpine mountain formations of the Carpathians. The climate conditions are formed under the influence of continental air masses from the east and southeast and humid maritime air masses from the west and southwest.

Precipitation is distributed very unevenly and depends on the altitude and exposure of the slopes. The greatest amount of precipitation falls in the mountains at an altitude of over 1000 m and amounts to 1200-1500 mm per year, and in the foothills - 600-700 mm per year. The slopes of the western and southwestern exposure receive the most precipitation. The bulk of precipitation (70-80%) falls in the warm season, and in winter - 20-25% of the annual precipitation. The snow cover is unevenly distributed depending on the forest cover, altitude, and terrain.

The spring floods begin in March. A characteristic feature of the spring period is floods of mixed origin, when rainfall contributes to the river's nutrition along with meltwater runoff. The water level rise in spring is 0.5-1.5 metres.

Summer and autumn floods occur during the warm season. Floods occur most often in May and July, less frequently in August, and even less frequently in September and October. During floods, the water level rises very sharply with an intensity of 15-20 cm per hour, and the water level drops by 10-15 cm. In normal years, the rise in water level during floods reaches 1.5-2.0 m, and during significant floods - 5-6 m.

The winter period is characterised by frequent intrusions of warm, humid air from the west and southwest. Under such conditions, the snow cover melts rapidly, leading to the formation of high floods. The recurrence of floods varies greatly from year to year, and it is impossible to establish the frequency of their recurrence. The frequency of floods decreases in autumn (October-November) and during winter.

1.1.3 Relief

The Prut sub-basin is pear-shaped with an average width of 40 km. The sub-basin is divided into three parts: mountainous, foothill and plain. The mountainous part of the sub-basin comprises the medium-altitude ridges of the Ukrainian Carpathians, which run almost parallel to each other from northwest to southeast, like the entire arc of the Carpathians. The mountainous part is divided into three zones: the axial zone, the Central Carpathians zone and the Skibovy Carpathians zone. The axial zone includes the Chornohora massif (Hoverla) and is marked by the deepest dissection, reaching 500 m. Some peaks reach a height of 2000 m (Pip Ivan, Petros). The Central Carpathians have absolute heights of 800-950 m. The Skibovi Carpathians zone is an alternation of narrow parallel asymmetrical ridges. The mountain ranges adjacent to the plain with absolute heights of 700-800 m are called the Kraevye Karpaty. The foothill part of the sub-basin occupies the area between the Carpathians and the Prut. This area is characterised by a complex, rugged terrain. Absolute heights reach 350-550 m. The plain part of the sub-basin is located on the Prut-Dniester interfluve and is drained by the left tributaries of the Prut, which form a wavy valley and gully relief.

The area of the Siret River sub-basin is unevenly distributed by altitude zones. A significant part of it is 400-600 m and only 0.7% of the area is above 1200 m. The highest, south-western part of the sub-basin up to the village of Berehomet is located on the spurs of the Carpathians. The watersheds are separated by separate ridges, with mountain peaks reaching 1000-1300 m above sea level. The ranges have rounded flat tops, steep slopes are dissected by numerous river valleys. Gradually, the mountains give way to a strip of foothills (Prykarpattia-Bukovyna) with an altitude of 500-600 m, which passes into the Podilske plateau. Landslides contribute to the formation of soft surface forms. Part of the Siret sub-basin is located in the Eastern Carpathians, in the Pokutsko-Bukovyna Carpathians and on the Bukovyna foothills.

1.1.4 Geology

The sub-basin of the Siret River is located within the young (alpine) folded structure of the Carpathians and the Precarpathian trough, the sub-basin of the Prut River is located within the young (alpine) folded structure of the Carpathians and the Precarpathian trough, and the north-eastern part is located within the Volyn-Podilska plate, the sediments of which in this part are represented by Neogene, Cretaceous, Devonian and older rocks.

Part of the Prut sub-basin is located in the Carpathians and is composed of Mesozoic sediments (shales, quartzites) overlain by a flysch (sandstones, clays, marls and limestones) of Paleogene and Cretaceous age and a thickness of Quaternary alluvial gravel and pebble deposits. An analysis of the geological structure of the Prut sub-basin has shown that the most water-rich aquifers are in the southern part of the Precarpathian Trough. In the areas along the left bank of the Prut, water is associated with alluvial deposits of the Eopleistocene and Lower Pleistocene. The water-bearing rocks here are sands and pebbles of the floodplain terraces up to 20 m thick.

The mountainous part of the Siret River sub-basin is composed of Paleozoic mica and other metamorphic shales, the foothill part is composed of sandstones, clay shales and limestones (mainly Cretaceous), and the plain part is composed of sandstones, marls, limestones and clay shales. Aquifers with water suitable for drinking and other technical purposes are confined to the sand and sandstone layers at a depth of 250-300 m, but they are not widespread.

1.1.5 Hydrogeology

The sub-basins are located within three hydrogeological regions: the Carpathian hydrogeological fold region, the Precarpathian and Volyn-Podolsk artesian basins.

Groundwater of the Carpathian hydrogeological folded area is confined to the upper fractured zone of the indigenous flysch rocks of the Paleogene and Cretaceous, which extends to a depth of 80-100 m. The hydrogeological conditions of the territory are characterised by uneven and generally low water enrichment, which is determined by low filtration properties of water-bearing rocks and their intensive dislocation. The most promising are alluvial deposits represented by gravel and pebble formations. Groundwater is recharged by precipitation and discharged by a hydrographic network

The hydrogeological conditions of the Precarpathian artesian basin are characterised by the presence of separate water-bearing sand and sandstone layers in the bedrock of the Neogene poorly permeable clay deposits, the water-bearing capacity of which is low. The waters associated with these layers are usually characterised by high salinity, which makes it impossible to use them for water supply. Only groundwater associated with alluvial Pliocene-Quaternary sediments is suitable for domestic drinking water use.

In the sub-basins of the Prut and Siret rivers within the Volyn-Podilskyi artesian basin, aquifers are common in the Paleozoic, Mesozoic and Cenozoic sediments. The main aquifers in this area are aquifers and complexes in alluvial Quaternary sediments and Miocene formations.

1.1.6 Soils

In the Prut River valley, chernozems are becoming more widespread: podzolised, shallow and deep low-humus soils. In the lower reaches, moisture deficit has led to the spread of southern chernozems and chestnut soils with signs of salinity.

Part of the Prut sub-basin, within the mountains, consists of sandy-light and medium loamy, sometimes sod-podzolic soils in combination with podzolic, occasionally mountain peat-podzolic soils. The channel is composed mainly of sandy-pebble and pebble-stony soils.

The mountainous part of the Siret sub-basin is dominated by medium-podzolic and mountain podzolic soils, while in the foothills and on the plain they are replaced by soddy-medium podzolic surface-ashy soils, and in the river valleys by soddy-podzolic-ashy soils in combination with meadow podzolic soils. By their mechanical composition, the soils in the mountains are sandy-medium loamy, and on the plains - light loamy. The underlying layer has low water permeability.

1.1.7 Flora

Vegetation plays an important role in shaping the hydrological regime of rivers and water bodies and water quality. About 35% of the Prut River sub-basin is covered by broadleaf and coniferous forests. The forested Carpathians have a pronounced landscape zonation. The foothill zone is characterised by oak and hornbeam forests, where, along with summer oak, there are also winter oak and Western European beech trees typical of Western Europe.

The lower slopes of the mountains (300-600 m) are occupied by broadleaf forests (summer oak, hornbeam, beech, maple, linden, sometimes with spruce and fir). Such forests are also found above 600 m, but are somewhat modified, with beech predominating with increasing altitude and conifers playing an increasingly important role. Spruce forests dominate at altitudes of 1350-1600 m. The mountain tops are occupied by subalpine meadows, mountain pine and alder thickets. The left-bank part of the Prut sub-basin is mostly open and ploughed, with sparse forests.

A significant part of the Siret sub-basin (41% of the total area) is covered by forests. The foothills and mountain slopes up to an altitude of 600 m are predominantly oak forests, above and up to 1000 m beech forests prevail, and even higher, up to 1300 m, coniferous forests.

The tops of some mountains are open and represent subalpine meadows - polonins.

In the flat part, the forest has been preserved only in some places, while the rest of the area has been ploughed and covered with meadows.

1.1.8 Fauna

The fauna in the Prut and Siret sub-basins is diverse. The vertebrate fauna alone within the Ukrainian Carpathians includes 435 species. There are inhabitants of Central European deciduous forests, such as red deer, European roe deer, and marsh turtle; representatives of the Mediterranean Sea, such as green frogs and spotted salamanders; and inhabitants of the Siberian taiga, such as grouse and black grouse.

There are many endemic species, such as the Carpathian squirrel and the Carpathian newt. Brown bears migrate from the river valleys to subalpine bushes for the summer. Predators include martens, ferrets, lynxes, and wolves.

Almost 200 species of birds live in forests, gardens, fields and water bodies. Most of them are forest dwellers (numerous species of passerines: woodpeckers, pigeons). Wetlands are inhabited by coots, waders, herons, and storks. There are also mountain plover, jay, mountain chickadee, and Carpathian grouse.

The rivers of the Prut and Siret sub-basins are home to a variety of fish species: Ukrainian lamprey, sterlet, brook trout, rainbow trout, pike, roach, verizub, oatmeal, rudd, tench, maren, pike perch, perch, goby, crucian carp, bream, catfish, ruff, carp, chub, chub, silver bream, minnow, and sockeye. The fast current, rocky, sometimes muddy bottom, poor plankton and underdeveloped vegetation determine the composition of the fish fauna. Rhyophilous, omnivorous species are common here, laying their eggs on rocky or shaved-sandy substrates.

1.1.9 Hydrological regime

Prut River sub-basin

Feeding: snow and rain.

The main area of Prut runoff formation is the upper part of the sub-basin, whose watercourses are characterised by flood conditions throughout the year, and its foothill section up to the city of Chernivtsi (6890 km^2, 25% of the total catchment area).

In the Carpathian part of the Prut sub-basin, the average long-term values of the annual runoff module are the highest (16.2-20.6 l/s km^2), in the foothill area (Chernivtsi) - 10.7 l/s km^2 and the lowest in the Podilska part of the Prut sub-basin (Leovo, Republic of Moldova) - 3.13 l/s km^2 . Thus, the upper part of the sub-basin accounts for about 2/3 of the annual flow of the Prut.

The average annual discharge is 78-94 m^3/s, with fluctuations from 40 to 162 m^3/s.

Intra-annual runoff distribution

The water resources of the Prut River are unevenly distributed throughout the year. The highest discharges are observed from April to July, with a maximum average discharge in June of 124-127 m^3/s . Minimum discharges of no more than 60 m^3/s are recorded in the winter months.

The annual precipitation pattern in the Prut sub-basin is significantly influenced by the altitude of the area. Precipitation is very unevenly distributed over the territory and increases with increasing altitude. On average, the increase in annual precipitation amounts is 13-15% with a rise of 100 m. The bulk of precipitation falls during the warm season. In winter, 20-25% of the annual precipitation falls. On average, there are 150-190 days of precipitation per year. Effective rains from a hydrological point of view (those that form a hydrological runoff) fall 5-20 times a year.

The snow cover is unevenly distributed across the territory, depending on the forest cover, terrain and topography. The average water content in snow in the mountainous areas is 40-50 mm, and 20-30 mm in the plains.

The maximum runoff is formed due to intense rainfall. The amount of precipitation per day can be 300-320 mm. Heavy rainfall causes catastrophic floods. They occur mainly in June and August.

The lowest runoff is observed in late summer, autumn and winter. During this period, the amount of precipitation decreases. Winter minimums are usually lower than summer minimums.

The ice regime is characterised by instability. The main phases of the ice regime depend on the altitude. The average duration of the period with ice phenomena lasts 80-140 days.

The increased intensity of rainfall on the north-eastern slopes of the Carpathian Mountains causes frequent storm floods, which is a characteristic feature of the Prut's regime. The Carpathian tributaries of the Prut River are mountain rivers with high slopes, rocky boulder and pebble beds, and low-lying underlying soils. Air humidity is high and evaporation is low. These orographic and climatic features create favourable conditions for surface runoff.

Siret River sub-basin

The Siret sub-basin is fed by snow and rain. The main area of Siret runoff formation is the upper part of the sub-basin, whose watercourses are characterised by a flood regime throughout the year.

On the Carpathian territory of the Siret sub-basin, the average long-term values of the annual runoff module are the highest - 15.7 l/s km^2 (Lopushna village), and downstream - 8.2 l/s km^2 (Storozhynets town). The average annual discharge is 5.51 m^3/s (Storozhynets).

Intra-annual runoff distribution

The intra-annual flow regime is characterised by floods from March to August, during which the rivers in the Siret sub-basin carry an average of 55-70% of the annual runoff. This period includes the seasons of spring (March - May) and summer (June - August). The season that accounts for the smallest share of the annual runoff (10-15%) is winter (December-February). This season also has the lowest monthly runoff - about 1% of the annual runoff.

The annual precipitation pattern in the Siretu sub-basin is strongly influenced by the altitude of the area. Precipitation is very unevenly distributed over the territory and increases with increasing altitude. On average, the increase in annual precipitation amounts to 13-15% with an elevation of 100 m.

The snow cover in the sub-basin is unevenly distributed, depending on the forest cover, terrain and topography. The average water content in snow in the mountainous part is 40-50 mm, and 20-30 mm in the plains.

The maximum runoff is formed by intense rainfall. The amount of precipitation per day can be 300-320 mm. Heavy rainfall causes catastrophic floods. They occur mainly in June and August.

The ice regime is characterised by instability. The main phases of the ice regime depend on the altitude. The average duration of the period with ice phenomena in the Siret sub-basin at altitudes of 501-700 m asl is 105-125 days, at altitudes of 251-500 m asl - 95-115 days, and at altitudes less than 250 m abs - 85-110 days.

1.1.10 Specifics of river sub-basins

Increased intensity of rainfall on the north-eastern slopes of the Carpathian Mountains causes frequent storm floods, which is a characteristic feature of the Prut and Siret water regime. The Carpathian tributaries of the rivers are mountain rivers with large slopes, rocky boulder and pebble beds and low-lying underlying soils. Air humidity is high and evaporation is low. These orographic and climatic features create favourable conditions for surface runoff.

After the confluence with the Cheremosh, the Prut's water content almost doubles. The rapid increase in water content occurs in the foothills, where the river receives its right tributaries. A characteristic feature of the Prut River is that it reaches its full water content in the vicinity of Chernivtsi.

An important feature of the Prut and Siret rivers is their high water content and frequent flooding, which pose a real threat not only to the economic sector but also to the lives of people living in the Prut and Siret sub-basins.

The Prut sub-basin is home to two internationally important wetlands that are part of the Carpathian National Nature Park and were designated by the Ramsar Secretariat in 2019. Functioning as flood regulators and freshwater reservoirs, the wetlands are habitats for biodiversity, including endemic, rare and threatened species listed in the Red Data Book of Ukraine and the IUCN Red List. Due to their favourable climate and attractive landscapes, wetlands are very popular with visitors. Human activity has a significant impact on the ecosystems of these areas. There are certain gaps in the management of these ecosystems, including an integrated monitoring system.

1.1.11 Typology of surface water bodies

The SWB typology was developed in accordance with the Methodology for Determining Surface and Groundwater Bodies (Methodology) approved by the Order of the Ministry of Ecology and Natural Resources No. 4 dated 14.01.2019 to detail the hydrographic zoning of Ukraine, prepare a state water monitoring programme, and develop and evaluate the effectiveness of the RBMP implementation.

In the sub-basins of the Prut and Siret rivers, two categories of SWBs have been identified – rivers and heavily modified water bodies (HMWBs).

The EU WFD system A was used for river typology and delineation (Table 71).

Table 71. Descriptors for rivers (system A)

Descriptors		
Catchment height, m	**Catchment area, km^2**	**Geological rocks**
• midlands: over 800 • lowlands: 500 - 800 • upland: 200 - 500 • lowland: < 200	• small: 10 - 100 • average: >100 - 1000 • Large: >1 000 - 10 000 • very large: > 10 000	• limestone • silicate • organic

In accordance with the above descriptors, 14 types of SWBs in the Prut and Siret sub-basins have been identified in the category of rivers (Table 72).

The sub-basins of the Prut and Siret rivers are located within two ecoregions - the Carpathians (number 10) and the Eastern Plains (number 16).

Rivers are classified as small (with a catchment area of less than 100 km^2), medium (100 to 1000 km^2), and large (1000 to 10,000 km^2) rivers by catchment area.

According to the height of the river catchment, the sub-basins are located in the midlands (over 800 m), lowlands (500 to 800 m), uplands (200 to 500 m) and lowlands (less than 200 m).

The geological rocks of the Prut and Siret sub-basins are represented by one type: silicate (Si).

Table 72. Types of SWBs in the "rivers" category

№	Type code	Type
1	UA_R_10_S_2_Si	a small river on a hill in silicate rocks
2	UA_R_10_S_3_Si	a small river in the lowlands in silicate rocks
3	UA_R_10_S_4_Si	a small river in the middle mountains in silicate rocks
4	UA_R_10_M_2_Si	medium-sized river on a hill in silicate rocks
5	UA_R_10_M_3_Si	medium-sized river in the lowlands in silicate rocks
6	UA_R_10_M_4_Si	a medium-sized river in the midlands in silicate rocks
7	UA_R_10_L_2_Si	a large river on a hill in silicate rocks
8	UA_R_16_S_1_Si	a small river in the lowlands in silicate rocks
9	UA_R_16_S_2_Si	a small river on a hill in silicate rocks
10	UA_R_16_S_3_Si	a small river in the lowlands in silicate rocks
11	UA_R_16_M_1_Si	medium-sized river in the lowlands in silicate rocks
12	UA_R_16_M_2_Si	medium-sized river on a hill in silicate rocks
13	UA_R_16_L_1_Si	a large river in the lowlands in silicate rocks
14	UA_R_16_L_2_Si	a large river on a hill in silicate rocks

1.1.12 Reference conditions

The assessment of the ecological state of the SWB is based on a comparison of biological indicators (benthic macroinvertebrates, macrophytes, phytobenthos, phytoplankton and fish) with reference conditions that characterise the state of the SWB, which has not been subjected to anthropogenic impact or is minimal.

Reference conditions are determined on the basis of data obtained from reference sites, by modelling (predictive models or retrospective forecasting methods that take into account historical, paleogeographic and other available data that provide a sufficient level of confidence in the values for reference conditions for each type of SWB) or by a combination of these methods or based on expert opinion.

In order to establish reference values for biological indicators based on data from reference sites, it is necessary to establish such sites for each type of SWB in all natural categories. The network should cover a sufficient number of sites to provide a sufficient level of confidence and to account for the variability of values for indicators that correspond to the different ecological status of the SWB type.

Key criteria for selecting reference sites:

- characterise the state of the SWB without anthropogenic impact or with minimal impact;
- There is no industry or intensive agriculture;
- concentrations of specific synthetic pollutants are zero or below the detection limits;
- no morphological changes;
- water abstraction and flow control cause only minor fluctuations in water levels and do not affect surface water quality;
- the vegetation of the coastal zone is appropriate for the type of SWB and geographical location;
- no invasive species;
- fishing and aquaculture do not affect the functioning of the ecosystem.

In accordance with paragraph 2, clause VII. of the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 5 dated 14.01.2019 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Conditions of a Surface Water Body, as well as Assigning an Artificial [...]", type-specific reference conditions may also be determined on the basis of existing reference sites in other countries for the same type of SWB or by combining the procedures described above.

Taking into account the fact that in Ukraine, as of today, the reference conditions for all types of SWB are not defined, it was proposed to use the reference conditions established for the same or similar types in the neighbouring EU countries, namely the Republic of Moldova and Romania.

The methodology includes four hydrobiological indicators (benthic macroinvertebrates, phytoplankton, phytobenthos, macrophytes, macroalgae and eutrophication, respectively) for four natural categories of surface waters (rivers, lakes, transitional waters and coastal waters) that have been identified in Ukraine.

The environmental quality standards (EQS) were approved by Order of the Ministry of Ecology No. 332 dated 01.04.2024 "On Approval of Environmental Water Quality Standards for Determining the Ecological Status of Surface Water Bodies and Amendments to Certain Regulatory Acts".

In the second cycle of the RBMP, it is necessary to revise the reference conditions (including for the fish fauna indicator) using data from state water monitoring.

1.2 Water body delineation

1.2.1 Surface water

In the Prut and Siret sub-basins, the SWB was determined on 133 rivers (according to the State Water Cadastre: Accounting of Surface Water Bodies geoportal of the State Agency of Water Resources of Ukraine).

Within the Prut and Siret sub-basins, 298 SWBs have been identified. The designated SWB belong to the following categories of surface water:

- rivers;
- heavily modified (HMWB).

Category "rivers"

According to the Methodology, 249 SWB were identified. The number of identified SWB, depending on descriptors and types, is shown in Tables 73 and 74.

Table 73. Distribution of SWBs of the "rivers" category by descriptors

Descriptor	Indicator	Number of SWB
by eco-region	Eastern plains	110
	Carpathians	139
by catchment area	small (S)	201
	average (M)	42
	large (L)	6
by the height of the catchment area	in the midlands	44
	in the lowlands	61
	on a hill	113
	in the lowlands	31
by geological type	in silicate rocks	249

Table 74. Distribution of SWBs of the "rivers" category by type

№	Type code	Type	Number of designated SWB
		Ecoregion No. 10 Carpathians	
1	UA_R_10_S_2_Si	a small river on a hill in silicate rocks	27
2	UA_R_10_S_3_Si	a small river in the lowlands in silicate rocks	50
3	UA_R_10_S_4_Si	a small river in the middle mountains in silicate rocks	41
4	UA_R_10_M_2_Si	medium-sized river on a hill in silicate rocks	7
5	UA_R_10_M_3_Si	medium-sized river in the lowlands in silicate rocks	10
6	UA_R_10_M_4_Si	a medium-sized river in the midlands in silicate rocks	3
7	UA_R_10_L_2_Si	a large river on a hill in silicate rocks	1
		Ecoregion 16 Eastern Plains	
8	UA_R_16_S_1_Si	a small river in the lowlands in silicate rocks	18
9	UA_R_16_S_2_Si	a small river on a hill in silicate rocks	64
10	UA_R_16_S_3_Si	a small river in the lowlands in silicate rocks	1
11	UA_R_16_M_1_Si	medium-sized river in the lowlands in silicate rocks	11
12	UA_R_16_M_2_Si	medium-sized river on a hill in silicate rocks	11
13	UA_R_16_L_1_Si	a large river in the lowlands in silicate rocks	2
14	UA_R_16_L_2_Si	a large river on a hill in silicate rocks	3

Category "heavily modified water bodies"

A total of 49 HMWB have been identified in the sub-basins. The share of HMWB in the total number of SWB in the sub-basins is 16.4%. Most of them (24 SWB) are classified as HMWB due to morphological changes. 9 SWB are classified as HMWB due to a combination of the following factors - disruption of the continuity of water and sediment flow and accumulation. 16 SWB are classified as HMWB due to a combination of disruption of water and media flow, accumulation and morphological changes (Figure 90).

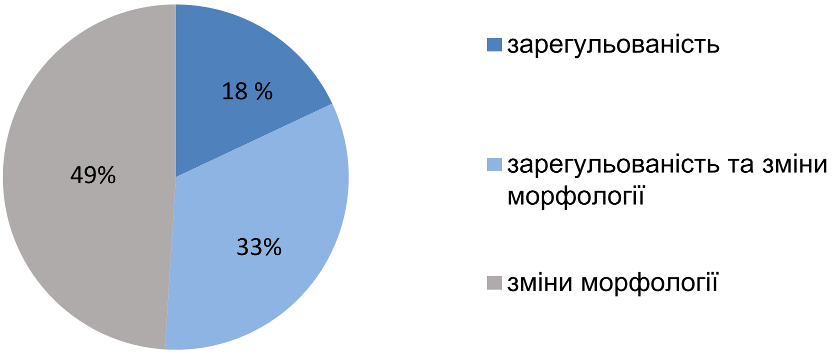


Figure 90. Distribution of HMWB by hydromorphological loads, %.

The percentage distribution of the identified SWB in the Prut and Siret sub-basins by category is shown in Figure 91.

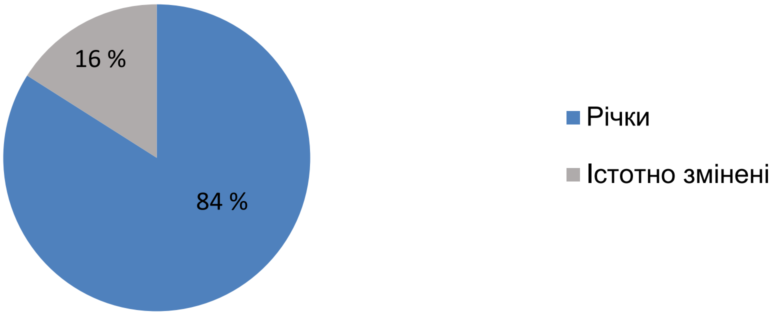


Figure 91. Breakdown of identified SWBs by category, %.

Each of the 298 SWB identified in the Prut and Siret sub-basins has been assigned a unique code that looks like this:

UA_ M5.3.2 _YYYY, UA_ M5.3.3 _YYYY

- UA - Ukraine;
- M5.3.2 and M5.3.3 - codes of the Prut and Siret sub-basins (according to the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 103 of 29 March 2017 "On Approval of the Boundaries of River Basin Areas, Sub-basins and Water Management Areas");
- YYYY is the unique number of the designated WFD in the sub-basins.

Each linear SWB (categories "rivers", "AWB or HMWB") has a length (km). The length of the SWBs ranges from 0.3 km (UA_M5.3.2_0143 - Vyzhenka River) to 119.7 km (UA_M5.3.2_0007 – Prut River).

Figure 92 shows the distribution of the identified linear SWB in the sub-basins by length.

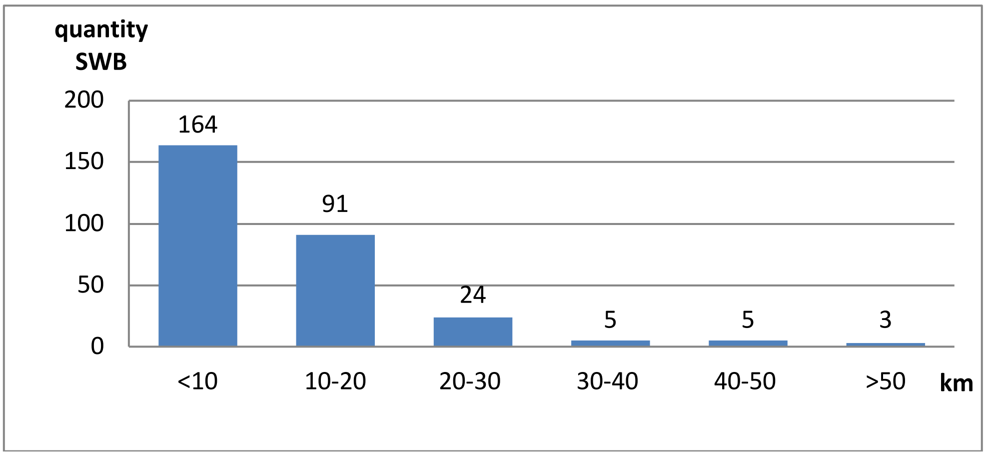


Figure 92. Distribution of the identified linear SWB by length

Each polygonal SWB (of the category "HMWB") has an area (km^2). The area of the SWB ranges from 0.16 km^2 (UA_M5.3.2_0229 - Glodos River Reservoir) to 0.47 km^2 (UA_M5.3.2_0217 - Cherlena River Reservoir).

Figure 93 shows the distribution of the identified polygonal SWB in the sub-basins by area.

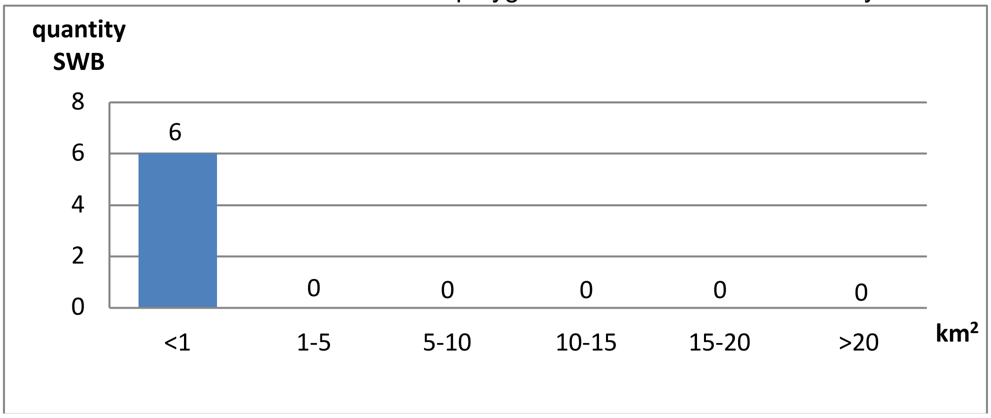


Figure 93. Distribution of identified polygonal SWB by area

1.2.2 Groundwater

The determination of the GWB was carried out in accordance with the Methodology for determining surface and groundwater bodies (Methodology), approved by the Order of the Ministry of Ecology and Natural Resources No. 4 dated 14.01.2019.

The definition of an GWB includes the division of aquifers into smaller units, the preliminary establishment of GWB boundaries based on individual characteristics and available knowledge of hydrogeological systems and anthropogenic impacts.

The definition begins with the analysis of geological maps and well data to identify different hydrogeological units within the aquifer. First of all, attention is paid to those aquifer complexes whose reserves can provide water intake of more than 10 m^3 per day.

The youngest aquifers are considered first. As a rule, the boundaries of surface water basins are approximated with the boundaries of groundwater basins, and then the determination of the GWB for deeper aquifer complexes, the boundaries of which go beyond the boundaries of surface water basins, is performed.

The codes of the defining GWB are formed as follows:

UAM5330Q100

- UA - Ukraine,
- M53 is the code for the Danube basin,
- 3 - Siret sub-basin, according to the Water Code,

- 0Q - geological system (geological age of water-bearing rocks),
- 100 - the number of the GWB.

GIS technologies were used in the process of identifying the GWB and creating the relevant maps. According to Guideline No. 9 "On Implementation of Geographic Information Systems (GIS)", river basins, sub-basins and groundwater bodies were depicted on the map as polygons, and observation wells as points, etc.

In the process of identifying GWBs in the Prut and Siret sub-basins, 8 GWBs with a total area of 8471 km^2 were identified (Table 75). In total, 2 non-pressure GWBs, 2 pressure GWBs and 4 pressure and non-pressure GWBs were identified in the sub-basins.

Table 75. List of identified GWBs in the Prut and Siret sub-basins

№	GWBs code	Aquifer (complex)	Geological index	The area of the GWBs, km2
Siret River sub-basin				
1	UAM5330Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	a P +aH$^{1-5}_{III}$	379,0
2	UAM5330N100	GWB in Miocene sediments	N s$_{11}$, N$_1$ ks, N$_1$ tr, N$_1$ op	844
3	UAM533PG100	GWB in Paleocene-Eocene sediments	₽$_{1-2}$	327
4	UAM5330K100	GWB in Upper Cretaceous sediments	K$_2$	78
Prut River sub-basin				
5	UAM5320Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	a P +aH$^{1-5}_{III}$	810
6	UAM5320N100	GWB in Miocene sediments	N s$_{11}$, N$_1$ ks, N$_1$ tr, N$_1$ op	5400
7	UAM532PG100	GWB in Paleocene-Eocene sediments	₽$_{1-2}$	252
8	UAM5320K100	GWB in Upper Cretaceous sediments	K$_2$	381

Prut River sub-basin GWB

GWBs in Quaternary alluvial sediments of floodplains and floodplain terraces (UAM5320Q100)

The MSS is confined to alluvial deposits of the Holocene and Upper Neopleistocene floodplain terraces of the Prut and Cheremosh rivers (aH+a P$^{1+3}_{III}$). It is widely developed both on the platform and in the Precarpathian trough.

The aquifer is the first to be reached from the surface and is usually unconfined. Water-bearing rocks are characterised by a variety of lithological and particle size distribution. Within the Carpathians, they are represented by gravel and pebble, sometimes coarse rubble material cemented with different grains of sand or clay. Within the Outer Zone of the Fore-Carpathian Trough and partially of the platform, in the valleys of the Prut and Cheremosh rivers and their tributaries, water-bearing modern alluvial deposits are mainly fine- to medium-grained sands, pebbles, and occasionally loams. In the area between the Prut and Dniester rivers, where rivers and streams are embedded in Miocene clays, individual waterlogged layers and lenses of sands and pebbles are most common in the thickness of modern alluvial clay deposits.

The GWB is underlain in the Prut valley by Miocene argillaceous clays.

While the total thickness of modern alluvial deposits is up to 26 m, the thickness of water-bearing rocks varies from 0.4 to 17 m, with the predominant values being 2-6 m (floodplains) and 7-10 m (terraces). The depth of the aquifer ranges from 0-11 m, with the most common occurrence at depths of 3-4 m. In areas of close occurrence of the aquifer to the surface, waterlogging is often observed.

The thickness of water-saturated rocks in the Prut and Cheremosh river valleys varies from 3.0 to 7.0 m, with filtration coefficients of 100-200 m/day, decreasing to 20-50 m/day in the lower reaches of the Prut River. The band of these rocks is sustained and its width is 500-800 m.

Alluvial deposits of the II and III terraces of the Prut and Cheremosh rivers are the most common. Their development area is 5-7 km. The filtration coefficients of these sediments vary within a fairly wide range from 1.0 to 50 m/day. In general, the coarseness of the rocks and the value of their filtration coefficient decrease with distance from the riverbed.

The waters of the modern alluvial deposits are mostly fresh and have a varied chemical composition. Along with calcium bicarbonate waters, the platform contains calcium sulphate, sodium-calcium sulphate-hydrocarbonate, calcium-magnesium hydrocarbonate waters with salinity ranging from 0.5 to 1.8 g/dm^3 , which is due to the inflow of highly saline waters from Miocene sediments and surface pollution.

The total water hardness varies from 1.87 to 9.9 mg-eq/dm^3 , in some cases reaching 30-40 mg-eq/dm^3 .

Due to its unprotected nature, water is often contaminated with decay products of organic matter. The ammonia content is 0.4-0.08 mg/dm^3, nitrates up to 225 mg/dm^3 (Novoselytsia).

The aquifer is recharged mainly by infiltration of precipitation and groundwater inflow from underlying aquifers, as well as by water inflow from rivers during floods (floodplains).

The water regime in modern alluvial deposits is closely dependent on the nature and amount of precipitation. The annual amplitude of water level fluctuations according to observations reaches 2-3 m, the water regime of the I-III floodplain terraces is unstable, with significant fluctuations depending on the amount of precipitation. The annual amplitude of water level fluctuations is 1.5-2m.

The aquifer of modern alluvial deposits of Holocene floodplains and I-III upper Neopleistocene floodplain terraces is the main aquifer for centralised water supply in the region and is widely used for water supply to the population.

The aquifer of alluvial sediments of the Middle Neopleistocene IV-V overflank terraces (a^{4-5} P_{II}) is developed in the Prut River valley. The water-bearing rocks are represented by sands of various sizes with lenses of pebbles, loams and sandy loams. The thickness of the water-bearing sediments varies from 0.9 to 22 m, with a predominant thickness of 7-10 m. The aquifer is usually the first to occur from the surface.

The watered aquifer is underlain in the Prut valley by Miocene clayey mudstones.

The depth of the aquifer varies from 2 to 5 m, the water is mostly non-pressure, only in places where there are poorly permeable layers in the roof it becomes pressure. The waters of alluvial deposits of the IV-V terraces are predominantly fresh (0.4-2.6 g/dm^3), calcium hydrocarbonate. The waters contain organic decomposition products. The content of micro-components is insignificant. The water hardness ranges from 1.95 to 35 mg-eq/dm^3 , with a prevalence of 3-8 mg-eq/dm^3 .

The aquifer is recharged over almost the entire area of its distribution by infiltration of precipitation and partially by water inflow from underlying aquifers. Alluvial deposits are classified as reservoir waters. Their regime is unstable. Water levels in wells are subject to significant fluctuations depending on the amount of precipitation. The annual amplitude of water level fluctuations is 1.5-2.0 m. The highest level is observed in July-October, and the lowest in November-January.

The waters of this aquifer are of limited use.

GWB in Lower Neogene sediments (UAM5320N100)

The GWB in Lower Sarmatian Miocene sediments (N s_{11}) is widespread in the Prut-Dniester interfluve and the Prut, Seret and Maly Seret interfluve.

The water-bearing rocks are numerous layers of sands, rarely sandstones and organogenic limestones, ranging in thickness from 0.4 to 22 m. The horizons are not consistent along strike and are often faulted.

Sometimes, layers of aquiferous sands and sandstones alternating with clays make up a single aquifer and are hydraulically interconnected. In such cases, the total thickness of the aquifers increases to 60 m.

The depth of the Sarmatian sediments' base varies from 4 m to 167.6 m in the western part of the Precarpathian Trough, thus determining the depth of groundwater occurrence. In the eastern part of the Chernivtsi region, the water is predominantly free-flowing. In the western direction, the pressure increases and reaches 165 m. The water enrichment of Lower Sarmatian sediments is extremely uneven, which is determined by the feeding conditions and heterogeneous lithological composition of water-bearing rocks. Spring flow rates range from 0.001 to 1.1 dm^3 /s, well flow rates - 0.34-1.3 dm^3 /s; well flow rates - from 0.24 dm^3 /s at a water level of 72.5 m, and up to 1.4 dm^3 /s at a water level of 24.0 m.

By chemical composition, the waters are fresh and slightly mineralised, characterised by calcium, magnesium, and rarely sodium and calcium hydrocarbonate-sulfate composition with a salinity of 0.3-1.3 g/dm^3 , in some places up to 5 g/dm^3 (Zhylivka, Bilivtsi villages). Characteristic of sodium bicarbonate waters is the presence of small amounts of bromine, iodine, iron and metabolic acid with a content of up to 45-50 mg/dm^3 . The total water hardness in the eastward direction varies from 0.53 to 9.0 mg-eq/dm^3 , in rare cases it reaches 40.0 mg-eq/dm^3 (Bilivtsi et al.) The concentration of hydrogen ions (pH) is 6.8-9.0. Products of organic water pollution (nitrites, nitrates, ammonia) are usually found in small quantities.

The aquifer is recharged mainly by infiltration of precipitation in shallow areas and outcrops of water-bearing rocks to the surface, as well as by flow from overlying Quaternary alluvial deposits.

The importance of groundwater from Sarmatian sediments for water supply is insignificant, however, in the Prut and Seret interfluve, due to good water quality and shallow occurrence of the horizon, and the absence of other aquifers, it is recommended for local water supply.

The aquifers and sediments of the Kosiv, Tiras and Opillya Miocene (N_1 ks, N_1 tr, N_1 op) are widespread, mainly in the southern half of the Prut-Seret interfluve and in the Prut River valley. The water-bearing rocks on the right bank of the Dniester and in the eastern part of the Prut-Dniester interfluve are various types of fractured limestone (N_1 op), and in the rest of the area - sands, sandstones, siltstones, limestones, marls. The gypsum anhydrite stratum of the Tiras Formation serves as a water-bearing layer between the sandy-clay Upper Badenian (Kosiv Formation) and the lower Opillya Badenian. The total thickness of the water-bearing layers of the aquifers is 10-40 m, rarely up to 70-85 m.

Almost everywhere, the Badenian rocks are overlain by Sarmatian sand and clay deposits, which often form the upper aquifer. The aquifers are underlain by rocks of the Cenomanian (Albanian) stage, which provides for hydraulic connection (eastern part of the region).

The depths of aquifers range from 0.5-1.0 m on valley slopes to 140 m in watershed areas, and increase to 1140-1240 m in the Krasnoyilsk region.

The waters are predominantly pressure, with the head increasing from 9-29 m on the platform to 360-430 m in the Fore-Carpathian trough towards the Carpathians.

The water content of the rocks varies. On the right bank of the Dniester, where there are deeply incised river and gully valleys, the Badenian aquifer is partially drained and its water supply is insignificant.

The flow rates of the springs vary widely and amount to 0.05-25 dm^3/s (Babyn, Verbivtsi, Tovtry villages), with the predominant flow rates of 0.3-0.5 dm^3 /s (N_1 tr, N_1 op). The well flow rates also vary widely: from 0.2 dm^3 /s, at a lowering of 9.0 m, to 17.7 dm^3 /s, at self-pouring (Novoselytsia), with flow rates of 1-2 dm^3 /s prevailing.

The chemical composition of the waters is very diverse. According to their chemical composition, the horizon waters can be divided into calcium sulphate and sodium calcium sulphate waters in the western part of the region, calcium hydrocarbonate waters in the eastern part and in the upper horizons (Kosivska Sveta) in the western part. Water salinity is 0.3-2.4 g/dm^3 . In the vicinity of Krasnoyilska village, in the direction of the slide, the mineralisation increases to 20.8-22.0 g/dm^3 and the waters become of sodium chloride type. The content of trace elements increases with depth. The content of Br is 4.5-21.0 mg/dm^3 , J - 6.6-8.5 mg/dm^3 , Sr - 0.1-1.0 mg/dm^3 , Ba - 0.1-1.0, Cu, Ca, V - 0.0001-0.1, Ba, Ni, Ti, Cr - traces. The total water hardness ranges from 7 to 36 mg-eq/dm^3 .

The content of NO_3 - is 5-10 mg/dm^3 , sometimes up to 260 mg/dm^3 (Repuzhyntsi village). The concentration of hydrogen ions (pH) is 6.7-7.5. The aquifers are fed by infiltration of precipitation in the northern part of the territory on the right bank of the Dniester River and by water flow from the underlying Cenomanian (Albanian) sediments. There are no sharp seasonal fluctuations in water levels. Discharge occurs in river valleys and ravines and through a system of tectonic fractures.

The practical significance of the waters of the described aquifers for water supply is small due to the variability of their chemical composition. They are mainly used for technical and domestic water supply of small farms, individual consumers and as mineral water.

GWB in Paleogene sediments (UAM532PG100)

Paleocene and Eocene deposits ₽$_{1-2}$. are widespread within the Folded (Flysch) Carpathians and the Inner Zone of the Precarpathian Trough. They are mainly represented by thin-core alternation of siltstones, mudstones and sandstones, rarely limestones and gravels. The water-bearing capacity of the strata is determined by the fracturing of rocks, which is maximally developed in the weathering zone, i.e. to a depth of 100m. The most intense fracturing is typical for sandstones and siltstones; mudstones are mostly waterless. The water is found at depths ranging from 0 to 39 m and is characterised as both pressurised and non-pressurised; the water table ranges from 0 to 28.0 m, more often from 1.5 to 10.0 m. The head reaches 36.2 m. Depending on the lithological composition of the water-bearing rocks and the degree of their fracturing, the flow rates of the springs vary from 0.08 to 3.0 l/s.

The water content of the Paleocene and Eocene is generally insignificant. The water content increases slightly in areas where sandy formations predominate in the section (Vygoda-Pasichnyanska and Yamnenska formations).

The waters in the near-surface part are calcium hydrocarbonate, less often calcium-sodium hydrocarbonate, hydrocarbonate-sulfate with a salinity of 0.1-0.3 g/dm^3 . The total hardness varies from 0.86 to 5.06 mg-eq/dm^3 . The concentration of hydrogen ions (pH) is 5.0-10.0. Nitrogen-containing compounds are absent in most samples.

The aquifer is fed by infiltration of precipitation. The water regime is unstable. The practical value of groundwater is insignificant.

GWB in Upper Cretaceous sediments (UAM5320K100)

It is distributed within the platform and the Outer Trough Zone, except for the area of Stavchany village (Kitsman district). Water-bearing sediments are represented mainly by sands and sandstones, with less frequent interbedded marls, limestones, flints, and opals. In the Dniester River valley, where the Cenomanian (Alba) deposits are represented by glauconite sands and sandstones and are exposed to the surface, the aquifer is the first to be found from the surface. Towards the south of the Dniester, the rocks sink to a depth and carbonate rock types begin to prevail. In the western part of the Chernivtsi region, Cenomanian (Albanian) sediments lie unconformably on fractured Jurassic formations. To the east of Chernivtsi city, the lower aquifer is formed by clay shales of the Silurian period. The Cenomanian (Alba) deposits are overlain by Badenian sediments to the east of the Sadhora-Kitsman-Stavchany line, and by Turonian deposits to the west. The thickness of the aquifer is from 2.0 to 38.0 m, mainly 20.0-25.0 m. The depth varies from several metres to 1300 m within the Outer Trough Zone.

The aquifer is a pressure aquifer. The head height varies from 8.0 to 155.0 m. The degree of water enrichment is unstable and depends on the lithological composition of water-bearing rocks and their exposure in space. The well flow rates range from 0.2 to 1.7 dm^3 /s at a water level of 4.0-36.0 m. Mostly, the flow rates are 0.7-1.0 dm^3 /s. Specific flow rates vary within 0.004-0.5 dm^3 /s. In the vicinity of Chernivtsi, water enrichment is increased: the flow rate is 2.0 dm^3 /s at a 2m drop (self-discharge) and 3.4 dm^3 /s at a 36.0m drop. The waters on the right bank of the Dniester are calcium bicarbonate with a salinity of 0.3-0.4 g/dm^3 , a total hardness of about 4.3 mg-eq/dm^3 and a pH of 7.5. In the rest of the territory, the water is predominantly calcium sulphate, calcium sulphate-hydrogen carbonate, changing to chloride with the submergence of the aquifer. The mineralisation varies from 0.5 to 8.3 g/dm3, mainly 1.0-1.5 g/dm^3 . Near the landslide in the area of Krasnoyilsk at a depth of 1363 m, the mineralisation of chloride sodium water in the aquifer increases to 16.9 g/dm3.

The water hardness ranges from 6.0 to 35.0 mg-eq/dm^3 , mainly 6.0-8.0 mg-eq/dm^3 , pH concentration is around 6.5. Content of microcomponents: Zr, Ti - traces; Ga, Cu, V - 0.001- 0.01; Ba - 0.1-1.0; Sr >1.0; Br -24.0; J - 7.0 mg/dm^3 .

The aquifer is recharged in some areas by the flow of water from the Baden sediments, and in river and gully valleys and in places close to the surface, by infiltration of precipitation. Within the area of water supply, the regime is unstable and the water table is subject to seasonal fluctuations.

The water is used by the local population. The aquifer is of practical importance for centralised water supply (eastern part of the region).

The water-bearing complex in the Lower-Upper Cretaceous sediments (Rakhiv, Cheremosh, Svydovets and Burkut formations) - (K_{1-2}) is distributed in the southwestern part, within the Inner Carpathian zone. The flysch rocks here are crumpled into narrow folds. The water-bearing rocks are represented by rhythmic alternation of siltstones, mudstones and sandstones, and less frequently limestones, conglomerates and gravels (sandstones, limestones, conglomerates and gravels are of subordinate importance). The sediments are aquiferous in the near-surface part, where weathering cracks are intensively developed, i.e. to the depths of 30.0-100.0 m.

The aquifer is located at depths ranging from 0 to 50 m and has been studied only at springs. In the zones located near the day surface, mainly non-pressure water circulates, which is confirmed by numerous leaks from downward springs. With increasing water depths, especially within tectonic fault zones, water acquires pressure properties. Depending on the lithological composition of the water-bearing rocks, the degree of their fracture and gypsometric position, the flow rate of the springs varies from 0.01 to 1.0 dm^3 /s. By chemical composition, the waters are calcium bicarbonate with a mineralisation of 0.1-0.3 g/dm^3 , less often calcium sodium sulphate and calcium sulphate-hydrocarbonate with a mineralisation of 0.4 to 0.7 g/dm^3 .

The total hardness ranges from 0.95 to 5.63 mg-eq/dm^3 , the concentration of hydrogen ions (pH) is 5.0-7.3. Waters containing hydrogen sulphide (2.5 to 33.2 mg/dm^3) and microcomponents are common: Br - 10.0, J - 5.8, Fe - 15 mg/dm^3

The aquifer is fed by infiltration of precipitation. The practical value of the aquifer complex is small, but given the lack of other aquifers, it is widely used by the population.

Seret River sub-basin GWB

GWB in Quaternary alluvial sediments of floodplains and floodplain terraces (UAM5330Q100)

The GWB in alluvial deposits of Holocene floodplains and I-III Upper Neopleistocene floodplain terraces (aH-a P^{1+3}_{III}) is confined to the floodplains of numerous rivers and streams. It is widely developed both on the platform and in the Precarpathian trough and is associated with alluvial deposits of the Seret River.

The thickness of water-bearing rocks in the Seret River valley is mainly 7.0-11.0 m. The filtration coefficients of the 200-400 m wide strip, which extends downstream to 1.5 km, are 13-32 m/day. Alluvial deposits of the II-III terraces of the Seret River have lower filtration properties (Kf = 1.0-5.0 m/day) and their development is also limited (narrow spreading strips from 200-300 m to 2.0 km).

The aquifer is non-pressure, sometimes the upper aquifer is one-age alluvial loams, which causes local heads of up to 4 m (floodplain terraces). The water content of the aquifer varies widely due to the heterogeneity of the granulometric composition of water-bearing rocks. In the valleys of the Carpathian rivers, the flow rate varies from 0.1 to 0.4 dm^3 /s with a water table drop of 5.9-16.4 m. On the platform, in the Prut River floodplain, east of Chernivtsi, the wells flow rate reaches 10.8 dm^3 /s at a water table lowering of 2.9 m. Specific flow rates vary from 0.1 to 3.9 dm^3 /s. Source flow rates are 0.1-0.3 dm^3 l/s.

The waters of the modern alluvial deposits are mostly fresh and have a varied chemical composition. Along with calcium bicarbonate waters, the platform contains calcium sulphate, sodium-calcium sulphate-hydrocarbonate, calcium-magnesium hydrocarbonate waters with salinity ranging from 0.5 to 1.8 g/dm^3 , which is caused by the inflow of highly saline waters from Miocene sediments and surface pollution. The total water hardness varies from 1.87 to 9.9 mg-eq/dm^3 , in some cases reaching 30-40 mg-eq/dm^3 .

The aquifer is recharged mainly by infiltration of precipitation and groundwater inflow from underlying aquifers, as well as by water inflow from rivers during floods (floodplains).

The water regime in modern alluvial deposits is closely dependent on the nature and amount of precipitation. The annual amplitude of water level fluctuations according to observations reaches 2-3 m, the water regime of the I-III floodplain terraces is unstable, with significant fluctuations depending on the amount of precipitation. The annual amplitude of water level fluctuations is 1.5-2m.

The aquifer of modern alluvial deposits of Holocene floodplains and I-III floodplain terraces of the Upper Neopleistocene is the main one used for centralised water supply.

The Middle Neopleistocene alluvial aquifer (a^{4-5} P_{II}) is developed in the Seret River valley in the deposits of the IV-V floodplain terraces. The water-bearing rocks are represented by sands of various sizes with lenses of pebbles, loams and sandy loams. The thickness of the water-bearing sediments varies from 0.9 to 22 m, with the most common thickness being 7-10 m. The aquifer is usually the first to occur from the surface.

The waterlogged rocks are underlain by Miocene argillaceous clays.

The depth of the aquifer varies from 2 to 5 metres, and the water is mostly non-pressurised, with pressure only in places where there are weakly permeable layers in the roof.

GWB in undissected Lower Neogene sediments (UAM5330N100)

The GWB in Lower Sarmatian Miocene sediments (N s_{11}) is widespread in the Prut-Dniester interfluve and the Prut, Seret and Maly Seret interfluve.

The water-bearing rocks are numerous layers of sands, rarely sandstones and organogenic limestones, ranging in thickness from 0.4 to 22 m. The horizons are not continuous along strike and are often faulted.

Sometimes, layers of aquiferous sands and sandstones alternating with clays make up a single aquifer and are hydraulically interconnected. In such cases, the total thickness of the aquifers increases to 60 m.

The depth of the Sarmatian sediments' base varies from 4 m to 167.6 m in the western part of the Fore-Carpathian Trough, thus determining the depth of the water table associated with them. In the western direction within the Seret sub-basin, the head increases and reaches 165 m. The water enrichment of Lower Sarmatian sediments is extremely uneven due to the feeding conditions and heterogeneous lithological composition of the water-bearing rocks. Spring flow rates range from 0.001 to 1.1 dm^3 /s, well flow rates - 0.34-1.3 dm^3 /s; well flow rates - from 0.24 dm^3 /s at a water level of 72.5 m, and up to 1.4 dm^3 /s at a water level of 24.0 m.

According to the chemical composition, the waters are fresh and slightly mineralised, characterised by calcium bicarbonate, magnesium bicarbonate, and rarely sodium calcium bicarbonate-sulfate composition with a mineralisation of 0.3-1.3 g/dm^3 . Characteristic of sodium bicarbonate waters is the presence of small amounts of bromine, iodine, iron and metabolic acid with a content of up to 45-50 mg/dm^3 . The total water hardness in the eastward direction varies from 0.53 to 9.0 mg-eq/dm^3 . The concentration of hydrogen ions (pH) is 6.8-9.0. Products of organic water pollution (nitrites, nitrates, ammonia) are usually found in small quantities.

The aquifer is recharged mainly by infiltration of precipitation in shallow areas and outcrops of water-bearing rocks to the surface, as well as by flow from overlying Quaternary alluvial deposits.

The importance of groundwater from Sarmatian sediments for water supply is insignificant, however, in the Prut and Seret interfluve, due to good water quality and shallow occurrence of the horizon, and the absence of other aquifers, it is recommended for local water supply.

The aquifers and sediments of the Kosiv, Tyras and Opillya Miocene are (N_1 ks, N_1 tr, N_1 op) widespread mainly in the southern half of the Prut-Seretska interfluve. Water-bearing rocks are sands, sandstones, siltstones, limestones, marls. The gypsum anhydrite stratum of the Tiras Formation serves as a water retaining layer between the sandy clay Upper Badenian (Kosiv Formation) and the lower Opillya Badenian. The total thickness of the water-bearing layers of the aquifers is 10-40 m, in some cases up to 70-85 m. The waters are of the formation and fracture type.

Almost everywhere, the Badenian rocks are overlain by Sarmatian sand and clay deposits, which often form the upper aquifer. The aquifers are underlain by rocks of the Cenomanian (Albanian) stage, which provides for hydraulic connection (eastern part of the region).

Depths of aquifers range from 0.5-1.0 m on valley slopes to 60 m in watershed areas.

The waters are predominantly pressure, with the head increasing from 9-29 m on the platform to 360-430 m in the Fore-Carpathian trough towards the Carpathians.

The flow rates of the springs vary widely and amount to 0.05-25 dm^3 /s (Babyn, Verbivtsi, Tovtry villages), with the predominant flow rates of 0.3-0.5 dm^3 /s (N_1 tr, N_1 op). The well flow rates also vary widely: from 0.2 dm^3 /s, at a lowering of 9.0 m, to 17.7 dm^3 /s, at self-pouring (Novoselytsia), with flow rates of 1-2 dm^3 /s prevailing.

The chemical composition of the waters is very diverse. According to their chemical composition, the water horizons can be divided into calcium sulphate and sodium calcium sulphate waters in the western part of the region, calcium hydrocarbonate waters in the eastern part and in the upper horizons (Kosivska Sveta) in the western part. Water salinity is 0.3-2.4 g/dm3. The content of micro-components increases with depth. The content of Br is 4.5-21.0 mg/dm3, J - 6.6-8.5 mg/dm^3 , Sr - 0.1-1.0 mg/dm^3 , Ba - 0.1-1.0, Cu, Ca, V - 0.0001-0.1, Ba, Ni, Ti, Cr - traces. The total water hardness ranges from 7 to 36 mg-eq/dm^3 .

The NO content$_3$ - is 5-10 mg/dm^3 , rarely up to 260 mg/dm^3 . The concentration of hydrogen ions (pH) is 6.7-7.5. The aquifers are fed by infiltration of precipitation in the northern part of the territory on the right bank of the Dniester River and by water flow from the underlying Cenomanian (Albanian) sediments. There are no sharp seasonal fluctuations in water levels. Discharge occurs in river valleys and ravines and through a system of tectonic fractures.

The practical significance of the waters of the described aquifers for water supply is small due to the variability of their chemical composition. They are mainly used for technical and domestic water supply of small farms, individual consumers and as mineral water.

GWB in Paleogene sediments (UAM533PG100)

Paleocene and Eocene sediments $₽_{1-2}$. are widespread within the Folded (Flysch) Carpathians and the Inner Zone of the Fore-Carpathian Trough. They are represented mainly by thin-core alternation of siltstones, mudstones and sandstones, and occasionally limestones and gravels. The water-bearing capacity of the strata is determined by the fracturing of rocks, which is maximally developed in the weathering zone, i.e., to a depth of 100m. The most intense fracturing is typical for sandstones and siltstones; mudstones are mostly waterless. The water is found at depths ranging from 0 to 39 m and is characterised as both pressurised and non-pressurised; the water table ranges from 0 to 28.0 m, more often from 1.5 to 10.0 m. The head reaches 36.2 m. Depending on the lithological composition of the water-bearing rocks and the degree of their fracturing, the flow rates of the springs vary from 0.08 to 3.0 l/s.

The water enrichment of the Paleocene and Eocene is approximately the same and mostly insignificant. The water enrichment slightly increases in areas where sandy formations predominate in the section (Vygoda-Pasichnyanska and Yamnenska formations).

The waters in the near-surface part are calcium hydrocarbonate, less often calcium-sodium hydrocarbonate, hydrocarbonate-sulfate with a salinity of 0.1-0.3 g/dm^3 . The total hardness varies from 0.86 to 5.06 mg-eq/dm^3 . The concentration of hydrogen ions (pH) is 5.0-10.0. Nitrogen-containing compounds are absent in most samples.

The aquifer is fed by infiltration of precipitation. The water regime is unstable. The practical value of groundwater is insignificant.

GWB in Upper Cretaceous sediments (UAM5330K100)

The water-bearing sediments are mainly sands and sandstones, with less frequent interlayers of marls, limestones, flints and opals. In the Dniester River valley, where the Cenomanian (Alba) deposits are represented by glauconite sands and sandstones and are exposed to the surface, the aquifer is the first to be found from the surface. Towards the south of the Dniester, the rocks sink to a depth and carbonate rock types begin to prevail. In the western part of the Chernivtsi region, Cenomanian (Albanian) sediments lie unconformably on fractured Jurassic formations. To the east of Chernivtsi city, the lower aquifer is clay shales of the Silurian period. The Cenomanian (Alba) deposits are overlain by Badenian sediments to the east of the Sadgora-Kitsman-Stavchany line, and by Turonian deposits to the west. The thickness of the aquifer is from 2.0 to 38.0 m, mainly 20.0-25.0 m. The depth varies from several metres to 1,300 metres within the Outer Trough Zone.

The aquifer is a pressure aquifer. The head height varies from 8.0 to 155.0 m. The water content is unstable and depends on the lithological composition of the water-bearing rocks and their exposure in space. The well flow rates range from 0.2 to 1.7 dm^3 /s at a water level of 4.0-36.0 m. Mostly, the flow rates are 0.7-1.0 dm^3 /s. Specific flow rates vary within 0.004-0.5 dm^3 /s. In the vicinity of Chernivtsi, water enrichment is increased: the flow rate is 2.0 dm^3 /s at a 2m drop (self-discharge) and 3.4 dm^3 /s at a 36.0m drop. The waters on the right bank of the Dniester are calcium bicarbonate with a salinity of 0.3-0.4 g/dm^3 , a total hardness of about 4.3 mg-eq/dm^3 and a pH of 7.5. In the rest of the territory, the water is predominantly calcium sulphate, calcium sulphate-hydrogen carbonate, changing to chloride with the submergence of the aquifer. The mineralisation varies from 0.5 to 8.3 g/dm3, mainly 1.0-1.5 g/dm^3 .

The water hardness ranges from 6.0 to 35.0 mg-eq/dm^3 , mainly 6.0-8.0 mg-eq/dm^3 , pH concentration is around 6.5. Content of microcomponents: Zr, Ti - traces; Ga, Cu, V - 0.001- 0.01; Ba - 0.1-1.0; Sr >1.0; Br -24.0; J - 7.0 mg/dm^3 .

The aquifer is recharged in some areas by the flow of water from the Baden sediments, and in river and gully valleys and in places close to the surface, by infiltration of precipitation. Within the area of water supply, the regime is unstable and the water table is subject to seasonal fluctuations.

The water is used by the local population. The aquifer is of practical importance for centralised water supply (eastern part of the region).

The water-bearing complex in the Lower-Upper Cretaceous sediments (Rakhiv, Cheremosh, Svydovets and Burkut formations) - (K_{1-2}) is distributed in the southwestern part, within the Inner Carpathian zone. The flysch rocks here are crumpled into narrow folds. The water-bearing rocks are represented by rhythmic alternation of siltstones, mudstones and sandstones, and less frequently limestones, conglomerates and gravels, with sandstones, limestones, conglomerates and gravels being of subordinate importance. The sediments are aquiferous in the near-surface part, where weathering cracks are intensively developed, i.e. to depths of 30.0-100.0 m.

The aquifer is located at depths ranging from 0 to 50 m and has been studied by sources. In the zones located near the day surface, mainly non-pressure water circulates, which is confirmed by numerous leaks from downward springs. With increasing water depths, especially within tectonic fault zones, water acquires pressure properties. Depending on the lithological composition of the water-bearing rocks, the degree of their fracture and gypsometric position, the flow rate of the springs varies from 0.01 to 1.0 dm^3 /s. By chemical composition, the waters are calcium bicarbonate with a mineralisation of 0.1-0.3 g/dm^3 , less often calcium sodium sulphate and calcium sulphate-hydrocarbonate with a mineralisation of 0.4 to 0.7 g/dm^3 . The total hardness ranges from 0.95 to 5.63 mg-eq/dm^3 , the concentration of hydrogen ions (pH) is 5.0-7.3. Waters containing hydrogen sulphide (from 2.5 to 33.2 mg/dm^3) and microcomponents are common: Br - 10.0, J - 5.8, Fe - 15 mg/dm^3 .

The aquifer is fed by infiltration of precipitation. The practical value of the aquifer complex is small, but given the lack of other aquifers, it is widely used by the population.

2 SIGNIFICANT ANTHROPOGENIC IMPACTS ON THE QUANTITATIVE AND QUALITATIVE STATUS OF SURFACE AND GROUNDWATER, INCLUDING POINT AND DIFFUSE SOURCES

2.1 Surface water

The sub-basins of the Prut and Siret rivers are located within two oblasts: Chernivtsi and Ivano-Frankivsk. The socio-economic structure of the sub-basins creates preconditions for the formation of anthropogenic pressure that affects surface water ecosystems. The main factors of anthropogenic pressure include:

- **Population (municipal return (waste) water)**. The Prut and Siret sub-basins have 8 administrative districts, 74 communities, 628 settlements, about 2.2 million people, and a population density of about 90 people/km^2 in Chernivtsi and Ivano-Frankivsk oblasts.
- **Enterprises in various sectors of the economy.** The main industrial sectors include: chemical and petrochemical industry, construction products, timber and wood products, light industry, machine building, electricity generation and distribution, food industry and agricultural processing.
- **Agriculture.** The agricultural sector within the sub-basins includes livestock farming, cereals, sugar beet, vegetables, fodder and industrial crops, horticulture, including irrigation, and fisheries.
- **Hydromorphological changes.** Cross structures on small and medium-sized rivers prevent the free passage of water, sediments and migration of aquatic life, and change the transit mode of rivers to an accumulation mode. Urbanisation, agriculture, sand and gravel extraction, etc. have a negative impact on river morphology.

The characterisation of anthropogenic load and its impact was carried out on the basis of chemical, physico-chemical and hydromorphological indicators that reflect the conditions of existence of the biotic component of aquatic ecosystems. Changes in these parameters under conditions of significant anthropogenic pressure may lead to the risk of not achieving the "good" ecological status of the SWB.

The assessment of anthropogenic pressure on the SWB was carried out in accordance with the "Methodological Recommendations for the Analysis of the Main Anthropogenic Pressures and Their Impacts on the State of Surface Waters" (hereinafter referred to as the Methodology), which were approved at the meeting of the Scientific and Technical Council of the SAWR on 20 April 2023, Minutes No. 2.

The methodological basis of the assessment was the DPSIR model developed by the European Environment Agency (EEA)[44] and adapted to the conditions of Ukraine. The determination of anthropogenic pressure was based on a sequential analysis of Drivers/Activities → Pressures → State → Impact → Response (Figure 94).

[44] CIS Guidance #3 Pressure and Impact Analysis, EU, 2003

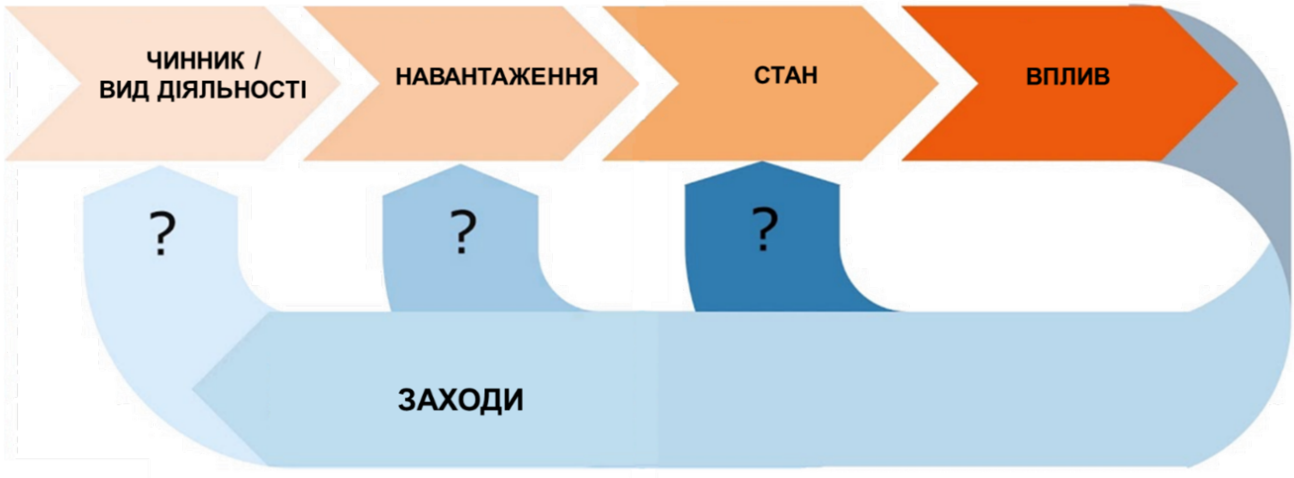


Figure 94. DPSIR conceptual model

The risk of not achieving a "good" environmental status of the SWB is determined on the basis of criteria for chemical, physico-chemical and hydromorphological indicators.

Criteria for chemical and physicochemical parameters:

- Disposal of untreated wastewater (point sources) - used for organic matter and nutrients;
- Wastewater fraction (point sources) - used for hazardous substances;
- Soil nitrogen balance (diffuse sources) - to determine the impact of crop production;
- Livestock index (diffuse sources) - to determine the impact of livestock.

Criteria for hydromorphological indicators:

- Disruption of the continuity of water flow and environments due to the presence of transverse artificial structures in the riverbed, disruption of the continuity of water flow and sediment movement and migration of fish and other aquatic life;
- Water intake;
- Flow control;
- Fluctuations in water levels below transverse artificial structures in the channel;
- Morphological changes that reflect a violation of the natural morphological characteristics of rivers.

By comparing the criteria with the thresholds, 3 risk categories are identified:

1. "without risk"
2. "possibly at risk"
3. "at risk"

The overall risk assessment for a SWB is determined by the worst value of any one criterion.

Assessing the risk of not achieving "good" ecological status

The risk of not achieving "good" environmental status/potential of an SWB is the risk, for each individual SWB , of not achieving the environmental objectives of the EU WFD by the end of the planning cycle, taking into account the current state of the SWB , the expected changes in the load on the SWB and the possible effects of government programmes and projects already implemented.

To assess the risk, an analysis of the anthropogenic load within the river basin area is carried out, based on chemical and physico-chemical components and hydromorphological changes.

The risk of failure to achieve environmental objectives is assessed separately from diffuse and point sources of pollution, as well as hydromorphological changes.

Assessment of the risk of failure to achieve environmental goals from point sources of pollution

Based on the results of the assessment of anthropogenic loads from point sources of pollution and their impact on the status of the sub-basins' SWB, the risk of not achieving a "good" ecological status/potential was established (Fig. 95) for

- 272 SWB - "no risk";
- 14 SWB - "possibly at risk";
- 12 SWB - "at risk".

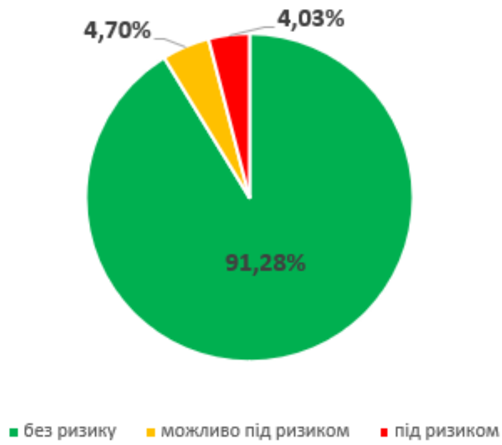


Figure 95. Risk assessment of failure to achieve "good" ecological status/potential based on the results of the assessment of anthropogenic pressures from point sources

Assessment of the risk of failure to achieve environmental goals from diffuse sources of pollution

Based on the results of the assessment of anthropogenic loads from diffuse sources of pollution and their impact on the sub-basin's SWB , the risk of failure to achieve "good" ecological status/potential (Fig. 96) was identified for

- 208 SWB - "no risk";
- 51 SWB - "possibly at risk";
- 39 SWB - "at risk".

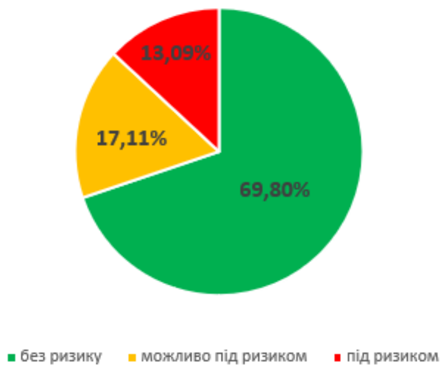


Figure 96. Risk assessment of failure to achieve "good" ecological status/potential based on the results of the assessment of anthropogenic pressures from diffuse sources

Assessing the risk of not achieving environmental goals: hydromorphological changes[45]

Based on the results of the hydromorphological changes assessment, it was found that:

- 249 SWB - "no risk";
- 49 SWB - "at risk".

[45] *The risk of failure to achieve environmental objectives based on hydromorphological changes was not assessed for the SSSI.*

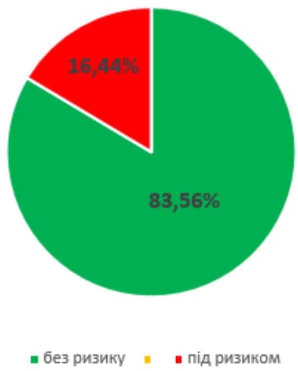


Figure 97. Risk assessment of failure to achieve 'good' ecological status/potential based on anthropogenic pressure assessment: hydromorphological changes

Generalised risk assessment of failure to achieve 'good' environmental status/potential

The risk of not achieving a "good" environmental status/potential has been assessed as follows:

- 160 SWB - "no risk";
- 42 SWB - "possibly at risk";
- 96 SWB are "at risk".

Figure 98. Assessment of the risk of not achieving "good" environmental status/potential of SWB

Impact of military operations on the state of SWB

No cases of military impacts were recorded in the Prut and Siret sub-basins.

2.1.1 Organic pollution

The main cause of organic pollution is insufficient or no wastewater treatment. Organic pollution can lead to significant changes in the oxygen balance of surface waters and, as a result, to changes in the species composition of aquatic life or even their death. The input of organic matter with wastewater is usually assessed by the indirect indicators of BOD_5 and COD.

Diffuse sources

Organic pollution from diffuse sources is mainly caused by rural households that are not connected to sewerage networks. Such individual households dispose of wastewater by accumulating it in lagoons, from which it is filtered into the nearest groundwater horizons.

The load from the rural population was assessed using the calculation method. To do this, we used the coefficients of organic matter intake based on the life activity of 1 person. In European countries, the generation of load from the population is calculated using the following indicators: BOD_5 - 60 g/day/person, COD - 110 g/day/person.

The assessment revealed that in just one year, distributed sources in the Prut and Siret sub-basins contribute organic matter: 44 tonnes of BOD_5 and 81 tonnes of COD, which is significantly higher than the total input from point sources. The reason for this is the low level of population connection to sewage treatment plants. In rural settlements and small towns, wastewater is discharged into lagoons built in the ground, from where pollutants easily enter groundwater and are transported to surface waters.

Rivers have the greatest impact of diffuse organic pollution in the sub-basins: Prut, Peremyska, Lyubizhna, Oslava, Bila Oslava, Krasna, Tovmachyk, Tovmach, Pistynka, Brusturka, Liuchka, Akra, Rybnitsa, Volytsia.

Point sources

Housing and communal services. The main cause of organic pollution is insufficient or no wastewater treatment. Organic pollution can lead to significant changes in the oxygen balance of surface waters and, as a result, to changes in the species composition of aquatic organisms or even their death. The input of organic matter with wastewater is usually assessed by the indirect indicators of BOD_5 and COD.

In the sub-basins of the Prut and Siret rivers, city and district centres are connected to municipal wastewater treatment plants. Wastewater is collected in rural and urban settlements in individual septic tanks or cesspools, which are one of the potential sources of contamination of groundwater aquifers in the Prut and Siret sub-basins.

In 2020, organic pollution from municipal point sources amounted to 0.329 thousand tonnes by BOD_5 and 0.629 thousand tonnes by COD.

The main polluters of organic matter in the Prut and Siret sub-basins are municipal enterprises: KP "Chernivtsivvodokanal" (Chernivtsi), Municipal Company "Kosivmiskvodoservis" in Kosiv. Kosiv, Verkhovyna VKP in Verkhovyna, Zastavna, Hlyboka, Storozhynets production departments of housing and communal services, and Novoselytsia City Heating Network.

The dominant part of organic pollution is generated by the city of Chernivtsi with a population of about 260 thousand people. Wastewater from this city contains 91% of organic substances in terms of BOD_5 and 60% in terms of COD.

Industry. Organic pollution of the WBF of the Prut and Siret sub-basins is mainly caused by woodworking and food (meat processing) industries. Organic pollution from industrial point sources amounts to 0.002 thousand tonnes in terms of BOD_5 and 0.009 thousand tonnes in terms of COD.

Agriculture. Pollution by organic matter from agricultural point sources is insignificant and in 2020 amounted to 0.001 thousand tonnes by COD. This is due to the predominant discharge of normatively clean water by fish farms, which accounts for 99% of the total wastewater from agricultural enterprises.

2.1.2 Pollution by nutrients

Nutrient inputs to the surface waters of the Prut and Siret sub-basins are the driving force behind eutrophication, which leads to an increase in primary production and accumulation of organic matter. The enrichment of water with nutrients, which stimulates the development of autotrophic aquatic organisms, resulting in an undesirable imbalance of organisms in the aquatic environment and a decrease in water quality.

Phosphorus and nitrogen compounds play a dominant role among biogenic substances. Phosphorus plays a greater role, while nitrogen is much less likely to limit the development of autotrophic organisms, due to the ability of many bacteria and cyanobacteria to fix it.

Nutrients can come from both point and diffuse sources. The main sources are untreated wastewater from municipal and industrial sectors.

In 2020, all business entities discharged to the surface waters of the Prut and Siret:

- ammonium nitrogen - 0.077 thousand tonnes;
- Nitrate nitrogen - 0.622 thousand tonnes
- Nitric nitrogen - 0.007 thousand tonnes;
- orthophosphates - 0.032 thousand tonnes.

The widespread use of phosphate-containing detergents and laundry detergents with insufficient wastewater treatment increases nutrient pollution. Ukraine has established phosphate content limits for detergents in line with European Parliament regulations. The efficiency of phosphorus removal from wastewater at most wastewater treatment plants in Ukraine does not exceed 20%, but due to outdated equipment, the efficiency of phosphorus removal by treatment plants often does not reach the design values.

Diffuse sources

Diffuse sources are defined as the washing away of substances from the surface of the catchment and the soil layer of the soaking zone. This type of pollution is the most difficult to assess, as it cannot be directly measured, but must be estimated through probable pathways. Diffuse runoff can be caused by both natural factors (precipitation, geological structure and soil composition) and anthropogenic factors, which in this case act as indirect factors (degree of ploughing, crop yields).

Land cover type is the dominant factor in the anthropogenic load from diffuse sources.

In accordance with the physical and geographical division, there are clear differences in land cover types, which significantly affect the emission of elements. In general, in the direction from the source to the mouth of the Prut and Siret rivers, there is a decrease in the degree of forest cover, while the share of agricultural land, which provides the main supply of nutrients, is increasing. The disturbance of soil cover due to ploughing leads to significant losses of nutrients due to deflation and water runoff.

There is no intensive agricultural production in the upper reaches of the Prut and Siret rivers, in a mountainous area with low temperatures and high rainfall. Meat and dairy farming and sheep breeding are developed here.

Another important indicator of the anthropogenic load from diffuse sources of pollution is the intensity of farming, which is manifested primarily in the amount of fertiliser applied. Nitrogen fertilisers dominate in the composition of applied fertilisers.

Point sources

Housing and communal services. Pollution by nutrients from point sources is mainly caused by the discharge of insufficiently treated or untreated municipal wastewater.

Within the Prut and Siret river sub-basins, wastewater from municipal enterprises was received in 2020:

- 0.075 thousand tonnes of ammonium nitrogen;
- 0.615 thousand tonnes of nitrate nitrogen compounds;
- 0.007 thousand tonnes of nitrogen in nitrite form;
- 0.031 thousand tonnes of phosphorus orthophosphate.

The widespread use of phosphorus-containing laundry detergents and cleaning agents with insufficient wastewater treatment increases nutrient pollution. The efficiency of phosphorus removal from wastewater at most wastewater treatment plants in Ukraine does not exceed 20%, but due to outdated equipment, the efficiency of phosphorus removal by treatment plants often does not reach design values.

2.1.3 Pollution by hazardous substances

Hazardous substances are represented by priority pollutants subject to control in accordance with the Order of the Ministry of Ecology and Natural Resources of 06.02.2017 No. 45 "On Approval of the List of Pollutants for Determining the Chemical State of Surface and Groundwater Bodies and the Ecological Potential of an Artificial or Significantly Modified Surface Water Bodies" (hereinafter - the Order) and the Order of the Ministry of Ecology and Natural Resources of 14.01.2019 No. 5 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified Surface Water Body".

The available information on the discharge of priority pollutants in the Prut and Siret sub-basins is currently quite limited. According to the state water use accounting, reporting on water use in the form No. 2TP-vodkhoz (annual), approved by the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 78 of 16.03.2015, for the period 2016-2021, no business entity in the Prut and Siret sub-basins indicated information on the presence of pollutants in the discharge of return (waste) water included in the list of priority pollutants by the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 45.

According to the monitoring of the content of priority and other hazardous substances in surface waters and bottom sediments of the rivers of the Prut and Siret sub-basins, the presence of organic substances, including priority substances such as pesticides, polyaromatic hydrocarbons, halogenated hydrocarbons, and heavy metals (cadmium, lead, nickel) was identified.

The monitoring results showed that the concentration of cadmium, lead and nickel exceeded the environmental quality standard for priority substances in water for the rivers of the Prut and Siret sub-basins.

In accordance with the Resolution of the CMU of 19.09.2018 No. 758 "On Approval of the Procedure for State Water Monitoring", the Prut and Siret RBD Laboratory took monthly water samples in 2019-2020 to determine chemical and physicochemical parameters at 15 (2019) and 19 (2020) monitoring points of surface water bodies from which water is taken to meet the drinking and household needs of the population; bodies at risk based on anthropogenic impacts.) observation points of surface water bodies from which water is abstracted to meet the drinking and household needs of the population; bodies at risk based on anthropogenic impacts on the qualitative and quantitative state and bodies of surface water in trans-boundary areas identified in accordance with interstate agreements on water management in border waters between the Government of Ukraine and the Governments of Romania and Moldova.

Water samples from surface water bodies were taken in compliance with the requirements of regulatory documents (DSTU ISO 6468-2002, DSTU ISO 10301:2004, DSTU ISO 5667-1:2009, DSTU ISO 5667-2:2009, DSTU ISO 5667-6:2009) and transferred to the water monitoring laboratory of the Western Region of the Dniester BWR to determine the priority pollutants, in accordance with the Order.

Based on the results of the monitoring of priority pollutants in the Prut and Siret sub-basins, 8 hazardous specific pollutants were identified (5 synthetic pollutants and 3 non-synthetic pollutants (heavy metals: cadmium, lead, nickel). The list of hazardous substances is given in Table 76.

Table 76. Specific pollutants (synthetic pollutants) for the Prut and Siret sub-basins

Chemical registration number	Indicators for determining the environmental status of the SWB	Average annual concentration, μg/dm^3	Maximum concentration, μg/dm^3
206-44-0	Fluoranthene μg/dm^3	0,046	0,35
205-99-2	Benzo (b) fluoranthene μg/dm^3	-	0,053
207-08-9	Benzo(k) fluoranthene μg/dm^3	-	0,045
74070-46-5	Aklonifene mcg/dm^3	-	0,14
67-66-3	Trichloromethane (chloroform) μg/dm^3	3,24	-
7440-43-9	Cadmium μg/dm^3	0,52	2,26
7439-92-1	Lead μg/dm^3	1,35	-
7440-02-0	Nickel μg/dm^3	6,04	41,14

The preliminary assessment of synthetic and non-synthetic specific substances will be based on the assessment of compliance with the accepted environmental quality standards and will be reported as an annual average and as a maximum permissible concentration. Failure to comply with an environmental quality standard will be established if the arithmetic mean of the measured concentrations is higher than the value of the relevant environmental quality standard. When assessing the values of non-synthetic specific substances, background concentrations of heavy metals for each SWB in the Prut and Siret sub-basins should be taken into account.

Control over the content of hazardous pollutants in the discharges of waste water from business entities mainly consists of determining the content of only the parameters stipulated in the draft maximum permissible discharges of water users (mainly pollution with organic and nutrients). The actual presence of hazardous substances, volumes and values need to be further verified, confirmed by research monitoring data and screening results of samples of wastewater discharged into the SWB of the Prut and Siret sub-basins.

Sources of hazardous pollutants to the Prut and Siret sub-basins may include industrial sources, livestock and food production, industrial and municipal waste.

2.1.4 Accidental pollution and impact of contaminated areas (landfills, sites, zones, etc.)

In the Prut and Siret sub-basins, "hazardous" industrial activities are underdeveloped, but there are potential sources of accidental pollution both through wastewater discharges and runoff from sites where industrial waste is stored.

The mechanism for preventing and minimising the risk of accidental pollution is established in the EU member states through the implementation of the Seveso-III Directive (Directive 2012/18/EU), the Industrial Waste from Mining Directive (2006/21/EC)10 and the Industrial Emissions Directive-IED (2010/75/EU)11 and for non-EU countries through the implementation of the recommendations of the UNECE Convention on the Transboundary Effects of Industrial Accidents.

The main provisions of the Seveso III Directive (Directive 2012/18/EU) were transposed into Ukrainian legislation in 2021 by amending the Civil Protection Code of Ukraine, the Law of Ukraine "On High Risk Facilities" (the Law) and a number of other laws.

Thus, in accordance with Article 9 of the Law, a business entity identifies high-risk facilities in accordance with the number of threshold masses of hazardous substances. Based on the results of the identification of a high-risk facility, it is assigned a class 1, 2 or 3.

Article 9-1 of the Law provides for the definition and approval of an accident prevention policy for a Class 1 or 2 hazardous facility. According to Article 10 of the Law, for a Class 1 or Class 2 hazardous facility, the operator shall develop and, in cases specified by the Law, review a report on safety measures at the hazardous facility.

Pursuant to Article 11 of the Law, in order to organise the response to accidents at high-risk facilities, operators develop and approve plans for localisation and elimination of accidents and their consequences for each high-risk facility they operate. The plan for localisation and elimination of accidents and their consequences shall be reviewed at least every three years. The procedure for action in the event of an accident at a high-risk facility is set out in Article 14 of the Law. Pursuant to this article, the Cabinet of Ministers of Ukraine approved the Procedure for Investigation of Accidents at High Risk Facilities by Resolution No. 965 dated 8 September 2023.

Article 15 of the Law stipulates that the operator shall annually submit to the competent authority, local executive authorities, and local self-government bodies information on high-risk facilities owned or operated by the operator by 30 December. At the request of a legal entity or individual or their representatives to obtain information about a hazard that has arisen at high-risk facilities and poses a threat to people and the environment, the operator must submit such information within 48 hours of receiving the request.

Pursuant to Article 16 of the Law, damage caused to individuals or legal entities as a result of an accident at a high-risk facility shall be compensated by the operator who owns the high-risk facility on the relevant legal basis, unless he or she proves that the damage was caused by force majeure or intent of the victim.

At the level of the Prut and Siret river sub-basins, a list of potential accident risk sites has been developed, which includes operating industrial facilities with a high risk of accidental pollution due to the nature of chemicals stored or used at industrial facilities, contaminated sites, including landfills and dumps located in areas of possible flooding. This register includes facilities that pose risks of accidental pollution, primarily, the CWS and sites where industrial waste is stored, sludge ponds.

Recent studies conducted in the Prut and Siret sub-basins have revealed excessive levels of polyaromatic hydrocarbons, pesticides, halogenated hydrocarbons and heavy metals such as cadmium, lead and nickel, which confirms a significant anthropogenic load on the SWB of the Prut and Siret sub-basins.

The Ministry of Environmental Protection and Natural Resources of Ukraine has launched an electronic service that also contains the Register of Waste Disposal Sites and the List of Facilities that are the largest polluters of the environment in terms of discharging pollutants into water bodies.

The register of business entities with risks of accidental pollution of the Prut and Siret sub-basins as of 01.01.2023 is presented in Table 77.

Table 77. Register of facilities in the sub-basins of the Prut and Siret rivers that are at risk of accidental pollution

№	Object name
1	Communal Unitary Enterprise "Kommunalnyk", Vyzhnytsia
2	Hlyboka Production Department of Housing and Communal Services, Hlyboka village
3	Kitsman Production Department of Housing and Communal Services, Kitsman
4	Chernivtsi Vodokanal, Chernivtsi city
5	Storozhynets Utility Company, Storozhynets
6	Municipal enterprise Novoselytsia City Heating Network, Novoselytsia

№	Object name
7	Verkhovyna Water Supply and Sewerage Enterprise, Verkhovyna village
8	Kolomyiavodokanal, Kolomyia city
9	Hvizdetsky Combine of Utilities, Hvizdets village
10	Zabolotivskyi KKP, Zabolotiv village
11	Housing and communal services company Technoservice, Pyadyky village
12	Municipal enterprise "Selyshche KP", Vorokhta village
13	Municipal enterprise "Village water worker", Turka village

According to the register of waste disposal sites (hereinafter referred to as SWB), there are 23 certified WDS in the Prut and Siret sub-basins (10 in Chernivtsi Oblast and 13 in Ivano-Frankivsk Oblast):

5 - solid waste disposal sites;
1 - wood waste (sawdust);
1 - oil and sludge collector;
7 - landfills;
5 - manure storage facilities;
1 - waste industrial oils;
1 - sludge from treated wastewater;
1 - storage of recyclable waste;
1 - residues of oil and fat refining.

One of the most acute environmental problems in Chernivtsi region (as well as in Ukraine as a whole) is the issue of waste (its generation, accumulation, utilisation, disposal, removal to unorganised storage sites, etc.) The main way to manage solid waste in Chernivtsi Oblast is to dispose of it at landfills/dumpsites. The majority of solid waste is disposed of at 1 landfill in Chernivtsi and 282 organised landfills with a total area of 260 hectares. Today, the situation has become particularly acute: landfills in the region are a big problem, and their number is growing every year. Landfills are one of the main sources of environmental pollution. Tonnes of garbage are dumped on the sides of roads and forests. The region has separate household waste collection in 39 settlements. 17 enterprises in the region have 50 waste incineration facilities and 3 enterprises have 4 waste disposal and recycling facilities with a total capacity of 28.7 thousand tonnes per year and 2.3 thousand tonnes per year, respectively.

There are 15 permanent solid waste landfills in Ivano-Frankivsk Oblast, of which 8 have been certified. The largest landfills in the Prut sub-basin are located near Kolomyia and Nadvirna (village of Pniv). Separate solid waste collection has been partially introduced in 57 settlements and 6 cities of regional significance.

Given the current situation, solving the problem of solid waste management should be included in the programme of measures to achieve good environmental condition of the Municipal Railway.

2.1.5 Hydromorphological changes

Hydromorphological changes are one of the significant water management issue (SWMI) that impede the achievement of environmental objectives set out in the RBMP. Hydromorphological changes as a result of economic activity affect the habitats of aquatic communities. The presence of hydromorphological changes leads to the deterioration of the ecological status of many SWBs in the Prut and Siret sub-basins.

The main activities that have led to hydromorphological changes are urbanisation, flood protection, channelisation and regulation of river flow (ponds and reservoirs).

Disruption of the free flow of rivers

Dams, ramps, weirs and other structures that cross the riverbed from one bank to the other disrupt the free flow of the river and restrict the migration of fish and other living organisms. The criterion for classifying a structure as one that disrupts flow and migration is its height of more than 0.3 m for rivers dominated by carp fish and 0.8 m for rivers dominated by salmonids.

In the Prut and Siret sub-basins, dams and other artificial cross-basin structures located in the riverbeds were built primarily to accumulate water for use in water supply for households and industry. Some dams were built as part of hydropower plants (mini-hydroelectric power plants).

A total of 25 SWBs have been identified where there is a violation of the continuity of water flow and environment, of which 6 SWBs are ponds and reservoirs located on the Vitsa, Gukiv, Stalinesti, Glodos, Cherlena and Shcherbintsy rivers, including two reservoirs with a volume of more than 1 million m^3 , namely:

- Cherlena reservoir with a volume of 3.16 million m^3, the maximum head at the dam is 10 m, located on the territory of the Vanchykovets village council in Chernivtsi region;
- Reservoir on the Shcherbintsy River with a volume of 1.37 million m^3, maximum head at the dam is 9 m, located outside the village of Kostychany in the territory of Kostychany village council, Chernivtsi region (distance from the river mouth to the dam is 4 km).

Unfortunately, most of the transverse structures on rivers are not equipped with fish passage, which limits the migration of fish species. In addition, dams restrict the free migration of some aquatic organisms and change the flow regime and, to a large extent, the sediment that is rolled along the bottom. Fine sediment fractions accumulate upstream of the dams, while downstream they are washed out and eroded.

Disruption of the hydraulic connection between river channels and their floodplains.

The hydraulic connection between the riverbed and the floodplain plays an important role in the functioning of aquatic ecosystems, providing water for important habitats for fish and aquatic life, and has a positive impact on the condition of surface and groundwater.

The assessment of this type of hydromorphological changes is included in the hydromorphological protocol for assessing the SWB used by the SES in the course of state monitoring of surface waters (indicators No. 10: "Interaction between the channel and the floodplain: 10a - Possibility of floodplain inundation, 10b - Limiting factor for the development of horizontal deformations of the channel"). Currently, there is no monitoring data for this indicator within the Prut and Siret sub-basins.

Hydrological changes.

Hydrological changes affect water bodies through water abstraction and fluctuations in water levels below dams, and as a result, lead to changes in the regime and distribution of river flows. Discharges, water abstraction and artificial periodic fluctuations in water levels (hydroelectricity) are key pressures that require compensatory measures to be implemented on a river basin-wide scale.

Decreased natural flows in the context of global warming and natural water shortages, reduced flow velocities and the formation of stagnant zones contribute to eutrophication processes, and, as a result, lead to a deterioration in biodiversity and degradation of aquatic ecosystems.

Criteria for assessing hydrological changes that lead to the failure to achieve good ecological potential: water withdrawals (small and medium-sized rivers - water withdrawals exceeding 75% of the discharge; large and very large rivers - water withdrawals exceeding 90% of the discharge), and water level fluctuations exceeding 0.5 m per day for most of the year.

No hydrological changes have been observed in the Prut and Siret sub-basins.

Morphological changes.

The sub-basins of the Prut and Siret rivers are characterised by a high natural intensity of channel reformation. Due to meandering (channel tortuosity) and water erosion, river banks are constantly being eroded and destroyed. These phenomena are observed on almost all high banks of concave bends. The banks of convex bends are accumulative channel forms. In some sections of the river, there is a tendency for meanders to break through, resulting in the formation of a new channel. As a rule, high river banks are subject to intensive erosion, with deformations accompanied by the collapse of large masses of soil from bank ledges into the river and the fall of growing trees and bushes that cover a large part of the coastal areas. Destruction of banks in large areas or natural channel straightening (breakthroughs) can cause negative environmental consequences, such as stagnation, water level subsidence, etc., and valuable coastal land is lost as a result of bank erosion.

However, the main factors that adversely affect the natural morphology of the riverbeds, banks and floodplains of the Prut and Siret sub-basins are urbanisation, flood protection and agriculture. As a result of these activities, the rivers in certain areas are straightened, banked, the floodplain is ploughed up almost to the channel, and its natural vegetation is changed.

The criteria for classifying SWB as "HMWB" due to hydromorphological changes are:

- disruption of the continuity of water flow and environments (transverse artificial structures in the riverbed, disruption of the continuity of water flow and sediment movement and migration of fish and other aquatic life);
- water withdrawals (small and medium-sized rivers - water withdrawals exceeding 75% of the supply; large and very large rivers - water withdrawals exceeding 90% of the supply);
- water accumulation (ponds with a ponding area of more than 1 km or several ponds with a ponding area of less than 1 km, but their total length is more than 30% of the length of the SWB, as well as reservoirs with a volume of more than 1 million m^3);
- fluctuations in water levels below the dam (water level fluctuations exceeding 0.5 m per day for most of the year);
- disturbance of natural morphological characteristics of rivers (hydromorphological class below the third according to the monitoring results, or straightening of more than 70% of the length of the main river channel in the absence of monitoring data).

In the mountainous part of the Prut sub-basin, some types of SWB, primarily small rivers in the midlands, have preserved virtually undisturbed or minimally disturbed areas. Unfortunately, there are very few undisturbed areas in the middle rivers, especially those located at altitudes below 500 m above sea level.

2.2 Groundwater

2.2.1 Pollution

The Prut and Siret sub-basins do not have large urban agglomerations or large industrial facilities associated with the extraction and processing of significant amounts of natural resources. The largest cities by population: Chernivtsi and Kolomyia.

The anthropogenic pressure on the GWB is associated with agricultural activities of the population: intensive farming and gardening with intensive use of fertilisers, pesticides and herbicides prevails. Cattle are raised mainly in stationary conditions.

The mountains are dominated by pasture farming and forestry.

Among the hydrotechnical types on the plain, amelioration and fisheries are very common.

Research carried out in the early 1990s to study the elements of the groundwater regime showed that land reclamation measures disrupt the natural hydraulic and hydrochemical connection between aquifers and cause deterioration in the quality of groundwater and surface water.

When the main drainage channels were laid, the surface layer of low-permeability rocks was completely or partially destroyed, which led to a deterioration in the protection of the GWB throughout the plain. Negative processes of groundwater quality deterioration are observed during flood filling of the canals and in the post-flood filtration period. Within the reclamation systems, the following increases intensity of pollution of surface and groundwater as a result of agricultural production (mineral and organic fertilisers, pesticides, etc.). The filtration of flood water enriched with oxygen from canals leads to an increase in oxidised iron in the water and its accumulation in soils. In addition, during the flood period, an increase in groundwater mineralisation and soil salinity was observed in a number of areas.

At present, a significant part of the reclamation network is out of order - the canals are silted up, overgrown with various vegetation, and the locks are out of order.

The mining and industrial type of anthropogenic load is very common in the development of GWB. It includes water intakes of fresh and mineral groundwater, open and underground mining, and oil and gas exploration sites.

An important place among the types and objects of technogenic (anthropogenic) load that negatively affects the GWB is occupied by domestic pollution due to the lack of centralised sewage systems with treatment and discharge of domestic wastewater in rural areas and partially in cities. There are solid waste dumps near almost every settlement. There is no industrial-scale sorting and recycling of this waste.

A detailed assessment of the current state of the anthropogenic load on the GWB is required.

2.2.2 Volumes / reserves

Estimated groundwater resources (EGWR) are the volumes of groundwater estimated on the basis of geological surveys that characterise the potential for their extraction from the subsoil in the respective territory. The estimated groundwater resources in the Prut and Siret sub-basins amount to 590.54 thousand m^3/day (260.86 thousand m3/day in Ivano-Frankivsk region and 329.67 thousand m^3/day in Chernivtsi region), and their distribution over the territory is uneven, which is explained by differences in geological, structural and physical geographical conditions. The exploration of forecasted groundwater resources in Ukraine is insignificant - 26%, for Ivano-Frankivsk region this figure is 38%, for Chernivtsi region - 43%. It is necessary to conduct a detailed assessment of the current state of anthropogenic pressure on the GWB.

Out of the total number of the EORPs, operational groundwater reserves in the amount of 240.89 thousand m3/day have been explored and approved (99.13 thousand m3/day in Ivano-Frankivsk region and 141.76 thousand m3/day in Chernivtsi region). Operational groundwater reserves are calculated based on the data of geological study of groundwater that can be extracted from the subsoil by rational technical and economic indicators of water intake in a given extraction mode, provided that the quality characteristics of groundwater meet the requirements of their intended use and the permissible degree of environmental impact during the estimated period of water use.

The development of projected groundwater resources is most intensive in densely populated areas with high economic potential. Most groundwater is withdrawn in areas with high population density and developed industry.

According to statistical reporting No. 2TP-Vodhoz (annual), the share of groundwater abstraction from natural bodies was 5.618 million m^3/year (25%) in 2020. Accordingly, the water supply in the Prut and Siret sub-basins is largely dependent on surface water.

Table 80. Extraction of drinking and industrial groundwater and its use in the Prut and Siret sub-basins

Year	Production, million m^3 /year	Use, million m^3/year					Groundwater discharge without use, million m^3/year
		Total	Household and drinking water	Production and technical	Agricultural	Irrigation	
Chernivtsi region							
2020	5,056	2,075	0,385	1,526	0,164	-	-
Ivano-Frankivsk region							
2020	0,562	0,492	0,122	0,354	0,017	-	-
	5,618	**2,567**	**0,507**	**1,88**	**0,181**	**-**	**-**

State accounting is carried out for the extraction and use of groundwater from explored, preliminary explored deposits and subsoil areas with unevaluated reserves within the Prut and Siret sub-basins. Groundwater extraction is subject to mandatory accounting based on the statistical reporting data of the SAWR No. 2TP-Vodkhoz (annual).

The current water supply within the Prut and Siret sub-basins is based on a network of centralised and dispersed water intakes and a dense network of individual production wells located in large settlements and rural areas.

2.2.3 The impact of military operations on the state of GWB

The impact of military operations in the Sireta and Prut sub-basins has not been recorded and is not expected.

2.2.4 Assessment of the risk of not achieving good GWB status

Risk assessment of failure to achieve good quality (chemical) status

As for non-pressure GWB, their quality condition within settlements is most likely poor (nitrate pollution). There is no data on the chemical composition of non-pressure GWB outside of settlements, but a significant anthropogenic load from diffuse sources of pollution within agricultural landscapes and their natural vulnerability and relative protection allows us to conclude that they are at risk of not achieving good quality (chemical) status. Within agro-landscapes, this risk is caused by the possibility of nitrates and pesticides entering the water. Protected from contamination, the pressure GWB are not at risk of failing to achieve good quality (chemical) status (Table 2.2.4).

Figure 99. Assessment of the risk of not achieving good chemical status of the GWB

Assessing the risk of not achieving good quantitative status

There is no negative impact from anthropogenic groundwater abstraction for the pressure and non-pressure GWB identified in the Siret and Prut sub-basins. Taking into account the reduction of groundwater extraction, there is no risk of failure to achieve good quantitative status for both pressurised and non-pressurised GWB, according to available data.

Table 2.2.4: Risk assessment of failure to achieve good qualitative (chemical) and quantitative status

GWB code	GWB and GWB groups	Quality risk		Quantitative risk	
		without risk at risk	at risk: the reason	without risk/ at risk	at risk: the reason
Siret River sub-basin					
UAM5330Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	at risk	Nitrogen pollution in agricultural landscapes	No risk	
UAM5330N100	GWB in Miocene sediments	No risk		No risk	
UAM533PG100	GWB in Paleocene-Eocene sediments	No risk		No risk	
UAM5330K100	GWB in Upper Cretaceous sediments	No risk		No risk	
Prut River sub-basin					
UAM5320Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	at risk	Nitrogen pollution in agricultural landscapes	No risk	
UAM5320N100	GWB in Miocene sediments	No risk		No risk	
UAM532PG100	GWB in Paleocene-Eocene sediments	No risk		No risk	
UAM5320K100	GWB in Upper Cretaceous sediments	No risk		No risk	

Other significant anthropogenic impacts

Climate change

One of the main manifestations of regional climate change against the backdrop of global warming is a significant increase in air temperature, changes in the thermal regime and precipitation patterns, an increase in the number of dangerous meteorological events and extreme weather conditions, and the damage they cause to various sectors of the economy and the population. These trends are typical for Ukraine in general and for the Prut and Siret sub-basins in particular. The greatest changes have been observed over the past thirty years, which have been the warmest for the period of instrumental weather observations.

The rise in air temperature is observed not only near the Earth's surface but also in the lower troposphere, accompanied by an increase in tropospheric moisture content, and causes an increase in atmospheric instability and convection intensity. Such changes have led to an increase in the frequency and intensity of convective weather phenomena: thunderstorms, showers, hail, squalls, and an increase in the maximum intensity of precipitation and its storm component.

Representative Concentration Pathways (RCPs) of greenhouse gases have different trajectories of emissions and concentrations in the atmosphere, emissions of pollutants, and specifics of land use in the 21st century (in particular, changes in the area of forested areas) and their corresponding consequences. Two RCP scenarios were selected for this study: "soft" scenario 2.6, which, in accordance with the Paris Agreement, provides for a reduction in greenhouse gas emissions, and "hard" scenario 8.5, which does not take into account any adaptation or mitigation measures. All scenarios demonstrate a steady increase in average annual temperature throughout the 21st century in all regions. By the end of the century, the average annual temperature averaged across regions under different scenarios is expected to increase by 2-5°C. Global greenhouse gas emissions scenarios (Sources: USGCRP/GlobalChange.gov, UHMI 2014) The study calculated simulated changes in the average annual river flow (flow rate) of the RBD of Ukraine for two future periods (2041-2070 and 2071-2100) under RCP2.6 and RCP8.5 scenarios

The water-heat balance of river basins is highly sensitive to climate change. Rising air temperatures and changes in precipitation patterns affect not only the hydrological regime of rivers, but also the overall water resources. Climate change is increasing the frequency of floods and droughts, which makes agriculture, energy, transport and the social sector vulnerable, as they depend on water resources.

The average annual runoff is expected to fluctuate between 2041 and 2070. Increased water flows in the rivers of the Carpathian region will result in catastrophic floods on mountain rivers and may cause significant economic losses in all sectors of the economy and in territorial communities in the Prut and Siret sub-basins.

Pollution of water bodies with solid household waste, including plastic

The pollution of water bodies by solid waste, primarily plastic, is one of the pressures that leads to the deterioration of the ecological and chemical state of surface waters. This problem is not specific to a particular river basin, but is relevant for the whole country and reflects the problem of waste management at both national and local levels.

Gaps in national legislation, an inefficient system of waste collection, transport and disposal, and a low culture of waste management are manifested in a large number of unauthorised and spontaneous landfills, including on river banks. Some of the waste ends up directly in rivers and water bodies, which is not only an aesthetic problem, but also leads to chemical pollution of water, poisoning of living organisms and deterioration of their living conditions.

Over time, plastic breaks down and turns into microplastics, which get into living aquatic organisms, contributing to the accumulation of toxins.

Microplastics are less than 5 mm in size and fall into two groups: primary and secondary. Primary microplastics are part of cosmetic products (toothpastes, scrubs, shower gels, etc.), industrial cleaning products, and are also formed as a result of wear and tear on car tyres and when washing synthetic products.

Recycled plastic is produced by shredding large plastic waste such as bottles, disposable tableware, packaging, etc.

No special studies have been conducted on the amount of waste on the banks and directly in the rivers and water bodies in the Prut and Siret sub-basins, nor on their direct impact on the ecological and chemical state of water bodies.

Given the current situation, addressing the problem of MSW management should be included in the programme of measures to achieve good environmental status of the Prut and Siret sub-basins.

Invasive species

Invasions of alien species outside their "native" habitats are global in nature. The naturalisation and further spread of invaders can cause irreversible environmental damage and undesirable economic and social consequences.

Currently, biological invasions are considered to be biological pollution, but unlike most pollutants that can decompose in natural ecosystems through self-purification processes and whose content is controlled by humans, alien organisms that have successfully invaded begin to multiply uncontrollably and spread rapidly in the environment. This phenomenon can have unpredictable and irreversible consequences.

In addition, the introduction of alien species leads to irreparable losses of biodiversity, both through direct destruction of native species by predators, food and spatial competition, and as a result of displacement of native species, changes in their habitats and hybridisation. The emergence of any alien species is an indicator and, at the same time, a cause of the deterioration of the ecological state of a water body. All this causes a particular danger of invasions and determines the specifics of control measures in terms of the risks of not achieving a "good" ecological status of SWB where the process of invasion of adventive species is carried out.

The issue of invasion of alien species is legally reflected in the Law of Ukraine "On the Basic Principles (Strategy) of the State Environmental Policy of Ukraine for the Period up to 2030", the Decree of the President of Ukraine of 17 December 2021 No. 668, which put into effect the decision of the National Security and Defence Council of Ukraine of 15 October 2021 "On the Strategy of Biosafety and Biological Protection", the Action Plan for the Implementation of the Strategy of Biosafety and Biological Protection for 2022-2025, approved by the Cabinet of Ministers of Ukraine on 07 July 2022 No. 57Z, and the Convention on Biological Diversity.

In accordance with paragraph 5 of the Action Plan for the Implementation of the Strategy for Biosafety and Biological Protection for 2022-2025, approved by the CMU Resolution No. 573 of 07.07.2022, the Ministry of Ecology approved the "Methodological Recommendations for Assessing the Existing and Potential Impact (Risks) of Invasive Alien Species" by Order No. 290 of 15.03.2024. (https://mepr.gov.ua/nakaz-mindovkillya-290-vid-15-03-2024/)

The Guidelines have been developed with due regard to the Regulation (EU) No 1143/2014 of the European Parliament and of the Council (22 October 2014) on the prevention and management of the introduction and spread of invasive alien species, and Delegated Regulation (EU) 2018/968 of the European Commission of 30 April 2018, supplementing Regulation (EU) No 1143/2014 of the European Parliament and of the Council on the risk assessment of invasive alien species, in order to harmonise approaches to impact (risk) assessment when preparing proposals for the inclusion of alien species in the List of Invasive Alien Species of Flora and Fauna of Ukraine.

Studies of alien aquatic species in the sub-basins of the Prut and Siret are not systematic and are sporadic.

The ichthyofauna of the main rivers of the Carpathian region includes 83 species of roundworms and fish, with 22 alien fish species and 1 species of roundworm present in the rivers of the Carpathians. Native species make up the majority - 73%, invasive species - 28%. The Prut basin has a significant number of invasive species - 11, with a smaller number in the Siret - three.

The reasons for the appearance of alien species in the rivers of the Carpathian region of Ukraine are related to direct anthropogenic impact. Almost half of the identified alien species appeared in the fish fauna as a result of human fishing activities.

The main ways of spreading invasive species are:

- aquaculture or fish farming of commercially valuable fish species;
- Accidental or unintentional introduction of commercial species along with stocking;
- aquarists, which contributed to the spread of species as a result of their deliberate release into natural reservoirs or accidental entry into the latter (sunfish, rotan, silver crucian carp);
- Expansion of the natural ranges of Ponto-Caspian species as a result of hydroelectric construction and global warming (round goby, sand goby, goby, goby, western goby, blunt-nosed goby);

- unauthorised stocking of rivers with alien species without scientific justification and expertise and relevant permits (Danube salmon).

According to the Convention on Biological Diversity (The Hague, 2002), measures aimed at mitigating the effects of invasions by alien species should be mainly preventive, but it is usually not possible to effectively control the process of invasions, primarily due to the lack of a biodiversity monitoring system.

After conducting special studies of alien aquatic species and determining the list of species in the area of their occurrence, the first and most important step is to establish a basin-wide monitoring system for invasions. Monitoring should be focused on:

- identification and analysis of the species composition of alien species, invasive corridors, geography and dynamics of invasions;
- population dynamics of the most significant invasions from emergence to naturalisation, as well as of invasive species that have already been naturalised, and the consequences of their impact on habitats, native species, communities and ecosystems;
- Inventory of possible intrusion sites and their survey (e.g., municipal wastewater leaks from large cities with a developed aquarium services market, discharges of heated water from thermal power plants and large industrial enterprises).

Provision must also be made at the basin level:

- development of regional/basin cadastral lists of alien, threatened (dangerous) species of flora and fauna of Ukraine;
- predicting the emergence of new invasive species that are potentially dangerous for human activities or established hydroecosystems;
- development of methods to curb the spread of alien species (e.g. physical removal, weakening the development of species using phytophagous animals, use of herbicides). An example is the programme for monitoring, localising and controlling the number of alien (invasive) plant species in the territory of the territorial community of Stryi City Council for the period 2021-2025.
- making management decisions on the protection and rational use of aquatic bioresources (including introduced ones), including regional lists of invasive species approved by local governments. For example, in 2017 the Zakarpattia Regional Council approved the first official regional list of invasive plant species in Ukraine.

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3 ZONES (TERRITORIES) TO BE PROTECTED AND THEIR MAPPING

3.1 Emerald Network sites

The Emerald Network is an ecological network consisting of special areas for the conservation of biological diversity established (designated) in accordance with the Convention on the Conservation of Wild Flora and Fauna and Natural Habitats in Europe (Bern Convention). Its goal is to ensure the long-term survival of species and habitats listed in the Bern Convention that require special protection.

On 30 November 2018, six countries - the Republic of Belarus, Georgia, the Republic of Moldova, Norway, Switzerland and Ukraine - officially approved the lists of Emerald Network sites on their territories. The full list of Ukraine's Emerald Network includes 271 sites[46], and the network covers about 8% of Ukraine's territory.

There are 8 Emerald Network sites within the Prut and Siret sub-basins.

According to the categories (Fig. 101), the Emerald Network sites are divided into:

- national natural park - 3;
- regional landscape park - 1;
- a nature reserve - 4.

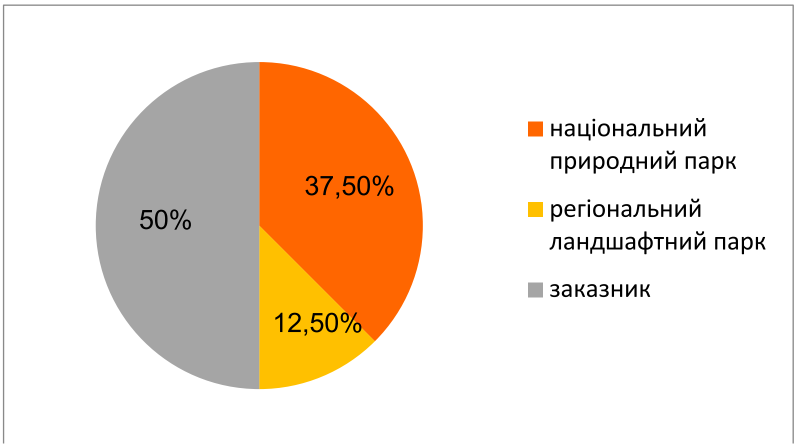


Figure 101. Breakdown of Emerald Network sites by category, %.

None of the sites has a management and development plan in place. The list of sites of the Emerald Network of the Prut and Siret sub-basins is provided in Annex 4 (M5.3.2, M5.3.3).

3.2 Sanitary protection zones

Sanitary protection zones include the areas where water intakes for drinking water supply are located. According to the Resolution of the Cabinet of Ministers of Ukraine on the Legal Regime of Sanitary Protection Zones of Water Bodies No. 2024 of 18 December 1998, these zones are classified as the so-called first zone (strict regime) of compliance with the use regime. The Resolution provides for a number of permitted and prohibited activities within drinking water intakes.

According to the EU WFD (Art. 7), "Member States shall identify in each RBI:

- All surface/groundwater bodies used for abstraction of water intended for human consumption, providing an average of more than 10 m³ of water per day or providing water consumption for more than 50 people and

[46] UPDATED LIST OF OFFICIALLY ADOPTED EMERALD SITES (NOVEMBER 2018) Document prepared by the Directorate of Democratic Partic- ipation and Marc Roekaerts (EUREKO) https://rm.coe.int/updated-list-of-officially-adopted-emerald-sites-november-2018-/16808f184d

- Water bodies intended for future use for the same purpose.

In the Prut and Siret sub-basins, there are 156 water intakes that withdraw more than 10 m³ per day. Of these, 91 are groundwater intakes and 65 are surface water intakes (Figure 102).

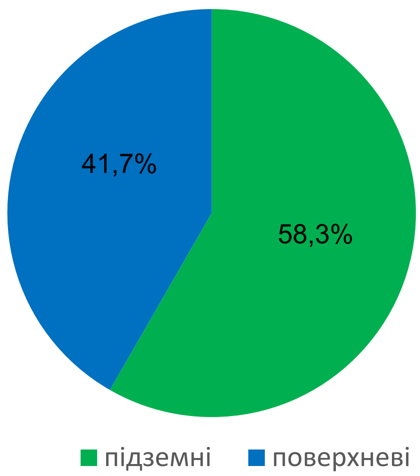


Figure 102. Distribution of drinking water intakes by type, %.

The SAWR is responsible for maintaining state water accounting.

3.3 Protection zones for valuable aquatic bioresources

Areas designated for the protection of economically important aquatic species or areas for the protection of valuable aquatic bioresources include those areas where such aquatic resources of significant economic value are found or cultivated.

Depending on the specifics of the protection zone for valuable aquatic bioresources, the monitoring programme may include additional indicators or sampling frequency.

According to the Resolution of the CMU No. 1209 "On Approval of Tariffs for Calculating the Amount of Compensation for Damage Caused by Illegal Harvesting (Collection) or Destruction of Valuable Aquatic Bioresources" dated 21 November 2011 (as amended by the Resolution of the CMU No. 1039 dated 6 October 2021), the list of valuable bioresources includes both rare and common fish species throughout Ukraine.

At the same time, according to Article 1 of the Law of Ukraine "On Fisheries, Commercial Fishing and Protection of Aquatic Bioresources", a fishery water body (or part thereof) is a water body (or part thereof) that is used or may be used for fisheries purposes.

Thus, taking into account the above, as well as the lack of an appropriate legislative and regulatory framework, the protection zones for valuable bioresources in Ukraine have not been defined.

3.4 SWBs/GWBs used for recreational, medical, resort and health purposes, as well as water intended for bathing

Recreation areas of water bodies are land plots with adjacent water space intended for organised recreation of the population on the coastal protective strips of water bodies. Places of mass recreation are determined by local governments in accordance with the powers vested in them every year before the start of the summer swimming season. Water protection zones are established along rivers, around lakes, reservoirs and other water bodies, within which land plots are allocated for coastal protection strips.

It is prohibited in water protection zones and coastal protection zones:

- storage and use of pesticides and fertilisers;
- construction of cemeteries, summer camps for livestock, manure storage facilities, cattle cemeteries, waste dumps, filtration fields, liquid and solid waste storage facilities, etc;
- discharge of untreated wastewater;

- construction of any structures (except for hydrotechnical, hydrometric and linear structures), including recreation centres, summer cottages, garages and car parks;
- Washing and maintenance of vehicles and equipment.

Requirements for the location and organisation of water body recreation areas:

- To organise recreational areas on water bodies, their owners or lessees are required to agree the operation of the beach with the State Service of Ukraine for Food Safety and Consumer Protection before the start of each swimming season;
- the recreation area should be located outside the sanitary protection zones of industrial enterprises. The recreation area should be located at the maximum possible distance (at least 500 m) from sluices, hydroelectric power plants, wastewater discharge sites, stables, livestock watering places and other sources of pollution;
- beaches should not be located within the first zone of the sanitary protection belt of drinking water sources.

Environmental goals for recreational areas:

- The water quality of reservoirs and rivers used in recreational areas must meet the requirements of sanitary legislation;
- the composition and properties of water in the area of recreational water use must meet the requirements for physical, chemical and sanitary-microbiological indicators;
- requirements for water monitoring in recreational areas:
- water sampling for departmental control in water bodies should be carried out annually by local self-government bodies at least 2 times before the start of the swimming season (at a distance of 1 km upstream of the swimming area on watercourses and at a distance of 0.1-1.0 km in both directions from it on water bodies, as well as within the swimming area);
- during the swimming season, such water sampling shall be carried out at least twice a month at at least two points selected in accordance with the nature, length and intensity of use of swimming areas.

Pursuant to CMU Resolution No. 264 of 06.03.2002 "On Approval of the Procedure for Registration of Places of Mass Recreation on Water Bodies", local executive authorities and territorial fishery protection authorities are required to identify on maps and schemes land plots and water areas suitable for the organisation of beaches, boat rental facilities, water attractions, as well as places for water sports and places for amateur and sport fishing in winter.

Approved copies of the mapping schemes are submitted to the emergency rescue services that serve water bodies in their area of responsibility and to the regional coordination emergency rescue centres of the State Specialised Emergency Rescue Service on Water Bodies of the Ministry of Emergencies (currently the State Emergency Service).

Information on places of mass recreation is submitted annually by 1 April by local governments, and information on places of recreational and sport fishing is submitted on 10 February and 30 October by territorial fish protection authorities to the regional coordination emergency rescue centres of the SES.

Within the Prut River sub-basin (as of July 2023), there are 5 recreation and leisure sites (Annex 5 (M5.3.2, M5.3.3)).

3.5 Areas vulnerable to (accumulation of) nitrate

Ukraine has approved a methodology for determining nitrate vulnerability zones (Order of the Ministry of Ecology of Ukraine No. 244 dated 15.04.2021), as required by the EU Nitrate Directive. The methodological approach is to use a large amount of high-resolution spatial and temporal data, mainly surface and groundwater monitoring data, but the definition of these zones should also use statistical data such as the number of livestock, fertiliser application and surplus calculations for nitrogen. All this information of high quality and sufficient reliability is necessary to identify nitrate vulnerable areas where mandatory measures to reduce nitrate pollution should be taken. At present, the existing surface water monitoring network is insufficient in terms of its integrity and spatial coverage to apply the developed method, and groundwater monitoring is not carried out at all.

Therefore, given that in Ukraine:

- the highest percentage of arable land in the world (53.9%, 2021 data), while the ploughed-out agricultural land rate is 78.2%;

- lack of representative and reliable information on the content of nutrients in surface and groundwater;
- Eutrophication of water bodies is a widespread phenomenon;

In the short term, it is proposed to designate the entire territory of Ukraine as a nitrate vulnerable area. This approach is in line with the EU WFD, reflects the current very limited availability of the necessary information to identify nitrate vulnerable areas, is used in many EU countries (e.g. Germany, Austria, Lithuania and Romania), is easier to assess, and allows for refinement or identification of nitrate vulnerable areas in subsequent reporting periods based on improved, more reliable information.

This approach avoids competition among farmers in the short term and allows all farmers to be financially supported through future rural development programmes without the need to differentiate between different regions. It also allows for the general measures of the action programme to be applied to the entire territory, but for more stringent action programme measures to be applied only to regions where (based on available data) clear agricultural stress can be proven and specified in a step-by-step manner.

Therefore, in the medium term, it is necessary to focus on substantial and gradual improvement of the monitoring network (both groundwater and surface water) and database to ensure a more detailed approach to zone identification and monitoring, and thus achieve full compliance with the WFD with the identified nitrate vulnerable zones during the second cycle of the RBMP (2031-2036).

3.6 Vulnerable and less vulnerable areas identified in accordance with the criteria approved by the Ministry of Environment

As of 2023, no vulnerable or less vulnerable zones have been identified in Ukraine.

The regulatory document governing this issue is the Order of the Ministry of Ecology and Natural Resources of 14 January 2019 No. 6 (registered with the Ministry of Justice of Ukraine on 5 February 2019 under No. 125/33096) "On Approval of the Procedure for Determining the Population Equivalent of a Settlement and the Criteria for Determining Vulnerable and Less Vulnerable Zones".

Also, in accordance with the Law of Ukraine "On Water Disposal and Wastewater Treatment" of 12 January 2023 (entered into force on 07 August 2023), Article 12. Powers of *Local Self-Government Bodies*, the powers of local self-government bodies in the field of water disposal include:

- upon the submission of the central executive body implementing the state policy in the field of water sector development, identification of vulnerable and less vulnerable zones in accordance with the criteria approved by the central executive body ensuring the formation of the state policy in the field of environmental protection.

As of 27 March 2024, local governments, upon the submission of the SAWR, recognised 10 SWBs as vulnerable zones, which is 3% of the total number of SWBs in the Prut and Siret sub-basins.

No decision has been made on less vulnerable areas.

4 MAPPING OF THE MONITORING SYSTEM, RESULTS OF MONITORING PROGRAMMES IMPLEMENTED FOR SURFACE WATER (ECOLOGICAL AND CHEMICAL), GROUNDWATER (CHEMICAL AND QUANTITATIVE), AREAS (TERRITORIES) SUBJECT TO PROTECTION

4.1 Surface water

Surface water monitoring is carried out in accordance with the Procedure for State Water Monitoring, approved by CMU Resolution No. 758 of 19 September 2018. The Ministry of Ecology, the SAWR and the SES are the subjects of state water monitoring.

Every year since 2020, state water monitoring programmes have been approved by the relevant orders of the Ministry of Ecology (No. 410 of 31.12.2020, No. 3 of 05.01.2022, No. 27 of 17.01.2023) and enforced by the SAWR.

The state water monitoring programme includes:

- information on the object of state water monitoring (code, name of the object, location and other characteristics);
- biological, physicochemical, chemical and hydromorphological indicators, frequency of monitoring, information on the subject and the performer of water monitoring.

State water monitoring is carried out according to the indicators and frequency specified in Annexes 1-3 of the Procedure.

Depending on the goals and objectives of state water monitoring, the following procedures are established:

- the procedure for diagnostic monitoring of the SWBs and GWBs;
- Procedure for operational monitoring of the SWBs and GWBs;
- the procedure for research monitoring of the SWBs;
- procedure for monitoring marine waters.

Diagnostic monitoring is carried out during the first year of state water monitoring. For SWBs that do not pose a risk of failing to achieve environmental objectives, diagnostic monitoring is carried out additionally during the fourth year of state water monitoring.

Operational monitoring is carried out for SWBs that pose a risk of not achieving environmental goals, as well as for SWBs whose water intake to meet drinking and domestic needs of the population averages more than 100 cubic metres per day.

Operational monitoring is carried out annually between the years of diagnostic monitoring.

The research monitoring is carried out by the state water monitoring entities, which independently determine the monitoring points, the list of indicators and the frequency of their measurement.

4.1.1 Monitoring system

In the Prut sub-basin, in 2023, monitoring was carried out at 29 monitoring sites at 23 SWBs, and in the Siret sub-basin - at 6 monitoring sites at 5 SWBs, including:

- at transboundary SWB identified in accordance with intergovernmental cooperation agreements - 1;
- at the SWBs from which water is abstracted to meet the drinking and household needs of the population - 4.

4.1.2 Hydromorphological assessment/status

The hydromorphological condition is assessed in accordance with the Methodology approved by the Order of the Ukrainian State Geological Survey No. 23 of 19.02.2019, in five classes.

Hydromorphological monitoring was carried out at 23 SWBs in 2021-2023. According to the monitoring results, 13 of the SWBs are classified as nearly natural, and 10 SWBs are classified as slightly modified (Fig. 103).

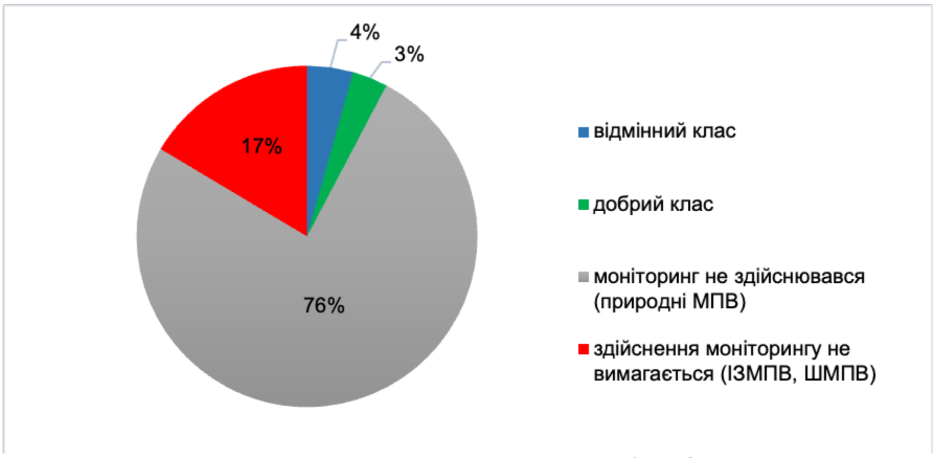


Figure 103. Hydromorphological status of the SWB

4.1.3 Chemical status assessment

The assessment of the chemical state of the SWBs is based on determining the concentrations of priority substances specified in Directive 2008/105/EC, taking into account Directive 2013/39/EU250, which sets the limit values of environmental quality standards.

In Ukraine, the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 45 of 6 February 2017, registered with the Ministry of Justice of Ukraine on 20 February 2017 under No. 235/30103, defines a list of indicators for which environmental quality standards are set in Annex 8 of the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 5 of 14.01.2019 No. 5 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified Surface Water Body".

Directive 2009/90/EC (Article 5), which sets out technical requirements/criteria for the processing of monitoring data, was also taken into account when assessing the chemical state of the SWB:

- If the measured value was below the limit of quantification (LOQ), the calculation uses the value of half the LOQ for this indicator
- When summarising the results of individual isomers or mixtures (e.g. polycyclic aromatic hydrocarbons, cyclodiene pesticides, DDT), in the case of values measured below the LOQ, zero "0" should be used to calculate the average concentrations.

In addition, Article 4 of Directive 2009/90/EC stipulates that the methods for measuring the content of indicators must meet the minimum criteria: have a measurement uncertainty value below 50% (k=2) and a quantification limit equal to or below 30% of the relevant environmental quality standard.

Valuation reliability

The reliability of the chemical state assessment was performed using the criteria for establishing the reliability of the correct determination of the ecological and chemical status of the SWBs specified in Annex 11 of the Order of the Ministry of Ecology and Natural Resources of 14.01.2019 No. 5.

According to the established criteria, a three-stage scheme was used to assess the reliability of the correct determination of the chemical state of the SWB:

- A high level of assessment reliability means that most of the requirements have been met, namely: measurement data are available for all indicators specified in the List of Pollutants for Determining the Chemical State of Surface and Groundwater bodies and the Environmental Potential of an

Artificial or Heavily Modified Surface Water Bodies in accordance with the Order of the Ministry of Environment No. 45 dated 6 February 2017, hereinafter referred to as the List, that meet the requirements of the Procedure (almost all relevant requirements for the list of indicators, methods and frequency have been met); the aggregation of SWBs demonstrates reliable results;

- The medium level of reliability of the assessment of the state of the SWB is established in the absence of sufficient monitoring data, frequency and measurement of all indicators identified in the List;
- The low level of reliability of the assessment of the state of SWB means that the assessment of the state of SWB was based on risk assessment, transfer of monitoring data through aggregation of SWB according to certain criteria.

To assess the chemical status of the SWBs, we used statistically processed data of measurements of pollutants in surface waters carried out as part of the state water monitoring programme (diagnostic and operational monitoring of the SWBs) at 38 monitoring points located at 31 SWBs in 2020-2023, namely, the average and maximum values.

Background concentrations for non-synthetic substances (mercury, lead, cadmium, nickel) were not taken into account when assessing the chemical state of the SWBs.

Compliance of the EQS measurement results with the requirements established for the annual average and maximum permissible concentrations is considered to be in compliance with the requirements established for the "good" chemical status of the SWBs.

For SWBs where monitoring was not carried out in the reporting period, the chemical state was assessed by interpolating (transferring) the assessment results from SWBs where monitoring was carried out in accordance with the aggregation of SWBs.

Article 5 of Directive 2009/90/EC also establishes criteria for statistical processing of monitoring data, namely:

- if the measured value was below the limit of quantification (LOQ), the calculation uses the value of half the LOQ for this indicator;
- when summarising the results of individual isomers or mixtures (e.g. polycyclic aromatic hydrocarbons, cyclodiene pesticides, DDT), in the case of values measured below the LOQ, zero "0" should be used to calculate the average concentrations.

In addition, Article 4 of Directive 2009/90/EC stipulates that the methods for measuring the content of indicators must meet the minimum criteria: have a measurement uncertainty value below 50% (k=2) and a quantification limit equal to or below 30% of the relevant environmental quality standard.

The following indicators were not measured: brominated diphenyl ethers (esters), chloralkanes, C10-13, di-(2-ethylhexyl)-phthalate, diuron, isoproturon, pentachlorophenol, tributyltin compounds (tributyltin cation), perfluorooctane sulfonate and its derivatives (PFOS), dioxins and dioxin-like compounds, hexabromocyclododecane (HBCDD).

For the indicators fluoranthene, hexachlorobenzene, hexachlorobutadiene, mercury and its compounds, dicofol, heptachlor and heptachloroepoxide, for which the recommended object of control is biota, due to the lack of technical capabilities and measurement methods, concentrations were determined only in surface water samples.

The results of the assessment of the chemical state of the WBM of the Prut and Siret sub-basins based on monitoring data are presented in Annex 6 (M5.3.2, M5.3.3).

Based on the results of the assessment of the chemical state of 31 SWB in the Prut and Siret sub-basins in 2020-2023, the following conclusions can be drawn from the monitoring data (Table 81):

- *chemical status is "good":* 15 SWB (5.1% of the total number of linear SWB), with a length of 344.3 km (10.7% of the total length of linear SWB in the Prut and Siret sub-basins);
- *chemical status of "failure to achieve good":* 16 SWB (5.5% of the total number of linear SWB), with a length of 457.6 km (14.3% of the total length of linear SWB in the Prut and Siret sub-basins).

There are no monitoring points in the sub-basins of the Prut and Siret rivers at the polygonal SWB.

Table 81. Chemical status of the Prut and Siret sub-basins (based on monitoring data)

Chemical status	number of linear SWBs	total length of the SWBs, km
"good"	15	344
"failure to achieve the good"	16	458

The following substances exceed the EQS_{MAX} - maximum permissible concentration and/or the $EQS_{average}$ - annual average concentration:

- cadmium (for 3 SWB);
- fluoranthene (for 8 SWB);
- lead and its compounds (for 1 SWB);
- mercury and its compounds (for 2 SWB);
- Nickel and its compounds (for 1 SWB);
- benzo(a)pyrene (for 20 SWB);
- benzo(b)fluoranthene (for 1 SWB);
- benzo(k)fluoranthene (for 1 SWB);
- benzo(g,h,i) perylene (for 2 SWB);
- Cypermethrin (for 4 SWB).

The interpolation of the results of SWB monitoring to other SWB was carried out on the basis of SWB aggregation, which was performed in 2022 as part of the implementation of state water monitoring in accordance with the Order of the SAWR dated 06.05.2022 No. 42 "On Approval of the State Agency of Ukraine for Research and Scientific and Technical Development Plan for 2022".

The purpose of SWB aggregation is to combine all SWB in a river basin into different groups based on reasonable criteria for:

- Interpolation of the results of monitoring of the SWB to other SWB that are grouped with them;
- Use the results of aggregation in the development of monitoring programmes for the following years to maximise the interpolation of the assessment results.

The criteria for the aggregation of SWBs of the "rivers" and "lakes" category are:

- the type of the defined SWB;
- assessing the risk of not achieving a good chemical state of the SWB;
- a physical and geographical unit of zoning of the basin to which the IWR belongs;
- the type of landscape where the SWB is located.

The criterion for linear SWB of the "HMWB" and "AWB" categories is:

- assessing the risk of not achieving a good chemical state of the MPE.

The criteria for polygonal SWB of the "HMWB" and "AWB" categories are:

- category;
- the volume of the reservoir;
- water exchange regime of the reservoir.

Based on interpolation of the monitoring results according to the aggregation of SWB (low level of reliability of the SWB assessment) (Table 82), the following was established:

- chemical status is "good": 21 linear SWB (7% of the number of linear SWB in the Prut and Siret sub-basins), with a length of 199.1 km (6% of the length of linear SWB in the Prut and Siret sub-basins);
- *chemical status of "failure to achieve good":* 66 linear SWB (23% of the number of linear SWB in the Prut and Siret sub-basins), with a length of 848.6 km (26% of the length of linear SWB in the Prut and Siret sub-basins).

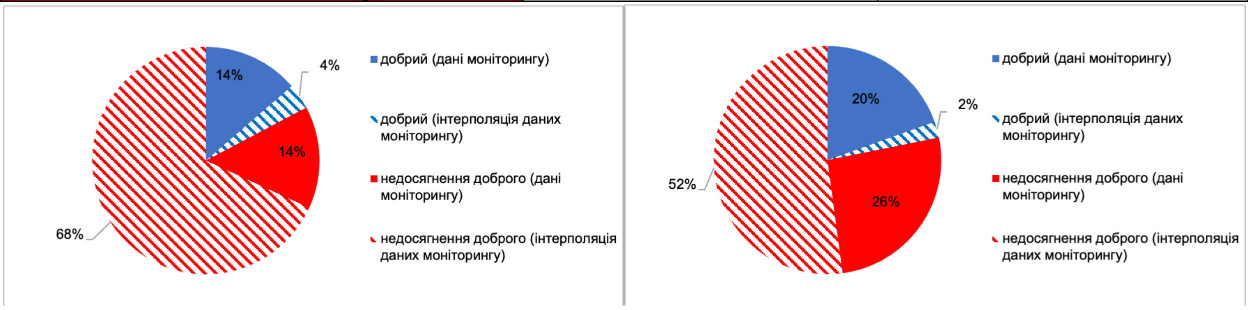
Table 82. Chemical status of the SWB of the Prut and Siret sub-basins (based on interpolation of monitoring data)

Chemical status	number of linear SWBs	total length of the SWBs, km
"good"	4	40
"failure to achieve the good"	75	917

A summary assessment of the chemical state of the SWBs is given in Table 83, Annex 7 (M5.3.2, M5.3.3) and Figure 104.

Table 83. Total assessment of the chemical status of the SWBs of the Prut and Siret sub-basins for the period 2020-2022 (monitoring data and interpolation of monitoring data)

Chemical status	number of linear SWBs	total length of linear SWBs, km
"good"	19	384
"failure to achieve the good"	91	1375



by number *by length*

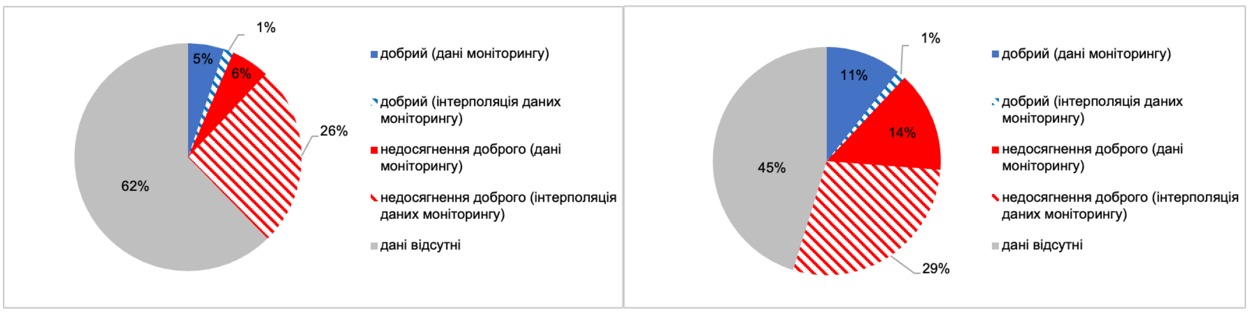
Figure 104. Assessment of the chemical state of the linear SWB of the Prut and Siret sub-basins (monitoring data and interpolation of monitoring data)

Taking into account the interpolation of monitoring data, the chemical state was assessed for 110 linear SWB (the total number of linear SWB in the Prut and Siret sub-basins is 292) with a total length of 1759 km (the length of all SWB in the Prut and Siret sub-basins is 3211 km).

For the 31 SWBs in the Prut and Siret sub-basins, the reliability of the assessment of correct identification corresponds to the average level of reliability.

79 SWBs were assessed with a low level of assessment reliability based on the transfer of results obtained under the surface water quality monitoring programme to SWBs where monitoring was not conducted in the specified period, according to the aggregation of SWBs.

The overall assessment of the chemical state of the linear SWB of the Prut and Siret sub-basins is shown in Figure 105.



by the number of SWBs *by the length of SWBs*

Figure 105. Total assessment of the chemical state of the linear SWB of the Prut and Siret sub-basins

4.1.4 Ecological status assessment

The determination of the ecological status of SWBs in accordance with the requirements of the Water Code of Ukraine and Order of the Ministry of Ecology and Natural Resources No. 5 dated 14 January 2019 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Heavily Modified Surface Water Body" is based on the use of a set of biotic and abiotic components inherent in aquatic ecosystems.

The basis for assessing the ecological status of SWBs is based on biological quality indicators that best reflect changes in the aquatic environment, including benthic invertebrates, phytobenthos, macrophytes, phytoplankton and fish. Auxiliary indicators include physicochemical and hydromorphological quality indicators. The environmental status assessment also includes specific synthetic and non-synthetic substances that are typical for the river basin.

The classification schemes for biological quality indicators depend on the type of SWBs and include possible anthropogenic pressures (e.g., organic and nutrient pollution, hydromorphological changes). The ecological status of an SWBs is assessed in relation to a reference value (i.e., the status of an SWBs of a certain type without or with minimal anthropogenic pressure). The degree of impact for individual biological quality indicators is converted into an ecological quality coefficient for individual boundaries of the five classes of ecological status of the SWBs.

The algorithm for determining the ecological status of SWBs based on the type-specific classification developed for biological, hydromorphological, chemical and physico-chemical indicators is given in the Order of the Ministry of Ecology and Natural Resources "On Approval of Environmental Water Quality Standards for Determining the Ecological Status of Surface Water Bodies...". Type-specific classification schemes were developed based on existing schemes in neighbouring EU countries for the respective types of intercalated SWBs.

The assessment of physicochemical and chemical indicators took into account the requirements of Directive 2009/90/EC (Article 5), which sets out technical requirements/criteria for the processing of monitoring data.

The results of state water monitoring conducted by the SAWR and the Ukrainian Hydrometeorological Centre were used to assess the ecological status of the SWBs as part of diagnostic and operational monitoring.

If during this period the monitoring of the SWBs was carried out more than once at the monitoring point, the assessment was made on the basis of the results of the last year in which the monitoring was carried out.

To assess the ecological state of the SWBs, we used the data on monitoring the content of synthetic and non-synthetic specific substances typical for the Danube RBD.

Background concentrations of non-synthetic specific substances were not taken into account when assessing the environmental condition of the SWB .

In the sub-basins of the Prut and Siret rivers, the environmental status was assessed for 21 linear SWBs with a length of 637.8 km based on the data of 2021-2023. The results of the assessment of the ecological status of the SWBs are presented in the table and appendix.

Table Ecological status of the SWB

Ecological status	Number of linear SWBs	Percentage of the total number of linear SWBs , %.	Length of linear SWBs , km	Percentage of the total length, %.
"high"	6	2,1	256,4	8,0
"good"	8	2,7	213,4	6,6
"moderate"	3	1,0	126,8	3,9
"poor"	4	1,4	41,2	1,3
"bad"	0	0	0	0

The level of reliability of the ecological status assessment is average for all assessed SWBs.

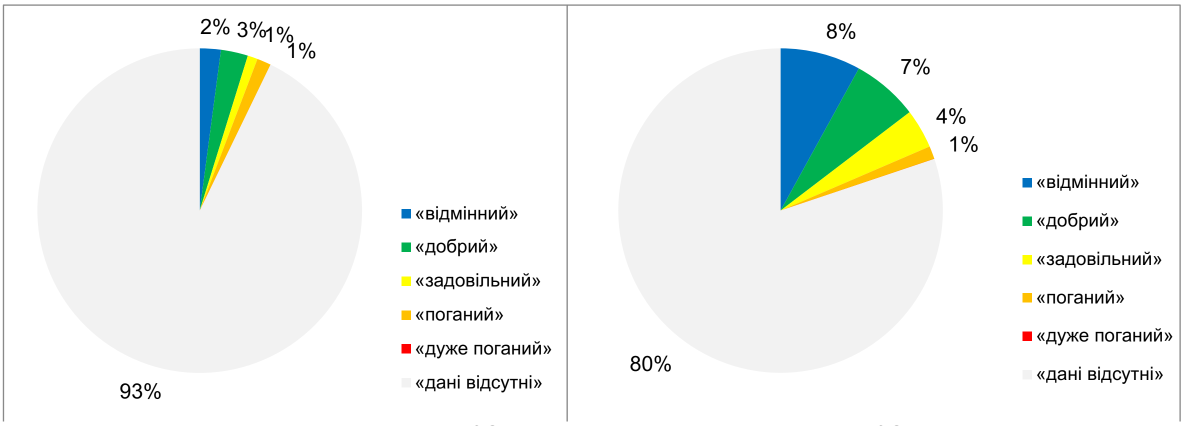
"high" ecological status was achieved for 6 linear SWB with a total length of 256.4 km, and "good" ecological status was achieved for 8 motorways with a total length of 213.4 km.

The environmental targets for achieving "good" ecological status were achieved in 14 SWB, representing 14.6% of the total length of linear SWB in the Prut and Siret sub-basins.

"Moderate" ecological status was determined for 3 linear SWB with a length of 126.8 km, which is 3.9% of the total length of SWB. The ecological status of 4 SWB is classified as "poor", which is 1.3% of the total length of SWB. None of the assessed SWB were classified as in "bad" ecological status.

The Sovytsia (Stavchanska) River (UA_M5.3.2.0165), the Klockuchka River (UA_M5.3.2.0172), the Khukiv River (UA_M5.3.2.0197), and the Molnytsia River (UA_M5.3.2.0200) were determined to be in "poor" ecological status due to non-compliance with the EQS for microphytobenthos, vascular plants, and benthic macroinvertebrates.

The results of the ecological status assessment are presented for the linear SWB of the "rivers" category in Figure 5.3.



by the number of SWBs *by the length of SWBs*

Figure 5.3 Assessment of the ecological status of the Danube RBD linear SWB (Prut and Siret sub-basins)

4.1.5 Ecological potential assessment

For an AWB or an HMWB, the ecological objective is to achieve good ecological potential, for which less stringent criteria are applied to determine impacts related to hydromorphological changes. The ecological potential of an AWB or an HMWB is determined in accordance with the classification established for determining the status of the SWB of the relevant category (river, lake, transitional waters, coastal waters) to which the AWB or an HMWB is most similar in terms of its characteristics.

In the sub-basins of the Prut and Siret rivers, the ecological potential was assessed for 6 linear SWB with a length of 98.7 km based on the data of 2021-2023. The results of the assessment of the ecological potential of the SWB are presented in the table and appendix.

Table 4 Ecological potential of SWB (linear)

Ecological potential	Number of linear SWBs	Percentage of the total number of linear SWBs, %	Length of linear SWBs, km	Percentage of the total length, %.
"good"	3	1,0	60,9	1,9
"moderate"	0	0	0	0
"poor"	1	0,3	18,3	0,6
"bad"	2	0,7	19,6	0,6

The level of reliability of the ecological potential assessment is average for all assessed SWB.

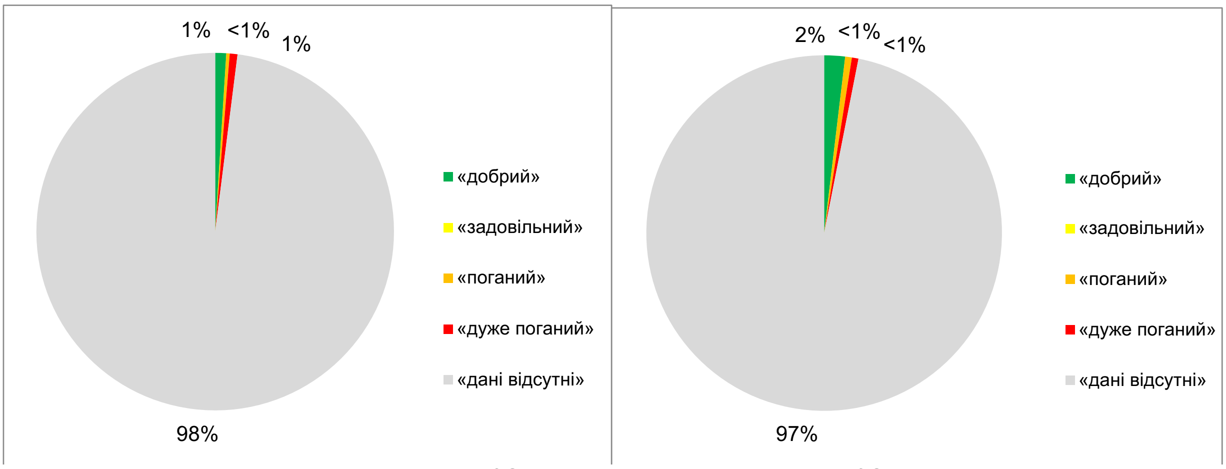
The environmental targets for achieving "good" ecological potential were achieved in 3 linear SWB with a length of 60.9 km, which is 1.9% of the length of linear SWB.

"Poor" ecological potential was identified on 1 linear SWB with a length of 18.3 km, which is 0.6% of the total length of the SWB. The "very poor" ecological potential was identified on 2 linear SWB with a length of 19.6 km.

The Sovytsia River (UA_M5.3.2_0168) was identified as having "poor" ecological potential due to non-compliance with the EQS for biological indicators: vascular plants and benthic macroinvertebrates.

Two SWB of the Sovytsia River (UA_M5.3.2_0166) and the Shubranets River (Potit) (UA_M5.3.2_0175) were assigned to "very poor" ecological potential due to non-compliance with the EQS for the biological indicator of benthic macroinvertebrates.

The results of the ecological potential assessment are presented for linear SWB in Fig.



by the number of SWBs *by the length of SWBs*

Figure Assessment of the ecological potential of the Danube RBD linear SWB (Prut and Siret sub-basins)

4.2 Groundwater

4.2.1 Monitoring system

There is no inventory of the condition of wells in the Prut and Siret sub-basins over the past 10 years.

4.2.2 Chemical assessment/risk assessment

As of the end of 2023, no chemical assessment/risk assessment of the GWB had been carried out.

4.2.3 Estimation of groundwater volumes/reserves

As of the end of 2023, no assessment of groundwater volumes/reserves had been made.

In the absence of monitoring data, environmental targets are set based on expert opinions.

4.3 AREAS (TERRITORIES) TO BE PROTECTED

The State Water Monitoring Programme for 2023 for the Prut and Siret sub-basins includes monitoring points within the same category of protected areas (territories):

- 4 monitoring points related to operational monitoring at the SWBs from which water is abstracted to meet the drinking and household needs of the population.

5 A LIST OF ENVIRONMENTAL OBJECTIVES FOR SURFACE WATERS, GROUNDWATER AND PROTECTED AREAS (TERRITORIES) AND DEADLINES FOR THEIR ACHIEVEMENT (IF NECESSARY, JUSTIFICATION FOR SETTING LESS STRINGENT OBJECTIVES AND/OR POSTPONEMENT OF THEIR ACHIEVEMENT)

Environmental objectives for surface water, groundwater and protected areas (territories) are set separately.

Surface water:

- Prevention of deterioration of all SWBs;
- Achievement/maintenance of good ecological and chemical status of all natural SWBs (rivers, lakes, transitional and coastal waters);
- Achieving/maintaining good ecological potential and chemical status of HMWBs and AWBs;
- Gradual reduction to the complete absence of hazardous substances.

Groundwater:

- Prevention of deterioration of all GWBs;
- Achieving/maintaining good quantitative and chemical status of all GWBs;
- Preventing and limiting groundwater pollution.

Areas (territories) to be protected:

Achieving standards and targets as required by applicable law for:

- Emerald Network facilities;
- sanitary protection zones;
- protection zones for valuable aquatic bioresources;
- surface/ground water bodies used for recreational, medical, resort and health purposes, as well as water intended for bathing;
- areas vulnerable to (accumulation of) nitrates;
- vulnerable and less vulnerable areas identified in accordance with the criteria approved by the Ministry of Environment.

In cases where several objectives are set for a particular SWBs or GWBs, the most stringent ones should be applied, while all other objectives should also be met.

In some cases, the deadlines for achieving environmental objectives or the targets themselves may be postponed as an exception.

It is allowed to postpone the date of achievement of the objective for a period of 6 years (until 2036), but not longer than 12 years (until the end of 2042) from the end of the implementation of the first cycle of the RBMP (2030).

An exemption applied to a particular SWB or GWB should not create a risk of not achieving the environmental objectives of the upstream (for SWB) or downstream (for SWB) and adjacent (for GWB) body or bodies.

The exceptions include:

- **Achieving less stringent objectives or postponing the date of their achievement** due to technical reasons (e.g. lack of a technical solution, technical impracticality or impracticability), disproportionately high cost or the existing natural state of the water body that does not allow for its improvement in a timely manner (e.g. inert groundwater to be restored). The presence or absence of disproportionality is determined by the results of an economic assessment of costs and benefits;

- **Temporary deterioration of the status (objectives) as a result of an unforeseen force majeure of** natural origin (e.g. extreme flood, drought) or anthropogenic (accident);
- **New physical changes to the SWB as a result of infrastructure projects** are permitted if the benefits to society are higher than the environmental benefits and there is no other option to avoid these changes for technical and/or financial reasons. Water pollution from point or diffuse sources is not allowed.

5.1 Environmental objectives for surface water

Based on the results of an assessment of the anthropogenic pressure on the SWB of the Prut and Siret sub-basins:

- 160 SWB are "at no risk" of failing to achieve "good" environmental status/potential, 42 SWB are "possibly at risk", and 96 SWB are "at risk";
- 272 SWB are "without risk" of not achieving "good" chemical status, 14 SWB are "possibly at risk", and 12 SWB are "at risk".

By 2030, 169 SWB will have achieved "good" environmental status/potential, of which 160 SWB are currently "without risk" (they need to maintain this status), 9 SWB are 6.5% of SWB that are "at risk" or "possibly at risk" of not achieving environmental objectives based on the results of the anthropogenic load assessment and will achieve environmental objectives through the implementation of PoM.

The remaining 'at risk' or 'possibly at risk' SWBs in the Prut and Siret sub-basins (129 SWB) could reach 'good' ecological status/potential by 2036 or 2042, subject to the implementation of the PoM.

By 2030, 272 SWB will have reached "good" chemical status, these are those that are currently "without risk" (they need to maintain this status), 26 SWB that are "at risk" according to the results of the anthropogenic load assessment will achieve environmental objectives no earlier than 2036 or 2042, provided that environmental protection measures are implemented.

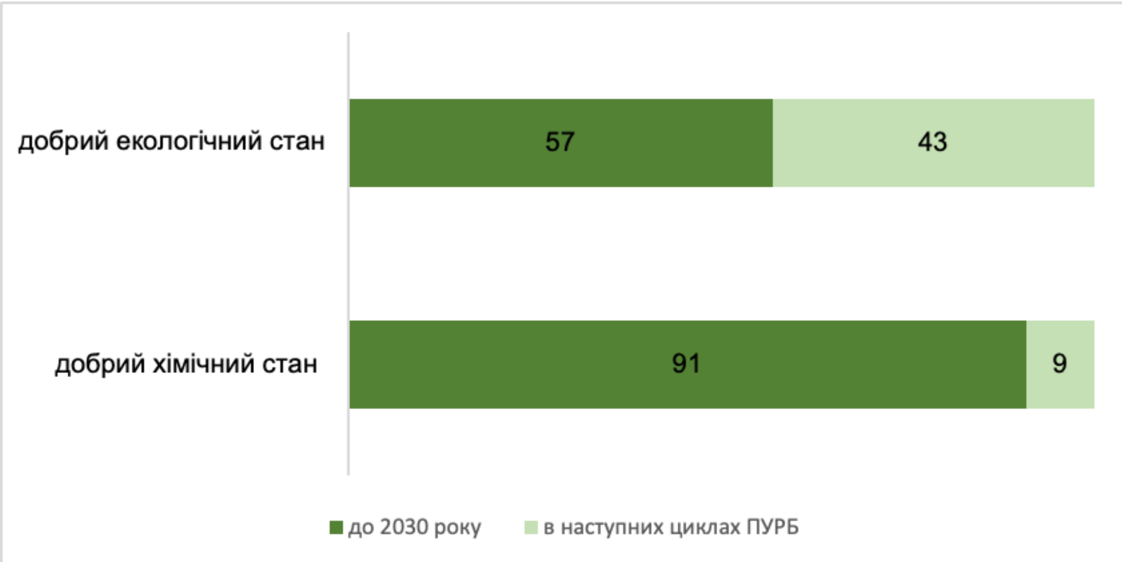


Figure 107. Timeframe for achieving the environmental objectives of the SWB

Annex 8 (M5.3.2, M5.3.3) contains the environmental targets of the SWB, the timeframe for achieving them, reasons for postponement and setting less stringent targets.

5.2 Environmental objectives for groundwater

Environmental targets are set for each GWB in terms of both their quantitative and qualitative (chemical) status. According to the WFD, the main objective is to achieve good groundwater status.

Additional targets for each individual GWB are defined depending on the existing quantitative and qualitative state of GWB, their use or potential use for water supply to the population, anthropogenic pressure and possible impact on surface ecosystems.

The main criterion for the good quantitative condition of the GWB should be the absence of groundwater depletion.

Depletion is the state of aquifers in which, under the influence of artificial drainage, the decline in groundwater levels has reached such indicators that exclude the possibility of further use of the horizon to meet the needs of society using traditional technical means.

The assessment of the depletion of the GWB is based on information on the level regime, data on groundwater extraction volumes and their comparison with the resources and approved operational reserves.

In addition, for non-pressure GWB, the criterion of good condition is the appropriate condition of the associated surface water bodies and the absence of negative impact on surface ecosystems, primarily vegetation suppression.

The criteria for the good quality (chemical) state of the GWB are the natural background content of chemical elements and compounds, as well as the standards set for drinking water by the State Sanitary Norms and Rules "Hygienic Requirements for Drinking Water Intended for Human Consumption" (SanPiN 2.2.4-171-10).

Quantitative state of low-pressure GWB

The environmental goal is to avoid groundwater depletion and to avoid deterioration of the quantitative state.

The groundwater bodies in the alluvial sediments of Holocene floodplains and Upper Pleistocene floodplain terraces are in good quantitative condition.

The aquifer of modern alluvial deposits of Holocene floodplains and I-III over floodplain terraces of the Upper Neopleistocene is the main source for centralised and agricultural water supply and is widely used for water supply to the population. The waters of the aquifer of alluvial deposits IV-V of the Middle Neopleistocene floodplain terraces are of limited use due to water enrichment and unsatisfactory water quality.

Groundwater produced in the alluvial deposits of Holocene floodplains and upper Pleistocene terraces of the Upper Pleistocene, is the only source of water supply for large settlements.

Qualitative (chemical) state of low-pressure GWB

The environmental objective is compliance with Sanitary and Epidemiological Norms and Regulations 2.2.4-171-10 and no deterioration in the quality of the water.

The quality of the GWB in the alluvial sediments of Holocene floodplains and Upper Pleistocene floodplain terraces is good.

The waters of the modern alluvial deposits are mostly fresh and have a varied chemical composition. Along with calcium hydrogen carbonate waters, the platform contains calcium sulphate, sodium carbonate and sodium calcium sulphate waters, hydrocarbonate calcium-magnesium hydrocarbonate, which is caused by the inflow of highly mineralised water from Miocene sediments and surface pollution. Due to the absence of a water-resistant layer, the water is often contaminated with organic decomposition products (nitrates, nitrites, ammonia).

Quantitative state of pressure GWB

The environmental objective is to avoid depletion of groundwater and no deterioration in its quantity.

GWB are found in the Upper Cretaceous sediments. The quantitative condition is good.

The head varies from 8.0 m to 155.0 m. The water content is unstable and depends on the lithological composition of the water-bearing rocks and their exposure in space. Well flow rates range from 0.2 to 1.7 litres per day. In the Chernivtsi area, the water enrichment is increased: the flow rate is 2.0 l/s at a depth of 2.0 m (self-discharge) and 3.4 l/s at a depth of 36.0 m. The aquifer is recharged in some areas by flow from the Baden sediments, and in river valleys, gullies and in places close to the surface, by infiltration of precipitation. The feeding regime is unstable and the water table is subject to seasonal fluctuations.

Water from the Upper Cretaceous aquifer is mainly used by individual consumers.

Qualitative (chemical) state of pressure GWB

Environmental objective - compliance of the content of elements and compounds with SanPiN 2.2.4-171-10 and no deterioration in the quality of pressure water treatment plants

The chemical condition of the GWB in the Upper Cretaceous sediments is good.

The chemical composition of water is calcium bicarbonate, less commonly calcium sodium bicarbonate-sulfate and calcium sulfate-hydrocarbonate. Waters containing hydrogen sulphide and microcomponents are often found: Br, J, Fe.

Quantitative state of pressure and non-pressure GWB

The environmental objective is to avoid depletion of groundwater and no deterioration in its quantity.

The groundwater bodies are found in Miocene and Paleocene-Eocene sediments. The quantitative condition is good.

The aquifer is locally distributed in the Lower Sarmatian-Miocene sediments of the Prut-Dniester interfluve and the interfluve of the Prut, Siret and Maly Siret.

In the eastern part of the Chernivtsi region, the water is mostly free-flowing. In the western direction, the pressure increases and reaches 165 m. The water enrichment of Lower Sarmatian sediments is extremely uneven, which is determined by the degree of drainage, feeding conditions and heterogeneous lithological composition of water-bearing rocks. The importance of groundwater from Sarmatian sediments for water supply is insignificant, however, in the Prut and Siret interfluve, due to good water quality and shallow occurrence of the horizon, and the absence of other aquifers, it is recommended for local water supply.

The aquifers in the deposits of the Kosiv, Tyras and Opillya Miocene are widespread in the southern half of the Prut-Siret interfluve and in the Prut River valley. The total thickness of the water-bearing layers of the aquifers is 10-40 m, rarely up to 70-85 m.

Almost everywhere, the Badenian rocks are overlain by Sarmatian sandy clay deposits, which often form the upper aquifer. Depths of aquifers range from 0.5-1.0 m on valley slopes to 140 m in watershed areas, and increase to 1140-1240 m in the area of Krasnoyilsk village. The waters are mainly pressure, in the direction of towards the Carpathians, the pressure increases from 9-29 m on the platform and up to 360-430 m in the Precarpathian trough.

The practical importance of the waters of the above aquifers for water supply due to their unstable chemical composition is not very important. They are mainly used for technical and household water supply to small farms, individual consumers and as mineral water.

The water enrichment of the Paleocene and Eocene is approximately the same and mostly insignificant. Slightly increased water enrichment is observed in areas where sandy formations predominate in the section (Vyhoda-Pasichnyanska and Yamnenska formations). The aquifer is fed by infiltration of precipitation. The water regime is unstable. The practical value of groundwater is insignificant.

Water is abstracted mainly for non-centralised water supply.

Quality condition of pressure and non-pressure GWB

The environmental objective is compliance with Sanitary and Epidemiological Norms and Regulations 2.2.4-171-10 and no deterioration in the quality of the water.

The chemical composition of the waters is fresh and slightly mineralised, characterised by calcium bicarbonate, magnesium bicarbonate, and rarely sodium calcium sulphate. A characteristic feature of sodium bicarbonate waters is the presence of small amounts of bromine, iodine, iron and metabolic acid. Products of organic water pollution (nitrites, nitrates, ammonia) are usually found in small quantities.

The poor state of groundwater monitoring over the past decades and, consequently, insufficient information on the current state of the GWB allows defining environmental objectives only in the most general form. In the course of monitoring, the environmental objectives for each GWB will be specified.

Annex 8 (M5.3.2, M5.3.3) (Table 2) contains the environmental targets of the GWB and their groups, the timeframe for achieving them, reasons for postponement and setting less stringent targets.

All 8 of the currently identified GWB and their groups will reach good quantitative status by 2030, and 6 will reach good chemical status (75% of the identified GWB and their groups). The remaining 2 GWB (non-pressure) are projected to reach good chemical (qualitative) status no earlier than 2042, provided that large-scale measures are taken to reduce the load from diffuse sources of pollution within agricultural landscapes.

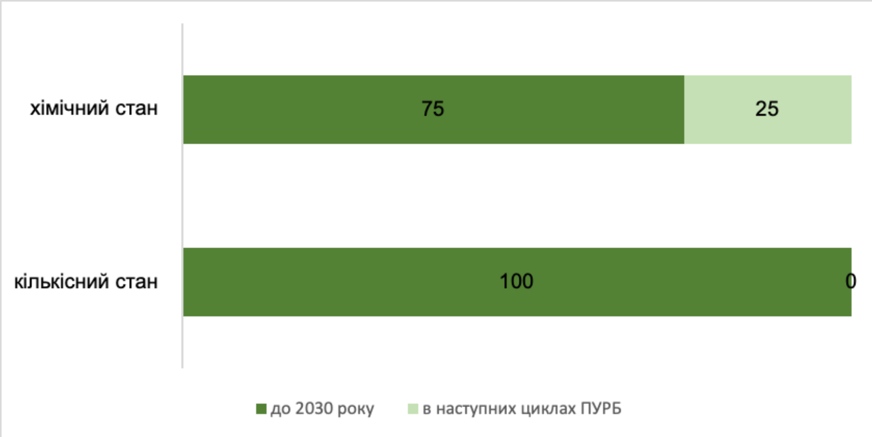


Figure 108. Timeframe for achieving the environmental objectives of the GWB

6 ECONOMIC ANALYSIS OF WATER USE

The economic analysis of water use has been prepared in accordance with the schedule of the RBMP development process based on data for 2015-2019. Due to the full-scale military invasion of Ukraine by the Russian Federation, the economic development of the territories and the structure of water use in the Prut and Siret sub-basins have undergone significant changes.

6.1 Economic development of the sub-basin

In terms of territory, the Prut and Siret sub-basins partially cover 2 oblasts, Ivano-Frankivsk and Chernivtsi, and account for 1.9% of Ukraine's territory (Table 84).

The total population of the river sub-basins is 1.17 million people, which is 2.8% of the population of Ukraine.

Table 84. Share of area and population of oblasts within the Prut and Siret sub-basins, %[47]

Areas.	Share of oblast area within sub-basins	Share of regional population within sub-basins
Ivano-Frankivsk	35	30
Chernivetska	81	86

Thus, there is a relative balance between the area of oblasts within the sub-basins and the population living in the oblasts. The majority of the population lives in Chernivtsi Oblast, which is explained by the location of the sub-basins.

Analysis of the Prut and Siret sub-basins

In 2019, the GRP of the Prut and Siret sub-basins totalled UAH 61.6 billion. The dynamics of this indicator over the entire study period of 2015-2019 shows a tendency to grow at different rates in different periods - the highest GRP growth rates were observed in 2017 (at 30%), while in 2019 these rates decreased (to 17%). The share of sub-basin GRP in the country's total GDP is mostly 1.5% (Table 85).

Table 85. Evolution of GRP in the Prut and Siret sub-basins, 2015-2019 [48]

Indicators.	2015	2016	2017	2018	2019
GRP in actual prices, UAH billion	29,5	33,5	43,6	52,5	61,6
The share of the river basin's GRP in Ukraine's total GDP, %.	1,5	1,4	1,5	1,5	1,5
Growth rate of GRP in sub-basins, % compared to the previous year	100,0	113,6	130,1	120,4	117,3

In the sub-basins of the Prut and Siret rivers, Chernivtsi Oblast has the highest share of GRP (58% of sub-basin GRP). Within Ivano-Frankivsk region, 42% of the sub-basin GRP is generated, while the population share is only 30%. This indicates a more developed economic activity in Ivano-Frankivsk Oblast.

The GRP per capita in the Prut and Siret sub-basins is UAH 58.5 thousand, which is lower than the total GRP in Ukraine (as of 2019, the GRP per capita is UAH 94.7 thousand).

Analysis of the Prut and Siret sub-basins

The value of GVA in actual prices is UAH 53.7 billion for the sub-basins, or 1.6% of the total GVA of Ukraine.

Agriculture, forestry and fisheries account for the largest share in the total GVA of the sub-basins, accounting for UAH 8.4 billion or 16%, and its share in the total GVA of Ukraine is 0.2%. The GVA by economic activity in the Prut and Siret sub-basins is presented in Table 6.3. Among the water-dependent economic sectors, the processing industry has a fairly high share in the overall structure of the sub-basins' GRP - UAH 4.7 billion or 8.8%, which corresponds to 0.1% of the total GRP of Ukraine. The share of water-

47 Determined by working with shapefiles from the Water Resources of Ukraine geoportal and population using ArcGIS

48 Calculated based on data from the State Statistics Service of Ukraine http://www.ukrstat.gov.ua/

dependent economic activities in the sub-basins is almost 40%. Other, non-water-dependent economic activities in the Prut and Siret sub-basins account for 60% of the total GVA.

Table 86. GVA of the Prut and Siret sub-basins by economic sectors, 2019

Sectors of the economy	GVA , billion UAH	Share in Ukraine's GVA, %.	Share in the basin's GVA, %.
Agriculture, forestry and fisheries	8,4	0,2	15,7
Mining and quarrying	2,0	0,1	3,8
processing industry	4,7	0,1	8,8
supply of electricity, gas, steam and air conditioning	3,0	0,1	5,5
Water supply; sewerage, waste management	0,2	<0,1	0,3
transport, warehousing, postal and courier services	3,0	0,1	5,5
TOTAL water-dependent economic activities	**21,3**	**1**	**39,7**
Other types of economic activity	32,4	0,9	60,3
IN TOTAL BY SUB-BASIN	**53,7**	**1,6**	**100**

The dynamics of the GVA of water-dependent economic activities in the Prut and Siret sub-basins during 2015-2019 decreased from 45% in 2015 to 40% in 2019 of the sub-basin GVA and shows a downward trend. The decline in the total value of water-dependent sectors' GVA was due to the decline in agriculture, forestry and fisheries GVA over the past 5 years. The remaining water-dependent sectors of the economy show fluctuations in GVA, with the manufacturing industry showing a slight increase in its share of GVA from 7.9% in 2015 to 8.8% in 2019. In turn, the growth of the total GVA of the Prut and Siret sub-basins is driven by other non-water-dependent sectors of the economy.

In terms of regions, the largest share of water-dependent industries is in Ivano-Frankivsk Oblast (47%), while in Chernivtsi Oblast the share of water-dependent sectors of the economy is only 35%.

6.2 Characteristics of modern water use

In 2019, water users withdrew 34.31 million m^3 of water from groundwater and surface water bodies in the Prut and Siret sub-basins, which is about 5% of the total withdrawal in the Danube basin and less than 1% of the total withdrawal in Ukraine.

The ratio of water use by source of abstraction is almost equal, but most of the water abstracted is from groundwater bodies (56% of water abstraction in the sub-basins). The main surface sources that supply the sub-basin economies with water resources are the Prut and Siret rivers.

Ivano-Frankivsk oblast uses mainly groundwater sources to meet water needs within sub-basins, while in Chernivtsi oblast the share of water abstraction from surface sources is predominant and amounts to more than 60%.

Figure 112. Sources of water intake

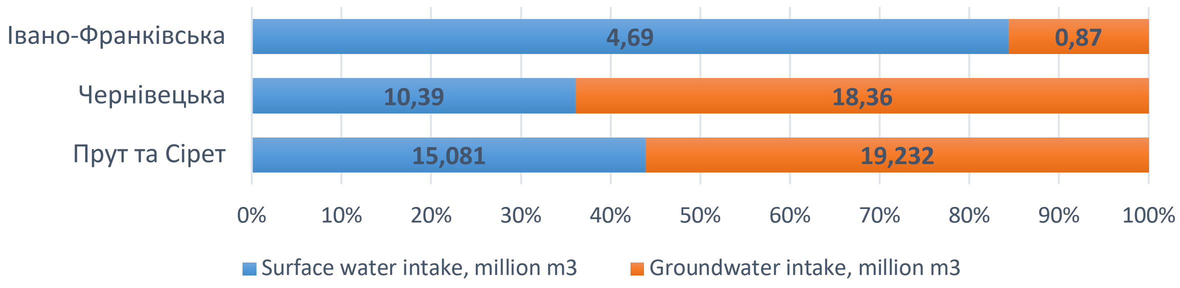


Figure 113. Distribution of water sources by region

The majority (84%) of water abstraction is carried out by water users in Chernivtsi Oblast, which is almost the same as the ratio of the area (territory) and population of the oblast within the sub-basins.

The main water users within the sub-basins are the following economic sectors: industry, housing and communal services, agriculture and transport.

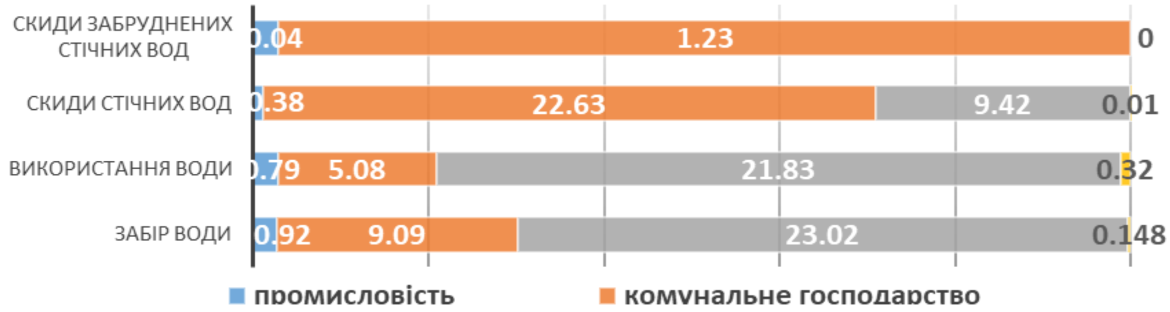


Figure 114. Characteristics of water use in the Prut and Siret sub-basins [49]

The structure of water use is as follows: 67% of water resources are withdrawn by agriculture, 29% by housing and communal services, 3% by industry, less than 1% by transport and about 3% by other sectors.

Water use in the sub-basins is 28 million m^3, which is only 14% of the total water use in the Danube basin.

A detailed description of water use in the Prut and Siret sub-basins by economic sectors is presented in Annex 9.1 (M5.3.2, M5.3.3).

As for the structure of wastewater discharge, more than 70% of wastewater is discharged into surface water bodies by housing and communal services, 29% by agriculture, and only 1% by industrial water users.

Almost 67% of the wastewater volume is normatively treated at wastewater treatment plants, 29% is normatively clean without treatment and 4% is polluted wastewater.

Almost all (97%) of the polluted wastewater comes from residential and municipal water users.

Information on wastewater discharges to water bodies by categories of discharged water is provided in Annex 9.2 (M5.3.2, M5.3.3).

To assess the socio-economic importance of water for economic sectors, we used a ranking of water users by 5 indicators adapted to the recommendations of the methodology[50] :

- GVA generated by the industry is an economic indicator of the sector's weight in the sub-basin economy;
- the volume of water withdrawn by the industry;
- water intensity of the industry compared to other industries;
- The industry's dependence on water quality;

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[49] Data source: State water cadastre data, section "Water use", 2019 State Agency of Water Resources of Ukraine

[50] European Union report "The Economic Value of Water - Water as a Key Resource for Economic Growth in the EU"

- pollution of water bodies by the industry's waste water.

Table 87. Water intensity of economic sectors

Industry sector	Water intake, million m^3	Gross domestic product, UAH million	Water intensity of GVA, m^3 /1000 UAH
Industry	0,92	9709,6	0,09
Housing and utilities	9,09	176,5	51,51
Agriculture	23,02	8436,5	2,73
Transport	0,148	2972,1	0,05
Total by sub-basin	**33,18**	**21294,7**	**1,61**

Table 88. Socio-economic weight of major water users

Sectors of the economy	Scope of airborne forces creation	Water intake by the industry	Water intensity of the industry	Dependence on water quality	Waste water contamination
Energy	moderate	low	low	low	low
Ferrous metallurgy	moderate	low	low	low	low
Chemical industry	moderate	low	low	low	low
Mechanical engineering and metalworking	moderate	low	low	low	low
Food industry	moderate	moderate	low	high	moderate
Coal industry	moderate	low	low	low	low
Housing and utilities	low	high	high	high	high
Fisheries	high	high	moderate	moderate	low
Irrigation	high	low	moderate	moderate	low
Other types of agriculture (including livestock and crop production)	high	low	moderate	moderate	low
Transport	moderate	moderate	low	low	low
Recreation and healthcare	moderate	low	low	high	low

Based on the results of the assessment of dependence on the five criteria above, economic sectors were divided into 5 groups according to their socio-economic importance in the sub-basins.

Group 1 "Full dependence" includes water users that are highly dependent on 4 indicators - water quality, high water intensity, exert significant pressure on water resources and produce small amounts of GVA, such as housing and communal services. Water in these sectors is a key factor for their operations.

Group 2 "Multiple dependence" includes those with high dependence on at least two indicators, such as fisheries.

Group 3, "Specific dependence", includes those with high dependence on one of the indicators, such as the food industry, recreation and healthcare.

Group 4 "Moderate dependence" includes those with moderate dependence on at least 1 indicator, such as irrigation and other types of agriculture.

Group 5, "Dependence without water use", includes economic sectors that use water without abstraction from natural water bodies, generate low volumes of GVA and are minor polluters. This group includes the chemical and coal industries, energy, ferrous metallurgy, machine building and metal processing, and transport.

According to the assessment of socio-economic significance, the housing and utilities sector is completely dependent on water resources and is the most water-intensive sector of the economy (51.51 m^3/1000 UAH).

6.2.1 Municipal water use

Municipal water use in the Prut and Siret sub-basins is aimed at meeting the drinking and domestic needs of the population. Municipal water use is mainly concentrated in large settlements, such as Chernivtsi, Kolomyia, Kosiv, Verkhovyna, Yaremche, Sniatyn, Kitsman, Storozhynets, Hlyboka, etc.

In 2019, water users in the housing and communal sector withdrew 9 million m³ of water as a result of their activities, which is 26.5% of the total water withdrawal by sub-basins.

The largest water users in this sector in the sub-basins are ChernivtsiVodokanal - 4.766 million m^3; Kitsmanske Utility Company - 0.226 million m^3, Storozhynets Utility Company - 0.257 million m^3 and Hlyboka Utility Company - 0.131 million m^3.

The percentage of water losses in the housing and utilities sector by sub-basin is significant and ranges from 34.8% (Ivano-Frankivsk oblast) to 52.1% (Chernivtsi oblast), with a volume of 3.5 million m^3 of water, which is significantly higher than the average value of water losses during transportation in Ukraine (30.3% according to the performance report of the National Commission for State Regulation of Energy and Utilities).

The housing and communal sector is the main polluter within the sub-basins and discharges 97% of polluted wastewater.

6.2.2 Industrial water use (by major water users, including energy)

Water abstraction by industrial water users is only 2.7% in the sub-basins (0.92 million m³).

The needs of industrial water users are met both from surface water bodies and groundwater.

According to state water accounting data, the main industrial water use in the Prut and Siret sub-basins is carried out by food industry water users and enterprises of the mining and processing industry.

There are no losses during water transportation by industrial enterprises.

Water was used the most:

- Mamalyha Gypsum Plant (Mamalyha village, Novoselytsia district) - 0.284 million m^3 ;
- SE "Ukrspirt" Zaluchanske MPD Sniatyn district - 0.213 million m^3 ;
- Gravel and sand quarry (Nepolokivtsi) - 0.071 million m^3 ,
- Bukovyna Factory LLC, GKD Lamel, Krasnoilsk, Storozhynets district - 0.06 million m^3 ;
- Chernivtsi Oil and Fat Plant (Chernivtsi) - 0.051 million m^3 ;
- PJSC Ukrnafta Nadvirna oil and gas production division m. Nadvirna - 0.031 million m^3 ;
- LLC KKNK Technobud - 0.023 million m^3 ;
- LLC Leonie Wareng Systems UA GmbH m. Kolomyia - 0.022 million m^3 .

The share of wastewater discharges from industrial water users is only 1.2% (0.382 million m^3), of which 0.037 million m^3 is polluted, mainly from the food industry.

6.2.3 Water use in agriculture

Agriculture is a significant economic sector in the Prut and Siret sub-basins, accounting for 67% of the total abstraction in the sub-basins.

In agriculture, water resources are used mainly for fisheries, including trout farms, crop production, livestock and poultry farming.

In the structure of water withdrawals for agricultural purposes, fisheries account for 42% of the total withdrawals in this category.

In 2019, agricultural water users discharged 9.42 million m^3 of wastewater into surface water bodies, which is 28.6% of the total water discharge by sub-basins.

Agriculture does not exert significant pressure on the water resources of the Prut and Siret sub-basins due to the almost absence of polluted water discharges from water users in this sector. The bulk (99.7%) of the wastewater discharged by agricultural water users is normatively clean water without treatment.

Water use was the largest:

- Pokuttya-Frukt LLC c. Stetseva, Sniatyn district - 0.390 million m^3 ;

- LLC VK firm "Varto" m. Sniatyn - 0.068 million m^3 ;
- Poultry farm "Sniatynska Nova" LLC m. Sniatyn - 0.032 million m^3 ;
- Rodnyk Plus LLC, Budyliv village, Sniatyn district - 0.022 million m^3 .

The main water users are in livestock production: Koteleve LLC, Koteleve village, Novoselytsia district - 0.069 million m^3 and Kolosok-2 LLC, Tsuren village, Hertsaiv district - 0.045 million m^3 ; in poultry farming: UPG-Invest LLC, Vytylivka village, Kitsman district - 0.074 million m^3 , Tarasovetska Poultry Farm LLC, Tarasivtsi village, Novoselytsia district - 0.034 million m^3 .

6.2.4 Water use in transport

Water use in transport involves the use of water resources, both surface and groundwater, for the needs of different types of transport, including water and land transport.

Water use in the transport sector in the Prut and Siret sub-basins is carried out for the needs of passenger and land transport in urban and suburban areas.

Water users in the transport sector used 0.2 million m^3 of water (almost 1% of the total water withdrawal).

The largest water users in the industry:

- Ivano-Frankivsk water supply distances of Hlyboka-Bukovynska and Storozhynets - 0.056 million m^3 ;
- PJSC "Ukrzaliznytsia" Kolomyia state station - 0.036 million m^3 ;
- PJSC "Ukrzaliznytsia" state station Korshiv - 0.008 million m^3 ;
- separate enterprise Motor Car Depot Kolomyia - 0.006 million m^3 .

Water users in the transport sector discharged 0.01 million m^3 of wastewater treated to the standard standards at wastewater treatment plants into surface water bodies.

6.2.5 Other types of water use

Other types of water use account for an insignificant 1.5% (0.05 million m^3) of the total water withdrawal in the sub-basins.

Other water users include forestry, communications, construction, trade and catering, and logistics companies.

The low values of water intake and discharge from other water uses indicate that there are no significant pressures on the water status from the above-mentioned sectors.

6.3 Forecast of water demand by major economic sectors

The forecast of water demand in general within sub-basins and by major economic sectors is made for the period of the RBMP (until 2030) under three scenarios: realistic, optimistic and pessimistic.

The forecast is based on water withdrawals within the Prut and Siret sub-basins for the period 2015-2020, their volume and by economic sector. The forecast of water withdrawals is based on the GDP of Ukraine for the same period and its forecast value for the short, medium and long term. The increment of optimistic and pessimistic scenarios was calculated by determining the average annual deviations for previous years from the forecasted values.

The main factors influencing water use in the Prut and Siret sub-basins:

- economic development trends - mainly agriculture;
- the spread of the COVID-19 coronavirus infection and the introduction of restrictive measures;
- natural and geographical: flood-prone region.

The forecast of water withdrawal for the short-term period - for 2021 - is based on the consensus forecast of the Ministry for Development of Economy, Trade and Agriculture of Ukraine (April 2021). Ukraine's GDP forecast shows a resumption of the positive trend in economic development after significant losses in 2020 caused by the COVID-19 pandemic, with rapid growth in 2021-2023 and gradual stabilisation thereafter. Thus, GDP growth is expected to reach 4.1% in 2021.

In the medium term, GDP is expected to grow by 3.7% in 2022-2024, with economic growth in Ukraine expected to reach 3.5% in 2023 and 3.9% in 2024.

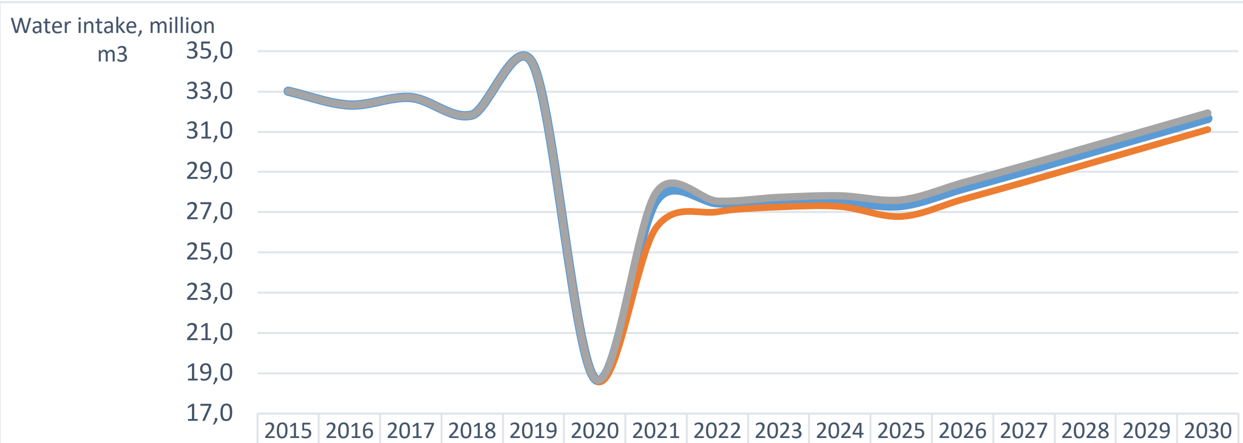
The long-term forecast period - 2024-2030 - was calculated on the basis of the World Bank's forecast values of global development indicators, Oxford Economic Forecasting [51,52] , which forecasts Ukraine's GDP growth by 3.2% annually until 2030.

The global outlook remains highly uncertain due to the pandemic. Provided that effective strategies for Ukraine's recovery and development are developed, including their high-quality and smooth implementation, it is possible to eliminate the effects of the pandemic on the economy and stimulate further development of economic potential in a fairly short period of time.

The method used to forecast water withdrawal rates was to calculate the projected exponential growth based on available data.

Preliminary expert forecasts of water withdrawal trends indicate an increase in water withdrawals in line with the economic recovery.

The analysis of Figure 116 shows an increase in water use in the Prut and Siret sub-basins in 2021, with a gradual stabilisation of the trend. In the period 2026-2030, there is a trend of consistent growth in water intake due to the growing needs of economic sectors.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
realistic	33,01	32,33	32,70	31,83	34,31	18,74	27,6	27,5	27,4	27,5	27,3	28,2	29,0	29,9	30,8	31,7
pessimistic	33,01	32,33	32,70	31,83	34,31	18,74	26	27	27	27,3	26,8	27,6	28,5	29,4	30,2	31,1
optimistic	33,01	32,33	32,70	31,83	34,31	18,74	28,0	27,6	27,7	27,8	27,6	28,5	29,3	30,2	31,1	31,9

Figure 116. Forecast of water abstraction in the Prut and Siret sub-basins until 2030.

The results of forecasting water abstraction volumes in the Prut and Siret sub-basins by 2030 by economic sector are shown in Figure 117.

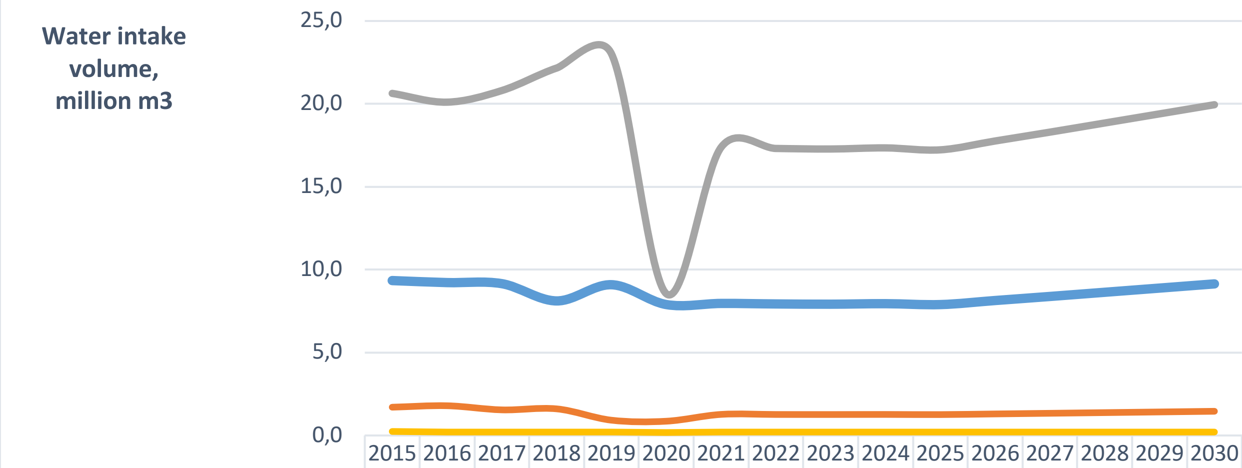
An analysis of water use data from[53] shows a significant drop in water abstraction in sub-basins, in particular in the agriculture sector by more than 2.5 times. This may be due to the decline in the agricultural production index in 2020, as well as to the conversion of water use reporting to electronic format and incomplete reporting data.

In the municipal sector, the decline in water intake in 2020 was 15%.

[51] Forecast of global economic development until 2030. Ukrainian Institute for the Future. URL: https://strategy.uifuture.org/prognoz-rozvitku-sv%D1%96tovoi-ekonom%D1%96ki-do-2030e.html.

[52] International Macroeconomic Data Set. United States Department of Agriculture. URL: https://www.ers.usda.gov/data-products/international-macroeconomic-data-set.aspx.

[53] Based on water intake data for 2015-2019 provided by the Prut and Siret BWRs and data from the State Agency of Water Resources' Electronic Services Portal for 2020



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
public utility	9,34	9,22	9,16	8,12	9,09	7,90	8,0	7,9	7,9	7,9	7,9	8,1	8,4	8,6	8,9	9,1
industry	1,71	1,79	1,55	1,61	0,92	0,86	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,4	1,4	1,5
agriculture	20,6	20,1	20,8	22,2	23,0	8,6	17,4	17,3	17,3	17,3	17,2	17,8	18,3	18,8	19,4	19,9
transport	0,24	0,22	0,22	0,22	0,20	0,18	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2

Figure 117. Forecast of water abstraction in the Prut and Siret sub-basins by 2030 by economic sector

In 2021, water withdrawals for housing and communal services are forecast to increase slightly, affected by quarantine restrictions and hygiene and sanitary innovations due to the impact of the COVID-19 pandemic. Starting from 2022, water withdrawals by the housing and utilities sector are forecast to stabilise.

The industry in the Prut and Siret sub-basins is expected to increase its projected water withdrawals as a result of the economic growth of the regions. By 2030, the growth in water abstraction in these sub-basins could reach 60% compared to 2020.

The forecast of water abstraction for agricultural purposes in the Prut and Siret sub-basins is characterised by significant fluctuations. In 2021, water abstraction in this sector is expected to roughly double. 2022-2026 - the projected indicators are expected to stabilise. In the long-term period until 2030, there is a trend of gradual increase in water use in the sub-basin areas.

No significant increase in water abstraction by transport sector water users is forecast.

Tools of economic control

6.3.1 Payback of water resources use

The payback of water resources use is the ratio of funds received from the use of water resources to funds spent on the provision of water services. The description of water services and water use in the Prut and Siret sub-basins is presented in accordance with the institutional structure of water services regulation:

I. Centralised water supply and sewerage services;

II. Special water use by economic sectors - payments and fees are paid to the budgets of all levels (rent, environmental tax for discharges into water bodies in Ukraine, lease of water bodies).

I. PAYBACK OF CENTRALISED WATER SUPPLY AND SEWERAGE SERVICES

In the Prut and Siret sub-basins, centralised water supply and sewerage services are provided by licensed companies of the National Energy and Utilities Regulatory Commission and organisations licensed by local governments.

The largest revenues are received by water and sewerage companies. According to estimates, water and sewerage companies - NEURC licensees in the Prut and Siret sub-basins (1 licensee, only 1% of the Ukrainian market[54]) received about UAH 255 million in 2020[55] (including VAT).

54 As of the beginning of 2021, the NEURC licensed 55 water and wastewater companies

55 Hereinafter, calculations were made on the basis of available statistics in Ukraine

The cost recovery of water supply and wastewater services, calculated as the ratio of tariff to cost, is more than 100% in the Prut and Siret sub-basins. Due to the insufficient level of customer payments for the services provided, which amounted to 91% in 2020 (90% for water supply and 94% for sewerage), a situation arises where water services are not sufficiently covered by customer payments and the sustainability of water services is threatened. The level of consumer payments for ChernivtsiVodokanal is 93.1%, which corresponds to a high level.

The condition of the water supply and sewerage networks in the Prut and Siret sub-basins is unsatisfactory, which affects water quality. The main source of investment in 2020 in the Prut and Siret sub-basins, as in previous years, was depreciation in the amounts provided for in the tariff structures. Funds were also raised from the profits provided for in the tariff structure of licensees.

Given that the profit in the tariffs was on average 2%, in the Prut and Siret sub-basins, the estimated profit of the utilities of the NEURC licensees was about UAH 5 million (out of a total of about UAH 810 million received by the companies). However, none of the companies provided for the use of profits for the formation of a reserve fund (capital) for modernisation or for production investments, which should have been provided for in their business activities.

According to the NEURC, "the amount of production investments from profits is determined in the amounts necessary for the gradual restoration of networks (improvement of the functioning of water and sewerage enterprises), and taking into account the needs to fulfil the financial obligations of licensees to international financial organisations". However, this level is extremely insufficient.

II. PAYBACK OF THE USE OF WATER DIVERSIONS IN THE PRUT AND SIRET SUB-BASINS

(based on public finance calculations)

1) REVENUES FOR SPECIAL WATER USE

In accordance with the principles of "user pays" and "polluter pays" The Tax Code of Ukraine establishes a fee for special water use:

A. Rent for water abstraction for different types of water users;
B. Environmental tax on discharges into water bodies;

In addition, there is a fee for the use of water bodies for aquaculture purposes:
C. Rent for water bodies;
D. Payment for special use of water bioresources.

A. Rent for special water use

The state (general and special funds combined) and local (general fund) budgets received a total of UAH 17.2 million from business entities in the Prut and Siret sub-basins by administrative region in 2017, UAH 23.5 million in 2018, and UAH 23.1 million in 2019.

In 2019-2020, there is a downward trend in rent revenues.

The Prut and Siret sub-basins are among the lowest in Ukraine in terms of special water use rents.

Table 90. Dynamics of rent payments for special water use to the state and local budgets in the Prut and Siret sub-basins, UAH[56]

Year/ area	Ivano-Frankivsk		Chernivetska		Together		Total by sub-basin
	state budget	local budgets	state budget	local budgets	state budget	local budgets	
2017	3397526,1	3397526,0	5187707,5	5187804,1	8585233,7	8585330,2	**17170563,84**
2018	5000265,2	4091246,8	7940289,8	6497068,4	12940555,0	10588315,2	**23528870,24**
2019	5224232,4	4274605,8	7454752,8	6099472,6	12678985,1	10374078,3	**23053063,46**
2020	4031805,0	3298813,8	7085986,2	5797503,1	11117791,2	9096316,8	**20214108,07**

B. Environmental tax on discharges of pollutants into water bodies

56 Source: Reports on local budget revenues, Reports on state budget revenues

In the Prut and Siret sub-basins, *in* 2018-2020, the state budget and the special fund of local budgets received tax revenues for pollutant discharges directly into water bodies at the level of UAH 1.5-1.6 million. More than half of these funds (55%) are collected by local budgets in accordance with the budget allocation (Table 91). Since 2019, there has been an upward trend in environmental tax revenues in Chernivtsi region.

Table 91. Revenues from environmental tax on discharges into water bodies to the state and local budgets in the Prut and Siret sub-basins, UAH[13]

Year/ area	Ivano-Frankivsk		Chernivetska		Together		Total by sub-basin
	state budget	local budgets	state budget	local budgets	state budget	local budgets	
2017	146977,5	587910,1	117325,7	469302,7	264303,2	1057212,8	**1321516,0**
2018	423428,7	517524,3	287611,1	351524,9	711039,8	869049,2	**1580089,0**
2019	336207,1	410920,0	348058,7	425405,4	684265,9	836325,4	**1520591,3**
2020	340329,6	415958,6	365007,5	446120,6	705337,1	862079,2	**1567416,3**

C. Payment for the lease of water bodies

The weighted average rent is unified for all water bodies in the Prut and Siret sub-basins and is constantly increasing. Its dynamics is as follows: in 2017 - UAH 156.9 per hectare, in 2018-2020 - UAH 162.7 per hectare.

According to estimates, local budgets in the sub-basin regions received rent for water bodies (parts of them) in the amount of UAH 148-109 thousand or 1.5-0.8% of the national figure in 2017-2020.

In the Prut and Siret sub-basins, the trend is towards a decrease in water body rental fees, by almost 40% compared to 2017.

According to the State Tax Service, local budgets of all levels in Ukraine received a total of UAH 10 million for the lease of water bodies in 2017-2018, UAH 13.5 million in 2019, and UAH 14 million in 2020 (Table 92).

Table 92. Dynamics of rent revenues to local budgets in the Prut and Siret sub-basins, UAH

Region/year	2017	2018	2019	2020
Ivano-Frankivsk	38497,7	55248,9	51027,4	32261,3
Chernivetska	109861,3	93786,8	84309,1	76393,3
Total by sub-basin	**148359,0**	**149035,7**	**135336,5**	**108654,6**

D. Payment for special use of fish and other aquatic bioresources

The fee for the use of fish and other aquatic bioresources is ***levied in*** accordance with the Resolution of the Cabinet of Ministers of Ukraine[57] According to the report on local budgets, only Ivano-Frankivsk region (with a 35% share in the sub-basin) received UAH 8.1 thousand from the fee for the special use of fish and other aquatic bioresources in 2020.

In 2017-2019, there were no revenues from fees for the special use of fish and other water resources.

Table 93. Dynamics of revenues from fees for special use of water bioresources to local budgets in the Prut and Siret sub-basins, UAH

Region/year	2017	2018	2019	2020
Ivano-Frankivsk	-	-	-	8146,86
Chernivetska	-	-	-	-
Total by sub-basin	-	-	-	**8146,86**

2) EXPENDITURES ON WATER RESOURCES IN THE PRUT AND SIRET SUB-BASINS

[57] Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure for Charging Fees for the Special Use of Water Bioresources and the Amount of Fees for Their Use" of 12 February 2020, No. 125

A. Capital and current expenditures from the state and local budgets for environmental programmes in the field of water resources protection

According to government statistics, capital investments and current expenditures are allocated to nine environmental areas, including those directly related to the reproduction and protection of water resources:

- waste water treatment;
- protection and rehabilitation of soil, groundwater and surface water.

The share of the former is more significant than the latter, accounting for about half of all expenditures out of the total amount of capital and current expenditures in all areas - Tables 94-96.

These two areas are covered by expenditures from the state (including the State Environmental Protection Fund) and local budgets (including local environmental protection funds), own funds, and other sources of funding. In 2019, UAH 224.278 million was allocated.

In 2018 and 2019, the information on capital and current expenditures reported in the state statistical reports is the same in the respective oblasts.

In 2020, capital and current expenditures will increase by more than 40% due to capital investments in the area of soil, groundwater and surface water protection and rehabilitation. These expenditures are aimed at implementing flood protection and bank protection measures, given the growing hazards and periodic destructive effects of floods and floods in sub-basins.

Table 94. Dynamics of capital investments in the Prut and Siret sub-basins, thousand UAH

Area.	2017			2018			2019			2020		
	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water
Ivano-Frankivsk	138101,6	30536,7	26833,8	86973,3	43940,3	19679,5	86973,3	43940,3	19679,5	93654,9	14657,9	62492,3
Chernivetska	19245,3	2321,9	14518,4	24391,4	14114,0	5705,8	24391,4	14114,0	5705,8	64753,3	5475,3	58563,9
Total by sub-basin	**157346,8**	**32858,6**	**41352,2**	**111364,7**	**58054,3**	**25385,3**	**111364,7**	**58054,3**	**25385,3**	**158408,2**	**20133,2**	**121056,2**
% of programmes from the total		**20,9**	**26,3**		**52,1**	**22,8**		**52,1**	**22,8**		**12,7**	**76,4**
A total of 2 water protection programmes		**74210,8**			**83439,6**			**83439,6**			**141189,4**	

Table 95. Dynamics of current investments in the Prut and Siret sub-basins, thousand UAH

Area.	2017			2018			2019			2020		
	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water
Ivano-Frankivsk	110681,1	49112,2	11609,9	221745,4	77535,5	13336,3	221745,4	77535,5	13336,3	205347,0	86174,3	9415,4
Chernivetska	70420,9	36724,2	1543,2	98881,5	48287,3	1678,9	98881,5	48287,3	1678,9	131759,9	84522,4	1393,0
Total by sub-basin	**181102,0**	**85836,4**	**13153,1**	**320626,8**	**125822,8**	**15015,2**	**320626,8**	**125822,8**	**15015,2**	**337106,9**	**170696,7**	**10808,4**
% of programmes from the total		**47,4**	**7,3**		**39,2**	**4,7**		**39,2**	**4,7**		**50,6**	**3,2**

A total of 2 water protection programmes		**98989,6**		**140838,0**		**140838,0**		**181505,1**

Table 96. Dynamics of capital and current investments in the Prut and Siret sub-basins, thousand UAH

Area.	**2017**			**2018**			**2019**			**2020**		
	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	Total expenditure on environmental programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water
Ivano-Frankivsk	248782,7	79648,9	38443,7	308718,6	121475,8	33015,8	308718,6	121475,8	33015,8	299001,9	100832,2	71907,7
Chernivetska	89666,2	39046,1	16061,7	123272,9	62401,3	7384,7	123272,9	62401,3	7384,7	196513,2	89997,7	59956,8
Total by sub-basin	**338448,9**	**118695,0**	**54505,3**	**431991,5**	**183877,1**	**40400,5**	**431991,5**	**183877,1**	**40400,5**	**495515,1**	**190829,9**	**131864,6**
% of programmes from the total		**35,1**	**16,1**		**42,6**	**9,4**		**42,6**	**9,4**		**38,5**	**26,6**
A total of 2 water protection programmes		**173200,4**			**224277,6**			**224277,6**			**322694,4**	

B. State budget expenditures for the maintenance of water infrastructure under the management of the State Agency of Water Resources

In the Prut and Siret sub-basins, water infrastructure maintenance activities are carried out by organisations under the management of the SAWR located in the respective sub-basin areas - the Prut and Siret River Basin Water Resources Administration and the Dniester River Basin Water Resources Administration (in terms of activities within Ivano-Frankivsk Oblast).

Expenditures on the operation of water infrastructure are carried out under the comprehensive programme "Operation of the State Water Management Complex and Water Resources Management"; in 2020, expenditures in the Prut and Siret sub-basins amounted to UAH 3,6804.5 thousand (UAH 23321.08 thousand for the Prut and Siret sub-basins and UAH 1,483.42 thousand for the Dniester sub-basin).

DETERMINING THE PAYBACK OF WATER RESOURCES USE IN THE PRUT AND SIRET SUB-BASINS

If the payback ratio of water resources use, calculated using the formula "Revenues / Expenses * 100":

- is more than 100%, this means that all costs are reimbursed by paying tax and non-tax revenues for services to budgets of all levels or by tariffs; budget revenues, if used for their intended purpose, can be used for water resources restoration; enterprises receive profits that can be used for production development - production investments, formation of a reserve fund (capital), etc. (part of which will be used to pay income tax);
- if the indicator is less than 100%, this indicates a threat to the sustainability of the service, as the costs of budgets or enterprises are not covered by the revenues received.

The calculated return on water use is 6.1%, which means that costs are higher than tax revenues for water services (Table 97).

This level of payback indicates a critical situation in terms of covering the costs of water services. Revenues are significantly lower than expenditures from the state and local budgets. The main share of expenditures is made up of funds from the state and local budgets allocated for measures in the area of "Protection and rehabilitation of soil, groundwater and surface water" (flood protection measures).

The calculated level of cost recovery indicates that tax mechanisms in the area of water resources use recovery in the Prut and Siret sub-basins do not ensure the sustainability of service provision.

Table 97. Balance of revenues and capital expenditures in 2020 in the sub-basin of the ah Prut and Siret

SOURCES	Receipts, thousand UAH	EXPENSES	Expenses , thousand UAH
Rent for special water use (state and local budgets)	**20214,1**	Capital investments in water resources restoration and protection	**322694,4**
Environmental tax on discharges into water bodies (state and local budgets)	**1567,4**	Expenditures from the state budget for the operation of the state water management complex	**36804,5**
Rent for water bodies (parts thereof) provided for use on a lease basis (local budgets)	**108,7**		
Payment for aquatic bioresources	**8,2**		
TOTAL RECEIPTS	**21898,4**	**TOTAL EXPENSES**	**359498,9**
ROI	**6,1%**		

6.4 Water tariffs

6.4.1 Tariffs for centralised water supply and sewerage

According to the institutional structure in Ukraine, the NEURC and local governments set the following types of tariffs for centralised water supply and sewerage services:

1) tariff for centralised supply (cold water) and sewerage (cold and hot water together) (calculated by water utilities, approved by the NEURC for its own licensees, by local authorities for other local licensees) and centralised water supply (hot water) (calculated by Teploenergo enterprises, approved by the NEURC for its own licensees, by local authorities for other local licensees);

2) tariff for centralised supply (cold water, hot water separately) and sewerage (cold and hot water) using in-building systems.

The NEURC licenses the activities of water supply companies (water utilities) if these companies serve more than 100,000 people, the volume of water supply is more than 300,000 m³, and the volume of water disposal is more than 200,000 m³.

When setting tariffs, the NEURC is guided by the principle of balancing the interests of consumers, business entities and the state: it limits the planned costs of licensees to an economically justified level that should ensure self-sufficiency of their activities, provided that they are managed efficiently and use resources economically, while at the same time providing for the necessary investments for the safe and sustainable operation of water and sewerage systems.

As of the beginning of 2021, the NEURC set tariffs for centralised water supply and sewerage in the Prut and Siret sub-basins for 1 licensee that has tariffs for other water utilities (water and wastewater business entities) - Table 99.

In 2020, the main items in the structure of the NEURC licensees' cost of services continued to be labour costs (including social benefits) and electricity purchase. Their shares are 42% and 25% in water supply (38% and 28% in 2019) and 53% and 22% in wastewater treatment (51% and 25% in 2019), respectively. Less significant cost components are depreciation, repair costs, reagents and fuels and lubricants, as well as taxes and fees, including a fee for special use of water (rent), and subsoil use fees for fresh groundwater extraction.

In the structure of the weighted average tariffs for centralised water supply and sewerage, the main share is made up of labour costs (39.73% and 51.26% respectively) and electricity (23.9% and 20.92% respectively).

Water supply and wastewater services are provided in the Prut and Siret sub-basins by enterprises licensed by local authorities - these are communal enterprises of district, city, town and sometimes village councils. The tariffs differ for different categories of users: households, budgetary organisations and commercial organisations. In general, local tariffs are 2-5 times higher than those of the NEURC licensees. Another peculiarity is that usually the tariff for wastewater disposal, which includes wastewater treatment, is higher than the tariff for water supply (Table 99).

Table 99. Tariffs for water supply and sewerage services set by local governments, including VAT

Vodokanal, licensed by the local government	Area	Water supply, UAH per 1 m³			Sewerage, UAH per 1 m³		
		Population / (apartment buildings separately, if the tariff was set in this way)	Budgetary organisations	Others (including commercial organisations and other institutions)	Population / (apartment buildings separately, if the tariff was set in this way)	Budgetary organisations	Others (including commercial organisations and other institutions)
Kolomyia Vodokanal [58]	Ivano-Frankivsk	25,36	25,36	25,36	12,89	12,89	12,89
Snyatyn Municipal Utility Company "Vodokanal" [59]	Ivano-Frankivsk	29,84	45,06	45,06	17,04	26,96	26,96
Production Department of Water Supply and Sewerage Services Yaremche[60]	Ivano-Frankivsk	20,0-25,0	30,0	30,0	20,0-25,0	35,0	35,0
Municipal enterprise "Storozhynetske ZhKh" [61]	Chernivetska	24,24	24,24	24,24	7,74	7,74	7,74
Kitsman City Council[62]	Chernivetska	26.00/ per service 27.00	36,00	36,00	20.00/ per service 20.50	38,00	38,00
Municipal enterprise Putivlmiskvodokanal [63]	Chernivetska	12,53	13,99	15,81	7,40	8,26	9,34
Beregomet enterprise Krynytsia	Chernivetska	21,75	23,92	23,94	16,92	18,60	18,60
Communal unitary enterprise "Kommunik" in the city of Vyzhnytsia[22]	Chernivetska	21,60	21,60	21,60	22.03 + subsidy from the local budget 11.87	33,90	33,90
Hlybotske Utility Company[22]	Chernivetska	9,00	14,46	18,86	6,80	8,85	11,55
Zastavna Housing and Utility Department for Heat and Water Supply[22]	Chernivetska	23,24	23,24	23,24	22,06	26,15	26,15
Kelmenetsky housing and communal services	Chernivetska	17,81	19,50	25,44	15,82	17,33	22,61
Municipal enterprise "Novoselytsia city heating network" [22]	Chernivetska	21,64	24,88	24,88	11,05	12,70	12,70
Nepolokovetsky Communal Enterprise [22]	Chernivetska	5,80	6,67	8,70	19,85	20,78	22,97
DOBROBUT 2012 [22]	Chernivetska	15,00	16,40	19,30	missing	missing	missing

58 According to https://kpvodokanal.if.ua/taryfy/, based on the decision of the Executive Committee of Kolomyia City Council No. 42 of 25.02.2021.
59 http://snyatyn.if.ua
60 https://yaremcha-miskrada.gov.ua/news/1581933183/
61 https://storozhynets.info/archives/48832
62 http://www.kitsman-rada.gov.ua/
63 https://old.bukoda.gov.ua/new/8086

6.4.2 The cost of water for industrial enterprises

The cost of water is actually paid by industrial enterprises in the form of a mandatory payment for special water use - rent. The object of taxation for rent for special water use is the actual volume of water used by water users.

In the case of surface water use, the rental rate depends on the needs of the use, the place and region of consumption, and the actual volume of water used. No rent is paid if the volume of consumption is less than 5 m³ per day and the water user does not have its own water intake facilities. Rental rates in the Prut and Siret sub-basins are among the lowest in Ukraine.

In the case of groundwater use, the rates of rent for special water use are set by the Tax Code of Ukraine and are differentiated by region. In the Prut and Siret sub-basins, the rates are shown in Table 100. The rates for groundwater use are among the highest in Ukraine.

Table 100. Rates of rent for special water use[64]

River basins, including tributaries of all orders	Rent rate, UAH per 100 cubic metres
For the use of surface water	
Danube	23,32
Name of the region	Rent rate, UAH per 100 cubic metres
For the use of groundwater	
Ivano-Frankivsk:	
Bohorodchany, Verkhovyna, Dolyna, Kosiv, Nadvirna, Rozhnyativ districts	145,42
other administrative and territorial units of the region	81,48
Chernivetska	101,8
Other rates for special water use	
For the needs of hydropower	UAH 11.31 per 10 thousand m^3
For the needs of water transport on all rivers	UAH 0.1938 per 1 tonne-day of operation
For the needs of fish farming	UAH 59.36 per 10 thousand m^3 of surface water; 71.36 - groundwater
For water in beverages	55.21 UAH per 1 m^3 of surface water; 64.39 - groundwater
For mine, quarry and drainage water	UAH 12.79 per 100 m^3

Charges for water pollution are received in the form of fines and environmental tax for discharges of pollutants into water bodies. The environmental tax is increasing annually, with the last increase in environmental tax rates occurring in 2019, when the emission rates increased by more than 2.2 times in accordance with the Tax Code of Ukraine. The tax rates for discharges of pollutants into water bodies are presented in Table 101.

Table 101. Environmental tax rates for discharges of certain pollutants into water bodies[65]

Name of the pollutant	Tax rate, UAH per 1 tonne
Ammonium nitrogen	1610,48
Organic matter (based on biochemical oxygen demand (BOD 5)	644,6
Suspended solids	46,19
Petroleum products	9474,05
Nitrates	138,57
Nitrites	7909,77
Sulphates	46,19
Phosphates	1287,18
Chlorides	46,19

[64] Tax Code of Ukraine, Article 255

[65] Article 245, Tax Code of Ukraine

Currently, the Verkhovna Rada of Ukraine is considering draft law 5600, which provides for changes in rent rates.

Table 102. Rates of rent for special water use (draft)[66]

River basins, including tributaries of all orders	Rent rate, UAH per 100 cubic metres
For the use of surface water	
Danube River Basin Region	29,96
Name of the region	Rent rate, UAH per 100 cubic metres
For the use of groundwater	
Ivano-Frankivsk	**166,51**
Chernivetska	**116,56**
Other rates for special water use	
For the needs of hydropower	UAH 12.95 per 10 thousand m^3
For the needs of water transport on all rivers except the Danube	
for self-propelled and non-self-propelled freight fleets in operation	UAH 0.2219 per 1 tonne-day of operation
for the passenger fleet in operation,	UAH 0.0246 per 1 place - day of operation
For the needs of fish farming	UAH 67.97 per 10 thousand m^3 of surface water; 81.71 - groundwater
For water in beverages	63.22 UAH per 1 m^3 of surface water; 73.73 - groundwater
For mine, quarry and drainage water	UAH 14.64 per 100 cubic metres of water

Housing and communal enterprises apply a coefficient of 0.3 to rent rates in terms of water volumes of technological standards for the use of drinking water determined in accordance with the legislation on drinking water, drinking water supply and sewerage.

66 http://w1.c1 gov.ua/pls/zweb2/webproc4_1?pf3511=72106

7 A REVIEW OF THE IMPLEMENTATION OF PROGRAMMES OR ACTIVITIES, INCLUDING HOW THE OBJECTIVES HAVE BEEN ACHIEVED

This section provides an overview of the implementation of environmental protection measures within the Prut and Siret sub-basins, which were funded by national targeted programmes, the State Environmental Protection Fund, relevant regional and local programmes or funds, the State Regional Development Fund, state investment projects, international technical assistance projects, regional and local infrastructure projects, etc. (Annex 10 (M5.3.2, M5.3.3)).

Among the national environmental programmes, we will analyse the implementation of the measures of the National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the period up to 2021 (hereinafter referred to as the Dnipro Programme). Clause 4 of the Resolution of the Cabinet of Ministers of Ukraine No. 336 of 18 May 2017 "On Approval of the Procedure for Developing RBMPs" states that the first RBMPs for each RBD are to be developed during the period of implementation of the Dnipro Programme. In accordance with clause 11 of the said Procedure, the first RBMPs for each RBD are financed from the state budget, which is provided for by the Dnipro Programme within the expenditures envisaged by the state budget of Ukraine for the respective year, as well as from other sources. The implementation of this programme is important both in the context of preparing RBMPs for the Prut and Siret sub-basins and in implementing measures to achieve the strategic environmental objective for the Prut and Siret SWB.

The Dnipro Programme aims to define the main directions of state policy in the field of water management, conservation and restoration of water resources, implementation of an integrated water resources management system based on the basin principle, restoration of the role of reclaimed land in the food and resource supply of the state, optimisation of water consumption, prevention and elimination of the consequences of harmful water impact.

The main objectives of the Dnipro Programme are:

- harmonisation of Ukrainian legislation with international standards and improvement of the regulatory framework for innovation and investment development of the water sector (partially completed);
- Implementation of an effective, justified and balanced mechanism for the use, protection and reproduction of water resources, ensuring sustainable development of the state water monitoring system in accordance with international standards (achieved);
- Implementation of the integrated water resources management system based on the basin principle, development and implementation of river basin management plans, application of the economic model of targeted financing of activities in river basins, establishment of river basin councils, as well as enhancement of the role of existing and creation of new basin water resource management agencies (partially implemented);
- Improving the technological level of water use, introducing low-water and waterless technologies, developing more rational water use standards, construction, reconstruction and modernisation of water supply and sewage systems (partially completed);
- bank protection and regulation of river channels, construction and reconstruction of hydraulic structures, protective dams, polders, flood control reservoirs, clearing of river channels, arrangement of water protection zones and coastal protection strips, development of schemes for comprehensive flood protection of territories from the harmful effects of water, improvement of methods and technical devices for hydrometeorological observations, flood forecasting (partially completed);
- Ensuring the development of land reclamation and improvement of the ecological condition of irrigated and drained lands, including restoration of the water management and reclamation complex, reconstruction and modernisation of reclamation systems and their facilities, engineering infrastructure of reclamation systems with the creation of integrated technological

complexes, introduction of new methods of irrigation and land drainage, application of water and energy-saving environmentally safe irrigation and water regulation regimes (not fulfilled).

The creation of the so-called "single" water management programme was supposed to consolidate state and local funds specifically for the implementation of the Dnipro Programme's tasks and objectives. The estimated amount of its funding was UAH 46478.46 million, including UAH 21029.03 million from the state budget, UAH 9294.2 million from the local budget, and UAH 16155.2 million from other sources not prohibited by law (in dollar terms, the equivalent of USD 6.193 billion (as of 1 January 2012), or an average of USD 688 million annually, or 0.4% of Ukraine's gross domestic product (GDP)). The amount of funding for the Dnipro Programme was determined each year when the draft State Budget Law of Ukraine for the respective year was prepared, taking into account the real possibilities of the state budget, and each year less and less funds were allocated to it. Since the start of the Dnipro Programme, as of 1 January 2019, 26% of the envisaged need has been allocated from budgets of all levels and other sources, and as of 1 January 2020, 17% of the envisaged need has been allocated, which has led to a significant failure to complete its tasks and activities on time. The main implementer of the Dnipro Programme is the State Agency of Water Resources of Ukraine. If we analyse in detail the distribution of state budget expenditures by the State Agency of Water Resources in recent years, we can see the following trend. State funds are allocated mainly for the costs of consumption of the water sector, labour remuneration, utilities, the share of financing from the state budget, for example, in 2020 was 93.5% (UAH 2092158.5 thousand) from the general fund and 81.1% (UAH 2261343.4 thousand) from the special fund. Total state budget expenditures to finance the Dnipro Programme in 2020 amounted to UAH 5022671.0 thousand. The lion's share of all funds is used for the operation of the state water management complex and water resources management - UAH 4561352.5 thousand (90.8%). In the context of the Prut and Siret sub-basins, all these generalisations and conclusions on the implementation and financing of the Programme are approximated to the relevant regional water management units. Measures to maintain water infrastructure in the Prut and Siret sub-basins are carried out by organisations under the management of the SAWR located in the respective regions - the Prut and Siret BUVR within Chernivtsi Oblast and the Dniester BUVR within Ivano-Frankivsk Oblast. For the third year in a row, the issue of extending the Programme's term from 2022 to 2024 until the RBMP is prepared has been resolved by reviewing the amount of funding for the measures and agreeing on their scope at the central and regional levels. As of 8 June 2021, the Accounting Chamber of Ukraine conducted an audit of the effectiveness of the implementation of the Dnipro Programme measures for the period up to 2021. The purpose of the audit is to identify existing problems with the implementation of the Dnipro Programme and to confirm or deny the need to extend the National Target Programme for the Development of Water Management and Environmental Improvement of the Dnipro River Basin until 2024.

Equally important and necessary was the National Target Programme "Drinking Water of Ukraine for 2011-2020", approved by the Law of Ukraine No. 2455-IV of 3 March 2005 (hereinafter referred to as the Drinking Water Programme). Its main goal was to ensure the rights of citizens to an adequate standard of living and environmental safety guaranteed by the Constitution of Ukraine by providing drinking water in the required volumes and in accordance with the established standards. To achieve this, the Drinking Water Programme was designed to ensure the implementation of the state policy on the development and reconstruction of centralised water supply and sewerage systems; protection of drinking water sources; bringing the quality of drinking water in line with the requirements of regulatory acts; regulatory support in the field of drinking water supply and sewerage; development and implementation of research and development projects using the latest materials, technologies, equipment and devices. The estimated amount of funding for the Drinking Water Programme was UAH 9471.7 million (in 2010 prices), of which UAH 3004.3 million was allocated from the state budget and UAH 6467.4 million from other sources.Due to the lack of adequate funding over the 10 years of the Drinking Water Programme in Ukraine, there have been no significant positive changes in the provision of drinking water in the required volumes and of the appropriate quality. Thus, as of 1 January 2020, about 1% of cities, more than 10% of urban-type settlements and almost 70% of villages in Ukraine (8.934 million people) were not provided with centralised drinking water supply. Almost 1 in 4 citizens of the country is not provided with centralised water supply. The problem of using imported water covers at least 9 regions of the country and directly affects at least 268,000 people living in 824 settlements. According to global standards for water quantity and quality, Ukraine is classified as a low-water country. Ukraine ranks 37th among 40 European countries in terms of drinking water quality. And over the past 10 years, our performance has only been deteriorating. And in terms of water per capita, Ukraine is 125th in the global ranking. At the same time, the National Target Programme Drinking Water of Ukraine is not being implemented or financed at all. The last time the Drinking Water Programme was funded was in 2018. In

2018, UAH 200 million was allocated from the state budget of Ukraine for the Drinking Water Programme, while only water and sewerage companies in Ukraine submitted projects totalling UAH 1.3 billion. Such activity of the companies is caused by their unsatisfactory financial and economic condition, as well as the inability of local governments to provide the necessary support for the renewal of fixed assets from local budgets. In addition, it is worth noting that the procedures for obtaining grants and loans from international financial institutions are quite lengthy and involve significant risks, so obtaining state funds for the implementation of a particular infrastructure project was a desirable goal for each water utility. In 2019-2020, the Drinking Water Programme was not funded and ended in 2020. In order to continue supporting the water supply and wastewater treatment companies, in 2019, the Ministry of Regional Development developed and submitted to the central executive authorities and specialised associations a draft law "On Amendments to the Law of Ukraine "On the National Target Programme "Drinking Water of Ukraine" for 2011-2020", which provided for the extension of the Programme for another 5 years. Interagency approval, coordination, and consultations with the Ministry of Finance lasted for two years. The Resolution of the Verkhovna Rada of Ukraine No. 980-IX of 5 November 2020 provides for the possibility and expediency of increasing/foreseeing expenditures and providing loans from the general fund of the draft state budget for 2021 under the budget programme "Implementation of the National Target Programme "Drinking Water of Ukraine" for the Ministry of Communities and Territories Development of Ukraine (instead of MinRegion) (clause 2.17.68). The Drinking Water of Ukraine programme will be extended until 2025. "No one should be left behind" is the principle on which state policy should be based, based on the global agenda. However, this does not automatically mean that the state level should bear the entire burden, including the financial burden. Public funds are not enough for everything and everyone - this is obvious and clear to everyone. So what should we do in the face of limited resources? Assessing the initial conditions and prospects and helping those who are in the worst situation compared to others would seem to be a logical and balanced decision. In our opinion, a "cumulative effect" or "synergy effect" from the combination of the two programmes Dnipro and Drinking Water could be achieved in the country's water sector. For example, the construction of main water pipelines at the expense of the SAWR (Dnipro Programme) could be simultaneously supplemented by the creation or reconstruction of both local water supply and sewage networks at the expense of the Ministry of Communities and Territories Development (Drinking Water Programme). When analysing the implementation of these two programmes, which operated almost in parallel to each other in 2013-2020, we did not track the effect of synergy, continuation, or combination of actions of one and the other agencies. The lack of interaction and coordination of activities led to a lack of complementary effect. The trend of programme synergy could be transferred to the regional level, where national programmes could also be complemented by regional programmes.

One of the elements of the RBMP structure is Section 3 "Areas (territories) to be protected and their mapping: Emerald Network sites; sanitary protection zones; protection zones for valuable aquatic bioresources; surface/groundwater bodies used for recreational, medical, resort and health purposes, and bathing waters; zones vulnerable to (accumulation of) nitrates", therefore, in the context of preparing and implementing the RBMP, it is very important to have information on the implementation of the National Programme for the Development of Nature Reserves for the period up to 2020, approved by the Cabinet of Ministers of Ukraine on 8 February 2006, No. 70-r (hereinafter referred to as the NRF Programme). According to the data on the registration of protected areas and sites submitted by the local executive authorities responsible for implementing the state policy in the field of environmental protection (hereinafter referred to as the "National Environmental Protection Agency"), as of 1 January 2020, the Ukrainian PA system comprised 8,512 territories and sites with a total area of 4.418 million hectares within the territory of Ukraine (actual area 4.085 million hectares) and 4,2500.0 hectares within the Black Sea. The ratio of the actual area of the nature reserve fund to the area of the state (the "reserve indicator") is 6.77%. The NRF is managed by the Ministry of Ecology and is funded through the state budget programme KPKVK 2701160 "Conservation of protected areas". In 2020, UAH 403734.6 thousand (state fund) and UAH 25644.9 thousand (special fund) were used for measures to conserve and expand the NRF, totalling UAH 429581.5 thousand. In general, the performance indicators under this budget programme were met.

The State Target Programme for the Development of Land Relations in Ukraine for the Period up to 2020, approved by the Cabinet of Ministers of Ukraine, was established to define and implement the main directions of state policy aimed at improving land relations and creating favourable conditions for sustainable development of land use in urban and rural areas, facilitating the solution of environmental and social problems of rural areas, developing highly efficient competitive agricultural production, and preserving the natural values of agricultural landscapes. The result of the underfunding of the Land Programme is excessive ploughing of agricultural land, which leads to a violation of the ecologically balanced ratio of agricultural, nature reserve and other environmental, health, recreational, historical, cultural, forestry, water fund lands, and an increase in the area of degraded, low-productive, and technogenically polluted land (diffuse sources of pollution). As of 1 January 2021, more than 500,000 hectares of degraded, underutilised and technogenically contaminated land are subject to conservation, 143,000 hectares of disturbed land need reclamation, and 294,000 hectares of underutilised land need improvement. Currently, a separate Ministry for Development of Economy, Trade and Agriculture of Ukraine has been established (Ministry of Economy, Resolution of the Cabinet of Ministers of Ukraine No. 838 of 19 September 2019), which will implement the new State Target Programme for the Development of Land Relations and National Geospatial Data Infrastructure in Ukraine for the period up to 2030 (Land Programme, draft order of the Cabinet of Ministers of Ukraine of 13 April 2021).

Budgetary environmental funds are one of the most important sources of financing environmental activities. Currently, Ukraine has a three-tiered system of environmental funds, consisting of the State Environmental Protection Fund (SEPF), regional and local (city, town and village) environmental protection funds. At the regional level, the regional and local environmental protection funds are a significant source of funding for environmental protection measures.

The environmental funds are used for targeted financing of environmental protection measures in accordance with the List of activities related to environmental protection measures approved by the Resolution of the Cabinet of Ministers of Ukraine No. 1147 dated 17 September 1996. In accordance with the Law of Ukraine "On Environmental Protection" dated 25 June 1991 No. 1264-XII (as amended on 18 December 2019), the financing of environmental protection measures, including water protection, is carried out at the expense of the State Budget of Ukraine, local budgets, funds of enterprises, institutions and organisations, environmental protection funds, voluntary contributions and other funds. In order to finance environmental protection and resource conservation measures, special-purpose funds of the National Environmental Protection Agency are created at the state and local levels, the so-called environmental funds. The idea of environmental funds is that polluters should finance the restoration or improvement of an object that is subject to pollution or deterioration as a result of their activities. Based on the experience of international practice, it is believed that earmarked revenues are a reliable way to secure sources of funding, so environmental funds are considered as sources of earmarked revenues for common environmental protection costs.

However, Ukraine faces a paradoxical situation: business entities that pollute the environment pay these funds, while most environmental, including water management, problems remain unresolved. According to the Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Regulation on the State Environmental Protection Fund" of 7 May 1998, No. 634 (as amended by the Resolution of the Cabinet of Ministers of Ukraine No. 1065 of 4 December 2019), the State Environmental Protection Fund became part of the State Budget of Ukraine. All environmental funds go to the consolidated budget, and environmental protection measures are financed on a residual basis, or on the principle of urgent need, when a critical, emergency environmental situation has already occurred. In fact, the entirety of the environmental tax collected is dissipated within the general and special funds of the state and local budgets. According to the Ministry of Finance, in 2018, environmental tax revenues amounted to UAH 2779.6 million, which significantly exceeds the budget expenditures of UAH 361.1 million for targeted environmental protection measures, which has signs of inefficient and misuse of environmental tax and is a violation of the current legislation. In 2013, the Budget Code of Ukraine stipulated that 33% of 53%, and in 2014 - 50% of 65% of the funds received by the special fund of the state budget should be used to finance exclusively targeted environmental modernisation projects of enterprises within the amount of environmental tax paid by them in accordance with the procedure established by the Cabinet of Ministers of Ukraine. However, not a single Ukrainian company has been able to take advantage of this provision due to the lengthy development of bylaws. According to 2018 data, the share of environmental revenues (rent, environmental tax, special permits, fines) in the state budget was over UAH 52 billion, of which UAH 4.6 billion was allocated to support the activities of the relevant central government agencies and environmental control, and only UAH 4.2 billion, or only 8% of environmental funds, was allocated to implement environmental protection measures. This also includes the allocation of funds for the national budget programmes Dnipro and Drinking Water, the actual funding status of which is presented above. The distribution of environmental funds between agencies and entities is as follows: the State Agency of Water Resources (38%), local budgets (24%), SAUEZM (22%), Ministry of Ecology (now Ministry of Environment) (9%), State Environmental Inspectorate (4%), and State Service of Geology and Subsoil (2%) received the most. The state budget for 2020 allocated UAH 496.356 million to finance environmental protection measures. It is clear that such expenditures cannot play a significant role in solving environmental problems, including addressing the issue of water pollution and depletion, and even more so in fulfilling the obligations assumed by Ukraine to the global community in the field of environmental protection and, in particular, the preparation of RBMPs to achieve a "good" environmental status for the MEAs of each RBF. For comparison, on average, EU countries spend 0.8% of their GDP on environmental protection. For example, in Poland, the average annual funding for environmental programmes is EUR 1-1.3 billion. Half of these funds are covered by national funding, and the other half by attracting international funding. In our realities, it is obvious and undeniable that we need to urgently restore and increase the targeted use of environmental tax funds and possibly create an extra-budgetary State Environmental Protection Fund with clear directions for using the funds and create an independent, effective, transparent instrument for financing environmental protection measures. The implementation of Ukraine's international commitments in the field of environmental protection is impossible without financial support for the environmental modernisation of business entities themselves, which need to bring their operations in line with high European standards. Public investment projects in Ukraine have once again proved to be inefficient and highly dependent on state funding.

In 2019-2020, the State Fund for Regional Development (hereinafter referred to as the SFRD) was much better funded, with funds allocated for specific investment projects in the regions, although the share of environmental projects, in particular water supply and sewage construction/reconstruction projects, was negligible. The SFRD was established in 2012 with the aim of increasing the competitiveness of regions by unlocking their own potential. The SFRD is the main instrument of the state to finance social, economic, infrastructure, cultural and sports projects throughout the country. In 2015-2020, a total of UAH 27.1 billion was distributed from the SFRD. During this time, about 4,500 projects were funded, most of them in the field of education (35%). Other projects that received significant funding included healthcare and social protection (18%), sports (14%), road infrastructure (12%), energy supply and sewage (11%). Over the past three years, the SFRD has allocated UAH 9.48 billion for projects in all regions of Ukraine. In total, about 10 thousand project proposals are available on the SFRD website. In 2020, we managed to significantly increase the percentage of disbursement of the SFRD funds. In 2020, UAH 4.9 billion was financed from the SFRD, half of which went to educational projects. The second largest area of funding was for sports facilities (22%). A significant portion of the SFRD funds was allocated to healthcare (12.2%), road transport projects (5%), and water supply and sewerage projects (6%, or UAH 294 million). In total, 284 projects were implemented at the expense of the SFRD in 2020.

With regard to the review of financing of regional local programmes and implementation of environmental protection measures, it can be stated that in two administrative regions that are part of the Prut and Siret sub-basins, targeted regional programmes were developed and approved by the sessions of regional councils in accordance with the national target programmes. Given that these regions belong to the flood-prone region of the Carpathian Mountains, priority was given to flood protection measures, construction of bank protection on mountain rivers, restoration of the hydrological regime of rivers, preservation and expansion of protected areas, and increase in forest cover. However, most of the environmental protection measures in the Prut and Siret sub-basins envisaged by these programmes were not implemented due to lack of adequate funding. Funding for both national and regional programmes is not based on a basin basis, but on an administrative-territorial basis, so in the context of reviewing the implementation of programmes or measures, including ways to achieve the objectives set out in the Prut and Siret RBFs, it is reasonable to assume that their funding at the regional level is practically very different, both in terms of capital investment and the number of projects implemented. Of course, given the economic situation in the country, the state budget is unable to finance significant expenditures on water management and reclamation, housing and communal services, or environmental protection, so at present and in the near future, some new administrative units (territorial communities) have begun to focus on their own investments, to find internal reserves of enterprises and funds in the regional, district and territorial community budgets, and to raise funds from the state budget. The first RBMP for the Prut and Siret, with specific measures for each identified MNE in the Prut and Siret sub-basins, should be the first step in helping local communities lay the foundation for planning for the future.

8 A COMPLETE LIST OF PROGRAMMES (PLANS) FOR THE PRUT AND SIRET RIVER SUB-BASINS, THEIR CONTENTS AND PROBLEMS TO BE SOLVED

The PoM has been developed in accordance with the requirements of the "Methodological Recommendations for Setting Environmental Objectives, Developing an Action Programme and Performing a Cost-Effectiveness Analysis of the River Basin Management Plan Action Programme" (hereinafter referred to as the Methodological Recommendations), approved at the meeting of the Scientific and Technical Council of the SAWR on 12 July 2023. The PoM was developed by the Prut and Siret BUVR in accordance with the Methodological Recommendations and the Procedure for Developing RBMPs in cooperation with local executive authorities, local self-government bodies, non-governmental organisations (NGOs), scientific and educational institutions and other stakeholders, taking into account the proposals and decisions of the Prut and Siret Basin Council.

The development of the software took into account the measures implemented or planned in the national RBMPs of the neighbouring countries of the Prut and Siret sub-basins (Romania, Republic of Moldova) and the chemical status of the transboundary SWBs according to the monitoring data for 2022-2023.

The programme is developed for a period of 6 years, starting with the first cycle of the plan for 2025-2030. The start of the measure implementation should be no later than the third year from the beginning of the cycle (no later than 1 January 2028). In total, the programme includes 182 measures (164 main and 18 additional).

The full list of measures in the Prut and Siret river sub-basins and their content is provided in Annex 11.

8.1 Surface water

For surface waters, the PoM includes measures aimed at:

- Reducing organic pollution (diffuse and point sources);
- Reducing nutrient pollution (diffuse and point sources);
- Reducing pollution by hazardous substances (diffuse and point sources);
- Improvement/restoration of the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, and modification of river morphology.

In addition to these measures, the PoM also includes other measures aimed at addressing other SWMI of the Prut and Siret sub-basins, identified in view of the specifics and transboundary nature of the sub-basins.

8.1.1 Measures to reduce pollution by organic matter, nutrients and hazardous substances (diffuse and point sources)

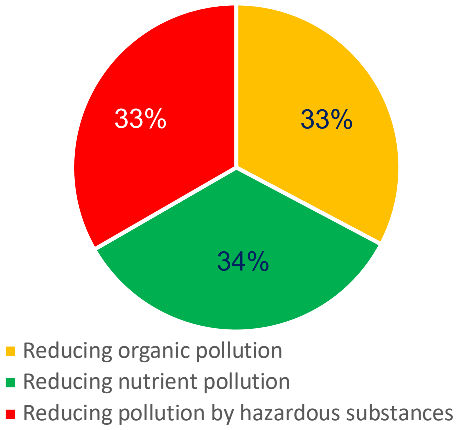
The anthropogenic pressures on the SWB is primarily due to pollution by organic, biogenic and hazardous substances from sewage treatment plants (STPs) and diffuse sources.

Number of measures aimed at reducing pollution (diffuse and point sources):

- organic substances - 146;

- biogenic substances - 148;

- Hazardous substances - 146.



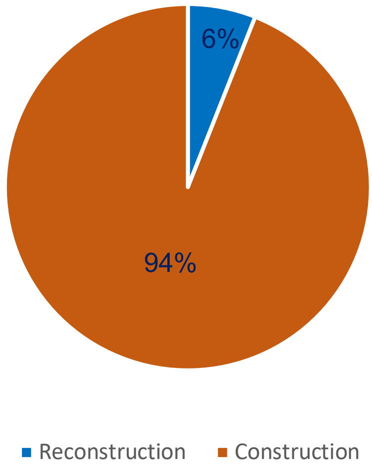


Figure 118. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point and diffuse sources and the way they are implemented (reconstruction or construction of STP and SN), %

Measures aimed at reducing pollution by biogenic substances (diffuse sources) also include "Establishment of water protection zones and coastal protection strips of water bodies in the Chernivtsi and Ivano-Frankivsk regions" (#162 and #163. Annex 11).

In accordance with the requirements of the Law of Ukraine "On Wastewater Disposal and Treatment" dated 12 January 2023 No. 2887-IX, in order to ensure high-quality centralised wastewater disposal while reducing the impact of return (wastewater) on the SWB, it is planned to build/reconstruct STPs and SNs for 146 settlements (44%) of the Prut and Siret sub-basins, with a population equivalent (PE) of 2,000 or more. Reconstruction/modernisation of STPs and SNs is envisaged in 9 communities, including 2 communities with tertiary (proper) wastewater treatment with removal of nitrogen and phosphorus compounds. The construction of new STPs and SNs is planned in 66 communities covering 137 settlements with a tendency to build single sewage treatment facilities for closely located settlements in the communities of Chernivtsi and Ivano-Frankivsk oblasts.

Among the measures aimed at reducing pollution by organic, biogenic and hazardous substances (diffuse and point sources), 70 relate to SWBs that are "at risk" of failing to achieve environmental objectives. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point sources, depending on the risk assessment of the SWB, are shown in Fig. 119.

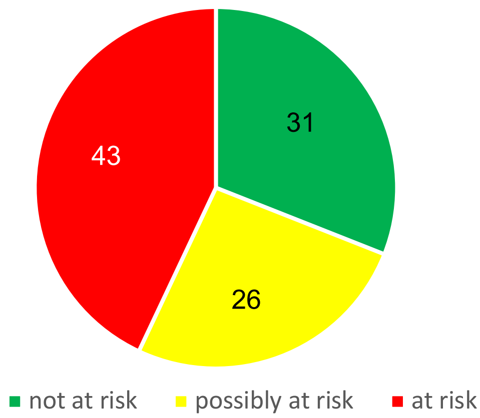


Figure 119. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point sources of pollution depending on the risk assessment of the SWB, %

8.1.2 Measures aimed at improving/restoring the hydrological regime and morphological indicators

17 measures aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, and modification of river morphology. Almost all of them are aimed at mitigating/reducing the negative impact of channel regulation works planned as part of the implementation of the "Flood Risk Management Plan for Certain Areas within the Danube River Basin Region for 2023-2030", approved on 8 October 2022 by CMU Resolution No. 895-r (Danube Flood Risk Management Plan). When developing the measures, it was taken into account that the environmental objectives are to maintain the "good" status of 3 SWB and achieve "good" status for 14 SWB. Measures aimed at improving/restoring the hydrological regime and morphological indicators in case of impaired free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology depending on the risk assessment of the SWB are presented in Fig. 120.

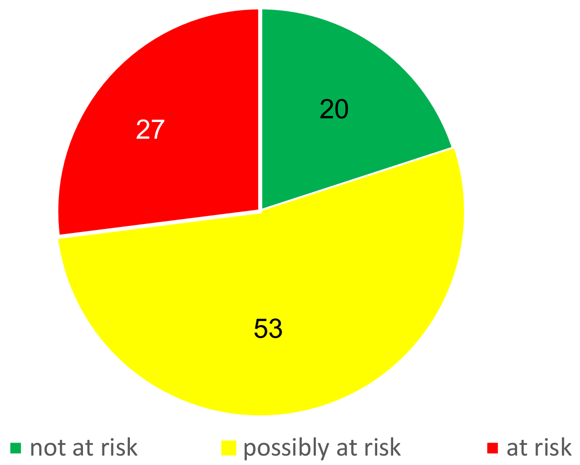


Figure 120. Measures aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology, depending on the assessment of SWB risks, %

In order to improve state accounting of water use, assessment of anthropogenic pressure and regulation of groundwater/surface water withdrawals, analysis of hydrological changes, and real-time balancing, the programme includes the measure: "Improvement of state accounting of water use within the areas of the Prut and Siret sub-basins within Chernivtsi and Ivano-Frankivsk oblasts" (#164, Annex 11). All water users in the sub-basins are to install/upgrade water metering devices with online data transmission.

8.1.3 Measures aimed at reducing pollution and improving/restoring hydrological regime and morphological indicators on transboundary SWBs

The PoM includes measures aimed at reducing pollution (reconstruction/construction of STPs and SNs) in the transboundary settlements: Chernivtsi, Novoselytsia, Marshyntsi, Mamalyha, Vanczykivka, Tarasivtsi, Podvirne, Zelena, Podvirivka, Lukachivka, Vashkivtsi (Prut River sub-basin), Storozhynets, Ropcha, Cherepkivtsi, Petrychanka, Turyatka (Siret River sub-basin). The measures are planned to be implemented on transboundary SWBs, which will have a potential impact on the neighbouring countries of the Prut and Siret sub-basins (Romania, Moldova): UA_M5.3.2_0007 (Prut River, Ukraine-Romania), UA_M5.3.2_0231 (HMWB, Patzapule River, Ukraine-Moldova), UA_M5.3.2_0233 (Zelena River, Ukraine-Moldova), UA_M5.3.2_0235 (Medvedka River, Ukraine-Moldova), UA_M5.3.2_0239 (Vilia River, Ukraine-Moldova), UA_M5.3.2_0242 (Lopatinka River HMWB, Ukraine-Moldova); UA_M5.3.3_0005, UA_M5.3.3_0006 (Siret River, Ukraine-Romania). The number of activities on the transboundary SWBs is shown in Fig. 121.

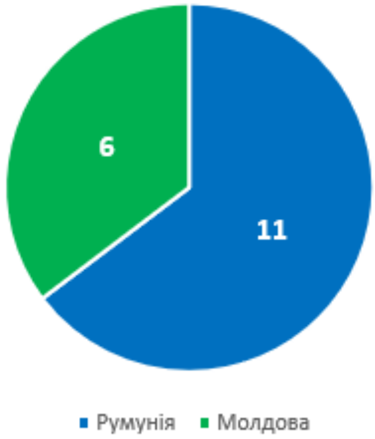


Figure 121. Number of measures at the SWB with neighbouring countries

8.2 Groundwater

The programme includes measures aimed at:

- reducing pollution (diffuse and point sources);
- preventing groundwater depletion;
- reducing the impact of planned infrastructure projects on water conditions.

It is mandatory to establish the boundaries of sanitary protection zones for groundwater intakes used for centralised water supply to the population, medical and recreational needs, indicate them in land management documentation, urban planning documentation at the local and regional levels, enter information on the relevant restrictions on land use in the State Land Cadastre and mark these boundaries on the ground with information signs. For groundwater abstractions with an extraction volume of more than 100 m^3/day within the sanitary protection zones and adjacent territories, water users shall set up a local network of observation wells to determine the amount of water and chemical and physicochemical parameters and provide observation data to the State Service of Geology and Subsoil of Ukraine.

Due to the cessation of groundwater monitoring since 2018, all measures are considered additional measures that relate not to a separate groundwater monitoring, but to groundwater monitoring in general, namely

1. Inventory of the observation well network. The inventory is necessary to resume monitoring observations and assess the need to drill additional monitoring wells.
2. The inventory will identify wells that need to be repaired, plugged or abandoned.
3. For non-pressure GWBs, it is advisable to arrange new observation points to characterise their quality state in areas with minimal anthropogenic impact on the quantitative and qualitative status of groundwater, including from point and diffuse sources.
4. At water intakes, where operational monitoring is carried out in accordance with the "Procedure for State Water Monitoring", it is necessary to reassess the operational groundwater reserves, which will allow for a more reliable assessment of the quantitative status of the GWB.

8.3 Other measures

Other measures include legislative and legal, administrative, fiscal, research and development, educational and awareness-raising, new technologies, environmental and communication, project, and other measures.

Other activities include, in particular, awareness-raising activities on the protection, conservation and restoration of water resources in all sub-basin communities. It is planned to hold annual Wetlands Day (2 February), International Water Day (22 March), Danube Day (29 June), and Clean Shores Day (third Saturday of September). It is also planned to clean up and restore river leaks, as well as to conduct outreach and education activities with local community groups, NGOs, schoolchildren and youth in the field of solid waste management. Implementation of local measures by local executive authorities to conserve, protect and restore water resources.

8.4 Assessment of the effectiveness of the PoM

The cost-effectiveness analysis (CEA) was conducted only for the main measures.

The largest share of measures is aimed at reducing pollution of the SWBs (87%). Some measures are aimed at addressing several SWMI. The vast majority of main measures relate to settlements with a population of 2 to 10 thousand, with 139 (83%). For settlements with a population of 10 to 100 thousand, there are 11 measures (7%) in cities and towns: Kolomyia, Yaremche, Vashkivtsi, Storozhynets, Krasnoyilsk, Nyzhniy Verbizh, Stopchativ, Miliyeve, Chornohuzy, Slobidka, Velykyi Kuchuriv. There is only 1 measure for settlements with a population of more than 100.0 thousand, and this is the measure for the city of Chernivtsi. This social specificity of the measures is due to the fact that the vast majority of residents of Ivano-Frankivsk and Chernivtsi regions live in rural areas.

The measures envisaged in the Programme will be financed from the state and local budgets, as well as other sources not prohibited by law. Financing of these measures from the state budget shall be carried out within the expenditures provided for in the State Budget of Ukraine for the relevant year.

The total cost of all the proposed measures for the period 2025-2030 is UAH 7095 million, per AH (74) - UAH 96 million (UAH 16 million per year), per capita (1.17 million people, data for 2020) - UAH 6064 (UAH 1011 per year). The most costly measures are the reconstruction/modernisation of the STPs and SN. For example, up to UAH 170 million is needed to implement such measures in the cities of Kolomyia and Chernivtsi.

No measures with a very high level of effectiveness were identified among the main measures.

The group with a high level of efficiency includes 2 measures: "Reconstruction of sewage treatment facilities and sewage networks in Kolomyia, Kolomyia community, Kolomyia rayon, Ivano-Frankivsk oblast" and "Completion of reconstruction of sewage treatment facilities in Chernivtsi, Chernivtsi rayon, Chernivtsi oblast", with a total cost of UAH 170 million (2%). Social impact is expected for 316 thousand people. These measures are aimed at reducing pollution by organic, biogenic and hazardous substances (SWMI 1 - 3). All the objects of the measures belong to the sector of very high water use pressure - the housing and utilities sector.

The group with an medium level of efficiency includes 144 measures with a total cost of UAH 6,488 million (91%). The measures are primarily aimed at reducing pollution with organic, biogenic and hazardous substances (SWMI 1 - 3). The social effect is 695 thousand people. All 144 sites of the measures belong to the sector of very high water use pressure - housing and communal services. This group is the largest in terms of the number of measures.

The group with low efficiency includes 16 measures with a total cost of UAH 426 million (6%). These are mainly measures aimed at reducing pollution by organic, biogenic and hazardous substances, improving/restoring the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology (SWMI 1-4), and removal of invasive vegetation (SWMI 11). Social impact - 31 thousand people.

The group with a very low level of effectiveness includes 2 measures with a total cost of UAH 9.9 million (1%), which are aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology (SWMI 4). The implementation of these measures will achieve a social effect for 3,000 people. The economic sector's pressure on water resources is minimal and corresponds to the lowest score.

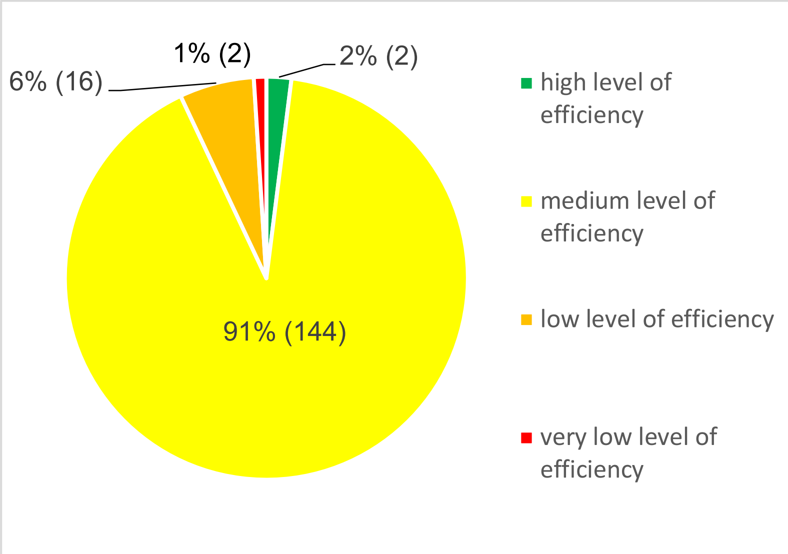


Figure 122. Distribution of main measures with different levels of efficiency by total cost of measures (number of measures in brackets)

A detailed CEA of the measures is provided in Annex 12.

9 REPORT ON PUBLIC INFORMATION AND PUBLIC DISCUSSION OF THE DRAFT RIVER BASIN MANAGEMENT PLAN

The main requirements for the organisation and conduct of public consultations by executive authorities on the formation and implementation of state policy are set out in the Procedure approved by the Cabinet of Ministers of Ukraine on 3 November 2010, No. 996. In accordance with paragraph 5 of the Procedure, public consultations are organised and conducted by the executive body that is the main developer of the draft legal act. In accordance with paragraphs 11 and 12 of the Procedure, public consultations on draft regulatory legal acts that define strategic goals, priorities and objectives in the relevant area of public administration, affect the vital interests of citizens, including those that affect the state of the environment, are mandatory in the form of public discussion and/or electronic public consultations.

In accordance with the second paragraph of clause 7 of the Procedure for Developing a River Basin Management Plan, public discussion of the draft river basin management plan is conducted for at least six months from the date of their publication. In accordance with the first paragraph of clause 8-1, the public has the right to provide comments and suggestions on information on the main anthropogenic impacts on the quantitative and qualitative status of surface and groundwater, including point and diffuse sources, within six months from the date of their publication on the website of the Ministry of Ecology.

Consultations in the process of drafting the RBMP

In 2022-2023, the Prut and Siret River Basin Water Management Authority (BUVR) consulted with the public in Chernivtsi and Ivano-Frankivsk oblasts on the SWMI of the Prut and Siret sub-basins, development of a complete list of action programmes (plans), their content and problems to be solved (PoM), and preparation of a draft Danube River Basin Management Plan (Prut and Siret sub-basins) for 2025-2030.

In order to ensure the timely preparation of the Danube RBMP, approved by the Order of the Ministry of Environmental Protection and Natural Resources of Ukraine No. 313 of 27 November 2020 "Schedule for the Development of the Draft Danube River Basin Management Plan", and to implement the orders of the State Agency of Water Resources of Ukraine No. 44 of 16 May 2022 No. 44 "On Approval of the Action Plan", No. 1105 "On Development of Draft River Basin Management Plans" of 18 December 2020, the Prut and Siret BUVR held two meetings with heads and representatives of local communities and water utilities to provide proposals for the PoM of the Prut and Siret River RBMP for the period 2025-2030. The preparation of the RBMP was also discussed at a roundtable meeting held to mark World Water Day 2023 with the participation of the Deputy Head of the Chernivtsi Regional Military Administration and the Head of the Prut and Siret Basin Council, as well as representatives of the State Environmental Inspectorate of the Carpathian District, the Department of Life Support Systems of the Chernivtsi Regional Military Administration, the Department of Ecology and Natural Resources of the Chernivtsi Regional Military Administration, the Chernivtsi Regional Centre for Hydrometeorology and the Chernivtsi Regional Fisheries Department.

In order to prepare the Danube RBMP PoM (Prut and Siret sub-basins) for the period 2025-2030, the Prut and Siret BUVR prepared and sent letters to the territorial communities of Chernivtsi and Ivano-Frankivsk oblasts, as well as to business entities providing water supply and sewerage services (water utilities), requesting them to submit proposals for the PoM aimed at addressing the SWMI of the Prut and Siret sub-basins. In order to improve cooperation with local executive authorities and key water users, the Deputy Head of the Chernivtsi Oblast State Administration (Deputy Head of the Oblast Military Administration) signed Order No. 34-YA dated 3 May 2023 "On Preparation of the RBMP PoM", namely, the submission by local communities of proposals aimed at addressing the SWMI of the Prut and Siret sub-basins (pollution by organic, nutrient and hazardous substances, hydromorphological changes, uncontrolled water use, contamination of the water supply system, etc.

In 2018, at the first meeting of the Prut and Siret Basin Council, a Working Group was formed to develop the relevant RBMP, headed by Hryhorii Kikerchuk, Deputy Head of the Prut and Siret BUVR. The Working Group included representatives of the Prut and Siret BUVR, Dniester BUVR, the Department of Ecology and Natural Resources of the Chernivtsi Oblast State Administration, the Department of Ecology and Natural Resources of the Ivano-Frankivsk Oblast State Administration, the State Ecological Inspectorate of the Carpathian District, and the Yaremche Mama-86-Yaremche City Environmental NGO, Yuriy Fedkovych Chernivtsi National University, Chernivtsi Regional Centre for Hydrometeorology, Ivano-Frankivsk Regional Centre for Hydrometeorology, Institute of Hydrobiology of the National Academy of Sciences of Ukraine, and the State Fisheries Agency in Chernivtsi Oblast.

The collected and processed proposals for the programme were presented for discussion at a meeting of the Prut and Siret Basin Council.

Public consultation of the draft RBMP

The information notice on the public consultations of the draft RBMP (2025-2030) and the draft RBMPs was published on the website of the SAWR on 21 December 2023 at the link: https://davr.gov.ua/informacijne-povidomlennya-pro-provedennya-publichnogo-gromadskogo-obgovorennya-proyektiv-planiv-upravlinnya-richkovimi-basejnami-20252030

Information on the start of public consultations of draft RBMPs and draft RBMPs was published on the website of the Ministry of Environment on 25 December 2023 at the link: https://mepr.gov.ua/ukrayina-zavershyla-robotu-nad-9-proyektamy-planiv-upravlinnya-richkovymy-basejnamy-rozpochalosya-gromadske-obgovorennya/

According to the information published in the announcement of the public consultations of the draft RBMPs (2025-2030), comments and proposals in hard copy were accepted at the following address: State Agency of Water Resources of Ukraine, 8 Velyka Vasylkivska St., Kyiv, 01024, and in electronic form to the e-mail address rbmp@davr.gov.ua. The deadline for submitting comments and proposals to the draft RBMP was 21 June 2024.

As part of the public consultations, the SAWR, with the support of the EU4Environment project, initiated a series of public engagement activities, the schedule of which was announced on 28 February 2024 on the website at the link: https://davr.gov.ua/news/derzhvodagentstvo-iniciyuye-zahodi-iz-zaluchennya-gromadskosti-do-obgovorennya-proyektiv-purb

In particular, an invitation to public consultations of the draft RBMP for the Danube River Basin (Tisza sub-basin) was published on the SAWR website for everyone on 17 April 2024 https://davr.gov.ua/news/provedennya-publichnogo-gromadskogo-obgovorennya-proyektu-planu-upravlinnya-richkovim-basejnom-dunayu-subbasejni-prutu-ta-siretu-20252030

The Prut and Siret BUVR sent out invitations to water users, all local communities and other stakeholders. The invitation to the public discussion of the draft Danube RBMP (Prut and Siret sub-basins) was also published on the same day on the BUVR website at the link: https://dpbuvr.gov.ua/26-kvitnia-2024-roku-vidbudet-sia-zakhid-z-publichnoho-hromads-koho-obhovorennia-proiektu-planu-upravlinnia-richkovym-baseynom-dunaiu-subbaseyny-prutu-ta-siretu/

In order to present the results of the analysis of the status of SWB in the Danube River Basin (Tisza sub-basin) and the relevant PoM, 7 infographics were developed: basin location features; SWMI; ecological state of SWBs (by biological indicators); chemical status of SWBs; hydromorphological changes; and PoM, and how to join public discussions.

The infographics are published on the website of the SAWR at the link: https://davr.gov.ua/plan-upravlinnya-richkovim-basejnom-dunayu1

Also, with the support of the NGO "World Wide Fund for Nature Ukraine", a questionnaire entitled "What are the "diseases" of the rivers of the Danube sub-basins - Prut and Siret - and how to improve their condition?" was developed and posted on Google forms https://forms.gle/tYGRQGg33THDBeuh9

The questionnaire was posted on the Facebook page of the Prut and Siret BUVR https://www.facebook.com/share/p/voFgeHrvWL91Ucje/ and on the WWF Ukraine page https://www.facebook.com/wwfukraine/posts/pfbid03w4761YF7YB49odXyfvH7XHN8vTwk9BmJ2Gjaq4v5NnWBFf6EBXd2hjNcPP7qkN4l

As a result, 18 responses were received, and they were also considered during the public consultations.

On 26 April 2024, an event was held in Chernivtsi to discuss the draft Danube RBMP (Prut and Siret sub-basins). The event was attended by 80 participants, including representatives of government agencies, water management organisations, members of the basin council, representatives of local communities, water users in the basin, scientists, NGOs and stakeholders. The event presented the results of the analysis of the above basin and the PoM, the vast majority of which relate to the construction or reconstruction of sewage treatment plants. This was followed by a discussion of the proposals and comments made by the participants to the draft RBMP. The results of the consultations are recorded in the Minutes (Annex 1 to the report on the results of the public discussion). Information about the event is available on the SAWR website https://davr.gov.ua/news/u-chernivcyah-vidbulosya-z-gromadske-obgovorennya-proyektu-purb-dunayu

The report on the results of the public consultations will be posted on the website of the SAWR and on the website of the Ministry of Environment.

Strategic environmental assessment of the draft RBMP

In accordance with paragraph 7 of the Procedure for the Development of a River Basin Management Plan, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 336 of 18.05.2017, the Ministry of Ecology ensures that strategic environmental assessment of draft river basin management plans is carried out in accordance with the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, ratified by the Law of Ukraine No. 562-VIII of 1 July 2015. The Ministry of Ecology contacted all affected states, but none of them expressed a desire to participate in the transboundary consultations.

The procedure for conducting a strategic environmental assessment (SEA) is set out in the Law of Ukraine "On Strategic Environmental Assessment" No. 2354-VIII dated 20 March 2018. Pursuant to Article 9(3)(1) of the Law, one of the stages of the SEA is public discussion and consultations in accordance with the procedure set out in Articles 12 and 13 of the Law, as well as transboundary consultations in accordance with the procedure set out in Article 14 of the Law. Pursuant to part nine of Article 12 of the Law, "based on the results of the public discussion, the customer shall prepare a certificate on public discussion, which summarises the comments and proposals received and indicates how the state planning document and the strategic environmental assessment report take into account the comments and proposals submitted in accordance with this article (or justify their rejection), and also justifies the selection of this particular state planning document in the form in which it is proposed for approval, among other justified al The certificate shall be accompanied by the minutes of public hearings (if held) and written comments and suggestions received. The certificate on public discussion is public information and is entered by the customer into the Unified Register of Strategic Environmental Assessment."

The certificate of public discussion of the draft Danube RBMP (Prut and Siret sub-basins) will be entered by the SAWR into the Unified Register of Strategic Environmental Assessment together with the approved RBMP.

10 LIST OF COMPETENT STATE AUTHORITIES RESPONSIBLE FOR IMPLEMENTING THE RIVER BASIN MANAGEMENT PLAN

According to part two of Article 13 of the Water Code of Ukraine, the CMU, the Council of Ministers of the Autonomous Republic of Crimea, village, town and city councils and their executive bodies, district and regional councils, executive authorities and other state bodies are responsible for public administration in the field of water use and protection and water resources restoration in accordance with the legislation of Ukraine.

The executive authorities in the field of water use and protection and water resources reproduction are the Ministry of Ecology, the SAWR, the State Geological Survey, the State Ecological Inspectorate and other bodies in accordance with the law.

Table 103. Central executive authorities in the field of water use and protection and water resources restoration

Name of the body (full and abridged)	Legal address	Official website
Ministry of Environmental Protection and Natural Resources of Ukraine (MENR)	35, Metropolitan Vasyl Lypkivsky Street, Kyiv, 03035; tel.: (044) 206-31-00, (044) 206-31-15; fax: (044) 206-31-07; e-mail: info@mepr.gov.ua	www.mepr.gov.ua
State Agency of Water Resources of Ukraine (SAWR)	8 Velyka Vasylkivska St., Kyiv, 01024; tel./fax: (044) 235-31-92; tel. (044) 235-61-46; e-mail: dar@davr.gov.ua	www.davr.gov.ua
State Service of Geology and Mineral Resources of Ukraine (Derzhgeonadra)	16, Anton Tsedik Street, Kyiv, 03057; tel: (044) 536-13-18; e-mail: office@geo.gov.ua	www.geo.gov.ua
State Environmental Inspectorate of Ukraine (SEI)	3, building 2, Novopecherskyi lane, Kyiv, 01042 tel./fax +38 (044) 521-20-40, tel: (044) 521-20-38; e-mail: info@dei.gov.ua	www.dei.gov.ua

Table 104. Main regulatory acts that define the powers of central executive authorities in the field of water use and protection and water resources restoration

Name of the body (full and abridged)	Legal act	Link on the official web portal of the Verkhovna Rada of Ukraine
Ministry of Environmental Protection and Natural Resources of Ukraine (MENR)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Articles 15 and 15^1	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text

Name of the body (full and abridged)	Legal act	Link on the official web portal of the Verkhovna Rada of Ukraine
	Regulation on the Ministry of Environmental Protection and Natural Resources of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 25 June 2020, No. 614 (Official Gazette of Ukraine, 2020, No. 59, p. 32, Article 1853)	https://zakon.rada.gov.ua/laws/show/614-2020-%D0%BF#Text
State Agency of Water Resources of Ukraine (SAWR)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 16	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Agency of Water Resources of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 20 August 2014, No. 393 (Official Gazette of Ukraine, 2014, No. 71, p. 34, Article 1995)	https://zakon.rada.gov.ua/laws/show/393-2014-%D0%BF#Text
State Service of Geology and Mineral Resources of Ukraine (Derzhgeonadra)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 17	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Service of Geology and Subsoil of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 30 December 2015 No. 1174 (Official Gazette of Ukraine, 2016, No. 3, p. 284, Article 192)	https://zakon.rada.gov.ua/laws/show/1174-2015-%D0%BF#Text
State Environmental Inspectorate of Ukraine (SEI)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 15^2	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Environmental Inspectorate of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 19 April 2017 No. 275 (Official Gazette of Ukraine, 2017, No. 36, p. 73, Article 1131)	https://zakon.rada.gov.ua/laws/show/275-2017-%D0%BF#Text

Name of the body (full and abridged)	Legal act	Link on the official web portal of the Verkhovna Rada of Ukraine
	Regulation on Territorial and Interregional Territorial Bodies of the State Environmental Inspectorate, approved by the Order of the Ministry of Energy and Environmental Protection of Ukraine dated 07 April 2020 No. 230, registered with the Ministry of Justice of Ukraine on 16 April 2020 under No. 350/34633 (Official Gazette of Ukraine, 2020, No. 33, p. 25, Article 1116)	https://zakon.rada.gov.ua/laws/show/z0350-20#Text

In order to ensure the implementation of the state policy in the field of management, use and reproduction of surface water resources within the Prut and Siret river sub-basins, to direct and coordinate the activities of organisations under the management of the SAWR on management, use and reproduction of surface water resources within the Prut and Siret river sub-basins, as well as to ensure the implementation of the state policy in the field of water management within the Chernivtsi region, the SAWR established the Basin Management Department.

Name of the body (full and abridged)	Legal address	Tel./fax	Email.	Website.
Basin water resources management of the Prut and Siret rivers (Prut and Siret BUVR)	58013, Chernivtsi, 194-b Heroiv Maidanu Street	(0372) 51-14-56	dpbuvr@gmail.com	dpbuvr.gov.ua

(*Source:* https://davr.gov.ua/vodogospodarskiorganizacii)

The names of sub-basins and water management areas within river basin districts are given in the Annex to the Order of the Ministry of Ecology and Natural Resources of Ukraine of 26 January 2017 No. 25 "On the Allocation of Sub-Basins and Water Management Areas within Established River Basin Districts", registered with the Ministry of Justice of Ukraine on 14 February 2017 under No. 208/30076 (https://zakon.rada.gov.ua/laws/show/z0208-17#Text).

The boundaries of river basin districts, sub-basins and water management areas are approved by the Order of the Ministry of Ecology and Natural Resources of Ukraine dated 03 March 2017 No. 103, registered with the Ministry of Justice of Ukraine on 29 March 2017 under No. 421/30289 (https://zakon.rada.gov.ua/laws/show/z0421-17#Text).

The Prut and Siret BUVR is a budgetary non-profit organisation that belongs to the management of the SAWR. The Regulation on the Prut and Siret BUVR was approved by the Order of the SAWR dated 30 December 2020 No. 1159 (https://dpbuvr.gov.ua/polozhennia-pro-upravlinnia-2/).

To develop proposals and ensure coordination of interests of enterprises, institutions and organisations in the field of water use and protection and water resources restoration within the Prut and Siret sub-basins, to promote integrated water resources management within the Prut and Siret sub-basins, to ensure coordination of interests and coordination of actions of stakeholders in water resources management within the Prut and Siret sub-basins, to facilitate cooperation between central and local executive authorities, local authorities and municipalities. The Prut and Siret Basin Council is an advisory body of the SAWR within the Prut and Siret sub-basins. The Regulation on the Prut and Siret Basin Council was approved by the Order of the SAWR No. 947 dated 18 December 2018 (https://davr.gov.ua/polozhennya-pro-basejnovu-radu-prutu-ta-siretu).

According to the List approved by Resolution of the CMU No. 1371 dated 13 September 2002 (as amended by Resolution of the CMU No. 1276 dated 30 November 2011) (https://zakon.rada.gov.ua/laws/show/1371-2002-%D0%BF#n38), the Ministry of Ecology and/or the SAWR are responsible for fulfilling international obligations in the field of water protection arising from Ukraine's membership in international organisations or in accordance with international treaties concluded by Ukraine.

In addition, pursuant to Article 9 of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (https://zakon.rada.gov.ua/laws/show/801-14#Text), the Government of Ukraine has concluded bilateral agreements on the protection of border/boundary waters, the responsibility for which lies with the State Agency of Water Resources:

- Agreement between the Government of Ukraine and the Government of Romania on Cooperation in the Field of Water Management on Boundary Waters of 30 September 1997 (https://zakon.rada.gov.ua/laws/show/642_059#Text)
- Agreement between the Government of Ukraine and the Government of the Republic of Moldova on the Joint Use and Protection of Boundary Waters of 23 November 1994 (https://zakon.rada.gov.ua/laws/show/498_051#Text).

On the appointment of the Commissioners of the CMU for Cooperation on Boundary Waters and their deputies, the CMU appointed by Resolution No. 126 of 10 March 2017 as amended (as amended by CMU Resolution No. 489 of 05 June 2019, No. 45 of 13 January 2021 and No. 1186 of 18 October 2022) (https://zakon.rada.gov.ua/laws/show/126-2017-%D0%BF#Text).

11 THE PROCEDURE FOR OBTAINING INFORMATION, INCLUDING PRIMARY INFORMATION, ON THE STATE OF SURFACE AND GROUNDWATER

In order to ensure proper organisation of access to public information, implementation of the Law of Ukraine "On Access to Public Information", Presidential Decree No. 547 of 05 May 2011 "Issues of Ensuring Access to Public Information by Executive Authorities", resolutions of the CMU No. 583 of 25 May 2011 "Issues of Implementation of the Law of Ukraine "On Access to Public Information" in the Secretariat of the CMU, Central and Local Executive Authorities", No. 835 of 21 October 2015 "On Approval of the Regulation

To regulate the procedure for access to public information, the SAWR adopted Order No. 163 dated 08.12.2023 "On Certain Issues of Implementation of the Law of Ukraine "On Access to Public Information" in the SAWR".

In accordance with paragraphs 16-18 of the Procedure for State Water Monitoring, approved by Resolution of the Cabinet of Ministers of Ukraine No. 758 of 19 September 2018, the results of state water monitoring are:

- Primary information (observation data) provided by the subjects of state water monitoring;
- generalised data relating to a certain period of time or a certain territory;
- Assessment of the ecological and chemical state of surface water bodies, the ecological potential of artificial or significantly modified surface water bodies, the quantitative and chemical state of groundwater bodies, the ecological state of marine waters and identification of sources of negative impact on them;
- forecasts of water conditions and their changes;
- scientifically based recommendations necessary for making management decisions in the field of water use and protection and water resources reproduction.

Subjects of state water monitoring are obliged to store primary information (observation data) obtained as a result of state water monitoring for an indefinite period of time.

The information obtained and processed by the state water monitoring bodies is official.

Primary information (observation data), generalised data, assessment results, forecasts and recommendations resulting from the state water monitoring are provided free of charge:

- for SWBs (including coastal waters) - to the SAWR and the Ministry of Environment;
- for GWBs – to the State Service of Geology and Mineral Resources and the Ministry of Environment, as well as to the SAWR in terms of generalised data, assessment results and forecasts;
- for marine waters - the Ministry of Environment.

The subjects of state water monitoring shall exchange information with each other on the data and results of state water monitoring on a free-of-charge basis.

The SAWR collects and publishes information on the state of surface waters in the public domain by maintaining the following information resources:

- geoportal "State Water Cadastre: Accounting of Surface Water Bodies" (http://geoportal.davr.gov.ua:81/);
- the web-based system "Monitoring and Environmental Assessment of Water Resources of Ukraine" (http://monitoring.davr.gov.ua/EcoWaterMon/GDKMap/Index).

Automatic data exchange has been set up between these information resources and the Ministry of Ecology's EcoHazard resource.

LOWER DANUBE RIVER BASIN MANAGEMENT PLAN (2025-2030)

June 2024

1 GENERAL CHARACTERISTICS OF SURFACE AND GROUNDWATER

1.1 Description of the river sub-basin

1.1.1 Hydrographic and water management zoning

The river sub-basin of the Lower Danube rivers is entirely located in Ukraine.

The sub-basin covers an area of 6234 km^2, occupying 1% of Ukraine's territory.

The Lower Danube sub-basin is located in one region of Ukraine - Odesa.

The hydrographic network of the Lower Danube sub-basin includes 37 rivers with a catchment area of more than 10 km^2, 16 lakes and 15 reservoirs.

1.1.2 Climate

The climate of the sub-basin is moderately warm, with short mild winters with frequent thaws, long hot, dry summers and insufficient rainfall.

These climate features are caused by a complex interaction of many physical and geographical factors, of which the most important are: radiation regime, peculiarity of atmospheric circulation, relief and sea influence.

The average annual temperature is above zero, around +10°C. The warmest month of the year is July, with an average temperature of +22 to 23°C, and on some days it reaches +38 to 41°C. The coldest month is February, with an average temperature of +0.2 to 1.4°C. In summer, the air temperature is quite stable, while in winter it is unstable, with frequent thaws.

The total amount of precipitation varies from 370 to 525 mm/year. The largest amount of precipitation (up to 60-70%) falls during the warm season (April - October) and amounts to 275-325 mm. In the cold season (November - March), the amount of precipitation rarely exceeds 30 - 40% of the annual amount (up to 200 mm).

Winter is dominated by unstable cloudy weather with frequent thaws (50-60 days) and short-term cold snaps. The snow cover is unstable, forming in the first decade of December, with an average duration of less than 40 days.

For most of the year, winds from the north and north-west prevail. In summer, westerly and north-westerly winds prevail. The average annual wind speed is 3.5-4.5 m/s. Strong winds prevail in the cold season and reach speeds of 16-20 m/s.

1.1.3 Relief

The sub-basin is distinguished by the Black Sea lowland, with an absolute height of 150-130 m. The lowland gradually slopes down to the Black Sea. The area is characterised by landforms of various genesis - accumulative, erosion, denudation, subsidence, and artificial. The northern and north-eastern parts of the sub-basin are characterised by wide watersheds (primary accumulative plains). In the south-east, there are Upper Pliocene marine terraces. Along the sea coast, there are marine accumulative landforms such as beaches, spits, and spits. Some of the sea shores, estuaries and lakes are abrasive, landslide and sometimes landslide.

In terms of tectonic structure, the lowland is part of the Black Sea Basin, filled with almost horizontal thick layers of sedimentary rocks, mainly marine sediments of the Paleogene and Neogene (clays, sands, sandy-clay and sandy-limestone rocks, limestone), overlain by continental sediments of anthropogenic age - red-brown clays, loess, loess-like loams.

Steppe landscapes with dark chestnut soils prevail. Most of the steppes are ploughed and used as agricultural land. The generally flatter topography of the territory facilitates intensive economic development of the region.

1.1.4 Geology

It is located in the Black Sea depression. The area has a two-member structure typical of the ancient Eastern European platform - the Dovendian crystalline basement and the platform cover. The basement is composed of Archean-Lower Proterozoic rocks. Sedimentary and volcanogenic-sedimentary structural-formational complexes of the Vendian, Paleozoic, Mesozoic and Cenozoic rocks are involved in the structure of the cover. The ancient rocks are located at a considerable depth, and the upper part of the section is composed of a thick thickness of Miocene terrigenous carbonate formations represented by interbedded clays, limestones, marls, sands, sandstones and siltstones. The section ends with alluvial Pliocene and Quaternary formations developed in the Danube Valley and composed of sands, siltstones, loams with interbedded clays and pebbles.

1.1.5 Hydrogeology

The sub-basin is part of the Black Sea artesian basin and is characterised by complex hydrogeological conditions. This is due to the diversity and irregular distribution of both water-bearing and water-resistant sediments, facies and lithological variability of rock composition, and the diversity of groundwater quality. Groundwater is contained in the Paleozoic, Mesozoic and Cenozoic sediments and is characterised by a variety of depths, extraction methods and availability, distribution and quality. Within the Lower Danube basin, groundwater of drinking quality is found in sandy Pliocene-Quaternary sediments and predominantly carbonate formations of the Upper Sarmatian-Miocene.

1.1.6 Soils

The Lower Danube sub-basin is dominated by steppe landscapes. The soil in the region is made up of ordinary and southern chernozems, with exclusively micellar carbonate soils in the Danube terrace plain and in the south-west of the watershed plain.

The chernozems were formed in the conditions of fescue-fescue and wormwood-fescue-fescue vegetation in combination with some annual and biennial grasses. The region's chernozems are distinguished by high biological activity, which contributes to the mineralisation of organic matter, a well-defined and strong "coprogenic" structure, high porosity (up to 50-55%) and water permeability (filtration coefficient of 1.5-3.5 mm/min).

The grain-size distribution of ordinary chernozems is heavy loamy, with a slightly lighter composition towards the south, and medium loamy varieties of southern chernozems dominate the terraced plain. In the profile of ordinary chernozems at a depth of 85-120 (130) cm, the white-eye horizon (usually the Phca horizon) is well defined, while in southern chernozems it approaches a depth of 65-90 cm. The carbonate content in this horizon reaches 17-22%. The gypsum horizon is not visible in the profile of chernozems up to a depth of 2-3 m. Primary chernozems are not saline to a depth of 5-7 m, and often deeper.

In general, chernozem soils are highly fertile and constitute the main natural resource of the region. Unfortunately, due to intensive and not always correct use, a significant part of the soil cover is noticeably degraded.

1.1.7 Flora

The vegetation of the sub-basin is predominantly steppe. According to the current geobotanical zonation, the area is part of the Danube-Dniester geobotanical district with fescue-fescue and wormwood-fescue-fescue steppes in combination with halophytic communities and saline meadows. The Danube geobotanical floodplain and deltaic region with sedge and reed beds - floodplains - stands out separately.

Floodplain meadows are developed in the river valleys and in the floodplain of the Danube River. The grass cover includes meadow bluegrass, couch grass, creeping wheatgrass, awnless fescue, red fescue, clover, and in flooded areas sedge, sward, marsh bluegrass, and yarrow. There are many representatives of the salt marsh flora - carrotwort, salt marsh wormwood, sea wormwood, Mayer's kermek, salt marsh aster, and salt marsh plantain. The Danube lowlands are occupied by floodplains, which are characterised by a complex of aquatic and coastal vegetation with tall grasses (reeds, reeds, cattails), grass bogs and floodplain forests of white willow.

The southern steppe sub-zone is characterised by the predominance of fescue-fescue associations in the grass stand and a decrease in the proportion of steppe herbs, which are represented by ephemerals (cereal grass, veronica), ephemeroids (goose onions, tulips, steppe hyacinth), and in lower reliefs by moisture-loving species (Romanian alfalfa, dry steppe sage, etc.). On the Black Sea coast, the grassland is dominated by Welsh fescue, comb rye, spikelet feather grass, and wormwood. Many of the plants are listed in the Red Book of Ukraine (water walnut, astragalus, cuckoo's foot, feather grass, etc.).

It should be noted that almost throughout the entire territory, as a result of long-term human activity, the natural vegetation cover has undergone radical changes and, first of all, cultivated vegetation has been widely introduced to replace the destroyed natural vegetation. Almost everywhere, the natural steppes and partially the Danube floodplain have been converted into arable land and are occupied by agricultural crops, with the main crops being wheat, barley, sunflower, rapeseed, peas, soybeans and rice. In addition, gardens and vineyards occupy a significant place. At the same time, the former steppes are now partially intersected by field protection strips, which are home to drought-resistant woody and shrubby vegetation.

1.1.8 Fauna

The Danube Delta is one of the richest places in modern Europe in terms of the number of fauna species.

The fauna of the sub-basin is represented by steppe, forest-steppe and intrazonal species, including birds, mammals, reptiles and fish. Within the district, there are two zoogeographic districts - the Danube-Dniester and Black Sea districts and one zoogeographic area - the Lower Danube Delta intrazonal area.

The entire territory of the sub-basin belongs to the Black Sea-Azov steppe province, which is divided into two zoogeographical districts. In the Danube-Dniester zoogeographical district, the main faunal complex is steppe, and in agroecosystems - forest. There are many birds here, including field harrier, blackbird, steppe lapwing, pheasant, grey partridge. Mammals include wild rabbit, hamster, white-toothed snipe, and steppe ferret (light).

The fauna of the Lower Danube is extremely rich, forming the Lower Danube Delta Intrazonal Area, which is home to many waterfowl: Diver (great, grey-cheeked), pelicans (pink, Dalmatian), cormorants, herons, mergansers, mallards, swans, white-tailed eagle, geese (grey goose), geese (red-fronted, white-cheeked), ducks (mallard, diver, diver), herring gulls, gulls, terns. Fish include Black Sea herring, sprat, hamsa, gobies, carp, bream, roach, silver carp, white cupid, crucian carp, pike perch, mullet, chop (large and small), striped ruff, beluga, sterlet, stellate sturgeon, Black Sea salmon, umber, mackerel. Mammals include three species of dolphins, European mink, river otter, muskrat, and many reptiles: marsh turtles, snakes, four-line and yellow-bellied snakes.

Several dozen species of fauna are listed in the Red Book of the World and the Red Book of Ukraine and are subject to protection.

1.1.9 Hydrological regime

The hydrological regime of the Lower Danube sub-basin is mainly dependent on climatic conditions. The water regime is characterised by three distinct phases: spring floods, summer and autumn floods, and autumn and winter low water.

Long-term stationary (multi-year) observations at special gauging stations on the Danube River have shown that the Danube River level is not stable throughout the year. In January-March, the water level sometimes rises to a critical level (232 cm BS at Kiliya), and in summer it drops to 10 cm BS (Vilkovo). The average annual flow of the Danube River is 198 km^3 . In winter and spring, significantly high levels are observed due to high precipitation throughout the sub-basin.

The water level in the Danube Delta is significantly influenced by wind-driven wind phenomena. In exceptional cases, under their influence, the water in the delta can rise by a metre or more.

Due to climate change and anthropogenic activities, the water content of small rivers is decreasing. The rivers are mainly fed by snow, which is characterised by spring floods and high water and a long summer and autumn low water period with rare flash floods.

The group of Danube reservoirs includes freshwater reservoirs located on the left of the Kilia arm of the Danube in the area from Reni: Kagul, Kartal, Yalpug-Kugurlui, Katlabukh, Safyan, China.

The hydrological regime of these reservoirs depends on a number of factors, but the most important factor is the water level in the Danube River and the condition of the hydraulic structures that provide water exchange between the reservoirs.

The level regime of the Soleniy Kut, Limba, Lebedynka, Kryve, Dervent, and Gradeshka lakes affects fishing conditions, water use, natural processes (land flooding, shoreline alteration), and the interests of a number of economic sectors.

1.1.10 Specifics of the river basin

The Danube is the second-longest river in Europe in terms of length and catchment area, with a length of 2,860 km, including 174 km in Odesa Oblast, and is the main waterway in southern Ukraine for supplying water to the population and economic sectors (irrigation, drinking water, industry, shipping, etc.).

The Danube Biosphere Reserve is located on the Ukrainian part of the Danube River.

The Danube reservoirs (Kagul, Kartal, Yalpug-Kugurlui, Katlabukh, Safyan, China) and the Danube Biosphere Reserve are included in the Emerald Network, and the wetlands located in the Ukrainian part of the Danube River are protected by the Ramsar Convention.

In order to improve water quality, in case of favourable hydrological conditions on the Danube River, water is exchanged. In particular, in the spring and summer, reservoirs are filled, and in the autumn and winter, water is discharged from reservoirs into the Danube River to the dead volume level.

All the Danube reservoirs are multi-purpose reservoirs, and the Cahul is a transboundary water body. To ensure proper living conditions for the population and intensive agricultural production, the territory along the Ukrainian section of the Danube River is protected by water protection dams.

The complex of flood control structures protects more than 80,000 hectares of land (including 32,000 hectares of agricultural land), 33 settlements in Reni, Bolhrad, Izmail and Kiliya districts of Odesa region, a network of international, state and local roads and other economic infrastructure facilities from flooding.

1.1.11 Typology of surface water bodies

The SWB typology was developed in accordance with the Methodology for Determining Surface and Groundwater Bodies (Methodology) approved by the Order of the Ministry of Ecology and Natural Resources No. 4 dated 14.01.2019 to detail the hydrographic zoning of Ukraine, prepare a state water monitoring programme, and develop and evaluate the effectiveness of the RBMP implementation.

In the Lower Danube sub-basin, SWBs have been identified for five categories of surface water - rivers, lakes, artificial and significantly modified surface water bodies, transitional and coastal waters.

For the typology and delineation of rivers and lakes, the EU WFD system A was used (Table 105, Table 106).

Table 105. Descriptors for rivers (system A)

Descriptors		
Catchment height, m	Catchment area, km^2	Geological rocks
• midlands: over 800 • lowlands: 500 - 800 • upland: 200 - 500 • lowland: < 200	• small: 10 - 100 • average: >100 - 1000 • Large: >1 000 - 10 000 • very large: > 10 000	• limestone • silicate • organic

Table 106. Descriptors for lakes (system A)

Descriptors			
Catchment height, m	Average depth, m	Water mirror area, km^2	Geological breeds
• upland: 200 - 500 • lowland: < 200	• shallow: <3 • average in depth: 3 - 15 • deep: >15	• small: 0,5 - 1 • average: 1 - 10 • large: 10 - 100	• limestone • silicate • organic

The EU WFD system B is used for the typology of SWBs in the categories of "transitional waters" and "coastal waters".

For "transitional waters", in addition to ecoregion and salinity, an additional indicator is used among the mandatory descriptors - origin (Table 107). This indicator, as an additional descriptor, was included following the example of Romania and Bulgaria.

Table 107. Descriptors for transitional waters (system B)

Eco-region	Salinity, ‰	Origin.
• Black Sea	• oligohaline 0.5 to < 5 • mesogastric 5 to < 18 • polygamous 18 to < 30 • euryhaline < 40	• seaside • estuaries are open • estuaries are closed

For "coastal waters", in addition to the ecoregion and salinity, additional indicators are used - exposure (protection from waves and wind), the prevailing composition of bottom sediments (Table 108).

Table 108. Descriptors for coastal waters (system B)

Eco-region	Salinity, ‰	Exposition.	Bottom deposits
• Black Sea	• desalinated < 0.5 • oligohaline 0.5 to <5 • mesogastric 5 to <18 • polygamous 18 to <30 • euryhaline 30 to <40	• protected (bays, bays) • open (cape zones, direct coast)	• clay-silt • silty sandy • sandy

The Lower Danube sub-basin is located within two ecoregions:

- SWBs of the "rivers" and "lakes" categories belong to the ecoregion: Pontic Province (12);
- SWB of the "transitional waters" and "coastal waters" categories are located in the Mediterranean ecoregion and belong to the sub-region: Black Sea.

The rivers of the sub-basin are classified as small (with a catchment area of less than 100 km^2), medium (from 100 to 1000 km^2) and very large (with a catchment area of more than 10,000 km^2) rivers.

According to the elevation of the catchment, the rivers of the sub-basin are located in lowlands (less than 200).

The geological rocks of the sub-basin are of two types: organic (O) and silicate (Si).

Table 109. Types of SWBs in the "rivers" category

№	Type code	Type
1	UA_R_12_S_1_Si	a small river in the lowlands in silicate rocks
2	UA_R_12_M_1_Si	medium-sized river in the lowlands in silicate rocks
3	UA_R_12_XL_1_Si	a very large river in the lowlands in silicate rocks
4	UA_R_12_XL_1_O	very large river in the lowlands in organic rocks

In the category of "lakes", 7 types of SWB were identified (Table 110).

Table 110. Type of SWB in the "lakes" category

№	Type code	Type
1	UA_L_12_L_1_SH_O	a large lake in the lowlands is shallow in organic rocks
2	UA_L_12_L_1_SH_Si	a large lake in the lowlands is shallow in silicate rocks
3	UA_L_12_M_1_SH_O	The middle lake in the lowlands is shallow in organic rocks
4	UA_L_12_M_1_SH_Si	The middle lake in the lowlands is shallow in silicate rocks
5	UA_L_12_S_1_SH_O	small lake in the lowlands shallow in organic rocks
6	UA_L_12_S_1_SH_Si	a small lake in the lowlands is shallow in silicate rocks
7	UA_L_12_XL_1_SH_Si	very large lake in the lowlands, shallow in silicate rocks

In the category of "transitional waters", 1 type of SWB is defined (Table 111):

Table 111. Types of SWB in the "transitional waters" category

№	Type code	Type
1	UA_TW_M5_M_M	Mesohaline estuaries

One type of SWB of the "coastal waters" category was identified (Table 112):

Table 112. Types of SWB in the "coastal waters" category

№	Type code	Type
1	UA_CW_M5_M_SH_D_SS	Mesogaline open deep silty-sandy

1.1.12 Reference conditions

The assessment of the ecological state of the SWB is based on a comparison of biological indicators (benthic macroinvertebrates, macrophytes, phytobenthos, phytoplankton and fish) with reference conditions that characterise the state of the SWB, which has not been subjected to anthropogenic impact or is minimal.

Reference conditions are determined on the basis of data obtained from reference sites, by modelling (predictive models or retrospective forecasting methods that take into account historical, paleogeographic and other available data that provide a sufficient level of confidence in the values for reference conditions for each type of SWB) or by a combination of these methods or based on expert opinion.

In order to establish reference values for biological indicators based on data from reference sites, it is necessary to establish such sites for each type of SWB in all natural categories. The network should cover a sufficient number of sites to provide a sufficient level of confidence and to account for the variability of values for indicators that correspond to the different ecological status of the SWB type.

Key criteria for selecting reference sites:

- characterise the state of the SWB without anthropogenic impact or with minimal impact,
- there is no industry or intensive agriculture,
- concentrations of specific synthetic pollutants are zero or below the detection limits,
- no morphological changes,
- water intake and flow control cause only minor fluctuations in water levels and do not affect surface water quality,
- the vegetation of the coastal zone is appropriate for the type of SWB and geographical location,
- no invasive species,
- fishing and aquaculture do not affect the functioning of the ecosystem.

In accordance with paragraph 2 of clause VII of the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 5 dated 14.01.2019 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial [...]", type-specific reference conditions may also be determined on the basis of existing reference sites in other countries for the same type of SWB or by combining the procedures described above.

Given that reference conditions for all types of SWBs are not currently defined in Ukraine, it was suggested to use the reference conditions established for the same or similar types in neighbouring EU countries, namely the Slovak Republic and Romania.

The methodology includes four hydrobiological indicators (benthic macroinvertebrates, phytoplankton, phytobenthos, macrophytes, macroalgae and eutrophication, respectively) for four natural categories of surface waters (rivers, lakes, transitional waters and coastal waters) that have been identified in Ukraine.

The environmental quality standards (EQS) were approved by Order of the Ministry of Ecology No. 332 dated 01.04.2024 "On Approval of Environmental Water Quality Standards for Determining the Ecological Status of Surface Water Bodies and Amendments to Certain Regulatory Acts".

In the second cycle of the RBMP, it is necessary to revise the reference conditions (including for the fish fauna indicator) using data from state water monitoring.

1.2 Water bodies delineation

1.2.1 Surface water

In the Lower Danube sub-basin, the SWB were determined for 37 rivers and 16 lakes (according to the State Water Cadastre: Accounting of Surface Water Bodies geoportal of the State Agency of Water Resources of Ukraine).

Within the sub-basin, 106 SWB have been identified. The identified SWB belong to the following categories of surface water:

- rivers;
- lakes;
- artificial (AWB) and heavily modified (HMWB);
- transitional waters;

- coastal waters.

Category "rivers"

According to the Methodology, 27 SWB were identified. The number of identified SWB by descriptors and types is shown in Tables 113 and 114.

Table 113. Distribution of SWBs in the "rivers" category by descriptors

Descriptor	Indicator	Number of SWB
by eco-region	Pontic Province (12)	27
by catchment area	small (S)	9
	average (M)	3
	very large (XL)	15
by the height of the catchment area	in the lowlands	27
by geological type	in silicate rocks	26
	in organic rocks	1

Table 114. Distribution of SWBs of the "rivers" category by type

№	Type code	Type	Number of designated SWB
1	UA_R_12_S_1_Si	a small river in the lowlands in silicate rocks	9
2	UA_R_12_M_1_Si	medium-sized river in the lowlands in silicate rocks	3
3	UA_R_12_XL_1_Si	a very large river in the lowlands in silicate rocks	14
4	UA_R_12_XL_1_O	very large river in the lowlands in organic rocks	1

Category "lakes"

According to the Methodology, 16 SWB were identified (Table 115).

Table 115. SWB of the "lakes" category

№	Type code	Type	Quantity of the designated SWB
Ecoregion 12 Pontic Province			
1	UA_L_12_L_1_SH_O	a large lake in the lowlands is shallow in organic rocks	1
2	UA_L_12_L_1_SH_Si	a large lake in the lowlands is shallow in silicate rocks	3
3	UA_L_12_M_1_SH_O	The middle lake in the lowlands is shallow in organic rocks	4
4	UA_L_12_M_1_SH_Si	The middle lake in the lowlands is shallow in silicate rocks	4
5	UA_L_12_S_1_SH_O	small lake in the lowlands shallow in organic rocks	2
6	UA_L_12_S_1_SH_Si	a small lake in the lowlands is shallow in silicate rocks	1
7	UA_L_12_XL_1_SH_Si	very large lake in the lowlands, shallow in silicate rocks	1

Category "transitional waters"

1 SWB has been identified.

Table 116. Types of SWB in the "transitional waters" category

№	Type code	Type	Quantity of the designated SWB
1	UA_TW_M5_M_M	Mesohaline estuaries	1

Category "coastal waters"

1 SWB has been identified.

Table 117. Types of SWB in the "coastal waters" category

№	Type code	Type	Quantity of the designated SWB
1	UA_CW_M5_M_SH_D_SS	Mesogaline open deep silty-sandy	1

Category "heavily modified surface water bodies"

Fifty-seven HMWB have been identified in the sub-basin. The share of HMWB in the total number of SWB in the sub-basin is 54%. Most of them (32 SWB) are classified as HMWB due to diversion.

19 SWB are classified as HMWB due to overregulation.

6 SWB are classified as HMWB due to a combination of regulation and channel straightening (Figure 127).

Figure 127. Distribution of HMWB by causes of hydromorphological stress, %.

Category "artificial surface water bodies"

The sub-basin has 4 AWB, 2 of which are canals and the other 2 are artificial reservoirs.

The percentage distribution of the identified SWB in the Lower Danube sub-basin by category is shown in Figure 128.

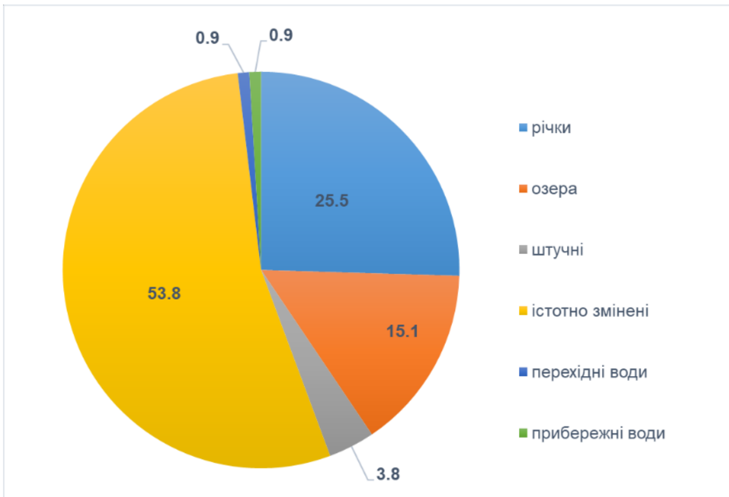


Figure 128. Breakdown of identified SWB by category, %.

Each of the 106 SWB has been assigned a unique code that looks like this:

UA_ M5.3.4_YYYY

- UA - Ukraine;
- M5.3.4 - code for the Lower Danube sub-basin (according to the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 103 of 29 March 2017 "On Approval of the Boundaries of River Basin Areas, Sub-basins and Water Management Areas");
- YYYY *is the* unique number of the designated SWB in the sub-basin.

Each linear SWB (categories "rivers", "AWB or HMWB") has a length (km). The length of the SWBs in the Lower Danube sub-basin ranges from 0.52 km (UA_M5.3.4_0069 - Valeperzha River) to 96.8 km (UA_M5.3.4_0003 - Danube River).

Figure 129 shows the distribution of the identified linear SWB in the sub-basin by length.

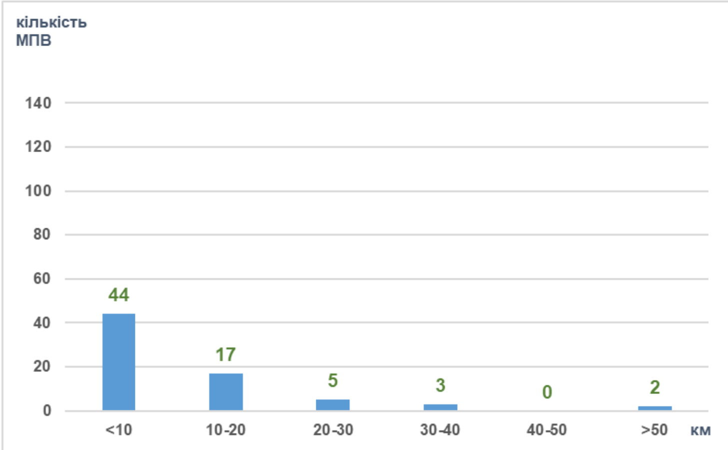


Figure 129. Distribution of the identified linear SWB by length

Each polygonal SWB (categories "lakes", "AWB or HMWB", "transitional waters", "coastal waters") has an area (km^2). The area of SWBs varies from 0.29 km^2 (UA_M5.3.4_0073 - Vynohradiv reservoir) to 242 km^2 (UA_M5.3.4_0105 - transitional waters of the Lower Danube sub-basin).

Figure 130 shows the distribution of the identified polygonal SWB by area.

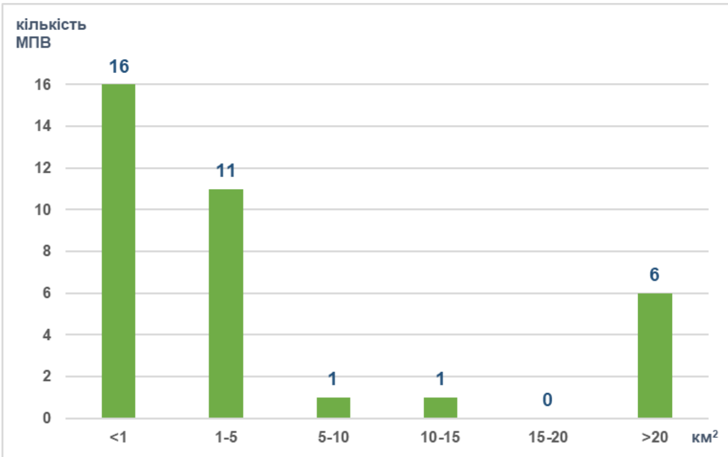


Figure 130. Distribution of identified polygonal SWB by area

1.2.2 Groundwater

The determination of the GWB was carried out in accordance with the Methodology for Determining Surface and Groundwater Bodies (Methodology) approved by the Order of the Ministry of Ecology and Natural Resources No. 4 dated 14.01.2019.

The definition of an GWB includes the division of aquifers into smaller units, the preliminary establishment of GWB boundaries based on individual characteristics and available knowledge of hydrogeological systems and anthropogenic impacts.

The definition begins with the analysis of geological maps and well data to identify different hydrogeological units within the aquifer. First of all, attention is paid to those aquifer complexes whose reserves can provide water intake of more than 10 m^3 per day.

The youngest aquifers are considered first. As a rule, the boundaries of surface water basins are approximated with the boundaries of groundwater basins, and then the determination of the GWB for deeper aquifer complexes, the boundaries of which go beyond the boundaries of surface water basins, is performed.

The codes of the defining SWB are formed as follows:

UAM5340N100

- UA - Ukraine,

- M53 is the code for the Danube basin,
- 4 - Lower Danube sub-basin, according to the Water Code,
- 0N - geological system (geological age of water-bearing rocks),
- 100 - the number of the GWB.

GIS technologies were used in the process of identifying the GWB and creating the relevant maps. According to Guideline No. 9 "On Implementation of Geographic Information Systems (GIS)", river basins, sub-basins and groundwater bodies were depicted on the map as polygons, and observation wells as points, etc.

In the process of identifying the GWB, 1 GWB was identified in the Lower Danube sub-basin.

Table 118. GWB of the Lower Danube sub-basin

№	GWB code	Aquifer (complex)	Geological index	Area of the GWB , km^2
1	UAM5340N100	GWB in the Upper Sarmatian sediments	N s_{13}	16478

GWB in Upper Sarmatian sediments (code UAM5800N500)

In most cases, the aquifer is represented by sub-horizons (up to 12) of different thickness and strike. The water-bearing rocks are layers and lenses of oolitic, shell limestone, sandstone, fine-grained sands, and shell accumulations occurring among clays of the same age. The thickness of the water-bearing rocks varies from 0.2-1.0 m to 3-5 m, and rarely up to 10-25 m. The total thickness of aquifers varies from 0.5-8 m to 20-45 m. The thickness of clays separating water-bearing rocks varies from 10 to 94 m. The depth of the aquifer cover is 60-150 m on the watershed plateau, 0-20 m in river valleys and deep gullies, and 25-50 m on the slopes of erosion cuts. There is a general submergence of sediments in the southern (towards the sea) and south-western directions, where the cover of aquifers is recorded at depths from -80 to -150. The head increases in the same direction (from 30-50 m to 100-140 m).

In terms of chemical composition and salinity, the waters are predominantly fresh and slightly brackish. The salinity increases towards the south as water-bearing rocks sink in the slow water exchange zone, but sometimes brackish water is found in the northern areas. In the coastal area, the waters become brackish and salty. The chemical composition of the waters is very diverse: from calcium bicarbonate to sodium chloride-sulfate. The salinity ranges from 0.2-1.0 to 2.2-3.8 g/dm3, rarely up to 5-7 m.

The aquifer in the Upper Sarmatian sediments of the Upper Miocene subregion is characterised by various filtration rates, which depend mainly on the lithology, degree of fracturing, and thickness of water-bearing rocks. Thus, filtration rates vary from 0.2 to 153 m/day. Well flow rates are 0.1-3.6 dm^3 /s and more.

The aquifer in the Upper Sarmatian sediments of the Upper Miocene subregion is widely used for domestic and drinking water supply (both local and centralised) throughout the entire area of its distribution, and water with high salinity is used in seaside resorts as mineral drinking and therapeutic drinking water (Kuyalnyk).

The characteristics of the GWB are given in Annex 2 (M5.3.4).

2 SIGNIFICANT ANTHROPOGENIC IMPACTS ON THE QUANTITATIVE AND QUALITATIVE STATE OF SURFACE AND GROUNDWATER, INCLUDING POINT AND DIFFUSE SOURCES

2.1 Surface water

The Lower Danube sub-basin is located within one region - Odesa. The socio-economic structure of the basin creates preconditions for the formation of anthropogenic pressure that affects surface water ecosystems. The main factors of anthropogenic pressure include:

- population. The sub-basin covers the territories of Izmail, Bolhrad and part of Tatarbunary TG of Bilhorod-Dnistrovskyi districts of Odesa region. The total population of the sub-basin as of 2019 is 313116 people, which is 1% of the total population of Ukraine;
- enterprises in various sectors of the Ukrainian economy;
- Agriculture. Agriculture is one of the leading sectors that plays an important role in shaping the sub-basin's economic growth;
- cross structures on small and medium-sized rivers that prevent the free passage of water, sediments and migration of aquatic life, and change the transit mode of rivers to an accumulation one.

The characterisation of anthropogenic load and its impact was carried out on the basis of chemical, physicochemical and hydromorphological parameters that reflect the conditions of existence of the biotic component of aquatic ecosystems. Changes in these parameters under conditions of significant anthropogenic pressure can lead to the risk of not achieving a "good" ecological status of water.

The assessment of the anthropogenic load on the SWB was carried out in accordance with the Methodological Recommendations for the Analysis of the Main Anthropogenic Loads and Their Impacts on the Surface Water Status, which were approved at the meeting of the Scientific and Technical Council of the State Agency of Ukraine for Water Resources on 20 April 2023, Minutes No. 2.

The methodological basis of the assessment was the DPSIR model developed by the European Environment Agency (EEA)[67] and adapted to the conditions of Ukraine. The determination of anthropogenic pressure was based on a sequential analysis of Drivers/Activities → Pressures → State → Impact → Response (Fig. 131).

Figure 131. DPSIR conceptual model

[67] CIS Guidance #3 Pressure and Impact Analysis, EU, 2003

The risk of not achieving a "good" environmental status of the SWB is determined on the basis of criteria for chemical, physico-chemical and hydromorphological indicators.

Criteria for chemical and physicochemical parameters:

- Disposal of untreated wastewater (point sources) - used for organic matter and nutrients;
- Wastewater fraction (point sources) - used for hazardous substances;
- Soil nitrogen balance (diffuse sources) - to determine the impact of crop production;
- Livestock index (diffuse sources) - to determine the impact of livestock.

Criteria for hydromorphological indicators:

- Disruption of the continuity of water flow and environments due to the presence of transverse artificial structures in the riverbed, disruption of the continuity of water flow and sediment movement and migration of fish and other aquatic life;
- Water intake;
- Flow control;
- Fluctuations in water levels below transverse artificial structures in the channel;
- Morphological changes that reflect a violation of the natural morphological characteristics of rivers.

By comparing the criteria with the thresholds, 3 risk categories are identified:

1. "without risk"
2. "possibly at risk"
3. "at risk"

The overall risk assessment for a SWB is determined by the worst value of any one criterion.

Assessing the risk of not achieving "good" ecological status

The risk of not achieving "good" ecological status/potential of an SWB is the risk, for each individual SWB, of not achieving the environmental objectives of the EU WFD by the end of the planning cycle, taking into account the current state of the SWB, the expected changes in the load on the SWB and the possible effects of government programmes and projects already implemented.

To assess the risk, an analysis of the anthropogenic load within the river basin area is carried out, based on chemical and physico-chemical components and hydromorphological changes.

The risk of failure to achieve environmental objectives is assessed separately from diffuse and point sources of pollution, as well as hydromorphological changes.

Assessment of the risk of failure to achieve environmental goals from point sources of pollution

Based on the results of the assessment of anthropogenic loads from point sources of pollution and their impact on the sub-basin's SWB, the risk of not achieving "good" ecological status/potential (Fig. 132) was identified for

- 99 SWB - "no risk";
- 7 SWB - "at risk".

Figure 132. Risk assessment of failure to achieve "good" ecological status/potential based on the results of the assessment of anthropogenic pressures from point sources

Assessment of the risk of failure to achieve environmental goals from diffuse sources of pollution

Based on the results of the assessment of anthropogenic loads from diffuse sources of pollution and their impact on the sub-basin's SWB, the risk of failure to achieve "good" ecological status/potential (Fig. 133) was identified for

- 35 SWB - "no risk";
- 24 SWB - "possibly at risk";
- 47 SWB - "at risk".

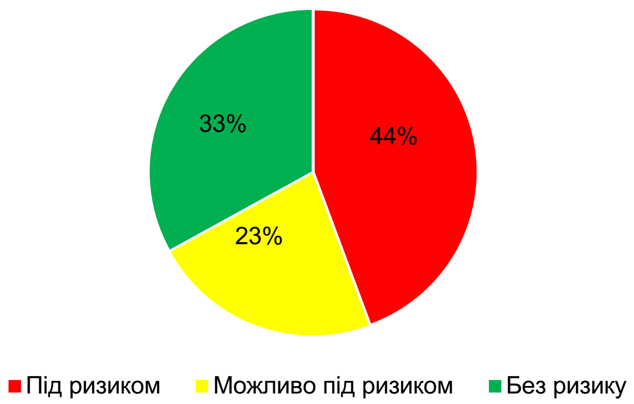


Figure 133. Risk assessment of failure to achieve "good" ecological status/potential based on the results of the assessment of anthropogenic pressures from diffuse sources

Assessing the risk of not achieving environmental goals: hydromorphological changes

Based on the results of the hydromorphological changes assessment, it was found that.[68]

- 45 SWB - "no risk";
- 57 SWB - "at risk".

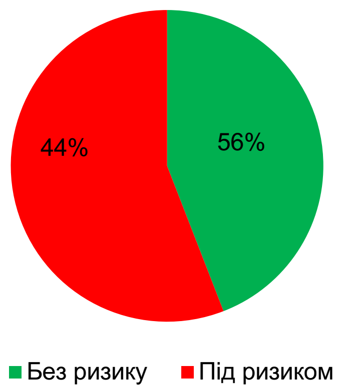


Figure 134. Risk assessment of failure to achieve good ecological status/potential based on anthropogenic pressure assessment: hydromorphological changes

Generalised risk assessment of failure to achieve 'good' environmental status/potential

The risk of not achieving a "good" environmental status/potential has been assessed as follows:

- 20 SWB - "no risk";
- 12 SWB - "possibly at risk";
- 74 SWB are "at risk".

[68] The risk of failure to achieve environmental objectives based on hydromorphological changes was not assessed for the AWB

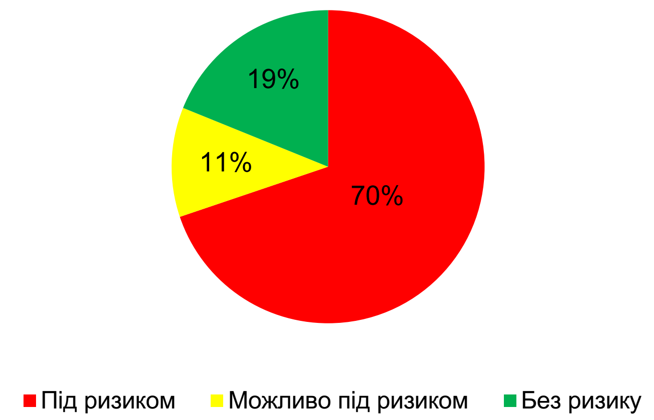


Figure 135. Summary assessment of the risk of not achieving "good" environmental status/potential of SWB

Impact of military operations on the state of surface water bodies

1. Pollution (organic, biogenic, hazardous) substances caused by:

1.1 destruction, suspension, disruption of the technological process of enterprises (including warehouses, oil product depots)

Data on the destruction, suspension or disruption of the technological process of enterprises as of September 2023 are presented in Annex 3 (M5.3.4).

1.2 by direct hit of pollutants from missiles, shells of military equipment, their washing, seepage in combat zones

Artillery shells, missiles and other munitions are basically composed of a metal shell filled with an explosive, propellant and a detonator.

Explosives are classified into primary explosives (mercury, lead azide, TNT) and secondary explosives (THE, hexogen, tetryl, TNT, picric acid, plastid-4, ammonites, dynamites, ammonals).

Metals are associated pollutants. The most common is lead, but also antimony, copper, cadmium, chromium, mercury, arsenic, nickel, bismuth and tungsten. As a rule, metals are concentrated in the sinkhole.

Flares burn at high altitude and disperse metals over large areas. Pyrotechnics can contain barium, antimony, strontium, copper, magnesium, manganese, chromium and lead. Unlike explosives and propellants, metals occur naturally in the environment, so their background concentrations need to be measured.

The detonation of rockets, artillery shells and mines produces a number of chemical compounds, including carbon monoxide and carbon dioxide, water vapour, nitrogen oxide, nitrogen, etc. A number of toxic elements, including sulphur and nitrogen oxide, also evaporate.

Monitoring of surface water in the area of active hostilities and recently liberated territories is not currently carried out for security reasons.

2. Impossibility of water monitoring or reduction of its programme (spatially and temporally) in the temporarily occupied territories.

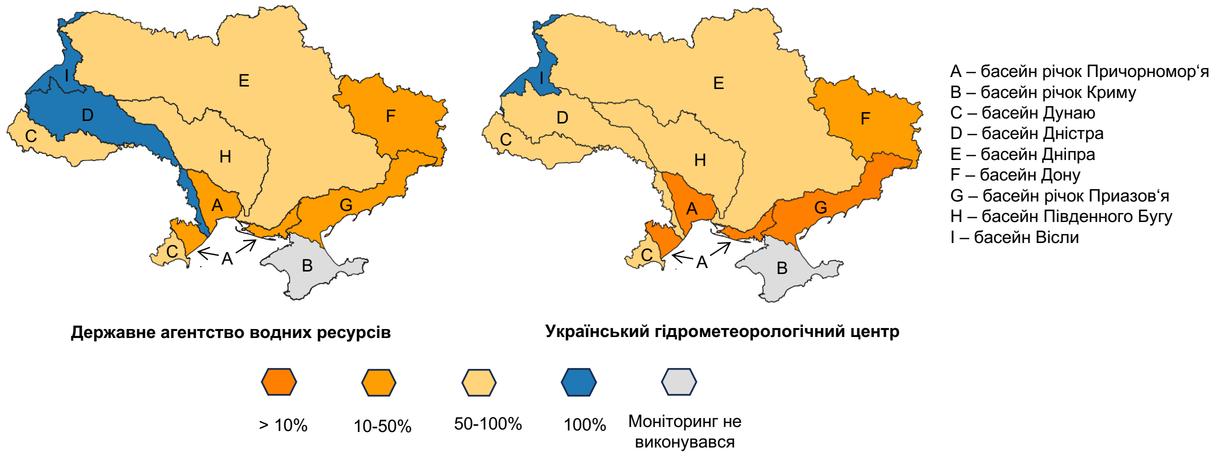


Figure 136. Surface water monitoring by river basin, 2022[69]

3. 3. Impossibility or restrictions on water management in the temporarily occupied territories.

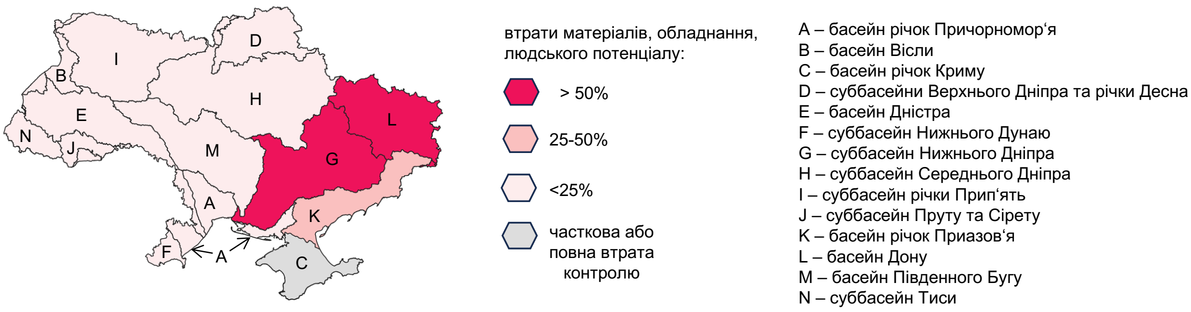


Figure 137. Impact of military operations on the ability to manage water resources[70]

2.1.1 Organic pollution

The analysis of anthropogenic load is formed by point and diffuse sources. While the impact of point sources can be determined on the basis of information obtained from water use reports in the form 2TP-vodkhoz (annual), the impact of diffuse sources is assessed on the basis of mathematical modelling. This is due to the fact that diffuse sources of pollution do not have constant coordinates and are characterised by a heterogeneous spatial distribution within the river basin. Another feature of diffuse sources of pollution is the variability of quantitative indicators of inflow and high dependence on hydrometeorological parameters.

Diffuse sources

The basic principles for determining the impact of anthropogenic load are set out in Guideline 3 of the General Implementation Strategy "Analysis of Anthropogenic Load". Based on the above-mentioned document, the national Methodology for Determining the Main Anthropogenic Pressures and Their Impacts on Surface Water Status was developed and approved by Order No. 4 of the State Agency of Ukraine for Water Resources dated 27 November 2018.

The indicators for determining the impact of diffuse sources in these documents include the following: the share of agricultural land and the share of livestock (Table 119).

Table 119. Indicators for determining the impact of diffuse sources

Share of agricultural land, I_{cr}			Share of livestock production, $I_{тв}$		
Category.	Title. categories	Criterion.	Category.	Title. categories	Criterion.

[69] Information prepared by the Zoy Environmental Network for the OSCE Project Co-ordinator in Ukraine

[70] Information prepared by the Zoy Environmental Network for the OSCE Project Co-ordinator in Ukraine

Share of agricultural land, I_{cr}			Share of livestock production, I_{TB}		
3	At risk	$AND_{cr} > 0.3$	3	At risk	$AND_{TB} > 1.0$
2	Possibly at risk	$0.1 < AND_{cr} < 0.3$	2	Possible at risk	$0.3 < AND_{TB} < 1$
1	No risk	$AND_{cr} < 0.1$	1	No risk	$AND_{TB} < 0.3$

A characteristic feature is that the level of diffuse pollution depends not only on the anthropogenic load in the river basin, but in many cases is determined by local climatic and hydrological conditions, and the properties of the underlying surface and soil.

The main factor in the anthropogenic load from diffuse sources is the type of land surface, which in turn depends on the population density in the catchment area of a particular SWB.

The main source of organic compounds is the households of the predominantly rural population, which are not served by the sewerage network. Wastewater disposal in such individual households is carried out on the terrain by accumulating in lagoons.

The load from the rural population was assessed using the calculation method. For this purpose, we used the coefficients of organic matter intake due to the vital activity of 1 person, the load from the population is calculated by the following indicators: BOD_5 - 60 g/day per person, COD - 110 g/day per person.

Taking into account changes in protein consumption by the population of Ukraine, a reduction factor of K = 78.9/105.2=0.75 was calculated. Accordingly, the value of BOD_5 per person should decrease from the physiological norm of 60 g/day to 45 g/day per person. The Intergovernmental Panel on Climate Change (IPCC) for the preparation of the Greenhouse Gas Inventory recommended a level of BOD_5 generation in municipal wastewater of 50 g of O_2 /day per person.

To calculate the value of BOD_5 , we used the figure of 50 g of O_2 /day per person. The COD level was calculated taking into account the conversion factor of BOD_5 to COD equal to 1.7. Accordingly, the figure of 85 g/day per person was used to calculate the COD load. Based on the changes in BOD_5 (50/60), the reduction in N_{total} will be 8.8 (50/60) = 7.3 g/day per person. The value of P_{total} was not changed due to the determining influence of detergents in the wastewater.

In rural settlements and small towns, wastewater is discharged into lagoons built into the ground, from where pollutants easily enter groundwater and are transported to the riverbed. Microbial and sorption processes in the soil cover contribute to the utilisation of 70% of organic matter. At the same time, a significant number of settlements without wastewater collection and treatment systems lead to surface water pollution.

Point sources

The main cause of organic pollution is inadequate or non-existent wastewater treatment after use by settlements, industrial and agricultural point sources. Such pollution can affect the composition of aquatic species and ecological status. The decomposition of organic matter consumes a lot of oxygen, which decreases the water's oxygen content and causes aquatic organisms to die. Organic pollution generated from these sources is assessed by BOD_5 and COD.

According to water use reports in Form 2TP-Vodkhoz (annual), in 2021, the total volume of wastewater discharged into surface water bodies of the Danube sub-basin was 44.011 million m^3, including 28.492 million m^3, polluted without treatment and insufficiently treated, 13.035 million m^3 , and 2.484 million m^3.

Table 120. Water users discharging wastewater into surface water bodies in the Lower Danube sub-basin

Water user	water user code	Discharge volume, million m^3	Degree of water treatment
PJSC Pulp and Paper Mill	00278818 / 510045	2,488 including: – 0,004 – 2,484	– regulatory clean without cleaning – normatively cleared (BIO)
PJSC "UDP Kilia Shipyard"	33113076 / 510144	0,036 including: – 0,024 – 0,012	– regulatory clean without cleaning – contaminated without cleaning
Titan LLC	25415133 / 510367	0,001	regulatory clean without cleaning
KP Svetlo	32319458 / 510747	0,126	contaminated insufficiently cleaned
Kamolino Holding LLC	37905021 / 512437	1,896	contaminated without cleaning
PJSC "Izmail-Navasco"	24769509 / 512480	0,402	regulatory clean without cleaning
Pivden Agro Holding LLC	39688078 / 512500	1,879	contamination without cleaning
Debut-2005 LLC	33757219 / 512495	4,908	regulatory clean without cleaning
FOP "Krivenko"	3062116515 / 512523	0,077	regulatory clean without cleaning
Mayak agricultural company	30704515 / 510838	12,327	contaminated without cleaning
GTS Operator of Ukraine LLC	42795490 / 511031	0,001	normatively cleared (BIO)
Crocus Farming Group	22505261 / 511819	0,160	regulatory clean without cleaning
Dunay Agricultural Company	32443875 / 511840	1,587	contaminated without cleaning
LLC JV "Danube-Agro"	30819680 / 511842	2,565	contaminated without cleaning
Rice of Bessarabia LLC	36837333 / 511846	5,625 – 2,236 – 3,388	– regulatory clean without cleaning – contaminated without cleaning
IC Natalka	30800397 / 511821	4,184 – 2,519 – 1,665	– regulatory clean without cleaning – contaminated without cleaning
Rice Group LLC	42914195 / 512661	4,830	contaminated without cleaning
State Enterprise "Ukrainian Sea Ports Authority", Reni branch	38727770 / 511959	0,114	The DFOs are not sufficiently cleaned
Kiliya branch of the State Enterprise "Centre for Certification and Expertise of Seeds and Seed Material"	37884028 / 512499	0,807	regulatory clean without cleaning

Table 121. Organic matter discharges to the sub-basin in 2021

Name of the company	BOD_5 , tonnes	COD, tonnes
PJSC "Pulp and Cardboard Mill", code 510045	6,0	93,6
Municipal enterprise "Svitlo", code 510747	1,6	8,0
SE USPA Reni branch, code 511959	2,3	-

Name of the company	BOD_5 , tonnes	COD, tonnes
Pivden Agroholding, code 512500	0,2	-

2.1.2 Pollution by nutrients

The supply of biogenic elements to water is the driving force behind eutrophication, which leads to an increase in primary production and accumulation of organic matter. Enrichment of water with nutrients that stimulate the development of autotrophic aquatic organisms, resulting in an undesirable imbalance of organisms in the aquatic environment and a decrease in water quality.

Among the biogenic elements, phosphorus and nitrogen compounds play a dominant role, and in some cases, ferrous, silicon and molybdenum can have an impact. Of the first two, phosphorus plays a greater role, while nitrogen is much less likely to limit the development of autotrophic organisms, due to the ability of many bacteria and cyanobacteria to fix it.

Diffuse sources

Land cover type is a dominant factor in the anthropogenic load on groundwater pollution from diffuse sources.

Another important indicator of the anthropogenic load from diffuse sources of pollution is the intensity of agriculture, which is expressed primarily in the amount of fertiliser used.

The majority of mineral fertilisers applied to various crops were nitrogen fertilisers. The current application of mineral fertilisers averaged 125 kg/ha.

The organic fertiliser load is not provided in the statistical information. This indicator is calculated on the basis of data on the number of livestock, manure yields and nitrogen and phosphorus compounds in their composition.

Despite the fact that the livestock industry in Ukraine has shrunk significantly since the change in the economic system and is recovering slowly, there are still a large number of domestic animals, especially birds, in the Lower Danube sub-basin.

Based on official statistical reports at the district level, manure yields within the sub-basin were calculated for one year. The manure production was calculated by animal type and averaged yield factors (Table 122).

Table 122. Coefficients for calculating manure production from different types of animals

Type of animal, head	Manure production, tonnes per year
CATTLE	11,4
Pigs	4,3
Sheep, goats	1,05
Poultry, 100 heads	5,45

Based on the calculated manure yield from livestock and data on the content of nitrogen and phosphorus compounds in it (Table 123), the theoretical yield of nutrients from livestock activities was obtained.

Table 123. Content of nitrogen and phosphorus compounds in manure of domestic animals

Animal type	Nutrient content	
	N, kg/t	P O_{25} , kg/t
Cattle, heads	4,19	1,47
Pigs, heads	6,1	1,43
Poultry, 100 heads	11,83	9,8
Sheep, goats, (heads)	6,2	1,6

Land use indicators (namely, the share of agricultural land) were used as one of the indicators to assess the impact of diffuse sources.

To assess the possibility of nutrients entering surface waters, direct quantitative indicators should provide more accurate results, including fertiliser application parameters and the overall balance of nitrogen and phosphorus in soils. Given that fertilisers in soils can not only be consumed by plants and washed out with water runoff, but also be affected by microbial processes and released into the air, we concluded that calculating the local balance between the supply of nitrogen and phosphorus compounds to the agroecosystem and their consumption would avoid overestimating the impact of diffuse sources. In addition, in this case, not only the applied ameliorants are taken into account, but also the organic fertilisers accumulated within the sub-basin.

To solve the problem of assessing the impact of diffuse sources, the best results can be obtained using data at the level of individual fields or farms. On the one hand, the initial information for such spatial resolution is not readily available, requiring the use of satellite technologies, and on the other hand, such work entails large and often unjustified expenditures of resources and time. For the purposes of developing the RBMP, it was decided to focus on the level of administrative districts.

Methodology for calculating the balance of nitrogen and phosphorus in the soil cover

The gross nutrient balance formed during the year in the topsoil characterises the potential amount of nutrients that can enter the channel network during runoff formation. The value of this balance is calculated as the difference between the amount of nutrients entering and leaving the agricultural system.

In agricultural practice in Ukraine, the balance of nutrients has so far been calculated only at the regional level.

The balance of nitrogen and phosphorus in soils is defined as the difference between the total supply of these compounds with fertilisers and their removal with crop yields. The latter is calculated by multiplying the crop yield data by the amount of nutrients consumed by the crop during maturation.

The indicators of nitrogen supply with precipitation are regionalised by physical and geographical zones and calculated on the basis of precipitation monitoring data for 2000-2017. Thus, the average annual precipitation for the mixed forest zone was 606 mm, forest-steppe - 571 mm and steppe - 488 mm. The amount of nitrogen supplied by precipitation was 4.5 kg/ha, 5.7 kg/ha and 4.0 kg/ha, respectively.

Determination of risk category thresholds for the Soil Balance indicator

The screening of the monitoring data revealed only 2 points where the threshold value of 50 mg/dm^3 was exceeded, which in terms of nitrogen is 11.3 mgN/dm^3. The waters of both sites were under the influence of point sources of pollution.

Experimental studies carried out at specially equipped small runoff sites to model water exchange within homogeneous hydrological areas have shown that in the absence of fertilisation, nitrate concentrations in water runoff are low.

In the case of mineral fertilisers, the removal of nitrogen compounds from the catchment area increases dramatically. At the same time, nitrogen in the surface runoff was mostly supplied by storm precipitation, and the total concentration of Nmin in the surface runoff water did not exceed 2 mgN/dm^3 . In the waters of lateral runoff formed in the vadose zone, due to a much longer retention time, the concentration of nitrogen compounds exceeded 60 mgN/dm.

The ecological classification of terrestrial surface waters based on the ecosystem principle was used as a criterion base for determining the pollution of surface waters by nitrate compounds from agricultural sources. In the classification based on tropho-saprobiological criteria, the values of both biotic and abiotic parameters were agreed upon. Thus, the limit of deviation from the good condition of waters, at which they reach a polytrophic state, is the concentration of nitrate ions of more than 1 mg/dm^3.

The entire available surface water monitoring database was sorted according to the above criterion. As a result, it was established that there were 25 observation points where $N\text{-}NO_3$ concentrations were above the limit of 1 mg/dm^3 . At the relevant points, the soil Nitrogen Balance was also determined. The average value was 35 kg/ha, and this value was used to determine the limit of surface water pollution. It should be noted that this value compares well with the risk limit adopted in EU countries, where it is 25 kg/ha.

Rivers in "good" ecological condition, fairly clean, mesotrophic, have a limit value of nitrate nitrogen concentrations of 0.5 mgN/dm^3.

The average value of the Soil Balance at the sites where nitrate nitrogen concentrations of 0.5 mgN/dm^3 were observed was 10 kg/ha, which was taken as the limit for the absence of water pollution risk.

Table 124. Limit values of categories for the criterion for assessing the risk of failure to achieve environmental objectives from diffuse sources "Soil balance"

Category.	Category name	Limit value
1	"without risk"	BH<10
2	"possibly at risk"	10<BG<35
3	"at risk"	BH >35

Calculation of soil nitrogen balance at the level of administrative districts

The initial information for calculating the balance of nutrients in soils was based on statistical data on sown areas, crops and their yields, fertiliser application and livestock indicators at the level of administrative districts of the oblasts within the Lower Danube sub-basin.

Table 125. Nitrogen and phosphorus balance calculation results for the sub-basin

№	District	Area.	Nitrogen balance, kgN/ha	Phosphorus balance, kg P_2 O /ha$_5$
1	Artsyzky	Odesa	45,6	-31,1
2	Bolgradsky	Odesa	48,8	-19,5
3	Izmail	Odesa	73,7	-22,4
4	Kiliysky	Odesa	21,0	-22,2
5	Reni	Odesa	24,7	-24,9
6	Tarutinsky	Odesa	27,9	-28,7
7	Tatarbunary	Odesa	32,8	-34,3

In the next step, the calculated nitrogen balance was converted to the SWB of the Lower Danube sub-basin as a weighted average value. The value of the balance varies widely, from 21 to 73.7 kgN/ha in the sub-basin soils, with an average value of 44.7 kgN/ha.

The phosphorus balance was in deficit, and therefore phosphorus was not used to determine the anthropogenic impact from diffuse sources in the future.

Calculation of the livestock load at the level of administrative districts

In order to estimate the livestock load, it was necessary to convert all animal species to one conventional unit. For this purpose, standard coefficients calculated on the basis of the value of the feed base were used. The basic unit was 1 head of cattle. For pigs, total sheep and goats, the conversion factors were 0.3 and 0.1, respectively. Poultry was converted by a factor of 0.014.

Based on the results, the weighted average livestock unit and the share of livestock for each SWB were calculated.

In general, the share of livestock is low and ranges from 0.0035 to 0.052. The average value was 0.029 heads/ha.

The main factor that determines the anthropogenic load on the SWB from diffuse sources is land use indicators. Disturbance of the soil cover due to ploughing and fertiliser application leads to significant losses of organic and nutrients due to deflation and water runoff.

The Lower Danube sub-basin summarises the impact of all the countries through which the Danube flows. At present, the concentrations of nitrogen and phosphorus compounds in the Danube estuary remain the highest in the north-western part of the Black Sea.

Based on the results of calculations with the Danube waters, an average of 653.4 thousand tonnes of N_{3ar} and 38.4 thousand tonnes of P_{3ar} are annually discharged to the Black Sea. The Lower Danube sub-basin emits an average of 2792 tonnes/year of nitrogen compounds and 127 tonnes/year of phosphorus compounds . Among the various sources, the main share of nutrients comes from agriculture (Table 126). For nitrogen, the role of this factor is 66%, and for phosphorus - 74%.

Table 126. Inputs of nitrogen and phosphorus compounds from the sub-basin catchment area

	Nitrogen, tonnes per year	Phosphorus, tonnes per year
Settlements	185,7	10,9
Agriculture	1878,1	94,0
Other sources	309,6	4,5
Natural background	410,1	17,7

	Nitrogen, tonnes per year	Phosphorus, tonnes per year
Total	2792	127

The greatest risk of diffuse pollution of surface water will be observed in spring, when runoff rates reach their highest levels. At this time, fertilisers and plant protection products should be applied to crops with the utmost responsibility.

During the period of minimum runoff (summer low water), the role of diffuse sources will sharply decrease due to the reduction of the water flow carrier. At this time, the role of point sources will be maximised. Given the low water content of most rivers, this will pose a great danger due to the reduced dilution capacity of water runoff. Some rivers sometimes experience drying up.

Assessment of risks of failure to achieve "good" environmental status from diffuse sources

The risks of not achieving "good" environmental status were assessed based on the risk category thresholds for the Soil Balance and Livestock Share indicators.

Soil balance			Share of livestock production, I_{TB}		
Category.	Category name	Criterion.	Category.	Category name	Criterion.
3	At risk	BG > 0.3	3	At risk	AND_{TB} > 1.0
2	Possible at risk	10 < BG < 35	2	Possible at risk	0.3 < AND_{TB} < 1
1	No risk	BG < 10	1	No risk	AND_{TB} < 0.3

Point sources

Pollution by nutrients from point sources is caused mainly by the discharge of insufficiently treated or untreated wastewater into surface water sources (after use by settlements, industry and agriculture), which significantly increases their concentration in water bodies.

Nutrient discharges to water bodies of the sub-basin and the impact from point sources were measured and determined by the following indicators: ammonium nitrogen, nitrite ion, nitrate ion, phosphate (Table 127).

Table 127. Results of nutrient discharge into water bodies of the Lower Danube sub-basin

Name of the company	Ammonium nitrogen, tonnes	Nitrites, tonnes	Nitrates, tonnes	Phosphates, tonnes
PJSC "Pulp and Cardboard Mill", code 510045	1,6	1,8	81,4	0,008
Municipal enterprise "Svitlo", code 510747	2,7	-	-	0,170
Mayak, code 510838	--	-	6,6	-
Natalka agricultural group, code 511821	0,1	-	-	-
SPC "Dunay", code 511840	1,1	-	-	-
SE USPA Reni branch, code 511959	0,2	-	1,3	0,032
Rice Group LLC, code 512661	-	--	5,5	-
Total	**5,7**	**1,8**	**100,5**	**0,210**

2.1.3 Pollution by hazardous substances

Diffuse sources

The risk of pollution by hazardous substances from diffuse sources was not assessed due to the lack of data on pesticide use.

Therefore, the overall assessment of pollution from diffuse sources will be determined by the impact of crop production.

Just over 60% of the lower Danube SWB is at risk. After the first cycle of monitoring surveys is conducted and data on the content of priority substances is obtained, the methodology can be further developed in terms of the Pesticides indicator.

Point sources

Sources of hazardous substances in the Lower Danube sub-basin include industrial wastewater, domestic and household runoff, surface runoff from territories, pesticides, oil products, heavy metals and other chemicals used in agriculture, and accidental discharges.

Name of the company	Iron is common, tonnes	Petroleum products, tonnes
State Enterprise "Kilia Shipyard", code 510144	-	0,0001
Municipal enterprise "Svitlo", code 510747	-	0,0061
SE USPA Reni branch, code 511959	-	0,0135
Total	**-**	**0,0197**

2.1.4 Accidental pollution and impact of contaminated areas (landfills, sites, zones, etc.)

No accidental pollution was observed in the Lower Danube sub-basin by district in 2021.

The mechanism for preventing and minimising the risk of accidental pollution is established in the EU member states through the implementation of the Seveso-III Directive (Directive 2012/18/EU), the Industrial Waste from Mining Directive (2006/21/EC)10 and the Industrial Emissions Directive-IED (2010/75/EU)11 and for non-EU countries through the implementation of the recommendations of the UNECE Convention on the Transboundary Effects of Industrial Accidents.

The main provisions of the Seveso III Directive (Directive 2012/18/EU) were transposed into Ukrainian legislation in 2021 by amending the Civil Protection Code of Ukraine, the Law of Ukraine "On High Risk Facilities" (the Law) and a number of other laws.

Thus, in accordance with Article 9 of the Law, a business entity identifies high-risk facilities in accordance with the number of threshold masses of hazardous substances. Based on the results of the identification of a high-risk facility, it is assigned a class 1, 2 or 3.

Article 9-1 of the Law provides for the definition and approval of an accident prevention policy for a Class 1 or 2 hazardous facility. According to Article 10 of the Law, for a Class 1 or Class 2 hazardous facility, the operator shall develop and, in cases specified by the Law, review a report on safety measures at the hazardous facility.

Pursuant to Article 11 of the Law, in order to organise the response to accidents at high-risk facilities, operators develop and approve plans for localisation and elimination of accidents and their consequences for each high-risk facility they operate. The plan for localisation and elimination of accidents and their consequences shall be reviewed at least every three years. The procedure for action in the event of an accident at a high-risk facility is set out in Article 14 of the Law. Pursuant to this Article, the Cabinet of Ministers of Ukraine approved the Procedure for Investigation of Accidents at High Risk Facilities by Resolution No. 965 dated 8 September 2023.

Article 15 of the Law stipulates that the operator shall annually submit to the competent authority, local executive authorities, and local self-government bodies information on high-risk facilities owned or operated by the operator by 30 December. At the request of a legal entity or individual or their representatives to obtain information about a hazard that has arisen at high-risk facilities and poses a threat to people and the environment, the operator must submit such information within 48 hours of receiving the request.

Pursuant to Article 16 of the Law, damage caused to individuals or legal entities as a result of an accident at a high-risk facility shall be compensated by the operator who owns the high-risk facility on the relevant legal basis, unless he or she proves that the damage was caused by force majeure or intent of the victim.

At the level of the Lower Danube sub-basin, a list of potential accident risk sites should be developed, including operating industrial facilities with a high risk of accidental pollution due to the nature of chemicals stored or used at industrial facilities, contaminated sites, including landfills and dumpsites located in flood zones. Such a register should first include facilities in the Lower Danube sub-basin that pose a risk of accidental pollution, primarily sludge ponds and tailings ponds, municipal wastewater treatment plants, and sites where industrial waste is stored.

The Ministry of Environmental Protection and Natural Resources of Ukraine has launched an electronic service that also contains the Register of Waste Disposal Sites and the List of Facilities that are the largest polluters of the environment in terms of discharging pollutants into water bodies.

Table 128. Register of facilities in the Lower Danube sub-basin that are at risk of accidental pollution

№	Name of the object
1	PJSC "ICCC", IZMAIL
2	MUNICIPAL ENTERPRISE "SVITLO", KILIA

2.1.5 Hydromorphological changes

Hydromorphological changes are one of the significant water management issue (SWMI) that impede the achievement of environmental objectives set out in the RBMP. Hydromorphological changes as a result of economic activity affect the habitats of aquatic communities. The presence of hydromorphological changes in SWBs leads to a deterioration in the ecological status of many SWBs in the Lower Danube sub-basin.

Hydromorphological changes are divided into types:

- disruption of the continuity of water flow and habitats - longitudinal disruption of the continuity of rivers and habitats (transverse artificial structures in the river channel, interruption of water flow, disruption of the free flow of rivers, movement of sediments, migration of fish and other aquatic life);
- disruption of the hydraulic connection between river channels and their floodplains;
- hydrological changes (water abstraction, hydropicking / fluctuations in water levels of artificial origin);
- morphological changes (modification of the morphology of the riverbed, banks, and adjacent parts of the floodplain, e.g. straightening).

Disruption of the free flow of rivers

Dams and other artificial cross structures located in the riverbeds were built primarily to accumulate water, with its subsequent use for agricultural, public and industrial purposes. In the Lower Danube sub-basin, 19 SWB have been identified where the continuity of water flow and habitats is disturbed (regulated).

The accumulation of water in ponds and reservoirs upstream of dams also provides flood protection for areas downstream of dams. According to the SAWR, a significant number of ponds are in poor technical condition. Most of them were built in 1960-1980 according to simplified design documentation. The dams are earthen, with loose slopes, and many of them are eroded. Spillway structures usually do not meet modern requirements in terms of their technical condition.

The presence of dams and other structures across the river channel disrupts the continuity of water flow and sediment movement, as well as the migration of fish and other aquatic life.

Fish passages were not built in the cross structures and, as a result, the populations of various fish species decreased or disappeared. To date, the construction of fish passages on existing dams seems to be quite problematic due to the lack of not only funds, but also the very assessment of the economic feasibility of building a fish passage.

Disruption of the hydraulic connection between river channels and their floodplains

The hydraulic connection between the riverbed and the floodplain plays an important role in the functioning of aquatic ecosystems, providing water for important habitats for fish and aquatic life, and has a positive impact on the condition of surface and groundwater.

The assessment of this type of hydromorphological changes is included in the hydromorphological protocol for assessing the SWB used by the SES in the course of state monitoring of surface waters (indicators No. 10: "Interaction between the channel and the floodplain: 10a - Possibility of floodplain inundation, 10b - Limiting factor for the development of horizontal deformations of the channel").

Hydrological changes

Hydrological changes affect water bodies through water abstractions and fluctuations in water levels below dams, and, as a result, lead to changes in the regime and distribution of river flows. Discharges, water abstractions and artificial periodic fluctuations in water levels (hydroelectricity) are key pressures that require compensatory measures to be implemented on a river basin-wide scale.

In the Lower Danube sub-basin, there are no SWB with hydrological changes.

Decreased natural flows in the context of global warming and natural water shortages, reduced flow velocities and the formation of stagnant zones contribute to eutrophication processes, and, as a result, lead to a deterioration in biodiversity and degradation of aquatic ecosystems.

Morphological changes

The main factors that adversely affect the natural morphology of the sub-basin's river channels, banks and floodplains are urbanisation, flood protection, agriculture and shipping. As a result of these activities, rivers in certain areas are straightened, dredged, and banked, the floodplain is ploughed up almost to the channel, and its natural vegetation is changed.

Within the sub-basin, rivers are straightened (morphological changes) at 32 SWB.

Reduced variability in channel depth and width, disruption of the natural balance of erosion and accumulation, narrowing of the inter-dam space and restriction of free river meandering lead to an impoverishment of the composition and reduction in the number of biological indicators, such as fish, benthic invertebrates, higher aquatic vegetation, and phytoplankton.

The criteria for classifying SWB as "HMWB" due to hydromorphological changes are:

- disruption of the continuity of water flow and environments (transverse artificial structures in the riverbed, disruption of the continuity of water flow and sediment movement and migration of fish and other aquatic life);
- water withdrawals (small and medium-sized rivers - water withdrawals exceeding 75% of the supply; large and very large rivers - water withdrawals exceeding 90% of the supply);
- water accumulation (ponds with a ponding area of more than 1 km or several ponds with a ponding area of less than 1 km, but their total length is more than 30% of the length of the SWBs, as well as reservoirs with a volume of more than 1 million m^3);
- fluctuations in the water level below the dam (water level fluctuations exceeding 0.5 m per day for most of the year);
- disturbance of natural morphological characteristics of rivers (hydromorphological class below the third according to the monitoring results, or straightening of more than 70% of the length of the main river channel in the absence of monitoring data).

2.2 Groundwater

2.2.1 Pollution

The main anthropogenic factors affecting the state of the underground hydrosphere include groundwater abstraction for water supply, use of surface water for reclamation purposes, use of mineral fertilisers and pesticides in agricultural production, and discharge of industrial and municipal wastewater. In terms of territory, this impact can be conditionally classified as local (discharge of municipal and industrial wastewater into the geological environment, formation and operation of household and industrial waste dumps, etc.) and regional (irrigation reclamation, groundwater extraction, use of agrochemicals). At the same time, a number of anthropogenic factors associated with additional water load on the geological environment (irrigation water, various wastewater) can affect both the level and chemical regime of groundwater. The use of mineral fertilisers and pesticides can significantly affect the chemical composition of groundwater.

Groundwater resources within the sub-basin are conditionally protected. The groundwater cover consists of loams and clays with a total thickness of 20-40 m. Contamination of the aquifers is possible through defective production wells and irrigation areas. There is spotty contamination of groundwater with nitrogen compounds within the settlements. The presence of synthetic surfactants, oil products, and pesticides in aquifers is also recorded in concentrations that do not exceed the maximum permissible levels. In the areas of intensive exploitation, the impact of technogenesis affects the level regime.

The impact of technogenesis on groundwater bodies in pressure aquifers is mainly reflected in the level regime. As a result of long-term intensive exploitation, depression sinkholes have formed. The reduction in groundwater extraction observed in recent years is contributing to the recovery of groundwater levels.

The groundwater reservoirs in the pressure horizons lie beneath a layer of water-resistant sediments, which significantly hinders their connection with surface ecosystems and provides a relatively high level of protection against surface pollution.

In the pressure aquifers in production wells, there is also spot pollution of groundwater with nitrogen compounds, and the presence of synthetic surfactants, oil products, and pesticides in concentrations that do not exceed the maximum permissible levels.

2.2.2 Volumes/reserves

In general, the territory is characterised by unfavourable conditions for the formation of groundwater resources. Non-pressure GWB are used for individual water supply in urban-type settlements in rural areas, while pressure GWB are used for centralised water supply.

No assessment of groundwater resources in non-pressure horizons has been carried out in Ukraine.

An analysis of the state of use of approved production reserves in the fields located in the Lower Danube sub-basin shows that production volumes do not exceed 47% of the approved reserves, and are mostly much lower - about 5-10%.

2.2.3 The impact of military operations on the state of GWB

Non-pressure GWB. The quality of non-pressure GWB may be affected by the ingress of pollutants (heavy metals, fuels and lubricants, organic pollution, nitrates, etc.) from the surface in the shelling zones. The destruction of industrial facilities can lead to the ingress of various pollutants into the soil and rocks of the aeration zone, and in the long run, negatively affect the quality of groundwater.

No changes in the quantitative state of non-pressure MPPs are expected due to military operations.

No changes in the quantitative state of pressure vessels are expected due to military operations**.**

The chemical state of the pressure water treatment plant will also remain stable.

2.2.4 Assessment of the risk of not achieving good GWB status

Risk assessment of failure to achieve good quality (chemical) status

As for non-pressure GWB, their quality condition within settlements is most likely poor (nitrate pollution). There is no data on the chemical composition of non-pressure GWB outside settlements, but a significant anthropogenic load from diffuse sources of pollution within agricultural landscapes and their natural vulnerability allows us to conclude that they are at risk of not achieving good quality (chemical) status. Within agro-landscapes, this risk is caused by the possibility of nitrates and pesticides entering the water. An additional negative impact on the Lower Danube basin is caused by substances that have been or may be released into the environment as a result of military operations, such as heavy metals, nitrates, oil products, as well as elements and compounds released into the environment as a result of the destruction of industrial facilities.

Protected from pollution, the pressure GWB are not at risk of failing to achieve good quality (chemical) status (Table 129). In the Lower Danube sub-basin, the territory of which is affected by military operations, 1 GWB in the Upper Sarmatian sediments has been identified, but due to its protection, no negative changes in quality are currently predicted.

Assessing the risk of not achieving good quantitative status

There is no negative impact from anthropogenic groundwater abstraction for the GWB identified in the Lower Danube sub-basin. Given the reduction in groundwater extraction, there is no risk of not achieving good quantitative status, according to available data.

Table 129 Risk assessment of failure to achieve good qualitative (chemical) and quantitative status

GWB code	GWB and GWB groups	Quality risk		Quantitative risk	
		without risk at risk	at risk: the reason	without risk/ at risk	at risk: the reason
UAM5340N100	GWB in the Upper Sarmatian sediments	No risk		No risk	

Other significant anthropogenic impacts

Climate change

One of the main manifestations of regional climate change against the backdrop of global warming is a significant increase in air temperature, changes in the thermal regime and precipitation patterns, an increase in the number of dangerous meteorological phenomena and extreme weather conditions that cause damage to various sectors of the economy and the population. These trends are typical for Ukraine in general and the Lower Danube sub-basin in particular. The greatest changes have been observed over the past thirty years, which have been the warmest for the period of instrumental weather observations.

The rise in air temperature is observed not only near the Earth's surface but also in the lower troposphere, accompanied by an increase in tropospheric moisture content, and causes an increase in atmospheric instability and convection intensity. Such changes have led to an increase in the frequency and intensity of convective weather phenomena: thunderstorms, showers, hail, squalls, and an increase in the maximum intensity of precipitation and its storm component.

A characteristic feature of the changing moisture regime in Ukraine is a change in the structure of precipitation. In the warm period, this is manifested in an increase in the intensity of precipitation and an increase in its storm component. The increase in precipitation intensity has led to an increase in daily precipitation, although the number of rainy days has decreased and the maximum duration of the rain-free period has increased. These trends are also typical for the Lower Danube sub-basin.

The rise in air temperature and uneven distribution of precipitation, which is localised and heavy in the warm season and does not ensure effective soil moisture accumulation, has led to an increase in the number and intensity of drought events.

During the cold period, a significant increase in air temperature led to a change in the precipitation pattern by increasing the frequency of rain and decreasing the frequency of snowfall, resulting in an increase in sleet, sleet and ice.

In 2021, a study[71] was published to assess future climate change in Ukraine based on an analysis of climate projections for the 21st century using modern scenarios - Representative Concentration Pathways (RCPs) and data from global and regional numerical climate models.

Water-balance modelling of water flow based on UkrNDGMI data using the regional REMO model and data from the CRU World Climate Centre under the A1B scenario has shown that from 2041, local surface runoff may cease in low-water years in the southern regions of Ukraine, including Odesa Oblast.

By 2050, the average annual air temperature will increase by 1-1.5°C (1.8°C in summer and 1.3°C in winter). This will lead to a reduction in the period with temperatures below 0°C, a lengthening of the warm dry season, increased evaporation, an increase in the number of extremely hot days and a reduction in the period with permanent snow cover. A more rapid change of seasons is likely.

Long-term precipitation forecasts are characterised by significant uncertainty. The average annual precipitation is forecast to decrease by 5-15%, but there may also be a slight (up to 6%) increase in precipitation due to heavy rainfall in the warm season. Extreme and hazardous weather events, such as storms, squalls, hurricanes, heavy rainfall and snowfall, thunderstorms and hail, will become more frequent and will be more destructive.

The average annual water flow in the Danube will not change significantly by 2050, but the redistribution of flow by season may lead to a decrease in flow in summer and an increase in flow in winter. Small rivers are experiencing severe water stress as a result of a reduction in surface runoff (by 5-25%) and its redistribution over the seasons.

Pollution of water bodies with solid waste, including plastic

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[71] ANALYSIS OF THE IMPACT OF CLIMATE CHANGE ON THE WATER RESOURCES OF UKRAINE (research summary) / Snizhko S., Shevchenko O., Didovets Y. // Edited by Sadogurska S. Centre for Environmental Initiatives "Ecoaction", 2021, 32 p.

The pollution of water bodies by solid waste, primarily plastic, is one of the pressures that leads to the deterioration of the ecological and chemical state of surface waters. This problem is not specific to the Lower Danube river sub-basin, but to the whole country and reflects the problem of waste management at both national and local levels.

Gaps in national legislation, an inefficient system of waste collection, transport and disposal, and a low culture of waste management are manifested in a large number of unauthorised and spontaneous landfills, including on river banks. Some of the waste ends up directly in rivers and water bodies, which is not only an aesthetic problem, but also leads to chemical pollution of water, poisoning of living organisms and deterioration of their living conditions.

Over time, plastic breaks down and turns into microplastics, which get into living aquatic organisms, contributing to the accumulation of toxins.

Microplastics are less than 5 mm in size and fall into two groups: primary and secondary. Primary microplastics are part of cosmetics (toothpastes, scrubs, shower gels, etc.), industrial cleaning products, and are also formed as a result of wear and tear on car tyres and when washing synthetic products.

Recycled plastic is produced by shredding large plastic waste such as bottles, disposable tableware, packaging, etc.

No special studies have been conducted on the amount of waste on the banks and directly in rivers and water bodies in the Danube basin, nor on its direct impact on the ecological and chemical state of water bodies.

Invasive species

Invasions of alien species outside their "native" habitats are global in nature. The naturalisation and further spread of invaders can cause irreversible environmental damage and undesirable economic and social consequences.

Currently, biological invasions are considered to be biological pollution, but unlike most pollutants that can decompose in natural ecosystems through self-purification processes and whose content is controlled by humans, alien organisms that have successfully invaded begin to multiply uncontrollably and spread rapidly in the environment. This phenomenon can have unpredictable and irreversible consequences.

In addition, the introduction of alien species leads to irreparable losses of biodiversity, both through direct destruction of native species by predators, food and spatial competition, and as a result of displacement of native species, changes in their habitats and hybridisation. The emergence of any alien species is an indicator and, at the same time, a cause of the deterioration of the ecological state of a water body. All this causes a special danger of invasions and determines the specifics of control measures in terms of the risks of not achieving a "good" ecological status of SWB where the process of invasion of adventive species is carried out.

The issue of invasion of alien species is legally reflected in the Law of Ukraine "On the Basic Principles (Strategy) of the State Environmental Policy of Ukraine for the Period up to 2030", the Decree of the President of Ukraine of 17 December 2021 No. 668, which put into effect the decision of the National Security and Defence Council of Ukraine of 15 October 2021 "On the Strategy of Biosafety and Biological Protection", the Action Plan for the Implementation of the Strategy of Biosafety and Biological Protection for 2022-2025, approved by the Cabinet of Ministers of Ukraine on 07 July 2022 No. 57Z, and the Convention on Biological Diversity.

In accordance with paragraph 5 of the Action Plan for the Implementation of the Strategy for Biosafety and Biological Protection for 2022-2025, approved by the CMU Resolution No. 573 of 07.07.2022, the Ministry of Ecology approved the "Methodological Recommendations for Assessing the Existing and Potential Impact (Risks) of Invasive Alien Species" by Order No. 290 of 15.03.2024. https://mepr.gov.ua/nakaz-mindovkillya-290-vid-15-03-2024/).

The Guidelines have been developed with due regard to the Regulation (EU) No 1143/2014 of the European Parliament and of the Council (22 October 2014) on the prevention and management of the introduction and spread of invasive alien species, and Delegated Regulation (EU) 2018/968 of the European Commission of 30 April 2018, supplementing Regulation (EU) No 1143/2014 of the European Parliament and of the Council on the risk assessment of invasive alien species, in order to harmonise approaches to impact (risk) assessment when preparing proposals for the inclusion of alien species in the List of Invasive Alien Species of Flora and Fauna of Ukraine.

The reasons for the appearance of alien species are related to direct anthropogenic impact. Almost half of the identified alien species appeared in the fish fauna as a result of human fishing activities.

The main ways of spreading invasive species are:

- aquaculture or fish farming of commercially valuable fish species;
- Accidental or unintentional introduction of commercial species along with stocking;
- aquarists, which contributed to the spread of species as a result of their deliberate release into natural reservoirs or accidental entry into the latter (sunfish, rotan, silver crucian carp);
- Expansion of the natural ranges of Ponto-Caspian species as a result of hydroelectric construction and global warming (round goby, sand goby, goby, goby, western goby, blunt-nosed goby);
- unauthorised stocking of rivers with alien species without scientific justification and expertise and relevant permits (Danube salmon).

According to the Convention on Biological Diversity (The Hague, 2002), measures aimed at mitigating the effects of invasions by alien species should be mainly preventive, but it is usually not possible to effectively control the process of invasions, primarily due to the lack of a biodiversity monitoring system.

After conducting special studies of alien aquatic species and determining the list of species in the area of their occurrence, the first and most important step is to establish a basin-wide monitoring system for invasions. Monitoring should be focused on:

- identification and analysis of the species composition of alien species, invasive corridors, geography and dynamics of invasions;
- population dynamics of the most significant invasions from emergence to naturalisation, as well as of invasive species that have already been naturalised, and the consequences of their impact on habitats, native species, communities and ecosystems;
- Inventory of possible intrusion sites and their survey (e.g., municipal wastewater leaks from large cities with a developed aquarium services market, discharges of heated water from thermal power plants and large industrial enterprises).

Provision must also be made at the basin level:

- development of regional/basin cadastral lists of alien, threatened (dangerous) species of flora and fauna of Ukraine;
- predicting the emergence of new invasive species that are potentially dangerous for human economic activity or established hydroecosystems;
- development of methods to curb the spread of alien species (e.g. physical removal, weakening the development of species using phytophagous animals, use of herbicides). An example is the programme for monitoring, localising and controlling the number of alien (invasive) plant species in the territory of the territorial community of Stryi City Council for the period 2021-2025.
- making management decisions on the protection and rational use of aquatic bioresources (including introduced ones), including regional lists of invasive species approved by local governments. For example, in 2017 the Zakarpattia Regional Council approved the first official regional list of invasive plant species in Ukraine.

3 ZONES (TERRITORIES) TO BE PROTECTED AND THEIR MAPPING

3.1 Emerald Network sites

The Emerald Network is an ecological network consisting of special areas for the conservation of biological diversity created (designated) in accordance with the Convention on the Conservation of Wild Flora and Fauna and Natural Habitats in Europe (Bern Convention). Its goal is to ensure the long-term survival of species and habitats listed in the Bern Convention that require special protection.

On 30 November 2018, six countries - the Republic of Belarus, Georgia, the Republic of Moldova, Norway, Switzerland and Ukraine - officially approved the lists of Emerald Network sites on their territories. The full list of Ukraine's Emerald Network includes 271 sites[72] , and the network covers about 8% of Ukraine's territory.

There are 5 Emerald Network sites in the Lower Danube sub-basin, covering approximately 17% (1,199 km^2) of the sub-basin area.

By category (Fig. 139), the sub-basin's Emerald Network sites are divided into:

- nature reserve - 3;
- biosphere Reserve - 1;
- protected area - 1.

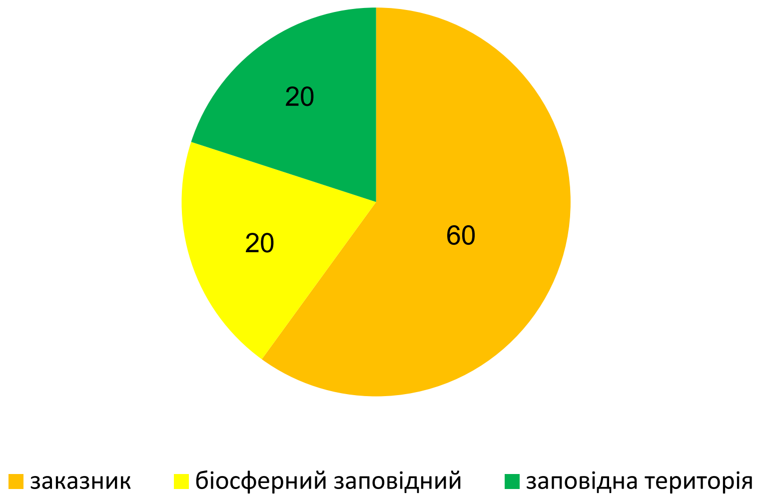


Figure 139. Breakdown of Emerald Network sites by category, %.

None of the sites has a management and development plan in place.

3.2 Sanitary protection zones

Sanitary protection zones include the areas where water intakes for drinking water supply are located. According to the Resolution of the Cabinet of Ministers of Ukraine on the Legal Regime of Sanitary Protection Zones of Water Bodies No. 2024 of 18 December 1998, these zones are classified as the so-called first zone (strict regime) of compliance with the use regime. The Resolution provides for a number of permitted and prohibited activities within drinking water intakes.

72 UPDATED LIST OF OFFICIALLY ADOPTED EMERALD SITES (NOVEMBER 2018) Document prepared by the Directorate of Democratic Participation and Marc Roekaerts (EUREKO) **https://rm.coe.int/updated-list-of-officially-adopted-emerald-sites-november-2018-/16808f184d**

Member States should identify in each RBD:

- All surface/groundwater bodies used for abstraction of water intended for human consumption, providing an average of more than 10 m³ of water per day or providing water consumption for more than 50 people and
- Water bodies intended for future use for the same purpose.

There are 9 water intakes in the Lower Danube sub-basin that withdraw more than 10 m³ per day. Of these, 6 are groundwater intakes and 3 are surface water intakes (Figure 140).

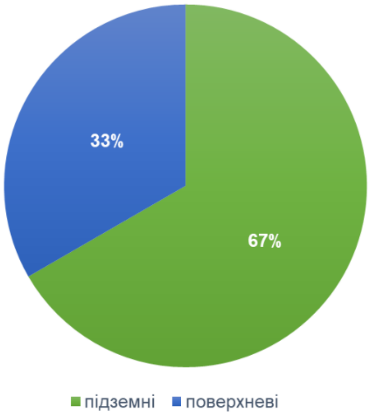


Figure 140. Distribution of drinking water intakes by type , %.

The SAWR is responsible for maintaining state water accounting.

3.3 Protection zones for valuable aquatic bioresources

Areas designated for the protection of economically important aquatic species or areas for the protection of valuable aquatic bioresources include those areas where such aquatic resources of significant economic value are found or cultivated.

Depending on the specifics of the protection zone for valuable aquatic bioresources, the monitoring programme may include additional indicators or sampling frequency.

According to the Resolution of the Cabinet of Ministers of Ukraine No. 1209 "On Approval of Tariffs for Calculating the Amount of Compensation for Damage Caused by Illegal Harvesting (Collection) or Destruction of Valuable Aquatic Bioresources" dated 21 November 2011 (as amended by the Resolution of the Cabinet of Ministers of Ukraine No. 1039 dated 6 October 2021), the list of valuable bioresources includes both rare and common fish species throughout Ukraine.

At the same time, according to Article 1 of the Law of Ukraine "On Fisheries, Commercial Fishing and Protection of Aquatic Bioresources", a fishery water body (or part thereof) is a water body (or part thereof) that is used or may be used for fisheries purposes.

Thus, taking into account the above, as well as the lack of an appropriate legislative and regulatory framework, the protection zones for valuable bioresources in Ukraine have not been defined.

3.4 SWBs/GWBs used for recreational, medical, resort and health purposes, as well as water intended for bathing

Recreation areas of water bodies are land plots with adjacent water space intended for organised recreation of the population on the coastal protective strips of water bodies. Places of mass recreation are determined by local governments in accordance with the powers vested in them every year before the start of the summer swimming season. Water protection zones are established along rivers, around lakes, reservoirs and other water bodies, within which land plots are allocated for coastal protection strips.

It is prohibited in water protection zones and coastal protection zones:

- storage and use of pesticides and fertilisers;

- construction of cemeteries, summer camps for livestock, manure storage facilities, cattle cemeteries, waste dumps, filtration fields, liquid and solid waste storage facilities, etc;
- discharge of untreated wastewater;
- construction of any structures (except for hydrotechnical, hydrometric and linear structures), including recreation centres, summer cottages, garages and car parks;
- Washing and maintenance of vehicles and equipment.

Requirements for the location and organisation of water body recreation areas:

- To organise recreational areas on water bodies, their owners or lessees are required to agree the operation of the beach with the State Service of Ukraine for Food Safety and Consumer Protection before the start of each swimming season;
- the recreation area should be located outside the sanitary protection zones of industrial enterprises. The recreation area should be located at the maximum possible distance (at least 500 m) from sluices, hydroelectric power plants, wastewater discharge sites, stables, livestock watering places and other sources of pollution;
- beaches should not be located within the first zone of the sanitary protection belt of drinking water sources.

Environmental goals for recreational areas:

- The water quality of reservoirs and rivers used in recreational areas must meet the requirements of sanitary legislation;
- the composition and properties of water in the area of recreational water use must meet the requirements for physical, chemical and sanitary-microbiological indicators.

Requirements for water monitoring in recreational areas:

- water sampling for departmental control in water bodies should be carried out annually by local self-government bodies at least 2 times before the start of the swimming season (at a distance of 1 km upstream from the swimming area on watercourses and at a distance of 0.1-1.0 km in both directions from it on water bodies, as well as within the swimming area);
- during the swimming season, such water sampling shall be carried out at least twice a month at at least two points selected in accordance with the nature, length and intensity of use of swimming areas.

Pursuant to CMU Resolution No. 264 of 06.03.2002 "On Approval of the Procedure for Registration of Places of Mass Recreation on Water Bodies", local executive authorities and territorial fishery protection authorities are required to identify on maps and schemes land plots and water areas suitable for the organisation of beaches, boat rental facilities, water attractions, as well as places for water sports and places for amateur and sport fishing in winter.

Approved copies of the maps are submitted to the emergency rescue services that serve water bodies in their area of responsibility and to the regional coordination emergency rescue centres of the State Specialised Emergency Rescue Service on Water Bodies of the Ministry of Emergencies (currently the State Emergency Service).

Information on places of mass recreation is submitted annually by 1 April by local governments, and information on places of recreational and sport fishing is submitted on 10 February and 30 October by territorial fish protection authorities to regional coordination emergency rescue centres of the SES.

According to the SES in Odesa region, due to martial law, recreation and leisure areas were not used in 2022-2023 (Annex 5 (M.5.3.4)).

3.5 Areas vulnerable to (accumulation of) nitrate

Ukraine has approved a methodology for determining nitrate vulnerability zones (Order of the Ministry of Environment of Ukraine No. 244 dated 15.04.2021), as required by the EU Nitrate Directive. The methodological approach is to use a large amount of high-resolution spatial and temporal data, mainly surface and groundwater monitoring data, but the definition of these zones should also use statistical data such as the number of livestock, fertiliser application and surplus calculations for nitrogen. All this information of high quality and sufficient reliability is necessary to identify nitrate vulnerable areas where mandatory measures to reduce nitrate pollution should be taken. At present, the existing surface water monitoring network is insufficient in terms of its integrity and spatial coverage to apply the developed method, and groundwater monitoring is not carried out at all.

Therefore, given that in Ukraine:

- the highest percentage of arable land in the world (53.9%, 2021 data), while the ploughed-out agricultural land rate is 78.2%;
- lack of representative and reliable information on the content of nutrients in surface and groundwater;
- Eutrophication of water bodies is a widespread phenomenon;

In the short term, it is proposed to designate the entire territory of Ukraine as a nitrate vulnerable area. This approach is in line with the EU WFD, reflects the current very limited availability of the necessary information to identify nitrate vulnerable areas, is used in many EU countries (e.g. Germany, Austria, Lithuania and Romania), is easier to assess, and allows for refinement or identification of nitrate vulnerable areas in subsequent reporting periods based on improved, more reliable information.

This approach avoids competition among farmers in the short term and allows all farmers to be financially supported through future rural development programmes without the need to differentiate between different regions. It also allows for the general measures of the action programme to be applied to the entire territory, but for more stringent action programme measures to be applied only to regions where (based on available data) clear agricultural stress can be proven and specified in a step-by-step manner.

Therefore, in the medium term, it is necessary to focus on substantial and gradual improvement of the monitoring network (both groundwater and surface water) and database to ensure a more detailed approach to zone identification and monitoring, and thus achieve full compliance with the WFD with the identified nitrate vulnerable zones during the second cycle of the RBMP (2031-2036).

3.6 Vulnerable and less vulnerable areas identified in accordance with the criteria approved by the Ministry of Environment

As of 2023, no vulnerable or less vulnerable zones have been identified in Ukraine.

The regulatory document governing this issue is the Order of the Ministry of Ecology and Natural Resources of 14 January 2019 No. 6 (registered with the Ministry of Justice of Ukraine on 5 February 2019 under No. 125/33096) "On Approval of the Procedure for Determining the Population Equivalent of a Settlement and the Criteria for Determining Vulnerable and Less Vulnerable Zones".

Also, in accordance with the Law of Ukraine "On Water Disposal and Wastewater Treatment" of 12 January 2023 (to enter into force on 07 August 2023), Article 12. Powers of Local Self-Government Bodies, the powers of local self-government bodies in the field of water disposal include:

- upon the submission of the central executive body implementing the state policy in the field of water sector development, identification of vulnerable and less vulnerable zones in accordance with the criteria approved by the central executive body ensuring the formation of the state policy in the field of environmental protection.

As of 27 March 2024, local governments, upon the submission of the SAWR, recognised 1 SWB as a vulnerable area, which is <1% of the total number of SWBs in the Lower Danube sub-basin.

No decision has been made on less vulnerable areas.

4 MAPPING OF THE MONITORING SYSTEM, RESULTS OF MONITORING PROGRAMMES FOR SURFACE WATER (ECOLOGICAL AND CHEMICAL), GROUNDWATER (CHEMICAL AND QUANTITATIVE), AREAS (TERRITORIES) TO BE PROTECTED

4.1 Surface water

Surface water monitoring is carried out in accordance with the Procedure for State Water Monitoring, approved by CMU Resolution No. 758 of 19 September 2018. The Ministry of Ecology, the SAWR and the SES are the subjects of state water monitoring.

Every year since 2020, state water monitoring programmes have been approved by the relevant orders of the Ministry of Ecology (No. 410 of 31.12.2020, No. 3 of 05.01.2022, No. 27 of 17.01.2023) and enforced by the SAWR.

The state water monitoring programme includes:

- information on the object of state water monitoring (code, name of the object, location and other characteristics);
- biological, physicochemical, chemical and hydromorphological indicators, frequency of monitoring, information on the subject and the performer of water monitoring.

State water monitoring is carried out according to the indicators and frequency specified in Annexes 1-3 of the Procedure.

Depending on the goals and objectives of state water monitoring, the following procedures are established:

- the procedure for diagnostic monitoring of the SWBs and GWBs;
- Procedure for operational monitoring of the SWBs and GWBs;
- the procedure for research monitoring of the SWBs;
- procedure for monitoring marine waters.

Diagnostic monitoring is carried out during the first year of state water monitoring. For SWBs that do not pose a risk of failing to achieve environmental objectives, diagnostic monitoring is carried out additionally during the fourth year of state water monitoring.

Operational monitoring is carried out for SWBs that pose a risk of not achieving environmental goals, as well as for SWBs whose water intake to meet drinking and domestic needs of the population averages more than 100 cubic metres per day.

Operational monitoring is carried out annually between the years of diagnostic monitoring.

The research monitoring is carried out by the state water monitoring entities, which independently determine the monitoring points, the list of indicators and the frequency of their measurement.

4.1.1 Monitoring system

In the Lower Danube sub-basin, monitoring will be carried out at 21 monitoring sites at 15 SWBs in 2023:

- at transboundary SWBs identified in accordance with intergovernmental cooperation agreements - 4
- at the SWBs from which water is abstracted to meet the drinking and household needs of the population - 3.

4.1.2 Hydromorphological assessment/status

The hydromorphological status is assessed in accordance with the Methodology approved by the Order of the Ukrainian State Geological Survey No. 23 of 19.02.2019 in five classes. Hydromorphological monitoring during 2021-2023 was carried out at 4 SWBs.

According to the monitoring results, all SWB are classified as nearly natural (Fig. 141).

Figure 141. Hydromorphological state of the Lower Danube sub-basin SWB

4.1.3 Chemical statua assessment

The assessment of the chemical state of the SWBs is based on determining the concentrations of priority substances specified in Directive 2008/105/EC, taking into account Directive 2013/39/EU250, which sets the limit values of environmental quality standards.

In Ukraine, the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 45 of 6 February 2017, registered with the Ministry of Justice of Ukraine on 20 February 2017 under No. 235/30103, defines a list of indicators for which environmental quality standards are set in Annex 8 of the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 5 of 14.01.2019 No. 5 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Status of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified Surface Water Body".

Directive 2009/90/EC (Article 5), which sets out technical requirements/criteria for the processing of monitoring data, was also taken into account when assessing the chemical state of the SWB:

- If the measured value was below the limit of quantification (LOQ), the calculation uses the value of half the LOQ for this indicator
- When summarising the results of individual isomers or mixtures (e.g. polycyclic aromatic hydrocarbons, cyclodiene pesticides, DDT), in the case of values measured below the LOQ, zero "0" should be used to calculate the average concentrations.

In addition, Article 4 of Directive 2009/90/EC stipulates that the methods for measuring the content of indicators must meet the minimum criteria: have a measurement uncertainty value below 50% (k=2) and a quantification limit equal to or below 30% of the relevant environmental quality standard.

Valuation reliability

The reliability of the chemical state assessment was performed using the criteria for establishing the reliability of the correct determination of the ecological and chemical status of the SWBs specified in Annex 11 of the Order of the Ministry of Ecology and Natural Resources of 14.01.2019 No. 5.

According to the established criteria, a three-stage scheme was used to assess the reliability of the correct determination of the chemical state of the SWB:

- A high level of assessment reliability means that most of the requirements have been met, namely: measurement data are available for all indicators specified in the List of Pollutants for Determining the Chemical State of Surface and Groundwater bodies and the Environmental Potential of an Artificial or Heavily Modified Surface Water Bodies in accordance with the Order of the Ministry of Environment No. 45 dated 6 February 2017, hereinafter referred to as the List, that meet the requirements of the Procedure (almost all relevant requirements for the list of indicators, methods and frequency have been met); the aggregation of SWBs demonstrates reliable results;
- The medium level of reliability of the assessment of the state of the SWB is established in the absence of sufficient monitoring data, frequency and measurement of all indicators identified in the List;
- The low level of reliability of the assessment of the state of SWB means that the assessment of the state of SWB was based on risk assessment, transfer of monitoring data through aggregation of SWB according to certain criteria.

To assess the chemical state of the SWB, statistically processed data of measurements of pollutants in surface water conducted at 11 SWB in 2021-2023 were used, namely, the average and maximum values.

Background concentrations for non-synthetic substances (mercury, lead, cadmium, nickel) were not taken into account when assessing the chemical state of the SWB.

Compliance of the measurement results with the environmental quality standards set for the annual average and maximum permissible SWB is considered to be compliance with the requirements set for good chemical condition of the MPW.

For the SWB where monitoring was not carried out in 2021-2023, the chemical state was assessed by interpolating (transferring) the assessment results from the monitored SWB according to the SWB aggregation.

The following indicators were not measured: brominated diphenyl ethers (esters), chloralkanes, C10-13, di-(2-ethylhexyl)-phthalate, diuron, isoproturon, pentachlorophenol, tributyltin compounds (tributyltin cation), perfluorooctane sulfonate and its derivatives (PFOS), dioxins and dioxin-like compounds, hexabromocyclo-dodecane (HBCDD).

For the indicators fluoranthene, hexachlorobenzene, hexachlorobutadiene, mercury and its compounds, dicofol, heptachlor and heptachloroepoxide, for which the recommended object of control is biota, due to the lack of technical capabilities and measurement methods, concentrations were determined only in surface water samples.

The chemical state was assessed on the basis of monitoring data obtained as part of the diagnostic and operational monitoring of the SWB in 2021-2023 for 11 SWB (Annex 8 (M5.3.4)).

Based on the results of the assessment of the chemical state of the Danube RBD (Lower Danube sub-basin) in 2021-2023, the following conclusions can be drawn from the monitoring data (Table 131):

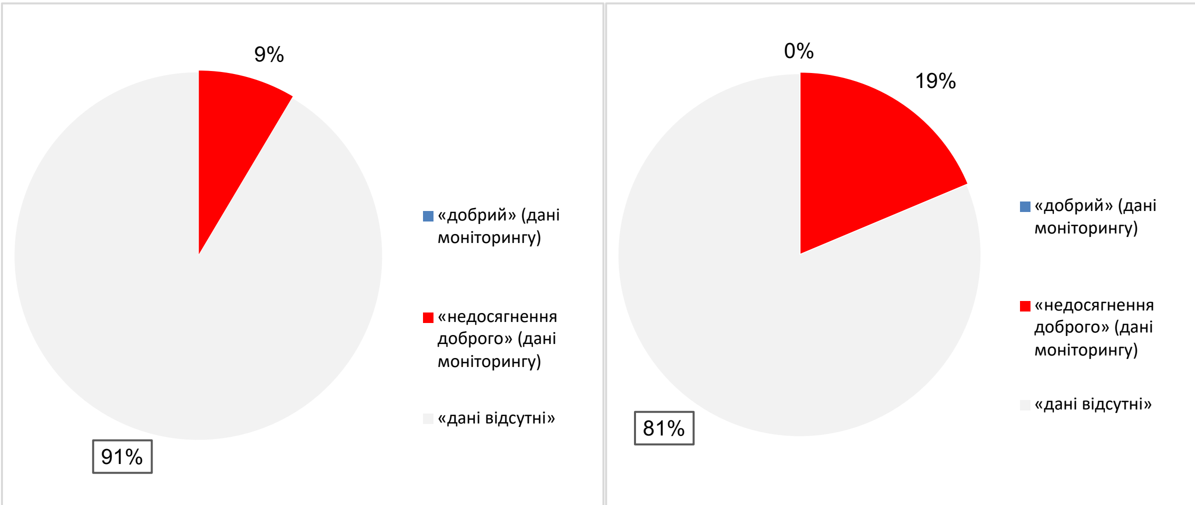
- *chemical status is "good": no SWBs have been* identified;
- *chemical status "not achieving good":* 6 linear SWB (8.5% of the total number of linear SWB), with a length of 157.9 km (18.6% of the total length of linear SWB); 5 polygonal SWB (23.8% of the total number of polygonal SWB), with a surface area of 439.0 km2 (60% of the total surface area of polygonal SWB).

Table 131. Chemical status of the SWB for the period 2021-2023 (according to monitoring data)

Chemical status	number of linear SWBs	total length of the SWBs, km	number of polygonal SWB	total area of the SWB, km^2
"good"	-	-	-	-
"failure to achieve the good"	6	157,9	5	439,0

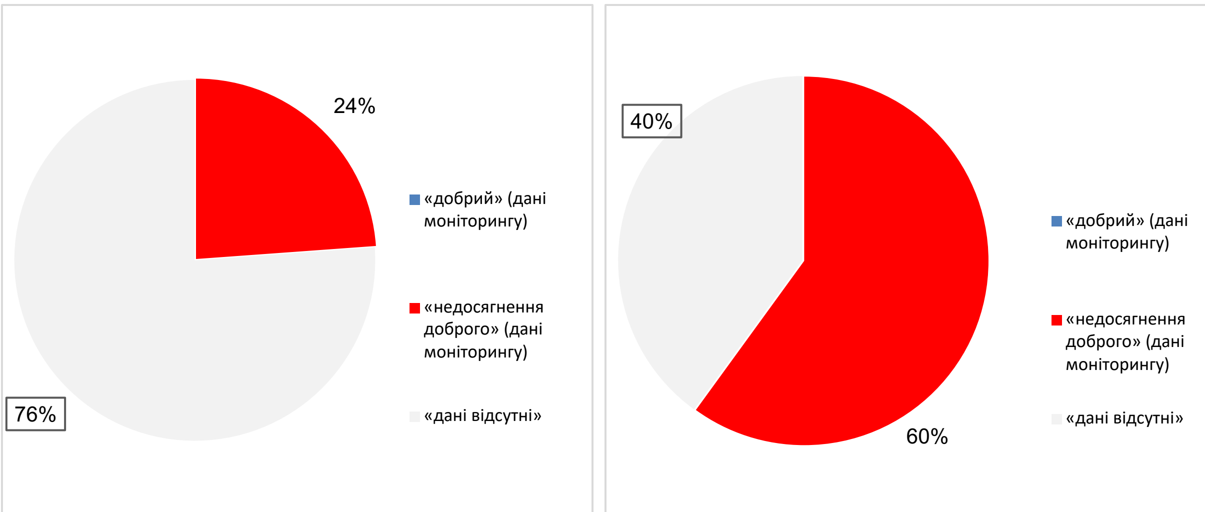
The following substances have been found to exceed the EQS_{MAX} - maximum permissible concentration and/or EQS_{CP} - average annual concentration:

- alachlor (for 1 SWB);
- cadmium and its compounds (for 9 SWB);
- fluoranthene (for 7 SWB);
- lead and its compounds (for 1 SWB);
- benzo(a)pyrene (for 11 SWBs);
- benzo(b)fluoranthene (for 4 SWB);
- benzo(k)fluoranthene (for 4 SWB);
- benzo(g,h,i) perylene (for 4 SWB);
- dicofol (for 3 SWBs);
- lucitrins (for 2 SWBs);
- Cypermethrin (for 1 SWB).



by the number of SWB *by the length of SWB*

Figure 142. Chemical status of the Danube RBD linear SWB (Lower Danube sub-basin)



by the number of SWB *by the area of SWB*

Figure 142. Chemical state of the Danube RBD polygonal SWB (Lower Danube sub-basin)

The interpolation of the results of SWB monitoring to other SWB was carried out on the basis of SWB aggregation, which was performed in 2022 as part of the implementation of state water monitoring in accordance with the Order of the SAWR dated 06.05.2022 No. 42 "On Approval of the State Agency of Ukraine for Research and Scientific and Technical Development Plan for 2022".

The purpose of the SWB aggregation is to combine all SWB in a river basin into different groups based on reasonable criteria for:

- Interpolation of the results of monitoring of the SWB to other SWB that are grouped with them;

- Use the results of aggregation in the development of monitoring programmes for the following years to maximise the interpolation of the assessment results.

The criteria for the aggregation of SWBs of the "rivers" and "lakes" category are:

- the type of the defined SWB;
- assessing the risk of not achieving a good chemical state of the SWB;
- a physical and geographical unit of zoning of the basin to which the SWB belongs;
- the type of landscape where the SWB is located.

The criterion for linear SWB of the "HMWB" and "AWB" categories is:

- assessing the risk of not achieving a good chemical state of the SWB.

The criteria for polygonal SWB of the "HMWB" and "AWB" categories are:

- category;
- the volume of the reservoir;

water exchange regime of the reservoir

Based on interpolation of the monitoring results according to the aggregation of SWB (low level of reliability of the SWB assessment) (Table 132), the following was established:

- *chemical status "good":* not determined;
- *chemical status "not achieving good":* 52 linear SWB (73% of the total number of linear SWB), by SWB length this amounts to 518.75 km (61% of the total length of linear SWB); polygonal SWB - without interpolation (according to SWB aggregation).

Table 132. Chemical status of the SWB based on interpolation of monitoring data

Chemical status	number of linear SWBs	total length of the SWB, km
"good"	-	-
"failure to achieve the good"	52	518,75

A general assessment of the chemical state of the SWB in the Lower Danube sub-basin (based on monitoring and interpolation data) leads to the following conclusions:

- *chemical status "good":* not determined;
- *chemical status "not achieving good":* 61 linear SWB (86% of the total number of linear SWB), with a total length of 731.5 km (86.2% of the total length of linear SWB); 5 polygonal SWB (14% of the total number of polygonal SWB), with a total area of 439.03 km2 (60% of the total area of polygonal SWB).

The general assessment of the chemical state of the SWB for the period 2021-2023 (monitoring data and interpolation of monitoring data) is presented in Table 133, Annex 6 (M5.3.4) and Figures 142 - 143.

Table 133. General assessment of the chemical status of the SWB for the period 2021-2022 (monitoring data and interpolation of monitoring data)

Chemical status	number of linear SWBs	total length of linear SWB, km	number of polygonal SWB	is the total area of polygonal SWB, km^2
"good"	-	-	-	-
"failure to achieve the good"	61	731,5	5	439,03

by the number of SWB *by the length of SWB*

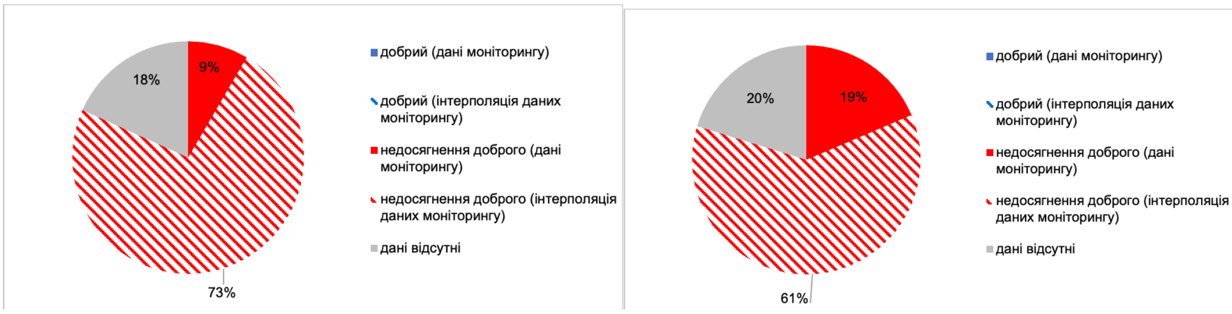
Figure 142. Summary assessment of the chemical status of the linear SWB in the Lower Danube sub-basin (monitoring data

For the 11 SWB of the Lower Danube sub-basin, the reliability of the assessment of the correct chemical status corresponds to an average level of reliability.

52 SWB were assessed with a low level of reliability based on the transfer of results obtained within the framework of the surface water quality monitoring programme to SWB where monitoring was not conducted in the specified period, according to the aggregation of SWB.

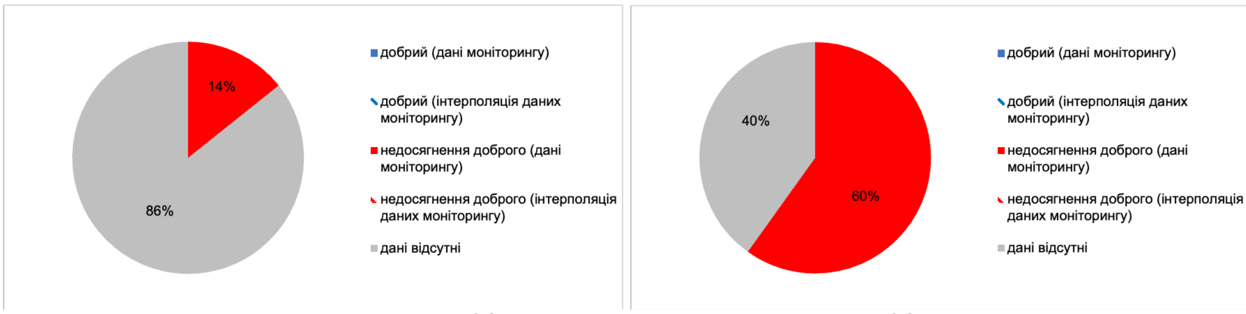
Taking into account the interpolation of monitoring data, the chemical state was assessed for 61 linear SWB, which is 731.5 km long, and 5 polygonal SWB, which is 439.03 km^2 in area .

A summary assessment of the chemical state of the linear SWB and polygonal SWB in the Lower Danube sub-basin is shown in Figure 144 and Figure 145.



by the number of SWB *by the length of SWB*

Figure 144. Summary assessment of the chemical status of the linear SWB in the Lower Danube sub-basin



by the number of SWB *by the area of SWB*

Figure 145. Summary assessment of the chemical state of polygonal SWB in the Lower Danube sub-basin

4.1.4 Ecological status assessment

Determination of the ecological state of the SWB in accordance with the requirements of the Water Code of Ukraine and the Order of the Ministry of Ecology and Natural Resources of 14.01.2019 No. 5 "On Approval of the Methodology for Assigning a Surface Water Body to One of the Classes of Ecological and Chemical Conditions of a Surface Water Body, as well as Assigning an Artificial or Significantly Modified Surface Water Body to One of the Classes of Ecological Potential of an Artificial or Significantly Modified

Surface Water Body" is based on the use of a set of biotic and abiotic components inherent in aquatic ecosystems.

The basis for assessing the ecological status of SWB is based on biological quality indicators that best reflect changes in the aquatic environment, including benthic invertebrates, phytobenthos, macrophytes, phytoplankton and fish. Auxiliary indicators include physicochemical and hydromorphological quality indicators. The assessment of the ecological status also includes specific synthetic and non-synthetic substances that are typical for RBDs.

The classification schemes for biological quality indicators depend on the type of SWB and include possible anthropogenic pressures (e.g., organic and nutrient pollution, hydromorphological changes). The ecological status of an SWB is assessed in relation to a reference value (i.e., the status of an SWB of a certain type without or with minimal anthropogenic pressure). The degree of impact for individual biological quality indicators is converted into an ecological quality coefficient for individual boundaries of the five classes of ecological status of the SWB.

The algorithm for determining the ecological status of SWB based on the type-specific classification being developed for biological, hydromorphological, chemical and physicochemical indicators is provided in the draft Order of the Ministry of Ecology and Natural Resources "On Approval of Environmental Water Quality Standards for Determining the Ecological Status of the Array of Surface Water Outlets...". Type-specific classification schemes were developed based on existing schemes in neighbouring EU countries for the relevant types of SWB that have undergone the intercalibration process.

The assessment of physicochemical and chemical indicators took into account the requirements of Directive 2009/90/EC (Article 5), which sets out technical requirements/criteria for the processing of monitoring data.

The results of state water monitoring conducted by the SAWR and the SES of Ukraine as part of diagnostic and operational monitoring were used to assess the environmental condition of the SWB.

If during this period the monitoring of the SWB was carried out more than once at the monitoring point, the assessment was made on the basis of the results of the last year in which the monitoring was carried out.

To assess the ecological state of the SWB, the data on monitoring the content of synthetic and non-synthetic specific substances typical for the Danube RBD were used.

Background concentrations of non-synthetic specific substances were not taken into account when assessing the environmental condition of the SWB .

In the Danube RBM (Lower Danube sub-basin), the ecological status was assessed for 21 linear SWB with a length of 637.8 km based on 2021-2023 data. The results of the assessment of the ecological status of the SWB are presented in the table and appendix.

Table Ecological status of the SWB

Ecological status	Number of linear SWBs	Percentage of the total number of linear SWBs, %.	Length of linear SWBs, km	Percentage of the total length, %.
"high"	0	0	0	0
"good"	0	0	0	0
"moderate"	2	2,8	112,7	13,2
"poor"	1	1,4	6,1	0,7
"bad"	0	0	0	0

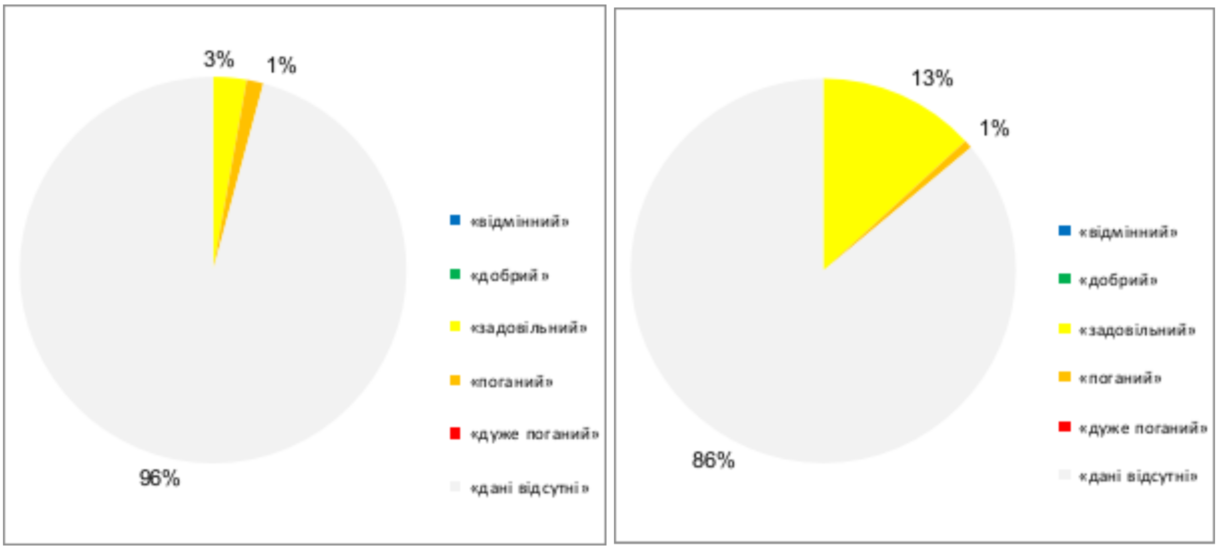
The level of reliability of the ecological status assessment is average for all assessed SWBs.

The environmental targets for achieving "good" ecological status have not been achieved in any of the assessed SWBs.

The ecological status of 2 linear SWBs with a length of 112.7 km, which is 13.2% of the total length of SWBs in the Lower Danube sub-basin, is "moderate". The ecological status of 1 SWBs is classified as "poor", which is 0.7% of the total length of the SWBs. None of the assessed SWBs were classified as being in "very poor" ecological status.

In the Danube RBD (Lower Danube sub-basin), the Kyrgyz-China River (UA_M5.3.4_0063) was identified in "poor" ecological status due to non-compliance with the EQS for vascular plants and benthic macroinvertebrates.

The results of the ecological status assessment are presented for the linear SWB of the "rivers" category in Figure 146.



by the number of SWB *by the area of SWB*

Figure 146 Assessment of the ecological status of the linear SWb of the Danube RBD (Lower Danube sub-basin)

4.1.5 Ecological potential assessment

For an AWB or an HMWB, the ecological objective is to achieve good ecological potential, for which less stringent criteria are applied to determine impacts related to hydromorphological changes. The ecological potential of an AWB or an HMWB is determined in accordance with the classification established for determining the status of the SWB of the relevant category (river, lake, transitional waters, coastal waters) to which the AWB or an HMWB is most similar in terms of its characteristics.

In the Danube RBD (Lower Danube sub-basin), the environmental potential was assessed for 2 linear SWB with a length of 29.3 km and 5 polygonal SWB with an area of 439.1 km^2 based on the 2021-2023 data. The results of the assessment of the environmental potential of the SWB are presented in the table and appendix.

Table 23 Ecological potential of SWB (linear)

Environmental potential	Number of linear SWBs	Percentage of the total number of linear SWBs, %.	Length of linear SWBs, km	Percentage of the total length, %.
"good"	0	0	0	0
"moderate"	1	1,4	5,1	0,6
"poor"	1	1,4	24,2	2,9
"bad"	0	0	0	0

Table 23 Environmental potential of SWB (polygonal)

Environmental potencial	Number of linear SWBs	Percentage of the total number of linear SWBs, %.	Length of linear SWBs, km	Percentage of the total length, %.
"good"	0	0	0	0
"modearte"	4	19,0	385,8	52,6
"poor"	1	4,8	53,3	7,3
"bad"	0	0	0	0

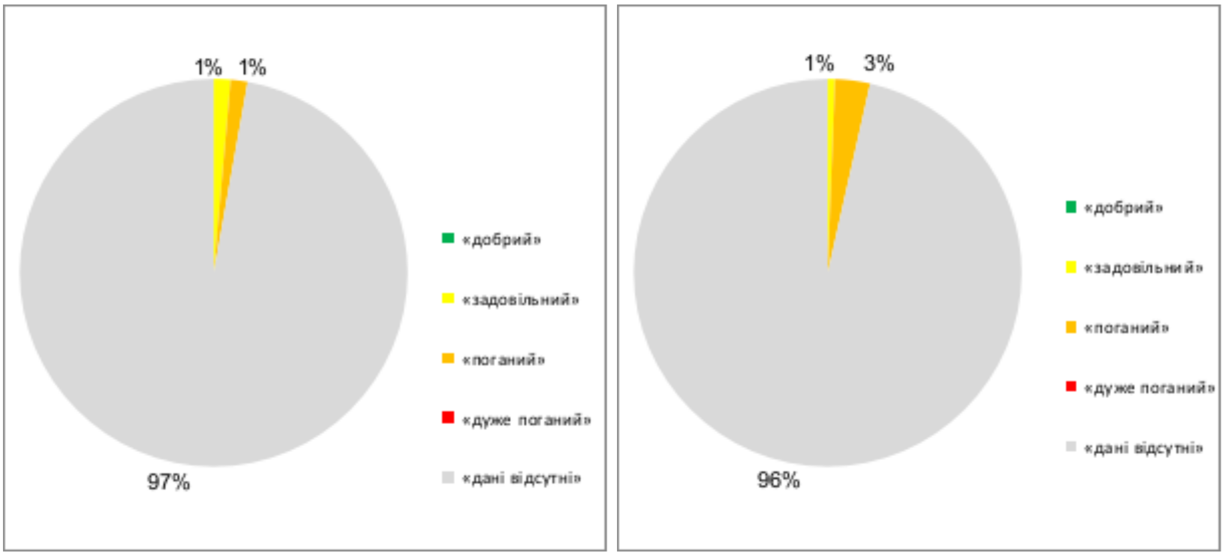
The level of reliability of the ecological potential assessment is average for all assessed SWBs.

The environmental targets for achieving "good" ecological potential were not achieved in any of the assessed SWBs.

"Moderate" ecological potential was determined at 1 linear SWB with a length of 5.1 km, which is 0.6% of the total length of SWB and 4 polygonal SWB with an area of 385.8 km2. "Poor” ecological potential was identified at 1 linear SWB with a length of 24.2 km and 1 polygonal SWB with an area of 53.3 km2.

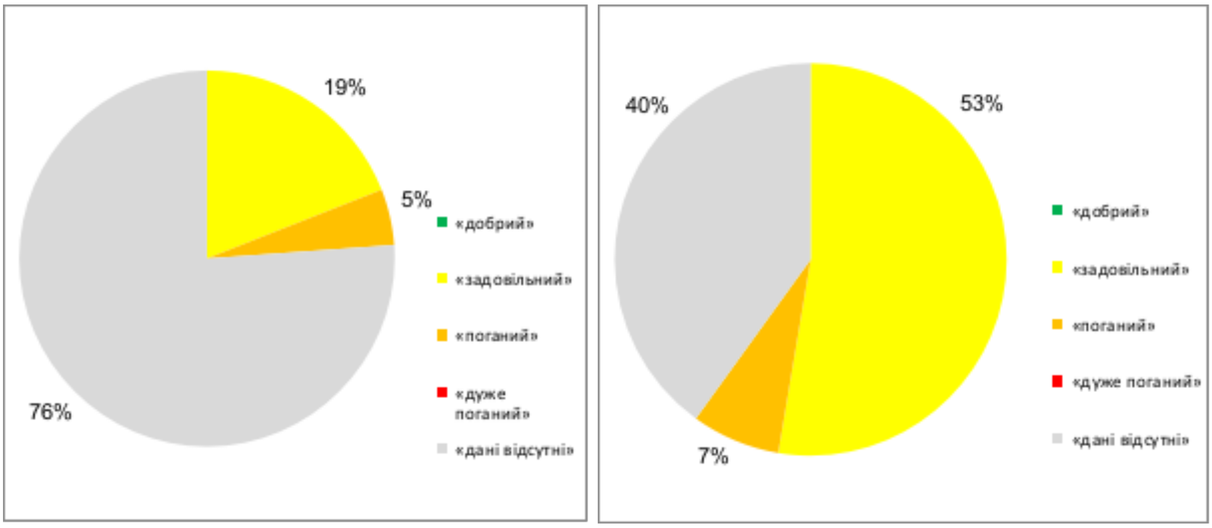
The Karasulak River (UA_M5.3.4_0029) and the China Reservoir (UA_M5.3.4_0086) were assigned "poor" ecological potential due to non-compliance with the EQS for biological indicators: phytoplankton, microphytobenthos, vascular plants and benthic macroinvertebrates.

The results of the ecological potential assessment are presented for linear SWB in Figure 147.



by the number of SWB *by the area of SWB*

Figure 147 Assessment of the ecological potential of the linear SWBs of the Danube RBD (Lower Danube sub-basin)



by the number of SWB *by the area of SWB*

Figure 149 Assessment of the ecological potential of the Danube RBd polygonal SWBs (Lower Danube sub-basin).

4.2 Groundwater

4.2.1 Monitoring system

The quantitative and chemical state of groundwater is monitored within the framework of the state groundwater monitoring system and changes in the state are predicted both under natural conditions and under the influence of human activity. Quantitative and chemical monitoring is carried out in the same observation wells. The monitoring is carried out in both non-pressure and pressure aquifers under natural, slightly disturbed and disturbed conditions. The disturbed conditions are investigated within the operational water intakes.

The state groundwater monitoring includes diagnostic and operational monitoring, the indicators and frequency of which are defined in accordance with the WFD and are set out in Annex 2 of the Procedure for State Water Monitoring. The components of state monitoring of groundwater bodies include monitoring of quantitative, chemical and physico-chemical indicators. The Procedure for State Water Monitoring does not define the monitoring network (in particular, the number of monitoring points), but it does set out the frequency and indicators to be monitored (see table in the general section on the Danube).

Since the beginning of the Russian military aggression in 2022, the monitoring has been permanently suspended, as the implementation of the of the State Programme for the Development of Ukraine's Mineral Resources Base until 2030, which included monitoring and funding, was suspended.

The observation network for groundwater monitoring is currently in a dilapidated state. Observations conducted in 2018-2020 did not meet the requirements of the current Procedure for State Water Monitoring in terms of either quantitative or qualitative indicators.

There is no inventory of GWB in the Lower Danube sub-basin.

4.2.3 Chemical assessment/risk assessment

As of the end of 2023, no assessment of the chemical state of the GWB had been carried out.

4.2.4 Estimation of groundwater volumes/reserves

As of the end of 2023, no assessment of groundwater volumes/reserves had been made.

In the absence of monitoring data, environmental targets are set based on expert opinions.

4.3 Areas (territories) to be protected

The State Water Monitoring Programme for 2023 for the Lower Danube Sub-basin includes monitoring sites within one category of protected areas (territories):

- 3 monitoring points related to operational monitoring at SWB from which water is abstracted to meet the drinking and household needs of the population (Annex 6).

5 A LIST OF ENVIRONMENTAL OBJECTIVES FOR SURFACE WATERS, GROUNDWATER AND PROTECTED AREAS (TERRITORIES) AND DEADLINES FOR THEIR ACHIEVEMENT (IF NECESSARY, JUSTIFICATION FOR SETTING LESS STRINGENT OBJECTIVES AND/OR POSTPONEMENT OF THEIR ACHIEVEMENT)

Environmental objectives for surface water, groundwater and protected areas (territories) are set separately.

Surface water:

- Prevention of deterioration of all SWBs;
- Achievement/maintenance of good ecological and chemical status of all natural SWBs (rivers, lakes, transitional and coastal waters);
- Achieving/maintaining good ecological potential and chemical status of HMWBs and AWBs;
- Gradual reduction to the complete absence of hazardous substances.

Groundwater:

- Prevention of deterioration of all GWBs;
- Achieving/maintaining good quantitative and chemical status of all GWBs;
- Preventing and limiting groundwater pollution.

Areas (territories) to be protected:

Achieving standards and targets as required by applicable law for:

- Emerald Network facilities;
- sanitary protection zones;
- protection zones for valuable aquatic bioresources;
- surface/ground water bodies used for recreational, medical, resort and health purposes, as well as water intended for bathing;
- areas vulnerable to (accumulation of) nitrates;
- vulnerable and less vulnerable areas identified in accordance with the criteria approved by the Ministry of Environment.

In cases where several objectives are set for a particular SWBs or GWBs, the most stringent ones should be applied, while all other objectives should also be met.

In some cases, the deadlines for achieving environmental objectives or the targets themselves may be postponed as an exception.

It is allowed to postpone the date of achievement of the objective for a period of 6 years (until 2036), but not longer than 12 years (until the end of 2042) from the end of the implementation of the first cycle of the RBMP (2030).

An exemption applied to a particular SWB or GWB should not create a risk of not achieving the environmental objectives of the upstream (for SWB) or downstream (for SWB) and adjacent (for GWB) body or bodies.

The exceptions include:

- **Achieving less stringent objectives or postponing the date of their achievement** due to technical reasons (e.g. lack of a technical solution, technical impracticality or impracticability), disproportionately high cost or the existing natural state of the water body that does not allow for its improvement in a timely manner (e.g. inert groundwater to be restored). The presence or absence of disproportionality is determined by the results of an economic assessment of costs and benefits;

- **Temporary deterioration of the status (objectives) as a result of an unforeseen force majeure of** natural origin (e.g. extreme flood, drought) or anthropogenic (accident)
- **New physical changes to the SWB as a result of infrastructure projects** are permitted if the benefits to society are higher than the environmental benefits and there is no other option to avoid these changes for technical and/or financial reasons. Water pollution from point or diffuse sources is not allowed.

5.1 Environmental objectives for surface water

The RBMP is aimed at achieving/maintaining "good" ecological status by all designated SWB. For surface waters, it is defined as "good" ecological status and "good" chemical status. For substantially modified and artificial SWB, the main environmental objective is to achieve "good" ecological potential.

In the Lower Danube sub-basin, 45 naturally occurring SWB have been identified, i.e. those classified as Rivers, Lakes, Coastal Waters and Transitional Waters; 57 significantly modified SWB and 4 artificial SWB.

For those SWBs that have a "good" ecological status based on the analysis of anthropogenic impacts, the main environmental objective is to preserve and prevent deterioration in the future. In those SWBs where "excellent" ecological status is established after the first year of monitoring, measures for their protection should be taken.

The SWB ecosystems that are at possible risk of not achieving "good" ecological status have a low anthropogenic load or the available data were insufficient to determine it accurately. As a result of the implementation of a set of measures aimed at improving the current state, the main environmental objective can be expected to be achieved by the end of the first planning cycle, i.e. in 2030.

The greatest anthropogenic impact has been noted on SWBs that are at risk of not achieving "good" ecological status. For these SWB s, it is necessary to use operational monitoring and confirm the ecological status using biological indicators. In accordance with the identified loads and their factors, develop and implement practical measures that will help restore the state of surface water bodies to achieve the set target and ensure sustainable water use.

Achievement of the main environmental objective for such SWB should be ensured within 1-3 planning cycles. The time required to achieve the environmental objective depends on the nature of the anthropogenic load and the financial needs for measures aimed at achieving it.

An important component of the environmental goals is the gradual reduction of pollution by priority substances to a level below the environmental quality standard and strict control over their content in wastewater discharged into surface water bodies. It should be noted that the existing database used to analyse the anthropogenic load contained significant gaps in the content of priority substances. In the process of implementing the first management plan, one of the important environmental objectives should be to fully characterise water pollution by a group of hazardous and priority substances. Due to the above, it is currently impossible to predict the time of achieving a "good" chemical state.

The Lower Danube sub-basin contains 57 substantially modified SWB and 4 artificial SWB, the ecological objective of which is to achieve "good" ecological potential. To date, the parameters of this potential have not yet been established, and this brings to the fore the task of determining its specific parameters.

Based on the results of the assessment of anthropogenic pressure on the SWB of the Lower Danube sub-basin:

- 20 SWB are "at no risk" of failing to achieve "good" environmental status/potential, 12 SWB are "possibly at risk", and 74 SWB are "at risk";
- 35 SWB are "without risk" of failing to achieve "good" chemical status, 21 SWB are "possibly at risk", and 50 SWB are "at risk".

By 2030, 36 SWB will have achieved "good" environmental status/potential, of which 3 SWB are 5% of SWB that are "at risk" or "possibly at risk" of not achieving environmental targets based on the results of the anthropogenic impact assessment, and will achieve environmental targets through the implementation of PoM.

The remaining 'at risk' or 'possibly at risk' SWB in the basin (70 SWB) could achieve 'good' ecological status/potential by 2036 or 2042, subject to the implementation of remedial measures.

By 2030, 106 SWB will have reached "good" chemical status, including 35 SWB that are currently "no risk" (they need to maintain this status), and 71 SWB that are "possibly at risk" or "at risk" according to the results of an assessment of anthropogenic pressure.

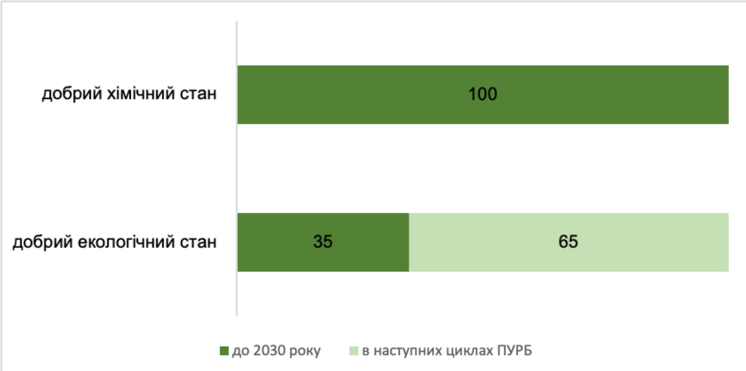


Figure 150. Timeframe for achieving the environmental objectives of the SWB

Annex 8 (M5.3.4) contains the environmental objectives of the SWB, the timeframe for achieving them, reasons for postponement and setting less stringent targets.

5.2 Environmental objectives for groundwater

Environmental targets are set for each GWB, both in terms of their quantitative and qualitative (chemical) status. According to the WFD, the main objective is to achieve "good" groundwater status.

Additional targets for each individual GWB are defined depending on the existing quantitative and qualitative state of GWB, their use or potential use for water supply to the population, anthropogenic pressure and possible impact on surface ecosystems.

The main criterion for the "good" quantitative state of the GWB should be the absence of groundwater depletion.

Depletion is the state of aquifers in which, under the influence of artificial drainage, the decline in groundwater levels has reached such indicators that exclude the possibility of further use of the horizon to meet the needs of society using traditional technical means.

The assessment of the depletion of the GWB is based on information on the level regime, data on groundwater extraction volumes and their comparison with the resources and approved operational reserves.

In addition, the criterion of "good" condition for non-pressure GWB is the appropriate condition of the associated surface water bodies and the absence of negative impact on surface ecosystems, primarily vegetation suppression.

The criteria for the "good" quality (chemical) state of the GWB are the natural background content of chemical elements and compounds, as well as the standards set for drinking water by the State Sanitary Norms and Rules "Hygienic Requirements for Drinking Water Intended for Human Consumption" (SanPiN 2.2.4-171-10).

Quantitative state of pressure GWB

The quantitative state of the pressure GWB is assessed by comparing the volumes of water withdrawal from these GWB at water intakes with the volumes of projected groundwater resources (PGR).

The environmental objective is the stability of the quantitative state and the absence of groundwater depletion. At groundwater abstractions, the volume of water withdrawal should not exceed the estimated operational reserves (within groundwater deposits).

High-quality (chemical) pressure vessel GWB

Since groundwater from all the pressure WTPs is used for centralised drinking water supply to the population, the criteria for "good" chemical condition was the compliance of groundwater chemical parameters with the State Sanitary Norms and Rules "Hygienic Requirements for Drinking Water Intended for Human Consumption" (SanPiN 2.2.4-171-10).

This document is mandatory for executive authorities, local governments, enterprises, institutions, organisations, regardless of ownership and subordination, whose activities are related to the design, construction and operation of drinking water supply systems, production and circulation of drinking water, supervision and control over the supply of drinking water to the population and citizens.

The Sanitary and Epidemiological Norms and Regulations 2.2.4-171-10 sets standards for drinking water, including tap water, water from bottling sites and pump rooms, as well as water from wells and springs, in terms of sanitary, chemical and epidemiological safety of drinking water.

Exceptions are indicators exceeded in groundwater due to natural factors.

An additional environmental objective is to avoid deterioration in the quality of the discharge boundary water, but conclusions on trends in chemical composition should be based on reliable monitoring data, as the content of components in water is subject to natural fluctuations, which is especially typical for those underground storage tanks that are located closer to the surface. Therefore, information on the interval of fluctuations in the content of components of the chemical composition of water should be available for each GWB.

For operational water intakes, the absence of adverse changes in water quality is determined by comparing current indicators with those at the time of approval of reserves.

The primary goal should be the resumption of groundwater monitoring, which was virtually suspended in recent years and finally destroyed during the war. In the absence of groundwater monitoring, achieving all of these goals is unrealistic.

The poor state of groundwater monitoring over the past decades and, consequently, insufficient information on the current state of the GWB allows defining environmental objectives only in the most general form. In the course of monitoring, the environmental objectives for each GWB will be specified.

Figure 151: Timeline for achieving the environmental goals of the GWB.

6 ECONOMIC ANALYSIS OF WATER USE

The economic analysis of water use has been prepared in accordance with the schedule of the RBMP development process based on data for 2015-2019. Due to the full-scale military invasion of Ukraine by the Russian Federation, the economic development of the territories and the structure of water use in the Lower Danube sub-basin have undergone significant changes.

6.1 Economic development of the sub-basin

The economic development of the Lower Danube sub-basin is conditioned by its geographical, climatic, economic and socio-demographic situation. The Lower Danube sub-basin is located on the territory of Izmail and Bolhrad districts and part of Tatarbunary TG of Bilhorod-Dnistrovskyi district of Odesa region.

Geographically, the Lower Danube sub-basin is an integral sub-basin, consisting of the Danube River basin within Ukraine, transitional waters and coastal waters (the Black Sea water area between the coastline and a line in the territorial sea at a distance of one nautical mile from the baseline used to determine the width of the territorial sea). The total population of the sub-basin, as of 2019, is 313,116 people, which is 1% of the total population of Ukraine.

Table 135. Share of area and population of oblasts within the sub-basin[73], %.

Oblast	Share of the region's area within the basin	Share of the region's population within the basin
Odesa	21	14

An analysis of the current situation in the region's socio-economic situation shows certain trends:

- Analysis of the demographic situation shows a negative migration process of the existing population;
- Total industrial production decreased by 25.5%, with the largest drop in manufacturing: mining and processing;
- agriculture is one of the leading sectors that plays an important role in shaping the pace of economic growth and, according to preliminary data, demonstrates the following trends - the growth rate of gross output was 80.23%, including: crop production - 88.0%, (wheat (88.4%), corn (81.8%), rapeseed (108.6%), fruits and berries (98.7%), barley (91.2%), vegetables (94.1%) and sunflower (80.5%), soybeans (78.8%)), with a slight decrease in production volumes compared to the previous year; and livestock production - 74.45% due to a decrease in meat, milk, eggs and wool production compared to the previous year.

The transport and road sector saw a decrease in cargo turnover (by 1.3%) and passenger traffic (by 0.7%) compared to the same period last year. Foreign trade: in 2019, the volume decreased by 10%.

Analysis of the Lower Danube sub-basin WFD

In 2019, the sub-basin's GRP amounted to UAH 25958.26 million. The dynamics of this indicator over the entire study period of 2015-2019 demonstrates an upward trend, and its share in Ukraine's GDP is also growing. The growth rate of the sub-basin's GRP compared to the previous year was highest in 2016-2017 (19%-24%), while in 2019, the sub-basin's GRP growth decreased to 13% per annum. The share of the sub-basin's GRP in the country's total GDP in 2019 was 65%.

Table 136. Dynamics of GRP in the sub-basin, 2015-2019

Indicator	2015	2016	2017	2018	2019
GRP in actual prices, UAH million	13350,91	15985,67	19873,08	22942,37	25958,26

73 calculated on the basis of data from the State Statistics Service of Ukraine http://www.ukrstat.gov.ua/

Indicator	2015	2016	2017	2018	2019
The share of the Lower Danube sub-basin's GRP in Ukraine's total GDP, %.	0,67	0,67	0,67	0,64	0,65
GRP growth rate of the Lower Danube sub-basin, % compared to the previous year	100	119	124	115	113

The dynamics of the sub-basin's GRP reflects an increase in GRP from UAH 13 million to UAH 25 million in 2019.

The GRP per capita within the sub-basin is UAH 82.9 thousand, which is lower than the total for the whole of Ukraine (as of 2019, the GRP per capita is UAH 94.7 thousand).

Analysis of the Lower Danube sub-basin WFD

As of 2019, the sub-basin's GVA was UAH 32,804.12 million, and it accounts for 0.96% of Ukraine's total GVA.

Table 137. GVA by economic sector, 2015-2019

Sectors of the economy	2015	2016	2017	2018	2019
Agriculture, forestry and fisheries, UAH million	2043,38	2647,97	2868,99	3184,75	2746,16
Share of agriculture, forestry and fisheries in the sub-basin in the total GVA of Ukraine, %.	0,85	0,95	0,94	0,88	0,77
Mining and quarrying, UAH million	2,29	4,58	7,26	6,88	12,03
Share of the mining industry and quarrying in the sub-basin in the total GVA of Ukraine, %.	0,00	0,00	0,00	0,00	0,01
Processing industry, UAH million	1861,34	2255,99	2563,54	2850,84	3163,35
Share of the sub-basin's processing industry in the total GVA of Ukraine,%.	0,79	0,77	0,71	0,69	0,74
Supply of electricity, gas, steam and air conditioning, UAH million	389,69	406,50	442,41	525,12	532,77
Share of electricity, gas, steam and conditioned air supply of the sub-basin in the total water supply of Ukraine, %.	0,73	0,55	0,51	0,47	0,43
Water supply, sewerage and waste management, UAH million	95,13	85,96	101,24	129,51	163,52
Share of water supply, sewerage, and waste management in the sub-basin in the total GVA of Ukraine, %.	1,20	1,01	1,02	1,14	1,13
Transport, warehousing, postal and courier activities, UAH million	3278,92	4013,60	4942,17	5328,42	6359,18
Share of transport, warehousing, postal and courier activities in the sub-basin in the total GVA of Ukraine,%.	2,43	2,56	2,58	2,34	2,40

In the overall structure of the GVA of Ukraine, among the water-dependent economic activities of the sub-basin in 2019, the largest percentage is accounted for by transport, warehousing, postal and courier activities (2.4%) and water supply and sewerage, waste management - 1.13%, agriculture, forestry and fisheries - 0.7%, supply of electricity, gas, steam and air conditioning - 0.4%, mining and quarrying - 0.01%, and manufacturing - 0.74%.

The total amount of GVA of water-dependent economic activities in the sub-basin in the total amount of GVA in the basin during 2014-2019 ranged from 39-46% (in 2019 - 127 million UAH, which is 39.5%).

6.2 Characteristics of modern water use

The current water use of the sub-basin was characterised based on the data of the state water cadastre in the section "Water use" for 2019.

Table 138. Dynamics of changes in the number of water users and water withdrawals

Years	2015	2016	2017	2018	2019
Number of water users, pcs.	246	244	239	234	225
Water intake, million m^3	546,6	777,7	464,0	571,4	627,5
Discharge to surface water bodies, million m^3	51,73	47,4	52,15	57,67	57,46
Polluting wastewater discharge, million m^3	15,17	15,06	18,78	2,09	32,73

In 2019, 225 water users submitted reports on water use in the sub-basin in the form 2TP-water farm (annual) (including 25 reports with zero water withdrawals).

The general indicators of water intake, water use and wastewater discharge in the sub-basin within Tatarbunary, Izmail, Kiliya, Bolhrad, Artsyz, Tarutino and Reni districts of Odesa region by economic sectors according to the 2TP-Vodkhoz (annual) form are summarised in Table 139.

Table 139. Characteristics of water use in the sub-basin in 2019, million m^3

Industry	Water intake	Usage. waters	Discharges of waste water into surface water bodies	Discharges of polluted wastewater
Public utilities	7,289	5,623	0,138	0,138
Industry	0,532	0,619	2,536	0,031
Agriculture, including irrigation	659, 04	126,72	32,644	32,556
Transport	0,022	0,102	0,001	0
Together:	**672,5**	**137,2**	**57,46**	**32,73**

Polluted wastewater is discharged into surface water bodies in the Danube sub-basin by water users:

Water user	code	Discharge volume, million m^3	Degree of water treatment
Industry:			
PJSC "UDP Kilia Shipyard"	33113076	0,031	contaminated without cleaning
Utilities:			
KP Svetlo	32319458	0,138	contaminated insufficiently cleaned (CIC)
Agriculture (irrigation):			
Debut-2005 LLC	33757219	11,93	contaminated without cleaning
Mayak agricultural company	30704515	15,01	contaminated without treatment (CTC)
LLC JV "Danube-Agro"	30819680	3,388	contaminated without treatment (CTC)
Druzhba agricultural collective farm	03769497	2,228	contaminated without treatment (CTC)

A detailed description of the sub-basin's water use by economic sector is presented in Figure 148.

Figure 148. Characteristics of water use in the Lower Danube sub-basin in 2019[74] , million m³

In total, the Lower Danube sub-basin withdrew a total of 672.5 million m^3 of water, of which: surface water - 666.3 million m^3 (99.1%), groundwater - 6.229 million m^3 (0.9%); the volume of fresh water used totalled 137.2 million m^3, including for drinking and sanitation - 6.103 million m^3 (4.5%); industrial - 1.115 million m^3 (0.8%); irrigation - 127.9 million m^3 (93.2%); other - 2.125 million m^3 (1.6%):

The most significant water user in the Lower Danube sub-basin is:

– *Agriculture, including irrigation (operation of irrigation systems):* 126.7 million m^3 (more than 90% of the total fresh water used);

The following sectors of the national economy follow in the order of decreasing water use:

– *Housing and utilities:* 5.623 million m^3 (4.1%);
– *Industry:* 0.619 million m^3 (0.45%), in which the woodworking industry has the largest share in terms of water use: 0.481 million m^3 (0.35%).

In the sub-basin, the total volume of water discharge is 58.16 million m^3, including total wastewater discharged into surface water bodies - 57.46 million m^3 (98.79%), of which: contaminated - 32.73 million m^3 (56.96%); normatively clean without treatment - 22.23 million m^3 (38.69%); normatively treated at treatment plants - 2.5 million m^3 (97.6%); transit water discharged - 507.3 million m^3 (28.3% of total water discharge); recycling, reuse and sequential use amounted to 3.104 million m^3 (0.17% of total water discharge).

In the sub-basin, water is mainly abstracted for economic needs from surface sources used for industrial, agricultural, and municipal water supply. A prerequisite for further socio-economic development is to provide water users with sufficient water in sufficient quantity and quality.

Forecast groundwater resources for the sub-basin in Odesa region are 88.67 million m^3 /year, and the level of approved groundwater resources is 92.72 million m^3/year.

The socio-economic importance of water for economic sectors was assessed based on the European methodology for assessing the value of water. The ranking of economic sectors was applied based on the ranking of economic sectors by 5 indicators adapted to the recommendations of the methodology, namely

[74] State water cadastre data on "Water use", 2019, State Agency of Water Resources of Ukraine

– GVA generated by an industry is an economic indicator of the sector's weight in the region's economy;
– the volume of water withdrawn by the industry;
– water intensity of the industry compared to other industries;
– The industry's dependence on water quality;
– pollution of water bodies by the industry's waste water.

Table 142. Water use and water intensity of the sub-basin's economic sectors

Industry sector	Water intake, million m^3	Gross domestic product, UAH million	Water intensity of airborne troops, m^3 /1000 UAH
Industry	1,063	3175,38	0,33
Housing and utilities	7,289	163,52	44,57
Agriculture	659,037	2746,16	239,44
Transport	0,022	6359,18	0,034

The water-dependent sectors of the economy were assessed for each indicator and its socio-economic weight was determined as low, moderate or high.

Table 143. Socio-economic weight of major water users

Sectors economies	Scope of airborne forces creation	Water intake by the industry	Water intensity of the industry	Dependence on water quality	Waste water contamination
Electricity	low	low	low	low	low
Industry	moderate	moderate	low	low	moderate
Mechanical engineering and metalworking	moderate	moderate	low	low	moderate
Woodworking	moderate	moderate	low	low	moderate
Food industry	moderate	low	low	high	moderate
Housing and utilities	moderate	high	moderate	moderate	high
Agriculture	moderate	moderate	high	high	low
Fisheries	moderate	moderate	high	moderate	moderate
Operation of irrigation systems (including irrigation)	moderate	high	high	high	high
Transport	high	low	low	low	moderate

Based on the assessment results, economic sectors are grouped into 5 groups according to their dependence on water resources and socio-economic importance.

Group 1 "Full dependence" includes water users that are highly dependent on 4 indicators - water quality, high water intensity, significant pressure on water resources and small volumes of GVA - irrigation (operation of irrigation systems).

Group 2 "Multiple dependence" includes those with high dependence on at least two indicators - agriculture and housing and communal services.

Group 3, "Specific dependence", includes those with high ***dependence*** on one indicator, such as the food industry, fisheries, and transport.

Group 4 "Moderate dependence" includes those with moderate dependence on at least 2 indicators - industry, machine building and metalworking, and woodworking.

Group 5 "Dependence without water use" includes economic sectors that use water without abstraction from natural water bodies, generate low volumes of GDP and are minor polluters. In Table.

6.2.1 Municipal water use

One of the main tasks of the water sector is to ensure municipal water consumption. This includes the water needs of the population, household and public utilities, public services, and industrial enterprises in settlements connected to local water supply systems. The amount of municipal water consumption depends on the number of residents, the degree of urbanisation and climatic conditions.

According to water use reports in the form 2TP-water farm (annual) for 2019, water users in the sub-basin withdrew 7.289 million m^3 of water from natural water bodies, including 1.731 million m^3 from surface water bodies and 5.559 million m^3 from underground water bodies. The total water used was 5.623 million m^3, including: 5.347 million m^3, for household drinking needs of the population, and 0.275 million m^3.

The total drainage area is 0.637 million m^3.

The discharge of return (waste) water into surface water bodies in the sub-basin is 0.138 million m^3, and water losses during transportation for own needs in the municipal sector amount to 1.655 million m^3 (10.5% of total losses).

Major water users in the municipal sector:

- Municipal enterprise "Bolgradvodokanal" m. Bolgrad - 0.141 million m^3 withdrawn from natural water bodies ;
- Municipal enterprise "Vilkovo city water supply" in Vilkovo. Vylkove - 0.084 million m^3 of water withdrawn;
- Municipal enterprise "Izmail VUVKG" in Izmail. Izmail - 1.862 million m^3 of water withdrawn;
- Municipal enterprise "Svitlo" in the city of Kilia - 0.173 million m^3 of water withdrawn.

The rate of physical deterioration of water and sewerage facilities outstrips the dynamics of their renewal and development, which directly depends on the ability of the state and local budgets to finance these measures. The main problems of the housing and utilities sector are the deterioration of the water supply and sewerage network, inefficient operation of treatment facilities, which leads to the supply of water of inadequate quality to consumers and the discharge of polluted water into water bodies. The current increase in the quantitative indicators of sanitary standards for drinking water necessitates the re-equipment of existing water treatment plants with the introduction of the latest water treatment technologies and the construction of new ones.

6.2.2 Industrial water use (by major water users)

The industry in the sub-basin is represented by enterprises of various forms of ownership: woodworking, food processing, machine building and metal processing. The industrial enterprises in the sub-basin take water from surface sources.

According to water use reports in the form 2TP-water farm (annual) for 2019, the industry in the sub-basin withdrew 0.532 million m^3 of water from natural water bodies, including: 0.491 million m^3, and 0.041 million m^3. The volume of water intake by the food industry is 0.020 million m^3, woodworking - 0.480 million m^3. The total water used by the industry is 0.619 million m^3, including: for domestic and drinking needs - 0.076 million m^3, for production needs - 0.543 million m^3.

The total drainage capacity is 2.548 million m^3.

The discharge of waste water into surface water bodies amounted to 2.536 million m^3, including: polluted water - 0.031 million m^3, standard clean water without treatment - 0.005 million m^3, standard treated water at treatment plants - 2.499 million m^3.

There are no water losses during transportation for own needs in the industry.

6.2.3 Water use in agriculture

Agriculture is one of the largest water consumers in the sub-basin. Non-returnable water consumption in agriculture accounts for 65-72% of total non-returnable water consumption in Ukraine.

The main areas of water use in agriculture are irrigation, watering, agricultural water supply and fisheries. Water use in agriculture is a very important and significant area in its socio-economic development. Unlike in industry, where it is sometimes possible to replace water in the technological process, in agriculture it cannot be replaced by anything, and irrigation of crops allows for good results.

According to state water use accounting data for 2019, agricultural entities in the sub-basin withdrew 659.037 million m^3 of water from natural water bodies, including 658.902 million m^3 from surface water bodies and 0.142 million m^3 from groundwater bodies. The total water used is 126.72 million m^3 , including: for domestic drinking needs - 0.279 million m^3 , for agricultural water supply - 1.275 million m^3 , for fisheries - 0.292 million m^3 , for irrigation - 124.851 million m^3 , for industrial needs - 0.238 million m^3 .

The total drainage area is 0.136 million m^3 .

The main water users are agriculture:

- Kamolino-Holding LLC - 11.206 million m^3 of water withdrawn;
- Debut-2005 LLC - 23.395 million m^3 of water withdrawn;
- Mayak SPC - 30.166 million m^3 of water withdrawn;
- Danube-Agro JV LLC - 6.842 million m^3 of water withdrawn;
- Rice of Bessarabia LLC - 23.239 million m^3 of water withdrawn.

Agriculture is one of the leading industries that plays an important role in shaping economic growth and, according to preliminary data, demonstrates the following trends: gross output growth rate was 80.23%, including

I. Crop production - 88.0%, including: wheat (88.4%), corn (81.8%), rapeseed (108.6%), fruits and berries (98.7%), barley (91.2%), vegetables (94.1%) and sunflower (80.5%), soybeans (78.8%), with a slight decrease in production volumes compared to the previous year.

II. livestock - 74.45% due to a decrease in the production of meat, milk, eggs and wool compared to the previous year.

There is no water loss during transport.

6.2.4 Water use in transport

Water users in this sector of the economy in the sub-basin withdrew 0.022 million m^3 of water from natural water bodies, including 0.022 million m^3. Water use by transport in the sub-basin amounts to 0.102 million m^3, including: for domestic and drinking needs - 0.062 million m^3, for industrial needs - 0.039 million m^3.

The total drainage is 0.002 million m^3.

The discharge of return (waste) water into surface water bodies in the sub-basin is 0.001 million m^3, including 0.001 million m^3 of normatively treated water at treatment plants.

There is no water loss during transport.

6.2.5 Other types of water use

Other types of water use withdraw water in the amount of less than 0.83% of the total water withdrawal in the river sub-basin.

These industries include trade and catering, logistics, construction, communications, healthcare and physical education, and education.

6.3 Forecast of water demand by major economic sectors

The water demand of the main sectors of the economy is projected for the period of the River Basin Management Plan (until 2030) under three scenarios: realistic, optimistic and pessimistic.

The forecast is based on the economic indicators of GDP/GDP for previous years and their forecast values. The increments of the optimistic and pessimistic scenarios are calculated by determining the average annual deviations from the forecast values for the previous years.

The deviation of the forecasted water withdrawal volumes under the pessimistic scenario ranges from 1.2-3.5% of the realistic scenario. The optimistic scenario shows a maximum increase in the projected demand for water resources by 0.1-1.8% compared to the realistic scenario.

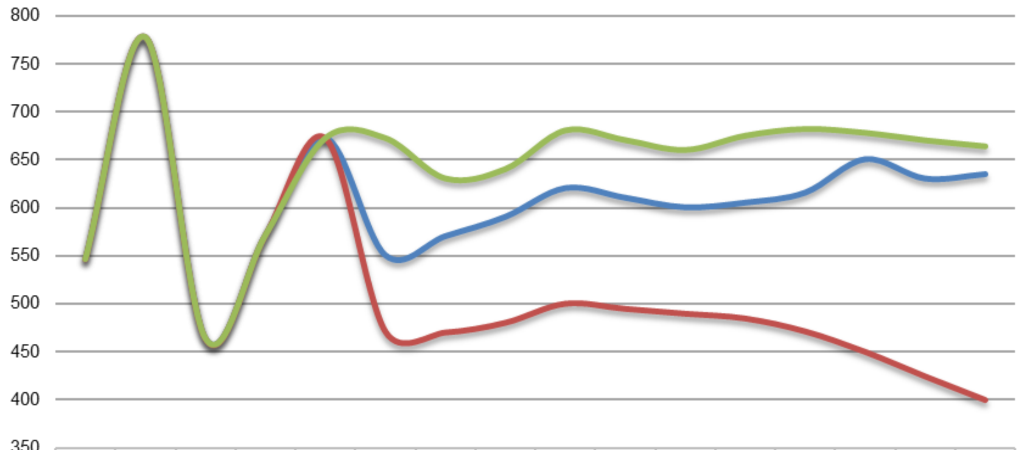
Since 2015, the economic profile of the sub-basin has been variable. Water withdrawals increased in 2016 (777.7 million m^3), and since 2017, water withdrawals have been decreasing, with an increase in water withdrawals starting in 2018.

The main factors affecting water use in the sub-basin include the following:

- the spread of COVID-19 coronavirus infection and the introduction of restrictive measures;
- economic development - driver sectors: agriculture;
- natural: climate change → increased irrigation (the vast majority of water is abstracted in the sub-basin for the operation of irrigation systems (including irrigation)).

The forecast of water withdrawal for the short-term period - for 2021 - is based on the European Bank for Reconstruction and Development's forecast of Ukraine's GDP for 2021, which shows an increase of 3.5%.

For the medium-term period of 2021-2023, the forecast is based on the Forecast of Economic and Social Development of Ukraine for 2021-2023 of the Ministry of Economy, Trade and Agriculture of Ukraine, which envisages GDP growth of 4.2% in 2021, 3.8% in 2022 and 4.7% in 2023.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Реалістичний	546.6	777.7	464	571.4	672.5	550.6	570.4	590.5	620.5	610.4	600.5	605.4	615.8	650.5	630.4	635
Песимістичний	546.6	777.7	464	571.4	672.5	471.4	470.4	480.5	500.4	495	490	485	471.5	450.2	424.7	400.2
Оптимістичний	546.6	777.7	464	571.4	672.5	672.5	630.5	640.2	680.5	670.4	660.2	675	682	678	670.2	664

Figure 150. Forecast of water abstraction in the Lower Danube sub-basin until 2030

The long-term forecast period - 2024-2030 - was calculated based on data from USDA, World Bank, IMF, IHS, Oxford Economic Forecasting, which forecasts Ukraine's GDP growth by 3.2% annually.

In 2021, the Ministry of Economy predicted a slowdown in water withdrawals and a decline in economic performance due to the spread of the acute respiratory disease COVID-19 caused by the SARS-CoV-2 coronavirus.

The largest reduction was expected in the agricultural sector, which is the main water user in the Lower Danube sub-basin. Almost constant abstraction rates are observed in the industrial and transport sectors.

2021-2025 - growth is expected with slight fluctuations in water intake within 5%.

2025-2030 - a trend of intensive growth in water intake due to the projected economic growth of 3.1% annually.

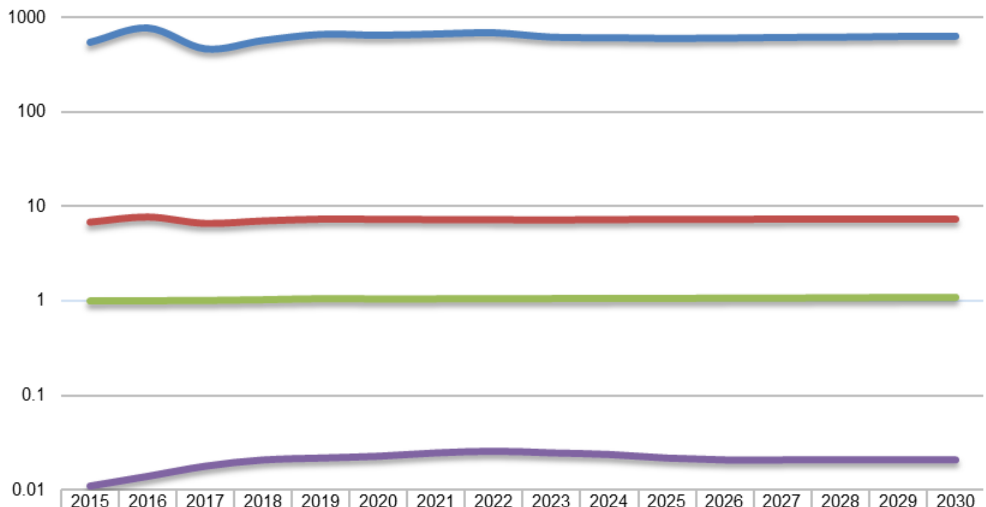
Water use was expected to decline in 2020 as a result of the COVID-19 pandemic.

Since 2021, there has been a stable trend of gradual growth in water intake.

In 2020, a total of 550.898 million m^3 of water was withdrawn from the sub-basin, of which 549.095 million m^3 were surface water, and 1.803 million m^3 were groundwater. Compared to 2019, when a total of 672.5 million m^3 of water was withdrawn, of which 666.3 million m^3 were surface water, and 6.229 million m^3 were groundwater.

Forecast groundwater resources in the sub-basin of the region are 88.67 million m^3/year, and the level of approved groundwater resources is 92.72 million m^3/year.

The forecast of water withdrawal in the sub-basin until 2030 by economic sectors was made on the basis of analysis of water use data series and their modelling in retrospect based on forecast values.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Сільське господарство	546.6	777.7	464	571.4	664.1	650.6	670.4	690.5	620.5	610.4	600.5	605.4	615.8	620.5	630.4	635
ЖКГ	6.776	7.68	6.56	6.99	7.29	7.27	7.22	7.18	7.15	7.22	7.25	7.26	7.29	7.29	7.29	7.29
Промисловість	1.002	1.01	1.02	1.04	1.06	1.06	1.06	1.06	1.07	1.07	1.08	1.08	1.08	1.09	1.10	1.10
Транспорт	0.011	0.014	0.018	0.021	0.022	0.023	0.025	0.026	0.025	0.024	0.022	0.021	0.021	0.021	0.021	0.021

Figure 151. Forecast of water withdrawals in the Lower Danube sub-basin by 2030 by economic sector

Within the sub-basin, agriculture (operation of irrigation systems) is the most developed sector, and this sector also abstracts the largest volumes of water, which affects the overall forecast of water abstraction in the sub-basin.

The housing and utilities sector is a significant water user in the sub-basin, which has responded more actively to the crisis caused by the spread of the COVID-19 pandemic. Thus, water withdrawals by this sector are projected to decrease by 2% in 2020. This indicator is expected to recover in 2025, which is reflected in the total water withdrawals in the sub-basin. In the subsequent period, this indicator is expected to fluctuate within 2-5%.

In the industrial sector of the sub-basin, no significant changes in water withdrawals are expected throughout the forecast period of 2021-2030. This trend is also evident in the retrospective period of 2015-2019.

No significant increase in water withdrawals by transport sector water users is forecast.

6.4 Tools of economic control

6.4.1 Payback of water resources use

The concept of "free" natural resources, which prevailed until the early 1980s, was accompanied by their irrational use, which eventually led to their pollution and shortage. The constant development of Ukraine's economy requires the involvement of more and more natural resources, including water, and thus the need to apply an economic assessment of this resource arises.

Conservation and rational use of water primarily involves improving the system of payment for its use.

Meeting the drinking needs of the population and the use of water by enterprises in their economic activities are referred to as special water use. Special water use is paid for and is carried out on the basis of a special water use permit. The permit for special water use is issued by the territorial bodies of the central executive body that implements the state policy in the field of water development.

The special water use permit sets out the water intake limit, the water use limit and the pollutant discharge limit. In the event of a water shortage, these limits may be reduced by the issuing authority without adjusting the special water use permit.

The terms of special water use are set by the authorities that issued the special water use permit. Special water use may be short-term (for three years) or long-term (from three to twenty-five years).

The legal, economic and organisational framework for the functioning of the drinking water supply system is defined by the Law of Ukraine "On Drinking Water and Drinking Water Supply" No. 2918-111 of

10.01.2002. According to this Law, centralised water supply services are provided by municipal enterprises of local communities (water utilities), which supply drinking water to all water users. Vodokanals have their own property and are financially independent, they have the right to set tariffs for water supply and sewerage independently. The activities of these enterprises are controlled by local governments and district state administrations.

In accordance with the "Procedure for setting tariffs for centralised water supply and sewerage services" approved by the Cabinet of Ministers of Ukraine by Resolution No. 302 dated 10 March 2016, the tariff for water supply and sewerage services should ensure reimbursement of operating expenses, financial expenses, expenses (or a share thereof) for capital investments, income tax expenses per unit of service and is determined by the company based on the indicators of the production programme for the base year. The tariffs for water supply and sewerage in different settlements of the region differ significantly.

Key regulators in the water and wastewater sector:

- the National Energy and Utilities Regulatory Commission (NEURC);
- local self-government bodies (LSG - city, town and village councils).

Payback of water resources use is a comparison of funds received from the use of water resources to the funds spent on the provision of water services.

The description of water services and water use in the Lower Danube sub-basin is presented in accordance with the institutional structure of water services regulation:

I. Centralised water supply and sewerage services;
II. Special water use by economic sectors - payments and fees are paid to the budgets of all levels (rent, environmental tax for discharges into water bodies in Ukraine, lease of water bodies);
III. Water supply services for irrigation.

I. Payback of centralised water supply and sewerage services

In the sub-basin, centralised water supply and sewerage services are provided by more than 10 organisations licensed by local authorities.

According to the calculations, the licensees of local governments in the sub-basin received: UAH 76.6 million (including VAT) in 2018, UAH 91.13 million (including VAT) in 2019, and UAH 100.24 million (including VAT) in 2020, respectively.

The insufficient level of payments by consumers for services rendered, which amounted to 91% in 2020, creates a situation of insufficient coverage of water services by consumer payments and threatens the sustainability of water services, and hence the debts of water utilities for electricity and wages.

The condition of the water supply and sewerage networks in the sub-basin is unsatisfactory, which affects water quality. The cost of rehabilitating the networks is so high that it cannot be covered by depreciation alone.

In the sub-basin, the average profit in the tariffs was 2.8%, but none of the companies provided for the use of profit to form a reserve fund (capital) for modernisation, which should have been included in their business operations.

According to the NEURC, "the amount of production investments from profits is determined in the amount necessary for the gradual restoration of networks (improvement of the functioning of water and sewerage enterprises), and taking into account the needs to fulfil the financial obligations of licensees to international financial organisations". However, this level is extremely insufficient.

II. Payback of water resources use in the sub-basin (based on public finance calculations)

In accordance with the principles of "user pays" and "polluter pays" The Tax Code of Ukraine establishes a fee for special water use:

A. Rent for water intake for different types of water users;
B. Environmental tax on discharges into water bodies.

In addition, there is a fee for the use of water bodies for aquaculture purposes:

C. Rent for water bodies;

D. Payment for special use of aquatic bioresources.

A. Rent for special water use

The state budget received UAH 3.4 million from business entities in the sub-basin by administrative district in 2018, UAH 3.2 million in 2019, and UAH 3.02 million in 2020.

Revenues from rents for special water use to the budgets of the sub-basin regions are declining.

B. Environmental tax on discharges of pollutants into water bodies

In the sub-basin, the state budget received tax revenues for pollutant discharges directly into water bodies in the amount of UAH 4.24 million in 2018, UAH 3.79 million in 2019, and UAH 3.23 million in 2020.

Environmental tax revenues from pollutant discharges into water bodies in the sub-basin are declining.

C. Payment for the lease of water bodies

The weighted average rent is unified for all water bodies in the sub-basin and is constantly increasing. Its dynamics is as follows: 2015 - 114.9 UAH/ha, 2016 - 153.2 UAH/ha, 2017 - 156.9 UAH/ha, 2018 - 162.7 UAH/ha, 2019 - 162.7 UAH/ha, 2020 - 162.7 UAH/ha.

According to estimates, local budgets in the sub-basin received rent for water bodies (parts thereof) in the amount of UAH 18.2-214.6 thousand in 2019-2020, including 2019 - 18.2 thousand UAH, 2020 - 214.6 thousand UAH.

The dynamics of water rent revenues to the budgets of the sub-basin regions is positive.

D. Payment for special use of water bioresources

The fee for the use of water bioresources is levied in accordance with a resolution of the Cabinet of Ministers of Ukraine. According to the report on local budgets, the fee for the special use of aquatic bioresources amounted to UAH 70.02 thousand in 2018, UAH 184.59 thousand in 2019, and UAH 1,574.5 thousand in 2020.

The dynamics of water bioresource use fees to local budgets in the Lower Danube sub-basin is positive.

Expenditures on water resources in the sub-basin

A. Capital and current expenditures from the state and local budgets for environmental programmes in the field of water resources protection

According to state statistical reports, capital investments and current expenditures are allocated to nine environmental areas, including those directly related to the reproduction and protection of water resources:

– treatment of waste water and protection and rehabilitation of soil, groundwater and surface water.

In 2018 and 2019, the percentage of the first and second directions together accounted for half of all expenditures of the total capital expenditures in all directions, but in 2020, the percentage of the first and second directions together decreased due to the growth of other areas of capital expenditures (Table 144).

Table 144. Dynamics of capital investments in the sub-basin, thousand UAH

Area.	2018			2019			2020		
	Total environmental programmes, inclu-ding	Waste water treat-ment	Protection and reha-bilitation of soil, groundwater and surface water	Total environmental programmes, inclu-ding	Waste water treat-ment	Protection and reha-bilitation of soil, groundwater and surface water	Total environmental programmes, inclu-ding	Waste water treat-ment	Protection and reha-bilitation of soil, groundwater and surface water
Odesa	12556,2	6333,4	100,4	12556,2	6333,4	100,4	23830,7	1970,2	4604,9

% of programmes from Total for the indicator		50,4	0,8		50,4	0,8		8,3	19,3
Total for 2 water protection programmes		6433,8			6433,8			6575,1	

In 2018-2019, the percentage of the first and second areas together accounted for almost a third of all expenditures from the total current expenditures in all areas, but in 2020, the percentage of the first and second areas together decreased due to the growth of total current expenditures due to the growth of other areas (Table 145).

Table 145. Dynamics of current investments in the sub-basin, thousand UAH

Area.	2018			2019			2020		
	Total environmental programmes, including	**Waste water treatment**	**Protection and rehabilitation of soil, groundwater and surface water**	**Total environmental programmes, including**	**Waste water treatment**	**Protection and rehabilitation of soil, groundwater and surface water**	**Total environmental programmes, including**	**Waste water treatment**	**Protection and rehabilitation of soil, groundwater and surface water**
Odesa	75467,9	21217,4	109,3	75467,9	21217,4	109,3	152468,3	28665,0	1618,1
% of programmes from Total for the indicator		28,1	0,14		28,1	0,14		18,8	1,1
Total for 2 water protection programmes		21326,7			21326,7			30283,1	

B. State budget expenditures for the maintenance of water infrastructure under the management of the SAWR

In the sub-basin, water infrastructure maintenance activities are carried out by organisations under the management of the State Agency of Water Resources located in the respective areas of the sub-basin - the basin water resources management.

Expenditures for the operation of water infrastructure are made under the comprehensive programme "Operation of the State Water Management Complex and Water Resources Management"; in 2020, expenditures in the Lower Danube sub-basin amounted to UAH 10,086.4 thousand.

Determining the payback of water use in a sub-basin

If the payback ratio of water resources use, calculated using the formula "Revenues / Expenses * 100":

– is more than 100%, this means that all costs are reimbursed by paying tax and non-tax revenues for services to budgets of all levels or by tariffs; budget revenues, if used for their intended purpose, can be used for water resources restoration; enterprises receive profits that can be used for production development - production investments, formation of a reserve fund (capital), etc. (part of which will be used to pay income tax);
– if the indicator is less than 100%, this indicates a threat to the sustainability of the service, as the costs of budgets or enterprises are not covered by the revenues received.

The return on water use calculated using the formula is 6.1%, which means that costs are higher than tax revenues for water services (Table 146).

Table 146. Calculation of revenues and capital expenditures by 2020 indicators in the sub-basin

SOURCES	Receipts, thousand UAH	EXPENSES	Expenses, thousand UAH
Rent for special water use (state and local budgets)	3024,7	Capital investments in water resources restoration and protection	30283,1
Environmental tax on discharges into the water bodies (state and local budgets)	3232,4	Expenditures from the state budget for the operation of the state water management complex	101086,4
Rent for water bodies (parts thereof) provided in use on a lease basis (local budgets)	214,6		
Payment for aquatic bioresources	1584,5		
TOTAL RECEIPTS	**8056,2**	**TOTAL EXPENSES**	**131369,5**
Payback	**6,1%**		

6.5 Water tariffs

6.5.1 Tariffs for centralised water supply and sewerage

According to the institutional structure in Ukraine, the NEURC and local governments set the following types of tariffs for centralised water supply and sewerage services:

1) Tariff for centralised supply (cold water, hot water separately) and sewerage (cold and hot water together);
2) Tariff for centralised supply (cold water, hot water separately) and sewerage (cold and hot water) using in-building systems.

There are no NEURC licensees in the sub-basin.

As of 2020, local governments have set tariffs for centralised water supply and sewerage for ten companies in the Lower Danube sub-basin.

In the sub-basin, only three WSP licensees have established tariffs for water supply and sewerage for consumers who are water supply and sewerage entities in the field of CWS: the enterprises of the ME "Vodokanal" of the Reni City Council, the ME "Izmail Production Department of Water Supply and Sewerage Facilities" and the ME "Bolgradvodokanal", from which other water utilities buy water, the costs of which are included in the tariffs of these enterprises.

As of 01.01.2021, the weighted average tariffs (cumulatively for all licensees of the sub-basin) are as follows:

- for centralised water supply services - 16.83 UAH/m³,
- for centralised sewerage services - 14.72 UAH/m³.

The level of reimbursement of centralised water supply and sewerage costs for consumers who are business entities in the field of water and wastewater (tariff to cost) for all water utilities - licensees of the sub-basin's WSS is about 100% and varies from 100% to 105.7%.

The tariff structure of the licensees includes MLA:

– for centralised water supply: labour costs (38.4%); electricity (24.8%); fuel and lubricants (1.5%); repair costs (15.2%); reagents (0.9%); depreciation and amortisation (2.8%); (0.6%); financial expenses (0.8%); other expenses (13.8%);

– for wastewater disposal: labour costs (50%); fuel and lubricants (5%); repairs (2.8%); depreciation (4%); other costs (39%), etc.

6.5.2 The cost of water for industrial enterprises

The cost of water is actually paid by industrial enterprises in the form of a mandatory payment for special water use - a rent, the amount of which depends on the type of water consumed, the purpose, place and region of consumption, and the actual volume of water used. No rent is paid if the volume of consumption is less than 5 m^3 per day and the water user does not have its own water intake facilities.

The rates of rent for special water use are set by the Tax Code of Ukraine and are differentiated by region. In the Lower Danube sub-basin, the rates are shown in Table 148.

Cost of water supply services for irrigation

The state operators of the market of water supply for irrigation (water abstraction for irrigation) are water management organisations of the State Agency of Water Resources of Ukraine.

The cost of such services is formed on the basis of a unified approach, which is defined by the order of the SAWR and is determined on the basis of economically justified costs directly related to their provision. The costs include direct labour costs, direct material costs and other direct costs, general and administrative expenses, including renewal and modernisation of fixed assets used in the amount of 10% of direct costs. These costs are differentiated according to technological characteristics.

The principle of pricing this service is not aimed at making a profit, as the state in the risky farming zone has committed itself to subsidising agricultural production. The service of water supply for irrigation is a kind of subsidy to agribusiness in the form of reducing the cost of irrigation through state maintenance (operation) of irrigation systems and service personnel.

The peculiarity of cost formation is that the calculation of the cost of this service includes the costs of water supply that are not covered by budget financing (including electricity, salaries, capital expenditures).

The cost of the service does not include the cost of water as a resource, as water management organisations are not primary water users.

The cost of water supply for irrigation as of 2020 varied from 1.08 to 3.51 UAH/m³ (Table 150).

Table 150. Cost of water supply for irrigation in the sub-basin, 2018-2020, UAH/m^3 (excluding VAT)

Area.	The cost of everything			Including the cost of	
	2018	2019	2020	electricity	own services
Odesa	**0,23-2,48**	**0,64-3,51**	**0,87-2,81**	**0,35-1,85**	**0,52-0,96**
Bolgrad district	1,29-2,48	1,71-3,51	0,87-2,81	0,42-1,85	0,45-0,96
Reni district	1,25-2,19	2,02-2,86	1,54-2,63	0,58-1,67	0,96-0,96
Izmail district	0,23-1,45	1,08-1,84	1,08-2,14	0,47-1,43	0,61-0,71
Kiliya district	0,58-1,22	0,64-1,86	0,87-0,95	0,35-0,42	0,52-0,53
Artsyz district	0,77-1,18	1,59-2,5	1,38-1,51	0,7-0,83	0,68-0,68

The proceeds from the provision of these services are used to replenish the special fund of the State Budget of Ukraine and are credited to the own revenues of water management organisations, which are used in accordance with the budget approved by the State Agency of Ukraine for Water Resources.

7 A REVIEW OF THE IMPLEMENTATION OF PROGRAMMES OR ACTIVITIES, INCLUDING HOW THE OBJECTIVES HAVE BEEN ACHIEVED

The section provides an overview of the implementation of environmental protection measures within the sub-basin, which were funded by national targeted programmes, the State Environmental Protection Fund, relevant regional and local programmes or funds, the State Regional Development Fund, state investment projects, international technical assistance projects, regional and local infrastructure projects, etc. (Annex 12 (M.5.3.4)).

The National Target Programme for the Development of the Water Sector and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021 (**Dnipro Programme)**

Paragraph 4 of the CMU Resolution No. 336 of 18 May 2017 "On Approval of the Procedure for Developing RBMPs" states that the development of the first RBMPs for each RBD is carried out during the period of implementation of the Dnipro Programme. In accordance with clause 11 of the said Procedure, the measures to develop the first RBMPs for each RBD are financed from the state budget, which is provided for by the same Dnipro Programme within the expenditures envisaged by the State Budget of Ukraine for the respective year, as well as from other sources. Implementation of this programme is important both in the context of preparing the Lower Danube RBMP and for implementing measures to achieve environmental objectives for the Lower Danube RBM SWB.

The Dnipro Programme aims to define the main directions of state policy in the field of water management, conservation and restoration of water resources, implementation of an integrated water resources management system based on the basin principle, restoration of the role of reclaimed land in the food and resource supply of the state, optimisation of water consumption, prevention and elimination of the consequences of harmful water impact.

The main objectives of the Dnipro Programme are:

- harmonisation of Ukrainian legislation with international standards and improvement of the regulatory framework for innovation and investment development of the water sector - partially achieved;
- Implementation of an effective, justified and balanced mechanism for the use, protection and reproduction of water resources, ensuring sustainable development of the state water monitoring system in accordance with international standards - achieved;
- Implementation of the integrated water resources management system based on the basin principle, development and implementation of RBMPs, application of the economic model of targeted financing of activities in river basins, establishment of basin councils, and enhancement of the role of existing and creation of new basin water resource management agencies - partially achieved;
- Improving the technological level of water use, introducing low-water and waterless technologies, developing more rational water use standards, construction, reconstruction and modernisation of water supply and sewage systems - partially achieved;
- bank protection and regulation of river channels, construction and reconstruction of hydraulic structures, protective dams, polders, flood control reservoirs, clearing of river channels, improvement of water protection zones and coastal protection strips, development of schemes for comprehensive flood protection of territories from the harmful effects of water, improvement of methods and technical devices for hydrometeorological observations and flood forecasting - partially completed;
- Ensuring the development of land reclamation and improvement of the ecological condition of irrigated and drained lands, including restoration of the water management and reclamation complex, reconstruction and modernisation of reclamation systems and their facilities, engineering infrastructure of reclamation systems with the creation of integrated technological complexes, introduction of new methods of irrigation and land drainage, application of water and energy-saving environmentally safe irrigation and water regulation regimes - not fulfilled.

The estimated amount of funding for the Dnipro Programme was UAH 46478.46 million, including UAH 21029.03 million from the state budget, UAH 9294.2 million from the local budget, and UAH 16155.2 million from other sources not prohibited by law (in US dollar terms, USD 6.193 billion (as of 01.01.12), or an average of USD 688 million annually, or 0.4% of Ukraine's gross domestic product (GDP)). The amount of funding for the Dnipro Programme was determined annually during the drafting of the State Budget Law of Ukraine for the respective year, taking into account the real capabilities of the state budget. Since the start of the Dnipro Programme's activities, as of 1 January 2019, 26% of the envisaged need has been allocated from budgets of all levels and other sources, and as of 1 January 2020, 17% of the envisaged need, which has led to a significant failure to complete its tasks and activities on time.

The main executor of the Dnipro Programme is the SAWR. If we analyse in detail the distribution of state budget expenditures on the SAWR over the past 3 years, we can see the following trend. State funds are allocated mainly for the costs of consumption of the water sector, labour remuneration, utilities, the share of which from the state budget, for example, in 2020 was 93.5% (UAH 2092158.5 thousand) from the general fund and 81.1% (UAH 2261343.4 thousand) from the special fund. Total state budget expenditures to finance the Dnipro Programme in 2020 amounted to UAH 5022671 thousand. The share of all funds used for the operation of the state water management complex and water resources management is UAH 4561352.5 thousand (90.8%).

Water infrastructure maintenance activities in the Lower Danube sub-basin are carried out by the SAWR of the Black Sea and Lower Danube Rivers, which falls under the management of the SAWR. Expenditures for the operation of water infrastructure are made within the framework of the integrated programme "Operation of the State Water Management Complex and Water Resources Management" for each separate division of the SAWR, rather than on a basin basis.

The issue of extending the Dnipro Programme from 2022 to 2024 to the period of preparation of the RBMP has been resolved for the third year by reviewing the amount of funding for the measures and agreeing on their scope at the central and regional levels. Currently, the SAWR has developed and submitted for interagency approval the draft Law of Ukraine "On Amendments to the National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021" to extend the Programme until 2024.

As of 8 June 2021, the Accounting Chamber of Ukraine conducted an audit of the effectiveness of the implementation of the Dnipro Programme activities for the period up to 2021. The purpose of the audit is to identify existing problems with the implementation of this Programme and to confirm or deny the need to extend its validity until 2024.

National Target Programme "Drinking Water of Ukraine for 2011-2020" (Drinking Water Programme)

"The National Target Programme "Drinking Water of Ukraine for 2011-2020", approved by the Law of Ukraine No. 2455-IV dated 03.03.2005 (hereinafter - the Drinking Water Programme). Its main goal was to ensure the rights of citizens to an adequate standard of living and environmental safety guaranteed by the Constitution of Ukraine by providing drinking water in the required volumes and in accordance with the established standards. The Drinking Water Programme was intended to ensure the implementation of the state policy on:

- development and reconstruction of centralised water supply and sewerage systems;
- protection of drinking water sources;
- Bringing the quality of drinking water to the requirements of regulatory acts;
- regulatory and legal support in the field of drinking water supply and sewerage;
- development and implementation of research and development projects using the latest materials, technologies, equipment and devices.

The estimated amount of funding for the Drinking Water Programme was UAH 9,471.7 million (in 2010 prices), of which UAH 3,004.3 million was allocated from the state budget and UAH 6,467.4 million from other sources. Due to the lack of adequate funding over the 10 years of the Drinking Water Programme in Ukraine, there have been no significant positive changes in the provision of drinking water in the required volumes and of the appropriate quality.

As of 1 January 2020, about 1% of cities, more than 10% of urban-type settlements and almost 70% of villages in Ukraine (8.934 million people) were not provided with centralised drinking water supply. Almost 1 in 4 citizens of the country is not provided with centralised water supply. The problem of using imported water covers at least 9 regions of the country, and directly affects at least 268,000 people living in 824 settlements.

According to global standards for water quantity and quality, Ukraine is classified as a low-water country. Ukraine ranks 37th out of 40 European countries in terms of drinking water quality. And over the past 10 years, our performance has only been deteriorating. And in terms of water per capita, Ukraine is 125th in the global ranking. At the same time, the national target programme Drinking Water of Ukraine is not being implemented or financed at all. The last time the Drinking Water Programme was funded was in 2018, when UAH 200 million was allocated from the State Budget of Ukraine, with water and sewerage companies alone submitting projects totalling UAH 1.3 billion. This activity of the companies is caused by their unsatisfactory financial and economic condition, as well as the inability of local governments to provide the necessary support for the renewal of fixed assets from local budgets. In addition, it is worth noting that the procedures for obtaining grants and loans from international financial institutions are quite lengthy and involve significant risks, so obtaining public funds for the implementation of an infrastructure project was a desirable goal for each water utility. In 2019-2020, the Drinking Water Programme was not funded and ended in 2020.

In order to continue supporting water supply and wastewater treatment companies, in 2019, MinRegion of Ukraine developed and submitted to the central executive authorities and specialised associations a draft law "On Amendments to the Law of Ukraine "On the National Target Programme "Drinking Water of Ukraine" for 2011-2020", which provided for the extension of the Programme for another 5 years. Interagency approval, coordination, and consultations with the Ministry of Finance lasted for 2 years. The Resolution of the Verkhovna Rada of Ukraine No. 980-IX dated 5 November 2020 provides for the possibility and expediency of increasing/foreseeing expenditures and providing loans from the general fund of the draft state budget for 2021 under the budget programme "Implementation of the National Target Programme "Drinking Water of Ukraine" for the Ministry of Development of Communities and Territories of Ukraine (instead of MinRegion) (clause 2.17.68.). The Drinking Water of Ukraine programme will be extended until 2025.

The State Target Programme for the Development of Land Relations in Ukraine for the period up to 2020

The Programme was approved by the Cabinet of Ministers of Ukraine by its Resolution No. 743-r dated 17.06.2009.

The purpose of the Programme is to define and implement the main directions of state policy aimed at improving land relations and creating favourable conditions for sustainable development of land use in urban and rural areas, facilitating the solution of environmental and social problems in rural areas, developing highly efficient competitive agricultural production, and preserving the natural values of agricultural landscapes.

As a result of insufficient funding for the Programme, Ukraine is experiencing excessive ploughing of agricultural land, which leads to a disruption of the ecologically balanced ratio of agricultural, nature reserve and other environmental, health, recreational, historical, cultural, forestry, water fund lands, and an increase in the area of degraded, low-productive, and technologically polluted land (diffuse sources of pollution).

As of 1 January 2021, more than 500,000 hectares of degraded, underutilised and technologically contaminated land are subject to conservation, 143,000 hectares of disturbed land need reclamation, and 294,000 hectares of underutilised land need improvement.

A separate Ministry for Development of Economy, Trade and Agriculture of Ukraine has been established (Ministry of Economy, CMU Resolution No. 838 of 19.09.2019), which will implement the new State Target Programme for the Development of Land Relations and National Geospatial Data Infrastructure in Ukraine for the period up to 2030 (Land Programme, draft CMU Resolution of 13.04.2021).

The National Programme for the Development of Nature Reserves for the period up to 2020 (NRD Programme)

One of the elements of the RBMP structure is Section 3 "Areas (territories) to be protected and their mapping: Emerald Network sites; sanitary protection zones; protection zones for valuable aquatic bioresources; surface/groundwater bodies used for recreational, medical, resort and health purposes, as well as bathing waters; zones vulnerable to (accumulation of) nitrates", vulnerable and less vulnerable zones identified in accordance with the criteria approved by the Ministry of Ecology, therefore, in the context of preparing and implementing the RBMP, it is very important to have information on the implementation of the National Programme for the Development of Nature Reserves for the period up to 2020, approved by the Cabinet of Ministers of Ukraine on 8 February 2006. No. 70-r (hereinafter referred to as the NRF Programme).

According to the data on the registration of NRF territories and objects submitted by the executive authorities at the local level that ensure the implementation of the state policy in the field of environmental protection (hereinafter - the NRF), as of 01.01.2020, the NRF of Ukraine comprises 8,512 km of territories and objects with a total area of 4.418 million hectares within the territory of Ukraine (actual area 4.085 million hectares) and 40,2500.0 hectares within the Black Sea. The ratio of the actual area of the nature reserve fund to the area of the state (the "reserve indicator") is 6.77%.

The NRF is managed by the Ministry of Ecology and is funded through the state budget programme "Conservation of Protected Areas". According to the passport of this programme for 2021, UAH 589326.7 thousand (state fund) and UAH 18289.8 thousand (special fund) were used for measures to preserve and expand the protected areas, for a total of UAH 607616.5 thousand. In general, the performance indicators under this budget programme were met.

In addition, according to the Regional Report on the State of the Environment in Odesa Oblast, in 2020, a number of environmental measures and programmes related to the restoration and conservation of water resources were implemented on the territories and facilities of the nature reserve fund of Odesa Oblast. For example, the Sturgeon Watch-3 campaign was held on the territory of the Danube Biosphere Reserve as part of the WWF project "Save the Danube Sturgeon" (2016-2020).

As part of the international project "Restoration of wetlands and steppes in the Danube Delta region" (2019-2023), an additional herd of wild tarpon horses, as well as European fallow deer and red deer, which perform an important ecological function, was introduced on Ermakov Island.

Also in 2020, the introduction of the eagle owl in the territory of the State Reserve continued within the framework of the project "Restoration of wetlands and steppes in the Danube Delta region" (2019-2023) and 3 individuals of this species were released into the wild. In 2020, the implementation of the international project "Invasive Alien Species Observatory and Network. Development for the Assessment of Climate Change Impacts in Black Sea Deltaic Protected Areas", which aims to identify and study aggressive alien species of animals and plants that pose a threat to the ecosystem and economy of the region.

In 2020, as part of the Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council dated 20.12.2019 No. 1165-VII, the Regional Scheme for the Formation of the Odesa Regional Environmental Network was detailed for Izmail, Reniia, Kiliya, Bolhrad, Shyriai, Ivanivka, and Velykomykhailivka districts of Odesa region.

Regional programme for **the development of the water sector in Odesa Oblast until 2021**

The Programme was approved by the decision of the Odesa Regional Council of 18 September 2013 No. 882-VI, as amended on 15 May 2020 No. 304-VII.

The initiator, developer and responsible implementer of the Programme is the Black Sea and Lower Danube River Basin Water Resources Management Authority. The Programme has been developed in order to:

- Increase the efficiency of the use of the state reclamation network and on-farm reclamation systems in the region, increase crop yields, improve the ecological state of rural areas and living conditions;
- implementation of the state and regional water policy, meeting the needs of the population for quality water and the region's economic sectors for water resources;
- Inventory and certification of water bodies, creation of a register of hydraulic structures and their owners in river basins, and the establishment of riverine protective strips;
- flood protection of the region's river basins and protection of rural settlements and agricultural land from the harmful effects of water.

Total financial resources required for the implementation of the Programme: UAH 2969160,698 thousand, including: state budget funds - UAH 1656100,698 thousand, local budget funds - UAH 450324 thousand, funds from other sources - UAH 862736 thousand.

The programme participants include the Regional State Administration's Agricultural Policy Department, the Regional State Administration's Department of Ecology and Natural Resources, the Main Directorate of the State Emergency Service of Ukraine in Odesa Oblast, the Odesa United Directorate for the Construction of Water Management Facilities, the Ukrainian State Regional Design and Survey Institute Ukrpivden-diprovodhosp, and local authorities.

The breakdown of funding by programme area is as follows:

1. Ensuring the development of land reclamation and improvement of the ecological condition of irrigated land - UAH 2240820 thousand;
2. Priority provision of centralised water supply to rural settlements that use imported water - UAH 582680,698 thousand;
3. Comprehensive flood protection - UAH 62670 thousand;
4. Protection of rural settlements and agricultural land from the harmful effects of water - UAH 82990 thousand.

Odesa Regional Integrated Environmental Protection Programme for 2020-2021

The Programme was approved by the decision of the Odesa Oblast Council of 20 December 2019 No. 1165-VII (as amended on 03 March 2020 No. 1240-VII and 10 August 2020 No. 1384-VII). The initiator, developer and responsible executor of the Programme is the Department of Ecology and Natural Resources of the Oblast State Administration.

Total amount of financial resources required for the Programme implementation: total - UAH 237793.684 thousand, including: state budget funds - UAH 101358101, local budget funds - UAH 132785583 (including oblast budget - UAH 128778071, of which rayon, territorial communities, city budget - UAH 2100000, budgets of villages, settlements, cities of rayon significance - UAH 1907512), other sources - UAH 3650000.

The programme participants include the Department of Ecology and Natural Resources of the Odesa Oblast State Administration, local governments, the Tiligulsky Regional Landscape Park, and the I. Mechnikov Odesa National University.

The main activities of the Programme are:

- protection and rational use of water resources;
- protection and rational use of land and mineral resources;
- preservation of the nature reserve fund and ecological network, protection and rational use of flora and fauna;
- Rational use and storage of production and household waste;
- science, information and education, personnel training, environmental impact assessment, strategic environmental assessment, labour organisation, participation in international environmental organisations, and implementation of an economic mechanism for environmental protection.

According to the Programme implementation report for 2020, only 8 out of 33 planned tasks have been completed, and two tasks are still in progress.

In 2020, the Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021 envisaged the following environmental protection measures, namely:

- item 1.2.1 "Priority measures for cleaning the Gromadsky Canal to improve water exchange between Katlabukh and Safian Lakes" - regional budget, in terms of Article 85 of the Budget Code of Ukraine - UAH 5,880.0 thousand;
- item 1.2.3 "Development of project documentation for the improvement of the hydrological condition of the Karasulak River (engineering surveys, development of project documentation, environmental impact assessment of the planned activity, expert evaluation, approval (endorsement) of project documentation)" regional budget, in accordance with Article 85 of the Budget Code of Ukraine - UAH 2000.0 thousand and the budget of villages, towns, cities of district significance - UAH 520.0 thousand;
- item 1.2.4 "Development of project documentation for improving the hydrological condition of the Kyrgyz-Chinese River (engineering surveys, development of project documentation, environmental impact assessment of the planned activities, expert evaluation, approval (endorsement) of project documentation)" - the regional budget, in accordance with Article 85 of the Budget Code of Ukraine - UAH 3200.0 thousand and the budget of villages, towns, cities of district significance - UAH 400.0 thousand;

- item 1.2.5 "Clearing and reconstruction of the complex of culverts and barrier structures along the Malyi Taimenchuk River (KSC SRZ backwater) on the territory of Kiliya ATC" oblast budget - UAH 2000.0 thousand.

The decision of the Odesa Regional Council of 20 December 2019 No. 1199-VII "On the Regional Budget of Odesa Region for 2020" (as amended) provided for UAH 1360.0 thousand for clearing riverbeds and flood protection, including

- clearing and reconstruction of a complex of culverts and barrier structures along the Maly Taimenchuk River in the territory of Kiliya TG - UAH 860.0 thousand.

As of 01.01.2021, UAH 185,941 thousand was allocated from the regional budget for the clearing and reconstruction of a complex of culverts and barrier structures along the Malyi Taimenchuk River in the territory of Kiliya TG.

Regional Programme "Drinking Water of Odesa Region" for 2021-2024

Approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII. The programme is aimed at solving the problems with drinking water supply and sewerage in settlements and at developing the water supply and sewerage sector, improving its efficiency and reliability.

The objective of the Programme is to provide the population of the region with drinking water of standard quality, develop the water supply and sewerage sector, and improve its efficiency and reliability.

The initiator, developer and responsible executor of the Programme is the Department of Life Support Systems and Energy Efficiency of the Odesa Oblast State Administration.

The Programme participants are district state administrations, local governments, and the Department of Life Support Systems and Energy Efficiency of the Odesa Oblast State Administration.

The total amount of funding is UAH 136,7010 thousand, including UAH 384,000 thousand from the state budget, UAH 326,200 thousand from district and city budgets, UAH 385,200 thousand from village, town, city of district subordination and territorial communities budgets, and UAH 27,610 thousand from other sources.

Areas of activity of the Programme:

- protection of drinking water sources;
- bringing the quality of drinking water to the established standards;
- improving the provision of centralised water supply and sewerage.

Within the framework of the Facility Design Programme: "Construction of the main drinking water pipeline Matroska - Izmail - Bolhrad with engineering structures for water supply to the city of Bolhrad and settlements of Bolhrad and Izmail districts of Odesa region with the reconstruction of water supply facilities from underground sources in the area of Matroska village, Izmail district, Odesa region" was not completed due to lack of funding.

Of the four existing surface water intakes where water is treated to drinking quality, one in Kilia requires a complete reconstruction of its water treatment facilities (the chlorination plant needs to be repaired).

Of the total number of sewage treatment plants in Odesa Oblast, about 28.6% are in unsatisfactory sanitary and technical condition, namely the sewage treatment plants of Bolhrad, Bereziv, Bilhorod-Dnistrovskyi districts (Artsyz, Bereziv, Saratskyi, Ananivskyi, Oknyanskyi, Tatarbunarskyi districts).

Sewage treatment plants in Odesa, Podilsk and Rozdilnyansky districts need reconstruction. Centralised sewerage systems with wastewater treatment at their own treatment plants are available in the cities of Odesa, Bilhorod-Dnistrovskyi, Kodyma, Podilsk, Reni, Ananiev, Artsyz, Tatarbunary, Rozdilna, Berezivka, Kilia, Teplodar, and the villages of Zatoka and Ivanivka. Wastewater from the towns of Izmail, Chornomorsk, Balta, Yuzhne and Tarutino is treated at the departmental sewage treatment plants. The settlements of Savran, Zakharivka, Shiryaevo, Velykomykhailivka, Mykolaivka do not have any sewage treatment facilities.

As for the availability of drinking water supply, in 53 settlements of the region, water is supplied according to the schedule, including in the cities of Bilhorod-Dnistrovskyi, water is supplied for 17 hours in the spring and summer, Vilkovo - 20 hours, Tatarbunary - up to 9 hours.

There is no drinking water supply in 182 settlements in the region, which use imported water and mine wells.

Imported drinking water is partially or fully used in the water supply system of the region in 56 settlements, including 1 settlement (Suvorove) and 5 villages, where the population consuming imported water is 32.98 thousand people.

A total of ten activities are planned under the Programme, with two years left to complete them. In each of the Programme's areas, the activities are implemented in stages, and as of today, most of the planned activities have not yet been implemented or have not been fully implemented. Sufficient funding and active work of the executors will allow completing the planned actions by the end of the deadline.

Programme to improve the environmental situation in Kilia for 2018-2022

The programme was approved by the decision of the Kilia City Council dated 31.01.2018 No. 637-VII-30.

The initiator and developer of the Programme is the Department for the Development of Housing and Communal Services, Humanitarian and Social Work of the Executive Committee of Kilia City Council. The responsible executor is the Executive Committee of the Kilia City Council, and the Programme participants are the Executive Committee of the Kilia City Council, public authorities and other business entities.

The Programme will be implemented in 2018-2022. The sources of funding include the state budget, regional, district budgets, city, village budgets and other sources not prohibited by law. The total amount of financial resources required to implement the Programme is UAH 156444.0 thousand.

The purpose of the Programme is to improve the environmental situation and prevent negative impacts from the poor state of the environment in Kilia. The Programme provides for measures to restore and maintain favourable hydrological conditions and sanitary condition of water bodies. The proximity of surface waters has a negative impact on the livelihoods of the city's population. Outdated, worn-out sewage systems used by Svitlo also have a negative impact on water bodies (surface and underground) in the city of Kilia and the state of the environment in general.

Implementation of the Programme's activities will help achieve the following results:

- preserve the existing water balance and resources;
- maintain the hydrological regime and sanitary condition of the Danube River;
- Ensure the elimination of illegal solid waste dumps;
- to ensure the preservation of green spaces on the council's territory by planting young trees, controlling weeds and ragweed, and landscaping streets;
- Ensuring trouble-free operation of sewerage networks in the local community;
- Involvement of the public in the implementation of environmental protection measures.

Programme for the implementation of the EU Strategy for the Danube Region in Odesa Oblast for 2020-2022

The programme was approved by the decision of the Odesa Regional Council on 10.08.2020 No. 1379-VII, as amended on 18.06.2021 No. 209-VIII.

The Programme is coordinated by the Department of Economic Policy and Strategic Planning of the Odesa Oblast State Administration and the local Association of Local Governments "EU Strategy for the Danube Region".

The Programme's implementation is monitored by the Odesa Oblast Council's Standing Committee on Interregional and International Cooperation.

The Programme will be financed from the state and local budgets, investors' funds, international technical assistance programmes and other sources not prohibited by the current legislation.

The total amount of financial resources required for the implementation of the Programme is UAH 16790086 thousand, including: state budget funds - UAH 2688593 thousand, local budgets (budgets of territorial communities of villages, their associations, towns, cities (including districts in cities), budgets of amalgamated territorial communities) - UAH 301905 thousand, other - 11866796 thousand.

The top priority issues for Odesa Oblast, which the Programme is aimed at addressing, are:

- development of all types of transport links, modernisation of transport infrastructure, and environmental friendliness of transport;
- development of port infrastructure and shipping;
- development of tourism with a focus on domestic tourism, preservation of historical, archaeological, ethno-cultural heritage and their integration into the tourism sector; development of ecological and rural green tourism;
- Reducing energy consumption by increasing energy efficiency of enterprises and modernising the housing stock; increasing the share of renewable energy; and reducing CO2 emissions;
- Improving the quality of water resources, reducing their pollution, providing the population with quality drinking water, protecting and restoring small rivers;
- Establishing an effective natural risk management system, especially in view of climate change and the resulting increase in the frequency and intensity of extreme natural events (floods, droughts, forest and reed fires);
- Increasing the percentage of protected areas, protecting valuable natural sites and territories from destruction, and restoring valuable natural landscapes and ecosystems.

The purpose of the Programme is to ensure proper coordination of individual activities and projects implemented in the Odesa Oblast in the context of the EU Strategy for the Danube Region, to increase the efficiency of the use of funds for these activities and projects, and to provide conditions for cooperation between the authorities and local self-government bodies, business entities, the scientific and expert community, civil society at both the regional and the Danube macro-region levels for closer integration.

The implementation of the Programme will allow:

- to significantly improve the state of the region's transport infrastructure, which will provide an additional incentive for economic development;
- improve the quality of life of the population, in particular by providing them with quality water supply and sewerage, electricity, and improving the environmental situation;
- improve the quality of the environment, increase the percentage of nature reserves;
- develop the region's tourism potential, including by attracting foreign partners.

Each administrative region develops an environmental development programme tailored to the specifics of the region. Odesa Oblast, which includes the Lower Danube sub-basin, pays more attention to water resources and the protection and conservation of biological and landscape diversity in its environmental target programmes.

Given the economic situation in the country, the state budget is unable to finance significant expenditures on water management and reclamation, housing and communal services, or environmental protection, so at present and in the near future, some new administrative units (UAUs) have begun to focus on their own investments, to seek internal reserves of enterprises and funds in the regional, district and amalgamated territorial community budgets, to attract international technical assistance, and to

The Danube RBMP (Lower Danube sub-basin) with specific measures for each identified sub-basin MEA should be the first to help local TSs lay the foundation for future action planning.

8 A COMPLETE LIST OF PROGRAMMES (PLANS) FOR THE LOWER DANUBE RIVER SUB-BASIN, THEIR CONTENTS AND PROBLEMS TO BE SOLVED

The PoM was developed in accordance with the "Methodological Recommendations for Setting Environmental Objectives, Developing a Programme of Measures and Performing a Cost-Effectiveness Analysis of the River Basin Management Plan" (Methodological Recommendations), approved at a meeting of the Scientific and Technical Council of the SAWR on 12 July 2023. The Guidelines were developed by the Black Sea and Lower Danube BUVR jointly with local executive authorities, local governments, non-governmental organisations (NGOs), scientific and educational institutions and other stakeholders, taking into account the proposals and decisions of the Lower Danube Basin Council. The chemical status of the transboundary SWBs was taken into account in the development of the PoM based on the monitoring data for 2022-2023.

The programme is developed for a period of 6 years, starting with the first cycle of the plan for 2025-2030. The start of the measure should be no later than the third year from the beginning of the cycle (no later than 1 January 2028).

A total of 44 measures (26 main and 18 additional) are included in the PoM. A full list of measures in the Lower Danube River Sub-basin and their content is provided in Annex 11.

8.1 Surface water

For surface waters, the PoM includes measures aimed at:

- Reducing organic pollution (diffuse and point sources);
- Reducing nutrient pollution (diffuse and point sources);
- Reducing pollution by hazardous substances (diffuse and point sources);
- Improvement/restoration of the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, and modification of river morphology.

In addition to these measures, the PoM also includes other measures aimed at addressing other SWMI of the Lower Danube sub-basin, identified in view of the specifics and transboundary nature of the sub-basin.

8.1.1 Measures to reduce pollution by organic matter, nutrients and hazardous substances (diffuse and point sources)

The anthropogenic pressures on the SWB is primarily due to pollution with organic, biogenic and hazardous substances from sewage treatment plants (STPs) and diffuse sources.

Number of measures aimed at reducing pollution (diffuse and point sources):

- organic substances - 4;
- biogenic substances - 5;
- hazardous substances - 5.

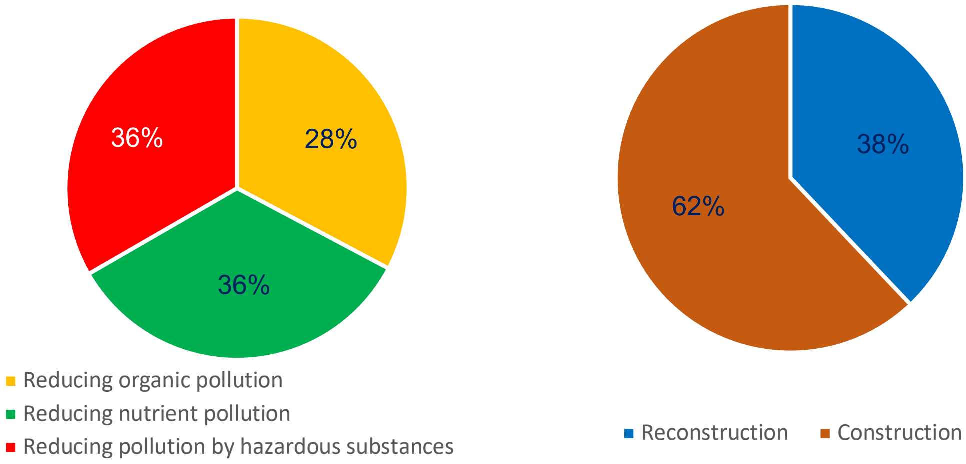


Figure 152. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point and diffuse sources and the way they are implemented (reconstruction or construction of STPs and SN), %.

In order to reduce pollution with organic, biogenic and hazardous substances (point and diffuse sources), the following measure is planned to be implemented: "Creation of wastewater treatment and solid waste disposal complexes in the waters of the Danube seaports of five territorial communities of Izmail rayon, Odesa oblast" (#3, Annex 11). This measure is a pilot project that is planned to be implemented in the community to achieve/maintain the "good" status of the Lower Danube SWBs.

Measures aimed at reducing pollution by nutrients (diffuse sources) include: "Establishment of water protection zones and coastal protective strips of water bodies on the territory of 16 communities in Bilhorod-Dnistrovskyi rayon, Bolhradskyi rayon, Izmailskyi rayon of Odesa oblast" (#4, Annex 11). Measures aimed at reducing pollution by hazardous substances (diffuse sources) include the following measure: "Rehabilitation of the territory of the former oil storage facility and prevention of pollution by oil products in the border area of Reniisky community, Izmail district, Odesa region" (# 2, Annex 13). A set of measures is planned to prevent oil pollution of the Danube River bank, with an estimated area of 0.35 hectares and a volume of 6.5 thousand cubic metres of contaminated soil.

In accordance with the requirements of the Law of Ukraine "On Wastewater Disposal and Treatment" of 12 January 2023 No. 2887-IX, in order to ensure high-quality centralised wastewater disposal while reducing the impact of wastewater on the SWBs, it is planned to build/reconstruct STPs and SNs in 5 settlements (31%) of the Lower Danube sub-basin, with a population equivalent (PE) of 2,000 or more. The reconstruction/modernisation of STPs and SNs is envisaged in 3 communities (Izmail, Kiliya and Reni) with tertiary (proper) wastewater treatment with removal of nitrogen and phosphorus compounds. The construction of new STPs and SNs is planned in 2 communities (Safianivska and Vylkivska).

Among the measures aimed at reducing pollution by organic, biogenic and hazardous substances (diffuse and point sources), 4 measures relate to SWBs that are "at risk" of failing to achieve environmental objectives. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point sources, depending on the risk assessment of the SWBs, are presented in Fig. 153.

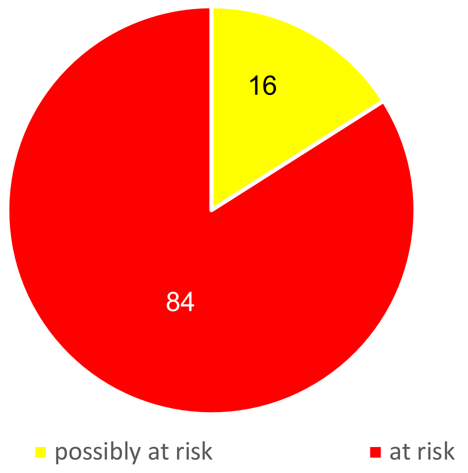


Figure 153. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point sources of pollution depending on the risk assessment of the SWB, %

8.1.2 Measures aimed at improving/restoring the hydrological regime and morphological indicators

19 measures aimed at improving/restoring the hydrological regime and morphological indicators in the event of impaired free flow of rivers in the Lower Danube sub-basin. When developing the measures, it was taken into account that the environmental objectives for the SWB are to achieve "good" status/potential for 7 SWB and 11 HMWB (the Kirgiz River is included in two measures: #19 and #20, Annex 11).

Measures aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology depending on the assessment of Flood Risk are presented in Fig. 154.

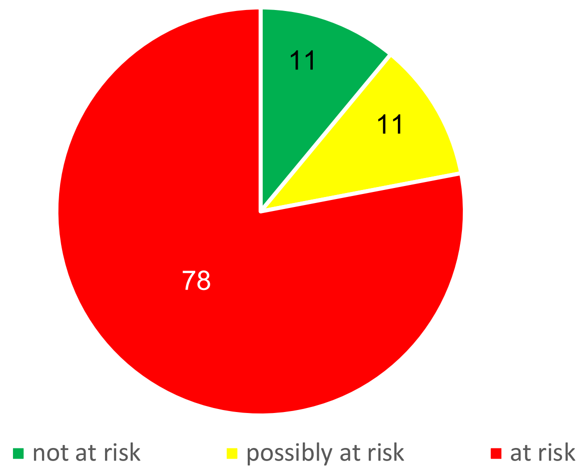


Figure 154. Measures aimed at improving/restoring the hydrological regime and morphological indicators in case of disruption of free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology, depending on the assessment of SWB risks, %

In order to improve state accounting of water use, assessment of anthropogenic pressure and regulation of groundwater/surface water withdrawals, analysis of hydrological changes, and real-time balancing, the programme includes the measure: "Improvement of state accounting of water use in the Lower Danube sub-basin within Odesa Oblast" (# 26, Annex 11). All water users in the region are scheduled to install/modernise water intake and use metering devices with online data transmission.

8.2 Groundwater

The programme includes measures aimed at:

- reducing pollution (diffuse and point sources);
- preventing groundwater depletion;
- reducing the impact of planned infrastructure projects on water conditions.

It is mandatory to establish the boundaries of sanitary protection zones for groundwater intakes used for centralised water supply to the population, medical and recreational needs, indicate them in land management documentation, urban planning documentation at the local and regional levels, enter information on the relevant restrictions on land use in the State Land Cadastre and mark these boundaries on the ground with information signs. For groundwater abstractions with an extraction volume of more than 100 m^3/day within the sanitary protection zones and adjacent territories, water users shall set up a local network of observation wells to determine the amount of water and chemical and physicochemical parameters and provide observation data to the State Service of Geology and Subsoil of Ukraine.

Due to the cessation of groundwater monitoring since 2018, all measures are considered additional measures that relate not to a separate groundwater monitoring, but to groundwater monitoring in general, namely

a. Inventory of the observation well network. The inventory is necessary to resume monitoring observations and assess the need to drill additional monitoring wells.
b. The inventory will identify wells that need to be repaired, plugged or abandoned.
c. At water intakes, where operational monitoring is carried out in accordance with the "Procedure for State Water Monitoring", it is necessary to reassess the operational groundwater reserves, which will allow for a more reliable assessment of the quantitative status of the GWB.

8.3 Other measures

Other measures include legislative and legal, administrative, fiscal, research and development, educational and awareness-raising, new technologies, environmental and communication, project, and other measures.

Research activities are planned: "Economic and ecological certification of water users in the Lower Danube sub-basin on the basis of digitalisation 16 communities Bilhorod-Dnistrovskyi rayon, Bolhradskyi rayon, Izmailskyi rayon, Odesa oblast", "Development of the Strategy for greening water management activities in the context of sustainable development of the Lower Danube sub-basin 16 communities Bilhorod-Dnistrovskyi rayon, Bolhrad rayon, Izmail rayon, Odesa oblast", "Modernisation of the hydrological infrastructure management system and hydrological monitoring of water management systems "Kyslytskyi arm of the Stepovyi arm - floodplain of the Stepovyi arm - Lake China" Safianivska community, Izmail district, Odesa region", "Modernisation of the hydrological infrastructure management system and hydrological monitoring of the water management systems "Safiany - Katlabukh" Safianivska community, Izmail district, Odesa region", "Modernisation of the hydrological infrastructure management system and hydrological monitoring of water management systems "Kyslytskyi Rukav - Staronekrasivski Plains - Lung Lakes", Izmail community, Izmail district, Odesa region" and "Modelling of water and salt balance and water quality in the Danube Lake Katlabukh, Safianivska community, Izmail district, Odesa region".

8.4 Assessment of the effectiveness of the PoM

The cost-effectiveness analysis (CEA) was conducted only for the main measures.

The largest share of measures is aimed at improving/restoring the hydrological regime and morphological indicators (44%), and reducing pollution of the SWB from point sources (40%). Some measures are aimed at addressing several SWMI. The vast majority of measures relate to settlements with a population of 10.0 to 100.0 thousand, 24 of them (77%). For settlements with a population of 2.0 to 10.0 thousand, there are 3 measures (10%), and for settlements with a population of more than 100.0 thousand, only 4 measures (13%).

The measures envisaged in the Programme will be financed from the state and local budgets, as well as other sources not prohibited by law. Financing of these measures from the state budget shall be carried out within the expenditures provided for in the State Budget of Ukraine for the relevant year.

The total cost of the main measures for the period 2025-2030 is UAH 2,649 million, per community (16) - UAH 165 million. The most costly measures are those related to the reconstruction/modernisation of the STPs and SN. For example, up to UAH 1,269 million is needed to implement such measures in the city of Izmail.

No measures with a very high level of effectiveness were identified among the main measures.

One measure with a total cost of UAH 1,269 million (48%) was included in the group with a high level of efficiency, namely Reconstruction of Sewage Treatment Facilities in Izmail, Izmail community, Izmail District, Odesa Oblast. The social effect is 70 thousand people.

The group with an medium level of efficiency includes 3 measures totalling UAH 778 million (29%). The measures are aimed at reducing pollution by organic, nutrient and hazardous substances (SWMI 1 - 3) from small towns and villages in the sub-basin. The measures belong to the sector of very high water use pressure - housing and communal services . The social effect is 274 thousand people.

The group with low efficiency includes 18 measures (20%) with a total cost of UAH 530 million and social impact for 408 thousand people. The measures are aimed at addressing hydromorphological changes by implementing measures to revitalise and clean up the Kyrgyz-China, Aliyaga, Kyrgyz, Dunayets, Maly Katlabukh and other rivers. This group also includes the establishment of water protection zones and coastal protection strips for water bodies in 16 communities in Bilhorod-Dnistrovskyi, Bolhradskyi and Izmailskyi districts of Odesa Oblast.

The group with a very low level of efficiency includes 4 measures (3%) aimed at improving hydromorphological indicators. These are measures to revitalise and clean up water bodies within the administrative boundaries of Krynychne community, Bolhrad district. UAH 70 million is envisaged for the implementation of these measures, which will achieve a social effect for 42 thousand people, which corresponds to a very low level according to the criteria being assessed. The economic sector's pressure on water resources is minimal and corresponds to the lowest score.

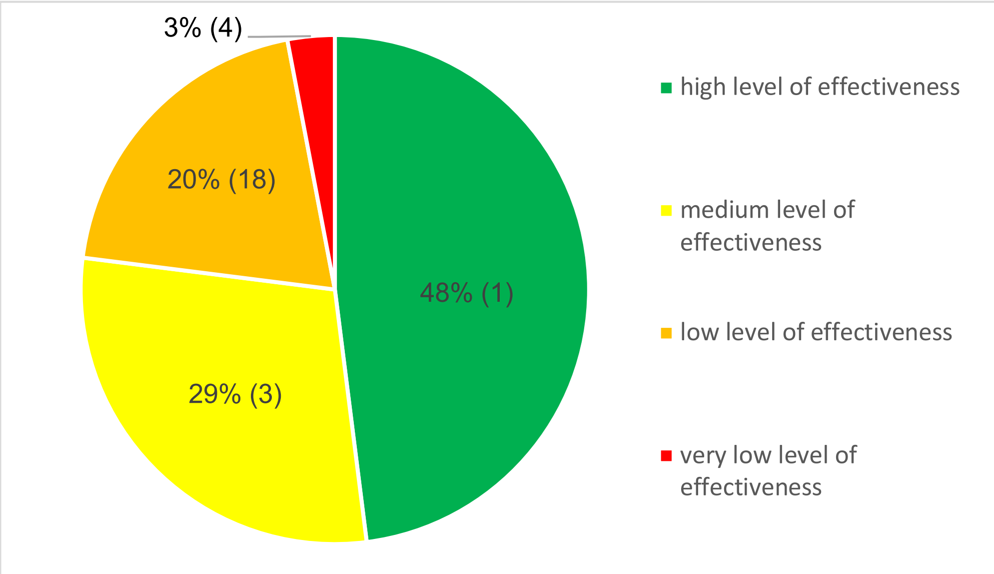


Figure 155. Distribution of main measures with different levels of efficiency by total cost of measures (number of measures in brackets)

A detailed CEA of the measures is provided in Annex 12.

9 REPORT ON PUBLIC INFORMATION AND PUBLIC DISCUSSION OF THE DRAFT RIVER BASIN MANAGEMENT PLAN

The main requirements for the organisation and conduct of public consultations by executive authorities on the formation and implementation of state policy are set out in the Procedure approved by the Cabinet of Ministers of Ukraine on 3 November 2010, No. 996. In accordance with paragraph 5 of the Procedure, public consultations are organised and conducted by the executive body that is the main developer of the draft legal act. In accordance with paragraphs 11 and 12 of the Procedure, public consultations on draft regulatory legal acts that define strategic goals, priorities and objectives in the relevant area of public administration, affect the vital interests of citizens, including those that affect the state of the environment, are mandatory in the form of public discussion and/or electronic public consultations.

In accordance with the second paragraph of clause 7 of the Procedure for Developing a River Basin Management Plan, public discussion of the draft RBMP is conducted for at least six months from the date of their publication. In accordance with the first paragraph of clause 8-1, the public has the right to provide comments and suggestions on information on the main anthropogenic impacts on the quantitative and qualitative status of surface and groundwater, including point and diffuse sources, within six months from the date of their publication on the website of the Ministry of Ecology.

Consultations in the process of drafting the RBMP

During 2022-2023, the Black Sea and Lower Danube River Basin Water Management Authority (BUVR) held consultations with the public of Odesa Oblast on the SWMI of the Lower Danube sub-basin, development of a complete list of action programmes (plans), their content and problems to be solved (PoM), and preparation of a draft Danube RBMP (Lower Danube Sub-basin) for 2025-2030.

In order to timely prepare the Danube RBMP (Lower Danube Sub-basin) approved by the Order of the Ministry of Environmental Protection and Natural Resources of Ukraine No. 313 of 27 November 2020 "Schedule for the Process of Developing the Draft Lower Danube River Sub-basin Management Plan", to implement the Orders of the State Agency of Water Resources of Ukraine No. 44 "On Approval of the Action Plan" of 16 May 2022, and No. No. 1105 "On the Development of Draft River Basin Management Plans", the RBMOs of the Black Sea and Lower Danube Rivers held online meetings for three days (10-12 August) in 2022, and offline meetings with representatives of district state administrations, territorial communities and water users in April-May 2023 to ensure the preparation of the RBMP for the Lower Danube Sub-basin for the period 2025-2030, taking into account the need to plan activities during the military and reconstruction periods.

Additionally, in order to ensure the preparation of the PoM for the development of the RBMP for the Lower Danube Sub-basin for the period 2025-2030, the Black Sea and Lower Danube BUVR prepared and sent letters to business entities providing water supply and sewerage services (water utilities), industrial enterprises, agricultural enterprises, hotel, tourist and sanatorium complexes of the region that discharge waste water into surface water bodies of the Lower Danube sub-basin with a request to submit their proposals to the PoM aimed at addressing the SWMI of the Lower Danube sub-basin. At a regular meeting of the Black Sea Rivers Basin Council, all proposals aimed at addressing the SWMI of the Lower Danube sub-basin were considered and approved.

Public consultations of the draft RBMP

The information notice on the public consultations of the draft RBMPs (2025-2030) and the draft RBMPs was published on the website of the SAWR on 21 December 2023 at the link: https://davr.gov.ua/informacijne-povidomlennya-pro-provedennya-publichnogo-gromadskogo-obgovorennya-proyektiv-planiv-upravlinnya-richkovimi-basejnami-20252030

Information on the start of public discussion of draft RBMPs and draft RBMPs was published on the website of the Ministry of Environment on 25 December 2023 at the link: https://mepr.gov.ua/ukrayina-zavershyla-robotu-nad-9-proyektamy-planiv-upravlinnya-richkovymy-basejnamy-rozpochalosya-gromadske-obgovorennya/

According to the information published in the announcement of the public discussion of the draft RBMP (2025-2030), comments and proposals in hard copy were accepted at the following address: State Agency of Water Resources of Ukraine, 8 Velyka Vasylkivska St., Kyiv, 01024, and in electronic form to the e-mail address rbmp@davr.gov.ua. The deadline for submitting comments and proposals to the draft RBMP was 21 June 2024.

As part of the public consultations, the SAWR, with the support of the EU4Environment project, initiated a series of public engagement activities, the schedule of which was announced on 28 February 2024 on the website at the link: https://davr.gov.ua/news/derzhvodagentstvo-iniciyuye-zahodi-iz-zaluchennya-gromadskosti-do-obgovorennya-proyektiv-purb

In particular, an invitation to public consultations of the draft RBMP for the Danube River Basin District (Lower Danube Sub-basin) was published on the SAWR website for everyone on 1 April 2024 https://davr.gov.ua/news/gromadske-obgovorennya-proyektu-purb-richok-prichornomorya-ta-proyektu-purb-dunayu-subbasejn-nizhnogo-dunayu--na-20252030

It should be noted that the two draft RBMPs: Danube (Lower Danube sub-basin) and Black Sea rivers were discussed at the same meeting, as many stakeholders were the same.

The Black Sea and Lower Danube BUVR sent out invitations to water users, all local communities and other stakeholders. The invitation to the public consultations of the draft Danube RBMP (Lower Danube Sub-basin) was also published on the same day on the BUVR Facebook page at the following link: https://www.facebook.com/odessa.buvr/posts/pfbid0YtczUUi5Cv8YMoMKUN4TSTbLcVhuvNG1qpTPB4BgATHxVSnqrNQs1iv3dcLoyKHBl

In order to present the results of the analysis of the status of SWB in the Danube River Basin (Lower Danube sub-basin) and the relevant PoM, 7 infographics were developed: basin location features; SWMI; ecological status of the SWB (by biological indicators); chemical status of the SWB; hydromorphological changes; and how to join public consultations.

The infographics are published on the website of the SAWR at the link: https://davr.gov.ua/plan-upravlinnya-richkovim-basejnom-dunayu1

On 5 April 2024, an event was held in Odesa to discuss the draft RBMP for the Danube River Basin (Lower Danube sub-basin) and the Black Sea rivers. The event was attended by 104 participants, including representatives of government agencies, water management organisations, members of the basin council, representatives of local communities, water users in the basin, scientists, NGOs and stakeholders. The event presented the results of the analysis of the above-mentioned basin and the PoM, the vast majority of which relate to the construction or reconstruction of sewage treatment plants. This was followed by a discussion of the proposals and comments made by the participants to the draft RBMP. The results of the discussion are recorded in the Minutes (Annex 1 to the report on the results of the public discussion). Information about the event is available on the website of the Lower Danube and Black Sea Rivers BUVR https://oouvr.gov.ua/%d0%bf%d1%80%d0%be%d0%b2%d0%b5%d0%b4%d0%b5%d0%bd%d0%bd%d1%8f-%d0%bf%d1%83%d0%b1%d0%bb%d1%96%d1%87%d0%bd%d0%be%d0%b3%d0%be-%d0%b3%d1%80%d0%be%d0%bc%d0%b0%d0%b4%d1%81%d1%8c%d0%ba%d0%be%d0%b3%d0%be/

The report on the results of the public consultations will be posted on the website of the SAWR and on the website of the Ministry of Environment.

Strategic environmental assessment of the draft RBMP

In accordance with paragraph 7 of the Procedure for the Development of a River Basin Management Plan, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 336 of 18.05.2017, the Ministry of Ecology ensures that strategic environmental assessment of draft river basin management plans is carried out in accordance with the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, ratified by the Law of Ukraine No. 562-VIII of 1 July 2015. The Ministry of Ecology contacted all affected states, but none of them expressed a desire to participate in the transboundary consultations.

The procedure for conducting a strategic environmental assessment (SEA) is set out in the Law of Ukraine "On Strategic Environmental Assessment" No. 2354-VIII dated 20 March 2018. Pursuant to Article 9(3)(1) of the Law, one of the stages of the SEA is public discussion and consultations in accordance with the procedure set out in Articles 12 and 13 of the Law, as well as transboundary consultations in accordance with the procedure set out in Article 14 of the Law. Pursuant to part nine of Article 12 of the Law, "based on the results of the public discussion, the customer shall prepare a certificate on public discussion, which summarises the comments and proposals received and indicates how the state planning document and the strategic environmental assessment report take into account the comments and proposals submitted in accordance with this article (or justify their rejection), and also justifies the selection of this particular state planning document in the form in which it is proposed for approval, among other justified al The certificate shall be accompanied by the minutes of public hearings (if held) and written comments and suggestions received. The certificate on public discussion is public information and is entered by the customer into the Unified Register of Strategic Environmental Assessment."

The certificate of public consultations of the draft Danube RBMP (Lower Danube sub-basin) will be entered by the SAWR into the Unified Register of Strategic Environmental Assessment together with the approved RBMP.

10 LIST OF COMPETENT STATE AUTHORITIES RESPONSIBLE FOR IMPLEMENTING THE RIVER BASIN MANAGEMENT PLAN

According to part two of Article 13 of the Water Code of Ukraine, the CMU, the Council of Ministers of the Autonomous Republic of Crimea, village, town and city councils and their executive bodies, district and regional councils, executive authorities and other state bodies are responsible for public administration in the field of water use and protection and water resources restoration in accordance with the legislation of Ukraine.

The executive authorities in the field of water use and protection and water resources reproduction are the MENR, the SAWR, the State Geological Survey, the State Ecological Inspectorate and other bodies in accordance with the law.

Table 153. Executive authorities in the field of water use and protection and water resources reproduction

Title.	Address.	Address of the official website
Ministry of Environmental Protection and Natural Resources of Ukraine (MENR)	35, Metropolyt Vasyl Lypkivskyi St., Kyiv, 03035 tel.: (044) 206-31-00, (044) 206-31-15, fax: (044) 206-31-07, E-mail: info@mepr.gov.ua	www.mepr.gov.ua
State Agency of Water Resources of Ukraine (SAWR)	8 Velyka Vasylkivska St., Kyiv, 01024 tel./fax: (044) 235-31-92, tel. (044) 235-61-46 E-mail: davr@davr.gov.ua	www.davr.gov.ua
State Service of Geology and Mineral Resources of Ukraine (Derzhgeonadra)	16 Anton Tsedik St., Kyiv, 03057 tel: (044) 536-13-18 E-mail: office@geo.gov.ua	www.geo.gov.ua
State Environmental Inspectorate of Ukraine (SEI)	3, building 2, Novopecherskyi lane, Kyiv, 01042 tel./fax +38 (044) 521-20-40 tel: (044) 521-20-38 E-mail: info@dei.gov.ua	www.dei.gov.ua

Table 154. Main regulatory acts that define the powers of executive authorities in the field of water use and protection and water resources reproduction

Name of the body	Legal act	Link on the official website of the Parliament of Ukraine
Ministry of Environmental Protection and Natural Resources of Ukraine (MENR)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Articles 15 and 15[1]	https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the Ministry of Environmental Protection and Natural Resources of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 25 June 2020, No. 614 (Official Gazette of Ukraine, 2020, No. 59, p. 32, Article 1853)	https://zakon.rada.gov.ua/laws/show/614-2020-%D0%BF#Text

Name of the body	Legal act	Link on the official website of the Parliament of Ukraine
State Agency of Water Resources of Ukraine (SAWR)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 16	https://zakon.rada.gov.ua/ laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Agency of Water Resources of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 20 August 2014, No. 393 (Official Gazette of Ukraine, 2014, No. 71, p. 34, Article 1995)	https://zakon.rada.gov.ua/ laws/show/393-2014-%D0%BF#Text
State Service of Geology and Mineral Resources of Ukraine (Derzhgeonadra)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 17	https://zakon.rada.gov.ua/ laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Service of Geology and Subsoil of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 30 December 2015 No. 1174 (Official Gazette of Ukraine, 2016, No. 3, p. 284, Article 192)	https://zakon.rada.gov.ua/ laws/show/1174-2015-%D0%BF#Text
State Environmental Inspectorate of Ukraine (SEI)	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of Ukraine (VVR), 1995, No. 24, p. 189) - Article 15^2	https://zakon.rada.gov.ua/ laws/show/213/95-%D0%B2%D1%80#Text
	Regulation on the State Environmental Inspectorate of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine of 19 April 2017 No. 275 (Official Gazette of Ukraine, 2017, No. 36, p. 73, Article 1131)	https://zakon.rada.gov.ua/ laws/show/275-2017-%D0%BF#Text
	Regulation on Territorial and Interregional Territorial Bodies of the State Environmental Inspectorate, approved by the Order of the Ministry of Energy and Environmental Protection of Ukraine dated 07 April 2020 No. 230, registered with the Ministry of Justice of Ukraine on 16 April 2020 under No. 350/34633 (Official Gazette of Ukraine, 2020, No. 33, p. 25, Article 1116)	https://zakon.rada.gov.ua/ laws/show/z0350-20#Text

In order to ensure the implementation of the state policy in the field of management, use and reproduction of surface water resources within the Lower Danube River Sub-basin, to direct and coordinate the activities of organisations under the management of the SAWR on management, use and reproduction of surface water resources within the Lower Danube River Sub-basin, as well as to ensure the implementation of the state policy in the field of water management within Odesa region, the SAWR established the Basin Department.

Name of the organisation	Address	Telephone/fax	Email	Website
The Black Sea and Lower Danube River Basin Water Management Authority (Black Sea and Lower Danube BUVR)	13, Ivan and Yurii Lypiv Str., Odesa, 65078	(048)766-91-02	buvr_odesa@oouvr.gov.ua	www.oouvr.gov.ua

The names of sub-basins and water management areas within river basin districts are given in the Annex to the Order of the MENR No. 25 "On the Allocation of Sub-Basins and Water Management Areas within Established River Basin Districts" dated 26 January 2017, registered with the Ministry of Justice of Ukraine on 14 February 2017 under No. 208/30076 (https://zakon.rada.gov.ua/laws/show/z0208-17#Text).

The boundaries of river basin districts, sub-basins and water management areas were approved by the Order of the MENR No. 103 dated 03.03.2017, registered with the Ministry of Justice of Ukraine on 29 March 2017 under No. 421/30289 (https://zakon.rada.gov.ua/laws/show/z0421-17#Text).

The Black Sea and Lower Danube BUVR is a budgetary non-profit organisation that falls under the management of the SAWR. The Regulation on the Black Sea and Lower Danube BUVR was approved by the Order of the SAWR dated 06.07.2023 No. 80.

The Lower Danube Basin Council is a consultative and advisory body of the SAWR Management of the Lower Danube Sub-basin in order to develop proposals and ensure coordination of interests of enterprises, institutions and organisations in the field of water use and protection and water resources restoration within the Lower Danube Sub-basin area, to promote integrated water resources management within the Lower Danube Sub-basin area, to ensure coordination of interests and coordination of actions of stakeholders in water resources management within the Lower Danube Sub-basin area, to facilitate cooperation between central and local executive authorities, bodies The Lower Danube Basin Council is an advisory body to the State Agency of Water Resources of Ukraine within the Lower Danube Sub-basin area. The Regulation on the Lower Danube Basin Council was approved by the Order of the SAWR No. 972 dated 22.12.2018.

According to the List approved by Resolution of the CMU No. 1371 dated 13 September 2002 (as amended by Resolution of the Cabinet of Ministers of Ukraine No. 1276 dated 30 November 2011) (https://zakon.rada.gov.ua/laws/show/1371-2002-%D0%BF#n38), the MENR and/or the SAWR are responsible for fulfilling international obligations in the field of water protection arising from Ukraine's membership in international organisations or in accordance with international treaties concluded by Ukraine.

In addition, pursuant to Article 9 of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (https://zakon.rada.gov.ua/laws/show/801-14#Text), the Government of Ukraine has concluded bilateral agreements on the protection of border/boundary waters, the responsibility for which lies with the SAWR:

- Agreement between the Government of Ukraine and the Government of Romania on Cooperation in the Field of Water Management on Boundary Waters of 30 September 1997 (https://zakon.rada.gov.ua/laws/show/642_059#Text)

- Agreement between the Government of Ukraine and the Government of the Republic of Moldova on the Joint Use and Protection of Boundary Waters of 23 November 1994 (https://zakon.rada.gov.ua/laws/show/498_051#Text).

11 THE PROCEDURE FOR OBTAINING INFORMATION, INCLUDING PRIMARY INFORMATION, ON THE STATE OF SURFACE AND GROUNDWATER

In order to ensure proper organisation of access to public information, implementation of the Law of Ukraine "On Access to Public Information", Presidential Decree No. 547 of 05 May 2011 "Issues of Ensuring Access to Public Information by Executive Authorities", resolutions of the CMU No. 583 of 25 May 2011 "Issues of Implementation of the Law of Ukraine "On Access to Public Information" in the Secretariat of the CMU, Central and Local Executive Authorities", No. 835 of 21 October 2015 "On Approval of the Regulation

To regulate the procedure for access to public information, the SAWR adopted Order No. 163 dated 08.12.2023 "On Certain Issues of Implementation of the Law of Ukraine "On Access to Public Information" in the SAWR".

In accordance with paragraphs 16-18 of the Procedure for State Water Monitoring, approved by Resolution of the Cabinet of Ministers of Ukraine No. 758 of 19 September 2018, the results of state water monitoring are:

- Primary information (observation data) provided by the subjects of state water monitoring;
- generalised data relating to a certain period of time or a certain territory;
- Assessment of the ecological and chemical state of surface water bodies, the ecological potential of artificial or significantly modified surface water bodies, the quantitative and chemical state of groundwater bodies, the ecological state of marine waters and identification of sources of negative impact on them;
- forecasts of water conditions and their changes;
- scientifically based recommendations necessary for making management decisions in the field of water use and protection and water resources reproduction.

Subjects of state water monitoring are obliged to store primary information (observation data) obtained as a result of state water monitoring for an indefinite period of time.

The information obtained and processed by the state water monitoring bodies is official.

Primary information (observation data), generalised data, assessment results, forecasts and recommendations resulting from the state water monitoring are provided free of charge:

- for SWBs (including coastal waters) - to the SAWR and the Ministry of Environment;
- for GWBs – to the State Service of Geology and Mineral Resources and the Ministry of Environment, as well as to the SAWR in terms of generalised data, assessment results and forecasts;
- for marine waters - the Ministry of Environment.

The subjects of state water monitoring shall exchange information with each other on the data and results of state water monitoring on a free-of-charge basis.

The SAWR collects and publishes information on the state of surface waters in the public domain by maintaining the following information resources:

- geoportal "State Water Cadastre: Accounting of Surface Water Bodies" (http://geoportal.davr.gov.ua:81/);
- the web-based system "Monitoring and Environmental Assessment of Water Resources of Ukraine" (http://monitoring.davr.gov.ua/EcoWaterMon/GDKMap/Index).

Automatic data exchange has been set up between these information resources and the Ministry of Ecology's EcoHazard resource.

ANNEXES
TO THE DANUBE RIVER BASIN MANAGEMENT PLAN 2025-2030

ANNEX 1. List of identified SWB

Risk of failure to achieve the environmental objectives of the SWB: not at risk-1, possibly at risk-2; at risk-3.

Linear SWBs

River basin	River sub-basin	Name of the SWB	Where does the SWB go?	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	Risk of not achieving environmental goals	
											good environmental condition	good chemical condition
Danube	Tisa	Bila Tisa	Tisa	UA_R_10_M_3_Si	12,68	R	UA_M5.3.1_0001	2	1	1	2	1
Danube	Tisa	Bila Tisa	Tisa	UA_R_10_M_2_Si	6,27	R	UA_M5.3.1_0002	2	1	1	2	1
Danube	Tisa	Black Tiszа	Tisa	UA_R_10_S_4_Si	10,28	R	UA_M5.3.1_0003	2	1	1	2	1
Danube	Tisa	Black Tiszа	Tisa	UA_R_10_S_3_Si	4,36	R	UA_M5.3.1_0004	2	1	1	2	1
Danube	Tisa	Black Tiszа	Tisa	UA_R_10_M_3_Si	30,36	R	UA_M5.3.1_0005	3	1	1	3	1
Danube	Tisa	Black Tiszа	Tisa	UA_R_10_M_2_Si	7,15	R	UA_M5.3.1_0006	2	1	1	2	1
Danube	Tisa	Tisa	Danube	UA_R_10_L_2_Si	25,03	R	UA_M5.3.1_0007	3	1	1	3	3
Danube	Tisa	Tisa	Danube	UA_R_10_L_2_Si	64,92	R	UA_M5.3.1_0008	3	1	1	3	3
Danube	Tisa	Tisa	Danube	UA_R_10_L_2_Si	5,28	R	UA_M5.3.1_0009	3	2	1	3	3
Danube	Tisa	Tisa	Danube	UA_R_10_L_1_Si	33,53	R	UA_M5.3.1_0010	3	2	1	3	3
Danube	Tisa	Tisa	Danube	UA_R_11_L_1_Si	47,61	R	UA_M5.3.1_0011	3	2	1	3	3
Danube	Tisa	Tisa	Danube	UA_R_11_L_1_Si	17,89	R	UA_M5.3.1_0012	2	1	1	2	1
Danube	Tisa	Tisa	Danube	UA_R_11_XL_1_Si	7,84	R	UA_M5.3.1_0013	2	1	1	2	1
Danube	Tisa	Tisa	Danube	UA_R_11_XL_1_Si	17,42	R	UA_M5.3.1_0014	3	2	1	3	3
Danube	Tisa	Stogovets	Bila Tisa	UA_R_10_S_4_Si	7,98	R	UA_M5.3.1_0015	1	1	1	1	1
Danube	Tisa	Stogovets	Bila Tisa	UA_R_10_S_3_Si	7,42	R	UA_M5.3.1_0016	1	1	1	1	1
Danube	Tisa	Balsatul	Stogovets	UA_R_10_S_4_Si	9,42	R	UA_M5.3.1_0017	1	1	1	1	1
Danube	Tisa	Balsatul	Stogovets	UA_R_10_S_3_Si	0,59	R	UA_M5.3.1_0018	1	1	1	1	1
Danube	Tisa	Hoverla	Bila Tisa	UA_R_10_S_4_Si	7,04	R	UA_M5.3.1_0019	1	1	1	1	1
Danube	Tisa	Hoverla	Bila Tisa	UA_R_10_S_3_Si	5,37	R	UA_M5.3.1_0020	1	1	1	1	1
Danube	Tisa	Brebeneskul	Hoverla	UA_R_10_S_4_Si	10,51	R	UA_M5.3.1_0021	1	1	1	1	1
Danube	Tisa	Brebeneskul	Hoverla	UA_R_10_S_3_Si	0,83	R	UA_M5.3.1_0022	1	1	1	1	1

Danube	Tisa	Schaul	Bila Tisa	UA_R_10_S_4_Si	9,43	R	UA_M5.3.1_0023	1	1	1	1	1
Danube	Tisa	Schaul	Bila Tisa	UA_R_10_S_3_Si	8,04	R	UA_M5.3.1_0024	1	1	1	1	1
Danube	Tisa	Bohdan	Bila Tisa	UA_R_10_S_4_Si	5,88	R	UA_M5.3.1_0025	1	1	1	1	1
Danube	Tisa	Bohdan	Bila Tisa	UA_R_10_S_3_Si	10,54	R	UA_M5.3.1_0026	1	1	1	1	1
Danube	Tisa	Kvass	Bila Tisa	UA_R_10_S_4_Si	5,10	R	UA_M5.3.1_0027	1	1	1	1	1
Danube	Tisa	Kvass	Bila Tisa	UA_R_10_S_3_Si	10,19	R	UA_M5.3.1_0028	1	1	1	1	1
Danube	Tisa	Pavlik	Bila Tisa	UA_R_10_S_4_Si	5,97	R	UA_M5.3.1_0029	1	1	1	1	1
Danube	Tisa	Pavlik	Bila Tisa	UA_R_10_S_3_Si	6,71	R	UA_M5.3.1_0030	1	1	1	1	1
Danube	Tisa	Stanislav	Black Tisza	UA_R_10_S_4_Si	8,44	R	UA_M5.3.1_0031	3	1	1	3	1
Danube	Tisa	Stanislav	Black Tisza	UA_R_10_S_3_Si	2,72	R	UA_M5.3.1_0032	2	1	1	2	1
Danube	Tisa	Length	Black Tisza	UA_R_10_S_4_Si	8,35	R	UA_M5.3.1_0033	1	1	1	1	1
Danube	Tisa	Length	Black Tisza	UA_R_10_S_3_Si	2,71	R	UA_M5.3.1_0034	1	1	1	1	1
Danube	Tisa	Lazeshchyna	Black Tisza	UA_R_10_S_4_Si	10,19	R	UA_M5.3.1_0035	1	1	1	1	1
Danube	Tisa	Lazeshchyna	Black Tisza	UA_R_10_S_3_Si	7,80	R	UA_M5.3.1_0036	1	1	1	1	1
Danube	Tisa	Lazeshchyna	Black Tisza	UA_R_10_M_3_Si	5,82	R	UA_M5.3.1_0037	2	1	1	2	1
Danube	Tisa	Lopushanka	Lazeshchyna	UA_R_10_S_4_Si	5,63	R	UA_M5.3.1_0038	1	1	1	1	1
Danube	Tisa	Lopushanka	Lazeshchyna	UA_R_10_S_3_Si	5,46	R	UA_M5.3.1_0039	1	1	1	1	1
Danube	Tisa	Ilmin	Black Tisza	UA_R_10_S_4_Si	1,35	R	UA_M5.3.1_0040	1	1	1	1	1
Danube	Tisa	Ilmin	Black Tisza	UA_R_10_S_3_Si	4,16	R	UA_M5.3.1_0041	1	1	1	1	1
Danube	Tisa	Big	Tisa	UA_R_10_S_4_Si	2,79	R	UA_M5.3.1_0042	1	1	1	1	1
Danube	Tisa	Big	Tisa	UA_R_10_S_3_Si	3,56	R	UA_M5.3.1_0043	1	1	1	1	1
Danube	Tisa	Big	Tisa	UA_R_10_S_2_Si	2,97	R	UA_M5.3.1_0044	1	1	1	1	1
Danube	Tisa	White	Tisa	UA_R_10_S_4_Si	3,20	R	UA_M5.3.1_0045	1	1	1	1	1
Danube	Tisa	White	Tisa	UA_R_10_S_3_Si	4,74	R	UA_M5.3.1_0046	2	1	1	2	1
Danube	Tisa	White	Tisa	UA_R_10_S_2_Si	4,16	R	UA_M5.3.1_0047	1	1	1	1	1
Danube	Tisa	Kosivska	Tisa	UA_R_10_S_4_Si	12,70	R	UA_M5.3.1_0048	1	1	1	1	1
Danube	Tisa	Kosivska	Tisa	UA_R_10_S_3_Si	16,71	R	UA_M5.3.1_0049	1	1	1	1	1
Danube	Tisa	Kosivska	Tisa	UA_R_10_S_2_Si	1,87	R	UA_M5.3.1_0050	1	1	1	1	1
Danube	Tisa	Kosivska	Tisa	UA_R_10_M_2_Si	12,89	R	UA_M5.3.1_0051	3	1	1	3	1
Danube	Tisa	Shopurka	Tisa	UA_R_10_M_2_Si	12,84	R	UA_M5.3.1_0052	3	1	1	3	3
Danube	Tisa	Mala Shopurka	Shopurka	UA_R_10_S_4_Si	6,95	R	UA_M5.3.1_0053	1	1	1	1	1
Danube	Tisa	Mala Shopurka	Shopurka	UA_R_10_S_3_Si	14,76	R	UA_M5.3.1_0054	1	1	1	1	1
Danube	Tisa	Mala Shopurka	Shopurka	UA_R_10_M_2_Si	7,81	R	UA_M5.3.1_0055	1	1	1	1	1
Danube	Tisa	Sredna Shopurka	Shopurka	UA_R_10_S_4_Si	7,04	R	UA_M5.3.1_0056	1	1	1	1	1
Danube	Tisa	Sredna Shopurka	Shopurka	UA_R_10_S_3_Si	13,90	R	UA_M5.3.1_0057	1	1	1	1	1
Danube	Tisa	Sredna Shopurka	Shopurka	UA_R_10_S_2_Si	1,73	R	UA_M5.3.1_0058	1	1	1	1	1
Danube	Tisa	Sredna Shopurka	Shopurka	UA_R_10_M_2_Si	6,01	R	UA_M5.3.1_0059	1	1	1	1	1
Danube	Tisa	Apšica	Tisa	UA_R_10_S_4_Si	2,55	R	UA_M5.3.1_0060	1	1	1	1	1
Danube	Tisa	Apšica	Tisa	UA_R_10_S_3_Si	5,17	R	UA_M5.3.1_0061	1	1	1	1	1
Danube	Tisa	Apšica	Tisa	UA_R_10_S_2_Si	13,79	R	UA_M5.3.1_0062	2	1	1	2	1

Danube	Tisa	Apšica	Tisa	UA_R_10_M_2_Si	21,04	R	UA_M5.3.1_0063	3	1	1	3	1
Danube	Tisa	Veliky Pliats	Apšica	UA_R_10_S_4_Si	1,24	R	UA_M5.3.1_0064	1	1	1	1	1
Danube	Tisa	Veliky Pliats	Apšica	UA_R_10_S_3_Si	3,81	R	UA_M5.3.1_0065	1	1	1	1	1
Danube	Tisa	Veliky Pliats	Apšica	UA_R_10_S_2_Si	6,25	R	UA_M5.3.1_0066	1	1	1	1	1
Danube	Tisa	Tjovshag	Apšica	UA_R_10_S_4_Si	2,18	R	UA_M5.3.1_0067	1	1	1	1	1
Danube	Tisa	Tjovshag	Apšica	UA_R_10_S_3_Si	7,01	R	UA_M5.3.1_0068	1	1	1	1	1
Danube	Tisa	Tjovshag	Apšica	UA_R_10_S_2_Si	9,64	R	UA_M5.3.1_0069	2	1	1	2	1
Danube	Tisa	Basheu	Apšica	UA_R_10_S_3_Si	2,93	R	UA_M5.3.1_0070	1	1	1	1	1
Danube	Tisa	Basheu	Apšica	UA_R_10_S_2_Si	16,14	R	UA_M5.3.1_0071	3	1	1	3	1
Danube	Tisa	Theresa	Tisa	UA_R_10_M_3_Si	4,02	R	UA_M5.3.1_0072	1	1	1	1	1
Danube	Tisa	Theresa	Tisa	UA_R_10_M_2_Si	33,00	R	UA_M5.3.1_0073	3	1	1	3	3
Danube	Tisa	Theresa	Tisa	UA_R_10_L_2_Si	18,71	R	UA_M5.3.1_0074	3	1	1	3	1
Danube	Tisa	Mokryanka	Theresa	UA_R_10_S_4_Si	13,69	R	UA_M5.3.1_0075	1	1	1	1	1
Danube	Tisa	Mokryanka	Theresa	UA_R_10_S_3_Si	6,66	R	UA_M5.3.1_0076	1	1	1	1	1
Danube	Tisa	Mokryanka	Theresa	UA_R_10_M_3_Si	12,76	R	UA_M5.3.1_0077	1	1	1	1	1
Danube	Tisa	Yanovets	Mokryanka	UA_R_10_S_4_Si	6,41	R	UA_M5.3.1_0078	1	1	1	1	1
Danube	Tisa	Yanovets	Mokryanka	UA_R_10_S_3_Si	8,25	R	UA_M5.3.1_0079	1	1	1	1	1
Danube	Tisa	Brusturyanka	Theresa	UA_R_10_M_3_Si	15,76	R	UA_M5.3.1_0080	2	1	1	2	1
Danube	Tisa	Beretianka	Brusturyanka	UA_R_10_S_4_Si	10,29	R	UA_M5.3.1_0081	1	1	1	1	1
Danube	Tisa	Beretianka	Brusturyanka	UA_R_10_S_3_Si	5,83	R	UA_M5.3.1_0082	1	1	1	1	1
Danube	Tisa	Plaisance	Beretianka	UA_R_10_S_4_Si	11,07	R	UA_M5.3.1_0083	1	1	1	1	1
Danube	Tisa	Plaisance	Beretianka	UA_R_10_S_3_Si	3,01	R	UA_M5.3.1_0084	1	1	1	1	1
Danube	Tisa	Turbat	Brusturyanka	UA_R_10_S_4_Si	17,22	R	UA_M5.3.1_0085	1	1	1	1	1
Danube	Tisa	Turbat	Brusturyanka	UA_R_10_S_3_Si	3,04	R	UA_M5.3.1_0086	1	1	1	1	1
Danube	Tisa	Apple tree	Brusturyanka	UA_R_10_S_4_Si	4,77	R	UA_M5.3.1_0087	1	1	1	1	1
Danube	Tisa	Apple tree	Brusturyanka	UA_R_10_S_3_Si	9,31	R	UA_M5.3.1_0088	1	1	1	1	1
Danube	Tisa	Krasnoshora	Theresa	UA_R_10_S_4_Si	2,80	R	UA_M5.3.1_0089	1	1	1	1	1
Danube	Tisa	Krasnoshora	Theresa	UA_R_10_S_3_Si	8,05	R	UA_M5.3.1_0090	1	1	1	1	1
Danube	Tisa	Krasnoshora	Theresa	UA_R_10_S_2_Si	4,99	R	UA_M5.3.1_0091	1	1	1	1	1
Danube	Tisa	Tereshuvka	Theresa	UA_R_10_S_4_Si	2,55	R	UA_M5.3.1_0092	1	1	1	1	1
Danube	Tisa	Tereshuvka	Theresa	UA_R_10_S_3_Si	10,98	R	UA_M5.3.1_0093	1	1	1	1	1
Danube	Tisa	Tereshuvka	Theresa	UA_R_10_S_2_Si	11,54	R	UA_M5.3.1_0094	1	1	1	1	1
Danube	Tisa	Tereshuvka	Theresa	UA_R_10_M_2_Si	6,17	R	UA_M5.3.1_0095	1	1	1	1	1
Danube	Tisa	Luzhanka	Theresa	UA_R_10_S_4_Si	3,73	R	UA_M5.3.1_0096	1	1	1	1	1
Danube	Tisa	Luzhanka	Theresa	UA_R_10_S_3_Si	9,80	R	UA_M5.3.1_0097	1	1	1	1	1
Danube	Tisa	Luzhanka	Theresa	UA_R_10_S_2_Si	8,69	R	UA_M5.3.1_0098	1	1	1	1	1
Danube	Tisa	Luzhanka	Theresa	UA_R_10_M_2_Si	14,07	R	UA_M5.3.1_0099	1	1	1	1	1
Danube	Tisa	Untitled	Theresa	UA_R_10_S_3_Si	5,56	R	UA_M5.3.1_0100	1	1	1	1	1
Danube	Tisa	Untitled	Theresa	UA_R_10_S_2_Si	9,95	R	UA_M5.3.1_0101	1	1	1	1	1
Danube	Tisa	Tyachivets	Tisa	UA_R_10_S_3_Si	1,89	R	UA_M5.3.1_0102	1	1	1	1	1

Danube	Tisa	Tyachivets	Tisa	UA_R_10_S_2_Si	30,34	R	UA_M5.3.1_0103	2	1	1	2	1
Danube	Tisa	Martosz	Tisa	UA_R_10_S_2_Si	12,03	R	UA_M5.3.1_0104	3	1	1	3	1
Danube	Tisa	Stara Rika	Tisa	UA_R_10_S_2_Si	14,16	R	UA_M5.3.1_0105	2	1	1	2	1
Danube	Tisa	Sloboda	Tereblya	UA_R_10_S_4_Si	11,32	R	UA_M5.3.1_0106	1	1	1	1	1
Danube	Tisa	Tereblya	Tisa	UA_R_10_S_3_Si	9,04	R	UA_M5.3.1_0107	1	1	1	1	1
Danube	Tisa	Tereblya	Tisa	UA_R_10_M_3_Si	22,23	R	UA_M5.3.1_0108	2	1	1	2	1
Danube	Tisa	Tereblya	Tisa	UA_R_10_M_2_Si	51,85	R	UA_M5.3.1_0110	3	2	1	3	3
Danube	Tisa	Ozerianka	Tereblya	UA_R_10_S_4_Si	9,95	R	UA_M5.3.1_0111	1	1	1	1	1
Danube	Tisa	Ozerianka	Tereblya	UA_R_10_S_3_Si	3,98	R	UA_M5.3.1_0112	1	1	1	1	1
Danube	Tisa	Ozerianka	Tereblya	UA_R_10_M_3_Si	5,33	R	UA_M5.3.1_0113	1	1	1	1	1
Danube	Tisa	Dog	Ozerianka	UA_R_10_S_4_Si	10,92	R	UA_M5.3.1_0114	1	1	1	1	1
Danube	Tisa	Girsovets	Tereblya	UA_R_10_S_4_Si	2,97	R	UA_M5.3.1_0115	1	1	1	1	1
Danube	Tisa	Girsovets	Tereblya	UA_R_10_S_3_Si	6,20	R	UA_M5.3.1_0116	1	1	1	1	1
Danube	Tisa	Sugar	Tereblya	UA_R_10_S_4_Si	3,53	R	UA_M5.3.1_0117	1	1	1	1	1
Danube	Tisa	Sugar	Tereblya	UA_R_10_S_3_Si	11,15	R	UA_M5.3.1_0118	1	1	1	1	1
Danube	Tisa	Velyka Uholka	Tereblya	UA_R_10_S_4_Si	1,70	R	UA_M5.3.1_0119	1	1	1	1	1
Danube	Tisa	Velyka Uholka	Tereblya	UA_R_10_S_3_Si	4,82	R	UA_M5.3.1_0120	1	1	1	1	1
Danube	Tisa	Velyka Uholka	Tereblya	UA_R_10_S_2_Si	18,39	R	UA_M5.3.1_0121	2	1	1	2	1
Danube	Tisa	Velyka Uholka	Tereblya	UA_R_10_M_2_Si	3,83	R	UA_M5.3.1_0122	1	1	1	1	1
Danube	Tisa	Mala Uholka	Velyka Uholka	UA_R_10_S_4_Si	2,10	R	UA_M5.3.1_0123	1	1	1	1	1
Danube	Tisa	Mala Uholka	Velyka Uholka	UA_R_10_S_3_Si	4,11	R	UA_M5.3.1_0124	1	1	1	1	1
Danube	Tisa	Mala Uholka	Velyka Uholka	UA_R_10_S_2_Si	15,99	R	UA_M5.3.1_0125	2	1	1	2	1
Danube	Tisa	Odars	Velyka Uholka	UA_R_10_S_3_Si	0,84	R	UA_M5.3.1_0126	1	1	1	1	1
Danube	Tisa	Odars	Velyka Uholka	UA_R_10_S_2_Si	15,35	R	UA_M5.3.1_0127	1	1	1	1	1
Danube	Tisa	Moranjos	Tisa	UA_R_10_S_3_Si	1,14	R	UA_M5.3.1_0128	1	2	1	2	1
Danube	Tisa	Moranjos	Tisa	UA_R_10_S_2_Si	4,43	R	UA_M5.3.1_0129	1	2	1	2	1
Danube	Tisa	Moranjos	Tisa	UA_R_10_S_1_Si	10,55	R	UA_M5.3.1_0130	2	2	1	2	1
Danube	Tisa	Axe	Tisa	UA_R_10_S_2_Si	17,44	R	UA_M5.3.1_0131	2	2	1	2	1
Danube	Tisa	Axe	Tisa	HMWB	5,55	HMWB	UA_M5.3.1_0132	2	2	3	3	1
Danube	Tisa	Axe	Tisa	UA_R_10_M_1_Si	5,44	R	UA_M5.3.1_0133	2	2	1	2	1
Danube	Tisa	Untitled	Axe	AWB	4,99	AWB	UA_M5.3.1_0134	1	2		2	1
Danube	Tisa	Untitled	Axe	AWB	5,62	AWB	UA_M5.3.1_0135	1	2		2	1
Danube	Tisa	Bailova	Tisa	UA_R_10_S_2_Si	17,94	R	UA_M5.3.1_0136	2	2	1	2	1
Danube	Tisa	Bailova	Tisa	UA_R_10_S_1_Si	3,81	R	UA_M5.3.1_0137	2	2	1	2	1
Danube	Tisa	Untitled	Bailova	UA_R_10_S_2_Si	11,42	R	UA_M5.3.1_0138	2	2	1	2	1
Danube	Tisa	Boronyava	Tisa	UA_R_10_S_2_Si	3,66	R	UA_M5.3.1_0139	1	2	1	2	1
Danube	Tisa	Boronyava	Tisa	UA_R_10_S_1_Si	2,77	R	UA_M5.3.1_0140	1	2	1	2	1
Danube	Tisa	Boronyava	Tisa	UA_R_10_S_1_Si	8,26	R	UA_M5.3.1_0142	2	2	1	2	1
Danube	Tisa	Tushka	Tisa	HMWB	2,27	HMWB	UA_M5.3.1_0143	1	2	3	3	1
Danube	Tisa	Tushka	Tisa	UA_R_10_M_1_Si	10,60	R	UA_M5.3.1_0144	3	2	1	3	1

Danube	Tisa	Small	Silence	UA_R_10_S_3_Si	0,99	R	UA_M5.3.1_0145	1	2	1	2	1
Danube	Tisa	Small	Silence	UA_R_10_S_2_Si	4,02	R	UA_M5.3.1_0146	1	2	1	2	1
Danube	Tisa	Small	Silence	HMWB	7,26	HMWB	UA_M5.3.1_0147	3	2	3	3	1
Danube	Tisa	Burkut	Tisa	UA_R_10_S_2_Si	2,46	R	UA_M5.3.1_0148	1	2	1	2	1
Danube	Tisa	Burkut	Tisa	HMWB	6,94	HMWB	UA_M5.3.1_0149	3	2	3	3	1
Danube	Tisa	Khust	Tisa	UA_R_10_S_2_Si	15,81	R	UA_M5.3.1_0150	2	2	1	2	1
Danube	Tisa	Khust	Tisa	UA_R_10_S_1_Si	25,80	R	UA_M5.3.1_0151	3	2	1	3	3
Danube	Tisa	Lukovets	Khust	UA_R_10_S_1_Si	10,40	R	UA_M5.3.1_0152	3	2	1	3	1
Danube	Tisa	Untitled	Rika	AWB	2,36	AWB	UA_M5.3.1_0153	2	2		2	1
Danube	Tisa	Rika	Tisa	UA_R_10_M_3_Si	8,61	R	UA_M5.3.1_0154	1	1	1	1	1
Danube	Tisa	Rika	Tisa	UA_R_10_M_2_Si	60,71	R	UA_M5.3.1_0155	3	1	1	3	3
Danube	Tisa	Rika	Tisa	UA_R_10_L_2_Si	3,04	R	UA_M5.3.1_0156	2	2	1	2	1
Danube	Tisa	Rika	Tisa	UA_R_10_L_1_Si	11,71	R	UA_M5.3.1_0157	2	2	1	2	1
Danube	Tisa	Blindly	Rika	UA_R_10_S_4_Si	2,50	R	UA_M5.3.1_0158	1	1	1	1	1
Danube	Tisa	Blindly	Rika	UA_R_10_S_3_Si	8,71	R	UA_M5.3.1_0159	1	1	1	1	1
Danube	Tisa	Burdock	Rika	UA_R_10_S_4_Si	1,72	R	UA_M5.3.1_0160	1	1	1	1	1
Danube	Tisa	Burdock	Rika	UA_R_10_S_3_Si	8,08	R	UA_M5.3.1_0161	2	1	1	2	1
Danube	Tisa	Bistra	Rika	UA_R_10_S_4_Si	2,23	R	UA_M5.3.1_0162	1	1	1	1	1
Danube	Tisa	Bistra	Rika	UA_R_10_S_3_Si	10,49	R	UA_M5.3.1_0163	1	1	1	1	1
Danube	Tisa	Shaving	Rika	UA_R_10_S_4_Si	2,62	R	UA_M5.3.1_0164	1	1	1	1	1
Danube	Tisa	Shaving	Rika	UA_R_10_S_3_Si	18,22	R	UA_M5.3.1_0165	2	1	1	2	1
Danube	Tisa	Shaving	Rika	UA_R_10_S_2_Si	1,23	R	UA_M5.3.1_0166	1	1	1	1	1
Danube	Tisa	Belt	Rika	UA_R_10_S_4_Si	2,99	R	UA_M5.3.1_0167	1	1	1	1	1
Danube	Tisa	Belt	Rika	UA_R_10_S_3_Si	7,72	R	UA_M5.3.1_0168	3	1	1	3	1
Danube	Tisa	Belt	Rika	UA_R_10_M_3_Si	11,67	R	UA_M5.3.1_0169	3	1	1	3	1
Danube	Tisa	Belt	Rika	UA_R_10_M_2_Si	7,92	R	UA_M5.3.1_0170	2	1	1	2	1
Danube	Tisa	Studeniy	Belt	UA_R_10_S_4_Si	0,69	R	UA_M5.3.1_0171	1	1	1	1	1
Danube	Tisa	Studeniy	Belt	UA_R_10_S_3_Si	12,22	R	UA_M5.3.1_0172	1	1	1	1	1
Danube	Tisa	Pogar	Belt	UA_R_10_S_4_Si	1,46	R	UA_M5.3.1_0173	1	1	1	1	1
Danube	Tisa	Pogar	Belt	UA_R_10_S_3_Si	5,77	R	UA_M5.3.1_0174	1	1	1	1	1
Danube	Tisa	Untitled	Belt	UA_R_10_S_4_Si	0,86	R	UA_M5.3.1_0175	1	1	1	1	1
Danube	Tisa	Untitled	Belt	UA_R_10_S_3_Si	10,49	R	UA_M5.3.1_0176	1	1	1	1	1
Danube	Tisa	Volovets	Rika	UA_R_10_S_4_Si	1,28	R	UA_M5.3.1_0177	1	1	1	1	1
Danube	Tisa	Volovets	Rika	UA_R_10_S_3_Si	7,18	R	UA_M5.3.1_0178	1	1	1	1	1
Danube	Tisa	Volovets	Rika	UA_R_10_S_2_Si	3,59	R	UA_M5.3.1_0179	2	1	1	2	1
Danube	Tisa	Progudnya	Rika	UA_R_10_S_3_Si	5,82	R	UA_M5.3.1_0180	1	1	1	1	1
Danube	Tisa	Progudnya	Rika	UA_R_10_S_2_Si	4,06	R	UA_M5.3.1_0181	2	1	1	2	1
Danube	Tisa	Wide	Rika	UA_R_10_S_4_Si	1,04	R	UA_M5.3.1_0182	1	2	1	2	1
Danube	Tisa	Wide	Rika	UA_R_10_S_3_Si	4,58	R	UA_M5.3.1_0183	1	2	1	2	1
Danube	Tisa	Wide	Rika	UA_R_10_S_2_Si	8,14	R	UA_M5.3.1_0184	1	2	1	2	1

Danube	Tisa	Hall	Rika	UA_R_10_S_4_Si	0,45	R	UA_M5.3.1_0185	1	2	1	2	1
Danube	Tisa	Hall	Rika	UA_R_10_S_3_Si	1,20	R	UA_M5.3.1_0186	1	2	1	2	1
Danube	Tisa	Hall	Rika	UA_R_10_S_2_Si	1,29	R	UA_M5.3.1_0187	1	2	1	2	1
Danube	Tisa	Chekhovets	Rika	UA_R_10_S_3_Si	2,59	R	UA_M5.3.1_0188	1	2	1	2	1
Danube	Tisa	Chekhovets	Rika	UA_R_10_S_2_Si	15,24	R	UA_M5.3.1_0189	1	2	1	2	1
Danube	Tisa	Suryuk	Rika	UA_R_10_S_3_Si	5,06	R	UA_M5.3.1_0190	1	2	1	2	1
Danube	Tisa	Suryuk	Rika	UA_R_10_S_2_Si	9,46	R	UA_M5.3.1_0191	1	2	1	2	1
Danube	Tisa	Osawa	Rika	UA_R_10_S_3_Si	2,09	R	UA_M5.3.1_0192	1	2	1	2	1
Danube	Tisa	Osawa	Rika	UA_R_10_S_2_Si	19,94	R	UA_M5.3.1_0193	2	2	1	2	1
Danube	Tisa	Osawa	Rika	UA_R_10_S_1_Si	2,89	R	UA_M5.3.1_0194	1	2	1	2	1
Danube	Tisa	Mala Osava	Rika	UA_R_10_S_2_Si	12,91	R	UA_M5.3.1_0195	1	2	1	2	1
Danube	Tisa	Mala Osava	Rika	UA_R_10_S_1_Si	6,06	R	UA_M5.3.1_0196	1	2	1	2	1
Danube	Tisa	Gashparka	Tisa	UA_R_10_S_2_Si	3,69	R	UA_M5.3.1_0197	1	2	1	2	1
Danube	Tisa	Gashparka	Tisa	UA_R_10_S_1_Si	3,48	R	UA_M5.3.1_0198	3	2	1	3	1
Danube	Tisa	Gashparka	Tisa	HMWB	7,40	HMWB	UA_M5.3.1_0199	2	1	3	3	1
Danube	Tisa	Untitled	Gashparka	AWB	8,11	AWB	UA_M5.3.1_0200	1	2		2	1
Danube	Tisa	Batar	Tisa	UA_R_10_S_3_Si	1,03	R	UA_M5.3.1_0201	1	1	1	1	1
Danube	Tisa	Batar	Tisa	UA_R_11_S_2_Si	4,40	R	UA_M5.3.1_0202	1	1	1	1	1
Danube	Tisa	Batar	Tisa	HMWB	15,79	HMWB	UA_M5.3.1_0203	3	1	3	3	3
Danube	Tisa	Batar	Tisa	HMWB	29,32	HMWB	UA_M5.3.1_0204	3	1	3	3	1
Danube	Tisa	Untitled	Batar	AWB	3,73	AWB	UA_M5.3.1_0205	1	1		1	1
Danube	Tisa	Holt	Batar	UA_R_11_S_2_Si	2,57	R	UA_M5.3.1_0206	1	1	1	1	1
Danube	Tisa	Holt	Batar	UA_R_11_S_1_Si	1,56	R	UA_M5.3.1_0207	1	1	1	1	1
Danube	Tisa	Holt	Batar	AWB	3,70	AWB	UA_M5.3.1_0208	1	1		1	1
Danube	Tisa	Batarch	Batar	HMWB	2,36	HMWB	UA_M5.3.1_0209	1	1	3	3	1
Danube	Tisa	New Batar	Batar	AWB	9,50	AWB	UA_M5.3.1_0210	2	1		2	1
Danube	Tisa	Fireworks	Batar	HMWB	10,48	HMWB	UA_M5.3.1_0211	2	1	3	3	1
Danube	Tisa	Eger	Batar	AWB	5,26	AWB	UA_M5.3.1_0212	1	1		1	1
Danube	Tisa	Untitled	Untitled	AWB	3,03	AWB	UA_M5.3.1_0213	1	1		1	1
Danube	Tisa	Untitled	Batar	AWB	9,34	AWB	UA_M5.3.1_0214	1	1		1	1
Danube	Tisa	Palad	Tour	AWB	4,41	AWB	UA_M5.3.1_0215	1	1		1	1
Danube	Tisa	Tour		AWB	4,80	AWB	UA_M5.3.1_0216	1	1		1	1
Danube	Tisa	Borzhava	Tisa	UA_R_10_S_4_Si	1,39	R	UA_M5.3.1_0217	1	1	1	1	1
Danube	Tisa	Borzhava	Tisa	UA_R_10_S_3_Si	3,57	R	UA_M5.3.1_0218	1	1	1	1	1
Danube	Tisa	Borzhava	Tisa	UA_R_10_S_2_Si	9,30	R	UA_M5.3.1_0219	1	1	1	1	1
Danube	Tisa	Borzhava	Tisa	UA_R_10_M_2_Si	14,80	R	UA_M5.3.1_0220	3	2	1	3	1
Danube	Tisa	Borzhava	Tisa	UA_R_10_M_1_Si	32,76	R	UA_M5.3.1_0221	3	3	1	3	1
Danube	Tisa	Borzhava	Tisa	UA_R_11_M_1_Si	13,97	R	UA_M5.3.1_0222	3	2	1	3	1
Danube	Tisa	Borzhava	Tisa	UA_R_11_L_1_Si	34,51	R	UA_M5.3.1_0223	3	2	1	3	1
Danube	Tisa	Kushnitsa	Borzhava	UA_R_10_S_4_Si	1,07	R	UA_M5.3.1_0224	1	3	1	3	1

Danube	Tisa	Kushnitsa	Borzhava	UA_R_10_S_3_Si	3,13	R	UA_M5.3.1_0225	1	3	1	3	1
Danube	Tisa	Kushnitsa	Borzhava	UA_R_10_S_2_Si	11,33	R	UA_M5.3.1_0226	2	3	1	3	1
Danube	Tisa	Kushnitsa	Borzhava	UA_R_10_M_2_Si	3,40	R	UA_M5.3.1_0227	2	3	1	3	1
Danube	Tisa	Vaskova	Kushnitsa	UA_R_10_S_4_Si	1,35	R	UA_M5.3.1_0228	1	2	1	2	1
Danube	Tisa	Vaskova	Kushnitsa	UA_R_10_S_3_Si	3,13	R	UA_M5.3.1_0229	1	3	1	3	1
Danube	Tisa	Vaskova	Kushnitsa	UA_R_10_S_2_Si	6,27	R	UA_M5.3.1_0230	1	3	1	3	1
Danube	Tisa	Booking	Borzhava	UA_R_10_S_4_Si	1,86	R	UA_M5.3.1_0231	1	3	1	3	1
Danube	Tisa	Booking	Borzhava	UA_R_10_S_3_Si	2,46	R	UA_M5.3.1_0232	1	3	1	3	1
Danube	Tisa	Booking	Borzhava	UA_R_10_S_2_Si	15,75	R	UA_M5.3.1_0233	1	3	1	3	1
Danube	Tisa	Booking	Borzhava	UA_R_10_S_1_Si	0,74	R	UA_M5.3.1_0234	1	3	1	3	1
Danube	Tisa	Untitled	Borzhava	UA_R_10_S_3_Si	0,67	R	UA_M5.3.1_0235	1	3	1	3	1
Danube	Tisa	Untitled	Borzhava	UA_R_10_S_2_Si	5,69	R	UA_M5.3.1_0236	1	3	1	3	1
Danube	Tisa	Untitled	Borzhava	UA_R_10_S_1_Si	4,36	R	UA_M5.3.1_0237	2	3	1	3	1
Danube	Tisa	Bistra	Borzhava	UA_R_10_S_3_Si	2,05	R	UA_M5.3.1_0238	1	3	1	3	1
Danube	Tisa	Bistra	Borzhava	UA_R_10_S_2_Si	6,34	R	UA_M5.3.1_0239	2	3	1	3	1
Danube	Tisa	Bistra	Borzhava	HMWB	4,13	HMWB	UA_M5.3.1_0240	2	3	3	3	1
Danube	Tisa	Untitled	Borzhava	UA_R_10_S_3_Si	0,83	R	UA_M5.3.1_0241	1	3	1	3	1
Danube	Tisa	Untitled	Borzhava	UA_R_10_S_2_Si	5,10	R	UA_M5.3.1_0242	2	3	1	3	1
Danube	Tisa	Untitled	Borzhava	UA_R_10_S_1_Si	5,40	R	UA_M5.3.1_0243	2	3	1	3	1
Danube	Tisa	Berberke	Borzhava	UA_R_10_S_2_Si	1,87	R	UA_M5.3.1_0244	1	3	1	3	1
Danube	Tisa	Berberke	Borzhava	HMWB	9,55	HMWB	UA_M5.3.1_0245	2	3	3	3	1
Danube	Tisa	Bukovets	Berberke	UA_R_10_S_3_Si	2,61	R	UA_M5.3.1_0246	1	3	1	3	1
Danube	Tisa	Bukovets	Berberke	UA_R_10_S_2_Si	5,43	R	UA_M5.3.1_0247	2	3	1	3	1
Danube	Tisa	Bukovets	Berberke	HMWB	8,21	HMWB	UA_M5.3.1_0248	2	3	3	3	1
Danube	Tisa	Irshava	Borzhava	UA_R_10_S_4_Si	2,29	R	UA_M5.3.1_0249	1	3	1	3	1
Danube	Tisa	Irshava	Borzhava	UA_R_10_S_3_Si	8,44	R	UA_M5.3.1_0250	1	3	1	3	1
Danube	Tisa	Irshava	Borzhava	UA_R_10_S_2_Si	14,45	R	UA_M5.3.1_0251	1	3	1	3	1
Danube	Tisa	Irshava	Borzhava	UA_R_10_M_1_Si	12,42	R	UA_M5.3.1_0252	3	3	1	3	3
Danube	Tisa	Irshava	Borzhava	UA_R_11_M_1_Si	12,60	R	UA_M5.3.1_0253	3	3	1	3	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_3_Si	1,81	R	UA_M5.3.1_0254	1	3	1	3	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_2_Si	8,97	R	UA_M5.3.1_0255	1	3	1	3	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_4_Si	0,37	R	UA_M5.3.1_0256	1	1	1	1	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_3_Si	3,51	R	UA_M5.3.1_0257	1	1	1	1	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_2_Si	13,69	R	UA_M5.3.1_0258	1	2	1	2	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_3_Si	2,84	R	UA_M5.3.1_0259	1	3	1	3	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_2_Si	6,78	R	UA_M5.3.1_0260	1	3	1	3	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_1_Si	1,53	R	UA_M5.3.1_0261	1	3	1	3	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_4_Si	0,57	R	UA_M5.3.1_0262	1	3	1	3	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_3_Si	2,73	R	UA_M5.3.1_0263	1	3	1	3	1
Danube	Tisa	Untitled	Irshava	UA_R_10_S_2_Si	6,64	R	UA_M5.3.1_0264	2	3	1	3	1

Danube	Tisa	Untitled	Irshava	UA_R_10_S_1_Si	5,17	R	UA_M5.3.1_0265	2	3	1	3	1
Danube	Tisa	Bruise	Irshava	UA_R_10_S_4_Si	0,77	R	UA_M5.3.1_0266	1	3	1	3	1
Danube	Tisa	Bruise	Irshava	UA_R_10_S_3_Si	3,04	R	UA_M5.3.1_0267	1	3	1	3	1
Danube	Tisa	Bruise	Irshava	UA_R_10_S_2_Si	8,83	R	UA_M5.3.1_0268	3	3	1	3	1
Danube	Tisa	Bruise	Irshava	UA_R_10_S_1_Si	7,63	R	UA_M5.3.1_0269	2	3	1	3	1
Danube	Tisa	Deep	Borzhava	UA_R_11_S_2_Si	0,73	R	UA_M5.3.1_0270	1	1	1	1	1
Danube	Tisa	Deep	Borzhava	HMWB	11,76	HMWB	UA_M5.3.1_0271	2	1	3	3	1
Danube	Tisa	Deep	Borzhava	HMWB	13,43	HMWB	UA_M5.3.1_0272	1	1	3	3	1
Danube	Tisa	Untitled	Deep	UA_R_11_S_2_Si	1,81	R	UA_M5.3.1_0273	1	1	1	1	1
Danube	Tisa	Untitled	Deep	UA_R_11_S_1_Si	7,23	R	UA_M5.3.1_0274	2	1	1	2	1
Danube	Tisa	Untitled	Deep	HMWB	5,22	HMWB	UA_M5.3.1_0276	1	1	3	3	1
Danube	Tisa	Untitled	Untitled	AWB	7,02	AWB	UA_M5.3.1_0277	2	1		2	1
Danube	Tisa	Werke	Serne	UA_R_11_M_1_Si	12,73	R	UA_M5.3.1_0278	3	1	1	3	3
Danube	Tisa	Werke	Serne	UA_R_11_S_1_Si	24,24	R	UA_M5.3.1_0279	3	1	1	3	3
Danube	Tisa	Grandfather's Might	Charonda	AWB	8,15	AWB	UA_M5.3.1_0280	2	1		2	1
Danube	Tisa	Sipa	Charonda	UA_R_11_S_1_Si	14,65	R	UA_M5.3.1_0281	3	1	1	3	3
Danube	Tisa	Bridge	Sipachka	AWB	4,42	AWB	UA_M5.3.1_0282	1	1		1	1
Danube	Tisa	Bridge	Bridge	AWB	4,47	AWB	UA_M5.3.1_0283	1	1		1	1
Danube	Tisa	Kovacs Potok	Sipachka	AWB	10,44	AWB	UA_M5.3.1_0284	1	1		1	1
Danube	Tisa	Kodach	Borzhava	AWB	8,04	AWB	UA_M5.3.1_0285	1	1		1	1
Danube	Tisa	Charonda Tisza	Tisa	UA_R_11_M_1_Si	3,67	R	UA_M5.3.1_0286	1	2	1	2	1
Danube	Tisa	Sipa-Charonda	Tisa	UA_R_11_M_1_Si	16,57	R	UA_M5.3.1_0287	1	2	1	2	1
Danube	Tisa	Untitled	Charonda	UA_R_11_S_1_Si	19,28	R	UA_M5.3.1_0288	2	1	1	2	1
Danube	Tisa	Serne	Charonda	UA_R_11_M_1_Si	25,23	R	UA_M5.3.1_0289	2	1	1	2	1
Danube	Tisa	Kosino-Bovtradsky	Serne	AWB	10,00	AWB	UA_M5.3.1_0290	3	1		3	1
Danube	Tisa	Gat Potok	Serne	AWB	5,67	AWB	UA_M5.3.1_0291	1	1		1	1
Danube	Tisa	Tsertsyno	Koropets	HMWB	16,50	HMWB	UA_M5.3.1_0292	2	1	3	3	1
Danube	Tisa	Charonda-Latorica	Latorytsia	AWB	7,99	AWB	UA_M5.3.1_0293	1	2		2	1
Danube	Tisa	Tsertsyno	Koropets	HMWB	3,20	HMWB	UA_M5.3.1_0294	1	2	3	3	1
Danube	Tisa	Latorytsia	Bodrog	UA_R_10_S_3_Si	9,84	R	UA_M5.3.1_0295	1	1	1	1	1
Danube	Tisa	Latorytsia	Bodrog	UA_R_10_S_2_Si	7,84	R	UA_M5.3.1_0296	3	1	1	3	1
Danube	Tisa	Latorytsia	Bodrog	UA_R_10_M_2_Si	38,17	R	UA_M5.3.1_0297	3	1	1	3	1
Danube	Tisa	Latorytsia	Bodrog	UA_R_10_M_1_Si	3,53	R	UA_M5.3.1_0298	3	1	1	3	1
Danube	Tisa	Latorytsia	Bodrog	UA_R_10_L_1_Si	26,11	R	UA_M5.3.1_0299	3	1	1	3	3
Danube	Tisa	Latorytsia	Bodrog	UA_R_11_L_1_Si	67,25	R	UA_M5.3.1_0300	3	1	1	3	3
Danube	Tisa	Slavka	Latorytsia	UA_R_10_S_3_Si	4,00	R	UA_M5.3.1_0301	1	1	1	1	1
Danube	Tisa	Slavka	Latorytsia	UA_R_10_S_2_Si	6,14	R	UA_M5.3.1_0302	3	1	1	3	3
Danube	Tisa	Zdenyatska	Latorytsia	UA_R_10_S_4_Si	1,08	R	UA_M5.3.1_0303	1	1	1	1	1
Danube	Tisa	Zdenyatska	Latorytsia	UA_R_10_S_3_Si	13,75	R	UA_M5.3.1_0304	1	1	1	1	1
Danube	Tisa	Zdenyatska	Latorytsia	UA_R_10_S_2_Si	4,94	R	UA_M5.3.1_0305	3	1	1	3	1

Danube	Tisa	Zdenyatska	Latorytsia	UA_R_10_M_2_Si	7,39	R	UA_M5.3.1_0306	3	1	1	3	1
Danube	Tisa	Veche	Latorytsia	UA_R_10_S_4_Si	1,05	R	UA_M5.3.1_0307	1	1	1	1	1
Danube	Tisa	Veche	Latorytsia	UA_R_10_S_3_Si	10,09	R	UA_M5.3.1_0308	1	1	1	1	1
Danube	Tisa	Veche	Latorytsia	UA_R_10_S_2_Si	4,09	R	UA_M5.3.1_0309	3	1	1	3	1
Danube	Tisa	Veche	Latorytsia	UA_R_10_M_2_Si	25,20	R	UA_M5.3.1_0310	3	1	1	3	3
Danube	Tisa	Zhdimir	Latorytsia	UA_R_10_S_4_Si	2,40	R	UA_M5.3.1_0311	1	1	1	1	1
Danube	Tisa	Zhdimir	Latorytsia	UA_R_10_S_3_Si	4,22	R	UA_M5.3.1_0312	1	1	1	1	1
Danube	Tisa	Zhdimir	Latorytsia	UA_R_10_S_2_Si	5,46	R	UA_M5.3.1_0313	1	1	1	1	1
Danube	Tisa	Svaliava	Latorytsia	UA_R_10_S_3_Si	1,46	R	UA_M5.3.1_0314	1	1	1	1	1
Danube	Tisa	Svaliava	Latorytsia	UA_R_10_S_2_Si	12,32	R	UA_M5.3.1_0315	2	1	1	2	1
Danube	Tisa	Svaliava	Latorytsia	UA_R_10_M_2_Si	4,72	R	UA_M5.3.1_0316	2	1	1	2	1
Danube	Tisa	Svaliava	Latorytsia	UA_R_10_M_1_Si	1,74	R	UA_M5.3.1_0317	2	1	1	2	1
Danube	Tisa	Dusinka	Svaliava	UA_R_10_S_2_Si	14,57	R	UA_M5.3.1_0318	3	1	1	3	3
Danube	Tisa	Nelipinsky	Svaliava	AWB	2,60	AWB	UA_M5.3.1_0319	3	1		3	1
Danube	Tisa	Foam	Latorytsia	UA_R_10_S_2_Si	13,70	R	UA_M5.3.1_0320	2	1	1	2	1
Danube	Tisa	Foam	Latorytsia	UA_R_10_M_2_Si	8,36	R	UA_M5.3.1_0321	3	1	1	3	3
Danube	Tisa	Foam	Latorytsia	UA_R_10_M_1_Si	2,40	R	UA_M5.3.1_0322	3	1	1	3	3
Danube	Tisa	Great Pina	Foam	UA_R_10_S_4_Si	0,60	R	UA_M5.3.1_0323	1	1	1	1	1
Danube	Tisa	Great Pina	Foam	UA_R_10_S_3_Si	2,72	R	UA_M5.3.1_0324	1	1	1	1	1
Danube	Tisa	Great Pina	Foam	UA_R_10_S_2_Si	9,11	R	UA_M5.3.1_0325	3	1	1	3	3
Danube	Tisa	Mala Pina	Foam	UA_R_10_S_3_Si	1,36	R	UA_M5.3.1_0326	1	1	1	1	1
Danube	Tisa	Mala Pina	Foam	UA_R_10_S_2_Si	9,61	R	UA_M5.3.1_0327	3	1	1	3	3
Danube	Tisa	Bruise	Latorytsia	UA_R_10_S_3_Si	2,87	R	UA_M5.3.1_0328	1	1	1	1	1
Danube	Tisa	Bruise	Latorytsia	UA_R_10_S_2_Si	8,71	R	UA_M5.3.1_0329	3	1	1	3	1
Danube	Tisa	Bruise	Latorytsia	UA_R_10_S_1_Si	2,71	R	UA_M5.3.1_0330	3	1	1	3	1
Danube	Tisa	Dubrovytsia	Latorytsia	UA_R_10_S_3_Si	2,25	R	UA_M5.3.1_0331	1	1	1	1	1
Danube	Tisa	Dubrovytsia	Latorytsia	UA_R_10_S_2_Si	4,49	R	UA_M5.3.1_0332	1	1	1	1	1
Danube	Tisa	Dubrovytsia	Latorytsia	UA_R_10_S_1_Si	4,49	R	UA_M5.3.1_0333	1	1	1	1	1
Danube	Tisa	Lamination	Viznytsia	UA_R_10_S_4_Si	2,83	R	UA_M5.3.1_0334	1	1	1	1	1
Danube	Tisa	Lamination	Viznytsia	UA_R_10_S_3_Si	3,72	R	UA_M5.3.1_0335	1	1	1	1	1
Danube	Tisa	Lamination	Viznytsia	UA_R_10_S_2_Si	5,76	R	UA_M5.3.1_0336	1	1	1	1	1
Danube	Tisa	Quiet	Viznytsia	UA_R_10_S_3_Si	2,77	R	UA_M5.3.1_0337	1	1	1	1	1
Danube	Tisa	Quiet	Viznytsia	UA_R_10_S_2_Si	4,79	R	UA_M5.3.1_0338	1	1	1	1	1
Danube	Tisa	Viznytsia	Latorytsia	UA_R_10_S_2_Si	8,62	R	UA_M5.3.1_0339	1	1	1	1	1
Danube	Tisa	Viznytsia	Latorytsia	UA_R_10_S_1_Si	1,43	R	UA_M5.3.1_0340	3	1	1	3	1
Danube	Tisa	Viznytsia	Latorytsia	UA_R_10_M_1_Si	9,06	R	UA_M5.3.1_0341	3	1	1	3	1
Danube	Tisa	Obama	Viznytsia	UA_R_10_S_4_Si	0,71	R	UA_M5.3.1_0342	3	1	1	3	1
Danube	Tisa	Obama	Viznytsia	UA_R_10_S_3_Si	2,29	R	UA_M5.3.1_0343	1	1	1	1	1
Danube	Tisa	Obama	Viznytsia	UA_R_10_S_2_Si	6,39	R	UA_M5.3.1_0344	1	1	1	1	1
Danube	Tisa	Obama	Viznytsia	HMWB	7,06	HMWB	UA_M5.3.1_0345	2	1	3	3	1

Danube	Tisa	Ureter	Latorytsia	HMWB	16,59	HMWB	UA_M5.3.1_0346	2	1	3	3	1
Danube	Tisa	Urban	Ureter	HMWB	13,92	HMWB	UA_M5.3.1_0347	2	1	3	3	1
Danube	Tisa	High-bank	Latorytsia	AWB	3,55	AWB	UA_M5.3.1_0348	2	1		2	1
Danube	Tisa	K-100	High-bank	AWB	19,93	AWB	UA_M5.3.1_0349	3	1		3	1
Danube	Tisa	Old	Latorytsia	UA_R_10_S_3_Si	1,08	R	UA_M5.3.1_0350	1	2	1	2	1
Danube	Tisa	Old	Latorytsia	UA_R_10_S_2_Si	5,72	R	UA_M5.3.1_0351	2	2	1	2	1
Danube	Tisa	Old	Latorytsia	UA_R_10_S_1_Si	7,29	R	UA_M5.3.1_0352	3	1	1	3	1
Danube	Tisa	Old	Latorytsia	UA_R_11_S_1_Si	2,62	R	UA_M5.3.1_0354	1	1	1	1	1
Danube	Tisa	Old	Latorytsia	UA_R_11_M_1_Si	23,31	R	UA_M5.3.1_0355	2	1	1	2	1
Danube	Tisa	Bistra	Old	UA_R_10_S_3_Si	1,98	R	UA_M5.3.1_0356	1	2	1	2	1
Danube	Tisa	Bistra	Old	UA_R_10_S_2_Si	5,46	R	UA_M5.3.1_0357	1	2	1	2	1
Danube	Tisa	Bistra	Old	UA_R_10_S_1_Si	2,25	R	UA_M5.3.1_0358	1	2	1	2	1
Danube	Tisa	Kuchava	Old	UA_R_10_S_2_Si	4,46	R	UA_M5.3.1_0359	1	1	1	1	1
Danube	Tisa	Kuchava	Old	UA_R_10_S_1_Si	4,83	R	UA_M5.3.1_0360	1	1	1	1	1
Danube	Tisa	Kuchava	Old	HMWB	1,81	HMWB	UA_M5.3.1_0361	3	1	3	3	1
Danube	Tisa	Untitled	Old	UA_R_10_S_2_Si	0,90	R	UA_M5.3.1_0362	1	1	1	1	1
Danube	Tisa	Untitled	Old	UA_R_10_S_1_Si	3,94	R	UA_M5.3.1_0363	1	1	1	1	1
Danube	Tisa	Untitled	Old	HMWB	6,46	HMWB	UA_M5.3.1_0364	1	1	3	3	1
Danube	Tisa	Poluch	Old	UA_R_10_S_3_Si	0,57	R	UA_M5.3.1_0365	1	1	1	1	1
Danube	Tisa	Poluch	Old	UA_R_10_S_2_Si	5,35	R	UA_M5.3.1_0366	2	1	1	2	1
Danube	Tisa	Poluch	Old	UA_R_10_S_1_Si	3,19	R	UA_M5.3.1_0367	2	1	1	2	1
Danube	Tisa	Poluch	Old	HMWB	1,58	HMWB	UA_M5.3.1_0369	1	1	3	3	1
Danube	Tisa	Poluch	Old	HMWB	11,45	HMWB	UA_M5.3.1_0370	3	1	3	3	3
Danube	Tisa	Old	Latorytsia	AWB	8,14	AWB	UA_M5.3.1_0371	1	1		1	1
Danube	Tisa	Yaruga	Latorytsia	UA_R_10_S_2_Si	1,95	R	UA_M5.3.1_0372	1	1	1	1	1
Danube	Tisa	Yaruga	Latorytsia	UA_R_11_S_1_Si	20,39	R	UA_M5.3.1_0373	3	1	1	3	3
Danube	Tisa	Vela	Old	UA_R_10_S_3_Si	3,07	R	UA_M5.3.1_0374	1	2	1	2	1
Danube	Tisa	Vela	Old	UA_R_10_S_2_Si	8,96	R	UA_M5.3.1_0375	3	2	1	3	1
Danube	Tisa	Vela	Old	UA_R_10_S_1_Si	4,75	R	UA_M5.3.1_0376	1	2	1	2	1
Danube	Tisa	Vela	Old	HMWB	8,83	HMWB	UA_M5.3.1_0377	2	2	3	3	1
Danube	Tisa	Untitled	Vela	AWB	2,65	AWB	UA_M5.3.1_0378	1	2		2	1
Danube	Tisa	Kamarochi	Latorytsia	AWB	9,60	AWB	UA_M5.3.1_0378	1	2		2	1
Danube	Tisa	Tsyganivka	Old	UA_R_10_S_3_Si	1,45	R	UA_M5.3.1_0379	1	2	1	2	1
Danube	Tisa	Tsyganivka	Old	UA_R_10_S_2_Si	7,03	R	UA_M5.3.1_0380	1	2	1	2	1
Danube	Tisa	Tsyganivka	Old	UA_R_10_S_1_Si	4,75	R	UA_M5.3.1_0381	1	2	1	2	1
Danube	Tisa	Tsyganivka	Old	HMWB	12,20	HMWB	UA_M5.3.1_0382	3	1	3	3	1
Danube	Tisa	Untitled	Untitled	AWB	1,95	AWB	UA_M5.3.1_0383	1	2		2	1
Danube	Tisa	Untitled	Untitled	AWB	3,92	AWB	UA_M5.3.1_0384	1	2		2	1
Danube	Tisa	Solotvynskyi	Old	UA_R_10_S_3_Si	0,76	R	UA_M5.3.1_0385	1	2	1	2	1
Danube	Tisa	Solotvynskyi	Old	UA_R_10_S_2_Si	4,47	R	UA_M5.3.1_0386	1	2	1	2	1

Danube	Tisa	Solotvynskyi	Old	UA_R_10_S_1_Si	5,92	R	UA_M5.3.1_0387	2	2	1	2	1
Danube	Tisa	Solotvynskyi	Old	HMWB	10,66	HMWB	UA_M5.3.1_0388	3	1	3	3	1
Danube	Tisa	Deep	Tsyganivka	UA_R_10_S_2_Si	3,18	R	UA_M5.3.1_0389	2	2	1	2	1
Danube	Tisa	Deep	Tsyganivka	UA_R_10_S_1_Si	1,87	R	UA_M5.3.1_0390	1	2	1	2	1
Danube	Tisa	Deep	Tsyganivka	UA_R_11_S_1_Si	8,25	R	UA_M5.3.1_0391	1	2	1	2	1
Danube	Tisa	Untitled	Untitled	AWB	1,18	AWB	UA_M5.3.1_0392	1	2		2	1
Danube	Tisa	Tova	Latorytsia	UA_R_11_S_1_Si	12,37	R	UA_M5.3.1_0393	3	2	1	3	3
Danube	Tisa	Koropets	Latorytsia	HMWB	5,30	HMWB	UA_M5.3.1_0394	1	1	3	3	1
Danube	Tisa	Koropets	Latorytsia	UA_R_11_S_1_Si	21,66	R	UA_M5.3.1_0395	3	1	1	3	3
Danube	Tisa	Koropets	Latorytsia	UA_R_11_M_1_Si	47,13	R	UA_M5.3.1_0396	3	1	1	3	3
Danube	Tisa	Black Water	Koropets	HMWB	2,83	HMWB	UA_M5.3.1_0397	1	1	3	3	1
Danube	Tisa	Black Water	Koropets	HMWB	12,54	HMWB	UA_M5.3.1_0398	2	1	3	3	1
Danube	Tisa	Dragonfly	Black Water	UA_R_10_S_2_Si	1,03	R	UA_M5.3.1_0399	1	1	1	1	1
Danube	Tisa	Dragonfly	Black Water	UA_R_10_S_1_Si	4,70	R	UA_M5.3.1_0400	1	1	1	1	1
Danube	Tisa	Dragonfly	Black Water	HMWB	9,32	HMWB	UA_M5.3.1_0401	1	1	3	3	1
Danube	Tisa	Slopes	Dragonfly	UA_R_10_S_2_Si	4,51	R	UA_M5.3.1_0402	1	2	1	2	1
Danube	Tisa	Slopes	Dragonfly	UA_R_10_S_1_Si	5,71	R	UA_M5.3.1_0403	1	1	1	1	1
Danube	Tisa	Slopes	Dragonfly	HMWB	0,68	HMWB	UA_M5.3.1_0404	1	1	3	3	1
Danube	Tisa	Slopes	Dragonfly	HMWB	2,71	HMWB	UA_M5.3.1_0406	1	1	3	3	1
Danube	Tisa	Mochila	Black Water	UA_R_10_S_2_Si	0,91	R	UA_M5.3.1_0407	1	1	1	1	1
Danube	Tisa	Mochila	Black Water	UA_R_10_S_1_Si	3,27	R	UA_M5.3.1_0408	1	1	1	1	1
Danube	Tisa	Mochila	Black Water	UA_R_11_S_1_Si	2,47	R	UA_M5.3.1_0409	1	1	1	1	1
Danube	Tisa	Mochila	Black Water	HMWB	4,30	HMWB	UA_M5.3.1_0411	1	1	3	3	1
Danube	Tisa	Untitled	Black Water	UA_R_11_S_1_Si	7,13	R	UA_M5.3.1_0412	1	3	1	3	1
Danube	Tisa	Untitled	Black Water	HMWB	2,94	HMWB	UA_M5.3.1_0414	1	2	3	3	1
Danube	Tisa	Novel	Black Water	UA_R_10_S_2_Si	1,05	R	UA_M5.3.1_0415	1	1	1	1	1
Danube	Tisa	Novel	Black Water	UA_R_11_S_1_Si	5,48	R	UA_M5.3.1_0416	1	2	1	2	1
Danube	Tisa	Novel	Black Water	HMWB	10,15	HMWB	UA_M5.3.1_0418	1	2	3	3	1
Danube	Tisa	Novel	Black Water	HMWB	8,02	HMWB	UA_M5.3.1_0419	1	1	3	3	1
Danube	Tisa	Sholen	Novel	UA_R_10_S_2_Si	1,13	R	UA_M5.3.1_0420	1	1	1	1	1
Danube	Tisa	Sholen	Novel	UA_R_10_S_1_Si	3,24	R	UA_M5.3.1_0421	1	1	1	1	1
Danube	Tisa	Sholen	Novel	UA_R_11_S_1_Si	6,16	R	UA_M5.3.1_0422	1	2	1	2	1
Danube	Tisa	Kidosh	Black Water	AWB	10,50	AWB	UA_M5.3.1_0423	1	1		1	1
Danube	Tisa	K-300	High-bank	AWB	7,61	AWB	UA_M5.3.1_0424	3	1		3	1
Danube	Tisa	Untitled (Valea)	Ruk. Untitled	HMWB	23,25	HMWB	UA_M5.3.1_0425	3	2	3	3	3
Danube	Tisa	Ruk. Untitled	Latorytsia	UA_R_11_L_1_Si	5,89	R	UA_M5.3.1_0426	1	2	1	2	1
Danube	Tisa	Uzh	Latorytsia	UA_R_10_S_4_Si	0,34	R	UA_M5.3.1_0427	1	1	1	1	1
Danube	Tisa	Uzh	Latorytsia	UA_R_10_S_3_Si	8,66	R	UA_M5.3.1_0428	1	1	1	1	1
Danube	Tisa	Uzh	Latorytsia	UA_R_10_S_2_Si	2,35	R	UA_M5.3.1_0429	1	1	1	1	1
Danube	Tisa	Uzh	Latorytsia	UA_R_10_M_2_Si	41,43	R	UA_M5.3.1_0430	3	1	1	3	3

Danube	Tisa	Uzh	Latorytsia	UA_R_10_M_1_Si	14,75	R	UA_M5.3.1_0431	3	1	1	3	3
Danube	Tisa	Uzh	Latorytsia	UA_R_10_L_1_Si	29,02	R	UA_M5.3.1_0432	3	1	1	3	3
Danube	Tisa	Uzh	Latorytsia	UA_R_11_L_1_Si	18,40	R	UA_M5.3.1_0433	3	2	1	3	3
Danube	Tisa	Gusny	Ug (left)	UA_R_10_S_4_Si	1,12	R	UA_M5.3.1_0434	1	1	1	1	1
Danube	Tisa	Gusny	Ug (left)	UA_R_10_S_3_Si	9,23	R	UA_M5.3.1_0435	1	1	1	1	1
Danube	Tisa	Gusny	Ug (left)	UA_R_10_S_2_Si	3,10	R	UA_M5.3.1_0436	1	1	1	1	1
Danube	Tisa	Ug (right)	Uzh	UA_R_10_S_4_Si	0,46	R	UA_M5.3.1_0437	1	1	1	1	1
Danube	Tisa	Ug (right)	Uzh	UA_R_10_S_3_Si	3,80	R	UA_M5.3.1_0438	1	1	1	1	1
Danube	Tisa	Ug (right)	Uzh	UA_R_10_S_2_Si	9,51	R	UA_M5.3.1_0439	1	1	1	1	1
Danube	Tisa	Ulichka	Uzh	UA_R_10_M_2_Si	4,18	R	UA_M5.3.1_0440	1	1	1	1	1
Danube	Tisa	Ubl'a	Uzh	UA_R_10_M_1_Si	6,47	R	UA_M5.3.1_0441	1	1	1	1	1
Danube	Tisa	Kamenica	Uzh	UA_R_10_S_3_Si	1,50	R	UA_M5.3.1_0442	1	1	1	1	1
Danube	Tisa	Kamenica	Uzh	UA_R_10_S_2_Si	7,98	R	UA_M5.3.1_0443	1	1	1	1	1
Danube	Tisa	Kamenica	Uzh	UA_R_10_S_1_Si	1,33	R	UA_M5.3.1_0444	1	1	1	1	1
Danube	Tisa	Big	Uzh	UA_R_10_S_3_Si	0,91	R	UA_M5.3.1_0445	1	1	1	1	1
Danube	Tisa	Big	Uzh	UA_R_10_S_2_Si	9,58	R	UA_M5.3.1_0446	1	1	1	1	1
Danube	Tisa	Big	Uzh	UA_R_10_S_1_Si	2,65	R	UA_M5.3.1_0447	1	1	1	1	1
Danube	Tisa	Luta	Uzh	UA_R_10_S_4_Si	1,47	R	UA_M5.3.1_0448	1	1	1	1	1
Danube	Tisa	Luta	Uzh	UA_R_10_S_3_Si	12,45	R	UA_M5.3.1_0449	1	1	1	1	1
Danube	Tisa	Luta	Uzh	UA_R_10_S_2_Si	4,66	R	UA_M5.3.1_0450	3	1	1	3	1
Danube	Tisa	Luta	Uzh	UA_R_10_M_2_Si	24,33	R	UA_M5.3.1_0451	1	1	1	1	1
Danube	Tisa	Luta	Uzh	UA_R_10_M_1_Si	6,04	R	UA_M5.3.1_0452	1	1	1	1	1
Danube	Tisa	Bachava	Luta	UA_R_10_S_4_Si	0,26	R	UA_M5.3.1_0453	1	1	1	1	1
Danube	Tisa	Bachava	Luta	UA_R_10_S_3_Si	2,08	R	UA_M5.3.1_0454	1	1	1	1	1
Danube	Tisa	Bachava	Luta	UA_R_10_S_2_Si	8,04	R	UA_M5.3.1_0455	1	1	1	1	1
Danube	Tisa	Turya	Uzh	UA_R_10_S_3_Si	2,67	R	UA_M5.3.1_0456	1	1	1	1	1
Danube	Tisa	Turya	Uzh	UA_R_10_S_2_Si	6,57	R	UA_M5.3.1_0457	1	1	1	1	1
Danube	Tisa	Turya	Uzh	UA_R_10_M_2_Si	11,49	R	UA_M5.3.1_0458	3	1	1	3	1
Danube	Tisa	Turya	Uzh	UA_R_10_M_1_Si	15,25	R	UA_M5.3.1_0459	2	1	1	2	1
Danube	Tisa	Hiss	Turya	UA_R_10_S_4_Si	4,10	R	UA_M5.3.1_0460	1	1	1	1	1
Danube	Tisa	Hiss	Turia	UA_R_10_S_3_Si	5,65	R	UA_M5.3.1_0461	1	1	1	1	1
Danube	Tisa	Hiss	Turya	UA_R_10_S_2_Si	8,13	R	UA_M5.3.1_0462	1	1	1	1	1
Danube	Tisa	Hiss	Turia	UA_R_10_M_2_Si	3,03	R	UA_M5.3.1_0463	1	1	1	1	1
Danube	Tisa	Zvor	Hiss	UA_R_10_S_4_Si	2,95	R	UA_M5.3.1_0464	1	1	1	1	1
Danube	Tisa	Zvor	Hiss	UA_R_10_S_3_Si	3,48	R	UA_M5.3.1_0465	1	1	1	1	1
Danube	Tisa	Zvor	Hiss	UA_R_10_S_2_Si	7,77	R	UA_M5.3.1_0466	1	1	1	1	1
Danube	Tisa	Turitsa	Turia	UA_R_10_S_4_Si	1,57	R	UA_M5.3.1_0467	1	1	1	1	1
Danube	Tisa	Turitsa	Turya	UA_R_10_S_3_Si	4,32	R	UA_M5.3.1_0468	1	1	1	1	1
Danube	Tisa	Turitsa	Turia	UA_R_10_S_2_Si	14,23	R	UA_M5.3.1_0469	3	1	1	3	1
Danube	Tisa	Turitsa	Turya	UA_R_10_S_1_Si	3,35	R	UA_M5.3.1_0470	1	1	1	1	1

Danube	Tisa	Sevens	Turya	UA_R_10_S_2_Si	5,38	R	UA_M5.3.1_0471	1	1	1	1	1
Danube	Tisa	Sevens	Turya	UA_R_10_S_1_Si	6,98	R	UA_M5.3.1_0472	1	1	1	1	1
Danube	Tisa	Syryi Potik	Uzh	UA_R_10_S_3_Si	3,04	R	UA_M5.3.1_0473	1	2	1	2	1
Danube	Tisa	Syryi Potik	Uzh	UA_R_10_S_2_Si	7,08	R	UA_M5.3.1_0474	1	2	1	2	1
Danube	Tisa	Syryi Potik	Uzh	UA_R_10_S_1_Si	2,53	R	UA_M5.3.1_0475	1	2	1	2	1
Danube	Tisa	Derivation channel of the HPP cascade	Uzh	HMWB	7,28	HMWB	UA_M5.3.1_0476	1	2	3	3	1
Danube	Tisa	Derivation channel of the HPP cascade	Uzh	HMWB	3,16	HMWB	UA_M5.3.1_0477	2	2	3	3	1
Danube	Tisa	Untitled	Uzh	UA_R_10_S_3_Si	1,55	R	UA_M5.3.1_0478	1	2	1	2	1
Danube	Tisa	Untitled	Uzh	UA_R_10_S_2_Si	5,40	R	UA_M5.3.1_0479	1	2	1	2	1
Danube	Tisa	Untitled	Uzh	UA_R_10_S_1_Si	3,39	R	UA_M5.3.1_0480	1	2	1	2	1
Danube	Prunus	Prunus	Danube	UA_R_10_S_4_Si	14,89	R	UA_M5.3.2_0001	2	1	1	2	2
Danube	Prunus	Prunus	Danube	UA_R_10_M_4_Si	3,24	R	UA_M5.3.2_0002	1	1	1	1	1
Danube	Prunus	Prunus	Danube	UA_R_10_M_3_Si	39,09	R	UA_M5.3.2_0003	1	1	1	1	1
Danube	Prunus	Prunus	Danube	UA_R_10_M_2_Si	20,53	R	UA_M5.3.2_0004	2	3	1	3	2
Danube	Prunus	Prunus	Danube	UA_R_16_M_2_Si	20,09	R	UA_M5.3.2_0005	1	3	1	3	1
Danube	Prunus	Prunus	Danube	UA_R_16_L_2_Si	60,30	R	UA_M5.3.2_0006	1	1	1	1	1
Danube	Prunus	Prunus	Danube	UA_R_16_L_1_Si	119,73	R	UA_M5.3.2_0007	3	1	1	3	3
Danube	Prunus	Pikes	Prunus	UA_R_10_S_4_Si	6,63	R	UA_M5.3.2_0008	1	1	1	1	1
Danube	Prunus	Pikes	Prunus	UA_R_10_S_3_Si	5,72	R	UA_M5.3.2_0009	2	1	1	2	2
Danube	Prunus	Prutets-Yablonitsky	Prunus	UA_R_10_S_4_Si	8,34	R	UA_M5.3.2_0010	2	1	1	2	2
Danube	Prunus	Prutets-Yablonitsky	Prunus	UA_R_10_S_3_Si	6,41	R	UA_M5.3.2_0011	1	1	1	1	1
Danube	Prunus	Prutets-Yablonitsky	Prunus	UA_R_10_M_3_Si	2,83	R	UA_M5.3.2_0012	1	1	1	1	1
Danube	Prunus	Prutets-Cheme-govsky	Prunus	UA_R_10_S_4_Si	7,37	R	UA_M5.3.2_0013	1	1	1	1	1
Danube	Prunus	Prutets-Cheme-govsky	Prunus	UA_R_10_S_3_Si	12,01	R	UA_M5.3.2_0014	1	1	1	1	1
Danube	Prunus	Prutets-Cheme-govsky	Prunus	UA_R_10_M_3_Si	3,55	R	UA_M5.3.2_0015	1	1	1	1	1
Danube	Prunus	Interchange	Prunus	UA_R_10_S_4_Si	2,43	R	UA_M5.3.2_0016	1	1	1	1	1
Danube	Prunus	Interchange	Prunus	UA_R_10_S_3_Si	11,43	R	UA_M5.3.2_0017	2	3	1	3	2
Danube	Prunus	Interchange	Prunus	UA_R_10_S_2_Si	3,67	R	UA_M5.3.2_0018	1	3	1	3	1
Danube	Prunus	Lubizhna	Prunus	UA_R_10_S_4_Si	0,83	R	UA_M5.3.2_0019	1	3	1	3	1
Danube	Prunus	Lubizhna	Prunus	UA_R_10_S_3_Si	10,22	R	UA_M5.3.2_0020	1	3	1	3	1
Danube	Prunus	Lubizhna	Prunus	UA_R_10_S_2_Si	10,42	R	UA_M5.3.2_0021	1	3	1	3	1
Danube	Prunus	Oslava	Prunus	UA_R_10_S_3_Si	2,71	R	UA_M5.3.2_0022	1	3	1	3	1
Danube	Prunus	Oslava	Prunus	UA_R_10_S_2_Si	13,86	R	UA_M5.3.2_0023	1	3	1	3	1
Danube	Prunus	White Oslava	Oslava	UA_R_10_S_4_Si	0,56	R	UA_M5.3.2_0024	1	3	1	3	1

Danube	Prunus	White Oslava	Oslava	UA_R_10_S_3_Si	7,84	R	UA_M5.3.2_0025	1	3	1	3	1
Danube	Prunus	White Oslava	Oslava	UA_R_10_S_2_Si	3,77	R	UA_M5.3.2_0026	1	3	1	3	1
Danube	Prunus	Red	Prunus	UA_R_10_S_3_Si	1,33	R	UA_M5.3.2_0027	1	3	1	3	1
Danube	Prunus	Red	Prunus	UA_R_16_S_3_Si	1,13	R	UA_M5.3.2_0028	1	3	1	3	1
Danube	Prunus	Red	Prunus	UA_R_16_S_2_Si	16,46	R	UA_M5.3.2_0029	1	3	1	3	1
Danube	Prunus	Tovmachik	Prunus	UA_R_16_S_2_Si	28,70	R	UA_M5.3.2_0030	1	3	1	3	1
Danube	Prunus	Tovmach	Tovmachik	UA_R_16_S_2_Si	12,84	R	UA_M5.3.2_0031	1	3	1	3	1
Danube	Prunus	Shibenka-Velyka	Prunus	UA_R_16_S_2_Si	13,26	R	UA_M5.3.2_0032	1	1	1	1	1
Danube	Prunus	Kolomyika	Prunus	UA_R_16_S_2_Si	21,64	R	UA_M5.3.2_0033	1	1	1	1	1
Danube	Prunus	Pistachio	Prunus	UA_R_10_S_4_Si	2,73	R	UA_M5.3.2_0034	1	2	1	2	1
Danube	Prunus	Pistachio	Prunus	UA_R_10_S_3_Si	15,20	R	UA_M5.3.2_0035	1	3	1	3	1
Danube	Prunus	Pistachio	Prunus	UA_R_10_M_3_Si	1,62	R	UA_M5.3.2_0036	1	3	1	3	1
Danube	Prunus	Pistachio	Prunus	UA_R_10_M_2_Si	16,81	R	UA_M5.3.2_0037	1	3	1	3	1
Danube	Prunus	Pistachio	Prunus	UA_R_16_M_2_Si	25,57	R	UA_M5.3.2_0038	1	2	1	2	1
Danube	Prunus	Brusturka	Pistachio	UA_R_10_S_4_Si	2,57	R	UA_M5.3.2_0039	1	3	1	3	1
Danube	Prunus	Brusturka	Pistachio	UA_R_10_S_3_Si	14,01	R	UA_M5.3.2_0040	1	3	1	3	1
Danube	Prunus	Hatch	Pistachio	UA_R_10_S_3_Si	4,53	R	UA_M5.3.2_0041	1	3	1	3	1
Danube	Prunus	Hatch	Pistachio	UA_R_10_S_2_Si	11,36	R	UA_M5.3.2_0042	1	3	1	3	1
Danube	Prunus	Hatch	Pistachio	UA_R_10_M_2_Si	10,54	R	UA_M5.3.2_0043	3	3	1	3	3
Danube	Prunus	Hatch	Pistachio	UA_R_16_M_2_Si	20,03	R	UA_M5.3.2_0044	1	2	1	2	1
Danube	Prunus	Acreage.	Hatch	UA_R_10_S_4_Si	0,63	R	UA_M5.3.2_0045	1	3	1	3	1
Danube	Prunus	Acreage.	Hatch	UA_R_10_S_3_Si	4,31	R	UA_M5.3.2_0046	1	3	1	3	1
Danube	Prunus	Acreage.	Hatch	UA_R_10_S_2_Si	7,55	R	UA_M5.3.2_0047	1	3	1	3	1
Danube	Prunus	Sopivka	Hatch	UA_R_10_S_3_Si	1,03	R	UA_M5.3.2_0048	1	1	1	1	1
Danube	Prunus	Sopivka	Hatch	UA_R_10_S_2_Si	7,30	R	UA_M5.3.2_0049	1	1	1	1	1
Danube	Prunus	Sopivka	Hatch	UA_R_16_S_2_Si	9,78	R	UA_M5.3.2_0050	1	1	1	1	1
Danube	Prunus	Sopivka	Hatch	UA_R_10_M_2_Si	9,20	R	UA_M5.3.2_0051	1	1	1	1	1
Danube	Prunus	Keys	Sopivka	UA_R_10_S_3_Si	0,47	R	UA_M5.3.2_0052	1	1	1	1	1
Danube	Prunus	Keys	Sopivka	UA_R_10_S_2_Si	0,35	R	UA_M5.3.2_0053	1	1	1	1	1
Danube	Prunus	Keys	Sopivka	UA_R_16_S_2_Si	13,54	R	UA_M5.3.2_0054	1	1	1	1	1
Danube	Prunus	Mlynivka (Kolomy-ika)	Prunus	UA_R_16_S_2_Si	29,04	R	UA_M5.3.2_0055	3	1	1	3	3
Danube	Prunus	Dubrovodka	Prunus	UA_R_16_S_2_Si	40,11	R	UA_M5.3.2_0056	2	1	1	2	2
Danube	Prunus	Kosachivka	Dubrovodka	HMWB	9,81	HMWB	UA_M5.3.2_0057	3	1	3	3	3
Danube	Prunus	Verkhovets	Prunus	UA_R_16_S_2_Si	16,29	R	UA_M5.3.2_0058	1	1	1	1	1
Danube	Prunus	Berezovka	Prunus	UA_R_16_S_2_Si	17,82	R	UA_M5.3.2_0059	1	1	1	1	1
Danube	Prunus	Tsutsulin	Prunus	UA_R_16_S_2_Si	13,35	R	UA_M5.3.2_0060	1	2	1	2	1
Danube	Prunus	Rudka	Prunus	HMWB	23,25	HMWB	UA_M5.3.2_0061	2	1	3	3	2
Danube	Prunus	Tarnowiec	Prunus	UA_R_16_S_2_Si	15,73	R	UA_M5.3.2_0062	1	1	1	1	1

Danube	Prunus	Turk	Prunus	UA_R_16_S_2_Si	33,60	R	UA_M5.3.2_0063	2	1	1	2	2
Danube	Prunus	Turk	Prunus	UA_R_16_M_2_Si	15,59	R	UA_M5.3.2_0064	1	1	1	1	1
Danube	Prunus	Fishery	Prunus	UA_R_10_S_3_Si	11,28	R	UA_M5.3.2_0065	1	2	1	2	1
Danube	Prunus	Fishery	Prunus	UA_R_10_S_2_Si	3,98	R	UA_M5.3.2_0066	1	3	1	3	1
Danube	Prunus	Fishery	Prunus	UA_R_10_M_2_Si	9,20	R	UA_M5.3.2_0067	1	3	1	3	1
Danube	Prunus	Fishery	Prunus	UA_R_16_M_2_Si	36,06	R	UA_M5.3.2_0068	3	3	1	3	3
Danube	Prunus	River	Fishery	UA_R_10_S_4_Si	3,16	R	UA_M5.3.2_0069	1	3	1	3	1
Danube	Prunus	River	Fishery	UA_R_10_S_3_Si	15,44	R	UA_M5.3.2_0070	1	3	1	3	1
Danube	Prunus	River	Fishery	UA_R_10_S_2_Si	2,46	R	UA_M5.3.2_0071	1	3	1	3	1
Danube	Prunus	Tarnowiec	Fishery	UA_R_16_S_2_Si	16,21	R	UA_M5.3.2_0072	1	3	1	3	1
Danube	Prunus	Mill	Fishery	UA_R_16_S_2_Si	11,77	R	UA_M5.3.2_0073	1	3	1	3	1
Danube	Prunus	Khimichin	Fishery	UA_R_16_S_2_Si	20,71	R	UA_M5.3.2_0074	1	3	1	3	1
Danube	Prunus	Black-haired	Prunus	UA_R_16_S_2_Si	28,97	R	UA_M5.3.2_0075	1	1	1	1	1
Danube	Prunus	Black-haired	Prunus	UA_R_16_M_2_Si	48,56	R	UA_M5.3.2_0076	2	1	1	2	2
Danube	Prunus	Pear	Black-haired	UA_R_16_S_2_Si	11,80	R	UA_M5.3.2_0077	1	1	1	1	1
Danube	Prunus	Orelets	Prunus	UA_R_16_S_2_Si	16,92	R	UA_M5.3.2_0078	1	1	1	1	1
Danube	Prunus	Beleluia	Prunus	HMWB	10,48	HMWB	UA_M5.3.2_0079	1	1	3	3	1
Danube	Prunus	Beleluia	Prunus	UA_R_16_M_2_Si	19,84	R	UA_M5.3.2_0080	1	1	1	1	1
Danube	Prunus	Stream	Prunus	UA_R_16_S_2_Si	13,60	R	UA_M5.3.2_0081	1	1	1	1	1
Danube	Prunus	Stream	Prunus	HMWB	0,74	HMWB	UA_M5.3.2_0082	1	1	3	3	1
Danube	Prunus	Cheremosh	Prunus	UA_R_10_L_2_Si	34,59	R	UA_M5.3.2_0083	1	1	1	1	1
Danube	Prunus	Cheremosh	Prunus	UA_R_16_L_2_Si	42,99	R	UA_M5.3.2_0084	1	2	1	2	1
Danube	Prunus	Cheremosh	Prunus	UA_R_16_L_1_Si	6,80	R	UA_M5.3.2_0085	1	1	1	1	1
Danube	Prunus	Black Cheremosh	Cheremosh	UA_R_10_S_4_Si	25,57	R	UA_M5.3.2_0086	1	1	1	1	1
Danube	Prunus	Black Cheremosh	Cheremosh	UA_R_10_M_4_Si	21,77	R	UA_M5.3.2_0087	1	1	1	1	1
Danube	Prunus	Black Cheremosh	Cheremosh	UA_R_10_M_3_Si	48,74	R	UA_M5.3.2_0088	2	1	1	2	2
Danube	Prunus	Gallows	Black Cheremosh	UA_R_10_S_4_Si	12,19	R	UA_M5.3.2_0089	1	1	1	1	1
Danube	Prunus	Armour	Black Cheremosh	UA_R_10_S_4_Si	9,58	R	UA_M5.3.2_0090	1	1	1	1	1
Danube	Prunus	Armour	Black Cheremosh	UA_R_10_S_3_Si	3,43	R	UA_M5.3.2_0091	1	1	1	1	1
Danube	Prunus	Bystrets	Black Cheremosh	UA_R_10_S_4_Si	10,45	R	UA_M5.3.2_0092	1	1	1	1	1
Danube	Prunus	Bystrets	Black Cheremosh	UA_R_10_S_3_Si	4,81	R	UA_M5.3.2_0093	1	1	1	1	1
Danube	Prunus	Iltsi	Black Cheremosh	UA_R_10_S_4_Si	9,23	R	UA_M5.3.2_0094	1	1	1	1	1
Danube	Prunus	Iltsi	Black Cheremosh	UA_R_10_S_3_Si	9,50	R	UA_M5.3.2_0095	1	1	1	1	1
Danube	Prunus	Iltsi	Black Cheremosh	UA_R_10_M_3_Si	2,33	R	UA_M5.3.2_0096	1	1	1	1	1
Danube	Prunus	Berezhnitsa	Black Cheremosh	UA_R_10_S_4_Si	4,40	R	UA_M5.3.2_0097	1	1	1	1	1
Danube	Prunus	Berezhnitsa	Black Cheremosh	UA_R_10_S_3_Si	7,60	R	UA_M5.3.2_0098	1	1	1	1	1
Danube	Prunus	River	Black Cheremosh	UA_R_10_S_3_Si	5,94	R	UA_M5.3.2_0099	1	1	1	1	1
Danube	Prunus	Chorna Rika	River	UA_R_10_S_4_Si	2,18	R	UA_M5.3.2_0100	1	1	1	1	1

Danube	Prunus	Chorna Rika	River	UA_R_10_S_3_Si	9,77	R	UA_M5.3.2_0101	1	1	1	1	1
Danube	Prunus	White River	River	UA_R_10_S_4_Si	3,98	R	UA_M5.3.2_0102	1	1	1	1	1
Danube	Prunus	White River	River	UA_R_10_S_3_Si	7,48	R	UA_M5.3.2_0103	1	1	1	1	1
Danube	Prunus	White Cheremosh	Cheremosh	UA_R_10_M_4_Si	15,53	R	UA_M5.3.2_0104	1	1	1	1	1
Danube	Prunus	White Cheremosh	Cheremosh	UA_R_10_M_3_Si	38,11	R	UA_M5.3.2_0105	1	1	1	1	1
Danube	Prunus	Parkalab	White Cheremosh	UA_R_10_S_4_Si	10,71	R	UA_M5.3.2_0106	1	1	1	1	1
Danube	Prunus	Sarata	White Cheremosh	UA_R_10_S_4_Si	14,32	R	UA_M5.3.2_0107	1	1	1	1	1
Danube	Prunus	Beef	White Cheremosh	UA_R_10_S_4_Si	20,25	R	UA_M5.3.2_0108	1	1	1	1	1
Danube	Prunus	Burdock	White Cheremosh	UA_R_10_S_4_Si	10,73	R	UA_M5.3.2_0109	1	1	1	1	1
Danube	Prunus	Burdock	White Cheremosh	UA_R_10_S_3_Si	2,12	R	UA_M5.3.2_0110	1	1	1	1	1
Danube	Prunus	Breakdown	White Cheremosh	UA_R_10_S_4_Si	10,13	R	UA_M5.3.2_0111	1	1	1	1	1
Danube	Prunus	Breakdown	White Cheremosh	UA_R_10_S_3_Si	3,25	R	UA_M5.3.2_0112	1	1	1	1	1
Danube	Prunus	Breakdown	White Cheremosh	UA_R_10_M_3_Si	7,22	R	UA_M5.3.2_0113	1	1	1	1	1
Danube	Prunus	The literate Great	Breakdown	UA_R_10_S_4_Si	13,66	R	UA_M5.3.2_0114	1	1	1	1	1
Danube	Prunus	The literate Great	Breakdown	UA_R_10_S_3_Si	1,85	R	UA_M5.3.2_0115	1	1	1	1	1
Danube	Prunus	Kekacha	White Cheremosh	UA_R_10_S_4_Si	6,81	R	UA_M5.3.2_0116	1	1	1	1	1
Danube	Prunus	Kekacha	White Cheremosh	UA_R_10_S_3_Si	5,11	R	UA_M5.3.2_0117	1	1	1	1	1
Danube	Prunus	Putila	Cheremosh	UA_R_10_S_4_Si	8,59	R	UA_M5.3.2_0118	1	1	1	1	1
Danube	Prunus	Putila	Cheremosh	UA_R_10_S_3_Si	7,91	R	UA_M5.3.2_0119	1	1	1	1	1
Danube	Prunus	Putila	Cheremosh	UA_R_10_M_3_Si	26,87	R	UA_M5.3.2_0120	1	1	1	1	1
Danube	Prunus	Putila	Cheremosh	UA_R_10_M_2_Si	3,43	R	UA_M5.3.2_0121	1	1	1	1	1
Danube	Prunus	Foschke	Putila	UA_R_10_S_4_Si	2,72	R	UA_M5.3.2_0122	1	1	1	1	1
Danube	Prunus	Foschke	Putila	UA_R_10_S_3_Si	5,93	R	UA_M5.3.2_0123	1	1	1	1	1
Danube	Prunus	June	Putila	UA_R_10_S_4_Si	4,99	R	UA_M5.3.2_0124	1	1	1	1	1
Danube	Prunus	June	Putila	UA_R_10_S_3_Si	6,81	R	UA_M5.3.2_0125	1	1	1	1	1
Danube	Prunus	Porculin	Putila	UA_R_10_S_4_Si	3,45	R	UA_M5.3.2_0126	1	1	1	1	1
Danube	Prunus	Porculin	Putila	UA_R_10_S_3_Si	6,73	R	UA_M5.3.2_0127	1	1	1	1	1
Danube	Prunus	Party	Putila	UA_R_10_S_4_Si	4,78	R	UA_M5.3.2_0128	1	1	1	1	1
Danube	Prunus	Party	Putila	UA_R_10_S_3_Si	7,87	R	UA_M5.3.2_0129	1	1	1	1	1
Danube	Prunus	Dugenets	Putila	UA_R_10_S_4_Si	4,06	R	UA_M5.3.2_0130	1	1	1	1	1
Danube	Prunus	Dugenets	Putila	UA_R_10_S_3_Si	12,79	R	UA_M5.3.2_0131	1	1	1	1	1
Danube	Prunus	Biskiv	Putila	UA_R_10_S_4_Si	4,50	R	UA_M5.3.2_0132	1	1	1	1	1
Danube	Prunus	Biskiv	Putila	UA_R_10_S_3_Si	10,96	R	UA_M5.3.2_0133	1	1	1	1	1
Danube	Prunus	Biskiv	Putila	UA_R_10_S_2_Si	0,94	R	UA_M5.3.2_0134	1	1	1	1	1
Danube	Prunus	Biskiv Great	Biskiv	UA_R_10_S_4_Si	4,16	R	UA_M5.3.2_0135	1	1	1	1	1
Danube	Prunus	Biskiv Great	Biskiv	UA_R_10_S_3_Si	6,57	R	UA_M5.3.2_0136	1	1	1	1	1
Danube	Prunus	Commodity	Cheremosh	UA_R_10_S_4_Si	1,37	R	UA_M5.3.2_0137	1	1	1	1	1
Danube	Prunus	Commodity	Cheremosh	UA_R_10_S_3_Si	11,51	R	UA_M5.3.2_0138	1	1	1	1	1
Danube	Prunus	Commodity	Cheremosh	UA_R_10_S_2_Si	3,96	R	UA_M5.3.2_0139	1	1	1	1	1

Danube	Prunus	Rozhen the Great	Cheremosh	UA_R_10_S_4_Si	0,33	R	UA_M5.3.2_0140	1	1	1	1	1
Danube	Prunus	Rozhen the Great	Cheremosh	UA_R_10_S_3_Si	5,64	R	UA_M5.3.2_0141	1	2	1	2	1
Danube	Prunus	Rozhen the Great	Cheremosh	UA_R_10_S_2_Si	8,29	R	UA_M5.3.2_0142	1	2	1	2	1
Danube	Prunus	Exile	Cheremosh	UA_R_10_S_4_Si	0,32	R	UA_M5.3.2_0143	1	1	1	1	1
Danube	Prunus	Exile	Cheremosh	UA_R_10_S_3_Si	8,54	R	UA_M5.3.2_0144	1	1	1	1	1
Danube	Prunus	Exile	Cheremosh	UA_R_10_S_2_Si	9,13	R	UA_M5.3.2_0145	1	1	1	1	1
Danube	Prunus	Rot	Cheremosh	HMWB	9,81	HMWB	UA_M5.3.2_0146	1	2	3	3	1
Danube	Prunus	Volitsa	Cheremosh	UA_R_10_S_3_Si	0,78	R	UA_M5.3.2_0147	1	3	1	3	1
Danube	Prunus	Volitsa	Cheremosh	UA_R_10_S_2_Si	2,41	R	UA_M5.3.2_0148	1	3	1	3	1
Danube	Prunus	Volitsa	Cheremosh	UA_R_16_S_2_Si	25,75	R	UA_M5.3.2_0149	1	2	1	2	1
Danube	Prunus	Mlenyuta	Cheremosh	UA_R_16_S_2_Si	22,01	R	UA_M5.3.2_0150	1	1	1	1	1
Danube	Prunus	Trough	Mlenyuta	UA_R_16_S_2_Si	20,60	R	UA_M5.3.2_0151	1	1	1	1	1
Danube	Prunus	Berezhnitsa	Cheremosh	UA_R_16_S_2_Si	27,24	R	UA_M5.3.2_0152	1	1	1	1	1
Danube	Prunus	Psyarów	Cheremosh	UA_R_16_S_2_Si	16,73	R	UA_M5.3.2_0153	1	1	1	1	1
Danube	Prunus	Hlybochok	Psyarów	UA_R_16_S_2_Si	20,29	R	UA_M5.3.2_0154	1	1	1	1	1
Danube	Prunus	Volochina	Cheremosh	HMWB	7,36	HMWB	UA_M5.3.2_0155	1	1	3	3	1
Danube	Prunus	Volochina	Cheremosh	HMWB	4,02	HMWB	UA_M5.3.2_0156	1	2	3	3	1
Danube	Prunus	Lingonberry	Prunus	UA_R_16_S_2_Si	21,86	R	UA_M5.3.2_0157	1	1	1	1	1
Danube	Prunus	Lingonberry	Prunus	UA_R_16_M_1_Si	4,26	R	UA_M5.3.2_0158	1	2	1	2	1
Danube	Prunus	Untitled	Prunus	UA_R_16_S_2_Si	3,86	R	UA_M5.3.2_0159	1	2	1	2	1
Danube	Prunus	Untitled	Prunus	UA_R_16_S_1_Si	10,19	R	UA_M5.3.2_0160	2	2	1	2	2
Danube	Prunus	Clay	Prunus	UA_R_16_S_2_Si	18,86	R	UA_M5.3.2_0161	1	1	1	1	1
Danube	Prunus	Clay	Prunus	UA_R_16_M_1_Si	8,98	R	UA_M5.3.2_0162	1	2	1	2	1
Danube	Prunus	Owl	Prunus	HMWB	16,17	HMWB	UA_M5.3.2_0163	1	1	3	3	1
Danube	Prunus	Owl	Prunus	HMWB	11,68	HMWB	UA_M5.3.2_0164	1	2	3	3	1
Danube	Prunus	Owl	Prunus	UA_R_16_M_1_Si	17,66	R	UA_M5.3.2_0165	1	2	1	2	1
Danube	Prunus	Owl	Prunus	HMWB	16,35	HMWB	UA_M5.3.2_0166	1	1	3	3	1
Danube	Prunus	Owl	Prunus	HMWB	3,82	HMWB	UA_M5.3.2_0167	1	2	3	3	1
Danube	Prunus	Owl	Prunus	HMWB	18,25	HMWB	UA_M5.3.2_0168	3	2	3	3	3
Danube	Prunus	Untitled	Owl	UA_R_16_S_2_Si	15,03	R	UA_M5.3.2_0169	1	1	1	1	1
Danube	Prunus	Untitled	Owl	HMWB	1,95	HMWB	UA_M5.3.2_0170	1	2	3	3	1
Danube	Prunus	Klockuchka	Prunus	UA_R_16_S_2_Si	6,41	R	UA_M5.3.2_0171	1	1	1	1	1
Danube	Prunus	Klockuchka	Prunus	UA_R_16_S_1_Si	5,30	R	UA_M5.3.2_0172	1	1	1	1	1
Danube	Prunus	Shubranets	Prunus	HMWB	5,59	HMWB	UA_M5.3.2_0173	1	1	3	3	1
Danube	Prunus	Shubranets	Prunus	HMWB	17,40	HMWB	UA_M5.3.2_0174	1	1	3	3	1
Danube	Prunus	Shubranets	Prunus	HMWB	3,26	HMWB	UA_M5.3.2_0175	1	1	3	3	1
Danube	Prunus	Zadubrivka	Shubranets	UA_R_16_S_2_Si	9,92	R	UA_M5.3.2_0176	1	1	1	1	1
Danube	Prunus	Zadubrivka	Shubranets	UA_R_16_S_1_Si	12,66	R	UA_M5.3.2_0177	2	1	1	2	2
Danube	Prunus	Mosquitoes	Shubranets	UA_R_16_S_2_Si	11,27	R	UA_M5.3.2_0178	1	1	1	1	1
Danube	Prunus	Mosquitoes	Shubranets	UA_R_16_S_1_Si	13,21	R	UA_M5.3.2_0179	1	2	1	2	1

Danube	Prunus	Dereluy	Prunus	UA_R_16_S_2_Si	14,93	R	UA_M5.3.2_0180	3	1	1	3	3
Danube	Prunus	Dereluy	Prunus	UA_R_16_S_1_Si	7,89	R	UA_M5.3.2_0181	1	1	1	1	1
Danube	Prunus	Dereluy	Prunus	UA_R_16_M_1_Si	19,17	R	UA_M5.3.2_0182	1	2	1	2	1
Danube	Prunus	Untitled	Dereluy	UA_R_16_S_2_Si	9,79	R	UA_M5.3.2_0183	1	1	1	1	1
Danube	Prunus	Slave	Dereluy	UA_R_16_S_2_Si	8,80	R	UA_M5.3.2_0184	1	2	1	2	1
Danube	Prunus	Slave	Dereluy	UA_R_16_S_1_Si	4,80	R	UA_M5.3.2_0185	1	2	1	2	1
Danube	Prunus	Corovia	Dereluy	UA_R_16_S_2_Si	14,65	R	UA_M5.3.2_0186	1	1	1	1	1
Danube	Prunus	Corovia	Dereluy	UA_R_16_S_1_Si	12,11	R	UA_M5.3.2_0187	1	1	1	1	1
Danube	Prunus	Corovia	Dereluy	UA_R_16_M_1_Si	2,03	R	UA_M5.3.2_0188	1	2	1	2	1
Danube	Prunus	Vitsa	Prunus	UA_R_16_S_2_Si	1,63	R	UA_M5.3.2_0189	1	2	1	2	1
Danube	Prunus	Vitsa	Prunus	UA_R_16_S_1_Si	4,01	R	UA_M5.3.2_0190	3	2	1	3	3
Danube	Prunus	Vitsa	Prunus	UA_R_16_S_1_Si	4,37	R	UA_M5.3.2_0192	1	2	1	2	1
Danube	Prunus	Hukov	Prunus	UA_R_16_S_2_Si	12,14	R	UA_M5.3.2_0193	1	2	1	2	1
Danube	Prunus	Hukov	Prunus	UA_R_16_S_1_Si	8,53	R	UA_M5.3.2_0194	1	2	1	2	1
Danube	Prunus	Hukov	Prunus	UA_R_16_S_1_Si	3,64	R	UA_M5.3.2_0196	1	2	1	2	1
Danube	Prunus	Hukov	Prunus	UA_R_16_M_1_Si	6,20	R	UA_M5.3.2_0197	1	2	1	2	1
Danube	Prunus	Mothballs	Prunus	UA_R_16_S_2_Si	4,97	R	UA_M5.3.2_0198	1	2	1	2	1
Danube	Prunus	Mothballs	Prunus	UA_R_16_S_1_Si	8,78	R	UA_M5.3.2_0199	1	2	1	2	1
Danube	Prunus	Mothballs	Prunus	UA_R_16_M_1_Si	12,00	R	UA_M5.3.2_0200	3	2	1	3	3
Danube	Prunus	Rokytna	Prunus	HMWB	5,29	HMWB	UA_M5.3.2_0201	1	1	3	3	1
Danube	Prunus	Rokytna	Prunus	HMWB	13,17	HMWB	UA_M5.3.2_0202	1	1	3	3	1
Danube	Prunus	Rokytna	Prunus	UA_R_16_M_1_Si	15,58	R	UA_M5.3.2_0203	2	2	1	2	2
Danube	Prunus	Hertz	Prunus	HMWB	2,36	HMWB	UA_M5.3.2_0204	1	1	3	3	1
Danube	Prunus	Hertz	Prunus	HMWB	8,82	HMWB	UA_M5.3.2_0205	1	2	3	3	1
Danube	Prunus	Hertz	Prunus	UA_R_16_M_1_Si	10,33	R	UA_M5.3.2_0206	1	2	1	2	1
Danube	Prunus	Ringach	Prunus	UA_R_16_S_2_Si	3,71	R	UA_M5.3.2_0207	1	1	1	1	1
Danube	Prunus	Ringach	Prunus	HMWB	15,07	HMWB	UA_M5.3.2_0208	1	1	3	3	1
Danube	Prunus	Ringach	Prunus	HMWB	22,06	HMWB	UA_M5.3.2_0209	1	2	3	3	1
Danube	Prunus	Untitled	Ringach	UA_R_16_S_2_Si	3,06	R	UA_M5.3.2_0210	1	1	1	1	1
Danube	Prunus	Untitled	Ringach	HMWB	14,07	HMWB	UA_M5.3.2_0211	1	1	3	3	1
Danube	Prunus	Dynivka	Prunus	UA_R_16_S_2_Si	2,32	R	UA_M5.3.2_0212	1	2	1	2	1
Danube	Prunus	Dynivka	Prunus	HMWB	21,18	HMWB	UA_M5.3.2_0213	1	2	3	3	1
Danube	Prunus	Cherlena	Prunus	UA_R_16_S_2_Si	1,15	R	UA_M5.3.2_0214	1	1	1	1	1
Danube	Prunus	Cherlena	Prunus	UA_R_16_S_1_Si	12,90	R	UA_M5.3.2_0215	1	1	1	1	1
Danube	Prunus	Cherlena	Prunus	UA_R_16_M_1_Si	10,37	R	UA_M5.3.2_0216	1	2	1	2	1
Danube	Prunus	Cherlena	Prunus	HMWB	12,85	HMWB	UA_M5.3.2_0218	1	2	3	3	1
Danube	Prunus	Shcherbintsy	Cherlena	UA_R_16_S_2_Si	0,89	R	UA_M5.3.2_0219	1	1	1	1	1
Danube	Prunus	Shcherbintsy	Cherlena	HMWB	13,56	HMWB	UA_M5.3.2_0220	1	1	3	3	1
Danube	Prunus	Shcherbintsy	Cherlena	HMWB	3,51	HMWB	UA_M5.3.2_0222	1	2	3	3	1
Danube	Prunus	Stalineshty	Cherlena	UA_R_16_S_2_Si	1,83	R	UA_M5.3.2_0223	1	1	1	1	1

Danube	Prunus	Stalineshty	Cherlena	HMWB	18,64	HMWB	UA_M5.3.2_0224	1	1	3	3	1
Danube	Prunus	Stalineshty	Cherlena	HMWB	2,94	HMWB	UA_M5.3.2_0226	1	2	3	3	1
Danube	Prunus	Glodos	Cherlena	HMWB	0,74	HMWB	UA_M5.3.2_0227	1	2	3	3	1
Danube	Prunus	Glodos	Cherlena	UA_R_16_S_1_Si	5,57	R	UA_M5.3.2_0228	1	2	1	2	1
Danube	Prunus	Glodos	Cherlena	UA_R_16_S_1_Si	17,74	R	UA_M5.3.2_0230	1	2	1	2	1
Danube	Prunus	Patsapule	Prunus	HMWB	18,95	HMWB	UA_M5.3.2_0231	1	1	3	3	1
Danube	Prunus	Dona	Prunus	HMWB	6,39	HMWB	UA_M5.3.2_0232	1	1	3	3	1
Danube	Prunus	Green	Prunus	UA_R_16_S_1_Si	13,93	R	UA_M5.3.2_0233	1	1	1	1	1
Danube	Prunus	Medvedka	Prunus	UA_R_16_S_2_Si	2,27	R	UA_M5.3.2_0234	1	1	1	1	1
Danube	Prunus	Medvedka	Prunus	UA_R_16_S_1_Si	7,26	R	UA_M5.3.2_0235	1	1	1	1	1
Danube	Prunus	Larder	Prunus	HMWB	2,72	HMWB	UA_M5.3.2_0236	1	1	3	3	1
Danube	Prunus	Viliya	Prunus	HMWB	12,56	HMWB	UA_M5.3.2_0237	1	1	3	3	1
Danube	Prunus	Viliya	Prunus	UA_R_16_S_1_Si	1,70	R	UA_M5.3.2_0238	1	1	1	1	1
Danube	Prunus	Viliya	Prunus	UA_R_16_M_1_Si	6,12	R	UA_M5.3.2_0239	1	1	1	1	1
Danube	Prunus	New settler	Viliya	HMWB	12,52	HMWB	UA_M5.3.2_0240	1	1	3	3	1
Danube	Prunus	New settler	Viliya	HMWB	1,83	HMWB	UA_M5.3.2_0241	1	1	3	3	1
Danube	Prunus	Spatula	Prunus	HMWB	13,97	HMWB	UA_M5.3.2_0242	1	1	3	3	1
Danube	Prunus	Untitled	Spatula	HMWB	1,94	HMWB	UA_M5.3.2_0243	1	1	3	3	1
Danube	Prunus	Dradishte	Rakovets	HMWB	12,16	HMWB	UA_M5.3.2_0244	1	1	3	3	1
Danube	Prunus	Dradishte	Rakovets	HMWB	3,97	HMWB	UA_M5.3.2_0245	1	1	3	3	1
Danube	Prunus	Wet Rakovets	Rakovets	UA_R_16_S_2_Si	2,51	R	UA_M5.3.2_0246	1	1	1	1	1
Danube	Siret	Siret	Danube	UA_R_10_S_4_Si	4,09	R	UA_M5.3.3_0001	1	1	1	1	1
Danube	Siret	Siret	Danube	UA_R_10_S_3_Si	9,88	R	UA_M5.3.3_0002	1	1	1	1	1
Danube	Siret	Siret	Danube	UA_R_10_M_3_Si	12,88	R	UA_M5.3.3_0003	1	1	1	1	1
Danube	Siret	Siret	Danube	UA_R_10_M_2_Si	6,77	R	UA_M5.3.3_0004	1	1	1	1	1
Danube	Siret	Siret	Danube	UA_R_16_M_2_Si	64,51	R	UA_M5.3.3_0005	3	1	1	3	3
Danube	Siret	Siret	Danube	UA_R_16_L_2_Si	23,81	R	UA_M5.3.3_0006	3	2	1	3	3
Danube	Siret	Migova	Siret	UA_R_10_S_3_Si	10,36	R	UA_M5.3.3_0007	1	1	1	1	1
Danube	Siret	Migova	Siret	UA_R_10_S_2_Si	4,40	R	UA_M5.3.3_0008	1	1	1	1	1
Danube	Siret	Migova	Siret	UA_R_16_S_2_Si	5,47	R	UA_M5.3.3_0009	2	1	1	2	2
Danube	Siret	Untitled	Siret	UA_R_10_S_2_Si	2,52	R	UA_M5.3.3_0010	1	1	1	1	1
Danube	Siret	Untitled	Siret	UA_R_16_S_2_Si	11,11	R	UA_M5.3.3_0011	1	1	1	1	1
Danube	Siret	Mihidra	Siret	UA_R_10_S_2_Si	0,48	R	UA_M5.3.3_0012	1	1	1	1	1
Danube	Siret	Mihidra	Siret	UA_R_16_S_2_Si	19,48	R	UA_M5.3.3_0013	1	1	1	1	1
Danube	Siret	Mihidra	Siret	UA_R_16_M_2_Si	10,72	R	UA_M5.3.3_0014	1	1	1	1	1
Danube	Siret	Solonets	Mihidra	UA_R_10_S_3_Si	2,18	R	UA_M5.3.3_0015	1	1	1	1	1
Danube	Siret	Solonets	Mihidra	UA_R_10_S_2_Si	0,93	R	UA_M5.3.3_0016	1	1	1	1	1
Danube	Siret	Solonets	Mihidra	UA_R_16_S_2_Si	8,54	R	UA_M5.3.3_0017	1	1	1	1	1
Danube	Siret	Slavets	Mihidra	UA_R_10_S_3_Si	0,78	R	UA_M5.3.3_0018	1	1	1	1	1
Danube	Siret	Slavets	Mihidra	UA_R_10_S_2_Si	1,61	R	UA_M5.3.3_0019	1	1	1	1	1

Danube	Siret	Slavets	Mihidra	UA_R_16_S_2_Si	11,50	R	UA_M5.3.3_0020	1	1	1	1	1
Danube	Siret	Mihiderka	Mihidra	UA_R_16_S_2_Si	17,44	R	UA_M5.3.3_0021	1	1	1	1	1
Danube	Siret	Squirrel	Siret	UA_R_16_S_2_Si	16,63	R	UA_M5.3.3_0022	1	1	1	1	1
Danube	Siret	Dubovets	Siret	UA_R_16_S_2_Si	12,10	R	UA_M5.3.3_0023	1	1	1	1	1
Danube	Siret	Hinterland	Siret	UA_R_16_S_2_Si	24,27	R	UA_M5.3.3_0024	1	1	1	1	1
Danube	Siret	Small Siret	Siret	UA_R_10_S_4_Si	1,05	R	UA_M5.3.3_0025	1	1	1	1	1
Danube	Siret	Small Siret	Siret	UA_R_10_S_3_Si	9,34	R	UA_M5.3.3_0026	1	1	1	1	1
Danube	Siret	Small Siret	Siret	UA_R_10_S_2_Si	8,64	R	UA_M5.3.3_0027	1	1	1	1	1
Danube	Siret	Small Siret	Siret	UA_R_16_S_2_Si	0,43	R	UA_M5.3.3_0028	1	1	1	1	1
Danube	Siret	Small Siret	Siret	UA_R_16_M_2_Si	48,78	R	UA_M5.3.3_0029	1	1	1	1	1
Danube	Siret	Hilcha	Small Siret	UA_R_10_S_4_Si	0,32	R	UA_M5.3.3_0030	1	1	1	1	1
Danube	Siret	Hilcha	Small Siret	UA_R_10_S_3_Si	9,66	R	UA_M5.3.3_0031	1	1	1	1	1
Danube	Siret	Hilcha	Small Siret	UA_R_10_S_2_Si	0,43	R	UA_M5.3.3_0032	1	1	1	1	1
Danube	Siret	Untitled	Small Siret	UA_R_10_S_3_Si	3,86	R	UA_M5.3.3_0033	1	1	1	1	1
Danube	Siret	Untitled	Small Siret	UA_R_10_S_2_Si	7,24	R	UA_M5.3.3_0034	1	1	1	1	1
Danube	Siret	Untitled	Small Siret	UA_R_16_S_2_Si	0,47	R	UA_M5.3.3_0035	1	1	1	1	1
Danube	Siret	Pantine	Small Siret	UA_R_10_S_3_Si	0,75	R	UA_M5.3.3_0036	1	1	1	1	1
Danube	Siret	Pantine	Small Siret	UA_R_10_S_2_Si	5,55	R	UA_M5.3.3_0037	1	1	1	1	1
Danube	Siret	Pantine	Small Siret	UA_R_16_S_2_Si	6,61	R	UA_M5.3.3_0038	1	1	1	1	1
Danube	Siret	Untitled	Small Siret	UA_R_10_S_3_Si	3,12	R	UA_M5.3.3_0039	1	1	1	1	1
Danube	Siret	Untitled	Small Siret	UA_R_10_S_2_Si	2,01	R	UA_M5.3.3_0040	1	1	1	1	1
Danube	Siret	Untitled	Small Siret	HMWB	10,27	HMWB	UA_M5.3.3_0041	1	1	3	3	1
Danube	Siret	Siretel	Small Siret	UA_R_10_S_4_Si	0,75	R	UA_M5.3.3_0042	1	1	1	1	1
Danube	Siret	Siretel	Small Siret	UA_R_10_S_3_Si	7,59	R	UA_M5.3.3_0043	1	1	1	1	1
Danube	Siret	Siretel	Small Siret	UA_R_10_S_2_Si	5,29	R	UA_M5.3.3_0044	1	1	1	1	1
Danube	Siret	Siretel	Small Siret	UA_R_16_S_2_Si	8,55	R	UA_M5.3.3_0045	3	1	1	3	3
Danube	Siret	Siretel	Small Siret	UA_R_16_M_2_Si	8,81	R	UA_M5.3.3_0046	1	1	1	1	1
Danube	Siret	Jezerul	Siretel	UA_R_10_S_3_Si	3,41	R	UA_M5.3.3_0047	1	1	1	1	1
Danube	Siret	Jezerul	Siretel	UA_R_10_S_2_Si	1,15	R	UA_M5.3.3_0048	1	1	1	1	1
Danube	Siret	Jezerul	Siretel	UA_R_16_S_2_Si	6,54	R	UA_M5.3.3_0049	1	1	1	1	1
Danube	Siret	Chudey	Siretel	UA_R_16_S_2_Si	11,73	R	UA_M5.3.3_0050	1	1	1	1	1
Danube	Siret	Kotovets	Siret	HMWB	17,64	HMWB	UA_M5.3.3_0051	1	2	3	3	1
Danube	Siret	Malyi Kotovets	Kotovets	HMWB	11,23	HMWB	UA_M5.3.3_0052	1	2	3	3	1
Danube	lower Danube	Danube	Black Sea	UA_R_12_XL_1_Si	15,9	R	UA_M5.3.4_0001	3	3	1	3	3
Danube	lower Danube	Danube	Black Sea	UA_R_12_XL_1_O	59,4	R	UA_M5.3.4_0002	3	3	1	3	3
Danube	lower Danube	Danube	Black Sea	UA_R_12_XL_1_Si	96,8	R	UA_M5.3.4_0003	3	3	1	3	3
Danube	lower Danube	Sour sleeve	Danube	UA_R_12_XL_1_Si	29,5	R	UA_M5.3.4_0004	1	3	1	3	3
Danube	lower Danube	Ivanesti sleeve	Danube	UA_R_12_XL_1_Si	7,4	R	UA_M5.3.4_0005	1	3	1	3	3
Danube	lower Danube	mouth of the Tatar	Danube	UA_R_12_XL_1_Si	6,9	R	UA_M5.3.4_0006	1	3	1	3	3
Danube	lower Danube	Stepovyi sleeve	Danube	UA_R_12_XL_1_Si	13,1	R	UA_M5.3.4_0007	1	3	1	3	3

Danube	lower Danube	Katenka sleeve	Danube	UA_R_12_XL_1_Si	4,7	R	UA_M5.3.4_0008	1	2	1	2	2
Danube	lower Danube	Mashenka sleeve	Danube	UA_R_12_XL_1_Si	3,9	R	UA_M5.3.4_0009	1	2	1	2	2
Danube	lower Danube	Mouth of the Lap-tish	NA	UA_R_12_XL_1_Si	23,1	R	UA_M5.3.4_0010	1	2	1	2	2
Danube	lower Danube	Mouth of the Murza	Zhebriyansky estu-ary	UA_R_12_XL_1_Si	13,2	R	UA_M5.3.4_0011	1	2	1	2	2
Danube	lower Danube	Solomon sleeve	Danube	UA_R_12_XL_1_Si	12,9	R	UA_M5.3.4_0012	1	2	1	2	2
Danube	lower Danube	Belgorod estuary	Black Sea	UA_R_12_XL_1_Si	10,4	R	UA_M5.3.4_0013	1	2	1	2	2
Danube	lower Danube	Ochakivskoe estu-ary	Black Sea	UA_R_12_XL_1_Si	15,5	R	UA_M5.3.4_0014	1	2	1	2	2
Danube	lower Danube	mouth of the Prorva	Black Sea	UA_R_12_XL_1_Si	5,4	R	UA_M5.3.4_0015	1	2	1	2	2
Danube	lower Danube	Untitled	Lake. Kagul Lake	HMWB	3,6	HMWB	UA_M5.3.4_0016	1	2	3	3	2
Danube	lower Danube	Untitled	Lake. Kagul Lake	HMWB	2,1	HMWB	UA_M5.3.4_0017	1	2	3	3	2
Danube	lower Danube	Wicketa Creek	Danube	HMWB	2,6	HMWB	UA_M5.3.4_0019	1	2	3	3	2
Danube	lower Danube	Kart Lake connec-ting channel	Danube	HMWB	3,5	HMWB	UA_M5.3.4_0021	1	2	3	3	2
Danube	lower Danube	Yalpukh	Lake. Lake Yalpug (Yalpukh)	HMWB	5,8	HMWB	UA_M5.3.4_0022	3	3	3	3	3
Danube	lower Danube	Great Salcha	Yalpukh	HMWB	5,1	HMWB	UA_M5.3.4_0023	1	3	3	3	3
Danube	lower Danube	Skunk	Danube	HMWB	1,5	HMWB	UA_M5.3.4_0026	1	3	3	3	3
Danube	lower Danube	Karasulak	Lake. Lake Yalpug (Yalpukh)	HMWB	4,8	HMWB	UA_M5.3.4_0027	1	3	3	3	3
Danube	lower Danube	Karasulak	Lake. Lake Yalpug (Yalpukh)	HMWB	24,2	HMWB	UA_M5.3.4_0029	1	3	3	3	3
Danube	lower Danube	Kugu Lake connec-ting channel	Danube	HMWB	1,7	HMWB	UA_M5.3.4_0030	1	3	3	3	3
Danube	lower Danube	Kairaklia	Lake. Sofya Lake	HMWB	7,8	HMWB	UA_M5.3.4_0031	1	3	3	3	3
Danube	lower Danube	Kairaklia	Lake. Sofya Lake	HMWB	9,3	HMWB	UA_M5.3.4_0033	1	3	3	3	3
Danube	lower Danube	Lung Lake connec-ting channel	Danube	HMWB	5,7	HMWB	UA_M5.3.4_0036	1	3	3	3	3
Danube	lower Danube	Tashbunar	Lake. Katlabug Lake	HMWB	7,9	HMWB	UA_M5.3.4_0037	1	3	3	3	3
Danube	lower Danube	Tashbunar	Lake. Katlabug Lake	HMWB	2,2	HMWB	UA_M5.3.4_0039	1	3	3	3	3
Danube	lower Danube	Tashbunar	Lake. Katlabug Lake	HMWB	8,4	HMWB	UA_M5.3.4_0040	1	3	3	3	3
Danube	lower Danube	Tashbunar	Lake. Katlabug Lake	HMWB	11,9	HMWB	UA_M5.3.4_0042	1	3	3	3	3
Danube	lower Danube	Big Katlabukh	Lake. Katlabug Lake	UA_R_12_S_1_Si	15,6	R	UA_M5.3.4_0043	1	3	1	3	3
Danube	lower Danube	Big Katlabukh	Lake. Katlabug Lake	UA_R_12_S_1_Si	8,9	R	UA_M5.3.4_0045	1	3	1	3	3
Danube	lower Danube	Big Katlabukh	Lake. Katlabug Lake	HMWB	5,6	HMWB	UA_M5.3.4_0046	1	3	3	3	3
Danube	lower Danube	Big Katlabukh	Lake. Katlabug Lake	HMWB	12,8	HMWB	UA_M5.3.4_0048	1	3	3	3	3
Danube	lower Danube	Small Katlabukh	Big Katlabukh	UA_R_12_S_1_Si	10,3	R	UA_M5.3.4_0049	1	3	1	3	3
Danube	lower Danube	Small Katlabukh	Big Katlabukh	HMWB	1,6	HMWB	UA_M5.3.4_0050	1	3	3	3	3
Danube	lower Danube	Small Katlabukh	Big Katlabukh	HMWB	6,9	HMWB	UA_M5.3.4_0051	1	3	3	3	3

Danube	lower Danube	Small Katlabukh	Big Katlabukh	HMWB	2,9	HMWB	UA_M5.3.4_0052	1	3	3	3	3
Danube	lower Danube	Small Katlabukh	Big Katlabukh	HMWB	18,8	HMWB	UA_M5.3.4_0054	1	3	3	3	3
Danube	lower Danube	Yenika	Lake. Katlabug Lake	HMWB	5,2	HMWB	UA_M5.3.4_0055	1	3	3	3	3
Danube	lower Danube	Yenika	Lake. Katlabug Lake	HMWB	1,8	HMWB	UA_M5.3.4_0056	1	3	3	3	3
Danube	lower Danube	Yenika	Lake. Katlabug Lake	UA_R_12_S_1_Si	7,9	R	UA_M5.3.4_0057	1	3	1	3	3
Danube	lower Danube	Yenika	Lake. Katlabug Lake	UA_R_12_M_1_Si	1,3	R	UA_M5.3.4_0058	1	3	1	3	3
Danube	lower Danube	Yenika	Lake. Katlabug Lake	HMWB	12,4	HMWB	UA_M5.3.4_0060	1	3	3	3	3
Danube	lower Danube	Željavs connection channel	Danube	HMWB	3,5	HMWB	UA_M5.3.4_0062	1	3	3	3	3
Danube	lower Danube	Kirgiz-China	Lake China	UA_R_12_S_1_Si	6,1	R	UA_M5.3.4_0063	3	2	1	3	3
Danube	lower Danube	Kyrgyzstan-China	Lake China	HMWB	6,3	HMWB	UA_M5.3.4_0064	3	2	3	3	3
Danube	lower Danube	Kyrgyzstan-China	Lake China	HMWB	36,9	HMWB	UA_M5.3.4_0066	3	2	3	3	3
Danube	lower Danube	Untitled	Kyrgyzstan-China	UA_R_12_S_1_Si	9,7	R	UA_M5.3.4_0067	1	2	1	2	2
Danube	lower Danube	Valeperzha	Kyrgyzstan-China	UA_R_12_S_1_Si	9	R	UA_M5.3.4_0068	1	3	1	3	3
Danube	lower Danube	Valeperzha	Kyrgyzstan-China	HMWB	0,5	HMWB	UA_M5.3.4_0069	1	3	3	3	3
Danube	lower Danube	Valeperzha	Kyrgyzstan-China	HMWB	3,9	HMWB	UA_M5.3.4_0071	1	3	3	3	3
Danube	lower Danube	Kirgiz	Kyrgyzstan-China	UA_R_12_S_1_Si	11	R	UA_M5.3.4_0072	1	2	1	2	2
Danube	lower Danube	Kirgiz	Kyrgyzstan-China	UA_R_12_S_1_Si	17,7	R	UA_M5.3.4_0074	1	3	1	3	3
Danube	lower Danube	Kirgiz	Kyrgyzstan-China	HMWB	9,2	HMWB	UA_M5.3.4_0075	1	3	3	3	3
Danube	lower Danube	Kirgiz	Kyrgyzstan-China	HMWB	9,6	HMWB	UA_M5.3.4_0077	1	3	3	3	3
Danube	lower Danube	(Untitled)	Kyrgyzstan-China	HMWB	15	HMWB	UA_M5.3.4_0078	1	3	3	3	3
Danube	lower Danube	Aliyah	Lake China	HMWB	21,3	HMWB	UA_M5.3.4_0079	1	2	3	3	2
Danube	lower Danube	Aliyah	Lake China	HMWB	3,2	HMWB	UA_M5.3.4_0080	1	3	3	3	3
Danube	lower Danube	Aliyah	Lake China	HMWB	37,3	HMWB	UA_M5.3.4_0081	1	2	3	3	2
Danube	lower Danube	Tashlyk	Aliyah	HMWB	11,3	HMWB	UA_M5.3.4_0082	1	3	3	3	3
Danube	lower Danube	Tashlyk	Aliyah	UA_R_12_M_1_Si	3,1	R	UA_M5.3.4_0083	1	3	1	3	3
Danube	lower Danube	Tashlyk	Aliyah	HMWB	6,7	HMWB	UA_M5.3.4_0085	1	2	3	3	2
Danube	lower Danube	Kofa Canal	Danube	AWB	3,2	AWB	UA_M5.3.4_0087	1	2		2	2
Danube	lower Danube	Drakula	Danube	UA_R_12_M_1_Si	1	R	UA_M5.3.4_0088	1	3	1	3	3
Danube	lower Danube	Drakula	Danube	HMWB	37,2	HMWB	UA_M5.3.4_0090	1	2	3	3	2
Danube	lower Danube	Do not disturb	Danube	HMWB	9,7	HMWB	UA_M5.3.4_0091	1	3	3	3	3
Danube	lower Danube	Do not disturb	Danube	HMWB	24,5	HMWB	UA_M5.3.4_0093	1	2	3	3	2
Danube	lower Danube	Danube - Dnipro Canal	Lake. Sasyk Lake	AWB	13,6	AWB	UA_M5.3.4_0104	1	2		2	2

Polygonal SWBs

River basin	River sub-basin	Name of the SWB	Type of SWB	Area, km²	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	Risk of not achieving environmental goals	
										good environmental status	good chemical status
Danube	Tisa	Tereble-Ritske reservoir	HMWB	1,43	HMWB	UA_M5.3.1_0109	1	1	3	3	1
Danube	Tisa	Boronyavske Reservoir	HMWB	1,39	HMWB	UA_M5.3.1_0141	1	2	3	3	1
Danube	Tisa	Salva reservoir	HMWB	1,42	HMWB	UA_M5.3.1_0275	1	1	3	3	1
Danube	Tisa	Andriyivske Reservoir	HMWB	0,34	HMWB	UA_M5.3.1_0353	1	1	3	3	1
Danube	Tisa	Bobovyshchanske Reservoir	HMWB	0,20	HMWB	UA_M5.3.1_0368	3	1	3	3	3
Danube	Tisa	Babichka Reservoir	HMWB	1,07	HMWB	UA_M5.3.1_0405	1	1	3	3	1
Danube	Tisa	Mochila reservoir	HMWB	1,22	HMWB	UA_M5.3.1_0410	1	1	3	3	1
Danube	Tisa	Fornosh reservoir	HMWB	2,11	HMWB	UA_M5.3.1_0413	1	3	3	3	1
Danube	Tisa	Roman Potik reservoir	HMWB	1,39	HMWB	UA_M5.3.1_0417	1	1	3	3	1
Danube	Prunus	Reservoir on the Vitsa River	HMWB	0,20	HMWB	UA_M5.3.2_0191	1	1	3	3	1
Danube	Prunus	Reservoir on the Hukiv River	HMWB	0,46	HMWB	UA_M5.3.2_0195	1	1	3	3	1
Danube	Prunus	Reservoir on the Cherlena River	HMWB	0,47	HMWB	UA_M5.3.2_0217	1	1	3	3	1
Danube	Prunus	Reservoir on the Shcherbintsy River	HMWB	0,34	HMWB	UA_M5.3.2_0221	1	1	3	3	1
Danube	Prunus	Reservoir on the Stalinesti River	HMWB	0,23	HMWB	UA_M5.3.2_0225	1	1	3	3	1
Danube	Prunus	Reservoir on the Glodos River	HMWB	0,16	HMWB	UA_M5.3.2_0229	1	1	3	3	1
Danube	lower Danube	Lake. Kagul Lake	UA_L_12_L_1_SH_Si	91,35	L	UA_M5.3.4_0018	1	1	1	1	1

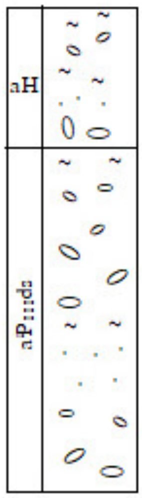
Danube	lower Danube	Lake. Kartal Lake	UA_L_12_M_1_SH_O	9,12	L	UA_M5.3.4_0020	1	1	1	1	1
Danube	lower Danube	Lake. Lake Yalpug (Yal-pukh)	UA_L_12_XL_1_SH_Si	145,26	L	UA_M5.3.4_0024	1	1	1	1	1
Danube	lower Danube	Lake. Kugurlui Lake	UA_L_12_L_1_SH_O	84,54	L	UA_M5.3.4_0025	1	1	1	1	1
Danube	lower Danube	Karasulka reservoir	HMWB	0,55	HMWB	UA_M5.3.4_0028	1	1	3	3	1
Danube	lower Danube	Kairakli reservoir	HMWB	0,9	HMWB	UA_M5.3.4_0032	1	1	3	3	1
Danube	lower Danube	Lake. Safiani Lake	UA_L_12_M_1_SH_Si	4,22	L	UA_M5.3.4_0034	1	1	1	1	1
Danube	lower Danube	Lake. Lung Lake	UA_L_12_M_1_SH_Si	1,29	L	UA_M5.3.4_0035	1	1	1	1	1
Danube	lower Danube	Tashbunar reservoir	HMWB	0,54	HMWB	UA_M5.3.4_0038	1	1	3	3	1
Danube	lower Danube	Tashbunarskoye-1 reservoir	HMWB	0,98	HMWB	UA_M5.3.4_0041	1	1	3	3	1
Danube	lower Danube	The Velykokatlabukhskoye water reservoir	HMWB	0,49	HMWB	UA_M5.3.4_0044	1	1	3	3	1
Danube	lower Danube	Velykokatlabukhske-1 re-servoir	HMWB	1,21	HMWB	UA_M5.3.4_0047	1	1	3	3	1
Danube	lower Danube	Malokatlabukhske-1 reservoir	HMWB	0,62	HMWB	UA_M5.3.4_0053	1	1	3	3	1
Danube	lower Danube	Novopokrovsky became	HMWB	0,54	HMWB	UA_M5.3.4_0059	1	1	3	3	1
Danube	lower Danube	Lake. Katlabug Lake	UA_L_12_L_1_SH_Si	64,6	L	UA_M5.3.4_0061	1	1	1	1	1
Danube	lower Danube	Volninskoye reservoir	HMWB	1,02	HMWB	UA_M5.3.4_0065	1	1	3	3	1
Danube	lower Danube	Valeperzha reservoir	HMWB	0,66	HMWB	UA_M5.3.4_0070	1	1	3	3	1

Danube	lower Danube	Vynogradiv reservoir	HMWB	0,29	HMWB	UA_M5.3.4_0073	1	1	3	3	1
Danube	lower Danube	Zadunayivske Reservoir	HMWB	0,74	HMWB	UA_M5.3.4_0076	1	1	3	3	1
Danube	lower Danube	Kholmske Reservoir	HMWB	0,6	HMWB	UA_M5.3.4_0084	1	1	3	3	1
Danube	lower Danube	Lake China	UA_L_12_L_1_SH_Si	53,28	L	UA_M5.3.4_0086	1	1	1	1	1
Danube	lower Danube	Vynogradiv reservoir	HMWB	0,97	HMWB	UA_M5.3.4_0089	1	1	3	3	1
Danube	lower Danube	Nerushayskoye reservoir	HMWB	1,4	HMWB	UA_M5.3.4_0092	1	1	3	3	1
Danube	lower Danube	artificial object	AWB	1,06	AWB	UA_M5.3.4_0094	1	1		1	1
Danube	lower Danube	artificial object	AWB	0,94	AWB	UA_M5.3.4_0095	1	1		1	1
Danube	lower Danube	Lake. Turke Lake	UA_L_12_M_1_SH_O	1,24	L	UA_M5.3.4_0096	1	1	1	1	1
Danube	lower Danube	Lake. Gradeshka Lake	UA_L_12_S_1_SH_Si	0,38	L	UA_M5.3.4_0097	1	1	1	1	1
Danube	lower Danube	Lake. Derwent Lake	UA_L_12_M_1_SH_O	1,12	L	UA_M5.3.4_0098	1	1	1	1	1
Danube	lower Danube	Lake. Lake Verega	UA_L_12_M_1_SH_Si	1,09	L	UA_M5.3.4_0099	1	1	1	1	1
Danube	lower Danube	Kryve Lake	UA_L_12_S_1_SH_O	0,66	L	UA_M5.3.4_0100	1	1	1	1	1
Danube	lower Danube	Bolshoy Solyonyi estuary	UA_L_12_M_1_SH_O	2,27	L	UA_M5.3.4_0101	1	1	1	1	1
Danube	lower Danube	Pozhezhny estuary	UA_L_12_S_1_SH_O	0,71	L	UA_M5.3.4_0102	1	1	1	1	1
Danube	lower Danube	Zhebriyansky estuary	UA_L_12_M_1_SH_Si	3,53	L	UA_M5.3.4_0103	1	1	1	1	1

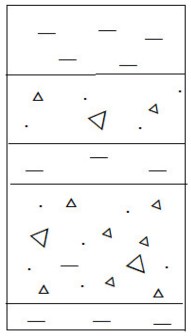
Polygonal SWB of the "coastal waters" category											
Danube	lower Danube	Water area of the Black Sea	UA_CW_M5_M_SH_D_SS	12,76	CW	UA_M5.3.4_0106	1	1	1	1	1
Polygonal SWB of the "transitional waters" category											
Danube	lower Danube	Danube	UA_TW_M5_M_M	242,4	TW	UA_M5.3.4_0105	1	1	1	1	1

ANNEX 2: Characteristics of the identified GWB in the Danube River Basin

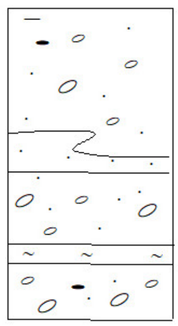
Characterisation of the GWB in alluvial Upper Neopleistocene-Holocene sediments of floodplains and first floodplain terraces of the rivers of the mountainous part and Solotvynska depression

Parameters	Characteristics	Lithological column
GWB	UAM5310Q100	
Name of the groundwater body	GWB in alluvial Upper Neopleistocene-Holocene sediments of floodplains and first floodplain terraces	
Area of distribution, km^{-2}	1251	
Geological index	$a P + aH^{1}_{III}$	
Lithology	Boulders, pebbles, gravel and sand of different grains	
Non-pressure or pressure water	non-pressure	
Composition of overlying sediments	Loams, clays	
Aquifer thickness, m	from 3 to 16	
Filtration coefficient, K, m/day	80-400	
Water permeability coefficient, Km, m $/day^{-2}$	800-1100	
Groundwater level	from 1-2 to 4-5.5	
Annual amplitude of level fluctuations, m	1,5	
Water withdrawal >10 m^{-3} /day: yes/no	Yes	
Number of production wells (water intakes)	> 80 group and single water intakes	
Operated for drinking, agricultural or industrial water supply	Domestic drinking and agricultural water supply	
Flow rate of wells or sources, dm $/s^{-3}$	0,75-13,89	
Chemical composition (main cations and anions)	Mineralisation - 0.12-0.32 g/dm^{-3} ; HCO_3 , Ca	
Main power supply	Infiltration of precipitation, surface water	
Relationship with surface water	Yes	
Trend in level change	Natural fluctuations	
The predominant type of human activity over the object	Water abstraction, including for centralised and non-centralised water supply	
Chemical state	Good	
Quantitative state	Good	
Reliability of information	High	
Annual precipitation, mm	In the mountainous part 800-1300 In lowland 640-1000	

Characterisation of the GWB in weathering crust and other loose Holocene sediments of the mountain slopes of the sedimentary Carpathians

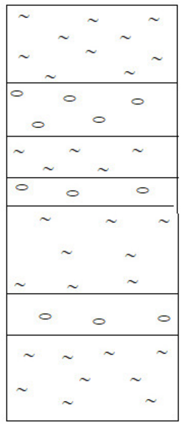
Parameters	Characteristics	Lithological column
GWB	UAM5310Q200	
Name of the groundwater body	GWB in weathering crust and other loose Holocene sediments of the mountain slopes of the sedimentary Carpathians	
Area of distribution, km^{-2}	7366	
Geological index	e,ed,dcH	
Lithology	Boulders, gravel, sand, loam	
Non-pressure or pressure water	non-pressure	
Composition of overlying sediments	Loams, clays	
Aquifer thickness, m	from 3 to 15	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Operated for drinking, agricultural or industrial water supply	Commercial and drinking	
Flow rate of wells or sources, dm /s^3	sources 0.07-3.4 wells 0.06-0.08	
Chemical composition (main cations and anions)	Mineralisation - 0.12-0.2 g/dm^3 ; calcium hydrocarbonate	
Main power supply	Infiltration of precipitation	
Relationship with surface water	yes	
Trend in level change	Natural fluctuations	
The predominant type of human activity over the object	Water abstraction, including for centralised and non-centralised water supply	
Chemical state	Good	
Quantitative state	Good	
Reliability of information	Medium	
Annual precipitation, mm	800-1300	

Characterisation of the GWB in lacustrine-alluvial Middle-Upper Neopleistocene sediments of the Minaya Formation

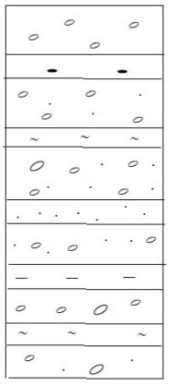
Parameters	Characteristics	Lithological column
GWB	UAM5310Q300	
Name of the groundwater body	GWB in lacustrine-alluvial middle-upper Neopleistocene-New Member sediments of the Minaya Formation	
Area of distribution, km^{-2}	1854	
Geological index	laPII-IIImn	
Lithology	Boulder and pebble loams with an admixture of gravel and sand, gravel and pebble loams, sands	
Non-pressure or pressure water	Non-pressure	
Composition of overlying sediments	Loams, clays	
Aquifer thickness, m	from 10 to 120	
Filtration coefficient, K, m/day	10-70	
Water permeability coefficient, Km, m /day^2	500-3500	
Groundwater level	4-7	
Annual amplitude of level fluctuations, m	2,5	

Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells (water intakes)	> 300 group and individual water intakes	
Operated for drinking, agricultural or industrial water supply	Domestic drinking and agricultural water supply	
Flow rate of wells or sources, dm /s^3	1,0-46	
Chemical composition (main cations and anions)	Mineralisation - 0.22-0.6 g/dm^3 ; calcium hydrocarbonate	
Main power supply	Infiltration of precipitation	
Relationship with surface water	Yes	
Trend in level change	Natural fluctuations	
The predominant type of human activity over the object	Water abstraction, including for centralised and non-centralised water supply	
Chemical state	Satisfactory, sometimes deironing is required	
Quantitative state	Good	
Reliability of information	High	
Annual precipitation, mm	500-800	

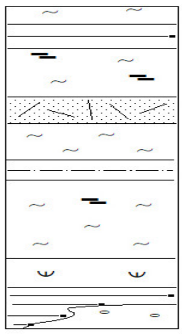
Characterisation of the GWB in the lacustrine-alluvial Eopleistocene-Lower Neopleistocene sediments of the Chop Formation

Parameters	Characteristics	Lithological column
GWB code	UAM5310Q400	
Name of the groundwater body	GWB in lacustrine-alluvial Eopleistocene-Lower Neopleistocene sediments of the Chop Formation	
Area of distribution, km^{-2}	1090	
Geological index	*laE+Pičp*	
Lithology	Sands with an admixture of pebbles and gravel among clays	
Non-pressure or pressure water	Pressure	
Composition of overlying sediments	Clays	
Aquifer thickness, m	from 10 to 400	
Filtration coefficient, K, m/day	1-5	
Water permeability coefficient, Km, m /day^2	3-35	
Groundwater level	2,5-5,8	
Annual amplitude of level fluctuations, m	2,5	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells (water intakes)		
Operated for drinking, agricultural or industrial water supply	Domestic drinking and agricultural water supply	
Flow rate of wells or sources, dm /s^3	0,92-3,0	
Chemical composition (main cations and anions)	Mineralisation - 0.5-0.8 g/dm^3 ; calcium hydrocarbonate	
The predominant type of human activity over the object	Water extraction for non-centralised water supply	
Chemical state	Water needs to be deironed	
Quantitative state	Good	
Reliability of information	Medium	
Annual precipitation, mm	500-800	

Characterisation of the GWB in alluvial Pliocene-Lower Neopleistocene sediments of the ninth and tenth overflank terraces

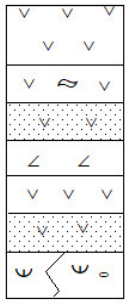
Parameters	Characteristics	Lithological column
GWB code	UAM5310Q500	
Name of the groundwater body	MPZV in alluvial Pliocene-Lower Neopleistocene sediments of the ninth and tenth overflank terraces	
Area of distribution, km^{-2}	118	
Geological index	$a\ N\ \text{-}E^{9-10}{}_{21}$	
Lithology	Gravelly-sandy, sandy, sandy-pebbly and boulder-pebbly deposits	
Non-pressure or pressure water	Pressurised and non-pressurised	
Composition of overlying sediments	Loams, clays	
Aquifer thickness, m	from 5 to 76	
Filtration coefficient, K, m/day		
Water permeability coefficient, Km, m $/day^2$	210-620	
Groundwater level	1,1-47	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells (water intakes)	> 20 individual wells	
Operated for drinking, agricultural or industrial water supply	Domestic drinking and agricultural water supply	
Flow rate of wells or sources, dm $/s^3$	1,0-5,0	
Chemical composition (main cations and anions)	Mineralisation - 0.14-0.6 g/dm^3 ; Cl Ca-Na, HCO_3 -Cl Na and Mg-Ca-Na	
Main power supply	Infiltration of precipitation	
Relationship with surface water	Yes	
Trend in level change	Natural fluctuations	
The predominant type of human activity over the object	Water extraction for non-centralised water supply	
Chemical state	Good	
Quantitative state	Good	
Reliability of information	Medium	
Annual precipitation, mm	500-800	

Characterisation of GWB in the Ilnytsia Formation sediments Pliocene

Parameters	Characteristics	Lithological column
GWB code	UAM5310N100	
Name of the groundwater body	MMP in the Ilnytsia sediments Pliocene worlds	
Area of distribution, km^{-2}	1307	
Geological index	N_2 *il*	
Lithology	Sands, siltstones, tuffs, conglomerates, tuffs	
Non-pressure or pressure water	Pressure	
Composition of overlying sediments	Clays	
Aquifer thickness, m	from 100 to 590	
Filtration coefficient, K, m/day	3-70	
Water permeability coefficient, Km, m $/day^2$		
Groundwater level	22	

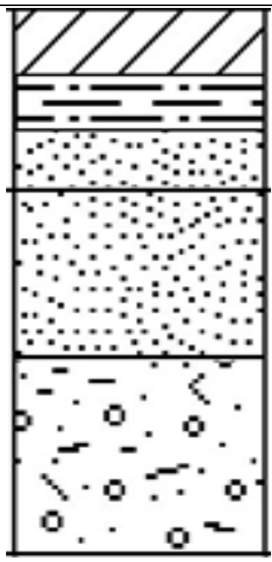
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells (water intakes)		
Operated for drinking, agricultural or industrial water supply		
Flow rate of wells or sources, dm /s^3		
Chemical composition (main cations and anions)	Mineralisation - 0.4-0.8 g/dm^3 ; calcium-sodium chloride-hydrocarbonate	
Reliability of information	Weak	

Characterisation of the GWB in volcanogenic Pliocene sediments of the Vygorlat-Gutyn Ridge

Parameters	Characteristics	Lithological column
GWB code	UAM5310 N200	
Name of the groundwater body	IPM in volcanogenic Pliocene sediments of the Vygorlat-Gutyn Ridge	
Area of distribution, km^{-2}	1727	
Geological index	N2vg	
Lithology	Fissured andesites, andesite-basalts, darites, andesite-dacites and tuffs	
Non-pressure or pressure water	Pressurised and non-pressurised	
Composition of overlying sediments	Loams, clays	
Aquifer thickness, m	"top floor" 20 -70 "ground floor" 3- 20	
Filtration coefficient, K, m/day	from 1-3 to 10-30	
Water permeability coefficient, Km, m /day^2	from 5-20 to 200-250	
Groundwater level	9-70 to +6	
Annual amplitude of level fluctuations, m		
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells (water intakes)	many group and single water intakes	
Operated for drinking, agricultural or industrial water supply	Domestic drinking and agricultural water supply	
Flow rate of wells or sources, dm /s^3	1,7-6,6	
Chemical composition (main cations and anions)	Mineralisation - 0.04-0.4 g/dm^3 ; sodium-calcium hydrocarbonate	
Main power supply	Infiltration of precipitation	
Relationship with surface water	Yes	
Trend in level change	Natural fluctuations	
The predominant type of human activity over the object	Water abstraction, including for centralised and non-centralised water supply	
Chemical state	Good	
Quantitative state	Good	
Reliability of information	High	
Annual precipitation, mm	500-1000	

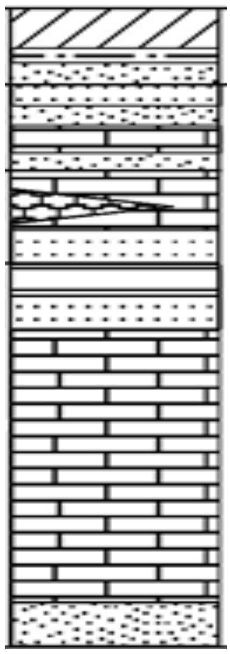
Characterisation of GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces

Parameters	Characteristics	Lithological and hydrogeological column
GWB code	UAM5320Q100	

Name of the groundwater body	GWB in alluvial sediments Holocene floodplains and upper Neopleistocene floodplain terraces	
Area of distribution, km^2	810	
Geological index	$a\ P\ aH^{1-5}_{III+}$	
Lithology	Alluvial Holocene deposits of riverbeds and floodplains (sands, sandy loams, loams, gravels, pebbles) Upper Neopleistocene alluvial deposits I-V of the floodplain terraces of rivers (gravel and pebble deposits with sand and loam layers)	
Groundwater or pressure water	Groundwater, in some places low pressure	
Composition of overlying sediments	Loess loam, sandy loam, soil layer	
Aquifer thickness, m Min, Max, Average	1) from 1.0 to 22.0	
Filtration coefficient, K, m/day. Min, Max, Average	1) from 0.1 to 200	
Water supply coefficient, Km, m^2 /day. Min, Max, Average		
Groundwater level, m, Min, Max, Average for the observation period	1) 0,0-11,0	
Annual amplitude of level fluctuations, m	1) 1,5-3	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells	284	
Used for drinking, agricultural or industrial water supply	Domestic, drinking and agricultural water supply	
Flow rate of wells or sources, l/s	1) wells - from 0.1-33	
Chemical composition (main cations and anions)	Fresh waters (salinity - 0.3-0.7 g/dm^3); calcium hydrocarbonate and calcium-magnesium (Ca, Mg, HCO_3,) prevail	
Main power supply	Infiltration of precipitation, partially surface watercourses	
Relationship with surface water	Intensity of communication: - by the duration of the delay in groundwater withdrawal for river flow "т": from very intensive, with a period т of up to 1 year, in floodplains to intensive, with a period т of 1-5 years, in overflow terraces; - in terms of the coefficients of connection between surface and groundwater resources at groundwater deposits - very intensive (Ksv.=0.95-0.98).	
Trend in level changes (downward, upward)	Natural fluctuations depending on the amount of precipitation	

Prevalence of human activity over the object	Water abstraction, including for centralised and agricultural water supply	
Chemical state	Good. Local pollution by organic decomposition products (nitrates, nitrites, ammonia).	
Quantitative state	Good. The aquifer is the only major source of water supply for large settlements	
Reliability of information (high low)	High	
Amount of annual precipitation, mm	In the mountainous part of the catchment 1200 mm, in the lower reaches - up to 500 mm	

Characterisation of GWB in Miocene sediments

Parameters	Characteristics	Lithological and hydrogeological column
GWB code	UAM5320N100	
Name of the groundwater body	GWB in Miocene sediments	
Area of distribution, km^2	5400	
Geological index	$N\ s_{11}$, N_1 *ks*, N_1 *tr* , N_1 *op*	
Lithology	layers of sands, rarely sandstones, occasionally sandy clays and organogenic limestones, marls	
Groundwater or pressure water	Pressure and non-pressure	
Composition of overlying sediments	Loam, sandy loam, topsoil	
Aquifer thickness, m Min, Max, Average	from 1 to 40	
Filtration coefficient, K, m/day. Min, Max, Average	from 0.1 to 5.0	
Water supply coefficient, Km, m^2 /day. Min, Max, Average		
Groundwater level, m, Min, Max, Average for the observation period	1,0-140,0;	
Annual amplitude of level fluctuations, m	0,2 - 1,0	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells	100	
Used for drinking, agricultural or industrial water supply	Domestic, agricultural and industrial water supply	
Flow rate of wells or sources, l/s	1) wells - from 0.1-12	
Chemical composition (main cations and anions)	Fresh water (mineralisation - 0.3-0.9 g/dm^3); calcium hydrocarbonate and calcium-magnesium (Ca, Mg, HCO_3,) predominate	

Main power supply	Infiltration of precipitation, partially surface watercourses	
Relationship with surface water	Intensity of communication: - by the duration of the delay in groundwater withdrawal for river flow "т": from very intensive, with a period of т up to 1 year, in floodplains to very difficult, with a period of т over 10 years, in watershed areas; - in terms of coefficients of connection between surface and groundwater resources at groundwater deposits: very intensive (Ksv.=0.95-0.98); groundwater level separation from the watercourse channel at 5 field sites.	
Trend in level changes (downward, upward)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Water abstraction, including for centralised, private and technical water supply	
Chemical state	Good	
Quantitative state	Good The aquifer is mainly used for technical and domestic water supply to small farms, individual consumers and as mineral water	
Reliability of information (high low)	High	
Amount of annual precipitation, mm	500-1000	

Characterisation of GWB in Paleocene-Eocene sediments

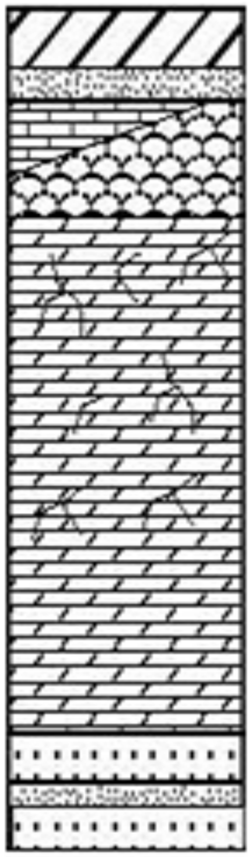
Parameters	**Characteristics**	**Lithological and hydrogeological column**
GWB code	UAM532PG100	
Name of the groundwater body	GWB in Paleocene-Eocene sediments	
Area of distribution, km^2	252	
Geological index	₽$_{1-2}$	
Lithology	Fractured mudstones, siltstones, sandstones	
Groundwater or pressure water	Pressure and non-pressure	
Composition of overlying sediments	Loamy sandy loam, sandy loam, soil layer	
Aquifer thickness, m Min, Max, Average	1) from 1 to 39.0	
Filtration coefficient, K, m/day. Min, Max, Average	1) from 0.1 to 5.0	

Water supply coefficient, Km, m^2 /day. Min, Max, Average		
Groundwater level, m, Min, Max, Average for the observation period	1) 0,0-28,0;	
Annual amplitude of level fluctuations, m	1) 0,2 - 0,4	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells	7	
Used for drinking, agricultural or industrial water supply	Domestic, drinking and industrial water supply	
Flow rate of wells or sources, l/s	1) wells - 0.1-3.0	
Chemical composition (main cations and anions)	Fresh water, calcium hydrocarbonate, less commonly calcium-sodium hydrocarbonate, hydrocarbonate-sulphate with salinity of 0.1-0.3 g/dm^3	
Main power supply	Infiltration of precipitation, partially surface watercourses	
Relationship with surface water	Intensity of communication: - by the duration of the delay in groundwater withdrawal for river flow "т": from very intensive, with a period of т up to 1 year, in floodplains to very difficult, with a period of т over 10 years, in watershed areas; - in terms of coefficients of connection between surface and groundwater resources at groundwater deposits: very intensive (Ksv.=0.95-0.98); groundwater level separation from the watercourse channel at 5 field sites.	
Trend in level changes (downward, upward)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Water abstraction mainly for non-centralised water supply	
Chemical state	Good	
Quantitative state	Good The aquifer is mainly used by individual consumers	
Reliability of information (high low)	High	
Amount of annual precipitation, mm	800-1000	

Characterisation of GWB in Upper Cretaceous sediments

Parameters	Characteristics	Lithological and hydrogeological column
GWB code	UAM5320K100	

Name of the groundwater body	GWB in Upper Cretaceous sediments
Area of distribution, km^2	381
Geological index	K_2
Lithology	Sand, sandstone, layers of marl, limestone, flint, and opal
Groundwater or pressure water	Pressure
Composition of overlying sediments	Loamy sandy loam, limestone, flysch, topsoil
Aquifer thickness, m Min, Max, Average	from 2 to 38.0
Filtration coefficient, K, m/day. Min, Max, Average	from 0.1 to 2.0
Water supply coefficient, Km, m^2 /day. Min, Max, Average	
Groundwater level, m, Min, Max, Average for the observation period	0,5-120,0;
Annual amplitude of level fluctuations, m	0,2 - 0,4
Water withdrawal >10 m^3 /day: yes/no	Yes
Number of production wells	31
Used for drinking, agricultural or industrial water supply	Domestic, drinking and industrial water supply
Flow rate of wells or sources, l/s	0,2-5,0
Chemical composition (main cations and anions)	Fresh water, calcium hydrocarbonate with a salinity of 0.3-0.4 g/dm^3
Main power supply	Infiltration of precipitation, partially surface watercourses
Relationship with surface water	Intensity of communication: - by the duration of the delay in groundwater withdrawal for river flow "т": very intense, with a period т of up to 1 year, in the valleys of major rivers; from difficult, with a period т of 5-10 years, to very difficult, with a period т of more than 10 years, in the valleys of their tributaries
Trend in level changes (downward, upward)	Natural fluctuations depending on the amount of precipitation
Prevalence of human activity over the object	Water abstraction mainly for individual water supply
Chemical state	Good
Quantitative state	Good. The aquifer is mainly used by individual consumers
Reliability of information (high low)	High
Amount of annual precipitation, mm	800-1000



Characterisation of GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces

Parameters	Characteristics	Lithological and hydrogeological column
GWB code	UAM5330Q100	
Name of the groundwater body	GWB in alluvial sediments Holocene floodplains and upper Neopleistocene floodplain terraces	
Area of distribution, km^2	379	
Geological index	$a\ P + aH^{1\text{-}5}{}_{III}$	
Lithology	Alluvial Holocene deposits of riverbeds and floodplains (sands, sandy loams, loams, gravels, pebbles) Upper Pleistocene alluvial deposits I-V of the floodplain terraces of rivers (gravel and pebble deposits with sand and loam layers)	
Groundwater or pressure water	Ground, in some places low-pressure	
Composition of overlying sediments	Loess loam, sandy loam, soil layer	
Aquifer thickness, m Min, Max, Average	1) from 0.9 to 22.0	
Filtration coefficient, K, m/day. Min, Max, Average	1) from 1.0 to 400	
Water supply coefficient, Km, m^2 /day. Min, Max, Average		
Groundwater level, m, Min, Max, Average for the observation period	1) 0,0-7,0;	
Annual amplitude of level fluctuations, m	1) 1,5-5	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells	50	
Used for drinking, agricultural or industrial water supply	Domestic, drinking and agricultural water supply	
Flow rate of wells or sources, l/s	1) wells - from 0.1-16	
Chemical composition (main cations and anions)	Fresh water (mineralisation - 0.3-0.9 g/dm^3); calcium hydrocarbonate and calcium-magnesium (Ca, Mg, HCO_3,) predominate	
Main power supply	Infiltration of precipitation, partially surface watercourses	
Relationship with surface water	Intensity of communication: - by the duration of the delay in groundwater withdrawal for river flow "т": from very intensive, with a period т of up to 1 year, in floodplains to	

	intensive, with a period τ of 1-5 years, in overflow terraces; - in terms of the coefficients of connection between surface and groundwater resources at groundwater deposits - very intensive (Ksv.=0.95-0.98).	
Trend in level changes (downward, upward)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Water abstraction, including for centralised and agricultural water supply	
Chemical state	Good. Local pollution by organic decomposition products (nitrates, nitrites, ammonia).	
Quantitative state	Good. The aquifer is the only major source of water supply for large settlements	
Reliability of information (high low)	High	
Amount of annual precipitation, mm	In the mountainous part of the catchment 1200 mm, in the lower reaches - up to 500 mm	

Characterisation of GWB in Miocene sediments

Parameters	Characteristics	Lithological and hydrogeological column
GWB code	UAM5330N100	
Name of the groundwater body	GWB in Miocene sediments	
Area of distribution, km^2	844	
Geological index	$N\ s_{11}$, $N_1\ ks$, $N_1\ tr$, $N_1\ op$	
Lithology	Interbedded sands, rarely sandstones, occasionally sandy clays and organogenic limestones, marls	
Groundwater or pressure water	Pressure and non-pressure	
Composition of overlying sediments	Loamy sandy loam, sandy loam, soil layer	
Aquifer thickness, m Min, Max, Average	1) from 10 to 40.0	
Filtration coefficient, K, m/day. Min, Max, Average	1) from 0.1 to 5.0	
Water supply coefficient, Km, m^2 /day. Min, Max, Average		
Groundwater level, m, Min, Max, Average for the observation period	1) 1,0-140,0;	
Annual amplitude of level fluctuations, m	1) 0,2 - 0,5	

Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells	20	
Used for drinking, agricultural or industrial water supply	Domestic, agricultural and industrial water supply	
Flow rate of wells or sources, l/s	1) wells - from 0.1-16	
Chemical composition (main cations and anions)	Fresh waters (salinity - 0.3-0.9 g/dm^3); calcium hydrocarbonate and calcium-magnesium (Ca, Mg, HCO_3,) prevail	
Main power supply	Infiltration of precipitation, partially surface watercourses	
Relationship with surface water	Intensity of communication: - by the duration of the delay in groundwater withdrawal for river flow "т": from very intensive, with a period of т up to 1 year, in floodplains to very difficult, with a period of т over 10 years, in watershed areas; - in terms of coefficients of connection between surface and groundwater resources at groundwater deposits: very intensive (Ksv.=0.95-0.98); groundwater level separation from the watercourse channel at 5 field sites.	
Trend in level changes (downward, upward)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Water abstraction, including for centralised, private and technical water supply	
Chemical state	Good	
Quantitative state	Good. The aquifer is mainly used for technical and domestic water supply to small farms, individual consumers and as mineral water	
Reliability of information (high low)	High	
Amount of annual precipitation, mm	500-1000	

Characterisation of GWB in Paleocene-Eocene sediments

Parameters	Characteristics	Lithological and hydrogeological column
GWB code	UAM533PG100	
Name of the groundwater body	GWB in Paleocene-Eocene sediments	
Area of distribution, km^2	327	
Geological index	₽$_{1-2}$	
Lithology	Fractured mudstones, siltstones, sandstones	

Groundwater or pressure water	Pressure and non-pressure	
Composition of overlying sediments	Loamy sandy loam, sandy loam, soil layer	
Aquifer thickness, m Min, Max, Average	1) from 1 to 39.0	
Filtration coefficient, K, m/day. Min, Max, Average	1) from 0.1 to 5.0	
Water supply coefficient, Km, m^2 /day. Min, Max, Average		
Groundwater level, m, Min, Max, Average for the observation period	1) 0,0-28,0;	
Annual amplitude of level fluctuations, m	1) 0,2 - 0,4	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells	5	
Used for drinking, agricultural or industrial water supply	Domestic, drinking and industrial water supply	
Flow rate of wells or sources, l/s	1) wells - 0.1-3.0	
Chemical composition (main cations and anions)	Fresh water, calcium hydrocarbonate, less commonly calcium-sodium hydrocarbonate, hydrocarbonate-sulphate with salinity of 0.1-0.3 g/dm^3	
Main power supply	Infiltration of precipitation, partially surface watercourses	
Relationship with surface water	Intensity of communication: - by the duration of the delay in groundwater withdrawal for river flow "т": from very intensive, with a period of т up to 1 year, in floodplains to very difficult, with a period of т over 10 years, in watershed areas; - in terms of coefficients of connection between surface and groundwater resources at groundwater deposits: very intensive (Ksv.=0.95-0.98); groundwater level separation from the watercourse channel at 5 field sites.	
Trend in level changes (downward, upward)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Water abstraction mainly for non-centralised water supply	
Chemical state	Good	
Quantitative state	Good. The aquifer is mainly used by individual consumers	
Reliability of information (high low)	High	
Amount of annual precipitation, mm	800-1000	

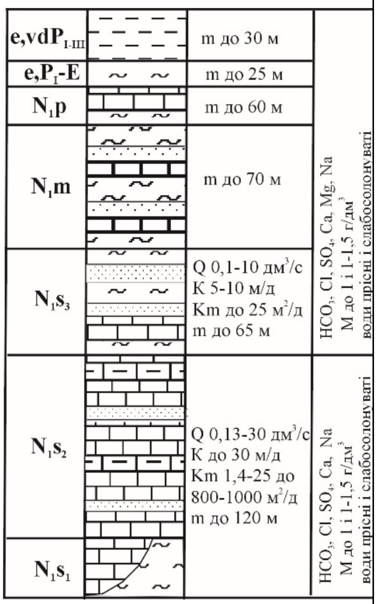
Characterisation of GWB in Upper Cretaceous sediments

Parameters	Characteristics	Lithological and hydrogeological column
GWB code	UAM5330K100	
Name of the groundwater body	GWB in Upper Cretaceous sediments	
Area of distribution, km^2	78	
Geological index	K_2	
Lithology	Sand, sandstone, layers of marl, limestone, flint, and opal	
Groundwater or pressure water	Pressure	
Composition of overlying sediments	Loamy sandy loam, limestone, flysch, soil layer	
Aquifer thickness, m Min, Max, Average	from 2 to 38.0	
Filtration coefficient, K, m/day. Min, Max, Average	from 0.1 to 2.0	
Water supply coefficient, Km, m^2 /day. Min, Max, Average		
Groundwater level, m, Min, Max, Average for the observation period	0,5-120,0;	
Annual amplitude of level fluctuations, m	0,2 - 0,4	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of production wells	2	
Used for drinking, agricultural or industrial water supply	Domestic, drinking and industrial water supply	
Flow rate of wells or sources, l/s	wells - 0.2-7.2	
Chemical composition (main cations and anions)	Fresh water, calcium hydrocarbonate with a salinity of 0.3-0.4 g/dm^3	
Main power supply	Infiltration of precipitation, partially surface watercourses	
Relationship with surface water	Intensity of communication: - by the duration of the delay in groundwater withdrawal for river flow "т": very intense, with a period т of up to 1 year, in the valleys of major rivers; from difficult, with a period т of 5-10 years, to very difficult, with a period т of more than 10 years, in the valleys of their tributaries	
Trend in level changes (downward, upward)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Water abstraction mainly for individual water supply	
Chemical state	Good.	

Quantitative state	Good. The aquifer is mainly used by individual consumers	
Reliability of information (high low)	High	
Amount of annual precipitation, mm	800-1000	

Characterisation of the GWB in the Upper Sarmatian sediments

Parameters	Characteristics	Lithological and hydrogeological column
GWB code	UAM5340N100	
Name of the groundwater body	GWB in the Upper Sarmatian sediments	
Area of distribution, km^2	16478	
Geological index	N s_{13}	
Lithology	Layers of limestone, sandstone, sand, siltstone, which are isolated from each other by layers of clay	
Groundwater or pressure water	Pressure	
Composition of the overlying sediments	Sediments are overlain by single-age clays and meiosis clays	
Aquifer thickness, m Min, Max, Average	The thickness of the layers is from 0.4-0.8 to 6.5-15, rarely more, the total thickness is from 1 to 65	
Filtration coefficient, K, m/d. Min, Max, Average	Limestone prevails 5-10, rarely more, sands up to 5.5	
Water supply coefficient, Km, m^2 /d. Min, Max, Average	Sands up to 10, limestones - 10-25, rarely more	
Groundwater level, m, Min, Max, Average for the observation period	Depending on the terrain - at depths from 2.5 to 90-100	
Annual amplitude of level fluctuations, m	Fluctuations depending on water withdrawal; lower levels in areas of intensive groundwater exploitation	
Water withdrawal >10 m^3 /d: yes/no	Yes	
Number of production wells	912 wells (560 water intakes)	
Used for drinking, agricultural or industrial water supply	Domestic drinking and agricultural water supply. 6 drinking water deposits and 8 mineral water deposits have been explored	
Flow rate of wells or sources, dm /s^3	Wells - 0.1-10, rarely more	
Chemical composition (main cations and anions)	Mineralisation 0.7-1.5 g/dm^3 (HCO_3 SO_4 Cl Ca Na Mg); in the southern part of the body 1.5-3.8 g/dm^3 (Cl Na)	
Main power supply	Infiltration of precipitation and surface water in shallow areas, feeding from adjacent aquifers	
Relationship with surface water	No.	



Trend of level change (decreasing-increasing)	Fluctuations depending on water withdrawal; lower levels in areas of intensive groundwater exploitation	
Prevalence of human activity over the object	Groundwater extraction for water supply. Explored 6 deposits of drinking water and 8 deposits of mineral water	
Chemical state	Good	
Quantitative state	Good	
Reliability of information (high low)	High	
Annual precipitation, mm, long-term average	By weather stations: Lull - 504 Serbia - 423 Berezanka - 414 Separate - 509 Ochakiv - 420 Odesa - 508 Sarata - 491	

ANNEX 3. List of cases of destruction, shutdowns, and disruption of technological processes at enterprises in the Danube sub-basin

№	Date.	Object name	Object type	A hazardous substance that has become a pollutant	Sphere of influence	Type of case	Length	Latitude	Settlement	Territorial community	District	Area.
1	24.07.2023	RENIA BUSINESS OFFICE OF THE STATE ENTERPRISE "SEAPORT ADMINISTRATION OF UKRAINE" (RENIA SEAPORT ADMINISTRATION), EDRPOU code 38728465	Port infrastructure	Sunflower oil	Environment +. Water area Porto + Population	Destruction of infrastructure	45.44	28.28	Reni	Reni	Izmail	Odesa

ANNEX 4. List of Emerald Network sites in the Danube basin

№	River basin	River sub-basin	Name of the territory	Code.	Area, km^2
1	Danube	Tisa	"Carpathian Biosphere Reserve	UA0000006	576,74
2	Danube	Tisa	Synevyr National Park	UA0000026	399,72
3	Danube	Tisa	Uzhansky National Park	UA0000032	389,49
4	Danube	Tisa	Zacharovanyi Krai National Park	UA0000041	60,37
5	Danube	Tisa	Prytysyansky radio-relay station	UA0000113	53,10
6	Danube	Tisa	Interstate Ukrainian-Romanian Biosphere Reserve "Marmarosh and Chyvchyno-Hryniava Mountains"	UA0000117	248,55
7	Danube	Tisa	Eastern Svydovets National Park	UA0000259	149,76
8	Danube	Tisa	Polonyna Borzhava forestry enterprise	UA0000263	44,63
9	Danube	Tisa	Ockley Ged National Park	UA0000268	2,96
10	Danube	Tisa	Vynogradivska Tysa forestry enterprise	UA0000269	59,64
11	Danube	Tisa	Borzhava Lower reaches forestry enterprise	UA0000270	40,49
12	Danube	Tisa	Koson radar station	UA0000271	2,49
13	Danube	Prut and Siret	Carpathian National Nature Park	UA0000014	499,96
14	Danube	Prut and Siret	Vyzhnytsia National Nature Park	UA0000028	111,47
15	Danube	Prut and Siret	Hutsulshchyna National Nature Park	UA0000033	390,41
16	Danube	Prut and Siret	Chernivtsi Regional Landscape Park	UA0000085	213,61
17	Danube	Prut and Siret	Zubrovytsia Nature Reserve	UA0000084	269,33
18	Danube	Prut and Siret	Verkhovynskyi Nature Reserve	UA0000115	143,61
19	Danube	Prut and Siret	Cheremoskyi Nature Reserve	UA0000125	195,65
20	Danube	Prut and Siret	Ryabchik customer	UA0000194	8,37
21	Danube	lower Danube	Danube Biosphere Reserve	UA0000018	463,17
22	Danube	lower Danube	The Danube Lake System	UA0000142	526,58
23	Danube	lower Danube	Bessarabian Colchicum	UA0000158	13,34
24	Danube	lower Danube	Izmail Islands	UA0000182	35,43
25	Danube	lower Danube	South Bessarabian	UA0000597	160,20

ANNEX 5. List of recreational and leisure facilities within the Danube basin

№	Title.	Address.	Territorial community	District	Area.
1	Recreation area "Eden"	Tereblya village, Voloshin Street, building 96	Bushtynska	Tyachivskyi	Transcarpathian
2	Recreation area, Bumerang LLC	Dyida village, 121 Arpad Street, building 121	Velikobyganskaya	Beregovsky	Transcarpathian
3	The Siloam Baths recreation centre, Individual entrepreneur Sedlyar O.V.	Shayan village, Ozerna Street, building 1	Vyshkivska	Khust	Transcarpathian
4	"Chernivtsi City Beach"	м. Chernivtsi, 5 Donbasovskaya str.	Chernivetska	Chernivtsi	Chernivetska
5	"Rutka"	c. Velykyi Kuchuriv village	Velykokuchurivska	Chernivtsi	Chernivetska
6	"Wave"	c. Boyany village	Boyanskaya	Chernivtsi	Chernivetska
7	"Sunny Beach"	c. Boyany village	Boyanskaya	Chernivtsi	Chernivetska
8	Children's camp "Under the forest"	м. Chernivtsi (in the Tsetsyno district)	Chernivetska	Chernivetska	Chernivetska

ANNEX 6. List of surface water monitoring sites in the Danube River Basin

№	SWB code	Name of the SWB	Name of the monitoring point	Code of the monitoring point	Geographical coordinates		RRB	Sub-basin	SWB category	Type of SWB
					Length	Latitude				
Diagnostic monitoring										
1	UA_M5.3.1_0198	Gashparka	8 km below V. Kopanya village, Berehove district, road bridge	UA_M5.3.1_0198_01	23° 8'41.85 "E	48°11'42.98 "N	Danube	Tisa	river	UA_R_10_S_1_Si
2	UA_M5.3.1_0327	Mala Pina	0.2 km, Polyana village, Mukachevo district, road bridge	UA_M5.3.1_0327_01	22°58'4.24 "E	48°37'23.65 "N	Danube	Tisa	river	UA_R_10_S_2_Si
3	UA_M5.3.1_0035	Lazeshchyna	14 km, above Lazeshchyna village, Rakhiv district, (reference conditions)	UA_M5.3.1_0035_01	24°25'53.90 "E	48°14'20.28 "N	Danube	Tisa	river	UA_R_10_S_4_Si
4	UA_M5.3.1_0431	Uzh	66 km, Dubrynychi village, above the confluence of the Lyuta River, Uzhhorod district, road bridge	UA_M5.3.1_0431_01	22°29'31.43 "E	48°48'58.17 "N	Danube	Tisa	river	UA_R_10_M_1_Si
5	UA_M5.3.1_0202	Batar	50 km, Cherna village, Berehove district, road bridge	UA_M5.3.1_0202_01	23°11'16.63 "E	48° 8'10.33 "N	Danube	Tisa	river	UA_R_11_S_2_Si
6	UA_M5.3.2_0003	Prut	941 km, Verbovskyi settlement, Yaremche City Council, impact of wastewater from the Municipal Enterprise "Vorokhta Village Utility"	UA_M5.3.2_0003_1	24˚35'05,9 "E	48˚19'18,5 "N	Danube	Prunus	river	UA_R_10_M_3_Si
7	UA_M5.3.2_0004	Prut	896 km, Yaremche, drinking water intake in Yaremche, Yaremche Water and Sewerage Department. Yaremche	UA_M5.3.2_0004_01	24˚33'54,0 "E	48˚27'33,0 "N	Danube	Prunus	river	UA_R_10_M_2_Si

8	UA_M5.3.2_0006	Prut	864 km, Sheparivtsi village, drinking water intake in Kolomyia, Kolomyiavodokanal	UA_M5.3.2_0006_01	24˚57'05,06 "E	48˚33'13,26 "N	Danube	Prunus	river	UA_R_16_L_2_Si
9	UA_M5.3.2_0007	Prut	790 km, Nepolokivtsi village, border of Ivano-Frankivsk and Chernivtsi regions	UA_M5.3.2_0007_01	25° 37' 16 "E	48° 22' 48 "N	Danube	Prunus	river	UA_R_16_L_1_Si
10	UA_M5.3.2_0007	Prut	772 km, Chernivtsi, Lenkivtsi village, w/s, left bank, 500 m above the bridge on the road to Chernivtsi	UA_M5.3.2_0007_02	25°53'54,2 "E	48°19'16,68 "N	Danube	Prunus	river	UA_R_16_L_1_Si
11	UA_M5.3.2_0007	Prut	759 km, Magala village, impact of wastewater from Chernivtsi Vodokanal	UA_M5.3.2_0007_03	26° 0' 42 "E	48° 16' 32 "N	Danube	Prunus	river	UA_R_16_L_1_Si
12	UA_M5.3.2_0007	Prut	718 km, Marshyntsi village (bridge), border with Romania	UA_M5.3.2_0007_04	26°17'43.6 "E	48°11'59.0 "N	Danube	Prunus	river	UA_R_16_L_1_Si
13	UA_M5.3.2_0007	Prut	697 km, Kostychany village, border with Romania and Moldova, 200 m below the confluence of the Cherlena River with the Prut River	UA_M5.3.2_0007_05	26°29' 53,52 "E	48° 13' 3,83 "N	Danube	Prunus	river	UA_R_16_L_1_Si
14	UA_M5.3.2_0007	Prut	678 km, Mamalyga village, border area with Romania and the Republic of Moldova	UA_M5.3.2_0007_06	26° 37' 48,0 "E	48° 15' 36,0 "N	Danube	Prunus	river	UA_R_16_L_1_Si
15	UA_M5.3.2_0007	Prut	746 km from the mouth, Magala village Camping discharge from Chernivtsi water utility	UA_M5.3.2_0007_03	25°59'59.2 "E	48°17'19.9 "N	Danube	Prunus	river	UA_R_16_L_1_SI
16	UA_M5.3.2_0012	Prutets-Yablunytskyi	1 km, Tatariv village, discharge of wastewater from Bukovel LLC and hotel and recreation complexes in Polyanytsia village	UA_M5.3.2_0012_01	24°33' 57,42 "E	48°20' 22,92 "N	Danube	Prunus	river	UA_R_10_S_4_Si

17	UA_M5.3.2_0076	Black	22.5 km, Khomyakivka village, Kolomyia district, Ivano-Frankivsk region, impact of wastewater from Hvizdetsky WWTP	UA_M5.3.2_0076_1	25˚17'29,0 "E	48˚34'13,4 "N	Danube	Prunus	river	UA_R_16_M_2_Si
18	UA_M5.3.2_0088	Black Cheremosh	18 km, Verkhovyna village, impact of wastewater from Verkhovyna CPP	UA_M5.3.2_0088_01	24°50' 24,21 "E	48°09' 25.20 "N	Danube	Prunus	river	UA_R_10_M_3_SI
19	UA_M5.3.2_0105	White Cheremosh	1 km, Shpetky village, municipal discharges	UA_M5.3.2_0105_01	24°59'25.5 "E	48°07'07.6 "N	Danube	Prunus	river	UA_R_10_M_3_Si
20	UA_M5.3.2_0149	Volitsa	1 km, Rybne village, impact of wastewater from water users	UA_M5.3.2_0149_01	25°18'6,631 "E	48°21'56,502 "N	Danube	Prunus	river	UA_R_16_S_2_SI
21	UA_M5.3.2_0158	Lingonberry	1.35 km, Zeleniv village anthropogenic load	UA_M5.3.2_0158_01	25°38'22.1 "E	48°21'28.3 "N	Danube	Prunus	river	UA_R_16_M_1_SI
22	UA_M5.3.2_0162	Glinnytsia	4 km, Drachyntsi village municipal discharge	UA_M5.3.2_0162_01	25°42'22.5 "E	48°19'05.8 "N	Danube	Prunus	river	UA_R_16_M_1_SI
23	UA_M5.3.2_0165	Sovytsia (Stavchanska)	3 km, Luzhany village, ponds, municipal discharges, Luzhany distillery	UA_M5.3.2_0165	25°47'21.6 "E	48°21'05.8 "N	Danube	Prunus	river	UA_R_16_M_1_Si
24	UA_M5.3.2_0166	Owl	900 km, Zastavna, impact of wastewater from the Zastavna Wastewater Treatment Plant	UA_M5.3.2_0166_01	25° 49' 17 "E	48° 30' 51 "N	Danube	Prunus	HMWB	no
25	UA_M5.3.2_0168	Owl	11 km, Lashkivka village, impact of the Kitsmansky VUZHKG's wastewater	UA_M5.3.2_0168_01	25°47'32.4 "E	48°24'51.5 "N	Danube	Prunus	HMWB	no
26	UA_M5.3.2_0168	Sovytsia (Kitsmanska)	7 km, Mamayivtsi village, Dyoler (Bukofrut) dumps	UA_M5.3.2_0168_02	25°49'8.6 "E	48°22'7 "N	Danube	Prunus	HMWB	no
27	UA_M5.3.2_0172	Klockuchka	1.2 km, Chernivtsi, Sevastopolska Street, municipal discharges	UA_M5.3.2_0172_01	25°55'36.3 "E	48°18'14.9 "N	Danube	Prunus	river	UA_R_16_S_1_Si

28	UA_M5.3.2_0175	Shubranets (Potit)	3 km, Chernivtsi, Stara Zhuchka district, wastewater impact, discharge into Zadubrivka river	UA_M5.3.2_0175_01	25°56'47.5 "E	48°19'23.3 "N	Danube	Prunus	HMWB	no
29	UA_M5.3.2_0180	Dereluy river	30 km, Hlyboka, impact of wastewater from Hlyboka utility company	UA_M5.3.2_0180_01	25°56'16.8 "E	48°06'5.1 "N	Danube	Prunus	river	UA_R_16_S_2_Si
30	UA_M5.3.2_0182	Dereluy	0.5 km, Ostrytsia village, municipal discharges	UA_M5.3.2_0182_01	26°02'36.4 "E	48°15'56.2 "N	Danube	Prunus	river	UA_R_16_M_1_Si
31	UA_M5.3.2_0192	Vitsa	2.3 km, Mamornytsia village, discharge of Kolos PE	UA_M5.3.2_0192_01	26°06'06.7 "E	48°13'05.2 "N	Danube	Prunus	river	UA_R_16_S_1_SI
32	UA_M5.3.2_0197	Khukiv river	2.5 km, Boyany village, municipal discharges from boarding houses, pollution from UNDS gardens Plant quarantine	UA_M5.3.2_0197_01	26°07'14.6 "E	48°15'15.6 "N	Danube	Prunus	river	UA_R_16_M_1_Si
33	UA_M5.3.2_0200	Molnitsa	0.7 km, Molnytsia village, municipal discharge	UA_M5.3.2_0200_01	26°14'04.0 "E	48°12'09.2 "N	Danube	Prunus	river	UA_R_16_M_1_Si
34	UA_M5.3.2_0203	Stara Hranica	2 km, Novoselytsia, pollution from gardens	UA_M5.3.2_0203_01	26°16'32.0 "E	48°13'03.7 "N	Danube	Prunus	river	UA_R_16_M_1_Si
35	UA_M5.3.2_0209	Ringach	2.95 km, Marshyntsi village, pollution from gardens, Tarasovetska Poultry Farm	UA_M5.3.2_0209_01	26°19'14.6 "E	48°12'19.9 "N	Danube	Prunus	HMWB	no
36	UA_M5.3.3_0005	Siret	448 km, Storozhynets, w/in	UA_M5.3.3_0005_01	25°42'52,63 "E	48°9'1,94 "N	Danube	Siret	river	UA_R_16_M_2_Si
37	UA_M5.3.3_0006	Siret	439 km, Petrychanka village, wastewater discharge from the Petrychanka Psychoneurological Residential Care Home	UA_M5.3.3_0006_01	25°53'0,0 "E	48° 02' 51 "N	Danube	Siret	river	UA_R_16_L_2_Si
38	UA_M5.3.3_0006	Siret	418 km, Cherepkivtsi village, bridge, border area with Romania	UA_M5.3.3_0006_02	25° 57' 53,6 "E	48° 0' 51,23 "N	Danube	Siret	river	UA_R_16_L_2_Si

39	UA_M5.3.3_0029	Small Siret	2.44 km, Sucheveni village, municipal discharges	UA_M5.3.3_0029_01	25°50'23.3 "E	48°02'51.0 "N	Danube	Siret	river	UA_R_16_M_2_Si
40	UA_M5.3.3_0045	Solonets	15 km, Krasnoyilsk, discharge from Krasnoyilsk Dock	UA_M5.3.3_0045_01	25°36'16.4 "E	48°01'03.9 "N	Danube	Siret	river	UA_R_16_S_2_Si
41	UA_M5.3.4_0003	Danube (Kilia arm)	94 km, Danube River; m. Izmail	UA_M5.3.4_0003_05	28°48'25 "E	45°20'20 "N	Danube	Lower Danube	river	UA_R_12_XL_1_Si
42	UA_M5.3.4_0004	Danube (Kislicka arm)	Sour sleeve	UA_M5.3.4_0004_01	29°08'47 "E	45°26'05 "N	Danube	Lower Danube	river	UA_R_12_XL_1_Si
43	UA_M5.3.4_0012	Danube (Solomon's Arm)	c. Liski	UA_M5.3.4_0012_01	29°30'29.0 "E	45°27'13.5 "N	Danube	Lower Danube	river	UA_R_12_XL_1_SI
44	UA_M5.3.4_0034	Safiany reservoir	c. Safiany village	UA_M5.3.4_0034_01	28°53'24.7 "E	45°23'12.2 "N	Danube	Lower Danube	lake	UA_R_12_L_SH_1_Si
45	UA_M5.3.4_0061	Katlabukh reservoir	c. Kyslytsia village	UA_M5.3.4_0061_02	29°01'46.3 "E	45°24'20.0 "N	Danube	Lower Danube	lake	UA_R_12_L_SH_1_Si
Operational monitoring										
1	UA_M5.3.1_0003	Chorna Tysa	42 km above Chorna Tysa village, Rakhiv district (reference conditions)	UA_M5.3.1_0003_01	24°19'17.76 "E	48°18'56.15 "N	Danube	Tisa	river	UA_R_10_S_4_Si
2	UA_M5.3.1_0004	Chorna Tysa	37 km, Chorna Tysa village, above the confluence of the Stanislav river, Rakhiv district, road bridge	UA_M5.3.1_0004_01	24°21'43.64 "E	48°17'42.95 "N	Danube	Tisa	river	UA_R_10_S_3_Si
3	UA_M5.3.1_0005	Chorna Tysa	10 km, Kvasy village, Rakhiv district, road bridge	UA_M5.3.1_0005_01	24°16'33.31 "E	48° 7'59.38 "N	Danube	Tisa	river	UA_R_10_M_3_Si
4	UA_M5.3.1_0008	Tisza river	942 km, Dilove (Khmeliv) village, Rakhiv district, border with Romania	UA_M5.3.1_0008_01	24° 8'51,21 "E	47°54'56,18 "N	Danube	Tisa	river	UA_R_10_L_2_Si
5	UA_M5.3.1_0008	Tisa	912 km, Solotvyno village, Tyachiv district, border with Romania	UA_M5.3.1_0008_02	23°52' 34,29 "E	47°56' 21,21 "N	Danube	Tisa	river	UA_R_10_L_2_Si
6	UA_M5.3.1_0008	Tisa	882 km, Tyachiv, drinking water supply. Tyachiv, Tyachiv district, border with Romania	UA_M5.3.1_0008_03	23°34'33,31 "E	48°0'17,93 "N	Danube	Tisa	river	UA_R_10_L_2_Si

7	UA_M5.3.1_0008	Tisa	957 km, Vilkhovatyi village, Rakhiv district, pedestrian bridge	UA_M5.3.1_0008_04	24°10'14.12 "E	48° 1'38.26 "N	Danube	Tisa	river	UA_R_10_L_2_Si
8	UA_M5.3.1_0010	Tisa	849 km, Kryva, Khust district, road bridge	UA_M5.3.1_0010_01	23°15'18.28 "E	48°10'35.63 "N	Danube	Tisa	river	UA_R_10_L_1_Si
9	UA_M5.3.1_0011	Tisa	807 km, Vylok village, Berehove district, border with Hungary	UA_M5.3.1_0011_01	22°50'4,29 "E	48°5'43,32 "N	Danube	Tisa	river	UA_R_11_L_1_Si
10	UA_M5.3.1_0014	Tisa	624 km, Chop, Uzhhorod district, border with Hungary	UA_M5.3.1_0014_01	22°12'25 "E	48°25'32,33 "N	Danube	Tisa	river	UA_R_11_XL_1_Si
11	UA_M5.3.1_0052	Shopurka	0.2 km, V. Bychkiv, Rakhiv district, road bridge	UA_M5.3.1_0052_01	24° 0'28.60 "E	47°58'7.36 "N	Danube	Tisa	river	UA_R_10_M_2_Si
12	UA_M5.3.1_0063	Apšica	2 km, Hrushevo village, Tyachiv district, road bridge	UA_M5.3.1_0063_01	23°47'4.52 "E	47°59'58.31 "N	Danube	Tisa	river	UA_R_10_M_2_Si
13	UA_M5.3.1_0074	Teresva	1 km, Teresva, Tyachiv district, road bridge	UA_M5.3.1_0074_01	23°40'35.13 "E	48° 0'1.30 "N	Danube	Tisa	river	UA_R_10_L_2_Si
14	UA_M5.3.1_0104	Martosz	1 km, Tyachiv, Tyachiv district, road bridge	UA_M5.3.1_0104_01	23°33'8.51 "E	48° 1'13.69 "N	Danube	Tisa	river	UA_R_10_S_2_Si
15	UA_M5.3.1_0108	Tereblya	54 km, Meryshor village, Khust district, road bridge	UA_M5.3.1_0108_01	23°40'34.80 "E	48°24'28.53 "N	Danube	Tisa	river	UA_R_10_M_3_Si
16	UA_M5.3.1_0109	Tereble-Ritske reservoir	52 km, Vilshany village, Khust district, dam	UA_M5.3.1_0109_01	23°37'53.66 "E	48°21'53.44 "N	Danube	Tisa	HMWB	no
17	UA_M5.3.1_0110	Tereblya	1 km, Bushtyno village, Tyachiv district, road bridge	UA_M5.3.1_0110_01	23°29'27.23 "E	48° 2'28.20 "N	Danube	Tisa	river	UA_R_10_M_2_Si
18	UA_M5.3.1_0151	Khustets	1 km, Khust, Khust district, road bridge	UA_M5.3.1_0151_01	23°16'26.88 "E	48°10'18.56 "N	Danube	Tisa	river	UA_R_10_S_1_Si
19	UA_M5.3.1_0157	River	1 km, Khust, Khust district, road bridge	UA_M5.3.1_0157_01	23°16'12.35 "E	48°10'50.66 "N	Danube	Tisa	river	UA_R_10_L_2_Si
20	UA_M5.3.1_0222	Borzhava	32, km, Velyki Komyaty village, Berehove district, road bridge	UA_M5.3.1_0222_01	22°59'36.35 "E	48°14'46.84 "N	Danube	Tisa	river	UA_R_11_M_1_Si

21	UA_M5.3.1_0223	Borzhava	10 km, Bene village, Berehove district, road bridge	UA_M5.3.1_0223_01	22°46'16.20 "E	48° 9'45.71 "N	Danube	Tisa	river	UA_R_11_L_1_Si
22	UA_M5.3.1_0279	Werke Canal	21 km, Berehove, Berehove district, road bridge	UA_M5.3.1_0279_01	22°38'34.10 "E	48°13'43.04 "N	Danube	Tisa	river	UA_R_11_S_1_Si
23	UA_M5.3.1_0290	Kosino-Bovtradsky Canal	7 km, Koson village, Berehove district, road bridge	UA_M5.3.1_0290_01	22°29'55.48 "E	48°15'38.85 "N	Danube	Tisa	AWB	no
24	UA_M5.3.1_0293	Charonda-Latorica	2 km, Chervone village, Uzhhorod district, road bridge	UA_M5.3.1_0293_01	22°16'11.57 "E	48°25'45.15 "N	Danube	Tisa	AWB	no
25	UA_M5.3.1_0300	Latorytsia	65 km, before Chop, drinking water supply to/from Chop, Uzhhorod district, border with Slovakia	UA_M5.3.1_0300_01	22°12'34,42 "E	48°27'20,85 "N	Danube	Tisa	river	UA_R_11_L_1_Si
26	UA_M5.3.1_0300	Latorytsia	87 km, below N. Davydkove village, Mukachevo district, road bridge	UA_M5.3.1_0300_02	22°32'35.75 "E	48°26'28.66 "N	Danube	Tisa	river	UA_R_11_L_1_Si
27	UA_M5.3.1_0301	Latorytsia	103 km, Mukachevo, Mukachevo district, road bridge	UA_M5.3.1_0301_01	22°43'33.38 "E	48°26'56.29 "N	Danube	Tisa	river	UA_R_10_L_1_Si
28	UA_M5.3.1_0310	Veche	0.2 km, Nelipyno village, Mukachevo district, road bridge	UA_M5.3.1_0310_01	23° 1'45.37 "E	48°33'38.17 "N	Danube	Tisa	river	UA_R_10_M_2_Si
29	UA_M5.3.1_0312	Zhdimir	9 km above Vovchy village, Mukachevo district, drinking water supply from Svalyava, reference conditions	UA_M5.3.1_0312_01	23° 7'2.71 E	48°35'18.55N	Danube	Tisa	river	UA_R_10_S_3_Si
30	UA_M5.3.1_0322	Foam	1 km below Holubynne village, Mukachevo district, road bridge	UA_M5.3.1_0322_01	22°57'46.46 "E	48°33'48.58 "N	Danube	Tisa	river	UA_R_10_M_2_Si
31	UA_M5.3.1_0355	Old	17 km, Znyatsevo village, Mukachevo district, road bridge	UA_M5.3.1_0355_01	22°31'34.54 "E	48°29'27.51 "N	Danube	Tisa	river	UA_R_11_M_1_Si
32	UA_M5.3.1_0393	Tova	9 km, Baranyntsi village, Uzhhorod district, pedestrian bridge	UA_M5.3.1_0393_01	22°19'36.12 "E	48°34'15.45 "N	Danube	Tisa	river	UA_R_11_S_1_Si

33	UA_M5.3.1_0405	Babichka reservoir	c. Zaluzhzhya village, Mukachevo district	UA_M5.3.1_0405_01	22°51'18.29 "E	48°22'3.50 "N	Danube	Tisa	HMWB	no
34	UA_M5.3.1_0410	Mochila reservoir	Pistryalovo village, Mukachevo district	UA_M5.3.1_0410_01	22°48'33.82 "E	48°21'45.16 "N	Danube	Tisa	HMWB	no
35	UA_M5.3.1_0413	Roman Potik reservoir	c. Horbok village, Mukachevo district	UA_M5.3.1_0413_01	22°52'48.22 "E	48°18'32.05 "N	Danube	Tisa	HMWB	no
36	UA_M5.3.1_0432	Fornosh reservoir	c. Fornosh village, Mukachevo district, Ramsar wetlands	UA_M5.3.1_0432_02	22°20'5.49 "C	48°37'42.21 "N	Danube	Tisa	river	UA_R_10_L_1_Si
37	UA_M5.3.1_0433	Uzh	32 km, Storozhnytsia village, Uzhhorod district, border with Slovakia	UA_M5.3.1_0433_01	22°12' 48,56 "E	48°36' 20,93 "N	Danube	Tisa	river	UA_R_11_L_1_Si
38	UA_M5.3.1_0440	Ulichka	1 km, Zabrid village, Uzhhorod district, border with Slovakia	UA_M5.3.1_0440_01	22°27' 22,41 "E	48°55' 20,07 "N	Danube	Tisa	river	UA_R_10_M_2_Si
39	UA_M5.3.1_0441	Ubl'a	5 km, Malyi Bereznyi village, Uzhhorod district, border with Slovakia	UA_M5.3.1_0441_01	22°25'56,01 "E	48°52'33,88 "N	Danube	Tisa	river	UA_R_10_M_1_Si
40	UA_M5.3.1_0477	Uzh	35 km, Uzhhorod, drinking water supply from Uzhhorod	UA_M5.3.1_0477_01	22°19'2.92"E	48°37'55.74"N	Danube	Tisa	HMWB	no
41	UA_M5.3.2_0004	Prut	896 km, Yaremche, drinking water intake in Yaremche, Yaremche Water and Sewerage Department. Yaremche	UA_M5.3.2_0004_01	24˚33'54,0 "E	48˚27'33,0 "N	Danube	Prunus	river	UA_R_10_M_2_Si
42	UA_M5.3.2_0007	Prut	772 km, Chernivtsi, Lenkivtsi village, w/s, left bank, 500 m above the bridge on the road to Chernivtsi	UA_M5.3.2_0007_02	25°53'54,2 "E	48°19'16,68 "N	Danube	Prunus	river	UA_R_16_L_1_Si
43	UA_M5.3.2_0007	Prut	718 km, Marshyntsi village (bridge), border with Romania	UA_M5.3.2_0007_04	26°17'43.6 "E	48°11'59.0 "N	Danube	Prunus	river	UA_R_16_L_1_Si
44	UA_M5.3.2_0076	Black	22.5 km, Khomyakivka village, Kolomyia district, Ivano-Frankivsk region, impact of	UA_M5.3.2_0076_1	25˚17'29,0 "E	48˚34'13,4 "N	Danube	Prunus	river	UA_R_16_M_2_Si

			wastewater from Hviz-detsky WWTP							
45	UA_M5.3.2_0149	Volitsa	1 km, Rybne village, impact of wastewater from water users	UA_M5.3.2_0149_01	25°18'6,631 "E	48°21'56,502 "N	Danube	Prunus	river	UA_R_16_S_2_SI
46	UA_M5.3.2_0166	Owl	900 km, Zastavna, impact of wastewater from the Zastavna Wastewater Treatment Plant	UA_M5.3.2_0166_01	25° 49' 17 "E	48° 30' 51 "N	Danube	Prunus	HMWB	no
47	UA_M5.3.2_0168	Owl	11 km, Lashkivka village, impact of the Kitsmansky VUZHKG's wastewater	UA_M5.3.2_0168_01	25°47'32.4 "E	48°24'51.5 "N	Danube	Prunus	HMWB	no
48	UA_M5.3.2_0172	Klockuchka	1.2 km, Chernivtsi, Sevastopolska Street, municipal discharges	UA_M5.3.2_0172_01	25°55'36.3 "E	48°18'14.9 "N	Danube	Prunus	river	UA_R_16_S_1_Si
49	UA_M5.3.2_0180	Dereluy	30 km, Hlyboka, impact of wastewater from Hlyboka utility company	UA_M5.3.2_0180_01	25°56'16.8 "E	48°06'5.1 "N	Danube	Prunus	river	UA_R_16_S_2_Si
50	UA_M5.3.2_0203	Stara Hranica	2 km, Novoselytsia, pollution from gardens	UA_M5.3.2_0203_01	26°16'32.0 "E	48°13'03.7 "N	Danube	Prunus	river	UA_R_16_M_1_Si
51	UA_M5.3.2_0200	Molnitsa	0.7 km Molnytsia village, municipal discharge	UA_M5.3.2_0200_01	26°14'04.0 "E	48°12'09.2 "N	Danube	Prunus	river	UA_R_16_M_1_Si
52	UA_M5.3.4_0001	Danube	163 km, Reni, border with Romania	UA_M5.3.4_0001_01	28°13'46,02 "E	45°28'2,04 "N	Danube	Lower Danube	river	UA_R_12_XL_1_Si
53	UA_M5.3.4_0003	Danube	48 km, Kilia, drinking water supply	UA_M5.3.4_0003_01	29°15'50,61 "E	45°26'6,56 "N	Danube	Lower Danube	river	UA_R_12_XL_1_Si
54	UA_M5.3.4_0003	Danube	20 km, m. Vilkovo, drinking water supply	UA_M5.3.4_0003_02	29°34'18,53 "E	45°24'5,6 "N	Danube	Lower Danube	river	UA_R_12_XL_1_Si
55	UA_M5.3.4_0003	Danube (Kilia arm)	89.9 km of the Danube River; 1.0 km below Izmail	UA_M5.3.4_0003_03	28°47'38 "E	45°20'09 "N	Danube	Lower Danube	river	UA_R_12_XL_1_SI
56	UA_M5.3.4_0003	Danube (Kilia arm)	32.0 km of the Danube River; 13.0 km below the town of Kiliya	UA_M5.3.4_0003_04	29°25'55 "E	45°26'41 "N	Danube	Lower Danube	river	UA_R_12_XL_1_SI
57	UA_M5.3.4_0018	Kagul reservoir	along A 218 from the southern outskirts of Nahirne village	UA_M5.3.4_0018_01	28°26'00 "E	45°26'00 "N	Danube	Lower Danube	lake	UA_L_12_L_1_SH_Si

58	UA_M5.3.4_0023	V. Yalpug	5.4 km, Tabaki village, Bolhrad district, flows into Lake Yalpug, border with the Republic of Moldova	UA_M5.3.4_0023_01	28°35'20,05 "E	45°43'45 "N	Danube	Lower Danube	HMWB	no
59	UA_M5.3.4_0024	Yalpug reservoir	1.6 km north-west of Kosa village	UA_M5.3.4_0024_01	28°37'14,7 "E	45°28'19,7 "N	Danube	Lower Danube	lake	UA_L_12_XL_1_SH_SI
60	UA_M5.3.4_0024	Yalpug-Kugurluy reservoir	drinking water to/from Bolgrad	UA_M5.3.4_0024_02	28°37'16,5 "E	45°37'21,04 "N	Danube	Lower Danube	lake	UA_L_12_XL_1_SH_Si
61	UA_M5.3.4_0025	Kugurlui reservoir	2.0 km south-west of Nova Nekrasivka village	UA_M5.3.4_0025_01	28°41'22,4 "E	45°17'29,1 "N	Danube	Lower Danube	lake	UA_L_12_L_1_SH_O
62	UA_M5.3.4_0029	Karasulak river	Road bridge of the road T 1631 Novoozerne - Bolhrad, near the village of Krynychne, Bolhrad district	UA_M5.3.4_0029_01	28°39'57,1 "E	45°33'12,7 "N	Danube	Lower Danube	HMWB	no
63	UA_M5.3.4_0042	Tashbunar	road bridge on the Tatarbunary-Ismail road (near the Izmail railway station)	UA_M5.3.4_0042_01	28° 55'13,7 "E	45°30'39,4 "N	Danube	Lower Danube	HMWB	no
64	UA_M5.3.4_0061	Katlabukh reservoir	within the village of Suvorove	UA_M5.3.4_0061_01	28°58'57 "E	45° 35'00 "N	Danube	Lower Danube	lake	UA_L_12_L_1_SH_Si
65	UA_M5.3.4_0063	Kyrgyzstan-China	49 km, M. Yaroslavets village, border with the Republic of Moldova	UA_M5.3.4_0063_01	28°59'42,72 "E	46°5'52,74 "N	Danube	Lower Danube	river	UA_R_12_S_1_Si
66	UA_M5.3.4_0086	China reservoir	within the village of Chervonyi Yar	UA_M5.3.4_0086_01	29°12'00 "E	45°35'00 "N	Danube	Lower Danube	lake	UA_L_12_L_1_SH_Si
67	UA_M5.3.4_0091	Nerushai	within the village of Bashtanivka	UA_M5.3.4_0091_01	29°28'50,5 "E	45°46'26,7 "N	Danube	Lower Danube	HMWB	no

ANNEX 7. Integrated assessment table of the Danube RBD SWB for 2020-2023.

No.	Surface water body				Biological indicators						Hydromorphological indicators - high condition (Yes/No)	Chemical and physicochemical parameters	Basin specific		Environmental status	Assessment reliability level***.	Artificial and substantially modified SWB			Chemical state	
	Name of the SWB	Code	Type	The length of the pipeline, km	Phytoplankton	Microphytobenthos	Vascular plants	Bottom macroinvertebrates	The state of the SWB by biological indicators	Assessment reliability level***.			Basin specific	Assessment reliability level***.			Artificial SWB (Yes/No)	Substantially amended SWB (Yes/Candidate)	ECOLOGICAL potential	Chemical state***.	Assessment reliability level***.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	p. Chorna Tysa	UA_M5.3.1_0003	UA_R_10_S_4_Si	10,3	n/a	2	n/a	2	2	C	yes	1			2	C				D	C
2	p. Chorna Tysa	UA_M5.3.1_0004	UA_R_10_S_3_Si	4,4	second-hand	A/B	-	A/A	2	C	yes	1	2	C	2	C				ND	C
3	p. Chorna Tysa	UA_M5.3.1_0005	UA_R_10_M_3_Si	30,4	second-hand	A/A	-	A/A	2	C	yes	1	2	C	2	C				D	C
4	p. Tisa	UA_M5.3.1_0008	UA_R_10_L_2_Si	64,9	second-hand	B/C	-	A/A	2	C	no	1	2	C	2	C				ND	C
5	p. Tisa	UA_M5.3.1_0010	UA_R_10_L_1_Si	33,5	second-hand	A/V	-	A/A	2	C	no	2	2	C	2	C				D	C
6	p. Tisa	UA_M5.3.1_0011	UA_R_11_L_1_Si	47,6	USED	A/A	-	A/A	2	C	no	1	2	C	2	C				D	C
7	p. Tisa	UA_M5.3.1_0014	UA_R_11_XL_1_Si	17,4	V/A	S/W	-	A/A	2	C	no	3	2	C	2	C				D	C
8	p. Lazesh-chyna	UA_M5.3.1_0035	UA_R_10_S_4_Si	10,2	second-hand	B/B	-	A/A	2	C	yes	2			2	C				D	C
9	p. Shopurka	UA_M5.3.1_0052	UA_R_10_M_2_Si	12,8	second-hand	A/B	-	A/A	2	C	no	3	2	C	2	C				D	C
10	p. Apšica	UA_M5.3.1_0063	UA_R_10_M_2_Si	21,0	second-hand	B/B	-	A/A	2	C	yes	3	2	C	2	C				D	C
11	p. Teresva	UA_M5.3.1_0074	UA_R_10_L_2_Si	18,7	second-hand	A/A	-	A/A	2	C	no	1	2	C	2	C				ND	C
12	p. Martosz	UA_M5.3.1_0104	UA_R_10_S_2_Si	12,0	second-hand	B/A	A/A	A/A	4	C	no	3	2	C	4	C				ND	C
13	p. Tereblya	UA_M5.3.1_0108	UA_R_10_M_3_Si	22,2	second-hand	A/A	-	A/A	3	C	no	2			3	C				D	C
14	Tereble-Ritske re-servoir	UA_M5.3.1_0109	no	1,4	n/a	n/a	n/a	n/a	n/a	C		1						HMWB		D	C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
15	p. Tereblya	UA_M5.3.1_0110	UA_R_10_M_2_Si	51,9	-	A/A	-	A/A	2	C	no	3	2	C	2	C				D	C
16	p. Khustets	UA_M5.3.1_0151	UA_R_10_S_1_Si	25,8	-	A/B	A/A	A/A	4	C	no	3	2	C	4	C				ND	C
17	p. River	UA_M5.3.1_0157	UA_R_10_L_2_Si	11,7	-	A/B	-	A/A	2	C	no	1	2	C	2	C				D	C
18	p. Repinka	UA_M5.3.1_0168	UA_R_10_S_3_Si	7,7	-	2*	n/a	4*	4*	C					4	C				ND	C
19	p. Gash-parka	UA_M5.3.1_0198	UA_R_10_S_1_Si	3,5	-	B/B	A/A	A/A	3	C			2	C	3	C				D	C
20	p. Batar	UA_M5.3.1_0202	UA_R_11_S_2_Si	4,4	-	A/B	-	A/A	2	C	no	1	2	C	2	C				ND	C
21	p. Borz-hava	UA_M5.3.1_0222	UA_R_11_M_1_Si	14,0	-	A/A	-	A/A	4	C	no	1			4	C				ND	C
22	p. Borz-hava	UA_M5.3.1_0223	UA_R_11_L_1_Si	34,5	A/A	A/B	B/C	A/A	3	C			2	C	3	C				ND	C
23	p. Irshava	UA_M5.3.1_0252	UA_R_10_M_1_Si	12,4	n/a	2*	0	2*	2*	C					2	C				ND	C
24	p. Salva	UA_M5.3.1_0274	UA_R_11_S_2_Si	7,2	-	-	-	-	the river dried up												
25	p. Werke	UA_M5.3.1_0279	UA_R_11_S_1_Si	24,2	-	B/A	-	B/A	4	C	no	3	3		4	C				ND	C
26	p. Kosyno-Bovtradskyi	UA_M5.3.1_0290	no	10,0	A/A	B/A	-	B/A	4	C	-	3					AWB		4	ND	C
27	p. Charonda-Latorica	UA_M5.3.1_0293	no	8,0	A/B	B/B	A/A	A/A	2	C	-	3	2	C			AWB		2	ND	C
28	p. Lato-rytsia	UA_M5.3.1_0300	UA_R_11_L_1_Si	67,3	A/A	C/B	B/C	S/W	3	C	no	1	2	C	3	C				ND	C
29	p. Lato-rytsia	UA_M5.3.1_0301	UA_R_10_L_1_Si	4,0	V/A	B/B	A/A	A/A	2	C	no	2	2	C	2	C				ND	C
30	p. Veche	UA_M5.3.1_0310	UA_R_10_M_2_Si	25,2	-	A/B	-	A/A	2	C	no	3	2	C	2	C				ND	C
31	p. Zhdimir	UA_M5.3.1_0312	UA_R_10_S_3_Si	4,2	-	A/B	-	A/A	2	C	yes	1	2	C	2	C				D	C
32	p. Foam	UA_M5.3.1_0322	UA_R_10_M_2_Si	2,4	-	A/A	-	A/A	2	C	no	3	2	C	2	C				ND	C
33	p. Mala Pina	UA_M5.3.1_0327	UA_R_10_S_2_Si	9,6	-	B/B	-	V/A	2	C			2	C	2	C				ND	C
34	p. Old	UA_M5.3.1_0355	UA_R_11_M_1_Si	23,3	-	B/B	A/A	A/A	3	C	no	2	2	C	3	C				ND	C
35	p. Solot-vynskyi	UA_M5.3.1_0388	no	10,7	2*	2*	2*	2*	2*	C								HMWB	2	ND	C
36	p. Tova	UA_M5.3.1_0393	UA_R_11_S_1_Si	12,4	-	B/A	A/A	A/A	4	C	no	3	2	C	4	C				ND	C
37	Babichka reservoir	UA_M5.3.1_0405	no	1,1	n/a	n/a	n/a	n/a			-	3						HMWB		D	C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
38	Mochila reservoir	UA_M5.3.1_0410	no	1,2	n/a	n/a	n/a	n/a			-	3						HMWB		ND	C
39	Fornosh reservoir	UA_M5.3.1_0413	UA_R_10_L_1_Si	2,1	n/a	n/a	n/a	n/a			-	3						HMWB		D	C
40	p. Uzh	UA_M5.3.1_0431	UA_R_10_M_1_Si	14,7	-	A/A	-	A/A	2	C			2	C	2	C				D	C
41	p. Uzh	UA_M5.3.1_0432	UA_R_10_L_1_Si	29,0	n/a	n/a	n/a	n/a												ND	C
42	p. Uzh	UA_M5.3.1_0433	UA_R_11_L_1_Si	18,4	V/A	B/B	B/B	B/B	3	C	no	3	2	C	3	C				D	C
43	p. Ulichka	UA_M5.3.1_0440	UA_R_10_M_2_Si	4,2	-	A/A	-	A/A	2	C	yes	2	2	C	2	C				D	C
44	p. Ubl'a	UA_M5.3.1_0441	UA_R_10_M_1_Si	6,5	-	A/A	A/A	A/A	2	C	yes	2	2	C	2	C				D	C
45	p. Uzh	UA_M5.3.1_0477	no	3,2	V/A	B/B	A/A	A/A	3	C	-	1	2	C				HMWB	3	ND	C
46	p. Prut	UA_M5.3.2_0003	UA_R_10_M_3_Si	39,1	-	A/A	-	A/A	2	C	yes	2	2	C	2	C				D	C
47	p. Prut	UA_M5.3.2_0004	UA_R_10_M_2_Si	20,5	-	A/A	-	A/A	2	C	yes	1	2	C	2	C				D	C
48	p. Prut	UA_M5.3.2_0006	UA_R_16_L_2_Si	60,3	-	A/A	-	A/A	1	C	no	1	2	C	1	C				ND	C
49	p. Prut	UA_M5.3.2_0007	UA_R_16_L_1_Si	119,7	3*	n/a	3*	3*	3*	C	no	2			3	C				ND	C
50	p. Prutets-Yab-lunytskyi	UA_M5.3.2_0012	UA_R_10_S_4_Si	2,8	-	A/A	-	A/A	3	C	yes	2	2	C	3	C				D	C
51	Turka River	UA_M5.3.2_0063	UA_R_16_S_2_Si	33,6	n/a	n/a	n/a	n/a												ND	C
52	Chernyava River	UA_M5.3.2_0076	UA_R_16_M_2_Si	48,6	-	A/A	-	A/A	1	C	yes	3	3	C	1	C				ND	C
53	p. Black Cheremosh	UA_M5.3.2_0088	UA_R_10_M_3_SI	48,7	-	A/A	-	A/A	2	C	yes	2	2	C	2	C				D	C
54	p. White Cheremosh	UA_M5.3.2_0105	UA_R_10_M_3_Si	38,1	n/a	1	n/a	2	2	C	yes	3			2	C				D	C
55	p. Volitsa	UA_M5.3.2_0149	UA_R_16_S_2_SI	25,7	-	A/A	-	A/A	1	C	yes	2	2	C	1	C				ND	C
56	p. Lingon-berry	UA_M5.3.2_0158	UA_R_16_M_1_SI	4,3	n/a	-	3	3	3	C	yes	3			3	C				D	C
57	p. Glinny-tsia	UA_M5.3.2_0162	UA_R_16_M_1_SI	9,0	-	B/A	-	A/A	2	C	no	3	2	C	2	C				D	C
58	p. Sovytsia (Stav-chanska)	UA_M5.3.2_0165	UA_R_16_M_1_Si	17,7	n/a	2	4	4	4	C	yes	3			4	C				ND	C
59	p. Owl	UA_M5.3.2_0166	no	16,4	3*	4*	5*	5*	5*	C	-	3						HMWB	5	D	C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
60	p. Owl	UA_M5.3.2_0168	no	18,3	3	3	4	4	4	C	-	3						HMWB	4	ND	C
61	p. Klockuchka	UA_M5.3.2_0172	UA_R_16_S_1_Si	5,3	-	A/A	A/B	A/A	4	C	no	3	2	C	4	C				ND	C
62	p. Shubranets (Potit)	UA_M5.3.2_0175	no	3,3	4	3	3	5	5	C	-	3						HMWB	5	ND	C
63	p. Dereluy	UA_M5.3.2_0180	UA_R_16_S_2_Si	14,9	-	A/A	-	A/A	2	C	yes	3	2	C	2	C				ND	C
64	p. Dereluy	UA_M5.3.2_0182	UA_R_16_M_1_Si	19,2	-	A/A	B/B	A/A	2	C	yes	3	2	C	2	C				ND	C
65	p. Vitsa	UA_M5.3.2_0192	UA_R_16_S_1_SI	4,4	-	-	-	-	the river dried up												
66	Khukiv river	UA_M5.3.2_0197	UA_R_16_M_1_Si	6,2	n/a	2	4	4	4	C	no	3			4	C				D	C
67	p. Molnitsa	UA_M5.3.2_0200	UA_R_16_M_1_Si	12,0	n/a	2	2	4	4	C	no	3			4	C				ND	C
68	p. Rokytnyanka (Stara Hranitsa River)	UA_M5.3.2_0203	UA_R_16_M_1_Si	15,6	n/a	n/a	n/a	n/a			no	3								ND	C
69	p. Ringach	UA_M5.3.2_0209	no	22,1	A/B	B/A	A/B	A/A	2	C	-	3	2	C				HMWB	2	ND	C
70	p. Dynivtsi	UA_M5.3.2_0213	no	21,2	-	A/A	A/B	A/A	2	C			2	C				HMWB	2	D	C
71	p. Siret	UA_M5.3.3_0005	UA_R_16_M_2_Si	64,5	-	C/A	-	A/A	1	C	no	2	2	C	1	C				D	C
72	p. Siret	UA_M5.3.3_0006	UA_R_16_L_2_Si	23,8	-	A/A	A/B	A/A	2	C	yes	3	2	C	2	C				ND	C
73	p. Migovka	UA_M5.3.3_0009	UA_R_16_S_2_Si	5,5	n/a	n/a	n/a	n/a												D	C
74	p. Mihidra	UA_M5.3.3_0014	UA_R_16_M_2_Si	10,7	n/a	n/a	n/a	n/a												D	C
75	p. Small Siret	UA_M5.3.3_0029	UA_R_16_M_2_Si	48,8	-	A/A	A/B	A/A	1	C	yes	3	2	C	1	C				D	C
76	p. Solonets	UA_M5.3.3_0045	UA_R_16_S_2_Si	8,6	-	A/A	A/B	A/A	1	C	yes	3	2	C	1	C				D	C
77	p. Kotovets	UA_M5.3.3_0051	no	17,6	A/C	A/A	A/B	A/A	2	C			2	C				HMWB	2	ND	C
78	p. Danube	UA_M5.3.4_0001	UA_R_12_XL_1_Si	15,9	3*	n/a	3*	3*	3*	C	yes	2	2	C	3	C				ND	C
79	p. Danube (Kilia arm)	UA_M5.3.4_0003	UA_R_12_XL_1_SI	96,8	3*	n/a	2*	3*	3*	C	yes	2	2	C	3	C				ND	C
80	Kagul reservoir	UA_M5.3.4_0018	UA_L_12_L_1_SH_Si	91,4	3*	-	3*	3*	3*	C	-	3	2	C			AWB		3*	ND	C
81	p. V. Yalpug	UA_M5.3.4_0023	no	5,1	3*	2*	3*	3*	3*	C	-	3	2	C				HMWB	3*	ND	C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
82	Yalpug reservoir	UA_M5.3.4_0024	UA_L_12_XL_1_SH_SI	145,3	3*	3*	3*	3*	3*	C	-	3	3	C			AWB		3*	ND	C
83	Kugurlui reservoir	UA_M5.3.4_0025	UA_L_12_L_1_SH_O	84,5	3*	3*	3*	3*	3*	C	-	3	2	C			AWB		3*	ND	C
84	p. Karasulak	UA_M5.3.4_0029	no	24,2	4*	4*	3*	4*	4*	C	-	3	3	C				HMWB	4*	ND	C
85	p. Tashbunar	UA_M5.3.4_0042	no	11,9	-	-	-	the river dried up													
86	Katlabukh reservoir	UA_M5.3.4_0061	UA_L_12_L_1_SH_Si	64,6	3*	3*	3*	3*	3*	C	-	3	3	C			AWB		3*	ND	C
87	p. Kyrgyzstan-China	UA_M5.3.4_0063	UA_R_12_S_1_Si	6,1	3*	-	4*	4*	4*	C	yes	3	2	C	4	C				ND	C
88	China reservoir	UA_M5.3.4_0086	UA_L_12_L_1_SH_Si	53,3	3*	3*	4*	4*	4*	C	-	3	3	C			AWB		4*	ND	C
89	p. Do not disturb	UA_M5.3.4_0091	no	9,7	-	-	-	complete disruption of the continuity of water flow		C	-	3	2	C				HMWB		ND	C

	was not carried out
-	not applicable
n/a	does not apply to this type of IPR
n/a	no monitoring was carried out
LEVEL OF RELIABILITY OF THE ASSESSMENT**	
B	tall
C	average
H	low
second-hand	without assessment
ASSESSMENT OF ENVIRONMENTAL STATUS/POTENTIAL	
1	excellent
2	kind
3	satisfactory
4	bad
5	very bad
ASSESSMENT OF THE CHEMICAL STATE***	
2	kind
5	failure to achieve the good

ANNEX 9. Achievement of the environmental objectives in the Danube RBD

Table 1: Achievement of the environmental objectives of the SWB in 2030

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
1	2	3	4	5	6	7	8	9
SWB not at risk								
1	Stogovets	UA_M5.3.1_0015	PR	risk-free	risk-free	yes	yes	
2	Stogovets	UA_M5.3.1_0016	PR	risk-free	risk-free	yes	yes	
3	Balsatul	UA_M5.3.1_0017	PR	risk-free	risk-free	yes	yes	
4	Balsatul	UA_M5.3.1_0018	PR	risk-free	risk-free	yes	yes	
5	Hoverla	UA_M5.3.1_0019	PR	risk-free	risk-free	yes	yes	
6	Hoverla	UA_M5.3.1_0020	PR	risk-free	risk-free	yes	yes	
7	Brebeneskul	UA_M5.3.1_0021	PR	risk-free	risk-free	yes	yes	
8	Brebeneskul	UA_M5.3.1_0022	PR	risk-free	risk-free	yes	yes	
9	Schaul	UA_M5.3.1_0023	PR	risk-free	risk-free	yes	yes	
10	Schaul	UA_M5.3.1_0024	PR	risk-free	risk-free	yes	yes	
11	Bohdan	UA_M5.3.1_0025	PR	risk-free	risk-free	yes	yes	

75 PR - SWB of natural categories (rivers, lakes, transitional, coastal), HMWB/AWB – heavily modified or artificial SWB

76 NN - natural causes, TA - technical causes (lack of technical solution, technical impracticality or impracticability), VH - disproportionately high cost, VO - causes related to military operations, temporary occupation of the territory, NA - unknown causes

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
12	Bohdan	UA_M5.3.1_0026	PR	risk-free	risk-free	yes	yes	
13	Kvass	UA_M5.3.1_0027	PR	risk-free	risk-free	yes	yes	
14	Kvass	UA_M5.3.1_0028	PR	risk-free	risk-free	yes	yes	
15	Pavlik	UA_M5.3.1_0029	PR	risk-free	risk-free	yes	yes	
16	Pavlik	UA_M5.3.1_0030	PR	risk-free	risk-free	yes	yes	
17	Length	UA_M5.3.1_0033	PR	risk-free	risk-free	yes	yes	
18	Length	UA_M5.3.1_0034	PR	risk-free	risk-free	yes	yes	
19	Lazeshchyna	UA_M5.3.1_0035	PR	risk-free	risk-free	yes	yes	
20	Lazeshchyna	UA_M5.3.1_0036	PR	risk-free	risk-free	yes	yes	
21	Lopushanka	UA_M5.3.1_0038	PR	risk-free	risk-free	yes	yes	
22	Lopushanka	UA_M5.3.1_0039	PR	risk-free	risk-free	yes	yes	
23	Ilmin	UA_M5.3.1_0040	PR	risk-free	risk-free	yes	yes	
24	Ilmin	UA_M5.3.1_0041	PR	risk-free	risk-free	yes	yes	
25	Big	UA_M5.3.1_0042	PR	risk-free	risk-free	yes	yes	
26	Big	UA_M5.3.1_0043	PR	risk-free	risk-free	yes	yes	
27	Big	UA_M5.3.1_0044	PR	risk-free	risk-free	yes	yes	
28	White	UA_M5.3.1_0045	PR	risk-free	risk-free	yes	yes	
29	White	UA_M5.3.1_0047	PR	risk-free	risk-free	yes	yes	
30	Kosivska	UA_M5.3.1_0048	PR	risk-free	risk-free	yes	yes	
31	Kosivska	UA_M5.3.1_0049	PR	risk-free	risk-free	yes	yes	

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
32	Kosivska	UA_M5.3.1_0050	PR	risk-free	risk-free	yes	yes	
33	Mala Shopurka	UA_M5.3.1_0053	PR	risk-free	risk-free	yes	yes	
34	Mala Shopurka	UA_M5.3.1_0054	PR	risk-free	risk-free	yes	yes	
35	Mala Shopurka	UA_M5.3.1_0055	PR	risk-free	risk-free	yes	yes	
36	Sredna Shopurka	UA_M5.3.1_0056	PR	risk-free	risk-free	yes	yes	
37	Sredna Shopurka	UA_M5.3.1_0057	PR	risk-free	risk-free	yes	yes	
38	Sredna Shopurka	UA_M5.3.1_0058	PR	risk-free	risk-free	yes	yes	
39	Sredna Shopurka	UA_M5.3.1_0059	PR	risk-free	risk-free	yes	yes	
40	Apšica	UA_M5.3.1_0060	PR	risk-free	risk-free	yes	yes	
41	Apšica	UA_M5.3.1_0061	PR	risk-free	risk-free	yes	yes	
42	Veliky Pliats	UA_M5.3.1_0064	PR	risk-free	risk-free	yes	yes	
43	Veliky Pliats	UA_M5.3.1_0065	PR	risk-free	risk-free	yes	yes	
44	Veliky Pliats	UA_M5.3.1_0066	PR	risk-free	risk-free	yes	yes	
45	Tjovshag	UA_M5.3.1_0067	PR	risk-free	risk-free	yes	yes	
46	Tjovshag	UA_M5.3.1_0068	PR	risk-free	risk-free	yes	yes	
47	Basheu	UA_M5.3.1_0070	PR	risk-free	risk-free	yes	yes	
48	Theresa	UA_M5.3.1_0072	PR	risk-free	risk-free	yes	yes	
49	Mokryanka	UA_M5.3.1_0075	PR	risk-free	risk-free	yes	yes	
50	Mokryanka	UA_M5.3.1_0076	PR	risk-free	risk-free	yes	yes	
51	Mokryanka	UA_M5.3.1_0077	PR	risk-free	risk-free	yes	yes	

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
52	Yanovets	UA_M5.3.1_0078	PR	risk-free	risk-free	yes	yes	
53	Yanovets	UA_M5.3.1_0079	PR	risk-free	risk-free	yes	yes	
54	Beretianka	UA_M5.3.1_0081	PR	risk-free	risk-free	yes	yes	
55	Beretianka	UA_M5.3.1_0082	PR	risk-free	risk-free	yes	yes	
56	Plaisance	UA_M5.3.1_0083	PR	risk-free	risk-free	yes	yes	
57	Plaisance	UA_M5.3.1_0084	PR	risk-free	risk-free	yes	yes	
58	Turbat	UA_M5.3.1_0085	PR	risk-free	risk-free	yes	yes	
59	Turbat	UA_M5.3.1_0086	PR	risk-free	risk-free	yes	yes	
60	Apple tree	UA_M5.3.1_0087	PR	risk-free	risk-free	yes	yes	
61	Apple tree	UA_M5.3.1_0088	PR	risk-free	risk-free	yes	yes	
62	Krasnoshora	UA_M5.3.1_0089	PR	risk-free	risk-free	yes	yes	
63	Krasnoshora	UA_M5.3.1_0090	PR	risk-free	risk-free	yes	yes	
64	Krasnoshora	UA_M5.3.1_0091	PR	risk-free	risk-free	yes	yes	
65	Tereshuvka	UA_M5.3.1_0092	PR	risk-free	risk-free	yes	yes	
66	Tereshuvka	UA_M5.3.1_0093	PR	risk-free	risk-free	yes	yes	
67	Tereshuvka	UA_M5.3.1_0094	PR	risk-free	risk-free	yes	yes	
68	Tereshuvka	UA_M5.3.1_0095	PR	risk-free	risk-free	yes	yes	
69	Luzhanka	UA_M5.3.1_0096	PR	risk-free	risk-free	yes	yes	
70	Luzhanka	UA_M5.3.1_0097	PR	risk-free	risk-free	yes	yes	
71	Luzhanka	UA_M5.3.1_0098	PR	risk-free	risk-free	yes	yes	

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
72	Luzhanka	UA_M5.3.1_0099	PR	risk-free	risk-free	yes	yes	
73	Untitled	UA_M5.3.1_0100	PR	risk-free	risk-free	yes	yes	
74	Untitled	UA_M5.3.1_0101	PR	risk-free	risk-free	yes	yes	
75	Tyachivets	UA_M5.3.1_0102	PR	risk-free	risk-free	yes	yes	
76	Sloboda	UA_M5.3.1_0106	PR	risk-free	risk-free	yes	yes	
77	Tereblya	UA_M5.3.1_0107	PR	risk-free	risk-free	yes	yes	
78	Ozerianka	UA_M5.3.1_0111	PR	risk-free	risk-free	yes	yes	
79	Ozerianka	UA_M5.3.1_0112	PR	risk-free	risk-free	yes	yes	
80	Ozerianka	UA_M5.3.1_0113	PR	risk-free	risk-free	yes	yes	
81	Dog	UA_M5.3.1_0114	PR	risk-free	risk-free	yes	yes	
82	Girsovets	UA_M5.3.1_0115	PR	risk-free	risk-free	yes	yes	
83	Girsovets	UA_M5.3.1_0116	PR	risk-free	risk-free	yes	yes	
84	Sugar	UA_M5.3.1_0117	PR	risk-free	risk-free	yes	yes	
85	Sugar	UA_M5.3.1_0118	PR	risk-free	risk-free	yes	yes	
86	Velyka Uholka	UA_M5.3.1_0119	PR	risk-free	risk-free	yes	yes	
87	Velyka Uholka	UA_M5.3.1_0120	PR	risk-free	risk-free	yes	yes	
88	Velyka Uholka	UA_M5.3.1_0122	PR	risk-free	risk-free	yes	yes	
89	Mala Uholka	UA_M5.3.1_0123	PR	risk-free	risk-free	yes	yes	
90	Mala Uholka	UA_M5.3.1_0124	PR	risk-free	risk-free	yes	yes	
91	Odars	UA_M5.3.1_0126	PR	risk-free	risk-free	yes	yes	

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
92	Odars	UA_M5.3.1_0127	PR	risk-free	risk-free	yes	yes	
93	Rika	UA_M5.3.1_0154	PR	risk-free	risk-free	yes	yes	
94	Blindly	UA_M5.3.1_0158	PR	risk-free	risk-free	yes	yes	
95	Blindly	UA_M5.3.1_0159	PR	risk-free	risk-free	yes	yes	
96	Burdock	UA_M5.3.1_0160	PR	risk-free	risk-free	yes	yes	
97	Bistra	UA_M5.3.1_0162	PR	risk-free	risk-free	yes	yes	
98	Bistra	UA_M5.3.1_0163	PR	risk-free	risk-free	yes	yes	
99	Shaving	UA_M5.3.1_0164	PR	risk-free	risk-free	yes	yes	
100	Shaving	UA_M5.3.1_0166	PR	risk-free	risk-free	yes	yes	
101	Belt	UA_M5.3.1_0167	PR	risk-free	risk-free	yes	yes	
102	Studeniy	UA_M5.3.1_0171	PR	risk-free	risk-free	yes	yes	
103	Studeniy	UA_M5.3.1_0172	PR	risk-free	risk-free	yes	yes	
104	Pogar	UA_M5.3.1_0173	PR	risk-free	risk-free	yes	yes	
105	Pogar	UA_M5.3.1_0174	PR	risk-free	risk-free	yes	yes	
106	Untitled	UA_M5.3.1_0175	PR	risk-free	risk-free	yes	yes	
107	Untitled	UA_M5.3.1_0176	PR	risk-free	risk-free	yes	yes	
108	Volovets	UA_M5.3.1_0177	PR	risk-free	risk-free	yes	yes	
109	Volovets	UA_M5.3.1_0178	PR	risk-free	risk-free	yes	yes	
110	Progudnya	UA_M5.3.1_0180	PR	risk-free	risk-free	yes	yes	
111	Botar	UA_M5.3.1_0201	PR	risk-free	risk-free	yes	yes	

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
112	Botar	UA_M5.3.1_0202	PR	risk-free	risk-free	yes	yes	
113	Untitled	UA_M5.3.1_0205	PR	risk-free	risk-free	yes	yes	
114	Holt	UA_M5.3.1_0206	PR	risk-free	risk-free	yes	yes	
115	Holt	UA_M5.3.1_0207	PR	risk-free	risk-free	yes	yes	
116	Holt	UA_M5.3.1_0208	AWB	risk-free	risk-free	yes	yes	
117	Eger	UA_M5.3.1_0212	AWB	risk-free	risk-free	yes	yes	
118	Untitled	UA_M5.3.1_0213	AWB	risk-free	risk-free	yes	yes	
119	Untitled	UA_M5.3.1_0214	AWB	risk-free	risk-free	yes	yes	
120	Palad	UA_M5.3.1_0215	AWB	risk-free	risk-free	yes	yes	
121	Tour	UA_M5.3.1_0216	AWB	risk-free	risk-free	yes	yes	
122	Borzhava	UA_M5.3.1_0217	PR	risk-free	risk-free	yes	yes	
123	Borzhava	UA_M5.3.1_0218	PR	risk-free	risk-free	yes	yes	
124	Borzhava	UA_M5.3.1_0219	PR	risk-free	risk-free	yes	yes	
125	Untitled	UA_M5.3.1_0256	PR	risk-free	risk-free	yes	yes	
126	Untitled	UA_M5.3.1_0257	PR	risk-free	risk-free	yes	yes	
127	Deep	UA_M5.3.1_0270	PR	risk-free	risk-free	yes	yes	
128	Untitled	UA_M5.3.1_0273	PR	risk-free	risk-free	yes	yes	
129	Bridge	UA_M5.3.1_0282	AWB	risk-free	risk-free	yes	yes	
130	Bridge	UA_M5.3.1_0283	AWB	risk-free	risk-free	yes	yes	
131	Kovacs Potok	UA_M5.3.1_0284	AWB	risk-free	risk-free	yes	yes	

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132	Kodach	UA_M5.3.1_0285	AWB	risk-free	risk-free	yes	yes	
133	Gat Potok	UA_M5.3.1_0291	AWB	risk-free	risk-free	yes	yes	
134	Latorytsia	UA_M5.3.1_0295	PR	risk-free	risk-free	yes	yes	
135	Slavka	UA_M5.3.1_0301	PR	risk-free	risk-free	yes	yes	
136	Zdenyatska	UA_M5.3.1_0303	PR	risk-free	risk-free	yes	yes	
137	Zdenyatska	UA_M5.3.1_0304	PR	risk-free	risk-free	yes	yes	
138	Veche	UA_M5.3.1_0307	PR	risk-free	risk-free	yes	yes	
139	Veche	UA_M5.3.1_0308	PR	risk-free	risk-free	yes	yes	
140	Zhdimir	UA_M5.3.1_0311	PR	risk-free	risk-free	yes	yes	
141	Zhdimir	UA_M5.3.1_0312	PR	risk-free	risk-free	yes	yes	
142	Zhdimir	UA_M5.3.1_0313	PR	risk-free	risk-free	yes	yes	
143	Svaliava	UA_M5.3.1_0314	PR	risk-free	risk-free	yes	yes	
144	Great Pina	UA_M5.3.1_0323	PR	risk-free	risk-free	yes	yes	
145	Great Pina	UA_M5.3.1_0324	PR	risk-free	risk-free	yes	yes	
146	Mala Pina	UA_M5.3.1_0326	PR	risk-free	risk-free	yes	yes	
147	Bruise	UA_M5.3.1_0328	PR	risk-free	risk-free	yes	yes	
148	Dubrovytsia	UA_M5.3.1_0331	PR	risk-free	risk-free	yes	yes	
149	Dubrovytsia	UA_M5.3.1_0332	PR	risk-free	risk-free	yes	yes	
150	Dubrovytsia	UA_M5.3.1_0333	PR	risk-free	risk-free	yes	yes	
151	Lamination	UA_M5.3.1_0334	PR	risk-free	risk-free	yes	yes	

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152	Lamination	UA_M5.3.1_0335	PR	risk-free	risk-free	yes	yes	
153	Lamination	UA_M5.3.1_0336	PR	risk-free	risk-free	yes	yes	
154	Quiet	UA_M5.3.1_0337	PR	risk-free	risk-free	yes	yes	
155	Quiet	UA_M5.3.1_0338	PR	risk-free	risk-free	yes	yes	
156	Viznytsia	UA_M5.3.1_0339	PR	risk-free	risk-free	yes	yes	
157	Obama	UA_M5.3.1_0343	PR	risk-free	risk-free	yes	yes	
158	Obama	UA_M5.3.1_0344	PR	risk-free	risk-free	yes	yes	
159	Old	UA_M5.3.1_0354	PR	risk-free	risk-free	yes	yes	
160	Kuchava	UA_M5.3.1_0359	PR	risk-free	risk-free	yes	yes	
161	Kuchava	UA_M5.3.1_0360	PR	risk-free	risk-free	yes	yes	
162	Untitled	UA_M5.3.1_0362	PR	risk-free	risk-free	yes	yes	
163	Untitled	UA_M5.3.1_0363	PR	risk-free	risk-free	yes	yes	
164	Poluch	UA_M5.3.1_0365	PR	risk-free	risk-free	yes	yes	
165	Old	UA_M5.3.1_0371	AWB	risk-free	risk-free	yes	yes	
166	Yaruga	UA_M5.3.1_0372	PR	risk-free	risk-free	yes	yes	
167	Dragonfly	UA_M5.3.1_0399	PR	risk-free	risk-free	yes	yes	
168	Dragonfly	UA_M5.3.1_0400	PR	risk-free	risk-free	yes	yes	
169	Slopes	UA_M5.3.1_0403	PR	risk-free	risk-free	yes	yes	
170	Mochila	UA_M5.3.1_0407	PR	risk-free	risk-free	yes	yes	
171	Mochila	UA_M5.3.1_0408	PR	risk-free	risk-free	yes	yes	

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172	Mochila	UA_M5.3.1_0409	PR	risk-free	risk-free	yes	yes	
173	Novel	UA_M5.3.1_0415	PR	risk-free	risk-free	yes	yes	
174	Sholen	UA_M5.3.1_0420	PR	risk-free	risk-free	yes	yes	
175	Sholen	UA_M5.3.1_0421	PR	risk-free	risk-free	yes	yes	
176	Kidosh	UA_M5.3.1_0423	AWB	risk-free	risk-free	yes	yes	
177	Uzh	UA_M5.3.1_0427	PR	risk-free	risk-free	yes	yes	
178	Uzh	UA_M5.3.1_0428	PR	risk-free	risk-free	yes	yes	
179	Uzh	UA_M5.3.1_0429	PR	risk-free	risk-free	yes	yes	
180	Gusny	UA_M5.3.1_0434	PR	risk-free	risk-free	yes	yes	
181	Gusny	UA_M5.3.1_0435	PR	risk-free	risk-free	yes	yes	
182	Gusny	UA_M5.3.1_0436	PR	risk-free	risk-free	yes	yes	
183	Ug (right)	UA_M5.3.1_0437	PR	risk-free	risk-free	yes	yes	
184	Ug (right)	UA_M5.3.1_0438	PR	risk-free	risk-free	yes	yes	
185	Ug (right)	UA_M5.3.1_0439	PR	risk-free	risk-free	yes	yes	
186	Ulichka	UA_M5.3.1_0440	PR	risk-free	risk-free	yes	yes	
187	Ubl'a	UA_M5.3.1_0441	PR	risk-free	risk-free	yes	yes	
188	Kamenica	UA_M5.3.1_0442	PR	risk-free	risk-free	yes	yes	
189	Kamenica	UA_M5.3.1_0443	PR	risk-free	risk-free	yes	yes	
190	Kamenica	UA_M5.3.1_0444	PR	risk-free	risk-free	yes	yes	
191	Big	UA_M5.3.1_0445	PR	risk-free	risk-free	yes	yes	

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192	Big	UA_M5.3.1_0446	PR	risk-free	risk-free	yes	yes	
193	Big	UA_M5.3.1_0447	PR	risk-free	risk-free	yes	yes	
194	Luta	UA_M5.3.1_0448	PR	risk-free	risk-free	yes	yes	
195	Luta	UA_M5.3.1_0449	PR	risk-free	risk-free	yes	yes	
196	Luta	UA_M5.3.1_0451	PR	risk-free	risk-free	yes	yes	
197	Luta	UA_M5.3.1_0452	PR	risk-free	risk-free	yes	yes	
198	Bachava	UA_M5.3.1_0453	PR	risk-free	risk-free	yes	yes	
199	Bachava	UA_M5.3.1_0454	PR	risk-free	risk-free	yes	yes	
200	Bachava	UA_M5.3.1_0455	PR	risk-free	risk-free	yes	yes	
201	Turia	UA_M5.3.1_0456	PR	risk-free	risk-free	yes	yes	
202	Turya	UA_M5.3.1_0457	PR	risk-free	risk-free	yes	yes	
203	Hiss	UA_M5.3.1_0460	PR	risk-free	risk-free	yes	yes	
204	Hiss	UA_M5.3.1_0461	PR	risk-free	risk-free	yes	yes	
205	Hiss	UA_M5.3.1_0462	PR	risk-free	risk-free	yes	yes	
206	Hiss	UA_M5.3.1_0463	PR	risk-free	risk-free	yes	yes	
207	Zvor	UA_M5.3.1_0464	PR	risk-free	risk-free	yes	yes	
208	Zvor	UA_M5.3.1_0465	PR	risk-free	risk-free	yes	yes	
209	Zvor	UA_M5.3.1_0466	PR	risk-free	risk-free	yes	yes	
210	Turitsa	UA_M5.3.1_0467	PR	risk-free	risk-free	yes	yes	
211	Turitsa	UA_M5.3.1_0468	PR	risk-free	risk-free	yes	yes	

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212	Turitsa	UA_M5.3.1_0470	PR	risk-free	risk-free	yes	yes	
213	Sevens	UA_M5.3.1_0471	PR	risk-free	risk-free	yes	yes	
214	Sevens	UA_M5.3.1_0472	PR	risk-free	risk-free	yes	yes	
215	Prunus	UA_M5.3.2_0002	PR	risk-free	risk-free	yes	yes	
216	Prunus	UA_M5.3.2_0003	PR	risk-free	risk-free	yes	yes	
217	Prunus	UA_M5.3.2_0006	PR	risk-free	risk-free	yes	yes	
218	Pikes	UA_M5.3.2_0008	PR	risk-free	risk-free	yes	yes	
219	Prutets-Yablonitsky	UA_M5.3.2_0011	PR	risk-free	risk-free	yes	yes	
220	Prutets-Yablonitsky	UA_M5.3.2_0012	PR	risk-free	risk-free	yes	yes	
221	Prutets-Chemegovsky	UA_M5.3.2_0013	PR	risk-free	risk-free	yes	yes	
222	Prutets-Chemegovsky	UA_M5.3.2_0014	PR	risk-free	risk-free	yes	yes	
223	Prutets-Chemegovsky	UA_M5.3.2_0015	PR	risk-free	risk-free	yes	yes	
224	Interchange	UA_M5.3.2_0016	PR	risk-free	risk-free	yes	yes	
225	Shibenka-Velyka	UA_M5.3.2_0032	PR	risk-free	risk-free	yes	yes	
226	Kolomyika	UA_M5.3.2_0033	PR	risk-free	risk-free	yes	yes	
227	Sopivka	UA_M5.3.2_0048	PR	risk-free	risk-free	yes	yes	
228	Sopivka	UA_M5.3.2_0049	PR	risk-free	risk-free	yes	yes	
229	Sopivka	UA_M5.3.2_0050	PR	risk-free	risk-free	yes	yes	

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230	Sopivka	UA_M5.3.2_0051	PR	risk-free	risk-free	yes	yes	
231	Keys	UA_M5.3.2_0052	PR	risk-free	risk-free	yes	yes	
232	Keys	UA_M5.3.2_0053	PR	risk-free	risk-free	yes	yes	
233	Keys	UA_M5.3.2_0054	PR	risk-free	risk-free	yes	yes	
234	Verkhovets	UA_M5.3.2_0058	PR	risk-free	risk-free	yes	yes	
235	Berezovka	UA_M5.3.2_0059	PR	risk-free	risk-free	yes	yes	
236	Tarnowiec	UA_M5.3.2_0062	PR	risk-free	risk-free	yes	yes	
237	Turk	UA_M5.3.2_0064	PR	risk-free	risk-free	yes	yes	
238	Black-haired	UA_M5.3.2_0075	PR	risk-free	risk-free	yes	yes	
239	Pear	UA_M5.3.2_0077	PR	risk-free	risk-free	yes	yes	
240	Orelets	UA_M5.3.2_0078	PR	risk-free	risk-free	yes	yes	
241	Beleluia	UA_M5.3.2_0080	PR	risk-free	risk-free	yes	yes	
242	Stream	UA_M5.3.2_0081	PR	risk-free	risk-free	yes	yes	
243	Cheremosh	UA_M5.3.2_0083	PR	risk-free	risk-free	yes	yes	
244	Cheremosh	UA_M5.3.2_0085	PR	risk-free	risk-free	yes	yes	
245	Black Cheremosh	UA_M5.3.2_0086	PR	risk-free	risk-free	yes	yes	
246	Black Cheremosh	UA_M5.3.2_0087	PR	risk-free	risk-free	yes	yes	
247	Gallows	UA_M5.3.2_0089	PR	risk-free	risk-free	yes	yes	
248	Armour	UA_M5.3.2_0090	PR	risk-free	risk-free	yes	yes	

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249	Armour	UA_M5.3.2_0091	PR	risk-free	risk-free	yes	yes	
250	Bystrets	UA_M5.3.2_0092	PR	risk-free	risk-free	yes	yes	
251	Bystrets	UA_M5.3.2_0093	PR	risk-free	risk-free	yes	yes	
252	Iltsi	UA_M5.3.2_0094	PR	risk-free	risk-free	yes	yes	
253	Iltsi	UA_M5.3.2_0095	PR	risk-free	risk-free	yes	yes	
254	Iltsi	UA_M5.3.2_0096	PR	risk-free	risk-free	yes	yes	
255	Berezhnitsa	UA_M5.3.2_0097	PR	risk-free	risk-free	yes	yes	
256	Berezhnitsa	UA_M5.3.2_0098	PR	risk-free	risk-free	yes	yes	
257	River	UA_M5.3.2_0099	PR	risk-free	risk-free	yes	yes	
258	Chorna Rika	UA_M5.3.2_0100	PR	risk-free	risk-free	yes	yes	
259	Chorna Rika	UA_M5.3.2_0101	PR	risk-free	risk-free	yes	yes	
260	White River	UA_M5.3.2_0102	PR	risk-free	risk-free	yes	yes	
261	White River	UA_M5.3.2_0103	PR	risk-free	risk-free	yes	yes	
262	White Cheremosh	UA_M5.3.2_0104	PR	risk-free	risk-free	yes	yes	
263	White Cheremosh	UA_M5.3.2_0105	PR	risk-free	risk-free	yes	yes	
264	Parkalab	UA_M5.3.2_0106	PR	risk-free	risk-free	yes	yes	
265	Sarata	UA_M5.3.2_0107	PR	risk-free	risk-free	yes	yes	
266	Beef	UA_M5.3.2_0108	PR	risk-free	risk-free	yes	yes	
267	Burdock	UA_M5.3.2_0109	PR	risk-free	risk-free	yes	yes	

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268	Burdock	UA_M5.3.2_0110	PR	risk-free	risk-free	yes	yes	
269	Breakdown	UA_M5.3.2_0111	PR	risk-free	risk-free	yes	yes	
270	Breakdown	UA_M5.3.2_0112	PR	risk-free	risk-free	yes	yes	
271	Breakdown	UA_M5.3.2_0113	PR	risk-free	risk-free	yes	yes	
272	The literate Great	UA_M5.3.2_0114	PR	risk-free	risk-free	yes	yes	
273	The literate Great	UA_M5.3.2_0115	PR	risk-free	risk-free	yes	yes	
274	Kekacha	UA_M5.3.2_0116	PR	risk-free	risk-free	yes	yes	
275	Kekacha	UA_M5.3.2_0117	PR	risk-free	risk-free	yes	yes	
276	Putila	UA_M5.3.2_0118	PR	risk-free	risk-free	yes	yes	
277	Putila	UA_M5.3.2_0119	PR	risk-free	risk-free	yes	yes	
278	Putila	UA_M5.3.2_0120	PR	risk-free	risk-free	yes	yes	
279	Putila	UA_M5.3.2_0121	PR	risk-free	risk-free	yes	yes	
280	Foschke	UA_M5.3.2_0122	PR	risk-free	risk-free	yes	yes	
281	Foschke	UA_M5.3.2_0123	PR	risk-free	risk-free	yes	yes	
282	June	UA_M5.3.2_0124	PR	risk-free	risk-free	yes	yes	
283	June	UA_M5.3.2_0125	PR	risk-free	risk-free	yes	yes	
284	Porculin	UA_M5.3.2_0126	PR	risk-free	risk-free	yes	yes	
285	Porculin	UA_M5.3.2_0127	PR	risk-free	risk-free	yes	yes	
286	Party	UA_M5.3.2_0128	PR	risk-free	risk-free	yes	yes	

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287	Party	UA_M5.3.2_0129	PR	risk-free	risk-free	yes	yes	
288	Dugenets	UA_M5.3.2_0130	PR	risk-free	risk-free	yes	yes	
289	Dugenets	UA_M5.3.2_0131	PR	risk-free	risk-free	yes	yes	
290	Biskiv	UA_M5.3.2_0132	PR	risk-free	risk-free	yes	yes	
291	Biskiv	UA_M5.3.2_0133	PR	risk-free	risk-free	yes	yes	
292	Biskiv	UA_M5.3.2_0134	PR	risk-free	risk-free	yes	yes	
293	Biskiv Great	UA_M5.3.2_0135	PR	risk-free	risk-free	yes	yes	
294	Biskiv Great	UA_M5.3.2_0136	PR	risk-free	risk-free	yes	yes	
295	Commodity	UA_M5.3.2_0137	PR	risk-free	risk-free	yes	yes	
296	Commodity	UA_M5.3.2_0138	PR	risk-free	risk-free	yes	yes	
297	Commodity	UA_M5.3.2_0139	PR	risk-free	risk-free	yes	yes	
298	Rozhen the Great	UA_M5.3.2_0140	PR	risk-free	risk-free	yes	yes	
299	Exile	UA_M5.3.2_0143	PR	risk-free	risk-free	yes	yes	
300	Exile	UA_M5.3.2_0144	PR	risk-free	risk-free	yes	yes	
301	Exile	UA_M5.3.2_0145	PR	risk-free	risk-free	yes	yes	
302	Mlenyuta	UA_M5.3.2_0150	PR	risk-free	risk-free	yes	yes	
303	Trough	UA_M5.3.2_0151	PR	risk-free	risk-free	yes	yes	
304	Berezhnitsa	UA_M5.3.2_0152	PR	risk-free	risk-free	yes	yes	
305	Psyarów	UA_M5.3.2_0153	PR	risk-free	risk-free	yes	yes	

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306	Hlybochok	UA_M5.3.2_0154	PR	risk-free	risk-free	yes	yes	
307	Lingonberry	UA_M5.3.2_0157	PR	risk-free	risk-free	yes	yes	
308	Clay	UA_M5.3.2_0161	PR	risk-free	risk-free	yes	yes	
309	Untitled	UA_M5.3.2_0169	PR	risk-free	risk-free	yes	yes	
310	Klockuchka	UA_M5.3.2_0171	PR	risk-free	risk-free	yes	yes	
311	Klockuchka	UA_M5.3.2_0172	PR	risk-free	risk-free	yes	yes	
312	Zadubrivka	UA_M5.3.2_0176	PR	risk-free	risk-free	yes	yes	
313	Mosquitoes	UA_M5.3.2_0178	PR	risk-free	risk-free	yes	yes	
314	Dereluy	UA_M5.3.2_0181	PR	risk-free	risk-free	yes	yes	
315	Untitled	UA_M5.3.2_0183	PR	risk-free	risk-free	yes	yes	
316	Corovia	UA_M5.3.2_0186	PR	risk-free	risk-free	yes	yes	
317	Corovia	UA_M5.3.2_0187	PR	risk-free	risk-free	yes	yes	
318	Ringach	UA_M5.3.2_0207	PR	risk-free	risk-free	yes	yes	
319	Untitled	UA_M5.3.2_0210	PR	risk-free	risk-free	yes	yes	
320	Cherlena	UA_M5.3.2_0214	PR	risk-free	risk-free	yes	yes	
321	Cherlena	UA_M5.3.2_0215	PR	risk-free	risk-free	yes	yes	
322	Shcherbintsy	UA_M5.3.2_0219	PR	risk-free	risk-free	yes	yes	
323	Stalineshty	UA_M5.3.2_0223	PR	risk-free	risk-free	yes	yes	
324	Green	UA_M5.3.2_0233	PR	risk-free	risk-free	yes	yes	

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
325	Medvedka	UA_M5.3.2_0234	PR	risk-free	risk-free	yes	yes	
326	Medvedka	UA_M5.3.2_0235	PR	risk-free	risk-free	yes	yes	
327	Viliya	UA_M5.3.2_0238	PR	risk-free	risk-free	yes	yes	
328	Viliya	UA_M5.3.2_0239	PR	risk-free	risk-free	yes	yes	
329	Wet Rakovets	UA_M5.3.2_0246	PR	risk-free	risk-free	yes	yes	
330	Siret	UA_M5.3.3_0001	PR	risk-free	risk-free	yes	yes	
331	Siret	UA_M5.3.3_0002	PR	risk-free	risk-free	yes	yes	
332	Siret	UA_M5.3.3_0003	PR	risk-free	risk-free	yes	yes	
333	Siret	UA_M5.3.3_0004	PR	risk-free	risk-free	yes	yes	
334	Migova	UA_M5.3.3_0007	PR	risk-free	risk-free	yes	yes	
335	Migova	UA_M5.3.3_0008	PR	risk-free	risk-free	yes	yes	
336	Untitled	UA_M5.3.3_0010	PR	risk-free	risk-free	yes	yes	
337	Untitled	UA_M5.3.3_0011	PR	risk-free	risk-free	yes	yes	
338	Mihidra	UA_M5.3.3_0012	PR	risk-free	risk-free	yes	yes	
339	Mihidra	UA_M5.3.3_0013	PR	risk-free	risk-free	yes	yes	
340	Mihidra	UA_M5.3.3_0014	PR	risk-free	risk-free	yes	yes	
341	Solonets	UA_M5.3.3_0015	PR	risk-free	risk-free	yes	yes	
342	Solonets	UA_M5.3.3_0016	PR	risk-free	risk-free	yes	yes	
343	Solonets	UA_M5.3.3_0017	PR	risk-free	risk-free	yes	yes	

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
344	Slavets	UA_M5.3.3_0018	PR	risk-free	risk-free	yes	yes	
345	Slavets	UA_M5.3.3_0019	PR	risk-free	risk-free	yes	yes	
346	Slavets	UA_M5.3.3_0020	PR	risk-free	risk-free	yes	yes	
347	Mihiderka	UA_M5.3.3_0021	PR	risk-free	risk-free	yes	yes	
348	Squirrel	UA_M5.3.3_0022	PR	risk-free	risk-free	yes	yes	
349	Dubovets	UA_M5.3.3_0023	PR	risk-free	risk-free	yes	yes	
350	Hinterland	UA_M5.3.3_0024	PR	risk-free	risk-free	yes	yes	
351	Small Siret	UA_M5.3.3_0025	PR	risk-free	risk-free	yes	yes	
352	Small Siret	UA_M5.3.3_0026	PR	risk-free	risk-free	yes	yes	
353	Small Siret	UA_M5.3.3_0027	PR	risk-free	risk-free	yes	yes	
354	Small Siret	UA_M5.3.3_0028	PR	risk-free	risk-free	yes	yes	
355	Small Siret	UA_M5.3.3_0029	PR	risk-free	risk-free	yes	yes	
356	Hilcha	UA_M5.3.3_0030	PR	risk-free	risk-free	yes	yes	
357	Hilcha	UA_M5.3.3_0031	PR	risk-free	risk-free	yes	yes	
358	Hilcha	UA_M5.3.3_0032	PR	risk-free	risk-free	yes	yes	
359	Untitled	UA_M5.3.3_0033	PR	risk-free	risk-free	yes	yes	
360	Untitled	UA_M5.3.3_0034	PR	risk-free	risk-free	yes	yes	
361	Untitled	UA_M5.3.3_0035	PR	risk-free	risk-free	yes	yes	
362	Pantine	UA_M5.3.3_0036	PR	risk-free	risk-free	yes	yes	

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
363	Pantine	UA_M5.3.3_0037	PR	risk-free	risk-free	yes	yes	
364	Pantine	UA_M5.3.3_0038	PR	risk-free	risk-free	yes	yes	
365	Untitled	UA_M5.3.3_0039	PR	risk-free	risk-free	yes	yes	
366	Untitled	UA_M5.3.3_0040	PR	risk-free	risk-free	yes	yes	
367	Siretel	UA_M5.3.3_0042	PR	risk-free	risk-free	yes	yes	
368	Siretel	UA_M5.3.3_0043	PR	risk-free	risk-free	yes	yes	
369	Siretel	UA_M5.3.3_0044	PR	risk-free	risk-free	yes	yes	
370	Siretel	UA_M5.3.3_0046	PR	risk-free	risk-free	yes	yes	
371	Jezerul	UA_M5.3.3_0047	PR	risk-free	risk-free	yes	yes	
372	Jezerul	UA_M5.3.3_0048	PR	risk-free	risk-free	yes	yes	
373	Jezerul	UA_M5.3.3_0049	PR	risk-free	risk-free	yes	yes	
374	Chudey	UA_M5.3.3_0050	PR	risk-free	risk-free	yes	yes	
375	Lake. Kagul Lake	UA_M5.3.4_0018	PR	risk-free	risk-free	yes	yes	
376	Lake. Kartal Lake	UA_M5.3.4_0020	PR	risk-free	risk-free	yes	yes	
377	Lake. Lake Yalpug (Yalpukh)	UA_M5.3.4_0024	PR	risk-free	risk-free	yes	yes	
378	Lake. Kugurlui Lake	UA_M5.3.4_0025	PR	risk-free	risk-free	yes	yes	
379	Lake. Safiani Lake	UA_M5.3.4_0034	PR	risk-free	risk-free	yes	yes	
380	Lake. Lung Lake	UA_M5.3.4_0035	PR	risk-free	risk-free	yes	yes	

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
381	Lake. Katlabukh Lake	UA_M5.3.4_0061	PR	risk-free	risk-free	yes	yes	
382	Lake China	UA_M5.3.4_0086	PR	risk-free	risk-free	yes	yes	
383	artificial object	UA_M5.3.4_0094	AWB	risk-free	risk-free	yes	yes	
384	artificial object	UA_M5.3.4_0095	AWB	risk-free	risk-free	yes	yes	
385	Lake Turke Lake	UA_M5.3.4_0096	PR	risk-free	risk-free	yes	yes	
386	Lake. Gradeshka Lake	UA_M5.3.4_0097	PR	risk-free	risk-free	yes	yes	
387	Lake. Derwent Lake	UA_M5.3.4_0098	PR	risk-free	risk-free	yes	yes	
388	Lake. Lake Verega	UA_M5.3.4_0099	PR	risk-free	risk-free	yes	yes	
389	Lake. Krive	UA_M5.3.4_0100	PR	risk-free	risk-free	yes	yes	
390	Bolshoy Solyonyi estuary	UA_M5.3.4_0101	PR	risk-free	risk-free	yes	yes	
391	Pozhezhny estuary	UA_M5.3.4_0102	PR	risk-free	risk-free	yes	yes	
392	Zhebriyansky estuary	UA_M5.3.4_0103	PR	risk-free	risk-free	yes	yes	
393	Water area of the Black Sea	UA_M5.3.4_0106	Coastal waters	risk-free	risk-free	yes	yes	
394	Danube	UA_M5.3.4_0105	Transitional waters	risk-free	risk-free	yes	yes	
5% SWB								
1	Latorytsia	UA_M5.3.1_0298	PR	at risk	risk-free	yes	yes	

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2	Latorytsia	UA_M5.3.1_0299	PR	at risk	at risk	yes	yes	
3	Latorytsia	UA_M5.3.1_0300	PR	at risk	at risk	yes	yes	
4	Veche	UA_M5.3.1_0309	PR	at risk	risk-free	yes	yes	
5	Veche	UA_M5.3.1_0310	PR	at risk	at risk	yes	yes	
6	Svaliava	UA_M5.3.1_0315	PR	possibly at risk	risk-free	yes	yes	
7	Svaliava	UA_M5.3.1_0316	PR	possibly at risk	risk-free	yes	yes	
8	Svaliava	UA_M5.3.1_0317	PR	possibly at risk	risk-free	yes	yes	
9	Dusinka	UA_M5.3.1_0318	PR	at risk	at risk	yes	yes	
10	Nelipinsky	UA_M5.3.1_0319	AWB	at risk	risk-free	yes	yes	
11	Foam	UA_M5.3.1_0321	PR	at risk	at risk	yes	yes	
12	Foam	UA_M5.3.1_0322	PR	at risk	at risk	yes	yes	
13	Great Pina	UA_M5.3.1_0325	PR	at risk	at risk	yes	yes	
14	Mala Pina	UA_M5.3.1_0327	PR	at risk	at risk	yes	yes	
15	Viznytsia	UA_M5.3.1_0341	PR	at risk	risk-free	yes	yes	
16	Obama	UA_M5.3.1_0345	HMWB	at risk	risk-free	yes	yes	
17	Uzh	UA_M5.3.1_0431	PR	at risk	at risk	yes	yes	
18	Uzh	UA_M5.3.1_0432	PR	at risk	at risk	yes	yes	
19	Uzh	UA_M5.3.1_0433	PR	at risk	at risk	yes	yes	
20	Prunus	UA_M5.3.2_0007	PR	at risk	at risk	yes	no	
21	Black Cheremosh	UA_M5.3.2_0088	PR	possibly at risk	possibly at risk	yes	no	

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22	Owl	UA_M5.3.2_0166	HMWB	at risk	risk-free	yes	yes	
23	Owl	UA_M5.3.2_0167	HMWB	at risk	risk-free	yes	yes	
24	Owl	UA_M5.3.2_0168	HMWB	at risk	at risk	yes	no	
25	Dereluy	UA_M5.3.2_0180	PR	at risk	at risk	yes	no	
26	Dereluy	UA_M5.3.2_0182	PR	possibly at risk	risk-free	yes	yes	
27	Siret	UA_M5.3.3_0005	PR	at risk	at risk	yes	no	
28	Siret	UA_M5.3.3_0006	PR	at risk	at risk	yes	no	
29	Karasulak	UA_M5.3.4_0027	HMWB	at risk	at risk	yes	yes	
30	Karasulak reservoir	UA_M5.3.4_0028	HMWB	at risk	risk-free	yes	yes	
31	Karasulak	UA_M5.3.4_0029	HMWB	at risk	at risk	yes	yes	
all other SWB								
1	Bila Tisa	UA_M5.3.1_0001	PR	possibly at risk	risk-free	no	yes	TP
2	Black Tisza	UA_M5.3.1_0003	PR	possibly at risk	risk-free	no	yes	TP
3	Bila Tisa	UA_M5.3.1_0002	PR	possibly at risk	risk-free	no	yes	TP
4	Black Tisza	UA_M5.3.1_0004	PR	possibly at risk	risk-free	no	yes	TP
5	Black Tisza	UA_M5.3.1_0006	PR	possibly at risk	risk-free	no	yes	TP
6	Tisa	UA_M5.3.1_0012	PR	possibly at risk	risk-free	no	yes	TP
7	Tisa	UA_M5.3.1_0013	PR	possibly at risk	risk-free	no	yes	TP
8	Stanislav	UA_M5.3.1_0032	PR	possibly at risk	risk-free	no	yes	TP
9	Lazeshchyna	UA_M5.3.1_0037	PR	possibly at risk	risk-free	no	yes	TP

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10	White	UA_M5.3.1_0046	PR	possibly at risk	risk-free	no	yes	TP
11	Apšica	UA_M5.3.1_0062	PR	possibly at risk	risk-free	no	yes	TP
12	Tjovshag	UA_M5.3.1_0069	PR	possibly at risk	risk-free	no	yes	TP
13	Brusturyanka	UA_M5.3.1_0080	PR	possibly at risk	risk-free	no	yes	TP
14	Tyachivets	UA_M5.3.1_0103	PR	possibly at risk	risk-free	no	yes	TP
15	Stara Rika	UA_M5.3.1_0105	PR	possibly at risk	risk-free	no	yes	TP
16	Tereblya	UA_M5.3.1_0108	PR	possibly at risk	risk-free	no	yes	TP
17	Velyka Uholka	UA_M5.3.1_0121	PR	possibly at risk	risk-free	no	yes	TP
18	Mala Uholka	UA_M5.3.1_0125	PR	possibly at risk	risk-free	no	yes	TP
19	Moranjos	UA_M5.3.1_0128	PR	possibly at risk	risk-free	no	yes	TP
20	Moranjos	UA_M5.3.1_0129	PR	possibly at risk	risk-free	no	yes	TP
21	Moranjos	UA_M5.3.1_0130	PR	possibly at risk	risk-free	no	yes	TP
22	Axe	UA_M5.3.1_0131	PR	possibly at risk	risk-free	no	yes	TP
23	Axe	UA_M5.3.1_0133	PR	possibly at risk	risk-free	no	yes	TP
24	Untitled	UA_M5.3.1_0134	AWB	possibly at risk	risk-free	no	yes	TP
25	Untitled	UA_M5.3.1_0135	AWB	possibly at risk	risk-free	no	yes	TP
26	Bailova	UA_M5.3.1_0136	PR	possibly at risk	risk-free	no	yes	TP
27	Bailova	UA_M5.3.1_0137	PR	possibly at risk	risk-free	no	yes	TP
28	Untitled	UA_M5.3.1_0138	PR	possibly at risk	risk-free	no	yes	TP
29	Boronyava	UA_M5.3.1_0139	PR	possibly at risk	risk-free	no	yes	TP

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30	Boronyava	UA_M5.3.1_0140	PR	possibly at risk	risk-free	no	yes	TP
31	Boronyava	UA_M5.3.1_0142	PR	possibly at risk	risk-free	no	yes	TP
32	Small	UA_M5.3.1_0145	PR	possibly at risk	risk-free	no	yes	TP
33	Small	UA_M5.3.1_0146	PR	possibly at risk	risk-free	no	yes	TP
34	Burkut	UA_M5.3.1_0148	PR	possibly at risk	risk-free	no	yes	TP
35	Khust	UA_M5.3.1_0150	PR	possibly at risk	risk-free	no	yes	TP
36	Untitled	UA_M5.3.1_0153	AWB	possibly at risk	risk-free	no	yes	TP
37	Rika	UA_M5.3.1_0156	PR	possibly at risk	risk-free	no	yes	TP
38	Rika	UA_M5.3.1_0157	PR	possibly at risk	risk-free	no	yes	TP
39	Burdock	UA_M5.3.1_0161	PR	possibly at risk	risk-free	no	yes	TP
40	Shaving	UA_M5.3.1_0165	PR	possibly at risk	risk-free	no	yes	TP
41	Belt	UA_M5.3.1_0170	PR	possibly at risk	risk-free	no	yes	TP
42	Volovets	UA_M5.3.1_0179	PR	possibly at risk	risk-free	no	yes	TP
43	Progudnya	UA_M5.3.1_0181	PR	possibly at risk	risk-free	no	yes	TP
44	Wide	UA_M5.3.1_0182	PR	possibly at risk	risk-free	no	yes	TP
45	Wide	UA_M5.3.1_0183	PR	possibly at risk	risk-free	no	yes	TP
46	Wide	UA_M5.3.1_0184	PR	possibly at risk	risk-free	no	yes	TP
47	Hall	UA_M5.3.1_0185	PR	possibly at risk	risk-free	no	yes	TP
48	Hall	UA_M5.3.1_0186	PR	possibly at risk	risk-free	no	yes	TP
49	Hall	UA_M5.3.1_0187	PR	possibly at risk	risk-free	no	yes	TP

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
50	Chekhovets	UA_M5.3.1_0188	PR	possibly at risk	risk-free	no	yes	TP
51	Chekhovets	UA_M5.3.1_0189	PR	possibly at risk	risk-free	no	yes	TP
52	Suryuk	UA_M5.3.1_0190	PR	possibly at risk	risk-free	no	yes	TP
53	Suryuk	UA_M5.3.1_0191	PR	possibly at risk	risk-free	no	yes	TP
54	Osawa	UA_M5.3.1_0192	PR	possibly at risk	risk-free	no	yes	TP
55	Osawa	UA_M5.3.1_0193	PR	possibly at risk	risk-free	no	yes	TP
56	Osawa	UA_M5.3.1_0194	PR	possibly at risk	risk-free	no	yes	TP
57	Mala Osava	UA_M5.3.1_0195	PR	possibly at risk	risk-free	no	yes	TP
58	Mala Osava	UA_M5.3.1_0196	PR	possibly at risk	risk-free	no	yes	TP
59	Gashparka	UA_M5.3.1_0197	PR	possibly at risk	risk-free	no	yes	TP
60	Untitled	UA_M5.3.1_0200	AWB	possibly at risk	risk-free	no	yes	TP
61	New Batar	UA_M5.3.1_0210	AWB	possibly at risk	risk-free	no	yes	TP
62	Vaskova	UA_M5.3.1_0228	PR	possibly at risk	risk-free	no	yes	TP
63	Untitled	UA_M5.3.1_0258	PR	possibly at risk	risk-free	no	yes	TP
64	Untitled	UA_M5.3.1_0274	PR	possibly at risk	risk-free	no	yes	TP
65	Untitled	UA_M5.3.1_0277	AWB	possibly at risk	risk-free	no	yes	TP
66	Grandfather's Might	UA_M5.3.1_0280	AWB	possibly at risk	risk-free	no	yes	TP
67	Charonda Tisza	UA_M5.3.1_0286	PR	possibly at risk	risk-free	no	yes	TP
68	Sipa-Charonda	UA_M5.3.1_0287	PR	possibly at risk	risk-free	no	yes	TP
69	Untitled	UA_M5.3.1_0288	PR	possibly at risk	risk-free	no	yes	TP

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
70	Serne	UA_M5.3.1_0289	PR	possibly at risk	risk-free	no	yes	TP
71	Charonda-Latorica	UA_M5.3.1_0293	AWB	possibly at risk	risk-free	no	yes	TP
72	Foam	UA_M5.3.1_0320	PR	possibly at risk	risk-free	no	yes	TP
73	High-bank	UA_M5.3.1_0348	AWB	possibly at risk	risk-free	no	yes	TP
74	Old	UA_M5.3.1_0350	PR	possibly at risk	risk-free	no	yes	TP
75	Old	UA_M5.3.1_0351	PR	possibly at risk	risk-free	no	yes	TP
76	Old	UA_M5.3.1_0355	PR	possibly at risk	risk-free	no	yes	TP
77	Bistra	UA_M5.3.1_0356	PR	possibly at risk	risk-free	no	yes	TP
78	Bistra	UA_M5.3.1_0357	PR	possibly at risk	risk-free	no	yes	TP
79	Bistra	UA_M5.3.1_0358	PR	possibly at risk	risk-free	no	yes	TP
80	Poluch	UA_M5.3.1_0366	PR	possibly at risk	risk-free	no	yes	TP
81	Poluch	UA_M5.3.1_0367	PR	possibly at risk	risk-free	no	yes	TP
82	Vela	UA_M5.3.1_0374	PR	possibly at risk	risk-free	no	yes	TP
83	Vela	UA_M5.3.1_0376	PR	possibly at risk	risk-free	no	yes	TP
84	Untitled	UA_M5.3.1_0378	AWB	possibly at risk	risk-free	no	yes	TP
85	Kamarochi	UA_M5.3.1_0378	AWB	possibly at risk	risk-free	no	yes	TP
86	Tsyganivka	UA_M5.3.1_0379	PR	possibly at risk	risk-free	no	yes	TP
87	Tsyganivka	UA_M5.3.1_0380	PR	possibly at risk	risk-free	no	yes	TP
88	Tsyganivka	UA_M5.3.1_0381	PR	possibly at risk	risk-free	no	yes	TP
89	Untitled	UA_M5.3.1_0383	AWB	possibly at risk	risk-free	no	yes	TP

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
90	Untitled	UA_M5.3.1_0384	AWB	possibly at risk	risk-free	no	yes	TP
91	Solotvynskyi	UA_M5.3.1_0385	PR	possibly at risk	risk-free	no	yes	TP
92	Solotvynskyi	UA_M5.3.1_0386	PR	possibly at risk	risk-free	no	yes	TP
93	Solotvynskyi	UA_M5.3.1_0387	PR	possibly at risk	risk-free	no	yes	TP
94	Deep	UA_M5.3.1_0389	PR	possibly at risk	risk-free	no	yes	TP
95	Deep	UA_M5.3.1_0390	PR	possibly at risk	risk-free	no	yes	TP
96	Deep	UA_M5.3.1_0391	PR	possibly at risk	risk-free	no	yes	TP
97	Untitled	UA_M5.3.1_0392	AWB	possibly at risk	risk-free	no	yes	TP
98	Slopes	UA_M5.3.1_0402	PR	possibly at risk	risk-free	no	yes	TP
99	Novel	UA_M5.3.1_0416	PR	possibly at risk	risk-free	no	yes	TP
100	Sholen	UA_M5.3.1_0422	PR	possibly at risk	risk-free	no	yes	TP
101	Ruk. Untitled	UA_M5.3.1_0426	PR	possibly at risk	risk-free	no	yes	TP
102	Turya	UA_M5.3.1_0459	PR	possibly at risk	risk-free	no	yes	TP
103	Syryi Potik	UA_M5.3.1_0473	PR	possibly at risk	risk-free	no	yes	TP
104	Syryi Potik	UA_M5.3.1_0474	PR	possibly at risk	risk-free	no	yes	TP
105	Syryi Potik	UA_M5.3.1_0475	PR	possibly at risk	risk-free	no	yes	TP
106	Untitled	UA_M5.3.1_0478	PR	possibly at risk	risk-free	no	yes	TP
107	Untitled	UA_M5.3.1_0479	PR	possibly at risk	risk-free	no	yes	TP
108	Untitled	UA_M5.3.1_0480	PR	possibly at risk	risk-free	no	yes	TP
109	Black Tisza	UA_M5.3.1_0005	PR	at risk	risk-free	no	yes	TP

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
110	Tisa	UA_M5.3.1_0007	PR	at risk	at risk	no	no	TP
111	Tisa	UA_M5.3.1_0008	PR	at risk	at risk	no	no	TP
112	Tisa	UA_M5.3.1_0009	PR	at risk	at risk	no	no	TP
113	Tisa	UA_M5.3.1_0010	PR	at risk	at risk	no	no	TP
114	Tisa	UA_M5.3.1_0011	PR	at risk	at risk	no	no	TP
115	Tisa	UA_M5.3.1_0014	PR	at risk	at risk	no	no	TP
116	Stanislav	UA_M5.3.1_0031	PR	at risk	risk-free	no	yes	TP
117	Kosivska	UA_M5.3.1_0051	PR	at risk	risk-free	no	yes	TP
118	Shopurka	UA_M5.3.1_0052	PR	at risk	at risk	no	no	TP
119	Apšica	UA_M5.3.1_0063	PR	at risk	risk-free	no	yes	TP
120	Basheu	UA_M5.3.1_0071	PR	at risk	risk-free	no	yes	TP
121	Theresa	UA_M5.3.1_0073	PR	at risk	at risk	no	no	TP
122	Theresa	UA_M5.3.1_0074	PR	at risk	risk-free	no	yes	TP
123	Martosz	UA_M5.3.1_0104	PR	at risk	risk-free	no	yes	TP
124	Tereble-Ritske reservoir	UA_M5.3.1_0109	HMWB	at risk	risk-free	no	yes	BB
125	Tereblya	UA_M5.3.1_0110	PR	at risk	at risk	no	no	BB
126	Axe	UA_M5.3.1_0132	HMWB	at risk	risk-free	no	yes	TP
127	Boronyavske Reservoir	UA_M5.3.1_0141	HMWB	at risk	risk-free	no	yes	BB
128	Tushka	UA_M5.3.1_0143	HMWB	at risk	risk-free	no	yes	TP

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
129	Tushka	UA_M5.3.1_0144	PR	at risk	risk-free	no	yes	TP
130	Small	UA_M5.3.1_0147	HMWB	at risk	risk-free	no	yes	TP
131	Burkut	UA_M5.3.1_0149	HMWB	at risk	risk-free	no	yes	TP
132	Khust	UA_M5.3.1_0151	PR	at risk	at risk	no	no	TP
133	Lukovets	UA_M5.3.1_0152	PR	at risk	risk-free	no	yes	TP
134	Rika	UA_M5.3.1_0155	PR	at risk	at risk	no	yes	TP
135	Belt	UA_M5.3.1_0168	PR	at risk	risk-free	no	yes	TP
136	Belt	UA_M5.3.1_0169	PR	at risk	risk-free	no	yes	TP
137	Gashparka	UA_M5.3.1_0198	PR	at risk	risk-free	no	yes	TP
138	Gashparka	UA_M5.3.1_0199	HMWB	at risk	risk-free	no	yes	TP
139	Batar	UA_M5.3.1_0203	HMWB	at risk	at risk	no	no	TP
140	Batar	UA_M5.3.1_0204	HMWB	at risk	risk-free	no	yes	TP
141	Batarch	UA_M5.3.1_0209	PR	at risk	risk-free	no	yes	TP
142	Fireworks	UA_M5.3.1_0211	HMWB	at risk	risk-free	no	yes	TP
143	Borzhava	UA_M5.3.1_0220	PR	at risk	risk-free	no	yes	TP
144	Borzhava	UA_M5.3.1_0221	PR	at risk	risk-free	no	yes	TP
145	Borzhava	UA_M5.3.1_0222	PR	at risk	risk-free	no	yes	TP
146	Borzhava	UA_M5.3.1_0223	PR	at risk	risk-free	no	yes	TP
147	Kushnitsa	UA_M5.3.1_0224	PR	at risk	risk-free	no	yes	TP
148	Kushnitsa	UA_M5.3.1_0225	PR	at risk	risk-free	no	yes	TP

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
149	Kushnitsa	UA_M5.3.1_0226	PR	at risk	risk-free	no	yes	TP
150	Kushnitsa	UA_M5.3.1_0227	PR	at risk	risk-free	no	yes	TP
151	Vaskova	UA_M5.3.1_0229	PR	at risk	risk-free	no	yes	TP
152	Vaskova	UA_M5.3.1_0230	PR	at risk	risk-free	no	yes	TP
153	Booking	UA_M5.3.1_0231	PR	at risk	risk-free	no	yes	TP
154	Booking	UA_M5.3.1_0232	PR	at risk	risk-free	no	yes	TP
155	Booking	UA_M5.3.1_0233	PR	at risk	risk-free	no	yes	TP
156	Booking	UA_M5.3.1_0234	PR	at risk	risk-free	no	yes	TP
157	Untitled	UA_M5.3.1_0235	PR	at risk	risk-free	no	yes	TP
158	Untitled	UA_M5.3.1_0236	PR	at risk	risk-free	no	yes	TP
159	Untitled	UA_M5.3.1_0237	PR	at risk	risk-free	no	yes	TP
160	Bistra	UA_M5.3.1_0238	PR	at risk	risk-free	no	yes	TP
161	Bistra	UA_M5.3.1_0239	PR	at risk	risk-free	no	yes	TP
162	Bistra	UA_M5.3.1_0240	HMWB	at risk	risk-free	no	yes	TP
163	Untitled	UA_M5.3.1_0241	PR	at risk	risk-free	no	yes	TP
164	Untitled	UA_M5.3.1_0242	PR	at risk	risk-free	no	yes	TP
165	Untitled	UA_M5.3.1_0243	PR	at risk	risk-free	no	yes	TP
166	Berberke	UA_M5.3.1_0244	PR	at risk	risk-free	no	yes	TP
167	Berberke	UA_M5.3.1_0245	HMWB	at risk	risk-free	no	yes	TP
168	Bukovets	UA_M5.3.1_0246	PR	at risk	risk-free	no	yes	TP

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
169	Bukovets	UA_M5.3.1_0247	PR	at risk	risk-free	no	yes	TP
170	Bukovets	UA_M5.3.1_0248	HMWB	at risk	risk-free	no	yes	TP
171	Irshava	UA_M5.3.1_0249	PR	at risk	risk-free	no	yes	TP
172	Irshava	UA_M5.3.1_0250	PR	at risk	risk-free	no	yes	TP
173	Irshava	UA_M5.3.1_0251	PR	at risk	risk-free	no	yes	TP
174	Irshava	UA_M5.3.1_0252	PR	at risk	at risk	no	no	TP
175	Irshava	UA_M5.3.1_0253	PR	at risk	risk-free	no	yes	TP
176	Untitled	UA_M5.3.1_0254	PR	at risk	risk-free	no	yes	TP
177	Untitled	UA_M5.3.1_0255	PR	at risk	risk-free	no	yes	TP
178	Untitled	UA_M5.3.1_0259	PR	at risk	risk-free	no	yes	TP
179	Untitled	UA_M5.3.1_0260	PR	at risk	risk-free	no	yes	TP
180	Untitled	UA_M5.3.1_0261	PR	at risk	risk-free	no	yes	TP
181	Untitled	UA_M5.3.1_0262	PR	at risk	risk-free	no	yes	TP
182	Untitled	UA_M5.3.1_0263	PR	at risk	risk-free	no	yes	TP
183	Untitled	UA_M5.3.1_0264	PR	at risk	risk-free	no	yes	TP
184	Untitled	UA_M5.3.1_0265	PR	at risk	risk-free	no	yes	TP
185	Bruise	UA_M5.3.1_0266	PR	at risk	risk-free	no	yes	TP
186	Bruise	UA_M5.3.1_0267	PR	at risk	risk-free	no	yes	TP
187	Bruise	UA_M5.3.1_0268	PR	at risk	risk-free	no	yes	TP
188	Bruise	UA_M5.3.1_0269	PR	at risk	risk-free	no	yes	TP

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
189	Deep	UA_M5.3.1_0271	HMWB	at risk	risk-free	no	yes	TP
190	Deep	UA_M5.3.1_0272	HMWB	at risk	risk-free	no	yes	TP
191	Salva reservoir	UA_M5.3.1_0275	HMWB	at risk	risk-free	no	yes	BB
192	Untitled	UA_M5.3.1_0276	HMWB	at risk	risk-free	no	yes	TP
193	Werke	UA_M5.3.1_0278	PR	at risk	at risk	no	no	PP
194	Werke	UA_M5.3.1_0279	PR	at risk	at risk	no	no	PP
195	Sipa	UA_M5.3.1_0281	PR	at risk	at risk	no	no	PP
196	Kosino-Bovtradsky	UA_M5.3.1_0290	AWB	at risk	risk-free	no	yes	PP
197	Tsertsyno	UA_M5.3.1_0292	HMWB	at risk	risk-free	no	yes	PP
198	Tsertsyno	UA_M5.3.1_0294	HMWB	at risk	risk-free	no	yes	PP
199	Latorytsia	UA_M5.3.1_0296	PR	at risk	risk-free	no	yes	TP
200	Latorytsia	UA_M5.3.1_0297	PR	at risk	risk-free	no	yes	TP
201	Slavka	UA_M5.3.1_0302	PR	at risk	at risk	no	no	TP
202	Zdenyatska	UA_M5.3.1_0305	PR	at risk	risk-free	no	yes	TP
203	Zdenyatska	UA_M5.3.1_0306	PR	at risk	risk-free	no	yes	TP
204	Bruise	UA_M5.3.1_0329	PR	at risk	risk-free	no	yes	TP
205	Bruise	UA_M5.3.1_0330	PR	at risk	risk-free	no	yes	TP
206	Viznytsia	UA_M5.3.1_0340	PR	at risk	risk-free	no	yes	TP
207	Obama	UA_M5.3.1_0342	PR	at risk	risk-free	no	yes	TP
208	Ureter	UA_M5.3.1_0346	HMWB	at risk	risk-free	no	yes	PP

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209	Urban	UA_M5.3.1_0347	HMWB	at risk	risk-free	no	yes	PP
210	K-100	UA_M5.3.1_0349	AWB	at risk	risk-free	no	yes	PP
211	Old	UA_M5.3.1_0352	PR	at risk	risk-free	no	yes	TP
212	Andriyivske Reservoir	UA_M5.3.1_0353	HMWB	at risk	risk-free	no	yes	BB
213	Kuchava	UA_M5.3.1_0361	HMWB	at risk	risk-free	no	yes	TP
214	Untitled	UA_M5.3.1_0364	HMWB	at risk	risk-free	no	yes	TP
215	Bobovyshchanske Reservoir	UA_M5.3.1_0368	HMWB	at risk	at risk	no	no	BB
216	Poluch	UA_M5.3.1_0369	HMWB	at risk	risk-free	no	yes	TP
217	Poluch	UA_M5.3.1_0370	HMWB	at risk	at risk	no	no	TP
218	Yaruga	UA_M5.3.1_0373	PR	at risk	at risk	no	no	TP
219	Vela	UA_M5.3.1_0375	PR	at risk	risk-free	no	yes	TP
220	Vela	UA_M5.3.1_0377	HMWB	at risk	risk-free	no	yes	TP
221	Tsyganivka	UA_M5.3.1_0382	HMWB	at risk	risk-free	yes	yes	TP
222	Solotvynskyi	UA_M5.3.1_0388	HMWB	at risk	risk-free	no	yes	TP
223	Tova	UA_M5.3.1_0393	PR	at risk	at risk	no	no	PP
224	Koropets	UA_M5.3.1_0394	HMWB	at risk	risk-free	no	yes	TP
225	Koropets	UA_M5.3.1_0395	PR	at risk	at risk	no	no	PP
226	Koropets	UA_M5.3.1_0396	PR	at risk	at risk	no	no	PP
227	Black Water	UA_M5.3.1_0397	HMWB	at risk	risk-free	no	yes	PP

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228	Black Water	UA_M5.3.1_0398	HMWB	at risk	risk-free	no	yes	PP
229	Dragonfly	UA_M5.3.1_0401	HMWB	at risk	risk-free	no	yes	TP
230	Slopes	UA_M5.3.1_0404	HMWB	at risk	risk-free	no	yes	TP
231	Babichka Reservoir	UA_M5.3.1_0405	HMWB	at risk	risk-free	no	yes	BB
232	Slopes	UA_M5.3.1_0406	HMWB	at risk	risk-free	no	yes	PP
233	Mochila reservoir	UA_M5.3.1_0410	HMWB	at risk	risk-free	no	yes	BB
234	Mochila	UA_M5.3.1_0411	HMWB	at risk	risk-free	no	yes	PP
235	Untitled	UA_M5.3.1_0412	PR	at risk	risk-free	no	yes	PP
236	Fornosh reservoir	UA_M5.3.1_0413	HMWB	at risk	risk-free	no	yes	BB
237	Untitled	UA_M5.3.1_0414	HMWB	at risk	risk-free	no	yes	PP
238	Roman Potik reservoir	UA_M5.3.1_0417	HMWB	at risk	risk-free	no	yes	BB
239	Novel	UA_M5.3.1_0418	HMWB	at risk	risk-free	no	yes	PP
240	Novel	UA_M5.3.1_0419	HMWB	at risk	risk-free	no	yes	PP
241	K-300	UA_M5.3.1_0424	AWB	at risk	risk-free	no	yes	PP
242	Untitled (Valea)	UA_M5.3.1_0425	HMWB	at risk	at risk	no	no	TP
243	Uzh	UA_M5.3.1_0430	PR	at risk	at risk	no	no	TP
244	Luta	UA_M5.3.1_0450	PR	at risk	risk-free	no	yes	TP
245	Turya	UA_M5.3.1_0458	PR	at risk	risk-free	no	yes	TP
246	Turitsa	UA_M5.3.1_0469	PR	at risk	risk-free	no	yes	TP

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				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
247	Derivation channel of the HPP cascade	UA_M5.3.1_0476	HMWB	at risk	risk-free	no	yes	PP
248	Derivation channel of the HPP cascade	UA_M5.3.1_0477	HMWB	at risk	risk-free	no	yes	PP
249	Prunus	UA_M5.3.2_0001	PR	possibly at risk	possibly at risk	no	no	TP
250	Prunus	UA_M5.3.2_0004	PR	at risk	possibly at risk	no	no	TP
251	Prunus	UA_M5.3.2_0005	PR	at risk	risk-free	no	yes	BB
252	Pikes	UA_M5.3.2_0009	PR	possibly at risk	possibly at risk	no	no	TP
253	Prutets-Yablonitsky	UA_M5.3.2_0010	PR	possibly at risk	possibly at risk	no	no	TP
254	Interchange	UA_M5.3.2_0017	PR	at risk	possibly at risk	no	no	TP
255	Interchange	UA_M5.3.2_0018	PR	at risk	risk-free	no	yes	TP
256	Lubizhna	UA_M5.3.2_0019	PR	at risk	risk-free	no	yes	TP
257	Lubizhna	UA_M5.3.2_0020	PR	at risk	risk-free	no	yes	TP
258	Lubizhna	UA_M5.3.2_0021	PR	at risk	risk-free	no	yes	TP
259	Oslava	UA_M5.3.2_0022	PR	at risk	risk-free	no	yes	TP
260	Oslava	UA_M5.3.2_0023	PR	at risk	risk-free	no	yes	TP
261	White Oslava	UA_M5.3.2_0024	PR	at risk	risk-free	no	yes	TP
262	White Oslava	UA_M5.3.2_0025	PR	at risk	risk-free	no	yes	TP
263	White Oslava	UA_M5.3.2_0026	PR	at risk	risk-free	no	yes	TP
264	Red	UA_M5.3.2_0027	PR	at risk	risk-free	no	yes	TP
265	Red	UA_M5.3.2_0028	PR	at risk	risk-free	no	yes	TP

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266	Red	UA_M5.3.2_0029	PR	at risk	risk-free	no	yes	TP
267	Tovmachik	UA_M5.3.2_0030	PR	at risk	risk-free	no	yes	TP
268	Tovmach	UA_M5.3.2_0031	PR	at risk	risk-free	no	yes	TP
269	Pistachio	UA_M5.3.2_0034	PR	possibly at risk	risk-free	no	yes	TP
270	Pistachio	UA_M5.3.2_0035	PR	at risk	risk-free	no	yes	TP
271	Pistachio	UA_M5.3.2_0036	PR	at risk	risk-free	no	yes	TP
272	Pistachio	UA_M5.3.2_0037	PR	at risk	risk-free	no	yes	TP
273	Pistachio	UA_M5.3.2_0038	PR	possibly at risk	risk-free	no	yes	BB
274	Brusturka	UA_M5.3.2_0039	PR	at risk	risk-free	no	yes	TP
275	Brusturka	UA_M5.3.2_0040	PR	at risk	risk-free	no	yes	TP
276	Hatch	UA_M5.3.2_0041	PR	at risk	risk-free	no	yes	TP
277	Hatch	UA_M5.3.2_0042	PR	at risk	risk-free	no	yes	TP
278	Hatch	UA_M5.3.2_0043	PR	at risk	at risk	no	no	TP
279	Hatch	UA_M5.3.2_0044	PR	possibly at risk	risk-free	no	yes	BB
280	Acreage.	UA_M5.3.2_0045	PR	at risk	risk-free	no	yes	TP
281	Acreage.	UA_M5.3.2_0046	PR	at risk	risk-free	no	yes	TP
282	Acreage.	UA_M5.3.2_0047	PR	at risk	risk-free	no	yes	TP
283	Mlynivka (Kolomyika)	UA_M5.3.2_0055	PR	at risk	at risk	no	no	TP
284	Dubrovodka	UA_M5.3.2_0056	PR	possibly at risk	possibly at risk	no	no	TP
285	Kosachivka	UA_M5.3.2_0057	HMWB	at risk	at risk	no	no	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
286	Tsutsulin	UA_M5.3.2_0060	PR	possibly at risk	risk-free	no	yes	TP
287	Rudka	UA_M5.3.2_0061	HMWB	at risk	possibly at risk	no	no	TP
288	Turk	UA_M5.3.2_0063	PR	possibly at risk	possibly at risk	no	no	TP
289	Fishery	UA_M5.3.2_0065	PR	possibly at risk	risk-free	no	yes	TP
290	Fishery	UA_M5.3.2_0066	PR	at risk	risk-free	no	yes	TP
291	Fishery	UA_M5.3.2_0067	PR	at risk	risk-free	no	yes	TP
292	Fishery	UA_M5.3.2_0068	PR	at risk	at risk	no	no	TP
293	River	UA_M5.3.2_0069	PR	at risk	risk-free	no	yes	TP
294	River	UA_M5.3.2_0070	PR	at risk	risk-free	no	yes	TP
295	River	UA_M5.3.2_0071	PR	at risk	risk-free	no	yes	TP
296	Tarnowiec	UA_M5.3.2_0072	PR	at risk	risk-free	no	yes	TP
297	Mill	UA_M5.3.2_0073	PR	at risk	risk-free	no	yes	TP
298	Khimichin	UA_M5.3.2_0074	PR	at risk	risk-free	no	yes	TP
299	Black-haired	UA_M5.3.2_0076	PR	possibly at risk	possibly at risk	no	no	TP
300	Beleluia	UA_M5.3.2_0079	HMWB	at risk	risk-free	no	yes	TP
301	Stream	UA_M5.3.2_0082	HMWB	at risk	risk-free	no	yes	TP
302	Cheremosh	UA_M5.3.2_0084	PR	possibly at risk	risk-free	no	yes	BB
303	Rozhen the Great	UA_M5.3.2_0141	PR	possibly at risk	risk-free	no	yes	TP
304	Rozhen the Great	UA_M5.3.2_0142	PR	possibly at risk	risk-free	no	yes	TP
305	Rot	UA_M5.3.2_0146	HMWB	at risk	risk-free	no	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
306	Volitsa	UA_M5.3.2_0147	PR	at risk	risk-free	no	yes	TP
307	Volitsa	UA_M5.3.2_0148	PR	at risk	risk-free	no	yes	TP
308	Volitsa	UA_M5.3.2_0149	PR	possibly at risk	risk-free	no	yes	TP
309	Volochina	UA_M5.3.2_0155	HMWB	at risk	risk-free	no	yes	TP
310	Volochina	UA_M5.3.2_0156	HMWB	at risk	risk-free	no	yes	TP
311	Lingonberry	UA_M5.3.2_0158	PR	possibly at risk	risk-free	no	yes	TP
312	Untitled	UA_M5.3.2_0159	PR	possibly at risk	risk-free	no	yes	TP
313	Untitled	UA_M5.3.2_0160	PR	possibly at risk	possibly at risk	no	no	TP
314	Clay	UA_M5.3.2_0162	PR	possibly at risk	risk-free	no	yes	BB
315	Owl	UA_M5.3.2_0163	HMWB	at risk	risk-free	no	yes	TP
316	Owl	UA_M5.3.2_0164	HMWB	at risk	risk-free	no	yes	TP
317	Owl	UA_M5.3.2_0165	PR	possibly at risk	risk-free	no	yes	TP
318	Untitled	UA_M5.3.2_0170	HMWB	at risk	risk-free	no	yes	TP
319	Shubranets	UA_M5.3.2_0173	HMWB	at risk	risk-free	no	yes	TP
320	Shubranets	UA_M5.3.2_0174	HMWB	at risk	risk-free	no	yes	TP
321	Shubranets	UA_M5.3.2_0175	HMWB	at risk	risk-free	no	yes	TP
322	Zadubrivka	UA_M5.3.2_0177	PR	possibly at risk	possibly at risk	no	no	TP
323	Mosquitoes	UA_M5.3.2_0179	PR	possibly at risk	risk-free	no	yes	TP
324	Slave	UA_M5.3.2_0184	PR	possibly at risk	risk-free	no	yes	TP
325	Slave	UA_M5.3.2_0185	PR	possibly at risk	risk-free	no	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
326	Corovia	UA_M5.3.2_0188	PR	possibly at risk	risk-free	no	yes	TP
327	Vitsa	UA_M5.3.2_0189	PR	possibly at risk	risk-free	no	yes	TP
328	Vitsa	UA_M5.3.2_0190	PR	at risk	at risk	no	no	TP
329	Reservoir on the Vitsa River	UA_M5.3.2_0191	HMWB	at risk	risk-free	no	yes	tp
330	Vitsa	UA_M5.3.2_0192	PR	possibly at risk	risk-free	no	yes	TP
331	Hukov	UA_M5.3.2_0193	PR	possibly at risk	risk-free	no	yes	TP
332	Hukov	UA_M5.3.2_0194	PR	possibly at risk	risk-free	no	yes	TP
333	Reservoir on the Hukiv River	UA_M5.3.2_0195	HMWB	at risk	risk-free	no	yes	tp
334	Hukov	UA_M5.3.2_0196	PR	possibly at risk	risk-free	no	yes	TP
335	Hukov	UA_M5.3.2_0197	PR	possibly at risk	risk-free	no	yes	TP
336	Mothballs	UA_M5.3.2_0198	PR	possibly at risk	risk-free	no	yes	TP
337	Mothballs	UA_M5.3.2_0199	PR	possibly at risk	risk-free	no	yes	TP
338	Mothballs	UA_M5.3.2_0200	PR	at risk	at risk	no	no	TP
339	Rokytna	UA_M5.3.2_0201	HMWB	at risk	risk-free	no	yes	TP
340	Rokytna	UA_M5.3.2_0202	HMWB	at risk	risk-free	no	yes	TP
341	Rokytna	UA_M5.3.2_0203	PR	possibly at risk	possibly at risk	no	no	TP
342	Hertz	UA_M5.3.2_0204	HMWB	at risk	risk-free	no	yes	TP
343	Hertz	UA_M5.3.2_0205	HMWB	at risk	risk-free	no	yes	TP
344	Hertz	UA_M5.3.2_0206	PR	possibly at risk	risk-free	no	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
345	Ringach	UA_M5.3.2_0208	HMWB	at risk	risk-free	no	yes	TP
346	Ringach	UA_M5.3.2_0209	HMWB	at risk	risk-free	no	yes	TP
347	Untitled	UA_M5.3.2_0211	HMWB	at risk	risk-free	no	yes	TP
348	Dynivka	UA_M5.3.2_0212	PR	possibly at risk	risk-free	no	yes	TP
349	Dynivka	UA_M5.3.2_0213	HMWB	at risk	risk-free	no	yes	TP
350	Cherlena	UA_M5.3.2_0216	PR	possibly at risk	risk-free	no	yes	TP
351	Reservoir on the Cherlena River	UA_M5.3.2_0217	HMWB	at risk	risk-free	no	yes	TP
352	Cherlena	UA_M5.3.2_0218	HMWB	at risk	risk-free	no	yes	TP
353	Shcherbintsy	UA_M5.3.2_0220	HMWB	at risk	risk-free	no	yes	TP
354	Reservoir on the Shcherbintsy River	UA_M5.3.2_0221	HMWB	at risk	risk-free	no	yes	TP
355	Shcherbintsy	UA_M5.3.2_0222	HMWB	at risk	risk-free	no	yes	TP
356	Stalineshty	UA_M5.3.2_0224	HMWB	at risk	risk-free	no	yes	TP
357	Reservoir on the Stalinesti River	UA_M5.3.2_0225	HMWB	at risk	risk-free	no	yes	TP
358	Stalineshty	UA_M5.3.2_0226	HMWB	at risk	risk-free	no	yes	TP
359	Glodos	UA_M5.3.2_0227	HMWB	at risk	risk-free	no	yes	TP
360	Glodos	UA_M5.3.2_0228	PR	possibly at risk	risk-free	no	yes	TP
361	Reservoir on the Glodos River	UA_M5.3.2_0229	HMWB	at risk	risk-free	no	yes	TP
362	Glodos	UA_M5.3.2_0230	PR	possibly at risk	risk-free	no	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
363	Patsapule	UA_M5.3.2_0231	HMWB	at risk	risk-free	no	yes	TP
364	Dona	UA_M5.3.2_0232	HMWB	at risk	risk-free	no	yes	TP
365	Larder	UA_M5.3.2_0236	HMWB	at risk	risk-free	no	yes	TP
366	Viliya	UA_M5.3.2_0237	HMWB	at risk	risk-free	no	yes	TP
367	New settler	UA_M5.3.2_0240	HMWB	at risk	risk-free	no	yes	TP
368	New settler	UA_M5.3.2_0241	HMWB	at risk	risk-free	no	yes	TP
369	Spatula	UA_M5.3.2_0242	HMWB	at risk	risk-free	no	yes	TP
370	Untitled	UA_M5.3.2_0243	HMWB	at risk	risk-free	no	yes	TP
371	Dradishte	UA_M5.3.2_0244	HMWB	at risk	risk-free	no	yes	TP
372	Dradishte	UA_M5.3.2_0245	HMWB	at risk	risk-free	no	yes	TP
373	Migova	UA_M5.3.3_0009	PR	possibly at risk	possibly at risk	no	no	TP
374	Untitled	UA_M5.3.3_0041	HMWB	at risk	risk-free	no	yes	TP
375	Siretel	UA_M5.3.3_0045	PR	at risk	at risk	no	no	TP
376	Kotovets	UA_M5.3.3_0051	HMWB	at risk	risk-free	no	yes	TP
377	Malyi Kotovets	UA_M5.3.3_0052	HMWB	at risk	risk-free	no	yes	TP
378	Danube	UA_M5.3.4_0001	PR	at risk	at risk	no	yes	NV
379	Danube	UA_M5.3.4_0002	PR	at risk	at risk	no	yes	NV
380	Danube	UA_M5.3.4_0003	PR	at risk	at risk	no	yes	NV
381	Sour sleeve	UA_M5.3.4_0004	PR	at risk	at risk	no	yes	NV
382	Ivanesti sleeve	UA_M5.3.4_0005	PR	at risk	at risk	no	yes	NV

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
383	mouth of the Tatar	UA_M5.3.4_0006	PR	at risk	at risk	no	yes	NV
384	Stepovyi sleeve	UA_M5.3.4_0007	PR	at risk	at risk	no	yes	NV
385	Katenka sleeve	UA_M5.3.4_0008	PR	possibly at risk	possibly at risk	no	yes	NV
386	Mashenka sleeve	UA_M5.3.4_0009	PR	possibly at risk	possibly at risk	no	yes	NV
387	Mouth of the Laptish	UA_M5.3.4_0010	PR	possibly at risk	possibly at risk	no	yes	NV
388	Mouth of the Murza	UA_M5.3.4_0011	PR	possibly at risk	possibly at risk	no	yes	NV
389	Solomon sleeve	UA_M5.3.4_0012	PR	possibly at risk	possibly at risk	no	yes	NV
390	Belgorod estuary	UA_M5.3.4_0013	PR	possibly at risk	possibly at risk	no	yes	NV
391	Ochakivskoe estuary	UA_M5.3.4_0014	PR	possibly at risk	possibly at risk	no	yes	NV
392	mouth of the Prorva	UA_M5.3.4_0015	PR	possibly at risk	possibly at risk	no	yes	NV
393	Untitled	UA_M5.3.4_0016	HMWB	at risk	possibly at risk	no	yes	NV
394	Untitled	UA_M5.3.4_0017	HMWB	at risk	possibly at risk	no	yes	NV
395	Wicketa Creek	UA_M5.3.4_0019	HMWB	at risk	possibly at risk	no	yes	NV
396	Kartal Lake connection channel	UA_M5.3.4_0021	HMWB	at risk	possibly at risk	no	yes	NV
397	Yalpukh	UA_M5.3.4_0022	HMWB	at risk	at risk	no	yes	NV
398	Great Salcha	UA_M5.3.4_0023	HMWB	at risk	at risk	no	yes	NV
399	Skunk	UA_M5.3.4_0026	HMWB	at risk	at risk	no	yes	NV
400	Kugurlui Lake connecting channel	UA_M5.3.4_0030	HMWB	at risk	at risk	no	yes	NV
401	Kairaklia	UA_M5.3.4_0031	HMWB	at risk	at risk	no	yes	NV

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
402	Kairaklia	UA_M5.3.4_0033	HMWB	at risk	at risk	no	yes	NV
403	Lung Lake connecting channel	UA_M5.3.4_0036	HMWB	at risk	at risk	no	yes	NV
404	Tashbunar	UA_M5.3.4_0037	HMWB	at risk	at risk	no	yes	NV
405	Tashbunar	UA_M5.3.4_0039	HMWB	at risk	at risk	no	yes	NV
406	Tashbunar	UA_M5.3.4_0040	HMWB	at risk	at risk	no	yes	NV
407	Tashbunar	UA_M5.3.4_0042	HMWB	at risk	at risk	no	yes	NV
408	Big Katlabukh	UA_M5.3.4_0043	PR	at risk	at risk	no	yes	NV
409	Big Katlabukh	UA_M5.3.4_0045	PR	at risk	at risk	no	yes	NV
410	Big Katlabukh	UA_M5.3.4_0046	HMWB	at risk	at risk	no	yes	NV
411	Big Katlabukh	UA_M5.3.4_0048	HMWB	at risk	at risk	no	yes	NV
412	Small Katlabukh	UA_M5.3.4_0049	PR	at risk	at risk	no	yes	NV
413	Small Katlabukh	UA_M5.3.4_0050	HMWB	at risk	at risk	no	yes	NV
414	Small Katlabukh	UA_M5.3.4_0051	HMWB	at risk	at risk	no	yes	NV
415	Small Katlabukh	UA_M5.3.4_0052	HMWB	at risk	at risk	no	yes	NV
416	Small Katlabukh	UA_M5.3.4_0054	HMWB	at risk	at risk	no	yes	NV
417	Yenika	UA_M5.3.4_0055	HMWB	at risk	at risk	no	yes	NV
418	Yenika	UA_M5.3.4_0056	HMWB	at risk	at risk	no	yes	NV
419	Yenika	UA_M5.3.4_0057	PR	at risk	at risk	no	yes	NV
420	Yenika	UA_M5.3.4_0058	PR	at risk	at risk	no	yes	NV
421	Yenika	UA_M5.3.4_0060	HMWB	at risk	at risk	no	yes	NV

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
422	Zheliawski connecting channel	UA_M5.3.4_0062	HMWB	at risk	at risk	no	yes	NV
423	Kyrgyzstan-China	UA_M5.3.4_0063	PR	at risk	at risk	no	yes	NV
424	Kyrgyzstan-China	UA_M5.3.4_0064	HMWB	at risk	at risk	no	yes	NV
425	Kyrgyzstan-China	UA_M5.3.4_0066	HMWB	at risk	at risk	no	yes	NV
426	Untitled	UA_M5.3.4_0067	PR	possibly at risk	possibly at risk	no	yes	NV
427	Valeperzha	UA_M5.3.4_0068	PR	at risk	at risk	no	yes	NV
428	Valeperzha	UA_M5.3.4_0069	HMWB	at risk	at risk	no	yes	NV
429	Valeperzha	UA_M5.3.4_0071	HMWB	at risk	at risk	no	yes	NV
430	Kirgiz	UA_M5.3.4_0072	PR	possibly at risk	possibly at risk	no	yes	NV
431	Kirgiz	UA_M5.3.4_0074	PR	at risk	at risk	no	yes	NV
432	Kirgiz	UA_M5.3.4_0075	HMWB	at risk	at risk	no	yes	NV
433	Kirgiz	UA_M5.3.4_0077	HMWB	at risk	at risk	no	yes	NV
434	(Untitled)	UA_M5.3.4_0078	HMWB	at risk	at risk	no	yes	NV
435	Aliyah	UA_M5.3.4_0079	HMWB	at risk	possibly at risk	no	yes	NV
436	Aliyah	UA_M5.3.4_0080	HMWB	at risk	at risk	no	yes	NV
437	Aliyah	UA_M5.3.4_0081	HMWB	at risk	possibly at risk	no	yes	NV
438	Tashlyk	UA_M5.3.4_0082	HMWB	at risk	at risk	no	yes	NV
439	Tashlyk	UA_M5.3.4_0083	PR	at risk	at risk	no	yes	NV
440	Tashlyk	UA_M5.3.4_0085	HMWB	at risk	possibly at risk	no	yes	NV
441	Kofa Canal	UA_M5.3.4_0087	AWB	possibly at risk	possibly at risk	no	yes	NV

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
442	Drakula	UA_M5.3.4_0088	PR	at risk	at risk	no	yes	NV
443	Drakula	UA_M5.3.4_0090	HMWB	at risk	possibly at risk	no	yes	NV
444	Do not disturb	UA_M5.3.4_0091	HMWB	at risk	at risk	no	yes	NV
445	Do not disturb	UA_M5.3.4_0093	HMWB	at risk	possibly at risk	no	yes	NV
446	Danube - Dnipro Canal	UA_M5.3.4_0104	AWB	possibly at risk	possibly at risk	no	yes	NV
447	Kairakli reservoir	UA_M5.3.4_0032	HMWB	at risk	risk-free	no	yes	TP
448	Tashbunar reservoir	UA_M5.3.4_0038	HMWB	at risk	risk-free	yes	yes	TP
449	Tashbunarskoye-1 reservoir	UA_M5.3.4_0041	HMWB	at risk	risk-free	yes	yes	TP
450	The Velykokatlabukhskoye reservoir	UA_M5.3.4_0044	HMWB	at risk	risk-free	yes	yes	TP
451	Velykokatlabukhskoye-1 reservoir	UA_M5.3.4_0047	HMWB	at risk	risk-free	yes	yes	TP
452	Malokatlabukhske-1 reservoir	UA_M5.3.4_0053	HMWB	at risk	risk-free	yes	yes	TP
453	Novopokrovsky pond	UA_M5.3.4_0059	HMWB	at risk	risk-free	yes	yes	NV
454	Volninskoye reservoir	UA_M5.3.4_0065	HMWB	at risk	risk-free	yes	yes	TP
455	Valeperzha reservoir	UA_M5.3.4_0070	HMWB	at risk	risk-free	yes	yes	TP
456	Vynogradiv reservoir	UA_M5.3.4_0073	HMWB	at risk	risk-free	yes	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[75]	Assessment of the risks of not achieving good status (completed in 2020)		Environmental goals, 2030		Reason for postponement of the date of achievement of environmental objectives (NN, TA, VH, VO, NA)[76]
				Ecological status/potential (at risk, possibly at risk, not at risk)	Chemical status (at risk, possibly at risk, not at risk)	Good ecological status/ potential (yes, no, unknown)	Good chemical status (yes, no, unknown)	
457	Zadunayivske Reservoir	UA_M5.3.4_0076	HMWB	at risk	risk-free	yes	yes	TP
458	Kholmske Reservoir	UA_M5.3.4_0084	HMWB	at risk	risk-free	yes	yes	TP
459	Vynogradiv reservoir	UA_M5.3.4_0089	HMWB	at risk	risk-free	yes	yes	TP
460	Nerushayskoye reservoir	UA_M5.3.4_0092	HMWB	at risk	risk-free	yes	yes	TP

Table 2: Achievement of environmental oblectives of the GWB

№	GWB code	Name of the GWB	Quantitative state		Chemical state		Reason for the postponement[77]	Reason for setting less stringent targets[78]	Notes[79]
			Objective.	**Timeframe for achievement**	**Objective.**	**Timeframe for achievement**			
1	2	3	4	5	6	7	8	9	10
Tisza sub-basin									
1	UAM5310Q100	Group of GWB s in alluvial Upper Neopleistocene-Holocene sediments of floodplains and first floodplain terraces of rivers of the mountainous part and Solotvynska depression	Good condition	2030	Good condition	2042	T,S	NZ	EO
2	UAM5310Q200	A group of GWB in weathering crust and other loose Holocene sediments of the mountain slopes of the sedimentary Carpathians	Good condition	2030	Good condition	2042	T,S	NZ	EO
3	UAM5310Q300	GWB in lacustrine-alluvial Middle-Upper Neopleistocene sediments of the Minaya Formation	Good condition	2030	Good condition	2042	T,S	NZ	EO

[77] T - technical reasons, H - disproportionately high cost, S - existing natural state
[78] not applicable (NA) in the first cycle of the RBMP 2025-2030
[79] RCA - risk assessment of failure to achieve good status, ES - ecological status according to monitoring data, CS - chemical status according to monitoring data, EO - expert assessment

№	GWB code	Name of the GWB	Quantitative state		Chemical state		Reason for the postponement[77]	Reason for setting less stringent targets[78]	Notes[79]
			Objective.	**Timeframe for achievement**	**Objective.**	**Timeframe for achievement**			
4	UAM5310Q400	GWB in lacustrine-alluvial Eopleistocene-Lower Neopleistocene sediments of the Chop Formation	Good condition	2030	Good condition	2030			EO
5	UAM5310Q500	GWB in alluvial Pliocene-Lower Neopleistocene sediments of the ninth and tenth overflank terraces (Kopanska terrace)	Good condition	2030	Good condition	2042	T,S	NZ	EO
6	UAM5310N100	GWB in sediments of the Pliocene Ilnytsia Formation	Good condition	2030	Good condition	2030			
7	UAM5310N200	A group of GWB in volcanogenic Pliocene sediments of the Vygorlat-Gutynsky Ridge	Good condition	2030	Good condition	2030			
Siret River sub-basin									
8	UAM5330Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	Good condition	2030	Good condition	2042	T,S	NZ	EO
9	UAM5330N100	GWB in Miocene sediments	Good condition	2030	Good condition	2030			
10	UAM533PG100	GWB in Paleocene-Eocene sediments	Good condition	2030	Good condition	2030			

№	GWB code	Name of the GWB	Quantitative state		Chemical state		Reason for the postponement[77]	Reason for setting less stringent targets[78]	Notes[79]
			Objective.	**Timeframe for achievement**	**Objective.**	**Timeframe for achievement**			
11	UAM5330K100	GWB in Upper Cretaceous sediments	Good condition	2030	Good condition	2030			
Siret River sub-basin									
12	UAM5320Q100	GWB in alluvial sediments of Holocene floodplains and upper Neopleistocene floodplain terraces	Good condition	2030	Good condition	2042	T,S	NZ	EO
13	UAM5320N100	GWB in Miocene sediments	Good condition	2030	Good condition	2030			
14	UAM532PG100	GWB in Paleocene-Eocene sediments	Good condition	2030	Good condition	2030			
15	UAM5320K100	GWB in Upper Cretaceous sediments	Good condition	2030	Good condition	2030			
Lower Danube sub-basin									
16	UAM5340N100	GWB in the Upper Sarmatian sediments	Good condition	2030	Good condition	2030			

ANNEX 9.1. Characteristics of water use in the Danube basin (2019)

Name of economic sectors	Water intake, million m3[3]	Volume of water used, million m3[3]	Share of total water withdrawal within the basin, %.
Industry	**3,496**	**3,691**	**<1**
including energy	0,029	0,041	
ferrous metallurgy	-	-	
food industry	0,639	0,856	
coal industry	-	-	
forestry woodworking	1,886	1,934	
pulp and paper	0,480	0,480	
chemical and petrochemical	0,014	0,014	
chemical industry	0,023	0,044	
fuel industry	0,005	0,005	
oil refining industry	-	-	
gas industry	0,005	0,005	
Housing and utilities	**40,24**	**30,37**	**5,4**
Agriculture	**699,0**	**164,0**	**94**
including fisheries	13,26	19,65	
irrigation	670,5	128,8	
agricultural enterprises	9,38	9,38	
Transport	**0,3**	**0,548**	**<1**
Forestry	**0,053**	**0,054**	**<0,1**
Other	4,011	5,237	**<1**
Total for the pool	**747,1**	**203,9**	**100**

ANNEX 9.2. Discharges of wastewater to water bodies by category of discharged water in the Danube basin

Name of economic sectors	Volume of water discharged, million m^3	including			Share of the total discharge within the basin, %.
		contaminated	normatively clean without purification	normatively cleaned at facilities	
Industry	**3,281**	**0,077**	**0,272**	**2,647**	**2,5**
including energy ferrous metallurgy food industry coal industry forest wood pulp and paper chemical and petrochemical chemical industry fuel industry oil refining industry gas industry	0,013 - 0,069 - 2,578 2,503 0,025 - - - -	- - 0,032 - 0,012 - - - - - -	0,002 - 0,009 - 0,053 0,004 - - - - -	0,011 - 0,028 - 2.512 2,499 0,025 - - - -	
Housing and utilities	**52,47**	**3,804**	**0,057**	**48,6**	**40,5**
Agriculture	**71,34**	**32,56**	**38,76**	**0,025**	**55,1**
including fisheries irrigation agricultural enterprises	16,23 54,70 0,416	- 32,56 -	16,23 22,14 0,392	- - 0,025	
Transport	**0,021**	**-**	**-**	**0,021**	**<0,1**
Forestry	**0,016**	**-**	**0,016**	**0,001**	**<0,1**
Other	2,272	0,089	0,525	1,676	**1,8**
Total for the pool	**129,4**	**36,53**	**39,63**	**52,97**	**100**

ANNEX 10 (M5.3.1). List of national target programmes, regional and local programmes, funds, state investment projects, international technical assistance projects, regional and local infrastructure projects, etc.

Name of the programme/fund/project	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine No. 4836-VI of 24 May 2012 (hereinafter referred to as the Dnipro-2021 Programme).**
Name of the conservation measure	Ensuring the development of land reclamation and improvement of the ecological condition of irrigated and drained lands
Relevance of the environmental measure to the main water and environmental issues	Pollution by nutrients. Issues related to the relationship between water quantity and quality associated with climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme provided funding of UAH 30,090.49 million for the implementation of measures to ensure the development of land reclamation and improve the environmental condition of irrigated and drained land for the entire period of implementation from 2013 to 2021 (9 years). This measure was to be a continuation of the implementation of the previously existing state target programme "Comprehensive programme for the development of land reclamation and improvement of the ecological condition of irrigated and drained lands in 2001-2005 and forecast to 2010 ". The measure was to ensure the development of land reclamation and improvement of the ecological condition of irrigated and drained lands, including the restoration of the water management and reclamation complex, reconstruction and modernisation of reclamation systems and their facilities, engineering infrastructure of reclamation systems with the creation of integrated technological complexes, introduction of new methods of irrigation and land drainage, application of water and energy-saving environmentally safe irrigation and water regulation regimes. The implementation of the planned action was carried out over 9 years, in two stages : 2013-2016 and 2017-2021. Since the start of the Dnipro-2021 Programme, as of 1 January 2019, 26% of the envisaged need has been allocated from budgets of all levels and other sources, and as of 1 January 2020, UAH 5115.383 million (17%) has been allocated, which has led to a significant failure to complete its tasks and activities on time. In addition, the CMU Resolution No. 539 of 24.05.2021 deprived the State Agency of Water Resources of its functions of hydrotechnical land reclamation and operation of state water management facilities of complex purpose, inter-farm irrigation and drainage systems. At the same time,

	water management organisations continued to fulfil their obligations under the concluded contracts for the supply of water for irrigation during 2021. Under the state budget programme "Operation of the State Water Management Complex and Water Resources Management", it was used throughout Ukraine: -2020 - UAH 4,106.2 million (general fund - UAH 2,151.7 million, special fund - UAH 2,117.8 million, water development fund - UAH 44.9 million); -2021 - UAH 5284.7 million (general fund - UAH 2515.6 million, special fund - UAH 22731.1 million, water development fund - UAH 38.0 million). In 2020, funds were raised to maintain the water management complex of the Transcarpathian region (Tisza sub-basin): at the expense of the State Programme 2707050 "Operation of the State Water Management Complex and Water Resources Management" - UAH 70938.5 thousand, of which: at the expense of the general fund - UAH 65805.1 thousand; at the expense of the special fund - UAH 5133.4 thousand; funds of business entities - UAH 10745.1 thousand; implementation of international projects - UAH 24173.8 thousand. At the same time, funds were raised for the maintenance of the water management complex of the Transcarpathian region (Tisza sub-basin) in 2021: at the expense of the State Programme 2707050 "Operation of the State Water Management Complex and Water Resources Management" - UAH 91868.8 thousand, of which: at the expense of the general fund - UAH 87,498.6 thousand; at the expense of the special fund - UAH 4,370.2 thousand; UAH 110,404,399 thousand at the expense of business entities; charitable contributions and investors' funds - UAH 29021.5 thousand; subventions from the local budget to the state budget - UAH 199.9 thousand. In 2021, BUDR Tysa carried out repair and maintenance work on the inter-farm reclamation network. Current repairs on the inter-farm network amounted to UAH 729.2 thousand (in 2020 - UAH 2852.7 thousand). In 2021, no work was performed on overhauls of the general and special funds. A total of 99.5 thousand m^3 of earthworks were

	performed on the inter-economic network, including. 56.3 thousand m^3 of canal cleaning, 29.6 thousand m^3 of on-farm network, including 0.4 thousand m^3 of canal cleaning. In 2021, employees of Uzhhorod MUDG carried out repair work at the pumping station NS-21 BOS in the village of Solovka, Uzhhorod district. The work was carried out on their own using materials purchased in 2020 at the expense of the general fund. Preparations were made for the conservation of two irrigation pumping stations in Berehove district (Pyiterfolvivska and Tekivska stations). The above figures confirm the low levels of actual funding for tasks and activities from all sources of funding.
Achievement of set goals	The set goals were not achieved.
Name of the programme/fund/project	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
Name of the conservation measure	Priority provision of centralised water supply to rural settlements that use imported water
Relevance of the environmental measure to the main water and environmental issues	Issues related to the relationship between water quantity and quality associated with climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme provided funding for the measure in the amount of UAH 1668.6 million for the entire implementation period from 2013 to 2021 (9 years). This event was a continuation of the implementation of the state target programme "Comprehensive Programme for the Priority Provision of Rural Settlements Using Imported Water with Centralised Water Supply in 2001-2005 and Forecast to 2010 ". The event was supposed to improve the technological level of water use, introduce low-water and waterless technologies, develop more rational water use standards, build, reconstruct and modernise water supply systems, and provide Ukrainian settlements that used imported water with drinking water in sufficient quantity and of appropriate quality. The implementation of the planned event was carried out over 9 years, in two stages: 2013-2016 and 2017-2021. As of 1 January 2020, UAH 283.6 million has been allocated from budgets of all levels and other sources since the start of the Dnipro-2021 Programme, which has led to a significant failure to complete its tasks and activities on time. For example, the State Agency of Water Resources of Ukraine used only UAH 205,000 thousand (4.2% of the total expenditures for 2020) to implement this measure

	under the Dnipro-2021 Programme in 2020, according to the departmental and programme classifications of expenditures and lending to the state budget. Under the State Budget Programme 2707090 "Priority provision of rural settlements with centralised water supply", no funds were allocated from the general fund in 2020, UAH 48.4 million was allocated from the Water Development Fund, and UAH 94.9 million from the general fund and UAH 45.0 million from the Water Development Fund in 2021, respectively. This area of work on the priority provision of centralised water supply to rural settlements in the Tisza sub-basin (Zakarpattia oblast) has not been funded in recent years, although the problem is urgent and has not been resolved. For example, the working project "Pistrialovo Rural Group Water Supply System with Water Intake "Verkhniy Koropets" of Mukachevo District, Zakarpattia Region", which was supposed to provide water supply to 4 villages of Mukachevo District: Verkhniy Koropets, Berezynka, Lalovo, Pistryalovo, started in 1996, has not been implemented. However, a water intake and water treatment facilities in the area of Verkhniy Koropets village, as well as part of the existing main water supply pipeline, have been partially constructed. It was planned to additionally build water pipelines to these villages, water towers, and local water supply networks. The estimated number of villagers to be supplied with water as a result of the project was more than EN=5000. The total cost of the works performed as of the date of termination of construction (1999) was UAH 1129,567 thousand, including UAH 1009,800 thousand of construction works. In order to continue the construction works in 2008, it was decided that it was necessary to adjust the design and estimate documentation. As a result of the public procurement procedure, the cost of such works was determined at UAH 1,350.0 thousand. During 2008, the amount of completed and financed design works amounted to UAH 350.0 thousand, but due to the lack of funding from the state budget, it was not possible to continue the design works. At the current stage of works on adjustment of design estimates it was estimated that UAH 44400.0 thousand (in 2008 prices) is required to complete construction works at the facility. Given the lack of funding from the state budget, it is impossible to complete both design and construction works. The costs incurred for the installation of the water supply system and for project adjustments totalling UAH 1479567.0 are accounted for in the balance sheet of Tysa BWR as construction in progress to date. The funds have been spent, the work has not been completed, the installed equipment is morally and physically outdated, and the materials for the project "Pistryalivka Rural Group Water Supply System with

	Verkhniy Koropets Water Intake in Mukachevo District, Zakarpattia Region" have been submitted for write-off to the VA.
Achievement of set goals	The target was not achieved.
Name of the programme/fund/project	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
Name of the conservation measure	Protecting rural settlements and agricultural land from the harmful effects of water
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Issues related to the relationship between water quantity and quality associated with climate change. Floods and floods, flooding of territories.
Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme envisaged allocating UAH 1571.48 million for the implementation of measures to protect rural settlements and agricultural land from the harmful effects of water for the entire implementation period from 2013 to 2021 (9 years). This measure was to continue the implementation of the previously existing Comprehensive Programme for Protection against Harmful Effects of Water from Rural Settlements and Agricultural Land in Ukraine in 2001-2005 and Forecast to 2010. The event included work on bank protection and regulation of river channels, construction and reconstruction of hydraulic structures, protective dams, polders, flood control reservoirs, clearing river channels, arranging water protection zones and coastal protection strips, developing schemes for comprehensive flood protection of territories from the harmful effects of water, improving methods and technical devices for hydrometeorological observations and flood forecasting. The implementation of the planned event was carried out over 9 years, in two stages: 2013-2016 and 2017-2021. Since the beginning of the Dnipro-2021 Programme, as of 1 January 2020, UAH 267.152 million has been allocated from budgets of all levels and other sources. Over the past three years, the general fund has been used under the Programme 2707070 "Protection against harmful effects of waters of rural settlements and agricultural lands, including in the Tisza River basin in the Transcarpathian region": 2019 - UAH 8.3 million (against the planned UAH 20.2 million); 2020 - UAH 10.1 million (plan - UAH 10.1 million); 2021 - UAH 20.3 million (plan - UAH 64.8 million).

	The special fund was allocated for the above activities in Ukraine as a whole: UAH 43.7 million in 2019, UAH 56.7 million in 2020, and UAH 71.8 million in 2021. Works on bank protection and regulation of river channels, construction and reconstruction of hydraulic structures, protective dams, polders, flood control reservoirs, clearing of river channels, arrangement of water protection zones and coastal protection strips, development of schemes for comprehensive flood protection of territories from the harmful effects of water, improvement of methods and technical devices for hydrometeorological observations and flood forecasting in the Tisza sub-basin (Zakarpattia oblast), the state budget funded only 6% of the planned allocations, while the funding of the Programme itself was not rhythmic and systematic, and in 2014-2017, no funding was provided at all.
Achievement of set goals	The target was not achieved.
Name of the programme/fund/project	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
Name of the conservation measure	Operation of the state water management complex and management of water resources, including environmental rehabilitation of the Dnipro River basin and improvement of drinking water quality
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Hydromorphological changes. Spread of invasive species. Issues related to the relationship between water quantity and quality associated with climate change. Droughts and water shortages.
Implementation of environmental protec-tion measures and their financing	The event was implemented over 9 years, in two stages: 2013-2016 and 2017-2021. Stage 2 is particularly noteworthy, during which it was planned to: implement a system of integrated water resources management based on the basin principle by developing and implementing river basin management plans, applying an economic model of targeted financing of activities in river basins, establishing river basin councils, as well as enhancing the role of existing and establishing new basin water resource management departments; implement water-saving technologies that ensure the improvement of the functioning of the water management and reclamation system.

	Since the beginning of the Dnipro-2021 Programme, as of 1 January 2019, 26% of the envisaged need has been allocated from budgets of all levels and other sources, and as of 1 January 2020, 17% has been allocated. State funds are allocated mainly for the costs of consumption in the water sector, labour remuneration, and utilities, the share of which was financed from the state budget in 2020, for example, as follows: from the general fund - 93.5% (UAH 2092158.5 thousand), from the special fund - 81.1% (UAH 2261343.4 thousand). Total state budget expenditures for financing the Dnipro-2021 Programme in 2020 amounted to UAH 5022671.0 thousand. The lion's share of all funds is used for the operation of the state water management complex and water resources management - UAH 4,561,352.5 thousand (90.8%). Total expenditures for the operation of the water sector in 2020 amounted to UAH 435,3501.9 thousand (86.7%) of total expenditures. At the same time, UAH 144620 thousand was allocated for the development of the water sector from the general fund and UAH 524549.1 thousand from the special fund, which totalled UAH 669169.1 thousand (13.3%) of the expenditures for the entire Programme. During 2020-2021, the Tisza RBMU prepared the Tisza sub-basin RBMP, and completed the development of individual sections: Main anthropogenic impacts on the quantitative and qualitative state of surface and groundwater, including point and diffuse sources (2020); Zones (territories) to be protected and their mapping (2020), Economic analysis of water use (2021); Development of type-specific classifications for chemical and physico-chemical indicators for each type of surface water body to be used to determine the ecological status/potential of surface water bodies in the Tisza sub-basin (2021). State monitoring of surface waters in the Tisza sub-basin is carried out in accordance with the requirements of the CMU Resolution No. 758 of 19.09.2018.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**The National Target Programme "Drinking Water of Ukraine for 2011-2020", approved by the Law of Ukraine No. 2455-IV dated 03.03.2005.**
Name of the conservation measure	Implementation of the state policy on development and reconstruction of centralised water supply and sewerage systems; protection of drinking water sources; bringing the quality of drinking water to the requirements of regulatory acts; regulatory support in the field of drinking water supply and sewerage; development and implementation of research and development developments using the latest materials, technologies, equipment and devices
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients.

	Pollution by hazardous substances. Hydromorphological changes. Spread of invasive species. Issues related to the relationship between water quantity and quality associated with climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The estimated amount of funding for the Programme was UAH 9,471.7 million (in 2010 prices), of which UAH 3,004.3 million was allocated from the state budget and UAH 6,467.4 million from other sources. Main objectives of the Programme: Bringing sanitary protection zones and water protection zones of drinking water sources into compliance with regulatory requirements, assessing the environmental and hygienic condition of drinking water sources for compliance with the established requirements; inventory of sewage treatment facilities; construction and reconstruction of water and sewage treatment facilities to reduce the amount of untreated wastewater discharged into water bodies and to recycle sediments; construction and implementation of drinking water treatment plants and bottling stations using the latest materials, technologies, equipment, instruments and research and development; Developing schemes to optimise the operation of centralised water supply systems; equipping water and wastewater quality control laboratories with modern control and analytical equipment; Bringing the regulatory framework for drinking water supply and wastewater disposal in line with EU standards, taking into account national peculiarities, including in terms of increased liability for violations of environmental pollution standards, primarily discharges by industrial enterprises into water bodies; Carrying out comprehensive research and development activities using the latest technologies, equipment, materials, and devices, the use of which is aimed, in particular, at energy and resource conservation, improving the quality of drinking water and wastewater treatment, and implementing such developments. Funding for the last 3 years: 2018 - UAH 200 million (the need is UAH 1.3 billion); 2019 - no funds were allocated at all; 2020 - no funds were allocated at all. Lack of funding for the project from the state budget.

Achievement of set goals	The target was not achieved.
Name of the programme/fund/project	**The State Target Programme for the Development of Land Relations in Ukraine for the period up to 2020 was approved by the Cabinet of Ministers of Ukraine on 17 June 2009, No. 743-r.**
Name of the conservation measure	Protection and rational use of land
Relevance of the environmental measure to the main water and environmental issues	Pollution by nutrients. Pollution by hazardous substances. Spread of invasive species. Issues related to the relationship between water quantity and quality associated with climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	Excessive ploughing of agricultural land leads to a disruption of the ecologically balanced ratio of agricultural, nature reserve and other environmental, health, recreational, historical, cultural, forestry, water fund lands, and an increase in the area of degraded, low-productive and technologically polluted land. The Ministry of Agrarian Policy and Food of Ukraine (MAPF), as the main spending unit of the state budget, and the StateGeoCadastre, as a lower-level spending unit, were responsible for implementing the Programme. As of 1 January 2021, 500,000 hectares of degraded, underutilised and technogenically contaminated land are subject to conservation, 143,000 hectares of disturbed land need reclamation, and 294,000 hectares of underutilised land need improvement. As a result of ineffective management by the Ministry of Agrarian Policy as the main spending unit and the StateGeoCadastre as a lower-level spending unit, the Ministry of Agrarian Policy was liquidated and the StateGeoCadastre was reformed by the Government in 2020. Lack of funding for the Programme from the state budget in this area in 2018-2020.
Achievement of set goals	The target was not achieved.
Name of the programme/fund/project	**Environmental Protection Funds (hereinafter referred to as EPFs)**
Name of the conservation measure	Environmental protection
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Littering with plastic and other solid waste. Hydromorphological changes. Spread of invasive species.

	Issues related to the relationship between water quantity and quality associated with climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	Currently, Ukraine has a three-tier system of environmental funds, consisting of the State Environmental Fund, regional and local (city, town and village) environmental funds. At the regional level, the regional and local environmental funds are a significant source of funding for environmental protection measures. The environmental funds are used for targeted financing of environmental protection measures in accordance with the List of activities that are considered to be environmental protection measures approved by the Cabinet of Ministers of Ukraine on 17.09.1996 No. 1147. In accordance with the Law of Ukraine "On Environmental Protection" dated 25.06.1991 No. 1264-XII (as amended on 18.12.2019), financing of environmental protection measures, including water resources, is carried out at the expense of the State Budget of Ukraine, local budgets, funds of enterprises, institutions and organisations, National Environmental Protection Agency funds, voluntary contributions and other funds. The CMU Resolution "On Approval of the Regulation on the State Environmental Protection Fund" dated 7.05.1998 No. 634 (as amended by the CMU Resolution No. 1065 dated 4.12.2019), according to which the State Environmental Protection Fund became part of the State Budget of Ukraine. According to 2018 data, the share of environmental revenues (rent, environmental tax, special permits, fines) in the state budget was over UAH 52 billion, of which UAH 4.6 billion was allocated to support the activities of the relevant central government agencies and environmental control, and only UAH 4.2 billion, or only 8% of environmental funds, was allocated for the implementation of environmental protection measures. This also includes the allocation of funds for the national budget programmes Dnipro-2021 and Drinking Water-2020. If these 4.2 billion UAH are divided among agencies and entities, the following picture emerges; the State Agency of Water Resources (38%), local budgets (24%), SAUEZM (22%), the Ministry of Ecology (now the Ministry of Environment) (9%), the State Environmental Inspectorate (4%), and the State Service of Geology and Mineral Resources (2%) received the most environmental funds. At present, Ukraine lacks monitoring of the effectiveness of environmental protection measures, a system of proper planning, inefficient use of funds, and the possibility of financial support for environmental modernisation by business entities themselves.

Achievement of set goals	The target was not achieved.
Name of the programme/fund/project	**"Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021", approved by the Head of the Zakarpattia Oblast State Administration by Order No. 230 of 17 July 2013 and approved by the Zakarpattia Oblast Council by Resolution No. 847 of 27 December 2013.**
Name of the conservation measure	Identification of the main areas of activity in the field of water management, conservation and reproduction of water resources, restoration of the role of reclaimed land, optimisation of water consumption, prevention and elimination of the consequences of harmful effects of water
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Issues related to the relationship between water quantity and quality associated with climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	Stages of the Programme implementation: at the 1st stage of the Regional Programme implementation (2013 - 2016), UAH 1541.5 million was envisaged, including: UAH 785.0 million from the state budget; UAH 73.0 million from local budgets; and UAH 683.5 million from international projects. UAH 2,370.3 million was allocated for the implementation of the Regional Programme's activities in Stage 2 (2017-2021), including: UAH 1,255.9 million from the state budget; UAH 119.4 million from local budgets; and UAH 995.0 million from international projects. Due to the lack of funding, many performance indicators could not be achieved. Expenditures of the water sector's structural units for the implementation of functional tasks, in particular, the maintenance of the water management and reclamation complex in terms of the operation of the national reclamation systems, were practically financed, and local budget funds were sufficient to address extremely urgent problems.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**"Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021", approved by the Head of the Zakarpattia Oblast State Administration by Order No. 230 of 17 July 2013 and approved by the Zakarpattia Oblast Council by Resolution No. 847 of 27 December 2013.**
Name of the conservation measure	Regulation and restoration of small river and stream channels
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes

	Questions about the relationship between water quantity and quality related to climate change Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021 (hereinafter referred to as the Regional Programme) was planned/implemented: In 2019, the Group planned to regulate and restore the beds of small rivers and streams for UAH 18983.8 thousand, with a length of 19.24 km; UAH 6428.7 thousand was spent on the restoration of 5.39 km. The measure was completed by 34%. 2020 - UAH 18,976.9 thousand planned for this area, 22.38 km long; UAH 3,079.3 thousand executed, 3.8 km long. The measure was completed by 16%. 2021 - UAH 1,698.4 thousand planned for this area, 6.8 km long; UAH 896.8 thousand executed, 1.6 km long. The measure was completed by 53%. With each subsequent year, funding for this area decreased.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**"Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021", approved by the Head of the Zakarpattia Oblast State Administration by Order No. 230 of 17 July 2013 and approved by the Zakarpattia Oblast Council by Resolution No. 847 of 27 December 2013.**
Name of the conservation measure	Construction of bank protection and erosion control measures
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Floods and floods, flooding of territories.
Implementation of environmental protection measures and their financing	The Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021 (hereinafter referred to as the Regional Programme) was planned/implemented: 2019 - UAH 39714.051 thousand of bank protection and erosion control measures were planned for the length of 9.059 km; UAH 27730.9 thousand of bank protection and erosion control measures were completed, with a length of 6.0 km.

	The event was completed by 70%. 2020 - UAH 29696.556 thousand planned for this area, 12.762 km long; UAH 3,812.1 thousand executed, 0.8 km long. The measure was completed by 13%. 2021 - UAH 4038.3 thousand planned for this area, 0.77 km long; UAH 3159.2 thousand executed, 1.3 km long. The measure was completed by 78%. With each subsequent year, funding for this area decreased.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**"Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021", approved by the Head of the Zakarpattia Oblast State Administration by Order No. 230 of 17 July 2013 and approved by the Zakarpattia Oblast Council by Resolution No. 847 of 27 December 2013.**
Name of the conservation measure	Cleaning of drainage channels on on-farm networks and reconstruction of engineering infrastructure
Relevance of the environmental measure to the main water and environmental issues	Issues related to the relationship between water quantity and quality associated with climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021 (hereinafter referred to as the Regional Programme) was planned/implemented: 2019 - UAH 1,368.6 thousand worth of water canals were planned to be cleared on on-farm networks and the engineering infrastructure was reconstructed, with a length of 13.1 km; UAH 875.6 thousand worth of work was completed, with a length of 7.1 km. The measure was completed by 64%. 2020 - UAH 3,352.8 thousand planned for this area, 10.0 km long; UAH 2,268.8 thousand executed, 1.8 km long. The measure was completed by 68%. 2021 - UAH 20704.143 thousand planned for this area, 17.438 km long; UAH 356.0 thousand executed, 8.4 km long. The measure's execution rate is 2%. With each subsequent year, funding for this area decreased.
Achievement of set goals	The target was not achieved.

Name of the programme/fund/project	**"Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021", approved by the Head of the Zakarpattia Oblast State Administration by Order No. 230 of 17 July 2013 and approved by the Zakarpattia Oblast Council by Resolution No. 847 of 27 December 2013.**
Name of the conservation measure	Construction and reconstruction of group water pipelines, treatment plants, and main water pipelines
Relevance of the environmental measure to the main water and environmental issues	Issues related to the relationship between water quantity and quality associated with climate change. Droughts and water shortages. Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Hydromorphological changes.
Implementation of environmental protection measures and their financing	The Regional Target Programme for the Development of Water Management and Environmental Rehabilitation of the Tisa River Basin in Zakarpattia Oblast for 2013-2021 (hereinafter referred to as the Regional Programme) was envisaged/implemented: 2019 - construction and reconstruction of group water pipelines, treatment facilities, main water pipelines in the amount of UAH 21622.2 thousand and a length of 0 km; completed - in the amount of UAH 13588.2 thousand and a length of 4.9 km. The measure was completed by 63%. 2020 - UAH 30934.999 thousand planned for this area, with a length of 2.903 km; UAH 1585.0 thousand executed, with a length of 0.9 km. The measure's performance is 5%. 2021 - UAH 5,000.0 thousand planned for this area; UAH 2,073.4 thousand executed, 2.6 km long. The implementation of the measure is 41%. With each subsequent year, funding for this area decreased.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**The Environmental Protection Programme of Zakarpattia Oblast for 2019-2020, approved by the decision of the Zakarpattia Oblast Council on 13.12.2018 No. 1335 (as amended).**
Name of the conservation measure	Protection and rational use of water resources
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Spread of invasive species.

	Issues related to the relationship between water quantity and quality associated with climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	In order to address urgent environmental issues to ensure a balanced economic and social development of the region, especially in terms of flood protection of settlements, certain local measures were implemented as part of the implementation of this Environmental Protection Programme for Zakarpattia Oblast for 2019-2020. Environmental protection measures were financed at the expense of the regional environmental protection fund of the regional budget. Below is a list of the following measures of the Environmental Protection Programme of Zakarpattia Oblast for 2019-2020, which were planned to be implemented in 2020: bank protection of the right bank of the Teresva River in Ust-Chorna, Tyachiv district, at the entrance to the settlement (UAH 2722.3 thousand planned, UAH 0 financed); bank reinforcement of the right and left banks of the Mokryanka River in the village of Ruska Mokra in the area of house No. 382 in Tyachiv district (UAH 959.3 thousand planned, UAH 0 financed); regulation of the Mokryanka riverbed in the village of Ruska Mokra near the KZRA tourist centre in Tyachiv district (UAH 716.1 thousand planned, UAH 0 financed); current repair of the dam on the Borzhava River in the village of Borzhava, Berehovo district (planned - UAH 190 thousand, financed - UAH 189.0); bank protection of the right bank of the Teresva River in Krasna village, Pidchos village, Tyachiv district (planned - UAH 2921.31 thousand, financed - UAH 0); bank protection of the right bank of the Teresva River in Ust-Chorna village, Bobruvka tract, Tyachiv district (reconstruction) adjustments (planned - UAH 1942.0 thousand, financed - UAH 1935.0 thousand); construction of a dam in the village of Turyi Remety, Perechyn district, along Zelena street with the preparation of design and estimate documentation (planned - UAH 8000.0 thousand, financed - UAH 0).
Achievement of set goals	The target was not achieved.
Name of the programme/fund/project	**The Environmental Protection Programme of Zakarpattia Oblast for 2019-2020, approved by the decision of the Zakarpattia Oblast Council on 13 December 2018 No. 1335 (as amended on 19 September 2019), and by**

	the decision of the Zakarpattia Oblast Council on 20 December 2019 No. 1651.
Name of the conservation measure	Protection and rational use of water resources. Protection and rational use of land resources.
Relevance of the environmental measure to the main water and environmental issues	Littering with plastic and other solid waste. Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	The following environmental measures were implemented in 2020 to prevent solid waste from polluting the cross-border section of watercourses (Tisa, Borzhava, Latorytsia and Uzh), as well as pollution of surface and groundwater of the Tisa sub-basin with organic matter, nutrients and hazardous substances as part of the implementation of the measures of the Environmental Protection Programme for Zakarpattia Oblast for 2019-2020: reclamation of the territory of the existing landfill in Barvinok village, Uzhhorod district, phase II - construction (planned - UAH 2000.0 thousand, financed - UAH 2000.0 thousand); Priority measures to prevent littering and improve the environmental condition of the Tisa River shoreline in Rakhiv (UAH 555.1 thousand planned, UAH 547.6 thousand financed); Elimination of a landfill in the coastal zone of the Borzhava River near the village of Nyzhni Remeta, Berehove district (planned - UAH 194.9 thousand, financed - UAH 193.0 thousand); environmental improvement and elimination of traffic jams in the Latorytsia riverbed in Uzhhorod district. Current repairs (planned - UAH 300.0 thousand, financed - UAH 300.0 thousand); Elimination of garbage jams and wood residues on the Borzhava River near the village of Kvasova on the section between 17.1 km and 17.9 km of the Borzhava River channel in Berehove district (planned - UAH 194.9 thousand, financed - UAH 193.0 thousand).
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**"Environmental Protection Programme for Zakarpattia Oblast for 2021-2023", approved by the order of the Zakarpattia Oblast State Administration dated 14 December 2020 No. 730 (as amended) and the decision of the Zakarpattia Oblast Council dated 17 December 2020 No. 66 (as amended).**
Name of the conservation measure	Protection and rational use of land

Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Floods and floods, flooding of territories.
Implementation of environmental protection measures and their financing	The Environmental Protection Programme for Zakarpattia Oblast for 2021-2023 provided for this: 2021 - UAH 6,000 thousand of land protection and rational use was planned, UAH 500 thousand (8%) was executed. A measure was taken to protect the central part of Bilky village (Bilkivska TG) from flooding, including the repair of bank protection of streams located on both sides of the Bilky secondary school along the school territory (approximately 500 m long) for UAH 500 thousand.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**"Environmental Protection Programme of Zakarpattia Oblast for 2021-2023", approved by the order of the Zakarpattia Oblast State Administration dated 14 December 2020 No. 730 (as amended) and the decision of the Zakarpattia Oblast Council dated 17 December 2020 No. 66 (as amended).**
Name of the conservation measure	Rational use and storage of production and household waste
Relevance of the environmental measure to the main water and environmental issues	Littering with plastic and other solid waste Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	The Environmental Protection Programme for Zakarpattia Oblast for 2021-2023 provided for this: 2021 - planned rational use and storage of production and household waste in the amount of UAH 3,000.0 thousand, implemented in the amount of UAH 1,084.0 thousand, 36%. Measures have been implemented: Elimination of unauthorised dumpsites within the dacha areas of Kamianytsia, Onokivtsi, Orikhovytsia villages (Onokivska TG) for the amount of UAH 300 thousand; survey of the Borzhava River water body, tree cutting and removal of garbage jams in the amount of UAH 294.0 thousand; inspection of the Latorytsia River water body, tree cutting and removal of garbage jams in the amount of UAH 490.0 thousand.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**"Environmental Protection Programme of Zakarpattia Oblast for 2021-2023", approved by the order of the Zakarpattia Oblast State Administration dated 14 December 2020 No. 730 (as amended) and the decision of**

	the Zakarpattia Oblast Council dated 17 December 2020 No. 66 (as amended).
Name of the conservation measure	Scientific, educational, environmental information and advocacy, printing, environmental monitoring, support of public environmental organisations
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Littering with plastic and other solid waste
Implementation of environmental protection measures and their financing	The Environmental Protection Programme for Zakarpattia Oblast for 2021-2023 provided for this: 2021 - UAH 1,055.0 thousand was planned to be spent on this measure of the Programme, UAH 755.0 thousand was spent, 72%. The following activities were carried out: - holding scientific and technical conferences and seminars, organising exhibitions, festivals and other events to promote environmental protection, publishing printed materials on environmental issues, creating libraries, video libraries, photo libraries, etc. (Department of Ecology and Natural Resources of the Zakarpattia Oblast State Administration) in the amount of UAH 355 thousand; - the functioning of the environmental monitoring system of the Transcarpathian region (Department of Ecology and Natural Resources of the Transcarpathian Regional State Administration) in the amount of UAH 100.0 thousand; - operation of the surface water monitoring system of the Tisa River sub-basin (Tisa River Basin Water Resources Management) in the amount of UAH 150.0 thousand; - maintenance and equipping of environmental protection organisations with instruments, equipment and special vehicles, strengthening of the material and technical base of the specially authorised central executive body on environmental protection, its governmental and territorial bodies, as well as institutions and organisations under its management (State Environmental Inspectorate in Zakarpattia region) in the amount of UAH 150.0 thousand.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**The Regional Programme "Drinking Water of Zakarpattia" for 2006-2020, approved by the decision of the Zakarpattia Regional Council of 12 January 2006, No. 690 (as amended by the decision of the Zakarpattia Regional Council of 7 May 2019, No. 1093).**
Name of the conservation measure	Implementation of measures aimed at a comprehensive solution to the issue of improving the supply of drinking water of standard quality to the population of the region, increasing the reliability and efficiency of centralised water

	supply and sewage facilities, reconstruction of the existing and construction of a new water supply and sewage network, improving the social and environmental situation on this basis, restoration, protection and rational use of drinking water sources
Relevance of the environmental measure to the main water and environmental issues	Droughts and water shortages. Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Issues related to the relationship between water quantity and quality associated with climate change.
Implementation of environmental protection measures and their financing	The total amount of funds raised in 2019 to maintain the region's water and sewerage facilities in good working order and develop the industry amounted to UAH 96.026 million, including UAH 40.910 million from the state budget, local budgets - UAH 45.234 million, own working capital of water supply companies - UAH 8,910 million, from other sources of financing - UAH 0.972 million. Under the budget programme "Implementation of Environmental Protection Measures", the company attracted UAH 15.774 million in state budget funds to implement projects for the construction of new and reconstruction of existing sewerage networks in Khust. In 2019, at the expense of the State Regional Development Fund on the terms of co-financing from the city budget of Chop, the implementation of the project "Water intake at underground wells on Myr Street in Chop" (construction) continued, for which the state and city budget funds in the amount of UAH 5.213 million were used in the reporting year (construction of the facility continued in 2020). The Fund and co-financing from municipal budgets also financed the construction of a section of the water supply network in Chop (UAH 5.965 million) and the reconstruction of a part of the water supply and sewerage network in Rakhiv (UAH 10.234 million). In recent years, local executive authorities and local self-government bodies have taken steps to implement project solutions aimed at providing the rural population with quality drinking water. Construction was carried out under the following projects at the expense of the State Regional Development Fund and local budgets: "Water supply and sewerage system in Barvinok village, Uzhhorod district" and "Water supply system in Chaslivtsi village, Uzhhorod district". The projects "Reconstruction of the sewage system in Vyshkovo, Khust district" and "Reconstruction of the water

	supply system in Vynohradiv" were implemented at the expense of a subvention from the state budget to local budgets for the implementation of measures for the social and economic development of certain territories.
Achievement of set goals	The goal was partially achieved.
Name of the programme/fund/project	**The Regional Programme "Drinking Water of Zakarpattia" for 2006-2020, approved by the decision of the Zakarpattia Regional Council of 12 January 2006, No. 690 (as amended by the decision of the Zakarpattia Regional Council of 7 May 2019, No. 1093).**
Name of the conservation measure	Implementation of measures aimed at a comprehensive solution to the issue of improving the supply of drinking water of standard quality to the population of the region, increasing the reliability and efficiency of centralised water supply and sewage facilities, reconstruction of the existing and construction of a new water supply and sewage network, improving the social and environmental situation on this basis, restoration, protection and rational use of drinking water sources
Relevance of the environmental measure to the main water and environmental issues	Droughts and water shortages. Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Issues related to the relationship between water quantity and quality associated with climate change.
Implementation of environmental protection measures and their financing	Measures in the water supply and sewerage sector in Zakarpattia Oblast (Tisza sub-basin) were carried out mainly at the expense of local budgets (city and village territorial communities) and working capital of water supply companies (water utilities) and were mainly aimed at maintaining water supply and sewerage networks and water management facilities (water intakes, NFS, WSS, SSS, WSC) in working order. According to local executive authorities that manage and operate water and sewerage companies, in 2020, 14,845 km of water supply and 1.58 km of sewerage networks were overhauled/replaced, which is 4.9 and 1.1 per cent of the need, respectively. The financial resources attracted to the industry from various sources are mostly used to ensure stable operation of enterprises, repair and replace pumping equipment, maintain business facilities in working order, and pay for energy consumption. In 2020, funds in the amount of UAH 68.222 million were allocated for these purposes, including: local budgets (AHs) - UAH 53.347 million, working capital of water supply companies (water utilities) - UAH 13.405 million,

	other sources of financing - UAH 0.759 million. Thus, in 2020, work continued on the implementation of the working project "Water intake at underground wells on Myr Street in Chop" (construction) and the construction of a pumping station at WPS No. 8 in Chop to provide water supply to the city's residents. In 2020, work continued on the construction of new water supply networks and major repairs of existing water supply networks and sewerage collectors in the cities of regional subordination: Khust (Khust DH), Vynohradiv (Vynohradiv DH), Berehove (Berehove DH), Mukachevo (Mukachevo DH) and Uzhhorod (Uzhhorod DH). Technical re-equipment of certain critical water management facilities and purchase of special machinery and pumping equipment was also carried out in the cities of Uzhhorod, Mukachevo, Svalyava, Chop, Perechyn, and Vynohradiv. The newly established village and settlement territorial communities (TCs) have begun preparing design and estimate documentation for the reconstruction and rehabilitation of rural water supply systems (Polyanska TC, Keretska TC, Velyky Bychkivska TC, Yasinyanska TC, Serednyanska TC, Baranynska TC). No funds were allocated from the regional budget for this area.
Achievement of set goals	The goal was partially achieved.
Name of the programme/fund/project	**"The Regional Development Strategy of Zakarpattia Oblast for the period of 2021-2027 was approved by the decision of the Zakarpattia Oblast Council of 20.12.2019 No. 1630 (as amended by the decision of the Oblast Council of 01.10.2020 No. 1840).**
Name of the conservation measure	Creating conditions to ensure sustainable development of the region and increase its competitiveness in this area: Ecology and environmental protection.
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Littering with plastic and other solid waste. Hydromorphological changes. Spread of invasive species. Issues related to the relationship between water quantity and quality associated with climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	As part of the Strategy implementation, it is envisaged to implement the Programme "Conservation of the Tisza

	River Valley Ecosystem in the Border Area of Ukraine, Hungary, Romania and Slovakia" developed by the Regional Association of Local Governments "Zakarpattia - for a Clean Environment" (hereinafter referred to as RAELG). This RAELC Programme combines the tasks of a number of local governments (territorial communities) to reduce the negative impact on the environment in the field of water resources. The RBCU Programme "Zakarpattia for a Clean Environment" envisages the phased construction of 18 sewage treatment plants (STPs) with an average capacity of 8-12 thousand equivalent inhabitants (EH). In most settlements, there is no sewerage network or it needs to be modernised, so this fact should be taken into account when determining the need for funds for the reconstruction/construction of WWTPs. During 2021, the Association developed feasibility studies for 8 settlements, which makes it possible to determine the necessary funding. The main objectives of the Association's Programme: 1. Cover 10-20% of the population of Zakarpattia Oblast (Tisza sub-basin) with a modern system of collection and treatment of domestic sewage. 2. Build modern and innovative sewage treatment plants in settlements: Polyana, Velykyi Bereznyi, Bushtyno, Perechyn, Storozhnytsia, Irshava, Volovets, Mizhhirya. 3. To achieve, through the construction of new WSCs, an improvement in the condition of surface waters in the Tisza sub-basin within 10-20%. 4. Improve the degree of treatment of waste water by at least 30% before discharging it into the surface water bodies of the Tisza sub-basin. 5. To achieve the suitability of surface waters for bathing in the river channels of the settlements covered by the Programme. 6. Formation of a balanced system of natural resources management and structural restructuring of the production potential of the economy, greening of technologies in industry, transport and urban development. 7. Preservation of biological and landscape diversity, landscaping and greening of settlements. The design and estimate documentation for the construction of sewage treatment plants and sewerage networks in the following territorial communities is now fully prepared: Kholmkivska TG (Storozhnytsia village, Uzh river, SWB UA_M5.3.1_0433). Mizhhiria TG (Mizhhiria village, Rika river, MNF UA_M5.3.1_0155).

	Polyana TG (Polyana village, Pina river, SWB UA_M5.3.1_0321). Volovets TG (Volovets village, Vecha river, SWB UA_M5.3.1_0310). Velyko-Bereznyanska TG (V. Bereznyi village, Uzh river, MNF UA_M5.3.1_0431). Chopska TG (Chop, Tysa River, SWB UA_M5.3.1_0014). Bushtynska TG (Bushtyno village, Tysa river, MNF UA_M5.3.1_0009). The total cost of the sewage treatment facilities is UAH 586,373,147 thousand. The total cost of construction is UAH 189,310,519 thousand. The cost of the technology is UAH 278,885,919 thousand. Other expenses amounted to UAH 118130.141 thousand. In addition, the Zakarpattia - for a Clean Environment has developed design and estimate documentation for the construction of a waste processing plant in Polianska AH for the needs of 16 communities in the sub-region, with funding of €7.284 million, including €1.8 million for the construction of the waste processing plant, €4.2 million for technological equipment, and €1.284 million for other costs. All of the above-mentioned CDD has passed the relevant environmental approvals and received positive expert o-pinions. The cost of works and technological equipment is indicated in 2021 prices.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**The Programme for the Development of Cross-Border Cooperation of the Zakarpattia Oblast for 2021-2027, approved by the order of the Head of the Zakarpattia State Administration of 03.12.2020 No. 705.**
Name of the conservation measure	Acceleration of the socio-economic development of the Transcarpathian region through the formation of good neighbourly relations with the EU member states and other foreign countries in the economic, social, scientific, tech-nological, environmental, cultural and tourism sectors, im-plementation of European integration measures at the re-gional level, co-financing of projects implemented in the Transcarpathian region with the involvement of internatio-nal technical assistance
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Littering with plastic and other solid waste. Hydromorphological changes.

	Spread of invasive species. Issues related to the relationship between water quantity and quality associated with climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	One of the activities of the Tisza RBMU is participation in the Joint Monitoring Committee's competitions to receive a Grant for the development of water management in the Zakarpattia region. During 2021, the Tisza River Basin Water Management Authority implemented the planned activities under the following grant contracts funded by the European Neighbourhood Instrument within the framework of the Hungary-Slovakia-Romania-Ukraine Cross-border Cooperation Programme 2014-2020. The project "Strengthening cross-border security through joint measures aimed at preventing floods and inland water flooding in the Tisza and Tur rivers" (Grant contract of 13.08.2019 No. HUSKROUA/1701/LIP/003), since the beginning of the Project implementation, international technical assistance funds in the amount of UAH 41198.0 thousand have been attracted, including for the works on the project "Reconstruction of the left bank dam of the Tisa River in the area of Tekovo - Hetynya village, Vynogradiv district, Transcarpathian region". The project "Establishment of a cross-border water quality monitoring network in the Upper Tisza basin with further development and modernisation of the joint Hungarian-Ukrainian hydrographic telemetry system" (Grant Contract No. HUSKROUA/1901/6.1/0016 dated 30.04.2021), since the beginning of the Project implementation, has attracted international technical assistance in the amount of UAH 774.12 thousand. The funds were used to develop a working draft of the construction project "Reconstruction and expansion of the existing network of facilities for hydrometric observations on rivers and other water bodies (AIS-Tysa 2.0)" and services for clearing the shoreline of the Tysa River from vegetation in the area of PZ 317, Khmeliv village, Rakhiv district to ensure the visibility of the web camera. The project "Joint measures for the prevention of natural disasters in the transboundary basin of the Uzh River" (Grant Contract No. HUSKROUA/1702/8.1/0005 dated 29.08.2019), since the beginning of its implementation, has attracted international technical assistance in the amount of UAH 9590.3 thousand, including UAH 786.8 thousand for the purchase of a Doppler flow velocity profiler. UAH, tender procedures were conducted for the development of flood zones and risks for the Uzh River basin and Uzhhorod, development of a feasibility study for the construction of a regulatory structure on the Uzh River within Uzhhorod, and relevant contracts were concluded.

	Additional topographic surveys of the facility design area and hydrometric measurements on the Uzh River were carried out using equipment purchased under the project. Training on modelling and GIS was conducted as part of the project. The project "Integrated Flood Management Strategy in the Upper Tisza Basin". Since the beginning of the project, international technical assistance funds in the amount of UAH 86.7 thousand have been attracted for the development of the water sector in Zakarpattia region (Berehove Municipal Water Supply and Sanitation Department). The project has just started in 2021. In addition, the State Environmental Inspectorate in Zakarpattia region, together with the government administration of Szabolcs-Szótmar-Bereg region (Hungary), the EUROPOLIS Agency and the Transylvanian Carpathians Association (Romania), is implementing the project "Environmental Assessment of the Upper Tisza River Basin to Develop a Monitoring Network and Action Plan for the Protection of Natural Values", which is being implemented under the HUSKROUA ENI CBC Cross-border Cooperation Programme 2014-2020. The total budget of the project is 504,943.06 euros, of which 454,454.14 euros are EU funds. The budget for the Ukrainian partners is EUR 138900.44, of which EUR 125010.39 are EU funds. The project pursues the overall goal of protecting natural ecosystems and water quality in the transboundary Ukrainian-Hungarian-Romanian area of the upper Tisza River basin. Main planned project activities: creating a database of pollution sources; A detailed monitoring programme (sampling, measurement and analysis); environmental survey and assessment; research on fish and macroscopic invertebrates; study of River Otter (Lutra lutra) and Eurasian Beaver (Castor fiber). One of the main objectives of the two-year project is to obtain information on the surface water quality of the Upper Tisza and its tributaries. To this end, 6 water samples will be taken from the Tisza River and its tributaries in 43 designated sites in Hungary, Romania and Ukraine. In Ukraine, 24 sites have been identified for water sampling (18 in the Tisza River and 6 in its tributaries), in Hungary, 14 sites (7 in the Tisza River and 7 in its tributaries), and in Romania, 5 sites (tributaries). A total of 258 water samples will be collected, 5676 chemical measurements and 258 chlorophyll a determinations will be made. Fish habitat and macroinvertebrate surveys will be conducted 2 times at 55 monitoring sites. The environmental assessment will be carried out in accordance with the EU Water Framework

	Directive. The monitoring of pollution sources will also be carried out, a database and a map of the environmental impact of pollutants in the Upper Tisza region will be created. During 2021, the project partners conducted joint Ukrainian-Hungarian surface water sampling, physicochemical measurements and hydrobiological studies of the surface waters of the Tisa River basin.
Achievement of set goals	The target was partially achieved.
Name of the programme/fund/project	**"Uzhhorod Environmental Protection Programme for 2018-2022", approved by the decision of the Executive Committee of Uzhhorod City Council No. 341 dated 02.11.2017.**
Name of the conservation measure	Reduction of emissions and discharges of pollutants into the environment, safe management of industrial and household waste, conservation and restoration of biological diversity, creation of safe living conditions for people, ensuring environmental safety, restoration and creation of nature reserve areas, designation of protected areas, etc.
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Littering with plastic and other solid waste. Hydromorphological changes. Spread of invasive species. Issues related to the relationship between water quantity and quality associated with climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	Stages of the Programme implementation and their financing: Stage 1 - 2018-2020, the amount of funds from the city budget for the implementation of the Programme is UAH 8057.40 thousand: 2018 - 2539.0 thousand UAH, 2019 - 1156.50 thousand UAH, 2020 - 1366.60 thousand UAH. Stage 2 - 2021-2022, the amount of Programme funds is UAH 8057.40 thousand: 2021 - UAH 1331.40 thousand, 2022 - UAH 1663.90 thousand. List of Programme objectives: ensuring environmentally safe collection of solid waste; ensuring the organisation of the territory of the Bozdosh Park nature reserve fund (reconstruction); ensuring the organisation of the territory of the Pidzamkovy Park nature reserve fund (reconstruction);

	Ensuring that green spaces within the Bozdosh Park natural reserve fund of local significance are maintained in good condition; Ensuring that green spaces within the Pidzamkovyi Park natural reserve fund of local importance are maintained in good condition; Ensuring that the objects of the Bozdosh Park nature reserve fund of local significance are maintained in good condition; Ensuring that the facilities of the local nature reserve fund Pidzamkovy Park are maintained in good condition; Ensuring the restoration and maintenance of a favourable hydrological regime, cleaning of the drainage channel within the Bozdosh Park nature reserve fund of local importance; Ensuring that an environmental campaign is held on the occasion of the Environment Day; certification of water bodies. In 2019, the volume of expenditures from the city budget amounted to UAH 1,156.5 thousand, and UAH 974.181 thousand was financed, 77.5%. In 2020, the amount of funds was UAH 1,366.60 thousand, and UAH 1,181.199 thousand was allocated, 86.4%. In 2021, the volume of expenditures from the city budget amounted to UAH 1,331.4 thousand, and UAH 274.317 thousand was financed, 19.2%: Ensuring environmentally safe collection of solid waste, planned - UAH 166.0 thousand, allocated - UAH 41,976 thousand; ensuring the maintenance of green spaces within the Bozdosh Park natural reserve fund of local significance, UAH 346.0 thousand planned and UAH 154.141 thousand allocated; Ensuring the maintenance of green spaces within the objects of the natural reserve fund of local importance "Pidzamkovyi Park", planned - UAH 172.0 thousand, not funded; ensuring the maintenance of the objects of the nature reserve fund of local importance "Bozdosh Park", planned - UAH 428.0 thousand, not funded; ensuring the maintenance of the objects of the natural reserve fund of local importance "Pidzamkovyi Park", planned - UAH 219.0 thousand, allocated - UAH 78.2 thousand; restoration and maintenance of a favourable hydrological regime, clearing the channel from trees, cleaning the drainage channel within the objects of the natural reserve

	fund of local importance "Bozdosh Park", planned - UAH 199.0 thousand, not funded.
Achievement of set goals	The target was partially achieved.

ANNEX 10 (M5.3.2, M5.3.3). List of national target programmes, regional and local programmes, funds, state investment projects, international technical assistance projects, regional and local infrastructure projects, etc.

1	**Name of the programme/fund/project**	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine No. 4836-VI of 24 May 2012 (hereinafter referred to as the Dnipro-2021 Programme).**
	Name of the conservation measure	Ensuring the development of land reclamation and improvement of the ecological condition of irrigated and drained lands
	Relevance of the environmental measure to the main water and environmental issues	№ 2. Pollution by nutrients. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 9. Droughts and water shortages.

	Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme envisaged funding in the amount of UAH 30090.49 million for the implementation of the measure to ensure the development of land reclamation and improve the environmental condition of irrigated and drained lands for the entire period of implementation from 2013 to 2021 (9 years). This measure was to be a continuation of the implementation of the previously existing state target programme "Comprehensive Programme for the Development of Land Reclamation and Improvement of the Ecological Condition of Irrigated and Drained Lands in 2001-2005 and Forecast to 2010". The event was to ensure the development of land reclamation and improvement of the ecological condition of irrigated and drained lands, in particular, restoration of the water management and reclamation complex, reconstruction and modernisation of reclamation systems and their facilities, engineering infrastructure of reclamation systems with the creation of integrated technological complexes, introduction of new methods of irrigation and land drainage, application of water- and energy-saving environmentally safe irrigation and water regulation regimes. The planned action was implemented over 9 years, in two stages: 2013-2016 and 2017-2021. Since the start of the Dnipro-2021 Programme, as of 1 January 2019, 26% of the envisaged need has been allocated from budgets of all levels and other sources, and as of 1 January 2020, UAH 5115.383 million (17%) has been allocated, which has led to a significant failure to complete its tasks and activities on time.
	Achieving the goals set	The set goals were not achieved.
2	**Name of the programme/fund/project**	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
	Name of the conservation measure	Priority provision of centralised water supply to rural settlements that use imported water
	Relevance of the environmental measure to the main water and environmental issues	№ 7. Issues related to the relationship between water quantity and quality associated with climate change. № 9. Droughts and water shortages.

	Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme provided funding for the measure in the amount of UAH 1668.6 million for the entire period of implementation from 2013 to 2021 (9 years). This measure was a continuation of the implementation of the State Target Programme "Comprehensive Programme for Priority Provision of Rural Settlements Using Imported Water with Centralised Water Supply in 2001-2005 and Forecast to 2010". The measure was to improve the technological level of water use, introduce low-water and waterless technologies, develop more rational water use standards, construct, reconstruct and modernise water supply systems, and provide Ukrainian settlements that used imported water with drinking water in sufficient quantity and of appropriate quality. The planned action was implemented over 9 years, in two stages: 2013-2016 and 2017-2021. Since the start of the Dnipro-2021 Programme, as of 1 January 2020, UAH 283.6 million has been allocated from budgets of all levels and other sources, which has led to a significant failure to complete its tasks and activities on time. For example, in 2020, the State Agency of Water Resources of Ukraine used only UAH 205,000.0 thousand (4.2% of the total expenditures for 2020) to implement the above measure within the Dnipro-2021 Programme. Low levels of actual funding for tasks and activities from all sources of funding.
	Achieving the goals set	The set goals were not achieved.
3	**Name of the programme/fund/project**	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
	Name of the conservation measure	Protecting rural settlements and agricultural land from the harmful effects of water
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme envisaged allocating UAH 1571.48 million for the implementation of the measure to protect rural settlements and agricultural land from the harmful effects of water for the entire period of implementation from 2013 to 2021 (9 years). This measure was to continue the implementation of the previously existing Comprehensive Programme for Protection of Rural Settlements and Agricultural Lands from Harmful Effects of Water in Ukraine in 2001-2005 and Forecast to 2010. The event included bank protection and regulation of river channels, construction and reconstruction of hydraulic structures, protective dams, polders, flood control reservoirs, clearing of river channels, arrangement of water protection zones and coastal protection strips, development of schemes for comprehensive flood protection of territories from the harmful effects of water, improvement of methods and technical devices for hydrometeorological observations and flood forecasting. The planned action was implemented over 9 years, in two stages: 2013-2016 and 2017-2021. Low levels of actual funding for tasks and activities from all sources of funding.
	Achieving the goals set	The set goals were not achieved.
4	**Name of the programme/fund/project**	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
	Name of the conservation measure	Integrated flood protection in the Dniester, Prut and Siret river basins
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme envisaged allocating UAH 5226.69 million for the implementation of the measure to implement comprehensive flood protection in the Dniester, Prut and Siret river basins for the entire implementation period from 2013 to 2021 (9 years). This measure was a continuation of the existing national target programme "Comprehensive Programme of Protection from Harmful Effects of Waters of Rural Settlements and Agricultural Lands in Ukraine in 2001-2005 and Forecast to 2010". The event included bank protection and river channel regulation, construction and reconstruction of hydraulic structures, protective dams, polders, flood control reservoirs, river channel clearing, arrangement of water protection zones and coastal protection strips, development of schemes for comprehensive flood protection of territories from the harmful effects of water, improvement of methods and technical devices for hydrometeorological observations and flood forecasting. The implementation of the planned event was carried out over 9 years, in two stages: 2013-2016 and 2017-2021. As part of the measure, an automated information and measurement system for monitoring and forecasting the harmful effects of water (AIMS "Prykarpattia") was created. Since the start of the Dnipro-2021 Programme, UAH 888.538 million has been allocated from budgets of all levels and other sources as of 1 January 2020. Low levels of actual funding for tasks and activities from all sources of funding.
	Achieving the goals set	The targets were partially achieved.
5	**Name of the programme/fund/project**	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
	Name of the conservation measure	Comprehensive flood protection in the Tisa River basin in the Transcarpathian region. KPKVK 2707070 "Protection against harmful effects of waters of rural settlements and agricultural lands, including in the Tisza River basin in the Transcarpathian region".
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The Programme envisaged allocating UAH 1835.2 million for the implementation of the measure on comprehensive flood protection in the Tisza river basins for the entire period of implementation from 2013 to 2021 (9 years). This measure was a continuation of the existing national target programme "Programme of Comprehensive Flood Protection in the Tisza River Basin in Zakarpattia Oblast for 2002-2006 and Forecast to 2015" (which ceased to exist on 1 January 2013). The programme envisaged bank protection and regulation of river channels, construction and reconstruction of hydraulic structures, protective dams, polders, flood reservoirs, clearing of river channels, arrangement of water protection zones and coastal protection strips, development of schemes for comprehensive flood protection of territories from the harmful effects of water, improvement of methods and technical devices for hydrometeorological observations and flood forecasting. As part of the project, it was planned to build flood storage tanks in mountainous and lowland parts of rivers, polders and flood control reservoirs to manage flood flows. In general, in 2020, UAH 81900.0 thousand (1.6% of the total budget of the State Agency for Water Resources of Ukraine for 2020) was allocated for protection against the harmful effects of water in rural settlements and agricultural land, including in the Tisa river basin in Zakarpattia region, including UAH 10100.0 thousand (state budget) and UAH 71800.0 thousand (special fund). In this area, flood protection in the Tisa RBF was financed in the amount of UAH 33685.7 thousand and in the Dniester, Prut and Siret RBFs in the amount of UAH 33155.0 thousand, UAH 15059.3 thousand was (rejected) returned to the budget through project adjustments and tender procedures. Funding for the activities under the CPECC 2707070 "Protection from harmful effects of water of rural settlements and agricultural lands, including in the Tisza River basin in the Transcarpathian region" was provided in Ivano-Frankivsk oblast: - in 2019 in the amount of UAH 7,800.0 thousand; - in 2020 in the amount of UAH 1,855.063 thousand; - in 2021 in the amount of UAH 17015,676 thousand; - as of 1 September 2022, no funds were allocated for 2022 under the CPECC 2407070 "Protection against harmful effects of waters of rural settlements and agricultural lands, including in the Tisza River basin in the Zakarpattia region". In the Danube RBM (Prut sub-basin), work was carried out on the following sites: - Development Fund 2019: "Overhaul of the water protection dam on the Cheremosh River in the territory of the Horishne-Zaluchanske village council of the Sniatyn district of Ivano-Frankivsk region" was financed in the amount of UAH 7,800.0 thousand; - Development Fund 2020: "Overhaul of the water protection dam on the Cheremosh River in the territory of the Horishne-Zaluchanske village council of the Sniatyn district of Ivano-Frankivsk region" - UAH 1,850.00;

		"Overhaul of the water protection dam on the Prut River in the village of Borshchiv, Sniatyn district, Ivano-Frankivsk region" was financed in the amount of UAH 8000.00 thousand; The total amount financed was UAH 9,850.00 thousand; - Development Fund 2021: "Restoration of the dam on the Prut River in the village of Prutivka, Sniatyn district, Ivano-Frankivsk region, damaged by the elements on 12-24 June 2020. Overhaul (including design works)" - UAH 4493.11 thousand; "Overhaul of the water protection dam on the Prut River in Sniatyn (Kulachyn village), Sniatyn district, Ivano-Frankivsk region, damaged by the elements on 12-24 June 2020 (including design work)" - UAH 2633.32 thousand; "Restoration of a water protection dam on the Prut River in the town of Sniatyn (Kulachyn village), Sniatyn district, Ivano-Frankivsk region" - UAH 128.89 thousand; "Restoration of the water protection dam on the Rybnytsia River in Verbovets village, Kosiv district, Ivano-Frankivsk region" - UAH 1004.10 thousand; "Restoration of bank protection of the Liuchka River in the village of Nyzhniy Verbizh, Kolomyia district, Ivano-Frankivsk region" - UAH 714.38 thousand; "Restoration of the dam "Protection of the village. Nizhniy Verbizh from flooding by the waters of the Sopivka River (dam) in Kolomyia district of Ivano-Frankivsk region" - UAH 1574.62 thousand; "Restoration of the water protection dam and channel regulation on the Prut River in the village of Pereriv, Kolomyia district, Ivano-Frankivsk region" - UAH 108.38 thousand; The total amount financed was UAH 10,656.8 thousand. Not all planned activities were funded.
	Achieving the goals set	The targets were partially achieved.
6	**Name of the programme/fund/project**	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
	Name of the conservation measure	Operation of the state water management complex and management of water resources, including environmental rehabilitation of the Dnipro River basin and improvement of drinking water quality
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances. № 5. Hydromorphological changes. № 6. Spread of invasive species. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 9. Droughts and water shortages.

	Implementation of environmental protection measures and their financing	The event was implemented over 9 years, in two stages: 2013-2016 and 2017-2021. Stage 2 is particularly noteworthy, during which it was planned to: implement a system of integrated water resources management based on the basin principle by developing and implementing river basin management plans, applying an economic model of targeted financing of activities in river basins, establishing river basin councils, as well as enhancing the role of existing and establishing new basin water resource management departments; implement water-saving technologies that ensure the improvement of the functioning of the water management and reclamation complex; improve the Works at the facilities under KPKV 2407050: - UAH 3440000.00 was financed in total for 2019 to perform works at the facilities under KVKV 2407050. Of these, for : - Carrying out measures to protect the territory of Borshchiv village council of Sniatyn district, Ivano-Frankivsk region, from flooding and flooding (including preparation of design and estimate documentation) - UAH 500,000.00; - Implementation of measures to combat the harmful effects of the Prut River water in the village of Borshchiv of the Zabolotiv Village Council of the TG, in the village of Voskresintsy of the Kolomyia City Council of the TG, Kolomyia district, and on the Black Cheremosh River in the village of Krasnyk (Hruzy village), Verkhovyna district, Ivano-Frankivsk region - UAH 2940000.00; Cash expenditures in 2019 totalled UAH 3,416,583.97. - In 2020, a total of UAH 375,788.00 was allocated for measures to protect the territory of Obertyn, Tlumach district, Ivano-Frankivsk region, from flooding and flooding. In addition, only UAH 198,000.00 was allocated for the implementation of the measures of the Comprehensive Regional Target Programme for the Development of Water Management for the Period up to 2021 in the Region in the territory of the Sniatyn City Council. A total of UAH 152,000.00 has been allocated for the implementation of the measures of the Comprehensive Regional Targeted Programme for the Development of Water Management for the Period up to 2021 in the Region in the territory of the Pyadytska Village Council of the Kolomyia District. Cash expenditures for the implementation of the events in 2020 totalled UAH 349978.80. UAH 118,000.00 was allocated and financed for the new construction of a water protection dam on the Prut River in the village of Sopiv, Pechenizhyn Village Council, Ivano-Frankivsk Oblast (including the preparation of design and estimate documentation). Reconstruction of bank protection structures on the right bank of the Prut River in the area of Danylo Halytskoho Street in Vorokhta village of Vorokhta settlement of Ivano-Frankivsk region (including environmental impact assessment and preparation of design and estimate documentation) in the amount of UAH 200,000.00. In total, UAH 318,000.00 was financed for the works.

		Cash expenses in total for 2021 amounted to UAH 77290.00. - Subvention of the local budget to the state budget I half of 2022 The account balance as of 1 January 2022 was UAH 240710.00. Funding in the amount of UAH 118,000.00 is provided for the new construction of a water protection dam on the Prut River in the village of Sopiv of the Pechenizhyn Village Council of the Ivano-Frankivsk Oblast (including the preparation of design estimates), as well as for the reconstruction of bank protection structures on the right bank of the Prut River in the area of Danila Halytskoho Street in the village of Vorokhta of the Vorokhta Village Council of the Ivano-Frankivsk Oblast. Danyla Halytskoho Street in Vorokhta village of Vorokhta settlement in Ivano-Frankivsk Oblast (including the environmental impact assessment procedure and preparation of design and estimate documentation), funding in the amount of UAH 200,000.00 is envisaged. A total of UAH 318,000.00 was allocated for the works under KPKV 2407050. Cash expenses for the first half of 2022 totalled UAH 181276.40. Low levels of actual funding for tasks and activities from all sources of funding.
	Achieving the goals set	The targets were partially achieved.
7	**Name of the programme/fund/project**	**"Regional Environmental Protection Programme until 2020", approved by the Ivano-Frankivsk Regional Council on 25.12.2015, No. 59-2/2015. Regional Environmental Protection Fund. Local environmental protection funds.**
	Name of the conservation measure	Protection and rational use of water resources
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances. № 5. Hydromorphological changes.

	Implementation of environmental protection measures and their financing	Over the period of the Programme, 438 environmental protection measures were implemented for about UAH 423 million from the state and regional environmental protection funds. UAH 300.8 million was allocated from the regional environmental protection fund for the protection and rational use of water resources, of which over UAH 280 million was financed and about UAH 250 million was disbursed. These funds were also used to carry out works in the Danube RBM (Prut sub-basin), namely: construction of sewage treatment plants and sewerage networks in the villages of Obertyn in Tlumach district (including 1.9 km of sewerage networks were laid), Rozhnyativ in Sniatyn and Delyatyn psychoneurological institutions, an inpatient department of the territorial centre for permanent residence in Krasnoillya village, Verkhovyna district, and a sewage and pumping station in Zabolotiv village, Sniatyn district. Work has begun on the construction and reconstruction of sewage treatment plants in Verkhovyna (Zhabievska Street, Hrushevskoho Street) and the villages of Korshiv of Korshiv Village Council and Mateyivtsi of Mateyivtsi Village Council. Sewerage collectors and sewerage networks were constructed (about 19 km long in 91 streets in the region's settlements), namely in the Danube RBM (Prut sub-basin): in the cities: Horodenka, Kolomyia, Kosiv, Sniatyn; in the villages: Vorokhta, Hvizdets of Kolomyia district, Delyatyn of Delyatyn village council of TG and in Staryi Kosiv village of Kosiv district. Work has begun on the construction and reconstruction of sewerage networks (about 432 m of sewerage networks have already been laid in 82 streets in the region's settlements and as of the end of 2020), namely in the Danube RBM (Prut sub-basin): in the cities of: Kolomyia, Kosiv, Nadvirna, Sniatyn and Yaremcha; villages: Korshiv, Kolomyia district, Krasnoillya. The reconstruction of the sewage pumping station (SPS) in Horodentsi was started. A sewage pumping station was purchased in Kolomyia, and sewage pumping stations were purchased for Mateyivtsi village of Mateyivtsi TG, Korshiv and Obertyn village. Composting sites at the Nadvirna wastewater treatment plant were expanded to 700 m^2 , 2 radial lagoons were reconstructed and a 685 m sewerage collector was partially constructed from the SPS to the NOS. UAH 261.1 million was allocated from the state environmental protection fund for the period 2016-2020 for the protection and rational use of water resources, of which about UAH 173 million was used to implement the following environmental protection measures, including in the Danube RBM (Prut sub-basin): - reconstruction of sewerage networks and treatment facilities in Kolomyia, Ivano-Frankivsk region - UAH 5,532.2 thousand; - construction of sewage treatment plants and sewerage networks with a capacity of 4000 m^3 /day in Yaremche,

		Ivano-Frankivsk region (Project Adjustment) - UAH 35,000.0 thousand; - new construction. Construction of sewage treatment facilities and a supply sewer in the village of Pyadyky, Kolomyia district, Ivano-Frankivsk region - UAH 11,000.0 thousand. During 2016-2019, the region saw a trend towards a decrease in discharges of polluted wastewater into surface water bodies from 1.006 million m^3 to 0.596 million m^3 . Not all of the planned activities have been funded and implemented.
	Achieving the goals set	The targets were partially achieved.
8	**Name of the programme/fund/project**	**"Regional Environmental Protection Programme until 2020", approved by the Ivano-Frankivsk Regional Council on 25.12.2015, No. 59-2/2015. Regional Environmental Protection Fund. Local environmental protection funds.**
	Name of the conservation measure	Industrial and municipal waste management
	Relevance of the environmental measure to the main water and environmental issues	№ 4. Littering with plastic and other solid waste.
	Implementation of environmental protection measures and their financing	Over the period of the Programme, 164 measures aimed at industrial and household waste management were implemented in the region, with UAH 115.3 million allocated from the regional and state environmental protection funds, and UAH 102.2 million financed, of which over UAH 87.6 million was spent. In the Danube RBM (Prut sub-basin), the following works were carried out: expansion and reconstruction of facilities for the storage of household and agricultural waste at the landfill in Sniatyn; construction of a sewerage collector (12.8 km) to discharge leachate from the landfill to the municipal wastewater treatment plant; expansion of household waste storage facilities on the territory of Kotykivka village council in the Derenivka tract of Horodenkivskyi district; construction of facilities for household waste storage on the territory of Verkhovyna village council (20 m of landfill site^2 , 125 m of landfill fenced and 20 m of hangar built^2); reclamation of the landfill in the village of Berezhnytsia, Verkhovyna district, Ivano-Frankivsk region. Containers for collection and sorting of solid waste, special equipment for collection and removal of solid waste were purchased, existing landfills in some CCs were equipped, and design and estimate documentation for the reconstruction of existing landfills and the construction of new ones for the newly created CCs was prepared.
	Achieving the goals set	The targets were partially achieved.

9	**Name of the programme/fund/project**	**"Regional Environmental Protection Programme until 2020", approved by the Ivano-Frankivsk Regional Council on 25.12.2015, No. 59-2/2015. Regional Environmental Protection Fund. Local environmental protection funds.**
	Name of the conservation measure	Protection and rational use of land
	Relevance of the environmental measure to the main water and environmental issues	№ 2. Pollution by nutrients. № 3. Pollution by hazardous substances.
	Implementation of environmental protection measures and their financing	Over the period of the Programme, UAH 258.1 million was allocated for land protection from the regional and state environmental protection funds, of which about UAH 250 million was financed, and over UAH 235 million was used to implement 231 measures. Over the period of the Programme, UAH 241.5 million was allocated from the regional environmental protection fund, of which about UAH 225 million was financed and about UAH 219 million was disbursed, which was used to build and reconstruct bank protection structures and dams on 168 sections of rivers in the region with a total length of over 34 km. In the Danube RBM (Prut sub-basin), flood protection measures were taken in the villages of Verbivtsi in Horodenka district, Mykulychyn in Yaremche city council and Borshchiv village council in Sniatyn district, which partially protected settlements, agricultural land and estates from the harmful effects of flood waters. Works were carried out to build bank protection, landslide, anti-mudslide and anti-mudflow structures to prevent the development of hazardous geological processes in the cities of Kosiv, Yaremche and the villages of Zamahora in Verkhovyna district, Yablunytsia and Mykulychyn in Yaremche City Council, Shepit in Kosiv district, Prokurava and Kosmach in Kosmach TG. In 2017, UAH 16,550,749 thousand was allocated from the State Environmental Protection Fund for the reconstruction of bank protection - the construction of a dam on the Prut River from the village of Nyzhniy Verbizh to the Taras Shevchenko Park in Kolomyia, which was used in full and 650 metres of the dam was restored. Not all of the planned activities have been funded and implemented.
	Achieving the goals set	The targets were partially achieved.
10	**Name of the programme/fund/project**	**"Regional Environmental Protection Programme until 2020", approved by the Ivano-Frankivsk Regional Council on 25.12.2015, No. 59-2/2015. Regional Environmental Protection Fund. Local environmental protection funds.**
	Name of the conservation measure	Preservation of the nature reserve fund

	Relevance of the environmental measure to the main water and environmental issues	№ 7. Issues related to the relationship between water quantity and quality associated with climate change.
	Implementation of environmental protection measures and their financing	UAH 5.79 million was allocated from the regional environmental protection fund for the implementation of the subprogramme "Preservation of the nature reserve fund", of which UAH 5.74 million was financed and about UAH 5 million was used for carrying out special measures aimed at preventing the destruction or damage of natural complexes of territories and objects: the Knyazhdvirskyi reserve in the Danube RBF area (Prut sub-basin) and developing land management documentation for the Obertynska Dolina botanical reserve. Not all of the planned activities have been funded and implemented.
	Achieving the goals set	The targets were partially achieved**.**
11	**Name of the programme/fund/project**	**"Regional Environmental Protection Programme until 2020", approved by the Ivano-Frankivsk Regional Council on 25.12.2015, No. 59-2/2015. Regional Environmental Protection Fund. Local environmental protection funds.**
	Name of the conservation measure	Protection and rational use of natural plant and animal resources
	Relevance of the environmental measure to the main water and environmental issues	№ 6. Spread of invasive species. № 7. Issues related to the relationship between water quantity and quality associated with climate change.
	Implementation of environmental protection measures and their financing	Funding for environmental protection measures in the part "Protection and rational use of natural plant resources" was provided by the regional and local funds of the National Environmental Protection Agency. During 2016-2020, UAH 3.9 million was allocated from the regional environmental protection fund, of which UAH 3.8 million was financed and UAH 2.1 million was disbursed. Work was carried out only in certain areas, including the conservation of Red Book plant species.
	Achieving the goals set	The targets were partially achieved.
12	**Name of the programme/fund/project**	**"Regional Environmental Protection Programme until 2020", approved by the Ivano-Frankivsk Regional Council on 25.12.2015, No. 59-2/2015. Regional Environmental Protection Fund. Local environmental protection funds.**
	Name of the conservation measure	Science, information and education, environmental monitoring

	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances. № 4. Littering with plastic and other solid waste. № 5. Hydromorphological changes. № 6. Spread of invasive species. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories. № 9. Droughts and water shortages.
	Implementation of environmental protection measures and their financing	Over the period of the Programme, UAH 25.5 million was allocated from the regional environmental protection fund to implement the subprogramme, of which UAH 19.7 million was financed and about UAH 15.5 million was used to implement 100 measures. These funds were used to prepare design estimates for the construction and reconstruction of wastewater treatment facilities in the cities of Horodenka, Kosiv, Vorokhta of the Yaremche City Council, Obertyn of the Tlumach District, and Mateyivtsi of the Mateyivtsi Village Council; and to prepare projects for the construction and reconstruction of dams and bank protection, as well as for the restoration and maintenance of favourable hydrological conditions and sanitary conditions of rivers in the region. Only some environmental awareness activities were financed.
	Achieving the goals set	The targets were partially achieved.
13	**Name of the programme/fund/project**	**"Regional Target Programme "Drinking Water" for 2012-2020", approved by the Ivano-Frankivsk Regional Council on 06.04.2012, No. 467-13/2012. Amended by the decision of the Ivano-Frankivsk Regional Council of 20.12.2019 No. 1326-33/2019.**
	Name of the conservation measure	Measures to improve the quality of drinking water and wastewater treatment; improve the sanitary, epidemiological and environmental situation in the region; ensure the protection of drinking water sources; introduce the latest technologies at drinking water and wastewater enterprises using modern equipment, devices and materials; reduce drinking water losses; and ensure round-the-clock supply of quality drinking water to the population.
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 9. Droughts and water shortages.

	Implementation of environmental protection measures and their financing	Responsible for the implementation of the measures was the Department of Housing and Communal Services of the Oblast State Administration (now the Department of Community and Territorial Development, Road, Housing and Communal Services, Urban Planning and Architecture of the Oblast State Administration). Programme funding stages: annually. A total of UAH 214.4 million was planned to be allocated for the implementation of the Programme in 2012-2020, including UAH 140.3 million from the state budget, UAH 7.9 million from the oblast budget, UAH 30.5 million from local budgets, and UAH 35.7 million from other sources. In 2019, UAH 25.25 million was allocated, including UAH 16.6 million from the state budget, UAH 1.0 million from the regional budget, UAH 4.0 million from local budgets, and UAH 4.65 million from other sources. However, not a single UAH has been allocated for the implementation of the measures. In 2020, a total of UAH 407,576 thousand was used from the regional budget for the implementation of this Programme, which was allocated to the "Measures to improve the quality of drinking water" in 2 educational institutions of the region (unfortunately, it is not indicated where exactly the work was performed). There is a lack of adequate funding for the Programme's activities.
	Achieving the goals set	The set goals were not achieved.
14	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of the Agro-Industrial Complex and Rural Areas of Ivano-Frankivsk Region for 2016-2020", approved by the Regional Council on 16.10.2015, No. 1830-39/2015.**
	Name of the conservation measure	Soil deoxidation (liming) works
	Relevance of the environmental measure to the main water and environmental issues	№ 2. Pollution by nutrients. № 3. Pollution by hazardous substances. № 6. Spread of invasive species.
	Implementation of environmental protection measures and their financing	Liming improves the quality of crop yields and has a positive effect on the sowing quality of seeds. Calcium in limestone acts as an antagonist to the intake of heavy metals and radionuclides into the plant. On limed soils, the resistance of plants to diseases increases, the composition changes and the number of weeds in the fields decreases, which reduces the use of hazardous substances for their destruction and, accordingly, the diffuse pollution entering the IWM. The total cost of the event was UAH 10.6 million, including UAH 1.0 million from the state budget, UAH 0.6 million from the regional budget and UAH 9.0 million from agricultural producers. The event was supposed to increase crop yields and gross agricultural production through the efficient use of fertilisers and ameliorants, and restore soil fertility. Unfortunately, the event was not funded from the state and regional budgets. Individual agricultural enterprises allocated extremely scarce funds for the event at their discretion.

	Achieving the goals set	The set goals were not achieved.
15	**Name of the programme/fund/project**	**"Regional Target Programme for the Development of Fish Farming for the Period up to 2020", approved by the Regional Council of 18.04.2013, No. 898-21/2013.**
	Name of the conservation measure	Ensure proper water quality in fish ponds, prevent pollution of water bodies by wastewater from industrial enterprises, settlements, fields and livestock farms. Carry out a range of hydrological studies, ichthyopathological monitoring, preventive and therapeutic veterinary and sanitary measures.
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances. № 6. Spread of invasive species.
	Implementation of environmental protection measures and their financing	Programme implementation period: from 2014 to 2020. Stages of Programme financing: annually, subject to the availability of financial resources in the oblast budget. The total budget of the Programme amounted to UAH 4.953 million, of which 50% was provided by the oblast budget - UAH 2.476 million and, accordingly, 50% - UAH 2.476 million from other sources (funds of fisheries enterprises, water body lessees). This Programme was not funded from the regional budget. The above environmental measure was to be implemented exclusively at the expense of water body lessees and commercial fisheries. It was not funded, implemented or monitored by the Department of Agricultural Development of the Oblast State Administration (responsible for implementing the Programme).
	Achieving the goals set	The set goals were not achieved.
16	**Name of the programme/fund/project**	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
	Name of the conservation measure	Operation of the state water management complex and water resources management
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances.

	Implementation of environmental protection measures and their financing	With funding from the Dnipro-2021 Programme, a modern water monitoring laboratory for the Western region was set up in Ivano-Frankivsk in 2018-2020 on the basis of the Dniester Basin Water Resources Management Authority (hereinafter referred to as the Dniester BWRA), which is a significant step towards the implementation of European water monitoring. The creation of such a laboratory cost the state approximately UAH 32 million, which was allocated from the special Water Development Fund. The Dniester BWRM laboratory is currently measuring priority pollutants (pesticides, polyaromatic hydrocarbons, light organic compounds and heavy metals) in the Dniester, Danube and Vistula basins. Innovative instruments provide diagnostics of the actual state of Ukrainian water bodies in accordance with European norms and standards, which will serve as the basis for developing RBMPs to achieve "good" ecological and chemical status of water.
	Achieving the goals set	The targets were partially achieved.
17	**Name of the programme/fund/project**	**The National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the period up to 2021, approved by the Law of Ukraine No. 4836-VI of 24 May 2012.**
	Name of the conservation measure	**Protection of rural settlements and agricultural land from the harmful effects of water.** It is implemented within the budget programme of the State Programme of State Programmes of Ukraine for Prevention of Water Pollution 2407070, 2707070 "Protection of Rural Settlements and Agricultural Lands from Harmful Effects of Water, Including in the Tisza River Basin in Zakarpattia Oblast".
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The general indicators of the Programme are presented. Funding for the structural units of the State Agency of Water Resources of Ukraine within the basin was provided through the relevant regional programmes and will be provided by object in them. The programme included the construction, reconstruction and overhaul of hydraulic structures, flood protection dams, bank protection structures, clearing and regulation of river and water channels, and maintenance of favourable hydrological conditions and sanitary conditions of rivers and water bodies. Within the Chernivtsi region: The Dnipro-2021 Programme allocated a total of UAH 1252.834 million for the creation of an effective water sector, including UAH 848.24 million for the implementation of measures to protect rural settlements and agricultural land from the harmful effects of water for the entire period of implementation from 2013 to 2021 (9 years). The implementation of the planned event was carried out in two stages: 2013-2016 and 2017-2021. Since the beginning of the measure implementation, UAH 67.714 million has been allocated and disbursed from the state budget as of 1 January 2022, which is 8% of the envisaged need. Work was carried out on the construction and overhaul of protective dams, bank protection and automatic gauging stations. At the same time, such planned measures as regulation and clearing of river channels, construction and reconstruction of polders, flood control reservoirs, afforestation and alkalisation of coastal protection strips were not implemented at all.
	Achievement of set goals	The set goals were not achieved.
18	**Name of the programme/fund/project**	**The National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the period up to 2021, approved by the Law of Ukraine No. 4836-VI of 24 May 2012.**
	Name of the conservation measure	Ensuring the development of land reclamation and improvement of the ecological condition of irrigated and drained lands
	Relevance of the environmental measure to the main water and environmental issues	№ 2. Pollution by nutrients. № 7. Issues related to the relationship between water quantity and quality in relation to climate change. № 9. Droughts and water shortages.

	Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme envisaged funding in the amount of UAH 30090.49 million for the implementation of the measure to ensure the development of land reclamation and improve the environmental condition of irrigated and drained lands for the entire period of implementation from 2013 to 2021 (9 years), including UAH 95.15 million for the maintenance of the water management and reclamation complex of the region and the reconstruction of the engineering infrastructure of drainage systems. This measure was intended to continue the implementation of the previously existing state target programme "Comprehensive Programme for the Development of Land Reclamation and Improvement of the Ecological Condition of Irrigated and Drained Lands in 2001-2005 and Forecast to 2010". The measure was to ensure the development of land reclamation and improvement of the ecological condition of irrigated and drained lands, in particular, restoration of the water management and reclamation complex, reconstruction and modernisation of reclamation systems and their facilities, engineering infrastructure of reclamation systems with the creation of integrated technological complexes, introduction of new methods of irrigation and land drainage, application of water and energy-saving environmentally safe irrigation and water regulation regimes. The planned action was implemented over 9 years, in two stages: 2013-2016 and 2017-2021. Since the start of the Dnipro-2021 Programme, as of 1 January 2019, no funds have been allocated from budgets of all levels or other sources for the reconstruction of engineering infrastructure. Funds have been allocated for the maintenance of the water management complex.
	Achievement of set goals	The set goals were not achieved.
19	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Overhaul of the dam on the Cheremosh River at Rivnia Farm, Vyzhnytsia District, Chernivtsi Region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was launched in 2018 and completed in 2020 at the expense of the state budget. UAH 8564.201 thousand was allocated for the implementation of the measure "Overhaul of the dam on the Cheremosh River "Rivnia Farm" in Vyzhnytsia district, Chernivtsi region". The project has been implemented. The dam was overhauled, with a total length of 479 metres.
	Achievement of set goals	The set goals have been achieved.

20	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Overhaul of the Prut river bank protection in the villages of Mamayevtsy - Luzhany, Kitsman district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was launched in 2018 and completed in 2021 at the expense of the state budget. UAH 20887,445 thousand was allocated for the implementation of the measure "Overhaul of the Prut River bank protection in the villages of Mamayevtsy - Luzhany, Kitsman district, Chernivtsi region". The project has been implemented. The bank protection was overhauled, with a total length of 550 m.
	Achievement of set goals	The set goals have been achieved.
21	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Overhaul of the dam on the Cheremosh River in the village of Chortorya, Kitsman district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The total cost of the facility is UAH 39163.0 thousand. The works started in 2018. As of 1 January 2022, the amount of funds disbursed from the state budget was UAH 1038.001 thousand. As a result of the flood in June 2020, which led to a natural disaster at the national level, and in particular at the regional level in Chernivtsi Oblast, the dam body on the Cheremosh River in Chortorya village was further destroyed and, accordingly, the scope of work and design solutions were changed (the length of the damaged area increased more than 3 times and is 530 metres). As of 1 January 2022, the working draft was adjusted.
	Achievement of set goals	The set goals were not achieved.

22	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection on the Suceava River in the village of Selyatyn, Putyla district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality in relation to climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was launched in 2020. The total cost is UAH 5,719.89 thousand. As of 1 January 2022, UAH 5,478,799 thousand was financed from the state budget. The status of the measure is 96%. Bank protection works were carried out for a total length of 147 metres. Funds are required for completion.
	Achievement of set goals	The targets were partially achieved.
23	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Overhaul of the Prut river bank in Tarasivtsi village, Novoselytsia district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The project was launched in 2020. The works were completed in 2021. The total cost is UAH 8658.164 thousand. UAH 8658.164 thousand was financed from the state budget. The status of the event is 100%. The bank protection was overhauled with a total length of 157 metres.
	Achievement of set goals	The set goals have been achieved.
24	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Overhaul of the bank protection on the Siret River in the village of Yordaneshty, Hlyboka district, Chernivtsi region (elimination of the consequences of the June 2020 flood)

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was launched in 2021. The total cost is UAH 5,579.195 thousand. As of 1 January 2022, UAH 4115,922 thousand was financed from the state budget. The status of the measure is 74%. The bank protection was overhauled with a total length of 300 metres. Funds are needed to complete the facility.
	Achievement of set goals	The targets were partially achieved.
25	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	"Overhaul of the dam No. 23 on the Cheremosh River in Vyzhnytsia (Rivne outskirts), Vyzhnytsia district, Chernivtsi region (elimination of the consequences of the June 2020 flood)"
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was launched in 2021. The total cost is UAH 6,378.86 thousand. As of 1 January 2022, UAH 6,036,932 thousand was financed from the state budget. The status of the event is 95%. The dam was overhauled, with a total length of 242 metres. Funds are needed to complete the facility.
	Achievement of set goals	The targets were partially achieved.
26	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	"Overhaul of the bank reinforcement on the Malyi Siret River in the village of Nyzhni Petrivtsi, Storozhynets district, Chernivtsi region (elimination of the consequences of the June 2020 flood)"
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event was launched and completed in 2021. The total cost is UAH 1004,714 thousand. UAH 1,004,714 thousand was financed from the state budget. The status of the event is 100%. The bank protection was overhauled, with a total length of 65 metres.
	Achievement of set goals	The set goals have been achieved.
27	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	"Overhaul of the bank protection on the Prut River in Kostychany village (site No. 1), Novoselytsia district, Chernivtsi region (elimination of the consequences of the June 2020 flood)"
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was launched in 2021. The total cost is UAH 3,859,310 thousand. As of 1 January 2022, UAH 2,596.37 thousand was financed from the state budget. The status of the measure is 67%. The onshore support was overhauled with a total length of 100 m. Funds are required to complete the facility.
	Achievement of set goals	The targets were partially achieved.
28	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	"Overhaul of the bank protection on the Prut River in the village of Vanczykivka (section No. 3), Novoselytsia district, Chernivtsi region (elimination of the consequences of the June 2020 flood)"
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event was launched in 2021. The total cost is UAH 2898,790 thousand. As of 1 January 2022, UAH 2,530.68 thousand was financed from the state budget. The status of the measure is 87%. The onshore support was overhauled with a total length of 144 m. Funds are required to complete the facility.
	Achievement of set goals	The targets were partially achieved.
29	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	"Overhaul of the dam on the Prut River in Nepolokivtsi, Chernivtsi district, Chernivtsi region (elimination of the consequences of the June 2020 flood)"
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was launched in 2021. The total cost is UAH 6084.15 thousand. As of 1 January 2022, UAH 5,545.175 thousand was financed from the state budget. The status of the measure is 90%. The dam was overhauled with a total length of 186 metres. Funds are needed to complete the facility.
	Achievement of set goals	The targets were partially achieved.
30	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in Chernivtsi Oblast for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Oblast Council of the VI convocation of 11.06.2014, No. 61-26/14.**
	Name of the conservation measure	"Overhaul of the bank support on the Siret River in the village of Prosika, Hlyboka district, Chernivtsi region (elimination of the consequences of the June 2020 flood)"
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was launched and completed in 2021. The total cost is UAH 1,477,931 thousand. UAH 1,477,931 thousand was financed from the state budget. The status of the event is 100%. The bank protection was overhauled, with a total length of 120 metres.
	Achievement of set goals	The set goals have been achieved.

31	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of the Marshyntsi - Mamalyha dam on the Prut River in Novoselytsia district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2016-2021 at the expense of the state budget. The total cost is UAH 20430.0 thousand (in 2014 prices). The distance is 1.98 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
32	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of a protective dam on the Cheremosh River in Marynychi village, Putyla district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2017-2018 at the expense of the state budget. The total cost is UAH 9000.0 thousand (in 2014 prices). The distance is 0.95 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
33	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Overhaul of the dam on the Cheremosh River in the village of Miliyevo, Vyzhnytsia district, Chernivtsi region

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2019 at the expense of the state budget. The total cost is UAH 2,300.0 thousand (in 2014 prices). The distance is 0.24 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
34	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Overhaul of the dam on the Cheremosh River in the village of Ispas, Vyzhnytsia district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2019 at the expense of the state budget. The total cost is UAH 3,600.0 thousand (in 2014 prices). The distance is 0.37 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
35	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of a dam on the Cheremosh River in Vashkivtsi, Vyzhnytsia district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2019-2021 at the expense of the state budget. The total cost is UAH 14580.0 thousand (in 2014 prices). The distance is 1.38 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
36	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Overhaul of the dam on the Siret River in the village of Sucheveny-Prosika, Hlyboka district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2015 at the expense of the state budget. The total cost is UAH 3,200.0 thousand (in 2014 prices). The distance is 0.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
37	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Installation and reconstruction of protective dams on the Siret River in Beregomet, Vyzhnytsia district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2017 at the expense of the state budget. The total cost is UAH 4,600.0 thousand (in 2014 prices). The distance is 0.6 km. The event was funded as of 01.01.2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.

38	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Overhaul of the dam on the Siret River in the village of Stara Zhadova, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2021 at the expense of the state budget. The total cost is UAH 5,400.0 thousand (in 2014 prices). The distance is 1.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
39	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of a protective dam on the Malyi Siret River in the village of Banyliv-Pidhirnyi, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the state budget. The total cost is UAH 4,900.0 thousand (in 2014 prices). The distance is 0.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
40	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in Chernivtsi Oblast for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Oblast Council of the VI convocation of 11.06.2014, No. 61-26/14.**
	Name of the conservation measure	Construction of a dam on the Myhivka River in the village of Myhovo, Vyzhnytsia district, Chernivtsi region

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2020 at the expense of the state budget. The total cost is UAH 3000.0 thousand (in 2014 prices). The distance is 0.29 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
41	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Restoration of the Prut River bank in Boyany village, Novoselytsia district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2018 at the expense of the state budget. The total cost is UAH 4000.0 thousand (in 2014 prices). The capacity is 0.344 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
42	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection of the Prut River (section 2) in Boyanivka village, Novoselytsia district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2017-2018 at the expense of the state budget. The total cost is UAH 5,300.0 thousand (in 2014 prices). The distance is 0.7 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
43	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in Chernivtsi Oblast for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Oblast Council of the VI convocation of 11.06.2014, No. 61-26/14.**
	Name of the conservation measure	Fixing the bank of the Prut River in the village of Novyi Kyseliv, Kitsman district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2019 at the expense of the state budget. The total cost is UAH 4100.0 thousand (in 2014 prices). The distance is 0.4 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
44	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Fixing the bank of the Prut River in the village of Nepolokivtsi, Kitsman district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2020 at the expense of the state budget. The total cost is UAH 3000.0 thousand (in 2014 prices). The distance is 0.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.

45	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Fixing the Prut river bank in Orshivtsi village, Kitsman district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2020 at the expense of the state budget. The total cost is UAH 3,380.0 thousand (in 2014 prices). The distance is 0.31 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
46	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection on the White Cheremosh River in the village of Dovhopillia (Stebni), Putyla district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the state budget. The total cost is UAH 900.0 thousand (in 2014 prices). Its length is 0.144 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
47	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection on the Siret River in Lukavtsi village, Vyzhnytsia district, Chernivtsi region

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the state budget. The total cost is UAH 4,800.0 thousand (in 2014 prices). The distance is 0.4 km. The event was funded as of. 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
48	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank reinforcement on the Siret River in Storozhynets, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the state budget. The total cost is UAH 2,500.0 thousand (in 2014 prices). The distance is 0.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
49	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection of the Siret River in the village of Kupka, Hlyboka district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the state budget. The total cost is UAH 6,000.0 thousand (in 2014 prices). The distance is 0.538 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.

50	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection on the Siret River in Komarivtsi village, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2020 at the expense of the state budget. The total cost is UAH 2000.0 thousand (in 2014 prices). The distance is 0.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
51	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection on the Siretel River in the village of Yizhivtsi, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the state budget. The total cost is UAH 2,250.0 thousand (in 2014 prices). Its length is 0.211 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
52	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank reinforcement on the Malyi Siret River in the village of Cheresh, Storozhynets district, Chernivtsi region

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2019 at the expense of the state budget. The total cost is UAH 3000.0 thousand (in 2014 prices). The distance is 0.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
53	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank reinforcement on the Malyi Siret River in Nyzhni Petrivtsi village, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2021 at the expense of the state budget. The total cost is UAH 4000.0 thousand (in 2014 prices). The distance is 0.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
54	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection on the Malyi Siret River in Budenets village, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2020 at the expense of the state budget The total cost is UAH 2000.0 thousand (in 2014 prices). The distance is 0.2 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
55	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank reinforcement on the Siretel River in the village of Yizhivtsi, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2021 at the expense of the state budget The total cost is UAH 3000.0 thousand (in 2014 prices). The distance is 0.35 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
56	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Fixing the bank of the Suceava River in Shepit village, Putyla district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2021 at the expense of the state budget. The total cost is UAH 2,160.0 thousand (in 2014 prices). The distance is 0.27 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.

57	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of a flood control dry plain reservoir on the Mihidra River near the village of Nova Zhadova, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the state budget. The total cost is UAH 55400.0 thousand (in 2014 prices). Capacity - 15.1 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
58	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of a flood control dry plain reservoir on the Malyi Siret River near the villages of Verkhni and Nyzhni Petrivtsi, Storozhynets district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2017-2020 at the expense of the state budget. The total cost is UAH 69,000.0 thousand (in 2014 prices). Capacity - 22 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
59	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of a flood control dry plain reservoir on the Prut River near the villages of Prypruttya-Boyanivka, Novoselytsia district, Chernivtsi region

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2020-2021 at the expense of the state budget. The total cost is UAH 60900.0 thousand (in 2014 prices). Capacity - 37.3 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
60	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in Chernivtsi Oblast for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Oblast Council of the VI convocation of 11.06.2014, No. 61-26/14.**
	Name of the conservation measure	Construction of a dry mountain flood control reservoir on the Putyla River near the village of Serhii, Putyla district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2016-2020 at the expense of the state budget. The total cost is UAH 87,000.0 thousand (in 2014 prices). Capacity - 16 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
61	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in Chernivtsi Oblast for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Oblast Council of the VI convocation of 11.06.2014, No. 61-26/14.**
	Name of the conservation measure	Construction of a dry mountain flood control reservoir on the Siret River above the village of Lekechi, Vyzhnytsia district, Chernivtsi region
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2016-2020 at the expense of the state budget. The total cost is UAH 75,000.0 thousand (in 2014 prices). Capacity - 13.1 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
62	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of flood control reservoirs of the Chernivtsi defence complex on the Shchubranets watercourse
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	It is planned to build 4 reservoirs in 2019-2021 at the expense of the state budget. The total cost is UAH 103,000.0 thousand (in 2014 prices). The total capacity of the 4 reservoirs is 3.46 million m^3 . Namely: 1.25 million m^3 ; 0.62 million m^3 ; 0.784 million m^3 ; 0.81 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
63	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of flood control reservoirs of the Chernivtsi defence complex on the Zadubrivka watercourse
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	It is planned to build 4 reservoirs in 2018-2021 at the expense of the state budget. The total cost is UAH 105500.0 thousand (in 2014 prices). The total capacity of the 4 reservoirs is 3.786 million m3^3 . Namely: 1.51 million m^3 ; 1.176 million m^3 ; 0.34 million m^3 ; 0.76 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
64	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Construction of flood control reservoirs for the Chernivtsi city defence complex on the Stenyhora watercourse
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	It is planned to implement the measure to build 1 reservoir in 2020-2021 at the expense of the state budget. The total cost is UAH 24,000.0 thousand (in 2014 prices). The total capacity of the reservoir is 0.826 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
65	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Reconstruction of a reservoir on the Cherlena River
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2020 at the expense of the state budget. The total cost is UAH 14,000.0 thousand (in 2014 prices). The total capacity of the reservoir is 2.01 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.

66	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Reconstruction of the reservoir on the Shcherbintsy River
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is scheduled to be implemented in 2020 at the expense of the state budget. The total cost is UAH 8000.0 thousand (in 2014 prices). The total capacity of the reservoir is 0.94 million m^3 . The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
67	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Putylka, Putyla district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2014-2021 at the expense of the local budget. The total cost is UAH 750.0 thousand (in 2014 prices). The total capacity is 5.8 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
68	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Biskiv, Putyla district, Chernivtsi region.

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2020-2021 at the expense of the local budget. The total cost is UAH 400.0 thousand (in 2014 prices). The total capacity is 2.0 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
69	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Tovarnitsa, Putyla district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2019-2020 at the expense of the local budget. The total cost is UAH 500.0 thousand (in 2014 prices). The total capacity is 3.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
70	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Vyzhenka, Vyzhnytsia district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2018 at the expense of the local budget. The total cost is UAH 300.0 thousand (in 2014 prices). The total capacity is 1.8 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
71	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Berezhnytsia, Vyzhnytsia district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2019-2020 at the expense of the local budget. The total cost is UAH 700.0 thousand (in 2014 prices). The total capacity is 4.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
72	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in Chernivtsi Oblast for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Oblast Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Psyars, Vyzhnytsia district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 250.0 thousand (in 2014 prices). The total capacity is 1.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.

73	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Hlybochok, Vyzhnytsia district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 400.0 thousand (in 2014 prices). The total capacity is 2.6 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
74	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Lingonberry in the Kitsman district of Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 500.0 thousand (in 2014 prices). The total capacity is 3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
75	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Hlynnytsia, Kitsman district, Chernivtsi region.

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 400.0 thousand (in 2014 prices). The total capacity is 2.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
76	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Sovytsia Stavchanska, Kitsman district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 1000.0 thousand (in 2014 prices). The total capacity is 5.8 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
77	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in Chernivtsi Oblast for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Oblast Council of the VI convocation of 11.06.2014, No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Sovytsia Kitsmanska, Kitsman district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 500.0 thousand (in 2014 prices). The total capacity is 2.6 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.

78	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Shchubranets, Zastavna district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is to be implemented at the expense of the local budget The total cost is UAH 400.0 thousand (in 2014 prices). The total capacity is 2.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
79	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in Chernivtsi Oblast for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Oblast Council of the VI convocation of 11.06.2014, No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Zadubrivka, Zastavna district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 500.0 thousand (in 2014 prices). The total capacity is 2.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
80	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Moshkiv, Zastavna district, Chernivtsi region.

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 300.0 thousand (in 2014 prices). The total capacity is 1.4 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
81	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Kuchur, Zastavna district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 300.0 thousand (in 2014 prices). The total capacity is 1.4 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
82	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Hukiv, Novoselytsia district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2018-2020 at the expense of the local budget. The total cost is UAH 1000.0 thousand (in 2014 prices). The total capacity is 5.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.

	Achievement of set goals	The set goals were not achieved.
83	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Glodos, Novoselytsia district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2018-2020 at the expense of the local budget. The total cost is UAH 1000.0 thousand (in 2014 prices). The total capacity is 5.8 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
84	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in Chernivtsi Oblast for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Oblast Council of the VI convocation of 11.06.2014, No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Cherlena, Novoselytsia district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2019-2021 at the expense of the local budget. The total cost is UAH 1400.0 thousand (in 2014 prices). The total capacity is 7.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
85	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**

	Name of the conservation measure	Measures to revive small rivers. p. Stalinesti, Novoselytsia district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event will be funded from the local budget. The total cost is UAH 1300.0 thousand (in 2014 prices). The total capacity is 6.8 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
86	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Patzapule, Novoselytsia district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2019-2020 at the expense of the local budget. The total cost is UAH 650.0 thousand (in 2014 prices). The total capacity is 3.7 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
87	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers p. Zelena, Kelmenets district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2021 at the expense of the local budget. The total cost is UAH 400.0 thousand (in 2014 prices). The total capacity is 2.2 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
88	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Novoselytsia, Kelmenets district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2021 at the expense of the local budget. The total cost is UAH 500.0 thousand (in 2014 prices). The total capacity is 2.8 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
89	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Medvedka, Kelmenets district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2021 at the expense of the local budget. The total cost is UAH 300.0 thousand (in 2014 prices). The total capacity is 1.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.

90	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Viliya, Kelmenets district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2020-2021 at the expense of the local budget. The total cost is UAH 700.0 thousand (in 2014 prices). The total capacity is 3.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
91	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Dradieste, Sokyryany district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2018-2019 at the expense of the local budget. The total cost is UAH 700.0 thousand (in 2014 prices). The total capacity is 3.7 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
92	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Dereluy, Hertsaiv district, Chernivtsi region.

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2018-2019 at the expense of the local budget. The total cost is UAH 700.0 thousand (in 2014 prices). The total capacity is 4.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
93	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Korovia, Storozhynets district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2020-2021 at the expense of the local budget. The total cost is UAH 600.0 thousand (in 2014 prices). The total capacity is 3.2 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
94	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Malyi Siret, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2018-2021 at the expense of the local budget. The total cost is UAH 1300.0 thousand (in 2014 prices). The total capacity is 5.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
95	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Bilka, Storozhynets district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2018-2019 at the expense of the local budget. The total cost is UAH 600.0 thousand (in 2014 prices). The total capacity is 3.0 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
96	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Hlybochok, Storozhynets district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2020 at the expense of the local budget. The total cost is UAH 200.0 thousand (in 2014 prices). The total capacity is 1.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.

97	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Turyatky of the Hlyboka district of the Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2018 at the expense of the local budget. The total cost is UAH 300.0 thousand (in 2014 prices). The total capacity is 2.0 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
98	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Kotovets, Hlyboka district, Chernivtsi region.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2019-2020 at the expense of the local budget. The total cost is UAH 800.0 thousand (in 2014 prices). The total capacity is 4.5 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
99	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to revive small rivers. p. Suchava, Putyla district, Chernivtsi region.

	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned to be implemented in 2014-2021 at the expense of the local budget. The total cost is UAH 800.0 thousand (in 2014 prices). The total capacity is 4.3 km. The event was funded as of 1 January 2022 - UAH 0 thousand. The status of the measure is 0%.
	Achievement of set goals	The set goals were not achieved.
100	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Shore protection of the Siret River along Siretska and Kobylyanska streets in the administrative area of Beregomet village council
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2020. The total cost is UAH 45,580 thousand. UAH 45,580 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
101	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection of the Siret River along Siretska Street in the administrative zone of the Beregomet village council
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2020. The total cost is UAH 6,090 thousand. UAH 6,090 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.

102	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Bank protection of the Siret River Zarichna Lane, 4 and Holovna Street, 140 in the village of Dolishniy Shepit
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2021. The total cost is UAH 36.0 thousand. UAH 36.0 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
103	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to prevent flooding of agricultural land near the Siret River near the village club in Zarichchia village
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2021. The total cost is UAH 27,964 thousand. UAH 27,964 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
104	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to prevent flooding of agricultural land near the Siret River near the bridge on Kobylyanska Street, Beregomet
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2021. The total cost is UAH 10,072 thousand. UAH 10,072 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
105	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to prevent flooding of agricultural land near the Siret River crossing bridge on Kobylyanska Street, Berehomet (Stebnyk corner)
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2021. The total cost is UAH 14,073 thousand. UAH 14,073 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
106	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to prevent flooding of agricultural land near the Siret River crossing bridge on Sichovykh Striltsiv Street at Zvarash River Dolishniy Shepit village
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2021. The total cost is UAH 5,183 thousand. UAH 5,183 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
107	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**

	Name of the conservation measure	Measures to prevent flooding of agricultural land (bank protection) on the bank of the Myhivka River in the area of Chapaeva and Naberezhna streets for 1.2 km in Myhove village
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2021. The total cost is UAH 48,988 thousand. UAH 48,988 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
108	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Measures to prevent flooding of agricultural land (bank protection) on the bank of the Myhivka River in the area of V. Tokar and Zarichna streets for a length of 0.8 km in Myhove village
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2021. The total cost is UAH 14,800 thousand. UAH 14,800 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
109	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Reconstruction of the sewerage network on Primaveriy Street, village. Magala village
	Relevance of the environmental measure to the main water and environmental issues	№ 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was planned and implemented in 2019. The total cost is UAH 334,803 thousand. UAH 334,803 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.

110	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Reconstruction of drainage system channels on the territory of the Magalska village council to protect agricultural land from flooding
	Relevance of the environmental measure to the main water and environmental issues	№ 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event was planned and implemented in 2019. The total cost is UAH 99,591 thousand. UAH 99,591 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
111	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Reconstruction of an on-farm reclamation canal in Prut village, Magalske village council
	Relevance of the environmental measure to the main water and environmental issues	№ 8. Floods and floods, flooding of territories.
	Implementation of environmental protection measures and their financing	The event is planned and implemented in 2021. The total cost is UAH 49,992 thousand. UAH 49,992 thousand was financed from the local budget. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
112	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Water Management and Flood Protection in the Chernivtsi Region for the Period up to 2021", approved by the decision of the XXVI session of the Chernivtsi Regional Council of the VI convocation of 11.06.2014 No. 61-26/14.**
	Name of the conservation measure	Revival of small rivers. Cleaning of the Moshkiv, Klokuchka, Molnytsia, Potit and Kysia rivers in Chernivtsi.
	Relevance of the environmental measure to the main water and environmental issues	№ 5. Hydromorphological changes. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories.

	Implementation of environmental protection measures and their financing	The event was planned and implemented: 2019 - UAH 1205.5 thousand; 2020 - UAH 1,161.6 thousand; 2021 - UAH 1484.9 thousand. The Chernivtsi City Municipal Production Trust for Green Economy and Landslide Prevention worked to clean the banks and channels of small rivers from debris and sediment, as well as fallen and dangerous trees. The status of the event is 100%.
	Achievement of set goals	The set goals have been achieved.
113	**Name of the programme/fund/project**	**"Regional Programme "Drinking Water of Chernivtsi Oblast for 2006-2020", approved by the decision of the Chernivtsi Oblast Council of 06.10.2005, No. 143-22/05.**
	Name of the conservation measure	Providing the population with quality drinking water, water supply and sewerage measures
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 9. Droughts and water shortages.
	Implementation of environmental protection measures and their financing	The estimated amount of funding for the Programme is UAH 120,152.0 thousand, including UAH 100,415.0 thousand from the state budget, UAH 14,666.2 thousand from local budgets, UAH 4,556.0 thousand from enterprises (water utilities) and UAH 514.8 thousand from other sources of funding. The programme included 3 stages of implementation, with the last, third stage covering 2016-2020. In 2019, the programme was not funded from the state and local budgets, although out of the 26 existing CWSs in the region (total actual capacity - 36.0 million m^3 /year), 6 needed urgent reconstruction. At the same time, local programmes (funds from water utilities and amalgamated territorial communities) and activities in 2019 helped to replace and rehabilitate emergency water and sewerage networks, prepare 23 water and 16 sewerage pumping stations, 2 water and 9 sewerage treatment plants, 46 wells and 5 water intakes from surface sources.
	Achievement of set goals	The set goals were not achieved.
114	**Name of the programme/fund/project**	**"Regional Programme "Drinking Water of Chernivtsi Oblast for 2006-2020", approved by the decision of the Chernivtsi Oblast Council of 06.10.2005, No. 143-22/05.**
	Name of the conservation measure	Overhaul of the raw sludge pumping pipeline at the municipal sewage treatment plant in Magala village, Novoselytsia district, Chernivtsi region

	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances.
	Implementation of environmental protection measures and their financing	The cost of the works is UAH 285316.32. UAH 10316.32 was paid by the utility company at its own expense and UAH 275,000.0 from the municipal environmental fund. A major overhaul of the raw sludge pumping pipeline at the municipal sewage treatment plant in Magala village, Novoselytsia district, Chernivtsi region, was carried out.
	Achievement of set goals	The set goals have been achieved.
115	**Name of the programme/fund/project**	**"Regional Programme "Drinking Water of Chernivtsi Oblast for 2006-2020", approved by the decision of the Chernivtsi Oblast Council of 06.10.2005, No. 143-22/05.**
	Name of the conservation measure	Construction of a water pipeline to provide the population of Magala village, Chernivtsi district, with centralised water supply
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances.
	Implementation of environmental protection measures and their financing	Construction of a 2.7 km water pipeline to provide the population of Magala village, Chernivtsi district, with centralised water supply at the expense of private funds in the amount of UAH 3 million.
	Achievement of set goals	The set goals have been achieved.
116	**Name of the programme/fund/project**	**"Regional Programme "Drinking Water of Chernivtsi Oblast for 2006-2020", approved by the decision of the Chernivtsi Oblast Council of 06.10.2005, No. 143-22/05.**
	Name of the conservation measure	Construction and reconstruction of water supply and sewerage systems
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances.

	Implementation of environmental protection measures and their financing	In the region, 23.36 km of emergency water supply networks were repaired and replaced for a total of UAH 3.1 million, 25 water intake wellheads were equipped for a total of UAH 400 thousand, and 14 water pumping stations, 1 water treatment plant and 25 wells were prepared for the winter period. To improve the environmental situation in the region, in 2021, 6.7 km of emergency sewerage networks were repaired and replaced for a total of UAH 1.8 million, and 3 sewage pumping stations and 8 sewage treatment plants were prepared for the winter period. The main reason for the unsatisfactory condition of sewage treatment facilities and, as a result, the discharge of excessive pollutants into the region's rivers and water bodies is the lack of funding in recent years for the construction and reconstruction of sewage systems.
	Achievement of set goals	The set goals were not achieved.
117	**Name of the programme/fund/project**	**"Comprehensive Programme for the Development of Land Relations in Chernivtsi Region for 2017-2021", approved by the decision of the Chernivtsi Regional Council of the VII convocation of 04 July 2017 No. 101-14/17.**
	Name of the conservation measure	Land protection measures
	Relevance of the environmental measure to the main water and environmental issues	№ 2. Pollution by nutrients. No. 3 Pollution by hazardous substances. No. 6 Spread of invasive species.

	Implementation of environmental protection measures and their financing	UAH 392,852 thousand is planned to be allocated from the regional budget for land protection measures (chemical amelioration of acidic soils - liming) on an area of 98.5 hectares. Land protection and soil fertility restoration is a complex, multifaceted problem that requires funds to solve. Organisational measures that do not require large additional costs can play a role, including special agrotechnical methods of no-till tillage, ploughing across slopes, increasing the percentage of perennial grasses in the structure of crop rotations and other non-tilled crops, etc. However, the systematic agricultural use of the land fund requires agrochemical monitoring, which is based on continuous control over the state of fertility and soil cover, soil degradation and the degree of pollution, reaction and salt regime of the soil environment. As a result of the reduction in chemical reclamation activities in the region, the area of soils with an acidic soil reaction has significantly increased, which is one of the main reasons for the deterioration of their fertility. Increased soil acidity leads to a significant drop in the efficiency of organic and mineral fertiliser application, lower crop yields and product quality. Soil acidification is also caused by a decrease in organic matter, and mineral fertilisers mainly contain nitrogen fertilisers, which are physiologically acidic and change the reaction of the soil environment towards acidification. UAH 199,391 thousand was used to reimburse the costs of liming 63.5 hectares of land for agricultural and forestry production losses. The Programme activities were not funded from the budget.
	Achieving the goals set	The targets were partially achieved.
118	**Name of the programme/fund/project**	**Comprehensive Programme for Environmental Protection "Ecology" in Chernivtsi Oblast for 2019-2021 (as amended), approved by the decision of the XXX session of the Regional Council of the VII convocation No. 42-30/19 of 27 March 2019.**
	Name of the conservation measure	Protection and rational use of water resources
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances. № 5. Hydromorphological changes.

	Implementation of environmental protection measures and their financing	Three environmental protection measures were carried out from the regional environmental protection fund in the amount of UAH 372,974 thousand: - Reconstruction of the Siret riverbed after the flood of 28-30 June 2018 with the construction of a ditch in the village of Dolishnyi Shepit (Popovych estate), Vyzhnytsia district, Chernivtsi region. Funding in the amount of UAH 73,070 thousand; - Overhaul of the left bank of the Vyzhenka river in the village of Vyzhenka (near the estate of H. Telesnytskyi), Vyzhnytsia district, Chernivtsi region. Financing in the amount of UAH 257,642 thousand; - Overhaul of sewerage networks of Roztokiv pre-school education institution in Putyla district. Financing in the amount of UAH 42,262 thousand. Construction of a sewerage collector in Vyzhnytsia, Chernivtsi region, was financed from the state budget in the amount of UAH 9000.0 thousand.
	Achieving the goals set	The set goals have been achieved.
119	**Name of the** programme/fund/project	**Comprehensive Programme for Environmental Protection "Ecology" in Chernivtsi Oblast for 2019-2021 (as amended), approved by the decision of the XXX session of the Regional Council of the VII convocation No. 42-30/19 of 27 March 2019.**
	Name of the conservation measure	Rational use and storage of production and household waste
	Relevance of the environmental measure to the main water and environmental issues	№ 4. Littering with plastic and other solid waste.

	Implementation of environmental protection measures and their financing	Expenditures from the regional environmental protection fund in 2019 are planned in the amount of UAH 530.0 thousand: - Purchase of containers for solid waste collection for Kitsmanske municipal solid waste collection centre - UAH 90.0 thousand; - Purchase of containers for the collection of solid waste for the Nyzhnostanivtsi village council of Kitsman district - UAH 50.0 thousand; - Purchase of containers for solid waste collection for the Valyavske village council of Kitsman district - UAH 50.0 thousand; - Purchase of containers for solid waste collection for Tereblechanska rural AH in Hlyboka district - UAH 100.0 thousand; - Purchase of containers for solid waste collection for the Mikhalcha village council of Storozhynets district - UAH 50.0 thousand; - Purchase of containers for solid waste collection for Vyzhnytsia municipal solid waste collection centre - UAH 90.0 thousand; - Purchase of containers for solid waste collection for Zadubrivka village council of Zastavna district - UAH 50.0 thousand; - Purchase of containers for the collection of solid waste for Klishkovetska TG - UAH 50.0 thousand. Due to the underperformance of the forecasted environmental payments to the regional environmental protection fund in 2019, the planned environmental protection measures in the amount of UAH 150.0 thousand remained unfunded. In 2021, 9 events worth UAH 739.1 thousand were financed to purchase containers for solid waste collection in the communities of Chernivtsi Oblast.
	Achieving the goals set	The targets were partially achieved.
120	**Name of the programme/fund/project**	**Comprehensive Environmental Protection Programme "Ecology" in Chernivtsi Oblast for 2019-2021 (as amended), approved by the decision of the XXX session of the Regional Council of the VII convocation No. 42-30/19 of 27 March 2019.**
	Name of the conservation measure	Rational use and storage of production and household waste
	Relevance of the environmental measure to the main water and environmental issues	№ 4. Littering with plastic and other solid waste.

	Implementation of environmental protection measures and their financing	Five events were financed from the state budget: -Acquisition and installation of a waste sorting line at the landfill of Vyzhnytsia municipal solid waste management company in the amount of UAH 5,000.0 thousand; - Acquisition of a garbage truck for household waste disposal in Vyzhnytsia municipal community in the amount of UAH 2,300.0 thousand; - Purchase of containers for separate collection of solid waste in Vyzhnytsia municipal community - UAH 3,250.0 thousand; - Purchase of containers for a garbage truck for the collection of solid waste at Hertsaivska municipal heating company - UAH 1305.0 thousand; - Purchase of containers for separate collection of solid waste in the settlements of Kitsmanska urban AH - UAH 1200.0 thousand.
	Achieving the goals set	The set goals have been achieved.
121	**Name of the programme/fund/project**	**Comprehensive Programme for Environmental Protection "Ecology" in Chernivtsi Oblast for 2019-2021 (as amended), approved by the decision of the XXX session of the Regional Council of the VII convocation No. 42-30/19 of 27 March 2019.**
	Name of the conservation measure	Preservation of the nature reserve fund
	Relevance of the environmental measure to the main water and environmental issues	№7. Improving the environmental situation and increasing the level of environmental safety.
	Implementation of environmental protection measures and their financing	UAH 1314654.0 was used from the regional fund to clean up the silt sediments of the Chortoryisky bird sanctuary in the Brusnytsia TG, Vyzhnytsia district, Chernivtsi region (reconstruction).
	Achieving the goals set	The set goals have been achieved.
122	**Name of the programme/fund/project**	**Comprehensive environmental protection programme "Ecology" in Chernivtsi region for 2019-2021 (as amended), approved by the decision of the XXX session of the Regional Council of the VII convocation No. 42-30/19 of 27 March 2019.**
	Name of the conservation measure	Science, information, environmental education, logistics of environmental organisations
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances. № 4. Littering with plastic and other solid waste. № 5. Hydromorphological changes. № 6. Spread of invasive species. № 7. Issues related to the relationship between water quantity and quality associated with climate change. № 8. Floods and floods, flooding of territories. № 9. Droughts and water shortages.

	Implementation of environmental protection measures and their financing	In 2019, UAH 1645,104 thousand was allocated from the regional environmental protection fund for 17 environmental measures, including: - Modernisation of the environmental and educational centre of the Vyzhnytskyi National Nature Park in the amount of UAH 95,098 thousand; - Material and technical support of the Chernivtsi Regional Centre for Ecological and Naturalistic Creativity of Pupils in the amount of UAH 96.0 thousand; - Material and technical support of the environmental and educational centre on the basis of Novoselytsia secondary school No. 3 of Novoselytsia City Council in the amount of UAH 100.00 thousand; - Measures to equip the Regional Orhus Environmental Information Centre at the Department of Ecology and Natural Resources of the Regional State Administration in the amount of UAH 60,778 thousand; - Establishment of an environmental education centre on the basis of Kamianske Secondary School in Storozhynets District - UAH 100.0 thousand; - To support the activities of the environmental and educational centre based at the Department of Botany, Forestry and Gardening of the Yuriy Fedkovych Chernivtsi National University - UAH 25.0 thousand; - Preparation of design and estimate documentation for the overhaul of the external sewerage network of the Emergency Medical Care Hospital - UAH 40.0 thousand; - Production of the monograph "Regional Report on the State of the Environment in Chernivtsi Oblast in 2018" - UAH 50.0 thousand; - Implementation of the research work "Scientific substantiation of the principles of planning sustainable quality development of the Prut River within the Chernivtsi region" Yuriy Fedkovych Chernivtsi National University - UAH 243,658 thousand; - Provision of components for automated hydrometeorological stations of the AIVS "Prykarpattya" - UAH 100.0 thousand for the Prut and Siret BWR. In 2021, 5 events totalling UAH 305.0 thousand were funded: - Purchase of material and technical means for effective implementation of operational control measures by the State Environmental Inspectorate of the Carpathian District - UAH 100.0 thousand; - Implementation of the research work "Scientific substantiation of the principles of planning for sustainable quality development of landscapes of the Siret riverbed and floodplain within the Chernivtsi region" - UAH 110.0 thousand; - Development of the draft Comprehensive Environmental Protection Programme "Ecology" in Chernivtsi Oblast for 2022-2024 - UAH 50.0 thousand; - Production of the monograph "Regional Report on the State of the Environment in Chernivtsi Oblast in 2020" - UAH 45.0 thousand.

	Achieving the goals set	The set goals have been achieved.
123	**Name of the programme/fund/project**	**The city of Chernivtsi.** **"Chernivtsi Municipal Water Supply Project, Stage 1".**
	Name of the conservation measure	Conversion of the chlorination system to hypochlorite at the Vynok water treatment plant under Phase 1 of the Project "Main water supply system from the 3rd lift station "Shubranets" to the Prut River, main water supply system after the Prut River, pipes in the landslide zone"
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances.
	Implementation of environmental protection measures and their financing	An agreement was signed for the design, supply and installation of equipment for the production of sodium hypochlorite. The EU Neighbourhood Investment Fund (NIF) funded consultancy services worth EUR 1.9 million. Due to the declaration of force majeure (martial law) by the Implementation Consulate. The Implementation Consultant completed the development of design and estimate documentation within the available funding, received positive conclusions from the State Enterprise "Ukrderzhbudekspertyza", completed the development of tender documents, held the fourth tender and prepared the relevant contract. The project implementation has been delayed, which, in turn, will lead to the need to extend the project implementation period and adjust the schedule of its activities.
	Achieving the goals set	The goal was partially achieved.
124	**Name of the programme/fund/pr**	**The city of Chernivtsi.** **"Chernivtsi Municipal Water Supply Project, Stage 2 (Municipal Climate Protection Programme II)".**
	Name of the conservation measure	Engage consultancy support in providing engineering and design expertise to ChernivtsiVodokanal to ensure that the project objective is achieved
	Relevance of the environmental measure to the main water and environmental issues	№ 1. Pollution by organic substances. № 2. Pollution by nutrients. № 3. Pollution by hazardous substances.

	Implementation of environmental protection measures and their financing	In accordance with the Resolution of the Cabinet of Ministers of Ukraine No. 1700-r dated 23 December 2021 "On Attracting a Loan and Grant from the KfW", a draft Loan and Grant Agreement in the amount of EUR 23.6 million was approved for the project. Expert services for the implementation of the Municipal Climate Protection Programme II were financed by the Special Fund provided by the Government of the Federal Republic of Germany in the amount of EUR 752.5 thousand. The geodetic and geological survey company has completed its work at the facilities and submitted the relevant reports. Surveys on the technical condition of the current water supply and sewage facilities included in the priority investment programme were completed. The consultant prepared a design specification, with 80% of the approval by Chernivtsi Vodokanal. The consultant has started developing design and estimate documentation for the project's investment activities.
	Achieving the goals set	The targets were partially achieved.

ANNEX 10 (M5.3.4). List of national target programmes, regional and local programmes, funds, state investment projects, international technical assistance projects, regional and local infrastructure projects, etc.

Name of the programme/fund/project	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine No. 4836-VI of 24 May 2012 (hereinafter referred to as the Dnipro-2021 Programme).**

Name of the conservation measure	Ensuring the development of land reclamation and improvement of the ecological condition of irrigated and drained lands
Relevance of the environmental measure to the main water and environmental issues	Pollution by nutrients. Issues related to the relationship between water quantity and quality associated with climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme provided funding in the amount of UAH 30,090.49 million for the implementation of measures to ensure the development of land reclamation and improve the environmental condition of irrigated and drained land for the entire period of implementation from 2013 to 2021 (9 years). This measure was to continue the implementation of the previously existing state target programme "Comprehensive Programme for the Development of Land Reclamation and Improvement of the Ecological Condition of Irrigated and Drained Lands in 2001-2005 and Forecast to 2010". The measure was to ensure the development of land reclamation and improvement of the ecological condition of irrigated and drained lands, in particular, restoration of the water management and reclamation complex, reconstruction and modernisation of reclamation systems and their facilities, engineering infrastructure of reclamation systems with the creation of integrated technological complexes, introduction of new methods of irrigation and land drainage, application of water and energy-saving environmentally safe irrigation and water regulation regimes. The planned action was implemented over 9 years, in two stages: 2013-2016 and 2017-2021. Since the start of the Dnipro-2021 Programme, as of 1 January 2019, 26% of the envisaged need has been allocated from budgets of all levels and other sources, and as of 1 January 2020, UAH 5115.383 million (17%) has been allocated, which has led to a significant failure to complete its tasks and activities on time. Low levels of actual funding for tasks and activities from all sources of funding.
Achievement of set goals	The set goals were not achieved.
Name of the programme/fund/project	**"The National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021, approved by the Law of Ukraine No. 4836-VI of 24 May 2012.**
Name of the conservation measure	Priority provision of centralised water supply to rural settlements that use imported water
Relevance of the environmental measure to the main water and environmental issues	Issues related to the relationship between water quantity and quality in relation to climate change.

	Droughts and water shortages.
Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme provided funding for the measure in the amount of UAH 1668.6 million for the entire implementation period from 2013 to 2021 (9 years). This event was a continuation of the implementation of the state target programme "Comprehensive Programme for Priority Provision of Rural Settlements Using Imported Water with Centralised Water Supply in 2001-2005 and Forecast to 2010". The event was supposed to improve the technological level of water use, introduce low-water and waterless technologies, develop more rational water use standards, build, reconstruct and modernise water supply systems, and provide Ukrainian settlements that used imported water with drinking water in sufficient quantity and of appropriate quality. The implementation of the planned event was carried out over 9 years, in two stages: 2013-2016 and 2017-2021. As of 1 January 2020, UAH 283.6 million has been allocated from budgets of all levels and other sources since the start of the Dnipro-2021 Programme, which has led to a significant failure to complete its tasks and activities on time. For example, the State Agency of Water Resources of Ukraine used only UAH 205,000 thousand (4.2% of the total expenditures for 2020) to implement this measure under the Dnipro-2021 Programme in 2020, according to the departmental and programme classifications of expenditures and lending to the state budget.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
Name of the conservation measure	Protecting rural settlements and agricultural land from the harmful effects of water
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Issues related to the relationship between water quantity and quality in relation to climate change. Floods and floods, flooding of territories.
Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme envisaged allocating UAH 1571.48 million for the implementation of measures to protect rural settlements and agricultural land from the harmful effects of water for the entire implementation period from 2013 to 2021 (9 years). This measure was to continue the implementation of the previously existing Comprehensive Programme for Protection against Harmful Effects of Water from Rural

	Settlements and Agricultural Land in Ukraine in 2001-2005 and Forecast to 2010. The event included work on bank protection and regulation of river channels, construction and reconstruction of hydraulic structures, protective dams, polders, flood control reservoirs, clearing river channels, arranging water protection zones and coastal protection strips, developing schemes for comprehensive flood protection of territories from the harmful effects of water, improving methods and technical devices for hydrometeorological observations and flood forecasting. The implementation of the planned event was carried out over 9 years, in two stages: 2013-2016 and 2017-2021. As of 1 January 2020, UAH 267.152 million has been allocated from the budgets of all levels and other sources since the start of the Dnipro-2021 Programme.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**"National Target Programme for the Development of Water Management and Environmental Rehabilitation of the Dnipro River Basin for the Period up to 2021", approved by the Law of Ukraine of 24 May 2012, No. 4836-VI.**
Name of the conservation measure	Operation of the state water management complex and management of water resources, including environmental rehabilitation of the Dnipro River basin and improvement of drinking water quality
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Hydromorphological changes. Spread of invasive species. Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The event was implemented over 9 years, in two stages: 2013-2016 and 2017-2021. Stage 2 is particularly noteworthy, during which it was planned to: implement a system of integrated water resources management based on the basin principle by developing and implementing river basin management plans, applying an economic model of targeted financing of activities in river basins, establishing river basin councils, as well as enhancing the role of existing and establishing new basin water resource management departments; implement water-saving technologies that ensure the improvement of the functioning of the water management and reclamation complex; improve the Since the beginning of the Dnipro-2021 Programme, as of 1 January 2019, 26% of the envisaged need has been

	allocated from budgets of all levels and other sources, and as of 1 January 2020, 17% of the envisaged need has been allocated. State funds are allocated mainly for the costs of consumption in the water sector, labour remuneration, and utilities, the share of which was financed from the state budget in 2020, for example, as follows: from the general fund - 93.5% (UAH 2092158.5 thousand), from the special fund - 81.1% (UAH 2261343.4 thousand). Total state budget expenditures for financing the Dnipro-2021 Programme in 2020 amounted to UAH 5022671.0 thousand. The lion's share of all funds is used for the operation of the state water management complex and water resources management - UAH 4,561,352.5 thousand (90.8%). Total expenditures for the operation of the water sector in 2020 amounted to UAH 435,3501.9 thousand (86.7%) of total expenditures. At the same time, UAH 144620 thousand was allocated for the development of the water sector from the state fund and UAH 524549.1 thousand from the special fund, which totalled UAH 669169.1 thousand (13.3%) of the expenditures for the entire Programme.
Achievement of set goals	Partially.
Name of the programme/fund/project	**The National Target Programme "Drinking Water of Ukraine for 2011-2020" was approved by the Law of Ukraine No. 2455-IV dated 03.03.2005.**
Name of the conservation measure	Implementation of the state policy on development and reconstruction of centralised water supply and sewerage systems; protection of drinking water sources; bringing the quality of drinking water to the requirements of regulatory acts; regulatory support in the field of drinking water supply and sewerage; development and implementation of research and development developments using the latest materials, technologies, equipment and devices
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Hydromorphological changes. Spread of invasive species. Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The estimated amount of funding for the Programme was UAH 9,471.7 million (in 2010 prices), of which UAH 3,004.3 million was allocated from the state budget and UAH 6,467.4 million from other sources. Main objectives of the Programme: - Bringing sanitary protection zones and water protection zones of drinking water sources into compliance with regulatory requirements, assessing the environmental and hygienic condition of drinking

	water sources for compliance with the established requirements; - inventory of sewage treatment facilities; - construction and reconstruction of water and sewage treatment facilities to reduce the amount of untreated wastewater discharged into water bodies and to recycle sediments; - construction and implementation of drinking water treatment plants and bottling stations using the latest materials, technologies, equipment, instruments and research and development; - Developing schemes to optimise the operation of centralised water supply systems; - equipping water and wastewater quality control laboratories with modern control and analytical equipment; - Bringing the regulatory framework for drinking water supply and wastewater disposal in line with EU standards, taking into account national peculiarities, including in terms of increased liability for violations of environmental pollution standards, primarily discharges by industrial enterprises into water bodies; - Carrying out comprehensive research and development activities using the latest technologies, equipment, materials, and devices, the use of which is aimed, in particular, at energy and resource conservation, improving the quality of drinking water and wastewater treatment, and implementing such developments. Funding for the last 3 years: 2018 - UAH 200 million (the need is UAH 1.3 billion); 2019 - no funds were allocated at all; 2020: no funds were allocated at all. Lack of funding for the project from the state budget.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**The State Target Programme for the Development of Land Relations in Ukraine for the period up to 2020 was approved by the Cabinet of Ministers of Ukraine on 17 June 2009, No. 743-r.**
Name of the conservation measure	Protection and rational use of land
Relevance of the environmental measure to the main water and environmental issues	Pollution by nutrients. Pollution by hazardous substances. Spread of invasive species. Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.

Implementation of environmental protection measures and their financing	Excessive ploughing of agricultural land leads to a disruption of the ecologically balanced ratio of agricultural, nature reserve and other environmental, health, recreational, historical, cultural, forestry, water fund lands, and an increase in the area of degraded, low-productive and technologically polluted land. The Ministry of Agrarian Policy and Food of Ukraine (MAPF), as the main spending unit of the state budget, and the StateGeoCadastre, as a lower-level spending unit, were responsible for implementing the Programme. As of 1 January 2021, 500,000 hectares of degraded, underutilised and technologically contaminated land are subject to conservation, 143,000 hectares of disturbed land need reclamation, and 294,000 hectares of underutilised land need improvement. Ineffective management by the Ministry of Agrarian Policy as the main spending unit and the StateGeoCadastre as a lower-level spending unit resulted in the liquidation of the Ministry of Agrarian Policy and the reform of the StateGeoCadastre by the Government in 2020. Lack of funding for the Programme from the state budget in this area in 2018-2020.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Environmental Protection Funds (hereinafter referred to as EPFs)**
Name of the conservation measure	Environmental protection
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Littering with plastic and other solid waste. Hydromorphological changes. Spread of invasive species. Issues related to the relationship between water quantity and quality in relation to climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	Currently, Ukraine has a three-tier system of environmental funds, consisting of the State Environmental Fund, regional and local (city, town and village) environmental funds. At the regional level, the regional and local environmental funds are a significant source of funding for environmental protection measures. The environmental funds are used for targeted financing of environmental protection measures in accordance with the List of activities that are considered to be environmental protection measures approved by the Cabinet of Ministers of Ukraine on 17.09.1996 No. 1147.

	In accordance with the Law of Ukraine "On Environmental Protection" dated 25.06.1991 No. 1264-XII (as amended on 18.12.2019), financing of environmental protection measures, including water resources, is carried out at the expense of the State Budget of Ukraine, local budgets, funds of enterprises, institutions and organisations, National Environmental Protection Agency funds, voluntary contributions and other funds. The CMU Resolution "On Approval of the Regulation on the State Environmental Protection Fund" dated 7.05.1998 No. 634 (as amended by the CMU Resolution No. 1065 dated 4.12.2019), according to which the State Environmental Protection Fund became part of the State Budget of Ukraine. According to 2018 data, the share of environmental revenues (rent, environmental tax, special permits, fines) in the state budget was over UAH 52 billion, of which UAH 4.6 billion was allocated to support the activities of the relevant central government agencies and environmental control, and only UAH 4.2 billion, or just 8% of environmental funds, was allocated to implement environmental protection measures. This also includes the allocation of funds for the national budget programmes Dnipro-2021 and Drinking Water-2020. If these UAH 4.2 billion are divided among agencies and entities, the following picture emerges; the State Agency of Water Resources (38%), local budgets (24%), SAUEZM (22%), the Ministry of Ecology (now the Ministry of Environment) (9%), the State Environmental Inspectorate (4%), and the State Service of Geology and Mineral Resources (2%) received the most environmental funds. At present, Ukraine lacks monitoring of the effectiveness of environmental protection measures, a system of proper planning, inefficient use of funds, and the possibility of financial support for environmental modernisation by business entities themselves.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Regional Programme for the Development of the Water Sector in Odesa Oblast for the period up to 2021, approved by the Odesa Oblast Council on 18 September 2013, No. 882-VI.**
Name of the conservation measure	Increasing the efficiency of the use of the state reclamation network and on-farm reclamation systems of the region, increasing crop yields, improving the ecological state of rural areas and living conditions of the population; implementing state and regional water policy, meeting the needs of the population for quality water and the region's economic sectors for water resources; inventorying and certifying water bodies, creating a register of hydraulic structures and their owners in the basins
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes.

	Issues related to the relationship between water quantity and quality in relation to climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	Stages of the Programme implementation: Stage I - 2013-2016, Stage II - 2017-2021. The total amount of financial resources required for the implementation of the Programme is UAH 2,969,160,698 thousand, including: state budget funds - UAH 1,656,100,698 thousand, local budget funds - UAH 450,324 thousand, funds from other sources - UAH 862,736 thousand. Due to the lack of funding, many performance indicators could not be achieved. The expenditures of the regional water management department for the implementation of functional tasks, in particular, the maintenance of the water management and reclamation complex in terms of the operation of national reclamation systems, were practically funded, and local budget funds were sufficient to address extremely urgent problems. Separate state investments were allocated to address the issue of water supply to the region's settlements that use imported water.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Regional Programme for the Development of the Water Sector in Odesa Oblast for the period up to 2021, approved by the Odesa Oblast Council on 18 September 2013, No. 882-VI.**
Name of the conservation measure	Construction of the Bolgrad Group Water Supply System for Agricultural Water Supply in Odesa Oblast
Relevance of the environmental measure to the main water and environmental issues	Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The implementation of this measure is specified in paragraph 2 of the Programme - "Priority provision of centralised water supply to rural settlements that use imported water". The main executor of the event is the Odesa Joint Directorate for the Construction of Water Management Facilities, with a deadline of one year (2021). The planned amount of funding envisaged by the programme is UAH 236,580.7 thousand in total, of which the state budget funds - UAH 216,580.7 thousand; the regional budget funds - UAH 20,000 thousand. In 2021, this event was not funded.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Regional Programme for the Development of the Water Sector in Odesa Oblast for the period up to 2021,**

	approved by the Odesa Oblast Council on 18 September 2013, No. 882-VI.
Name of the conservation measure	Construction of drinking water supply systems
Relevance of the environmental measure to the main water and environmental issues	Issues related to the relationship between water quantity and quality in relation to climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The implementation of this measure is specified in paragraph 2 of the Programme - "Priority provision of centralised water supply to rural settlements that use imported water". The main executor of the event is the Odesa United Directorate for the Construction of Water Management Facilities. The project envisages the construction and reconstruction of group water pipelines (treatment facilities, main water pipelines, distribution networks), construction and reconstruction of local water pipelines. The planned amount of funding for the event is envisaged by the programme: a total of UAH 21,000 thousand, of which the state budget funds - UAH 18,000 thousand; local budget funds - UAH 3,000 thousand. This event was not funded in 2019.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Regional Programme for the Development of the Water Sector in Odesa Oblast for the period up to 2021, approved by the Odesa Oblast Council on 18 September 2013, No. 882-VI.**
Name of the conservation measure	Establishment and reconstruction of production facilities for the operation of group water supply systems
Relevance of the environmental measure to the main water and environmental issues	Issues related to the relationship between water quantity and quality in relation to climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The implementation of this measure is specified in paragraph 2 of the Programme - "Priority provision of centralised water supply to rural settlements that use imported water". The main executor of the event is the State Enterprise "Odesa United Directorate for the Construction of Water Management Facilities". The event is envisaged under the task "Improvement of the regulatory framework and organisational structure of the water management complex to ensure water supply and sewerage in low-water regions and areas where water quality does not meet environmental safety and sanitary standards".

	The planned amount of funding for the event provided for in the programme is UAH 1000 thousand from the state budget. This event was not funded in 2019.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Regional Programme for the Development of the Water Sector in Odesa Oblast for the period up to 2021, approved by the Odesa Oblast Council on 18 September 2013, No. 882-VI.**
Name of the conservation measure	Construction, reconstruction and overhaul of flood protection dams
Relevance of the environmental measure to the main water and environmental issues	Issues related to the relationship between water quantity and quality in relation to climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The implementation of this measure is specified in paragraph 3 of the Programme - "Protection of rural settlements and agricultural land from the harmful effects of water". The event is part of the task "Construction, reconstruction and overhaul of hydraulic structures, flood protection dams, bank protection structures, clearing and regulation of river and waterways, restoration and maintenance of favourable hydrological conditions and sanitary condition of rivers and waterways". The planned amount of funding for the event provided for in the programme is UAH 490 thousand from the state budget. Actual funding for this measure in 2019 amounted to UAH 5,189.4 thousand. Funding was actually provided under the budget programme 2407070 "Protection of rural settlements and agricultural land from the harmful effects of water".
Achievement of set goals	Achieved.
Name of the programme/fund/project	**Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019, No. 1165-VII.**
Name of the conservation measure	Priority measures to clear the Gromadsky Canal to improve water exchange between Katlabukh and Safyany lakes
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The implementation of this measure is specified in paragraph 1.2.1 of the Programme.

	The event is to be financed from the regional budget, in accordance with Article 85 of the Budget Code of Ukraine, in the amount of UAH 5,880 thousand. This event is not included in the list of events funded in 2020 under the Programme. According to the Explanatory Note to the Programme from the Department of Ecology and Natural Resources of the Odesa Regional State Administration, due to the lack of funding from the regional budget, all other environmental measures of the Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019 No. 1165-VII (as amended on 3 March 2020 No. 1240-VII and 10 August 2020 No. 1384-VII), were not implemented in 2020. The main executors of the event are the Department of Finance of the Regional State Administration (in terms of inter-budgetary transfers) and the Izmail District State Administration. Planned funding: total - UAH 6,860 thousand, of which the regional budget - UAH 5,160 thousand; non-budgetary sources - UAH 1,700 thousand (other sources (compensation funds of the international technical assistance project (MIS ETC CODE 995). In fact, this event was not funded.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019, No. 1165-VII.**
Name of the conservation measure	Development of project documentation to improve the hydrological condition of the Karasulak River (engineering surveys, development of project documentation, environmental impact assessment of the planned activities, expert review, approval of project documentation)
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The implementation of this measure is described in paragraph 1.2.3. The event is to be financed from the regional budget, in accordance with Article 85 of the Budget Code of Ukraine - UAH 2,000,000 and from the budgets of villages, towns and cities of district significance - UAH 520,000. This event is not included in the list of events funded in 2020 under the Programme. According to the Explanatory Note to the Programme from the Department of Ecology and Natural Resources of the

	Odesa Regional State Administration, due to the lack of funding from the regional budget, all other environmental measures of the Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019 No. 1165-VII (as amended on 3 March 2020 No. 1240-VII and 10 August 2020 No. 1384-VII), were not implemented in 2020. The event is organised by the Bolgrad District State Administration, the Black Sea and Lower Danube River Basin Water Resources Management Authority, and the Department of Ecology and Natural Resources of the Regional State Administration. In fact, this event was not funded.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019, No. 1165-VII.**
Name of the conservation measure	Development of project documentation to improve the hydrological condition of the Kyrgyz-China River (engineering surveys, development of project documentation, environmental impact assessment of the planned activities, expert review, approval of project documentation)
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The implementation of this measure is described in paragraph 1.2.4. The event is to be financed from the regional budget, in accordance with Article 85 of the Budget Code of Ukraine - UAH 3,200 thousand and from the budgets of villages, towns and cities of district significance - UAH 400 thousand. This event is not included in the list of events funded in 2020 under the Programme. According to the Explanatory Note to the Programme from the Department of Ecology and Natural Resources of the Odesa Regional State Administration, due to the lack of funding from the regional budget, all other environmental measures of the Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019 No. 1165-VII (as amended on 3 March 2020 No. 1240-VII and 10 August 2020 No. 1384-VII), were not implemented in 2020. The main executors of the event are the Ostrovne Village Council of Artsyz district, the Black Sea and Lower Danube River Basin Water Resources Management, and the

	Department of Ecology and Natural Resources of the Regional State Administration. In fact, this event was not funded.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019, No. 1165-VII.**
Name of the conservation measure	Clearing and reconstruction of a complex of culverts and barrier structures along the Malyi Taimenchuk River (KSS SRZ bay) in the territory of Kiliya community
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	The implementation of this measure is described in clause 1.2.5. The event is to be financed from the regional budget, in accordance with Article 85 of the Budget Code of Ukraine - UAH 2,000,000. This event is among the list of activities financed in 2020 under the Programme. According to the Explanatory Note to the Programme from the Department of Ecology and Natural Resources of the Odesa Regional State Administration, in 2020, the following environmental measure was financed from the regional budget: "Clearing and reconstruction of a complex of culverts and barrier structures along the Malyi Taimenchuk River (KSS SRZ backwater) on the territory of Kiliya ATC". The main executor of the event is the Department of Finance of the Regional State Administration (in terms of interbudgetary transfers), Kilia District State Administration. In fact, UAH 185,941 thousand was financed for this event.
Achievement of set goals	Achieved.
Name of the programme/fund/project	**Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019, No. 1165-VII.**
Name of the conservation measure	Engineering surveys, analysis of the current state of the Lebyazhe Lake oil residue storage facility and development of recommendations for further management of the facility
Relevance of the environmental measure to the main water and environmental issues	Pollution by hazardous substances. Floods, floods, flooding of territories.

Implementation of environmental protection measures and their financing	The event will be funded from other sources - UAH 800 thousand (compensation funds from the international technical assistance project (MIS ETC CODE 995). This event is not included in the list of events funded in 2020 under the Programme. According to the Explanatory Note to the Programme from the Department of Ecology and Natural Resources of the Odesa Regional State Administration, due to the lack of funding from the regional budget, all other environmental measures of the Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019 No. 1165-VII (as amended on 3 March 2020 No. 1240-VII and 10 August 2020 No. 1384-VII), were not implemented in 2020. The main executor of the event is the Department of Ecology and Natural Resources. In fact, this event was not funded.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019, No. 1165-VII.**
Name of the conservation measure	Development of project documentation for the clearing of gullies in Vilkovo
Relevance of the environmental measure to the main water and environmental issues	Littering with plastic and other solid waste Hydromorphological changes. Issues related to the relationship between water quantity and quality in relation to climate change.
Implementation of environmental protection measures and their financing	The event will be financed from other sources - UAH 1,000 thousand (compensation funds from the international technical assistance project (MIS ETC CODE 995). This event is not included in the list of events funded in 2020 under the Programme. According to the Explanatory Note to the Programme from the Department of Ecology and Natural Resources of the Odesa Regional State Administration, due to the lack of funding from the regional budget, all other environmental measures of the Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019 No. 1165-VII (as amended on 3 March 2020 No. 1240-VII and 10 August 2020 No. 1384-VII), were not implemented in 2020. The main executor of the event is the Department of Ecology and Natural Resources. In fact, this event was not funded.

Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019, No. 1165-VII.**
Name of the conservation measure	Clearing Anaya and Dolskaya beams and protecting part of the territory of Suvorovo village in Izmail district from flooding
Relevance of the environmental measure to the main water and environmental issues	Littering with plastic and other solid waste Hydromorphological changes. Issues related to the relationship between water quantity and quality in relation to climate change. Floods and floods, flooding of territories
Implementation of environmental protection measures and their financing	The event will be funded from the regional budget in the amount of UAH 2,720 thousand. This event is among the list of activities funded in 2020 under the Programme. According to the Explanatory Note to the Programme from the Department of Ecology and Natural Resources of the Odesa Regional State Administration, this measure is still being implemented. The main executor of the event is the Department of Finance of the Regional State Administration (in terms of interbudgetary transfers), Suvorivsky village council of Izmail district. In fact, this event was financed in the amount of UAH 11231.1 thousand at the expense of the regional budget.
Achievement of set goals	Partially.
Name of the programme/fund/project	**Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019, No. 1165-VII.**
Name of the conservation measure	Development of land management documentation on the organisation and establishment of boundaries of territories and objects of the nature reserve fund (NRF) and measures to enter information into the State Land Cadastre
Relevance of the environmental measure to the main water and environmental issues	Littering with plastic and other solid waste. Spread of invasive species.
Implementation of environmental protection measures and their financing	The event will be funded from the regional budget in the amount of UAH 1,100 thousand. This event is among the list of activities funded in 2020 under the Programme. According to the Explanatory Note to the Programme from the Department of Ecology and Natural Resources of the

	Odesa Regional State Administration, this measure is still being implemented. The main executor of the event is the Department of Ecology and Natural Resources of the Regional State Administration. In fact, this event was financed in the amount of UAH 524,948 thousand at the expense of the regional budget.
Achievement of set goals	Partially.
Name of the programme/fund/project	**Odesa Regional Comprehensive Environmental Protection Programme for 2020-2021, approved by the decision of the Odesa Regional Council of 20 December 2019, No. 1165-VII.**
Name of the conservation measure	Improvement of the hydrological condition, reconstruction of the beam in the village of Stara Nekrasiva, Safianske village council, Izmail district, Odesa region
Relevance of the environmental measure to the main water and environmental issues	Hydromorphological changes. Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.
Implementation of environmental protection measures and their financing	Funding for the event for 2021 is provided at the expense of a subvention from the local budget - UAH 4 152 025. This event is among the list of activities funded in 2021 under the Programme. In fact, this event was financed in the amount of UAH 74,879.
Achievement of set goals	Partially.
Name of the programme/fund/project	**Comprehensive Programme for Environmental Protection, Rational Use of Natural Resources and Environmental Safety in Odesa Oblast for 2014-2019, approved by the Regional Council on 21 February 2014, No. 1071-VI.**
Name of the conservation measure	Achievement of environmental safety and rationalisation of natural resources use, protection and improvement of the environment in the region, including protection and rational use of water resources; protection and rational use of land resources, protection and rehabilitation of soil, groundwater and surface water; conservation of biological and landscape diversity, development of the nature reserve fund and formation of the ecological network.
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Littering with plastic and other solid waste. Hydromorphological changes. Spread of invasive species.

	Issues related to the relationship between water quantity and quality in relation to climate change. Floods and floods, flooding of territories. Droughts and water shortages.
Implementation of environmental protection measures and their financing	In the last, final year of 2019, the Programme's resources were to be allocated for environmental protection measures in the amount of UAH 28950.6 thousand. The following 3 sections were of particular interest among the Programme's implementation areas: - protection and rational use of water resources; - protection and rational use of land resources, protection and rehabilitation of soil, groundwater and surface water; - preservation of biological and landscape diversity, development of the nature reserve fund and formation of an ecological network. To implement measures to improve the condition of water bodies in 2019, UAH 3,298,037 thousand was allocated from the regional environmental protection fund for the construction and reconstruction of sewage treatment plants, sewage treatment stations, etc. In 2019, UAH 5654.3 thousand was allocated from the regional emergency response fund for clearing river channels and flood protection, and UAH 5584.317 thousand was financed. In 2019, UAH 14155.24 thousand was allocated from the regional environmental protection fund to address environmental issues in the region, and UAH 9700.6 thousand was allocated.
Achievement of set goals	Partially.
Name of the programme/fund/project	**Regional Programme for the Development of Land Relations and Land Protection for 2016-2020, approved by the Odesa Regional Council on 21 December 2015, No. 39-VII.**
Name of the conservation measure	Rational use and protection of land resources
Relevance of the environmental measure to the main water and environmental issues	Pollution by nutrients.
Implementation of environmental protection measures and their financing	The total amount of financial resources required for the implementation of the Programme is UAH 40870.8 thousand, all at the expense of the local budget and the regional budget. In 2019, UAH 4,079.72 thousand was allocated from the regional budget for the implementation of the Programme's activities. Unfortunately, the work on this project, including the surveying of the land fund boundaries, which began in 2017, was not completed due to lack of funding.

Achievement of set goals	Not achieved.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region" for 2021-2024, approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**
Name of the conservation measure	Improvement of drinking water supply sources
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	The Programme's activity area is Protection of drinking water sources. The indicator of the measure is the number of water intakes where sanitary protection zones for drinking water sources will be improved. According to the Programme, there should be 88 such water intakes. The event is planned to be implemented in stages: 2021 - 12 water intakes, 2022 - 24, 2023 - 26 and 2024 - 26 water intakes. The event is financed from district and city budgets (UAH 16,400.0), as well as from the budgets of villages, towns, cities of district significance, territorial communities (UAH 13,100.0) and other sources (UAH 20,000.0). As of the end of 2021, the planned event was partially completed due to insufficient funding.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region" for 2021-2024, approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**
Name of the conservation measure	Construction and reconstruction of water intake facilities using the latest technologies and equipment
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	The Programme's activity area is Protection of drinking water sources. The indicator of the measure is the number of water intake structures to be built and reconstructed. According to the Programme, there should be 253 such water intake structures. The event is planned to be implemented in stages: 2021 - 36 structures, 2022 - 59, 2023 - 68 and 2024 - 90 structures. The event is financed from district and city budgets (UAH 34,500.0), as well as from the budgets of villages, towns,

	cities of district significance, territorial communities (UAH 11,700.0) and other sources (UAH 48,300.0). As of the end of 2021, the planned event was partially completed due to insufficient funding.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region" for 2021-2024, approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**
Name of the conservation measure	Implementation of drinking water treatment plants in centralised water supply systems, primarily for water supply to pre-schools, schools and hospitals, particularly in rural areas, and arrangement of drinking water bottling points with delivery by special vehicles
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients.
Implementation of environmental protection measures and their financing	The Programme's objective is to bring the quality of drinking water to the established standards. The indicator of the measure is the number of drinking water treatment stations (facilities) in the centralised drinking water supply systems and drinking water bottling points to be implemented. According to the Programme, there should be 36 such stations (facilities). The implementation of the measure is planned in stages: 2021 - 0 structures, 2022 - 9, 2023 - 11 and 2024 - 18 stations. The event is financed from the state budget (UAH 9,000.0), district and city budgets (UAH 33,000.0), as well as from the budgets of villages, towns, cities of district significance, territorial communities (UAH 49,500.0) and other sources (UAH 7,600.0). In 2021, this measure was not funded under the Programme.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**The Regional Programme "Drinking Water of Odesa Region" for 2021-2024 was approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**
Name of the conservation measure	Inventory of sewage treatment plants
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	The Programme's objective is to bring the quality of drinking water to the established standards.

	The indicator of the measure is the number of sewage treatment plants to be inventoried. According to the Programme, there should be 15 such treatment facilities. The measure is planned to be implemented in stages: 2021 - 0 structures, 2022 - 2, 2023 - 4 and 2024 - 9 structures. The event is financed from district and city budgets (UAH 2,000.0), as well as from the budgets of villages, towns, cities of district significance, territorial communities (UAH 3,300.0) and other sources (UAH 4,500.0). In 2021, this measure was not funded under the Programme.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region" for 2021-2024, approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**
Name of the conservation measure	Construction and reconstruction of water and sewage treatment facilities using the latest technologies and equipment
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	The Programme's objective is to bring the quality of drinking water to the established standards. The indicator of the measure is the number of treatment facilities to be built and reconstructed. According to the Programme, there should be 14 such treatment facilities. The event is planned to be implemented in stages: 2021 - 1 structure, 2022 - 3 structures, 2023 - 5 structures and 2024 - 5 structures. The event is funded from the state budget (UAH 260,000.0), district and city budgets (UAH 90,000.0), as well as from the budgets of villages, towns, cities of district significance, territorial communities (UAH 44,600.0), and other sources (UAH 42,000.0). As of the end of 2021, the planned event was partially completed due to insufficient funding.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region" for 2021-2024, approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**
Name of the conservation measure	Development of schemes for optimising the operation of centralised water supply and sewage systems

Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	The Programme's objective is to bring the quality of drinking water to the established standards. The indicator of the measure is the number of schemes for optimising the operation of centralised water supply and sewerage systems to be developed. According to the Programme, there should be 22 such schemes. The event is planned to be implemented in stages: 2021 - 2 schemes, 2022 - 6, 2023 - 6 and 2024 - 8 schemes. The event is financed from district and city budgets (UAH 40,200.0), as well as from the budgets of villages, towns, cities of district significance, territorial communities (UAH 12,400.0) and other sources (UAH 8,210.0). As of the end of 2021, the planned event was partially completed due to insufficient funding.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region" for 2021-2024, approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**
Name of the conservation measure	Equipping water and wastewater quality control laboratories with modern control and analytical equipment
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	The Programme's objective is to bring the quality of drinking water to the established standards. The number of laboratories that will be equipped with modern equipment is an indicator of the measure's implementation. According to the Programme, there should be 8 such treatment laboratories. The event is planned to be implemented in stages: 2021 - 0 laboratories, 2022 - 2, 2023 - 3 and 2024 - 3 laboratories. The event is financed entirely from other sources (UAH 8,500.0). In 2021, this measure was not funded under the Programme.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region" for 2021-2024, approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**

Name of the conservation measure	Construction, reconstruction and repair of centralised water supply networks
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	Programme activity area - Improvement of centralised water supply and sewerage. The measure of the measure is the length of centralised water supply networks to be built, reconstructed and repaired. According to the Programme, the length of such networks will be 478 km. The event is planned to be implemented in stages: 92 km in 2021, 126 km in 2022, 130 km in 2023 and 130 km in 2024. The event is financed from the state budget (UAH 115,000.0), district and city budgets (UAH 56,000.0), as well as from the budgets of villages, towns, cities of district significance, territorial communities (UAH 118,000.0) and other sources (UAH 72,000.0). As of the end of 2021, the planned event was partially completed due to insufficient funding.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region" for 2021-2024, approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**
Name of the conservation measure	Construction, reconstruction, and repair of centralised sewerage networks.
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	Programme activity area - Improvement of centralised water supply and sewerage. The measure of the measure is the length of centralised sewage networks to be built, reconstructed and repaired. According to the programme, the length of such networks will be 165 km. The event is planned to be implemented in stages: 2021 - 26 km, 2022 - 42 km, 2023 - 46 km and 2024 - 51 km. The event is financed from the state budget (UAH 107,500.0), district and city budgets (UAH 42,000.0), as well as from the budgets of villages, towns, cities of district significance, territorial communities (UAH 15,800.0), and other sources (UAH 49,700.0).

	As of the end of 2021, the planned event was partially completed due to insufficient funding.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region" for 2021-2024, approved by the decision of the Odesa Regional Council of 16 April 2021 No. 141-VIII.**
Name of the conservation measure	Overhaul and reconstruction of pumping stations.
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances.
Implementation of environmental protection measures and their financing	Programme activity area - Improvement of centralised water supply and sewerage. The number of stations to be overhauled and reconstructed is an indicator of the measure's implementation. According to the Programme, there will be 24 such stations. The event is planned to be implemented in stages: 2021 - 4 stations, 2022 - 6, 2023 - 6 and 2024 - 8 stations. The event is funded from district and city budgets (UAH 12,100.0), as well as from the budgets of villages, towns, cities of district significance, territorial communities (UAH 11,500.0) and other sources (UAH 10,800.0). As of the end of 2021, the planned event was partially completed due to insufficient funding.
Achievement of set goals	In the process of implementation.
Name of the programme/fund/project	**Regional Programme "Drinking Water of Odesa Region for 2010-2013 and for the period up to 2020", approved by the Regional Council on 10.09.2010, No. 1170-V.**
Name of the conservation measure	Protection and rational use of drinking water sources. Development, reconstruction and construction of centralised water supply and sewerage systems in the region's settlements. Implementation of resource and energy-saving technologies, modern equipment and control devices for drinking water treatment and wastewater treatment at drinking water supply and wastewater disposal enterprises.
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Issues related to the relationship between water quantity and quality in relation to climate change. Droughts and water shortages.

Implementation of environmental protection measures and their financing	The programme was designed for 11 years in 3 stages: Stage 1 - 2010-2013, Stage 2 - 2014-2016; Stage 3 - 2017-2020. The total cost of the Programme amounted to UAH 3894580 thousand, of which the state budget - UAH 2515600.49 thousand, the regional budget - UAH 1102288.66 thousand, local district, city (cities of regional significance) budgets - UAH 250450.17 thousand, other non-budgetary sources - UAH 26240.68 thousand. In 2019, UAH 320,139.2 thousand was allocated for the implementation of the Drinking Water 2020 Programme. These funds were used to modernise 1.7 km of water supply and 0.9 km of sewerage networks; overhaul (reconstruct) 67.0 km of water supply and 27.0 km of sewerage networks; repair 2 water supply pumping stations, 6 sewerage pumping stations, 2 water treatment plants, 5 sewerage treatment plants; replace 3 units of pumping equipment at water supply pumping stations and 4 units of pumping equipment at sewerage pumping stations. of pumping equipment at sewage pumping stations; 84 water towers were repaired (including replacement); 24 artesian wells were constructed; 91 units of pumping equipment were purchased and replaced; 4 drinking water treatment stations were installed (3 pumping complexes in Bolhrad and one in Stari Troiany village, Kiliya district) and 31 design and estimate documents for water supply and sewage activities were prepared.
Achievement of set goals	Not achieved.
Name of the programme/fund/project	**The Programme for Improving the Environmental Situation in Kilia for 2018-2022, approved by the decision of the Kilia City Council dated 31.01.2018 No. 637-VII-30.**
Name of the conservation measure	Measures to restore and maintain a favourable hydrological regime and sanitary condition of water bodies
Relevance of the environmental measure to the main water and environmental issues	Pollution by organic substances. Pollution by nutrients. Pollution by hazardous substances. Littering with plastic and other solid waste. Hydromorphological changes.
Implementation of environmental protection measures and their financing	The estimate of the Programme for Improvement of the Environmental Situation in Kilia for 2018-2020 envisaged UAH 176,439,042 thousand in 2020, subject to co-financing of major projects, such as Construction of Sewage Treatment Plant in Kilia, drinking water supply to Ombria village and raw water pipeline from NS-1 ascent to the treatment plant of the municipal water supply in Kilia, with the State Regional Development Fund.

	Financing for the cleaning (construction) of storm sewers (storm drains) and drainage in the city of Kilia was provided for at the expense of additional revenues. The Programme was financed from the local budget in accordance with the areas of activity and funding amounts.
Achievement of set goals	Partially.

ANNEX 12 Cost-effectiveness analysis of the PoM

Tisza river sub-basin

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
93	**Reconstruction of sewage treatment facilities and networks in the city of Uzhhorod, Uzhhorod territorial community, Uzhhorod district, Zakarpattia region**	**4**	**High**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	143,6	**3**	1453,2	**5**	48.62262, 22.29227
66	**Reconstruction of sewage treatment facilities and networks in Mukachevo, Mukachevo territorial community, Mukachevo district, Transcarpathian region**	**3,75**	**High**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	90	**3**	910,8	**4**	48.43968, 22.72194
59	**Reconstruction of sewage treatment facilities and sewerage network in Berehove, Berehove Territorial Community, Berehove District, Zakarpattia Oblast**	**3,5**	**High**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	24,5	**2**	503	**4**	48.23047, 22.62769
39	**Reconstruction of sewage treatment facilities in Khust, Khust territorial community, Khust district, Zakarpattia region**	**3,5**	**High**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	30	**2**	540	**4**	48.17125, 23.27678
8	**Reconstruction of sewage treatment facilities in Tyachiv, Tyachiv territorial community, Tyachiv district, Zakarpattia region**	**3,25**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	10	**2**	180	**3**	48.00991, 23.55154

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
70	**Reconstruction of sewage treatment facilities in Volovets, Volovets territorial community, Mukachevo district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	5,5	**1**	84,65	**3**	48.71148, 23.16130
60	**Reconstruction of sewage treatment facilities in the village of Velyka Bakta, Berehove territorial community, Berehove district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	1,9	**1**	18,74	**2**	48.16238, 22.65401
14	**Reconstruction of sewage treatment facilities in Vynohradiv, Vynohradiv territorial community, Berehove district, Zakarpattia region**	**3,25**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	25	**2**	450	**3**	48.10532, 23.02495
86	**Reconstruction of sewage treatment facilities in Velykyi Bereznyi, Velykyi Bereznyi Territorial Community, Uzhhorod District, Zakarpattia Oblast**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	7	**1**	84,65	**3**	48.87183, 22.45574
41	**Reconstruction of sewage treatment facilities and sewerage network in Mizhhirya village, Mizhhirya territorial community, Khust district, Transcarpathian region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	9,5	**1**	87,68	**3**	48.51661, 23.50118

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
63	**Reconstruction of sewage treatment plants and sewerage network in Svaliava and Nelipyno village Svaliava territorial community, Nelipyno territorial community, Mukachevo rayon, Zakarpattia oblast**	**3,25**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	20,5	**2**	369	**3**	48.55152, 22.96999
61	**Reconstruction of sewage treatment facilities and sewerage network in Zhdeniyevo, Zhdeniyevo territorial community, Mukachevo district, Transcarpathian region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	1,2	**1**	9,6	**2**	48.77330, 22.97260
18	**Construction of sewage treatment plants and sewerage network in Kobyletska Polyana village, Velykobychkivska territorial community, Rakhiv district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	3,4	**1**	27,2	**2**	48.05545, 24.06545
2	**Reconstruction of sewage treatment facilities in Rakhiv, Rakhiv territorial community, Rakhiv district, Zakarpattia region**	**3,25**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	15,2	**2**	273,6	**3**	48.77389, 22.97283

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
4	**Reconstruction of sewage treatment facilities and sewerage network in Solotvyno, Solotvyno Territorial Community, Tyachiv District, Zakarpattia Region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	9	**1**	72	**3**	47.93902, 23.85335
11	**Reconstruction of sewage treatment facilities and sewerage network, Vyshkovo village, Vyshkovo territorial community, Khust district, Transcarpathian region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	8,4	**1**	67,2	**3**	48.06968, 23.40667
55	**Reconstruction of sewage treatment facilities in Irshava, Irshava territorial community, Khust district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	9,2	**1**	73,6	**3**	48.29545, 23.02869
87	**Reconstruction of sewage treatment facilities in Perechyn, Perechyn territorial community, Uzhhorod district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	6,7	**1**	53,6	**3**	48.73033, 22.45673
83	**Reconstruction of sewage treatment facilities and construction of sewerage network in Mynai village, Kholmkivska territorial community, Uzhhorod district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	3	**1**	24	**2**	48.61059, 22.30985

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
16	**Reconstruction of sewage treatment plants and sewerage network, Chop territorial community, Uzhhorod district, Zakarpattia region**	**3,25**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	10	**2**	129,1	**3**	48.42718, 22.20928
1	**Construction and reconstruction of sewage treatment plants and sewerage network, Yasinya village, Yasinya territorial community, Rakhiv district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	8,5	**1**	68	**3**	48.247592, 24.340986
3	**Construction of sewage treatment plants and sewerage network, Velyky Bychkiv, Velyky Bychkiv territorial community, Rakhiv district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	9,4	**1**	75,2	**3**	47.968381, 23.975636
6	**Construction of sewage treatment facilities and sewerage network in Nyzhnya Apsha village, Solotvyno territorial community, Tyachiv district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	7,3	**1**	58,4	**3**	47.985091, 23.816241
7	**Construction of sewage treatment plants and sewerage network in Teresva, Teresvyanska territorial community, Tyachiv district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	7,6	**1**	60,8	**2**	47.988754, 23.682434

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
10	**Construction of sewage treatment plants and sewerage network in Bushtyno, Bushtyno Territorial Community, Tyachiv District, Zakarpattia Region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	8,6	**1**	125,2	**3**	48.04436, 23.48617
20	**Construction of sewage treatment plants and sewerage network in Dubove, Dubove Territorial Community, Tyachiv District, Zakarpattia Region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	9,7	**1**	77,6	**3**	48.20269, 23.90651
33	**Construction of sewage treatment plants and sewerage network in Tereblya village, Bushtyn territorial community, Tyachiv district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	4	**1**	32	**2**	48.095853, 23.582542
12	**Construction of sewage treatment plants and sewerage network in Sokyrnytsia village, Khust territorial community, Khust district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	5,2	**1**	41,6	**2**	48.113454, 23.373770
43	**Construction of sewage treatment plants and sewerage network in Iza village, Khust territorial community, Khust district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	5,2	**1**	41,6	**2**	48.209218, 23.308114

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
45	**Construction of sewage treatment plants and sewerage network in Rokosovo village, Khust territorial community, Khust district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	4,8	**1**	38,4	**2**	48.202513, 23.175147
29	**Construction of sewage treatment facilities and sewerage network in Synevyr village, Synevyr territorial community, Khust district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	4,8	**1**	38,4	**2**	48.469495, 23.637778
32	**Construction of sewage treatment facilities and sewerage network in Kolochava village, Kolochava territorial community, Khust district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	5	**1**	40	**2**	48.423280, 23.694481
48	**Construction of sewage treatment plants and sewerage network in Keretsky and Bereznyky villages, Keretsky territorial community, Khust district, Transcarpathian region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	7,4	**1**	59,2	**3**	48.47918, 23.22092
56	**Construction of sewage treatment facilities and sewerage network in Ilnytsia village, Irshava territorial community, Khust district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	9	**1**	72	**3**	48.332268, 23.068339

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
57	**Construction of sewage treatment facilities and sewerage network in Zarichchia village, Zarichanska territorial community, Khust district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	4	**1**	32	**2**	48.261508, 22.963815
34	**Construction of sewage treatment plants and sewerage network in Dragovo village, Dragovo territorial community, Khust district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	4,4	**1**	35,2	**2**	48.223328, 23.554804
49	**Construction of sewage treatment facilities and sewerage network in Dovhe village, Dovzhanska territorial community, Khust district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	6,8	**1**	54,4	**3**	48.357555, 23.277363
50	**Construction of sewage treatment plants and sewerage network in Bilky village, Bilky territorial community, Khust district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	8	**1**	64	**3**	48.297795, 23.122460
15	**Construction of sewage treatment facilities and sewerage network in Vylok, Vylok territorial community, Berehove district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	3,3	**1**	26,4	**2**	48.116680, 22.829162

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
53	**Construction of sewage treatment facilities and sewerage network in Velyki Komyaty village, Vynohradiv territorial community, Berehove district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	6,7	**1**	53,6	**3**	48.241188, 22.934421
13	**Construction of sewage treatment plants and sewerage network in Korolevo, Korolevo Territorial Community, Berehove District, Zakarpattia Region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	9,4	**1**	75,2	**3**	48.151206, 23.117705
46	**Construction of sewage treatment plants and sewerage network in Pyiterfolvo village, Pyiterfolvivska territorial community, Berehove district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	2,1	**1**	16,8	**2**	48.056941, 22.920872
67	**Construction of sewage treatment plants and sewerage network in Velyki Luchky, Velyki Luchky Territorial Community, Mukachevo District, Zakarpattia Region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	9,1	**1**	72,8	**3**	48.424852, 22.549030
64	**Construction of sewage treatment plants and sewerage network in Kolchyno village, Kolchyn territorial community, Mukachevo district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	4,3	**1**	34,4	**2**	48.461501, 22.760871

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
72	**Construction of sewage treatment plants and sewerage network in Polyana village, Polyana territorial community, Mukachevo district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	3,7	**1**	115,46	**3**	48.613043, 22.962415
65	**Construction of sewage treatment plants and sewerage network in Chynadiyovo village, Chynadiyivska territorial community, Mukachevo district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	6,9	**1**	55,2	**3**	48.477110, 22.824787
76	**Construction of sewage treatment plants and sewerage network in Velyka Dobron village, Velyka Dobron territorial community, Uzh-horod district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	5,6	**1**	44,8	**2**	48.432040, 22.392946
88	**Construction of sewage treatment plants and sewerage network in Dubrynychi village, Dubrynytsia-Malobereznytsia territorial com-munity, Uzhhorod district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	2,2	**1**	17,6	**2**	48.798768, 22.501979
81	**Construction of sewage treatment facilities on the sewerage network of Serednye village, Serednyanska territorial community, Uzh-horod district, Zakarpattia region**	**2,75**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	3,9	**1**	31,2	**2**	48.537962, 22.501773

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
94	**Construction of sewage treatment facilities and sewerage network in Storozhnytsia village, Kholmkivska territorial community, Uzhhorod district, Zakarpattia region**	**3**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**5**	2,6	**1**	115,46	**3**	48.603922, 22.210748
27	**Construction of sewage treatment facilities and sewerage networks by Novyi Uriad 2006 in Tyachivka village, Tyachiv territorial community, Tyachiv district, Zakarpattia region**	**2,5**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**4**	0,022	**1**	5	**2**	48.56188, 22.73098
78	**Construction of sewage treatment plants and sewerage network by Adeniya LLC in Chopivtsi village, Mukachevo territorial community, Mukachevo district, Zakarpattia region**	**2,5**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**4**	0,016	**1**	10	**2**	48.48595, 22.62609
80	**Construction of sewage treatment facilities and sewerage network by Koshet LLC, Chopivtsi village, Mukachevo territorial community, Mukachevo district, Zakarpattia region**	**2,5**	**Medium**	SWMI 1, SWMI 2, SWMI 3	**3**	**4**	0,011	**1**	12	**2**	48.48595, 22.62609
98	**Construction of a waste recycling plant in the Polyanska territorial community, Uzhhorod rayon, Mukachevo rayon, Khust rayon, Zakarpattia oblast**	**3,25**	**Medium**	SWMI 10	**1**	**5**	200	**4**	291,36	**3**	48.613043, 22.962415

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
99	**Establishment of water protection zones and bank protection strips of water bodies within the Transcarpathian region**	**1,75**	**Low**	SWMI 2, SWMI 4	**2**	**1**	0	**1**	320	**3**	48.496443, 23.185033
68	**Reconstruction of sewage treatment facilities of PJSC "EUROKAR", LLC "RIK" village. Solomonovo, Chop territorial community, Uzhhorod district, Transcarpathian region**	**2**	**Low**	SWMI 1, SWMI 2, SWMI 3	**3**	**2**	1	**1**	30	**2**	48.44832, 22.17716
79	**Reconstruction of sewage treatment facilities and sewerage network of the "Svit Meat" farm, Zhukovo village, Ivanovo territorial community, Mukachevo district, Transcarpathian region**	**2,25**	**Low**	SWMI 1, SWMI 2, SWMI 3	**3**	**3**	0,131	**1**	20	**2**	48.49357, 22.64762
62	**Reconstruction of sewage treatment facilities of LLC "WINE COMPANY SHATO CHIZAI" in Orosiyevo village, Berehove territorial community, Berehove district, Transcarpathian region**	**2,25**	**Low**	SWMI 1, SWMI 2, SWMI 3	**3**	**3**	0,3	**1**	20	**2**	48.16074, 22.80528
89	**Construction of sewage treatment facilities and stormwater drainage networks at Perechyn Timber and Chemical Plant ALC, Perechyn. Perechyn, Perechyn territorial**	**2**	**Low**	SWMI 1, SWMI 2, SWMI 3	**3**	**2**	0,9	**1**	10	**2**	48.72687, 22.47935

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
	community, Uzhhorod district, Transcarpathian region										
5	**Implementation of measures to mitigate channel regulation works on the Tysa River in Solotvyno village, Solotvyno territorial community, Tyachiv district, Transcarpathian region**	**1,5**	**Low**	SWMI 4	**1**	**1**	9	**1**	100	**3**	47.932548, 23.864678
21	**Implementation of measures to mitigate channel regulation works on the Teresva River in Kalyny village, Dubivska territorial community, Tyachiv district, Zakarpattia region**	**1,5**	**Low**	SWMI 4	**1**	**1**	9,8	**1**	96	**3**	48.142853, 23.867089
31	**Implementation of measures to mitigate channel regulation works on the Tereblya River in Kolochava village, Kolochava territorial community, Khust district, Transcarpathian region**	**1,5**	**Low**	SWMI 4	**1**	**1**	5	**1**	80	**3**	48.422769, 23.693689

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
37	**Implementation of measures to mitigate channel regulation works on the Tereblya River near the railway bridge in the village of Ruske Pole. Ruske Pole, Tyachiv territorial community, Tyachiv district, Transcarpathian region**	**1,5**	**Low**	SWMI 4	**1**	**1**	4,3	**1**	60	**3**	48.056723, 23.515114
36	**Implementation of measures to mitigate channel regulation works on the Tereblya River from the village of Tereblya to the village of Dulovo, Bushtyn Territorial Community, Tyachiv District, Zakarpattia Region**	**1,5**	**Low**	SWMI 4	**1**	**1**	6,1	**1**	60	**3**	48.130904, 23.613219
35	**Implementation of measures to mitigate channel regulation works on the Tereblya River in Chumalovo village, Krychovo village, Bushtyn territorial community, Tyachiv district and Dragovo village, Dragovo territorial community, Khust district, Zakarpattia region**	**1,5**	**Low**	SWMI 4	**1**	**1**	10,2	**2**	80	**3**	48.214599, 23.555590
40	**Implementation of measures to mitigate channel regulation works on the Rika River in the villages of Maidan, Verkhniy Bystryi, Golyatin, Mizhhirya Territorial Community, Khust District, Zakarpattia Oblast**	**1,5**	**Low**	SWMI 4	**1**	**1**	4,3	**1**	290	**3**	48.608650, 23.502950

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
44	**Implementation of measures to mitigate channel regulation works on the Rika River in Khust, Khust Territorial Community, Khust District, Zakarpattia Oblast**	**1,75**	**Low**	SWMI 4	**1**	**1**	28,6	**2**	140	**3**	48.197926, 23.287944
54	**Implementation of measures to mitigate channel regulation works on the Borzhava river from Khmelnyk station to Hreblya village, Zarichanska territorial community, Khust district, Zakarpattia region**	**1,5**	**Low**	SWMI 4	**1**	**1**	1,3	**1**	188	**3**	48.245617, 22.953371
51	**Implementation of measures to mitigate channel regulation works on the Borzhava river from Hreblya village to Bilky village, Bilky territorial community, Khust district, Transcarpathian region**	**1,5**	**Low**	SWMI 4	**1**	**1**	9,4	**1**	200	**3**	48.279803, 23.067897
52	**Implementation of measures to mitigate channel regulation works on the Borzhava River in the village of Bronka, Dovzhanska territorial community, Khust district, Zakarpattia region**	**1,5**	**Low**	SWMI 4	**1**	**1**	1,8	**1**	60	**3**	48.402279, 23.269664

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
58	**Implementation of measures to mitigate channel regulation works on the Irshava River from the village of Khmelnyk, Kamianka Territorial Community, Berehove District, to the village of Zarichchia, Zarichchia Territorial Community, Khust District, Zakarpattia Oblast**	**1,5**	**Low**	SWMI 4	**1**	**1**	4,8	**1**	140	**3**	48.250706, 22.917250
77	**Implementation of measures to mitigate channel regulation works on the Stara River from the village of Irlyava, Serednyanska territorial community, Uzhhorod district, Transcarpathian region to the mouth**	**1,5**	**Low**	SWMI 4	**1**	**1**	0,3	**1**	60	**3**	48.497577, 22.558243
95	**Implementation of measures to mitigate channel regulation works on the Uzh River in Uzhhorod, Uzhhorod Territorial Community, Uzhhorod District, Zakarpattia Oblast**	**2**	**Low**	SWMI 4	**1**	**1**	143,6	**3**	100	**3**	48.619790, 22.276406
96	**Implementation of measures to mitigate channel regulation works on the Uzh river in the area from the state border to the village of Storozhnytsia, Kholmky territorial community, Uzhhorod district, Transcarpathian region**	**1,75**	**Low**	SWMI 4	**1**	**1**	146,2	**3**	6	**2**	48.603457, 22.206215

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
71	**Assessment, monitoring of changes in watershed conditions and implementation of watershed restoration works in Polianske and Ploskivske forestries, Polianske territorial community, Zakarpattia oblast**	**2**	**Low**	SWMI 9	**1**	**3**	20	**2**	2	**2**	48.663857, 22.933302
47	**Measures aimed at improving/restoring the hydrological regime and morphometric indicators of the Stary Botar River Pyiterfolvivska territorial community, Berehove district, Zakarpattia region**	**1,5**	**Low**	SWMI 4, SWMI 9	**2**	**1**	7,6	**1**	16	**2**	48.049468, 22.919730
69	**Development of measures to improve/restore the hydrological regime and morphometric indicators of the Latorytsia River on the Ukrainian-Slovak border Surtyvske territorial community, Chop territorial community, Uzhhorod district, Zakarpattia region**	**1,75**	**Low**	SWMI 4, SWMI 9	**2**	**1**	18,5	**2**	4	**2**	48.455435, 22.172980
9	**Implementation of infrastructure project mitigation measures: "Bridge over the Tisa river on the section Teplytsia - Sighetu Marmatiei", Ukraine-Romania border, NW 298-299, Bila Tserkva village, Solotvyno territorial community, Tyachiv district, Transcarpathian region**	**2**	**Low**	SWMI 4, SWMI 5	**2**	**2**	24,8	**2**	2	**2**	47.947617, 23.927414

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
100	**Measures for localisation and removal of invasive plants *(Ragweed and Sosnowski hogweed)* in the bank protection zones of the Tisa River sub-basin, Transcarpathian region**	**1,5**	**Low**	SWMI 11	**1**	**3**	0	**1**	1	**1**	48.496443, 23.185033
101	**Improving state accounting of water use in the Tisza River sub-basin within the Transcarpathian region**	**2,25**	**Low**	SWMI 4, SWMI 6, SWMI 9	**3**	**3**	0	**1**	41,981	**2**	48.496443, 23.185033
24	**Implementation of infrastructure project mitigation measures: "Construction of a nuclear motor bridge over the Teresva River on the national motorway of state importance H-09 "Mukachevo-Rakhiv-Bohorodychany-Ivano-Frankivsk-Rohatyn-Bibarka-Lviv", between the villages of Bedevlya and Teresva Bedevlyanska and Teresvyanska territorial communities, Tyachiv district, Transcarpathian region**	**2**	**Low**	SWMI 4, SWMI 5	**2**	**2**	20,5	**2**	2	**2**	48.000518, 23.675627
22	**Implementation of measures to mitigate channel regulation works on the Teresva river in Krasna village (section 1), Dubivska territorial community, Tyachiv district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	2,6	**1**	32	**2**	48.230751, 23.945530

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
23	**Implementation of measures to mitigate channel regulation works on the Teresva river in Krasna village (section 2), Dubivska territorial community, Tyachiv district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	2,6	**1**	16	**2**	48.219963, 23.935009
19	**Implementation of measures to mitigate channel regulation works on the Teresva River in the village of Ust-Chorna, Ust-Chorna territorial community, Tyachiv district, Transcarpathian region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	1,5	**1**	40	**2**	48.315651, 23.949901
25	**Implementation of measures to mitigate channel regulation works on the Mokryanka River in the village of Ruska Mokra, Ust-Chorna territorial community, Tyachiv district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	1,5	**1**	15	**2**	48.350647, 23.895688
26	**Implementation of measures to mitigate channel regulation works on the Luzhanka River in the village of Neresnytsia, Neresnytsia Territorial Community, Tyachiv District, Zakarpattia Region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	3,7	**1**	20	**2**	48.131223, 23.780687
30	**Implementation of measures to mitigate channel regulation works on the Tereblya River in the village of Negrovets, Kolochava**	**1,25**	**Very low**	SWMI 4	**1**	**1**	2,2	**1**	44	**2**	48.461017, 23.645609

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
	Territorial Community, Khust District, Zakarpattia Region										
28	**Implementation of measures to mitigate channel regulation works on the Tereblya River in the village of Synevyrska Polyana, Synevyrska territorial community, Khust district, Transcarpathian region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	1,4	**1**	40	**2**	48.573104, 23.672466
38	**Implementation of measures to mitigate channel regulation works on the Tereblya River in the village of Zabrid, Dragivska territorial community, Khust district, Transcarpathian region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	2	**1**	16	**2**	48.287331, 23.580229
42	**Implementation of measures to mitigate channel regulation works on the Rika River in the village of Nyzhniy Bystryi, Horinchivska territorial community, Khust district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	1,2	**1**	48	**2**	48.352994, 23.529012
74	**Implementation of measures to mitigate channel regulation works on the Pynia River in the village of Holubyne, Polyanska territorial community, Mukachevo district, Transcarpathian region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	2,8	**1**	20	**2**	48.561241, 22.959957

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
73	**Implementation of measures to mitigate channel regulation works on the Pynya River in the village of Polyana, Polyana Territorial Community, Mukachevo District, Zakarpattia Oblast**	**1,25**	**Very low**	SWMI 4	**1**	**1**	3,2	**1**	20	**2**	48.618739, 22.967316
75	**Implementation of measures to mitigate channel regulation works on the Vyznytsia River in the village of Kolchyno, Kolchyno Territorial Community, Mukachevo District, Zakarpattia Region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	4,3	**1**	25	**2**	48.472901, 22.755283
84	**Implementation of measures to mitigate channel regulation works on the Uzh River between the villages of Sil and Kostryno village, Kostrynska territorial community, Uzhhorod district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	1,7	**1**	12	**2**	48.950806, 22.543434
85	**Implementation of measures to mitigate channel regulation works on the Uzh river in Kostryno village, Kostrynska territorial community, Uzhhorod district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	1,1	**1**	20	**2**	48.938897, 22.592785

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
97	**Implementation of measures to mitigate channel regulation works on the Lyutyanka River in the village of Lyuta, Kostrynska territorial community and the village of Chornoholova, Dubrynytska-Maloberezhnyanska territorial community, Uzhhorod district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	3,7	**1**	5	**2**	48.915898, 22.742122
82	**Implementation of measures to mitigate channel regulation works on the Turya River in the village of Turya Remety, Turytsia River in the village of Turychka and Turytsia village, Turya-Remety territorial community, Uzhhorod district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	8	**1**	39	**2**	48.709596, 22.610583
90	**Implementation of measures to mitigate channel regulation works on the Uzh River near the village of Zarichovo, Perechyn Territorial Community, Uzhhorod District, Zakarpattia Oblast**	**1,25**	**Very low**	SWMI 4	**1**	**1**	2,3	**1**	4	**2**	48.760249, 22.508306
91	**Implementation of measures to mitigate channel regulation works on the Uzh River between Vorochovo village and Perechyn city, Perechyn territorial community, Uzhhorod district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	7,5	**1**	16	**2**	48.725535, 22.469928

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money	Name of the measure
							thousand people		*million UAH*		
	1	2	3	4	5	7	8	9	10	11	12
92	**Implementation of measures to mitigate channel regulation works on the Uzh River near the village of Onokivtsi, Onokivtsi Territorial Community, Uzhhorod District, Zakarpattia Oblast**	**1,25**	**Very low**	SWMI 4	**1**	**1**	2,2	**1**	20	**2**	48.646153, 22.350884
17	**Implementation of measures to mitigate channel regulation works on the Lazeshchyna River in Yasinya village, Yasinya territorial community, Rakhiv district, Zakarpattia region**	**1,25**	**Very low**	SWMI 4	**1**	**1**	3,7	**1**	2	**2**	48.271285, 24.379315

Prut and Siret sub-basin

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1	**Completion of the reconstruction of sewage treatment facilities in Chernivtsi,**	**3,75**	**high**	SWMI 1, SWMI 2, SWMI 3	3	5	260,00	4	75,00	3

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	Chernivtsi COMMUNITY Chernivtsi district Chernivtsi region									
2	**Reconstruction of wastewater treatment facilities and sewage networks in Kolomyia. Kolomyia COMMUNITY Kolomyia district Ivano-Frankivsk region**	**3,50**	**high**	SWMI 1, SWMI 2, SWMI 3	3	5	55,80	3	95,54	3
3	**Construction of wastewater treatment facilities and sewage networks in the city of Yaremche Yaremche COMMUNITY Nadvirna district Ivano-Frankivsk region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	20,00	2	136,00	3
4	**Construction of sewage treatment plants and drainage networks in Lanchyn village, Lanchyn COMMUNITY , Nadvirna district, Ivano-Frankivsk region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	10,60	2	190,80	3
5	**Construction of sewage treatment plants and water disposal networks in Nizhniy Verbizh village Nizhneverbizh COMMUNITY Kolomyia district, Ivano-Frankivsk region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	10,20	2	183,60	3
6	**Construction of sewage treatment plants and drainage networks in Stopchativ village, Yablunivska COMMUNITY , Kosiv district, Ivano-Frankivsk region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	16,10	2	289,80	3
7	**Construction of sewage treatment facilities and water disposal networks in the village of Milievo village Chornohuzy**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	11,90	2	214,20	3

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	Vyzhnytsia COMMUNITY Vyzhnytsia district, Chernivtsi region									
8	**Construction of sewage treatment plants and drainage networks in the village of Slobidka Kutska COMMUNITY Kosiv district, Ivano-Frankivsk region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	11,50	2	92,00	3
9	**Construction of sewage treatment plants and water disposal networks in the city of Vashkivtsi. Vashkivtsi Vashkivetska COMMUNITY Vyzhnytskyi district Chernivtsi region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	12,90	2	232,20	3
10	**Construction of sewage treatment plants and sewage networks in Velykyi Kuchuriv village Velykyi Kuchurivska COMMUNITY Chernivtsi district, Chernivtsi region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	12,40	2	223,20	3
11	**Construction of sewage treatment facilities in the city of Storozhynets Storozhynetska COMMUNITY Chernivtsi district, Chernivtsi region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	10,10	2	181,80	3
12	**Construction of sewage treatment plants and water disposal networks in Krasnoilsk village Krasnoilska COMMUNITY Chernivtsi district, Chernivtsi region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	10,50	2	189,00	3
13	**Construction of sewage treatment plants and drainage networks in the village of**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	10,00	1	180,00	3

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	Zeleniv Brusnytska COMMUNITY Vyzhnytsia district, Chernivtsi region									
14	**Construction of sewage treatment plants and drainage networks in the village of Vancykivtsi Vancykivtsi COMMUNITY Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	8,50	1	68,00	3
15	**Construction of sewage treatment plants and water disposal networks in Ostrytsia Magalska village, Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	6,40	1	51,20	3
16	**Construction of sewage treatment plants and drainage networks in Berehomet village, Nepolokivetska COMMUNITY , Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	9,70	1	77,60	3
17	**Construction of sewage treatment plants and drainage networks in the village of Marshyntsi Novoselytska COMMUNITY Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	9,60	1	55,20	3
18	**Construction of sewage treatment plants and water disposal networks in Tsuren village Ostrytska COMMUNITY , Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	7,10	1	56,80	3
19	**Construction of sewage treatment plants and drainage networks in Bili Oslavy village, Delyatynska COMMUNITY , Nadvirna district, Ivano-Frankivsk region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	6,40	1	51,20	3

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
20	**Construction of sewage treatment plants and drainage networks in Kosmach village Kosmach COMMUNITY Kosiv district, Ivano-Frankivsk region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	6,50	1	52,00	3
21	**Construction of sewage treatment plants and water disposal networks in the village of Mykytyntsi Kosivska COMMUNITY Kosiv district, Ivano-Frankivsk region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	6,90	1	55,20	3
22	**Construction of sewage treatment plants and drainage networks in Verbovets village, Kosivska COMMUNITY , Kosiv district, Ivano-Frankivsk region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	7,00	1	56,00	3
23	**Reconstruction of sewage treatment facilities in Hlyboka Hlybotska COMMUNITY Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	9,40	1	52,00	3
24	**Construction of sewage treatment plants and drainage networks in the village. Molodiya Chahorska COMMUNITY Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	9,30	1	74,40	3
25	**Construction of sewage treatment plants and water disposal networks in Kamyana Kamyanska COMMUNITY Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	7,20	1	57,60	3
26	**Construction of sewage treatment plants and water disposal networks in**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	7,40	1	59,20	3

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	Boyanivka village Boyanska COMMUNITY Chernivtsi district, Chernivtsi region									
27	**Construction of sewage treatment plants and water disposal networks in Banchy village Ostrytska COMMUNITY Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	6,90	1	55,20	3
28	**Construction of sewage treatment plants and drainage networks in Kolinkivtsi village Toporivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	9,40	1	75,20	3
29	**Construction of sewage treatment plants and drainage networks in the village of Malyntsi Klishkovetska COMMUNITY Dnistrovskyi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	9,60	1	76,80	3
30	**Construction of sewage treatment plants and drainage networks in Zarozhany village Nedoboivska COMMUNITY , Dnister district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	10,00	1	180,00	3
31	**Construction of sewage treatment plants and drainage networks in Berehomet village Berehometska COMMUNITY Vyzhnytskyi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	7,70	1	61,60	3
32	**Construction of sewage treatment plants and sewerage networks in Staryi**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	9,80	1	78,40	3

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	Vovchynets village, Kamianets COMMUNITY , Chernivtsi district, Chernivtsi region									
33	**Construction of sewage treatment plants and water disposal networks in Verkhni Petrivtsi village, Petrovetska COMMUNITY , Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	7,80	1	62,40	3
34	**Construction of sewage treatment plants and drainage networks in Davydivka village, Storozhynetska COMMUNITY , Chernivtsi district, Chernivtsi region**	**3,00**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	8,80	1	70,40	3
35	**Construction of sewage treatment plants and drainage networks in Yablunytsia village, Polyanitska COMMUNITY , Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2
36	**Construction of sewage treatment plants and drainage networks in Vorokhta village Vorokhtyanska COMMUNITY Nadvirna district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,24	1	33,92	2
37	**Construction of sewage treatment plants and drainage networks in the village of Mykulychyn Yaremche COMMUNITY Nadvirna district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,00	1	32,00	2
38	**Construction of sewage treatment plants and drainage networks in Zarichchya**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,00	1	32,00	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		million UAH	
	village, Delyatynska COMMUNITY , Nadvirna district, Ivano-Frankivsk region									
39	**Construction of sewage treatment plants and water disposal networks in Chornyi Potik village, Delyatynska COMMUNITY , Nadvirna district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,00	1	24,00	2
40	**Construction of sewage treatment plants and drainage networks in Sadzhavka village, Kolomyia COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,80	1	38,40	2
41	**Construction of sewage treatment plants and drainage networks in Illintsi village Zabolotivska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2
42	**Construction of sewage treatment plants and drainage networks in Oleshkiv village Zabolotivska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,00	1	24,00	2
43	**Construction of sewage treatment plants and drainage networks in Kornych village, Kolomyia COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,10	1	16,80	2
44	**Construction of sewage treatment facilities and drainage networks in the village of Mateyivtsi Mateyivetska COMMUNITY Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
45	**Construction of sewage treatment plants and drainage networks in Semakivtsi village, Mateivetska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,00	1	16,00	2
46	**Construction of sewage treatment plants and drainage networks in Budyliv village, Sniatynska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,10	1	32,80	2
47	**Construction of sewage treatment plants and drainage networks in Prutivka village, Sniatynska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,70	1	21,60	2
48	**Construction of sewage treatment plants and drainage networks in Vovchkivtsi village Sniatynska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,30	1	18,40	2
49	**Construction of sewage treatment facilities in Novoselytsia Novoselytska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,20	1	25,60	2
50	**Construction of sewage treatment plants and drainage networks in the village. Mamayivtsi Mamayivska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	5,80	1	46,40	2
51	**Construction of sewage treatment plants and drainage networks in Mamalyha**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	6,20	1	49,60	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		million UAH	
	village Mamalyha COMMUNITY , Dnistrovskyi district, Chernivtsi region									
52	**Construction of sewage treatment plants and drainage networks in Tarasivtsi village, Vanchykovetska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,90	1	39,20	2
53	**Construction of sewage treatment plants and sewage networks in Luzhany village, Mamayivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,70	1	37,60	2
54	**Construction of sewage treatment plants and drainage networks in the village of Striletskyi Kut, Mamayivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,20	1	25,60	2
55	**Construction of sewage treatment plants and drainage networks in the village of Hlynytsia Mamayivska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,60	1	36,80	2
56	**Construction of sewage treatment plants and drainage networks in Knyazhdvir village, Pechenizhynska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,90	1	23,20	2
57	**Construction of sewage treatment plants and drainage networks in Velykyi Kliuchiv village, Nizhneverbizka COMMUNITY**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,40	1	27,20	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		million UAH	
	, Kolomyia district, Ivano-Frankivsk region									
58	Construction of sewage treatment plants and drainage networks in the village of Rungury Pechenizhynska COMMUNITY Kolomyia district Ivano-Frankivsk region	2,75	medium	SWMI 1, SWMI 2, SWMI 3	3	5	3,50	1	28,00	2
59	Construction of sewage treatment plants and drainage networks in the village of Sopiv Pechenizhynska COMMUNITY Kolomyia district, Ivano-Frankivsk region	2,75	medium	SWMI 1, SWMI 2, SWMI 3	3	5	2,60	1	20,80	2
60	Construction of treatment facilities and sewage networks in the village of Pyadyky Pyadytska COMMUNITY , Kolomyia district, Ivano-Frankivsk region	2,75	medium	SWMI 1, SWMI 2, SWMI 3	3	5	3,50	1	28,00	2
61	Construction of sewage treatment plants and drainage networks in Pidhaichyky village Pidhaichyky COMMUNITY , Kolomyia district, Ivano-Frankivsk region	2,75	medium	SWMI 1, SWMI 2, SWMI 3	3	5	2,70	1	21,60	2
62	Construction of sewage treatment plants and drainage networks in Yavoriv village, Kosivska COMMUNITY , Kosiv district, Ivano-Frankivsk region	2,75	medium	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2
63	Construction of sewage treatment facilities and water disposal networks in the village of Gorod Kosivska COMMUNITY Kosiv district, Ivano-Frankivsk region	2,75	medium	SWMI 1, SWMI 2, SWMI 3	3	5	2,70	1	21,60	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
64	**Construction of sewage treatment plants and drainage networks in Rozhniv village Rozhnivska COMMUNITY , Kosiv district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	5,60	1	44,80	2
65	**Construction of sewage treatment plants and drainage networks in the village of Dzhuriv Sniatynska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,10	1	24,80	2
66	**Construction of sewage treatment plants and drainage networks in the village of Rika Kosivska COMMUNITY Kosiv district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,10	1	16,80	2
67	**Construction of sewage treatment plants and drainage networks in Khimchyn village, Rozhnivska COMMUNITY , Kosiv district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,20	1	25,60	2
68	**Construction of sewage treatment plants and drainage networks in Zhukiv village Obertynska COMMUNITY Ivano-Frankivsk district Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	5,30	1	17,60	2
69	**Construction of sewage treatment plants and drainage networks in Kulachkivtsi village, Hvizdetska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2
70	**Construction of sewage treatment plants and drainage networks in Balyntsi village**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,80	1	22,40	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	Zabolotivska COMMUNITY , Kolomyia district, Ivano-Frankivsk region									
71	**Construction of sewage treatment plants and drainage networks in Yakivka village, Obertynska COMMUNITY , Ivano-Frankivsk district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	5,30	1	42,40	2
72	**Construction of sewage treatment plants and drainage networks in Velyka Kamyanka Pyadytska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,80	1	22,40	2
73	**Construction of sewage treatment plants and drainage networks in Korshiv village Pyadytska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,40	1	35,20	2
74	**Construction of sewage treatment plants and drainage networks in Stetseva village, Sniatynska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,40	1	27,20	2
75	**Construction of sewage treatment plants and drainage networks in Konyatyn village Konyatynska COMMUNITY Vyzhnytskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,40	1	27,20	2
76	**Construction of sewage treatment plants and water disposal networks in Biloberizka village Biloberizka**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,00	1	16,00	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		million UAH	
	COMMUNITY Verkhovyna district, Ivano-Frankivsk region									
77	**Construction of sewage treatment plants and drainage networks in Roztoky village, Kutska COMMUNITY , Kosiv district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,00	1	16,00	2
78	**Reconstruction of treatment facilities in Kosiv Kosivska COMMUNITY Kosiv district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	8,49	1	24,20	2
79	**Construction of sewage treatment plants and water disposal networks in Banyliv village Banylivska COMMUNITY Vizhnytskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,90	1	31,20	2
80	**Construction of sewage treatment plants and drainage networks in Rybne village, Rozhnivska COMMUNITY , Kosiv district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,00	1	32,00	2
81	**Construction of sewage treatment plants and water disposal networks in Horishne Zaluchia village, Sniatynska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	5,20	1	41,60	2
82	**Construction of sewage treatment plants and drainage networks in Tuchapy village, Sniatynska COMMUNITY , Kolomyia district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,10	1	16,80	2

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							thousand people		*million UAH*	
83	**Construction of sewage treatment plants and water disposal networks Verkhovyna village Verkhovynska COMMUNITY Verkhovynskyi district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	1,00	1	10,57	2
84	**Construction of sewage treatment plants and drainage networks in Rivnia Verkhovynska COMMUNITY , Verkhovynskyi district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,30	1	26,40	2
85	**Construction of sewage treatment plants and drainage networks in the village of Stebni Biloberizka COMMUNITY Verkhovyna district, Ivano-Frankivsk region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,20	1	33,60	2
86	**Construction of sewage treatment plants and drainage networks in Dykhtynets village, Putylska COMMUNITY , Vyzhnytskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,10	1	24,80	2
87	**Construction of sewage treatment plants and drainage networks in Serhiyi Putylska village, Vyzhnytsia district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,00	1	16,00	2
88	**Reconstruction of sewage treatment plants and sewage networks in Putyla village Putyla COMMUNITY Vyzhnytsia district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,30	1	15,00	2

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							thousand people		*million UAH*	
89	**Construction of sewage treatment plants and water disposal networks in Korytne village, Banylivska COMMUNITY , Vyzhnytskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,00	1	31,20	2
90	**Construction of sewage treatment plants and drainage networks in Kostyntsi village, Storozhynets COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	5,20	1	41,60	2
91	**Construction of sewage treatment plants and water disposal networks in Kyseliv village Verenchanska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,50	1	36,00	2
92	**Construction of sewage treatment plants and drainage networks in the village of Stavchany Stavchanska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,40	1	27,20	2
93	**Construction of sewage treatment plants and drainage networks in Yuzhynets village, Stavchanska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,70	1	21,60	2
94	**Construction of sewage treatment plants and drainage networks in Oshykhliby village, Kitsmanska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,80	1	30,40	2
95	**Reconstruction of sewage treatment facilities and drainage networks in the city of**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	5,20	1	41,60	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	Zastavna Zastavnivska COMMUNITY Chernivtsi district, Chernivtsi region									
96	**Construction of sewage treatment plants and water disposal networks in Sukhoverkhiv village, Kitsmanska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,60	1	28,80	2
97	**Construction of sewage treatment plants and drainage networks in Shypyntsi village, Kitsmanska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,20	1	25,60	2
98	**Construction of sewage treatment plants and drainage networks in Verenchanka village Verenchanska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,70	1	29,60	2
99	**Construction of sewage treatment plants and sewage networks in Horishni Sherivtsi village Horishni Sherovetska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,80	1	22,40	2
100	**Construction of sewage treatment plants and water disposal networks in Chornivka village, Chernivtsi COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2
101	**Construction of sewage treatment plants and water disposal networks in Chervona**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,40	1	27,20	2

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							thousand people		million UAH	
	Dibrova village, Hlybotska COMMUNITY , Chernivtsi district, Chernivtsi region									
102	**Construction of sewage treatment plants and drainage networks in Voloka village Volokivska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	6,10	1	48,80	2
103	**Construction of sewage treatment plants and water disposal networks in Korovia village, Chernivtsi COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,00	1	24,00	2
104	**Construction of sewage treatment plants and water disposal networks in Lukytsia Chahorska village, Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,30	1	18,40	2
105	**Construction of sewage treatment plants and drainage networks in Toporivtsi village Toporivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,40	1	35,20	2
106	**Construction of sewage treatment plants and drainage networks in Ridkivtsi village Magalska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,40	1	35,20	2
107	**Construction of sewage treatment plants and drainage networks in Bairaky village, Hertsaivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,60	1	20,80	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
108	**Construction of sewage treatment plants and water disposal networks in Khryatska village, Hertsaivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,00	1	16,00	2
109	**Construction of sewage treatment plants and water disposal networks in Rokytne village, Novoselytska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,50	1	20,00	2
110	**Construction of sewage treatment plants and water disposal networks in Sloboda Novoselytska village, Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,10	1	16,80	2
111	**Construction of sewage treatment plants and drainage networks in Ternavka village, Hertsaivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,10	1	32,80	2
112	**Construction of sewage treatment plants and drainage networks in Lunka Hertsaivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,30	1	18,40	2
113	**Construction of sewage treatment plants and drainage networks in Hertsa Hertsaivska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,10	1	16,80	2
114	**Reconstruction of sewage treatment plants and sewage networks in Kitsman**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,10	1	40,00	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	Kitsmanska AH Chernivtsi district, Chernivtsi region									
115	**Construction of sewage treatment plants and water disposal networks in Dynivtsi village Novoselytska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,20	1	25,60	2
116	**Construction of sewage treatment plants and drainage networks in Stavchany village Nedoboivska COMMUNITY , Dnister district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,60	1	28,80	2
117	**Construction of sewage treatment plants and drainage networks in Cherlenivka village, Vanchykovetska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,00	1	32,00	2
118	**Construction of sewage treatment plants and drainage networks in Kruhlyk village, Khotyn COMMUNITY , Dnister district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,90	1	23,20	2
119	**Construction of sewage treatment plants and drainage networks in Yarivka village, Khotyn COMMUNITY , Dnistrovskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,30	1	18,40	2
120	**Construction of sewage treatment plants and drainage networks in Stalnivtsi village Mamalyhivska COMMUNITY , Dnistrovskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,10	1	16,80	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
121	**Construction of sewage treatment plants and water disposal networks in Malynivka village Novoselytska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,40	1	27,20	2
122	**Construction of sewage treatment facilities and water disposal networks in Koteleve village, Novoselytsia COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,00	1	24,00	2
123	**Construction of sewage treatment plants and drainage networks in Podvirne village, Mamalyhivska COMMUNITY , Dnistrovskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2
124	**Construction of sewage treatment plants and drainage networks in Zelena Livynetska village, Dnistrovskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,00	1	16,00	2
125	**Construction of sewage treatment plants and water disposal networks in Pidvirivka Livynetska COMMUNITY , Dnister district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,30	1	18,40	2
126	**Construction of sewage treatment plants and drainage networks in the village of Lukachivka Kelmenetska COMMUNITY Dnistrovskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	5,50	1	44,00	2
127	**Construction of sewage treatment plants and drainage networks in Vashkivtsi**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,70	1	29,60	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	village Vashkovetska COMMUNITY , Dnistrovskyi district, Chernivtsi region									
128	**Construction of sewage treatment plants and drainage networks in the village of Lukavtsi Beregometska COMMUNITY Vyzhnytsia district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,60	1	20,80	2
129	**Construction of sewage treatment plants and drainage networks in Karapchiv village Karapchivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,40	1	35,20	2
130	**Construction of sewage treatment plants and drainage networks in the village of Panka Storozhynetska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,50	1	20,00	2
131	**Construction of sewage treatment plants and drainage networks in Ropcha village, Storozhynetska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,40	1	27,20	2
132	**Construction of sewage treatment plants and drainage networks in Stara Zhadova village, Storozhynetska AH, Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2
133	**Construction of sewage treatment plants and drainage networks in Myhove village, Berehometska COMMUNITY , Vyzhnytskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,70	1	29,60	2

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							thousand people		*million UAH*	
134	**Construction of sewage treatment plants and drainage networks in Cherepkivtsi village Hlybotska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,10	1	16,80	2
135	**Construction of sewage treatment plants and drainage networks in Petrychanka village, Suchevenska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	3,00	1	24,00	2
136	**Construction of sewage treatment plants and drainage networks in the village. Stanovtsi Tarashanska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	5,10	1	40,80	2
137	**Construction of sewage treatment plants and drainage networks in Turyatka village Tarashanska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2
138	**Construction of sewage treatment plants and water disposal networks in Tereblече village Tereblechenska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,90	1	23,20	2
139	**Construction of sewage treatment plants and drainage networks in Bahna Vizhnytska village COMMUNITY Vizhnytskyi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	8,49	1	20,00	2
140	**Construction of sewage treatment plants and water disposal networks in Kupka**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,40	1	35,20	2

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							thousand people		million UAH	
	Suchevenska village, Chernivtsi district, Chernivtsi region									
141	**Construction of sewage treatment plants and water disposal networks in Budenets village, Chudeyska COMMUNITY , Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,70	1	21,60	2
142	**Construction of sewage treatment plants and drainage networks in the village of Yizhivtsi Chudeyska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	6,10	1	48,80	2
143	**Construction of sewage treatment plants and water disposal networks in Chudey village Chudeyska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	6,20	1	49,60	2
144	**Construction of sewage treatment plants and water disposal networks in Oprysheny village Hlybotska COMMUNITY Chernivtsi district, Chernivtsi region**	**2,75**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,40	1	19,20	2
145	**Reconstruction of sewage treatment facilities in Vorokhta, 31 Hoverlyanska St. Vorokhtyanska COMMUNITY Nadvirna district, Ivano-Frankivsk region**	**2,50**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	2,20	1	1,44	1
146	**Reconstruction of sewage treatment facilities in Zabolotiv village Zabolotivska**	**2,50**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	4,00	1	1,50	1

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	COMMUNITY Kolomyia district, Ivano-Frankivsk region									
164	**Improvement of state accounting of water use within the areas of the Prut and Siret river sub-basins within the Chernivtsi and Ivano-Frankivsk regions**	**2,25**	**low**	SWMI 4, SWMI 6, SWMI 9	3	3	0,00	1	24,36	2
147	**Establishment of water protection zones and bank protection strips in the Chernivtsi region**	**1,75**	**low**	SWMI 2, SWMI 4	2	1	0,00	1	235,00	3
148	**Establishment of water protection zones and bank protection strips in Ivano-Frankivsk region**	**1,75**	**low**	SWMI 2, SWMI 4	2	1	0,00	1	135,00	3
149	**Cleaning of the riverbed with restoration of the free flow of the Pistynka River and installation of a bank protection strip in the village of Nyzhniy Verbizh, Nyzhniy Verbizh COMMUNITY , Kolomyia district, Ivano-Frankivsk region (including design work).**	**2,00**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	1,50	1	3,60	2
150	**Cleaning of the riverbed with restoration of the free flow of the Liuchka River and installation of a bank protection strip in the village of Nyzhniy Verbizh, Nyzhniy Verbizh COMMUNITY , Kolomyia district, Ivano-Frankivsk region (including design work).**	**2,00**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	1,50	1	3,60	2

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							thousand people		million UAH	
151	**Restoration of the hydrological situation and capacity of the Sopivka river channel near the Voronivka corner and installation of a bank protection strip in the village of Sopiv Pechenizhynska COMMUNITY Kolomyia district, Ivano-Frankivsk region**	**2,00**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	2,50	1	2,71	2
152	**Restoration of the free flow of the Zadubrivka River and installation of a bank protection strip in the village. Zadubrivka Horishnosherovetska COMMUNITY Chernivtsi district, Chernivtsi region (including design works).**	**2,00**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	1,00	1	2,80	2
153	**Restoration of the free flow of the Shyrovtsi (Sherivchanka) riverbed, a tributary of the Moshkiv river, and installation of a bank protection strip in the village. Horishni Sherivtsi Horishni Sherovetska COMMUNITY Chernivtsi rayon Chernivtsi oblast (including design works).**	**2,00**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	2,80	1	2,10	2
154	**Restoration of the free flow of the Korovia riverbed and installation of a bank protection strip in Dubove village and Mykhalcha village. Mykhalcha Kamianska COMMUNITY Chernivtsi district, Chernivtsi region (including design works).**	**2,00**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	3,10	1	7,98	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
155	**Restoration of the hydrological situation and capacity of the Pechenega River channel and installation of a bank protection strip in the area of Dovbush Street in Pechenizhyn village Pechenizhynska COMMUNITY Kolomyia district, Ivano-Frankivsk region**	**1,75**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	1,00	1	1,55	1
156	**Cleaning of the riverbed with restoration of the free flow of the Verkhivets River and installation of a bank protection strip in Semakivtsi village, Mateivetska COMMUNITY , Kolomyia district, Ivano-Frankivsk region (including design works)**	**1,75**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	1,20	1	1,60	1
157	**Restoration of the free flow of a section of the Shubranets riverbed in the territory of Shubranets village, Horishnosherovetska COMMUNITY , Chernivtsi district, Chernivtsi region (including design works).**	**1,75**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	1,90	1	1,40	1
158	**Restoration of the free flow of a section of the Dereluy riverbed and installation of a bank protection strip in Chahor village, Chahorska COMMUNITY , Chernivtsi district, Chernivtsi region (including design works).**	**1,75**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	8,50	1	0,28	1

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
159	**Restoration of the free flow of the Molnytsia riverbed section in the territory of Bairaky village, Hertsaivska COMMUNITY , Chernivtsi district, Chernivtsi region (including design works).**	**1,75**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	1,90	1	1,40	1
160	**Restoration of the free flow of the Molnytsia riverbed and installation of a bank protection strip in the village. Molnytsia Hertsaivska COMMUNITY , Chernivtsi district, Chernivtsi region (including design works).**	**1,75**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	1,80	1	1,40	1
161	**Restoration of the free flow of the Hertsa riverbed and installation of a bank protection strip in the territory of the city. Hertsa Hertsaivska COMMUNITY Chernivtsi district Chernivtsi region (including design works).**	**1,75**	**low**	SWMI 1, SWMI 2, SWMI 3, SWMI 4	4	1	2,10	1	1,40	1
162	**Restoration and rehabilitation (revitalisation) of the Storozhynets River within the village of Bila Mamaivska, Chernivtsi District, Chernivtsi Oblast**	**1,25**	**very low**	SWMI 4	1	1	0,70	1	3,12	2
163	**Reconstruction of a hydraulic structure and dismantling of a temporary crossing for the revitalisation of the Hlynitsa River within the village of Drachyntsi, Mamayivska COMMUNITY , Chernivtsi district, Chernivtsi region**	**1,25**	**very low**	SWMI 4	1	1	2,30	1	6,85	2

Lower Danube sub-basin

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							thousand people		*million UAH*	
1	2	3	4	5	6	7	8	9	10	11
7	**Reconstruction of sewage treatment facilities in Izmail, Izmail COMMUNITY Izmail district, Odesa region**	**4**	**high**	SWMI 1, SWMI 2, SWMI 3	3	5	70,5	3	1269,828	5
6	**Construction of sewage treatment plants and sewerage networks in the city of Kilia Kilia COMMUNITY Izmail district, Odesa region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	21,6	2	389,466	3
9	**Construction of sewage treatment plants and sewerage networks in the city of Reni. Reni Reni COMMUNITY Izmail district, Odesa region**	**3,25**	**medium**	SWMI 1, SWMI 2, SWMI 3	3	5	21.4	2	385,2	3
3	**Creation of wastewater treatment and solid waste disposal complexes in the waters of the Danube seaports 5 COMMUNITY Izmail district, Odesa region**	**3**	**medium**	SWMI 4	1	5	252,5	4	4,2	2
26	**Improving state water accounting in the Lower Danube sub-basin within Odesa Oblast**	**2,25**	**low**	SWMI 4, SWMI 6, SWMI 9	3	3	0	1	16,783	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
4	**Establishment of water protection zones and bank protection strips for water bodies in 16 COMMUNITY s in Bilhorod-Dnistrovskyi rayon, Bolhradskyi rayon, Izmailskyi rayon Odesa oblast**	**1,5**	**low**	SWMI 2, SWMI 4	2	1	0	1	6,93	2
2	**Rehabilitation of the former oil storage facility and prevention of oil pollution in the border area Reniiska COMMUNITY Izmail district, Odesa region**	**1,75**	**low**	SWMI 4	1	3	36,1	2	0,42	1
11	**Revitalisation of the Karasulak River Vasylivska COMMUNITY , Kubeyska COMMUNITY Bolhradskyi district, Odesa region**	**1,75**	**low**	SWMI 4	1	1	21,1	2	77,175	3
16	**Cleaning and deepening the channel of the Kirgiz-China River Tarutynska COMMUNITY Bolhradskyi district, Odesa region**	**1,75**	**low**	SWMI 4	1	1	23,91	2	53,48	3
17	**Cleaning of water bodies in Vilne Tarutynska village, Bolhrad district, Odesa region**	**1,75**	**low**	SWMI 4	1	1	23,91	2	50,4	3

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
21	**Cleaning and deepening the channel of the Kyrgyzh River Tarutynska COMMUNITY Bolhradskyi district, Odesa region**	**1,75**	**low**	SWMI 4	1	1	23,91	2	63,35	3
25	**Cleaning and deepening of the Aliyaga riverbed Tarutynska COMMUNITY Bolhradskyi district, Odesa region**	**1,75**	**low**	SWMI 4	1	1	23,91	2	66,8	3
1	**Clearing the bed of the Balanesti Reniiska gully COMMUNITY Izmail district, Odesa region**	**1,5**	**low**	SWMI 4	1	1	36,1	2	31,5	2
5	**Clearing of the Belgorod Canal and internal ditches in Vilkovo Vilkovo COMMUNITY Izmail district, Odesa region**	**1,5**	**low**	SWMI 4	1	1	11,45	2	18	2
8	**Cleaning and deepening the channel of the Dunayets River Kiliya COMMUNITY Izmail district, Odesa region**	**1,5**	**low**	SWMI 4	1	1	33,7	2	33	2
14	**Clearing of internal gullies of Staronekrasivski floodplains Safianivska**	**1,5**	**low**	SWMI 4	1	1	43,1	2	48	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	COMMUNITY , Izmail district, Odesa region									
15	**Clearing the channel of the Malyi Katlabukh River Suvorovskaya COMMUNITY Izmail district, Odesa region**	**1,5**	**low**	SWMI 4	1	1	11,9	2	19,5	2
18	**Clearing of water bodies in Maloyaroslavets village Tarutynska COMMUNITY , Bolhrad district, Odesa region**	**1,5**	**low**	SWMI 4	1	1	23,91	2	2,45	2
20	**Cleaning of water bodies (Tvardychanskyi pond) Tarutynska COMMUNITY Bolhradskyi district, Odesa region**	**1,5**	**low**	SWMI 4	1	1	23,91	2	6,44	2
22	**Cleaning of water bodies in Vynohradivka village Tarutynska COMMUNITY Bolhradskyi district, Odesa region**	**1,5**	**low**	SWMI 4	1	1	23,91	2	6,44	2
23	**Clearing of water bodies (Gulmen pond) Yarove village Tarutynska**	**1,5**	**low**	SWMI 4	1	1	23,91	2	19,25	2

№	Name of the measure	Level of efficiency	Description of the level of efficiency	SWMI	Success rate	Pressure from the water sector	Number of people affected by the measure	Social efficiency	Total cost of investment	Value for money
							thousand people		*million UAH*	
	COMMUNITY Bolhradskyi district, Odesa region									
24	**Clearing of water bodies in Rivne Tarutynska village, Bolhrad district, Odesa region**	**1,5**	**low**	SWMI 4	1	1	23,91	2	10,64	2
10	**Clearing vegetation and silt from the Dandor pond Krynychnenska COMMUNITY , Bolhradskyi district, Odesa region**	**1,25**	**very low**	SWMI 4	1	1	4,4	1	11,69	2
12	**Cleaning up the Karasulske reservoir Kubeyska COMMUNITY Bolhradskyi district, Odesa region**	**1,25**	**very low**	SWMI 4	1	1	9,6	1	38,5	2
13	**Revitalisation of the Karasulak River Krynychnenska COMMUNITY Bolhradskyi district, Odesa region**	**1,25**	**very low**	SWMI 4	1	1	4,4	1	18,842	2
19	**Clearing of water bodies in Maloyaroslavets village, Tarutynska COMMUNITY , Bolhradskyi district, Odesa region**	**1,25**	**very low**	SWMI 4	1	1	23,91	2	1,4	1