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No. 1078 dated 01.11.2024

VISTULA RIVER BASIN MANAGEMENT PLAN 2025-2030

CONTENTS

The maps of the Vistula River Basin Management Plan for 2025-2030 are attached as a separate file in .PDF format.

LIST OF ABBREVIATIONS

AWB – artificial water body
BOD – Biochemical Oxygen Demand
BUWR – Basin Water Resources Administration
CEA – cost-effectiveness analysis
CMU – Cabinet of Ministers of Ukraine
COD – Chemical Oxygen Demand
EEA – European Environment Agency
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 body
LLC – Limited Liability Company
LOQ – limit of quantification
ME – municipal enterprises
MENR – Ministry of Environmental Protection and Natural Resources of Ukraine
NEURC – National Energy and Utilities Regulatory Commission
NNP – natural native park
NRF – Nature Reserve Fund
OSCE – Organization for Security and Co-operation in Europe
PE – population equivalent
PJSC – Public joint stock company
PoM – programme of measures
RBD – river basin district
RBMP – river basin management plan
REPF – Regional Environmental Protection Funds
ROWR – regional office of water resources
SAWR – State Agency of Water Resources of Ukraine
SE – state enterprises
SEF – State Environmental Fund
SEI – State Environmental Inspectorate of Ukraine
SES – State Emergency Service
SFRD – State Fund for Regional Development
STPs – sewage treatment plants
SWB – surface water body
SWMI – significant water management issue
TLV – threshold limit value
TOT – temporarily occupied territories
TPP – Thermal Power Plant
VAT – Value Added Tax
WFD – Water Framework Directive

1 GENERAL CHARACTERISTICS OF SURFACE AND GROUNDWATER

1.1. Description of the river basin

1.1.1. Hydrographic and water management zoning

The Vistula transboundary river basin is located on the territory of three countries: Ukraine, the Republic of Poland and the Republic of Belarus.

The length of the Vistula is 1,047 km, and it does not flow within Ukraine. The catchment area is 194,424 km^2, of which 12,933 km^2 is within Ukraine. The Vistula RBD covers 2% of Ukraine's territory.

The Vistula basin covers the territory of 2 regions of Ukraine (Volyn and Lviv).

The hydrographic network of the Vistula RBD includes 137 rivers with a catchment area of more than 10 km2, 19 lakes with a catchment area of more than 0.5 km^2 and 12 reservoirs.

The Vistula River basin area has two sub-basins: Western Bug and Syan.

1.1.2. Climate

The climate of the Vistula River basin is temperate continental, close to the temperate maritime climate of Western Europe, with mild winters and relatively humid summers.

The climate is characterised by frequent thaws in winter, high cloud cover, rainfall of 0.10-0.30 mm/min, and the resulting summer and autumn floods.

The average annual air temperature in the Vistula basin in Ukraine is 5.2-8.0°C. The coldest month of winter in the basin is January, with an average monthly temperature -5°C, which is 2-3°C lower than in December. All winter months are characterised by high air temperature variability.

The highest average temperatures are recorded in July at +18.0-18.5°C. In some years, there are also deviations from the average long-term temperature.

The amount of annual precipitation ranges from 500 mm (in the Western Bug River sub-basin) to 1070 mm (in the SianRiver sub-basin) with an uneven distribution by month.

The average annual relative humidity is 78%. In the Western Bug sub-basin, the low nature of the territory and the presence of a large number of lakes contribute to the formation of microclimatic features of the lakes.

Climate conditions are gradually changing from west to southeast, with decreasing precipitation and runoff rates and increasing evaporation.

1.1.3. Relief

By the nature of the relief, the territory belongs to three sub-regions of the Volyn-Podillya Upland: Volyn Upland, Podillia Upland, and Small Polissia. The Podillia and Volyn Uplands are elevated undulating hilly plains covered with loess deposits. The headwaters of the Western Bug originate within the Podilska Upland, which is characterised by mature erosion and denudation forms. Absolute heights here reach 350 - 400 m (maximum height 404 m at the confluence of the Western Bug and Siret).

The part of the Western Bug sub-basin that belongs to Small Polissia is a lowland plain covered with sandy loamy glacial deposits and, partly, loess rocks and clayey weathered marl crust. The relief of the plain was formed under the influence of glacial movement. Therefore, its height does not exceed 200 m. There is a dense river network. The areas between the rivers have a flat undulating surface with hills and depressions.

The Western Bug sub-basin is characterised by shallow river valleys, slightly sloping and swampy. In the forest-steppe zone, there are highly fragmented areas of the land surface composed of easily soluble rocks and subject to intense erosion.

The Siansub-basin is characterised by the predominance of low-wave plains. Most of the river valleys have meridional and submeridional directions, which is associated with glacial advance in the Lower Quaternary.

1.1.4. Geology

The sub-basin of the Western Bug River is located within the Volyn-Podillya plate, which belongs to the East European Platform. The sub-basin is located in a Paleozoic depression formed by rocks of the Devonian and Carboniferous terrigenous carbonate formation. The upper part of this Carboniferous stratum is coal-bearing. Depressions in the pre-Mesozoic relief are filled with Upper Jurassic terrigenous-carbonate sediments. Even higher, marl and chalk formations of the Upper Cretaceous are cloaked. They are overlain by Neogene terrigenous-carbonate formations (in some areas)

and loamy-sandy Quaternary sediments of various genesis.

The Syan River sub-basin is located within three geological structures: the Fore-Carpathian trough (the vast majority of the area), the Volyn-Podolsk plate (a small area in the north of the sub-basin) and the folded Carpathians (two small areas in the south and south-west).

Tectonically, the Precarpathian Trough is a young alpine crustal subsidence area located between the overlying Carpathian Cover and Fold Structure and the Volyn-Podillya Plate. The trough is formed by a thick, up to several kilometres thick, terrigenous Neogene mudstone sediments, mostly clayey, significantly halogenated and often gypsumised. These rocks are overlain by Quaternary sediments and underlain by Cretaceous, Jurassic and older rocks.

The Carpathians are an alpine cover-folding structure with a mountainous relief composed of thick, strongly dislocated flysch strata of Cretaceous and Paleogene age, represented mainly by sandstones, mudstones, siltstones, and less often limestones.

The geological structure of the Volyn-Podillya plate is similar to that of the Western Bug sub-basin.

1.1.5. Hydrogeology

The Zakhidnyi Buh sub-basin belongs to the Volyn-Podilskyi artesian basin, which is a monocline that dips in the western and southwestern directions. The most submerged part is characterised by increasing thickness of Cretaceous and coal deposits. The artesian basin is formed by a multi-storey aquifer system. There are no distinct layers of poorly permeable sediments separating the aquifers, from the Cretaceous to the older ones. Within the Western Bug basin, aquifers are widespread in Quaternary, Miocene, Upper Cretaceous formations and in the zone of intense fracturing of Devonian rocks.

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

The majority of the SianRiver sub-basin belongs to the Precarpathian artesian basin. Its hydrogeological conditions are characterised by the presence of separate water-bearing sand and sandstone layers in the bedrock of the Neogene low-permeability 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.

The groundwater of the Carpathian hydrogeological folded area is confined to the upper fractured zone of bedrock, which extends to a depth of 80-100 m. A characteristic feature of the hydrogeological conditions of the territory is uneven and generally low water enrichment, which is determined by the low filtration properties of water-bearing rocks and their intensive dislocation, as well as drainage. The most promising are the water-bearing Quaternary alluvial deposits represented by gravel and pebble formations.

The hydrogeological conditions of the Volyn-Podilskyi artesian basin are similar to those of the Western Bug sub-basin.

1.1.6. Soils

The soil cover of the Western Bug sub-basin is diverse in composition, profile structure and filtration properties. Due to the fact that various soil formation factors were involved in soil formation, a complex soil cover with a combination of different soil types and varieties was formed here.

In the sub-basin of the Western Bug River, sod-podzolic soils are the most common, while in the depressions around karst lakes and river floodplains, marsh and peat-bog soils are common, and in the forest-steppe zone (Lviv Oblast and southern part of Volyn Oblast) grey soils and sometimes black soil and sod soils are common.

Sod soils are common on the majority of hayfields and pastures. They cover large areas of arable land, mostly drained. Sod soils are most common in the Polissia regions, particularly in the Small Polissia.

Meadow-bog soils are found mainly in river floodplains and deep gully bottoms. Bog soils are found on the terrace depressions of river floodplains where there are groundwater outlets. Peaty-boggy soils occur along the periphery of lowland peat bogs and often in the central parts of small river floodplains. Peat bogs are bog soils where the peat layer exceeds 50 cm, and are common mainly in river floodplains.

In the SianRiver sub-basin, soil formation generally occurred under conditions of a combination of two soil-forming processes: podzolic and sodic. Depending on the intensity of their manifestation, different genetic types and subtypes of soils were formed.

Sod, podzolic-sod and meadow soils are widespread. Much smaller areas are occupied by meadow-bog and bog soils.

Meadow soils are used mainly as pastures. After drainage reclamation, some of them were brought under agricultural cultivation and are used for arable land. On the territory of the Nadsianska Plain, a combination of meadow-bog soils

with peat-bog and bog soils is fragmented in the floodplains of the Retychyn, Shklo, Vizhomlia and other rivers, valleys of beams and closed depressions. These groups form mosaics on alluvial and deluvial deposits. Sod soils occur within the shallow depressions of the Zandrova plain, occasionally on elevated relief elements and former forest glades.

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1.1.7. Flora

The Western Bug sub-basin is mainly located in the forest-steppe zone. The territory of the Vistula River Basin area is located in three physiographic zones: mixed forest zone (Ukrainian Polissya), forest-steppe zone and the altitudinal zone of the Ukrainian Carpathians.

The mixed forest zone is represented by pine and pine-oak forests, with much smaller areas occupied by oak, birch and alder forests. Most of the meadows in Polissia are located in the floodplains. Polissya is characterised by significant swampiness and forestation (about 40 per cent). The vast majority of bogs in Volyn Polissia are peat bogs or peatlands. Peat bogs are primarily found in the valleys of small rivers and along interfluves. They are dominated by moisture-loving shrub and marsh vegetation such as willow, sedge, mosses and lichens.

The forest vegetation of the forest-steppe is dominated by broadleaf forests, the species composition of which changes as you move from west to east. Forests are more widespread in the northern part of the Verkhobug and Styr plains, as well as in the Roztochchya. Oak, oak-hornbeam, and hornbeam forests predominate. Undergrowth is represented by hazel, birch, aspen and maple. Coniferous forests predominate in the Rata River basin and the Western Bug interfluve.

The main type of vegetation in the Ukrainian Carpathians is forest. More than half of the area is covered by spruce or fir forests, with beech forests predominating in the lower tier. As the altitude increases, climatic conditions deteriorate and tree growth slows down, resulting in sparse and crooked forests. Meadows occupy the largest area in the subalpine zone.

1.1.8. Fauna

The fauna of the Vistula basin is represented by a wide variety of vertebrates, birds, amphibians, crustaceans and reptiles, bats and protozoa, including those listed in the Red Book (black and white stork, owl, yellow heron, ermine, etc.).

The species composition of vertebrates in the region is quite diverse. Riverbeds, floodplains, ponds, marshy meadows, and marshlands are inhabited by animal species that form a specific and unique wetland fauna complex.

Wetlands are particularly valuable habitats for many nesting birds, some of which are found only here.

In order to preserve biodiversity, many protected areas have been established in the Vistula basin: in the Western Bug sub-basin, the most famous are: Shatsk National Nature Park, Vtensky Botanical Reserve, Chakhivsky, Moshne and Zgoransky Lakes landscape reserves, as well as the Lake Tur reserve and the Lake Svyatoe hydrological natural monument. In the sub-basin of the SianRiver, the Nadsyansky National Park, Yavoriv National Nature Park, Roztochya Nature Reserve, a UNESCO World Heritage Site, and the Cholginsky Ornithological Reserve were created, among others.

1.1.9. Hydrological regime

The rivers of the Vistula basin are divided by hydrological regime into the rivers of the Predkarpattya hydrological district - the sub-basin of the Syan River (the sources of the Syan and Rika rivers) and the Podilsky hydrological district - the sub-basins of the Western Bug and Syan Rivers (the rivers of the Vyshnia, Shklo, Vyara, Zavadivka basins).

The watercourses of the Predkarpattya district are characterised mainly by flood runoff, which accounts for 55-70% of the annual runoff. Floods are observed in the period from March to August. The winter period accounts for 10-15% of the annual runoff. In the Podilsky hydrological region, the rivers are characterised by a predominance of spring runoff - 40-45%. Summer river runoff is 20%.

The average long-term spring flood layer for rivers in the Precarpathian hydrological region is 150-180 mm, while in the Podilsky hydrological region this figure decreases to 60-100 mm. In particularly high-flow years, with a 1% probability of exceeding the spring runoff, we can expect a 300-400 mm layer in the Precarpathian hydrological region and 100-150 mm in the Podilsky region.

In the Vistula River Basin area, the hydrological regime is monitored by the Lviv Regional Centre for Hydrometeorology. At the hydrological stations in the Vistula River Basin area, water levels, flows and temperatures are monitored, as well as the ice regime. Out of 20 hydrological observation points in the Vistula River Basin area, only 1 hydrological post monitors sediment.

Maximum water levels. According to the monitoring hydrometeorological network of hydrological stations in the Vistula River basin, 5 hydrological stations were observed flooding the area with river water during the entire period of observation.

According to the Lviv Regional Centre for Hydrometeorology, within all hydrological stations near which flooding of the disaster areas was observed, the absolute maximum water levels exceeded the 10% probability of exceedance. The magnitude of exceeding the 10% probability of exceedance is less than 1 m. The maximum water levels in the rivers of the Vistula River basin area did not exceed the 1% probability of exceedance level within four hydrological stations, except for the Rata River in the village of Mezhyrichchya, Chervonohrad district.

1.1.10. Specifics of the river basin

The Vistula River Basin is the only river basin in Ukraine that belongs to the Baltic Sea. Almost along its entire length, the Western Bug River divides the borders of three countries - Ukraine, Belarus and Poland.

The source of the Zakhidnyi Buh River is unique. Unlike many other rivers in Ukraine, which start as small streams, the Western Bug originates as a full-flowing stream.

The most polluted river in the Vistula basin in Ukraine is the Poltva River, a tributary of the Western Bug. The largest polluter in the basin, Lviv Vodokanal, discharges wastewater into the Poltva River.

The Syan River is a transboundary mountain river whose waters are used not only by Ukraine but also by the Republic of Poland.

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 Vistula RBD defines SWBs for three categories of surface waters - rivers, lakes, artificial (AWB) and heavily modified water bodies (HMWB).

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	Area, km^2	Geological rocks
• 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 Vistula RBD is located within two ecoregions - the Carpathians (number 10) and the Eastern Plains (number 16).

According to the catchment area, 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 (over 10,000 k km^2) rivers.

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 three types: limestone (Ca), organic (O) and silicate (Si).

Table 3: Types of SWBs in the "rivers" category

№	Type code	Type
1	UA_R_10_S_3_Si	a small river in the lowlands in silicate rocks
2	UA_R_10_S_4_Si	a small river in the middle mountains in silicate rocks
3	UA_R_10_M_3_Si	medium-sized river in the lowlands in silicate rocks
4	UA_R_16_L_1_Si	a large river in the lowlands in silicate rocks
5	UA_R_16_L_2_Si	a large river on a hill in silicate rocks
6	UA_R_16_M_1_Si	medium-sized river in the lowlands in silicate rocks
7	UA_R_16_S_1_Si	a small river in the lowlands in silicate rocks
8	UA_R_16_S_2_Ca	a small river on a hill in limestone 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_2_Si	medium-sized river on a hill in silicate rocks
12	UA_R_16_XL_1_Si	a very large river in the lowlands in silicate rocks

In the category "lakes", 8 types of SWBs were identified (Table 4).

Table 4. Type of SWBs in the "lakes" category

№	Type code	Type
1	UA_L_16_S_1_SH_O	small lake in the lowlands shallow in organic rocks
2	UA_L_16_S_1_SH_Si	a small lake in the lowlands is shallow in silicate rocks
3	UA_L_16_S_1_I_Si	a small lake in the lowlands with medium depth in silicate rocks
4	UA_L_16_M_1_SH_O	The middle lake in the lowlands is shallow in organic rocks
5	UA_L_16_M_1_SH_Si	The middle lake in the lowlands is shallow in silicate rocks
6	UA_L_16_M_1_I_O	medium-sized lake in the lowlands with medium depth in organic rocks
7	UA_L_16_M_1_I_Si	medium depth lake in the lowlands in silicate rocks
8	UA_L_16_L_1_I_Si	a large lake in the lowlands with medium depth 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 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 MPA 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 Vistula River Basin, the SWBs was determined on 137 rivers and 19 lakes (according to the State Water Cadastre: Accounting of Surface Water Bodies geoportal of the SAWR).

Within the Vistula RBD, 269 SWBs have been identified. The identified SWBs belong to the following categories of surface water:

- rivers,
- lakes,
- artificial (AWB) and heavily modified (HMWB).

Category "rivers"

According to the Methodology, 84 SWBs were identified. The number of identified SWBs depending on descriptors and types is shown in Tables 5 and 6.

Table 5. Distribution of SWBs **of the "rivers" category by descriptors**

Descriptor	Indicator	Number of SWBs
by eco-region	Eastern plains	79
	Carpathians	5
by catchment area	small (S)	53
	average (M)	26
	large (L)	4
	very large (XL)	1
by the height of the catchment area	in the midlands	2
	in the lowlands	4
	on a hill	59
	in the lowlands	19
by geological type	in silicate rocks	82
	in limestone rocks	2

Table 6. Distribution of IBAs of the "rivers" category by type

№	Type code	Type	Number of identified SWBs
1	UA_R_10_S_3_Si	a small river in the lowlands in silicate rocks	2
2	UA_R_10_S_4_Si	a small river in the middle mountains in silicate rocks	2
3	UA_R_10_M_3_Si	medium-sized river in the lowlands in silicate rocks	1

№	Type code	Type	Number of identified SWBs
4	UA_R_16_L_1_Si	a large river in the lowlands in silicate rocks	3
5	UA_R_16_L_2_Si	a large river on a hill in silicate rocks	1
6	UA_R_16_M_1_Si	medium-sized river in the lowlands in silicate rocks	10
7	UA_R_16_S_1_Si	a small river in the lowlands in silicate rocks	5
8	UA_R_16_S_2_Ca	a small river on a hill in limestone rocks	2
9	UA_R_16_S_2_Si	a small river on a hill in silicate rocks	41
10	UA_R_16_S_3_Si	a small river in the lowlands in silicate rocks	1
11	UA_R_16_M_2_Si	medium-sized river on a hill in silicate rocks	15
12	UA_R_16_XL_1_Si	a very large river in the lowlands in silicate rocks	1

Category "lakes"

According to the Methodology, 19 SWBs were identified (Table 7)

Table 7. SWBs of the "lakes" category

№	Type code	Type	Quantity of the designated SWBs
1	UA_L_16_S_1_SH_O	small lake in the lowlands shallow in organic rocks	3
2	UA_L_16_S_1_SH_Si	a small lake in the lowlands is shallow in silicate rocks	3
3	UA_L_16_S_1_I_Si	a small lake in the lowlands with medium depth in silicate rocks	2
4	UA_L_16_M_1_SH_O	The middle lake in the lowlands is shallow in organic rocks	2
5	UA_L_16_M_1_SH_Si	The middle lake in the lowlands is shallow in silicate rocks	4
6	UA_L_16_M_1_I_O	medium lake in the lowlands medium depth in organic rocks	1
7	UA_L_16_M_1_I_Si	medium depth lake in the lowlands in silicate rocks	2
8	UA_L_16_L_1_I_Si	large lake in the lowlands, medium depth in silicate rocks	2

The category " heavily modified water bodies ".

There are 160 SWBs identified in the basin. The share of SWBs in the total number of SWBs in the Vistula RBD is 60%. Most of them (133 SWBs) are classified as HMWBs due due to straightening. 11 SWBs are classified as HMWBs due to overregulation.

16 SWBs are classified as HMWBs due to a combination of regulation and channel straightening (Fig. 1).

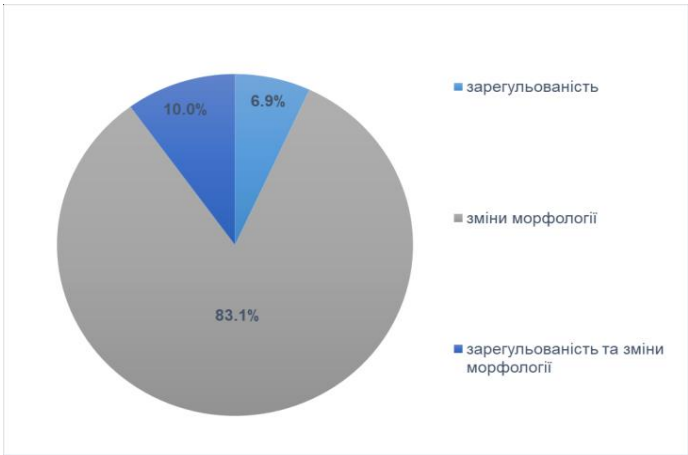


Figure 1. Distribution of HMWBs by causes of hydromorphological pressures (%)

Category "artificial surface water bodies".

In the Vistula basin, 6 AWBs have been identified. Of these, 2 are canals and 4 are storage reservoirs.

The percentage distribution of the identified SWBs in the Vistula RBD by category is shown in Figure 2.

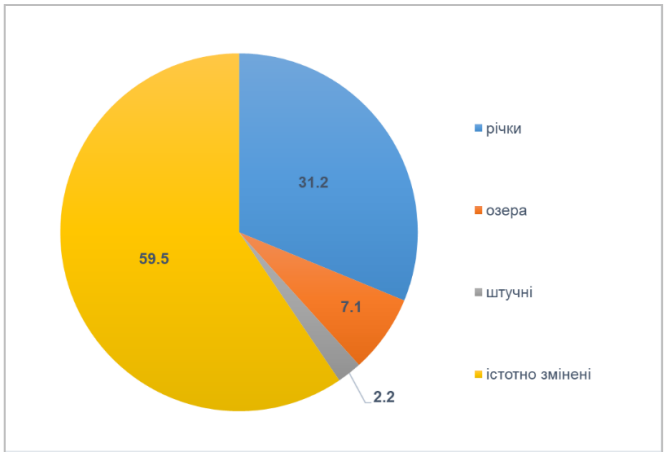


Figure 2. Distribution of identified SWBs by category (%)

Each of the 269 SWBs identified in the Vistula RBD has been assigned a unique code, which looks like this::

UA_ A6.6.1_YYYY and UA_ A6.6.2_YYYY

- *UA* - Ukraine
- *A6.6* - code of the Vistula RBD (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 Districts, Sub-basins and Water Management Areas")
- *A6.6.1* - code of the Western Bug sub-basin
- *A6.6.2* - San sub-basin code
- *YYYY is the* unique number of the designated SWBs in the Vistula RBD.

Each linear SWBs (categories "rivers", "AWB or HMWB") has a length (km). The length of the SWBs in the Vistula RBD ranges from 0.1 km (UA_A6.6.2_0059 - Velykyi Hninets River) to 161.6 km (UA_A6.6.1_0007 - Zakhidnyi Bug River).

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

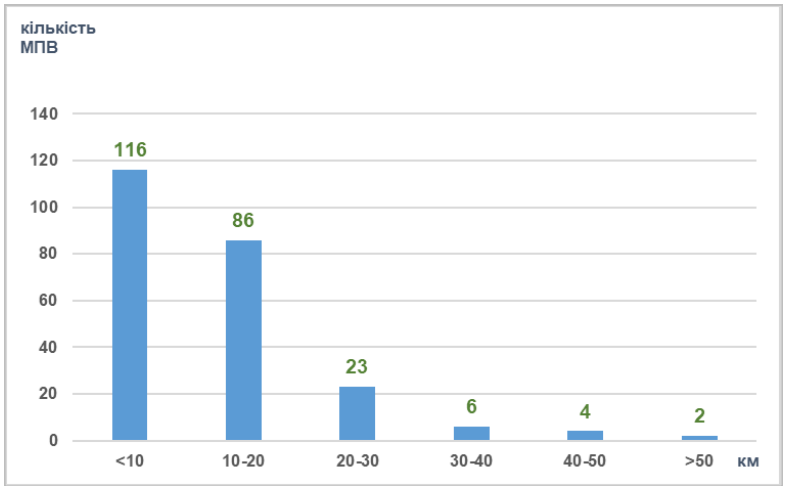


Figure 3. Distribution of the identified linear SWBs by length

Each polygonal SWBs (categories "lakes", "AWB or HMWB") has an area (km2). The area of SWBs in the Vistula RBD ranges from 0.36 km^2 (UA_A6.6.1_0165 - Nedilchyn Reservoir) to 25.6 km^2 (UA_A6.6.1_0169 - Lake Svityaz).

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

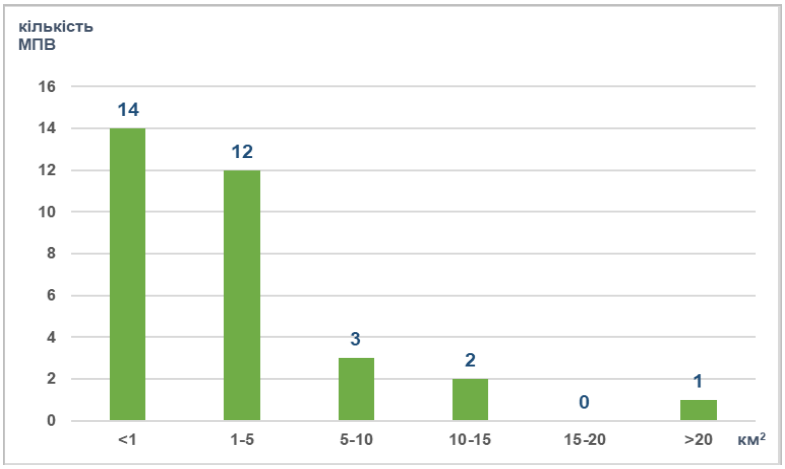


Figure 4. Distribution of identified polygonal SWBs depending on the area

1.2.2. Groundwater

The deliniation of the GWBs 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 GWBs includes the division of aquifers into smaller units, the preliminary establishment of GWBs 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 m3 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 GWBs for deeper aquifer complexes, the boundaries of which go beyond the boundaries of surface water basins, is performed.

The codes of the defining GWBs are formed as follows:

UAA6610Q100

- UA - Ukraine,
- A66 is the code for the Vistula basin,
- 1 - river sub-basin, according to the Water Code,
- 0Q - geological system (geological age of water-bearing rocks),
- 100 - the number of the GWB.

In the Vistula basin area within the administrative boundaries of Lviv and Volyn oblasts, 4 GWBs and groups of GWBs in non-pressure GWBs with a total area of 4,818.9 km^2 were identified.

In addition, 5 GWBs and groups of GWBs in pressure aquifers with a total area of 11,343 km^2 were identified. Including 3 GWBs within the Western Bug sub-basin, and 2 GWBs within the Syan sub-basin.

Table 8. GWBs and groups of GWBs in non-pressure aquifers in the Vistula River Basin

№	GWBs code	Aquifer (complex)	Geological index	Area of the GWBs km^2
1.	UAA6610Q100	Alluvial, Holocene floodplain and I-II over floodplain terraces of the Upper Neopleistocene the Western Bug River basin in the Eocene	a1-2 Plll+aH	2586,0
2.	UAA6620Q100	Alluvial, Holocene floodplain and I-II over floodplain terraces of the Upper Neopleistocene Century of the SianRiver basin	a1-2 Plll+aH	450,1

3.	UAA6610Q200	Glacial, lake-glacial, Middle Neopleistocene fluvioglacial of the Western Bug River basin	g,lg,fPII	985,1
4.	UAA6620Q200	Glacial, lacustrine-glacial, fluvio-glacial Lower-Middle Neopleistocene of the Western Bug River basin	g,lg,fPI-II	797,7

Table 9. GWBs and groups of groundwater GWBs in the pressure aquifers of the Vistula River basin

№	GWBs code	The aquifer (complex)	Geological index	Area of the GWBs km^2
1.	UAA6610N100	Middle Miocene deposits Western Bug river basin	*N1*	181,9
2.	UAA6620N100	Middle Miocene deposits SianRiver basin	*N1*	287,0
3.	UAA6610K100	Santon-Maastrichtian Upper Cretaceous of the Zakhid River basin ny Bug	*K2st-m*	10310,0
4.	UAA6620K100	Maastrichtian tier of the upper Cretaceous of the SianRiver basin	*K2m*	92,8
5.	UAA6610D100	The Upper Devonian deposits are a Western Bug River seine	*D3*	471,3

A group of GWBs in alluvial sediments of Holocene floodplains and I-II Upper Neopleistocene floodplain terraces (a1-2Plll+aH) of the Western Bug River sub-basin (UAA6610Q100)

The group is confined to alluvial deposits of floodplains, I and II over-floodplain terraces of the Upper Neopleistocene and Holocene (a1-2PIII + aH), which are common in the valleys of watercourses of the Western Bug River basin. This group of groundwater bodies includes groundwater:

- An aquifer in modern alluvial deposits of the Holocene (AH), confined to alluvial sands and sandy loams in the tributaries and channel floodplains of the Western Bug River, where it is the first to be found from the surface. In some places, river valleys are swampy. The horizon is underlain by water-enriched Upper Neopleistocene alluvial deposits, and in the floodplains of small rivers by Middle Neopleistocene glacial deposits. The level surface is free everywhere, the water table is set at a depth of 0.75-1.5 m and rises to the surface in high water. The horizon thickness averages 4-5 m, reaching 8.0 m in some areas. It is fed by atmospheric and flood water. It is drained by the river network into the low water mark and discharged into the aquifers (a1PIII, g, lg, fPIII) that lie below. The filtration coefficients for sands are 0.25-3.80 m/d, and for sandy loams - 0.02-0.15 m/d.
- Aquifer in the sediments of the first floodplain terrace of Upper Neopleistocene age (a1PIII). The aquifer was formed in the alluvial deposits of the first floodplain terrace of the Western Bug River and is mapped mainly on its right bank in a strip up to 8.0 km wide. It is usually the first to rise from the surface, and within the floodplain it is overlain by waterlogged modern alluvial deposits.

The absence of water reservoirs results in a non-pressure character of the horizon. Water-bearing rocks are represented by sands with sandy loam interlayers, which are 14-16 m thick. The depth of the aquifers is mainly 0.75-1.5 m, rarely 1.5-3.0 m.

The aquifer is closely connected to the underlying Middle Neopleistocene lake and alluvial sediments. It is fed by atmospheric precipitation, overflow from the overlying horizons and pressure filtration from the Upper Cretaceous aquifer. The water is discharged by springs on the slopes and by flowing into the horizons below the cut. The sand filtration coefficients are 0.75-2.66 m/d.

- The aquifer is located in the Upper Neopleistocene sediments of the second floodplain terrace (a2PIII). The aquifer is distributed in the southern part of the territory and is confined to the sands and sandy loams that make up the second floodplain terrace of the Western Bug River. It is the first aquifer to occur from the surface, or it overlies the aquifer of the first floodplain terrace, with which there is a close hydraulic connection. It lies on the Upper Cretaceous aquifer and the first local aquifer.

Depth is 3.0-5.0 m, thickness is up to 6.0 m. The conditions of feeding, discharge and interconnection are similar to the aquifer of Upper Neopleistocene deposits of the first floodplain terrace. The water enrichment of the horizon is insignificant, with well flow rates of 0.015-0.1 m3/s at water levels of about 1.0 m.

A group of GWBs in alluvial sediments of Holocene floodplains and I-II upper Neopleistocene floodplain terraces (a1-2Plll +aH) of the SianRiver sub-basin (UAA6620Q100)

The group of groundwater resources is confined to aquifers in alluvial deposits of floodplains, I and II overflank terraces of the Upper Neopleistocene and Holocene (a1-2PIII+aH), which are common in the valleys of watercourses of the SianRiver basin. This group of groundwater bodies includes groundwater:

- The aquifer of modern alluvial deposits (AMD), confined to alluvial sands and sandy loams in the tributaries and channel floodplains of the SianRiver. In the SianRiver valley, it is the first to be deposited from the surface, and in some places the river valleys are swampy. The horizon in the SianRiver valley is underlain by water-enriched Upper Neopleistocene sediments, and in the floodplains of small rivers by Lower-Middle Neopleistocene glacial deposits. The level surface is free, the levels are set at the low water mark at a depth of 0.75-1.5 m, and rise to the daytime surface in floods. The horizon thickness is on average 4-5 m. It is fed by atmospheric and flood water. It is drained by the river network into the low water mark and discharged into the underlying aquifers (a1PIII, g, lg, fPI-II). Filtration coefficients for sands are 0.25-3.80 m/d, for sandy loams - 0.02-0.15 m/d, and flow rates are up to 0.5-0.6 dm3/s.

Sodium-calcium chloride-hydrogen carbonate waters with salinity from 0.5 to 1.0 g/dm3. Hardness is 1-5 mg/dm3, pH is 7.1-8.0.

- Aquifer in the alluvial deposits of the first floodplain terrace of Upper Neopleistocene age (a1PIII). The horizon was formed in the alluvial deposits of the first floodplain terrace of the SianRiver, mainly the first one from the surface, and within the floodplain it is overlain by waterlogged modern alluvial deposits.

The absence of water reservoirs determines the non-pressure nature of the horizon; water-bearing rocks are sands with sandy loam layers, the thickness of which reaches 14-16 m. The depth of the aquifers is mostly 0.75-1.5 m, rarely 1.5-3.0 m.

There is a close relationship with the horizon below. It is recharged by precipitation and flow from the overlying horizons. Water is discharged by flowing into the underlying horizons and by springs on the slopes. The filtration coefficients of the sands are 0.75-2.66 m/d.

- The aquifer is located in alluvial deposits of the second Upper Neopleistocene floodplain terrace (a2PIII). The aquifer is located in the central part of the study area and is confined to the sands and sandy loams that make up the second floodplain terrace of the SianRiver. The aquifer is the first one from the surface or overlaps with the aquifer of the first floodplain terrace, with which there is a close hydraulic connection. It lies on predominantly clayey water-resistant formations of the Volynian strata and the Kosiv Formation of the Upper Badenian.

The chemical composition of the water is calcium bicarbonate, calcium bicarbonate-sulfate with salinity up to 0.6 g/dm3, often with a high content of sulfate ion.

Non-pressure groundwater levels are established at depths of 3.0-5.0 m, the horizon thickness is up to 6.0 m. The conditions of feeding, discharge and interconnection are similar to the aquifer of Upper Neopleistocene deposits of the first floodplain terrace. The water enrichment of the horizon is insignificant: specific flow rates vary from 0.1 dm^3/s to 0.5 dm^3/s, with a water level drop of about 1.0 m. The flow rates of springs do not exceed 0.1 dm^3/s.

The waters of the GWBs are widely used for local water supply.

GWBs in glacial, lake-glacial, water-glacial (fluvio-glacial) sediments of the Middle Neopleistocene (g,lg,fPII) in the Western Bug River sub-basin (UAA6610Q200)

The aquifer in glacial, lacustrine-glacial, water-glacial (fluvio-glacial) deposits of the Middle Neopleistocene (g, lg, fPII) is distributed mainly in the north, mainly in the Precarpathian artesian basin. In the Volyn-Podolsk artesian basin, the area of distribution is somewhat smaller.

The horizon is widespread on the right bank of the Western Bug. It is confined to water-glacial Middle Neopleistocene sands and sandy loams, lies first from the surface or is overlain by waterlogged modern alluvial and marsh deposits. The horizon is mostly 6-11 m thick, increasing to 15-17 m in glacial ploughing valleys. It lies on the first regional aquifer, which makes water exchange with the underlying aquifers difficult: The horizon is non-pressure, with groundwater levels occurring mainly at depths of 3.0-5.0 m. The aquifer is fed almost exclusively by atmospheric recharge, except for river valleys, where there is a hydraulic connection with the aquifer in the Upper Cretaceous sediments. Discharge occurs through flow to underlying horizons and by uplift on slopes. The filtration coefficients of sands are 0.36-2.85 m/d, and of sandy loams - 0.04-0.19 m/d.

GWBs in glacial, lake-glacial, water-glacial (fluvio-glacial) sediments of the Lower-Middle Neopleistocene of the SianRiver basin (g,lg,fPI-II) (UAA6620Q200)

The aquifer in glacial, lake-glacial, water-glacial (fluvio-glacial) sediments of the Lower-Middle Neopleistocene (g, lg,

fPI-II) is distributed within the Precarpathian Artesian Basin and borders on the similar aquifer in the Dniester River basin.

The horizon is widespread throughout the SianRiver basin. It is confined to water-glacial sands and sandy loams, lies first from the surface, or is overlain by waterlogged modern alluvial and marsh deposits. The thickness of the horizon is generally 6-11 m, increasing to 15-20 m in glacial ploughing valleys. It lies on a powerful aquifer, represented by a multi-kilometre-long thick Lower Neogene clay complex of Upper Badenian clays. As a result, water exchange with the underlying aquifers is impossible.

The aquifer is unconfined, with a depth of 0 m to 15 m. The water content is relatively low. The chemical composition is diverse: calcium bicarbonate and sodium bicarbonate-sulfate waters with salinity ranging from 0.3 g/dm^3 to 1.8 g/dm^3.

Groundwater levels occur mainly at depths of 3.0-5.0 m. The aquifer is fed by infiltration. The filtration coefficients of sands are 0.36-2.85 m/d, and of sandy loams - 0.04-0.19 m/d.

The flow rates of the springs range from 0.02 dm3/s to 1.8 dm^3/s. In areas where there are no sand layers, the sediments are anhydrous. Water-bearing sediments are sporadic, which is why the aquifer complex cannot be used for centralised water supply; it is widely used by the population and small enterprises for domestic water supply, where it is the main source.

Group of GWBs in the Middle Miocene sediments (N1) of the Western Bug River Basin (UAA6610N100)

The GWBs is distributed in the extreme southern part of the Western Bug River basin, within a narrow strip in the tectonic junction zone of the East European Platform with the Outer Zone of the Precarpathian Trough.

It unites a number of aquifers confined to the Opilska (N1op), Tiraska (N1tr) and Kosivska (N1ks) formations, between which there are no aged water-bearing strata. The aquifers of the Opilska Suite are characterised by significantly higher permeability than the overlying rocks.

The water-bearing rocks of the complex are limestone, sands, sandstones, gypsum, and anhydrite. The thickness of the Middle Miocene formations is 20-30 m. Depths of groundwater levels vary from fractions of a metre to 30 metres.

The filtration coefficients are 2-18 m/d. The aquifer is pressure and non-pressure. The head increases in the direction of dip. The aquifer is unevenly enriched with water. Well flow rates vary from thousandths to 12 dm^3/s. The chemical composition of the water is calcium bicarbonate with a salinity of 0.2-0.7 g/dm^3. The main source of groundwater formation and recharge is atmospheric precipitation and water from surface watercourses.

A group of GWBs in the Middle Miocene sediments (N1) of the SianRiver Basin (UAA6620N100)

The GWBs is distributed in the extreme northern part of the Sian River basin, within a narrow strip in the tectonic junction zone of the East European Platform with the Outer Zone of the Fore-Carpathian Trough.

It unites a number of aquifers confined to the Opilska (N1op), Tiraska (N1tr) and Kosivska (N1ks) formations, between which there are no aged water-bearing strata. The water-bearing sediments of the Opillya Formation are characterised by significantly higher water permeability than the overlying rocks. The water-bearing rocks of the complex are limestone, sand, sandstone, gypsum, and anhydrite. The thickness of the Middle Miocene formations is 30-50 m. Depths of groundwater levels vary from fractions of a metre to 30 metres. The filtration coefficients are 3.7-4.2 m/d. The aquifer is pressure and non-pressure. Heads in the direction of dip increase up to 25 m and more. The aquifer is unevenly enriched with water. Well flow rates vary from hundredths to 33 dm3/s (on the southern outskirts of the village of Volya Starytska, c. 808 - 432 dm3/s). The chemical composition of the water is calcium bicarbonate with a salinity of 0.2-0.7 g/dm3. The main source of groundwater formation and recharge is atmospheric precipitation and water from surface watercourses.

GWBs of the Santon-Maastrichtian Upper Cretaceous of the Western Bug River Basin (UAA6610K100)

It is confined to the aquifer in the deposits of the Lviv and Lukvyntsi formations of the Santon-Maastrichtian Upper Cretaceous (K2st-m) and is the main source of centralised water supply.

The aquifer in the Santon-Maastrichtian deposits of the Upper Cretaceous is developed throughout the Western Bug basin. The aquifer is confined to the fractured zone in marls, chalk and limestone. The upper part of the Cretaceous sediments, the so-called "colmatation zone", is a regional water bearing zone and serves as the upper water bearing cover of the aquifer. The Upper Cretaceous colmatics cover is predominantly composed of Neopleistocene sediments, with Miocene formations occurring in the extreme southern part of the Western Bug basin, which are located in the form of a sublatitudinal band.

The nature of the water-bearing rocks is determined by their position in the relief. In the watershed areas, the roof and foot of the aquifer are slightly elevated above the river valley areas. The direction of groundwater flow is from watersheds to valleys. The water is pressurised over most of the territory, with a decreasing head in the watersheds. The height of the head increases from the slopes of the watersheds to the river valleys from the first metres to 25-32 metres.

Groundwater levels range from +1.5 to 8 m in river valleys and up to 15 to 22 m in watershed areas. The thickness of the aquifer is closely related to the nature of fractures in the marl strata of the Cretaceous sediments.

The aquifer is confined to the zone of intense fracturing in the marl and chalk strata (zone of active water exchange). The roof of the zone can be traced at depths from 8-10 m to 32.4-37.0 m, and the sole - to 78-81.8 m (thickness varies from 7 to 65 m). Fractured rocks within the zone are not continuous in vertical section. The fractured rocks alternate with dense monolithic rocks that are not continuous.

The well flow rates vary from 0.6 to 22 dm3/s with a 0.5-40m drop in level. Specific flow rates are 0.094-11.1 dm3/s. Maximum well production rates are observed in river valleys, where the zone of intense fracturing is characterised by maximum water permeability. In the watershed areas, the water flow rate is mostly from 10 to 50 m2/d, less often 10 m^2/d.

The most common waters are sodium chloride-hydrogen carbonate and sodium chloride-hydrogen carbonate.

In the areas of tectonic faults and industrial zones, there is an increase in total mineralisation to 1.54-2.4 g/dm3 and dry residue to 1.87-2.08 g/dm^3.

The waters are neutral (pH in the range of 6-8), in the area of coal mining facilities from completely acidic (pH-2.7) to slightly alkaline (pH-8.2). The total hardness varies from 1.9 to 11.8 mg-eq/dm3, mainly from 6 to 9 mg-eq/dm3.

The predominant values of total iron content are from 0.2-0.4, the maximum values reach 2.43-7 mg/dm^3. Among the micro-components whose content exceeds the MPC, the following were identified: barium - up to 0.8-1.8 mg/dm3, lead - up to 0.14-0.06 mg/dm3, cadmium - up to 0.001-0.004 mg/dm3, titanium - up to 0.36-1.14 mg/dm3, aluminium - up to 0.6 mg/dm3. According to the results of radiological studies, water from existing water intakes meets the current requirements in terms of specific activity of natural radionuclides (U, Ra, Rn). In terms of organoleptic parameters, groundwater mostly meets the regulatory standards; sometimes with a slight sediment. Oxidation is 0.4 - 2.82 mgO_2/dm^3. The waters are transparent, odourless and colourless.

The Upper Cretaceous aquifer is fed by infiltration of precipitation through the thickness of overlying sediments in watersheds and their slopes, and by the presence of more permeable rocks in the cover of the Upper Cretaceous, the so-called "windows".

Under natural conditions, the Upper Cretaceous aquifer is discharged into the river network through a low-power layer of Quaternary formations into Quaternary aquifers in areas where the piezometric surface is higher than the groundwater table.

According to the results of regional routine observations, natural fluctuations in groundwater levels are observed in natural conditions depending on the season.

The Upper Cretaceous aquifer is important for domestic water supply and production needs: it is exploited by a large number of wells, boreholes and water intakes. Water intakes of district centres, mines and settlements of the Lviv-Volyn coal basin and other settlements use the waters of this horizon.

Maastrichtian Upper Cretaceous GWBs of the Sian River Basin (UAA6620K100)

It is confined to an aquifer in the Lviv Formation of the Maastrichtian Upper Cretaceous (K2m). Suitable for water supply purposes, it is located in the extreme northern part of the SianRiver basin on a small area.

The aquifer in the Upper Cretaceous Maastrichtian deposits is distributed only in a small area in the extreme northern part of the SianRiver basin. The aquifer is confined to the fractured zone in marls, chalk and limestone. It lies under Neogene sediments. The upper part of the Cretaceous sediments - the "colmatation zone" - is a regional water source and serves as the upper waterproof roof of the aquifer.

The nature of water-bearing rocks is determined by the position in the terrain. In the watershed areas, the roof and foot of the aquifer are slightly elevated above the river valley areas. The direction of groundwater flow is from watersheds to valleys. Groundwater is pressurised over most of the territory, with a decreasing pressure in the watersheds, where groundwater may be non-pressurised. The height of the head increases from the slopes of the watersheds to the river valleys.

Groundwater levels are found at depths ranging from 3 m in river valleys to 15-20 m in watershed areas. The thickness of the aquifer is closely related to the fractured nature of the marl strata of the Cretaceous sediments.

The aquifer is confined to a zone of intense fracturing in the marl and chalk strata (zone of active water exchange). Fracturing of rocks within the zone is not continuous in the vertical section.

Well flow rates vary from 0.04 to 6.2 dm^3/s. The maximum well flow rates are observed in river valleys, where the zone of intense fracturing is also characterised by maximum water permeability. Filtration coefficients range from 0.02 to 1.5-40 m/d.

The water is mainly calcium bicarbonate with a salinity of 0.2-0.6 g/dm^3.

The waters are neutral (pH 6-8). The total hardness varies from 1.9 to 11.8 mg-eq/dm^3, mainly from 6 to 9 mg-eq/dm3. The prevailing values of total iron content are from 0.2 to 0.4 mg/dm^3.

The Upper Cretaceous aquifer is recharged by infiltration of precipitation through the thickness of overlying sediments in watersheds and their slopes, as well as by groundwater inflow from the north and north-east from the area of the GWBs in the Upper Cretaceous sediments of the Western Bug River basin. Under natural conditions, the Upper Cretaceous aquifer is discharged into the river network through a low-power layer of Quaternary formations and into Quaternary aquifers in areas where the piezometric surface is higher than the groundwater table.

According to the results of regional routine observations, natural fluctuations in groundwater levels are observed in natural conditions depending on the season.

Due to its small size, it is used to a limited extent within the Sian River basin.

GWBs of the Upper Devonian sediments of the Western Bug River basin (UAA6610D100)

The Upper Devonian aquifer (D3) is the second pressure aquifer from the surface in the southeastern marginal part of the Western Bug River Basin.

It is overlain by the Upper Cretaceous aquifer complex. The zone of active groundwater exchange in the Upper Devonian sediments lies at depths of 100-200 m. The water-bearing rocks are sandstones with interlayers of mudstones and siltstones of the Frankian Stage and sandy and dolomitised limestones, flinty dolomites, cavernous and dense dolomites of the Famenian Stage. The depth of the aquifer cover is 73-270 m. Geophysical surveys in the wells revealed a zone of effective fracturing in the Upper Devonian sediments up to 100 m thick. The layered nature of fracture development in the vertical section was established. The water-saturated zones alternate with water-tight zones that do not have a continuous planar development. The most water-saturated zone is the 40-80 m thick rock stratum, which lies in the roof of the Upper Devonian aquifer complex. The aquifer is under pressure, with a head of 72-273 m. The piezometric levels are set at the levels ranging from +17.8 m from the ground surface to 9.3 m. The water enrichment of the complex is uneven over the area and cross-section. Well flow rates range from 4-5 to 265 dm^3/s. The water permeability of the reservoir varies from 70 to 2,280 m^2/d. The chemical composition of the water is calcium bicarbonate with a salinity of 0.4-0.7 g/dm^3. The aquifer complex is fed by groundwater flow from the upper horizons in the watershed areas. The Upper Devonian aquifer is used to supply water to settlements to the east of Lviv and is identified as a promising area for centralised water supply.

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

2.1. Surface water

The Vistula basin is located within 2 oblasts, Lviv and Volyn. The socio-economic structure of the basin creates prerequisites for the formation of anthropogenic pressure that affects surface water ecosystems. The main factors of anthropogenic pressure include:

- Population. There are 1137 settlements in the basin, with a population of about 1.44 million people, with a population density of 113 people/km in Lviv Oblast[2] and about 50 people/km in Volyn Oblast[2] .
- Enterprises in various sectors of the Ukrainian economy.
- Agriculture, which is one of the economic sectors of the basin's regions and is characterised by a high level of development. The main agricultural crops include cereals, industrial crops, potatoes, and fodder crops.
- 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 pressures 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 SWBs.

The assessment of the anthropogenic pressures on the SWBs was carried out in accordance with the Methodological Recommendations for the Analysis of the Main Anthropogenic Pressures and Their Impact 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)[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[2]

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

Criteria for chemical and physicochemical indicators:

- 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;

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

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

- 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 downstream 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. "not at 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 pressures on the SWB and the possible effects of government programmes and projects already implemented.

To assess the risk, an analysis of the anthropogenic pressures 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 pressures from point sources of pollution and their flow to the state of the Vistula basin's SWBs, the risk of not achieving good ecological status/potential was identified (Fig. 6) for

- 215 SWBs - "no risk"
- 29 SWBs - "possibly at risk"
- 25 SWBs - "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 flow to the state of the Vistula basin's SWBs, the risk of not achieving good ecological status/potential was identified (Fig. 7) for

- 23 SWBs - "no risk"
- 57 SWBs - "possibly at risk"
- 189 SWBs - "at risk"

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

Assessing the risk of not achieving environmental objectives: hydromorphological changes

Based on the results of the hydromorphological changes assessment, it was found that:

- 104 SWBs - "no risk"
- 159 SWBs - "at risk"

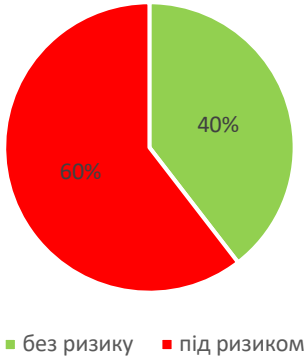


Figure 8. Risk assessment of failure to achieve good ecological status/potential based on anthropogenic pressure assessment: hydromorphological changes

Generalised risk assessment of failure to achieve good ecological status/potential

The risk of not achieving good ecological status/potential has been assessed as follows:

- 10 SWBs - "no risk"
- 20 SWBs - "possibly at risk"
- 239 SWBs - "at risk"

Figure 9. Summary assessment of the risk of not achieving good ecological status/potential of SWBs

Impact of military operations on the state of surface water bodies

Pollution (organic, biogenic, hazardous) substances caused by the **pollution:**

- **destruction, suspension, disruption of the technological process of treatment facilities and increased loads on them due to the growing number of internally displaced persons**

There were no facilities in the Vistula basin that suffered damage, suspension or disruption of the ODS process.

- **destruction, suspension, or disruption of the technological process of enterprises (including warehouses and oil product depots)**

In the Vistula basin, on 26 March 2022, as a result of a rocket attack on the oil depot of the Lviv Oil Terminal, a large volume of oil products entered the Poltva River and the Western Bug River. During March-July 2022, there was a significant excess of their concentrations in these water bodies.

Analyses of oil components in the Zakhidnyi Buh River revealed significant exceedances of the maximum permissible concentration of anthracene (up to 200 times); high concentrations of other aromatic hydrocarbons and halogenated hydrocarbons, including benzene, trichloroethylene, tetrachloroethylene, and chloroform (trichloromethane) were detected. The results of water samples taken in May 2022 showed a significant decrease in the content of oil products in the Poltva River and the Western Bug River.

In June-July 2022, the content of oil products in these rivers dropped to the level before the missile strike.

Data on the destruction, suspension or disruption of the technological process of enterprises as of September 2023 are presented in Annex 3.

- **direct ingress of pollutants from missiles, shells of military equipment, their washing away, seepage in combat zones**

There are no active hostilities in the Vistula basin, so no pollutants from missiles or military equipment have been recorded in the water bodies.

The hydromorphological changes caused:

- **Changes in the hydrological regime due to the destruction or disruption of hydraulic structures (dams, dikes, locks)**

No hydromorphological changes caused by changes in the hydrological regime as a result of the destruction or disruption of the operation of hydraulic structures (dams, dikes, sluices) in the Vistula basin have been recorded.

- **water intake to eliminate water shortages for drinking and other needs**

No hydromorphological changes caused by water abstraction to eliminate water shortages for drinking and other needs in the Vistula basin are observed.

- **Increased fluctuations in water levels below hydroelectric dams during periods of peak load coverage**

There are no hydromorphological changes in the Vistula basin associated with increasing fluctuations in water levels.

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

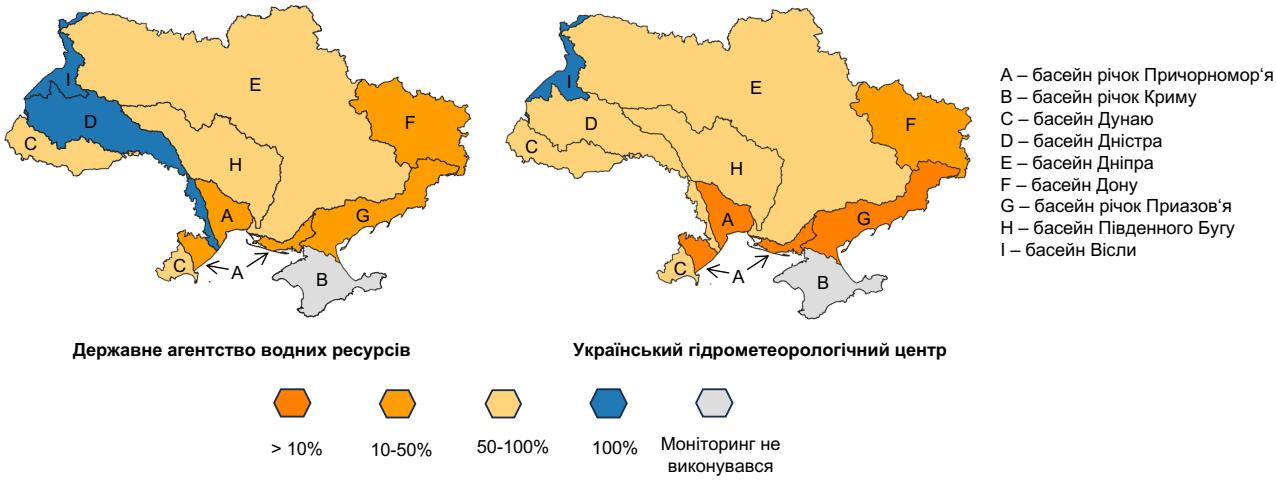


Figure. 10. Surface water monitoring by river basin, 2022[3]

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

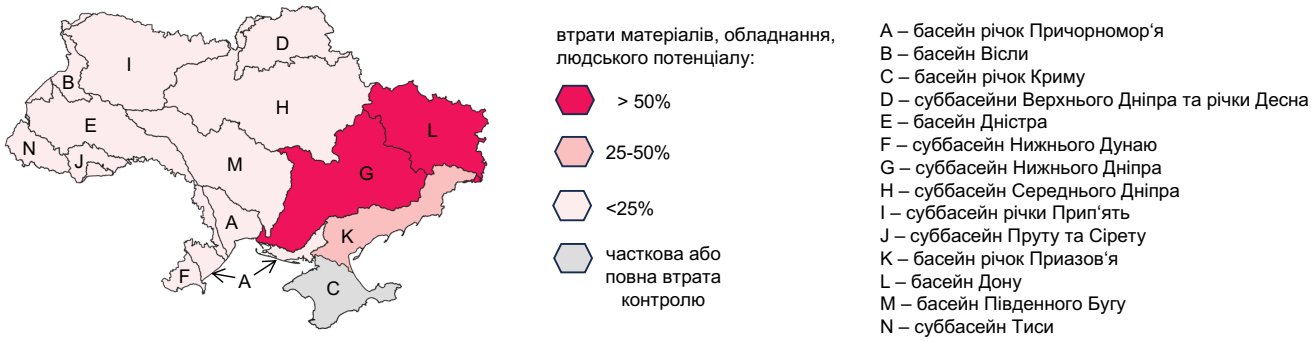


Figure 11: Impact of military operations on the ability to manage water resources[4]

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 indirect indicators of BOD5 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 due to the vital activity of 1 person. In European countries, the generation of load from the population is calculated using the following indicators: BOD5 - 60 g/day/person, COD - 110 g/day/person.

Point sources

In total, there are 1137 settlements in the Vistula basin. Cities with a population of more than 100,000 people have the greatest impact on the state of surface waters. In the Vistula basin, this is only the city of Lviv.

The population of the Vistula River basin is 1.44 million people. The largest city in the basin is Lviv (721.3 thousand inhabitants). There are 12 cities in the Vistula River Basin with more than 10,000 inhabitants, accounting for 70% of the population. In 2021, these cities contributed a total of 1,691.1 tonnes and 7,322 tonnes of organic matter to the Vistula Basin SWBs in terms of BOD5 and COD, respectively (Table 10).

[3] The information was prepared by the Zoy Environmental Network for the OSCE Project Co-ordinator in Ukraine.

[4] The information was prepared by the Zoy Environmental Network for the OSCE Project Co-ordinator in Ukraine.

Table 10. Cities in the Vistula basin with population over 10 thousand inhabitants

City	Population	Name of the water body to which the waste water	Type sewage treatment waters	Total organic matter load, t/year	
				BOD5	COD
Western Bug sub-basin					
Lviv	721 301	Poltva	biological	1541,7	6688,7
Zolochiv	24 109	Zolochivka	biological	12,6	31,7
Kamenka-Buzka	10 630	Kamenka	biological	6,7	19,4
Zhovkva	13 899	Svynia	biological	4,0	15,6
Sokal	20 882	Western Bug	biological	14,2	80,2
Chervonohrad	65 871	Western Bug	biological	52,9	251,4
Novovolynsk	51 010	Western Bug	biological	26,4	145,3
Volodymyr-Volynskyi	38 340	Luga	biological	6,7	47,7
Luboml	10 425	Hapa	biological	8,5	0,6
Sian sub-basin					
Sycamores	12 946	Shklo	biological	0,9	3,7
Novoyavorivsk	31 218	Gnoinets	biological	13,8	32,2
Town	15 825	Rakov	biological	2,7	5,6
Total	1 016 456			1691,1	7322,1

In 2021, a total of 7.6 thousand tonnes of organic matter (COD) was discharged to the Vistula basin's SWBs as part of wastewater. About 88% of organic matter (by BOD5 and COD) entered the Poltva River with wastewater from Lvivvodokanal, which receives wastewater from the city of Lviv (Tables 11-12).

Table 11. Inputs of organic substances to surface waters in wastewater, 2021

Name	Organic matter, tonnes per year	
	BOD5	COD
Western Bug sub-basin		
Western Bug	117,7	620,6
Zolochivka	12,6	31,7
Poltva	1541,7	6688,8
Yarychivka	21,0	54,0
Dumnitsa	0	0,1
Marunka	0	0,2
Tymkovetskyi Stream	0,1	0,4
Semyon	0	0,1
Kamenka	6,7	19,4
Kholoivka	0,7	1,5
Kiysky Stream	0,6	2,3
Rata	5,2	20,1
Svynia	4,0	15,6
Balanda (Mlynivka)	0,2	0,2
Solokia	0	0,1
Stripa	0,1	0,3
Luga	6,7	47,7
Hapa	8,5	0,6
Luga-Svynoriyka	0,4	2,4
Sian sub-basin		
Zavadivka	0,3	1,3
Vyshnia	2,5	4,4
Rakov	3,0	6,9
Zelenyi	0,1	0,4
Butsivskyi Canal	0,3	0,7
Shklo	1,2	4,7
Pyla	1,6	4,3
Gnoinets	13,8	32,2
Total	1749,0	7561,0

About 98% of organic substances (BOD5 and COD) enter the surface waters of the Vistula River basin from municipal enterprises (Table 12).

Table 12. Inputs of organic substances to surface waters as part of wastewater from municipal enterprises, 2021

Name	Organic matter, tonnes per year	
	BOD5	COD
Western Bug sub-basin		
Western Bug	105,1	523,8
Zolochivka	12,6	31,7
Poltva	1541,7	6688,7
Yarychivka	0,3	1,5
Kamenka	5,9	17,0
Kiysky Stream	0,6	2,3
Rata	5,1	20,0
Svynia	4,0	15,6
Balanda (Mlynivka)	0,2	0,2
Luga	6,7	47,7
Hapa	8,5	0,6
Luga-Svynoriyka	0,4	2,4
Sian sub-basin		
Zavadivka	0,3	1,3
Vyshnia	2,5	4,4
Rakov	3,0	6,9
Shklo	0,9	3,5
Pyla	1,6	4,3
Gnoinets	13,8	32,2
Total	1713,2	7404,1

Industrial wastewater contributes 1.4% of organic matter (COD) to the rivers of the Vistula basin, educational institutions - 0.7%, transport companies - 0.02%, and agriculture - 0.04% (Table 13).

Table 13. Organic matter discharges to surface waters as part of industrial wastewater, 2021

Name	Organic matter, tonnes per year	
	BOD5	COD
Western Bug sub-basin		
p. Western Bug	12,6	96,8
p. Yarychivka	0,1	0,5
p. Dumnitsa	0	0,1
p. Kamenka	0,8	2,4
p. Kholoivka	0,7	1,5
p. Rata	0,1	0,1
p. Strip	0,1	0,3
Xian sub-basin		
p. Glass	0,2	0,8
Total	14,6	102,5

2.1.2. Nutrients pollution

Nutrient inputs to the surface waters of the Vistula basin 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 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, with some influence from ferrous, silicon and molybdenum. 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 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.

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 of water bodies includes:

- agricultural runoff coming from agricultural land and reclaimed land;
- runoff from pastures and forests;
- urbanised runoff from the territories of settlements;
- runoff from industrial sites;
- precipitation falling on the catchment area and water bodies;
- surface runoff from rural areas and livestock farms;
- economic activity in the catchment area.

The significance of diffuse sources for nutrients pollution was assessed in terms of the sources of their input. Precipitation has virtually no effect on the migration of organic matter into the SWBs, so this source can be neglected.

The peculiarity of the soil cover in Ukraine contributes to the retention of humus in the soil layer and prevents its leaching. This natural feature prevents the loss of humus from the soil and has resulted in low levels of naturally occurring organic matter in river waters.

The main source of organic compounds is the households of the predominantly rural population, which are not served by a sewerage system.

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 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.

The risk from crop production in the Western Bug sub-basin is 70%, and in the Syan sub-basin - 71%.

Figure 12. Risk from crop production in the Western Bug sub-basin

There is no risk from livestock in the Vistula River basin.

Figure 13. Risk from crop production in the Sian River sub-basin

Figure 14. Risk from livestock in the Western Bug sub-basin

Figure 15. Risk from livestock in the SianRiver sub-basin

Point sources

Indicators of the main nutrient inputs to the surface waters of the Vistula basin are shown in Table 14.

Table 14. Inputs of biogenic substances in wastewater to the SWBs of the Vistula basin (2021 data).

Name	Pollutants			
	ammonium nitrogen, tonnes	nitrates, tonnes	Nitrites, tonnes	orthophosphates, tonnes
Western Bug sub-basin				
Western Bug	24,1	97,7	2,0	19,8
Zolochivka	1,0	5,0	0	2,4
Poltva	185,1	986,0	32,1	138,9
Yarychivka	5,7	1	1,7	2,0
Tymkovetskyi Stream	0	0,1	0	0
Kamenka	1,0	1,3	0	0,6
Kholoivka	0	0,5	0	0
Kiysky Stream	0,1	0,4	0	0,1
Rata	0,8	2,5	0	0,6
Svynia	0,2	3,5	0	0,4
Balanda (Mlynivka)	0	0	0,1	0
Luga	4,7	7,9	0,3	2,5
Hapa	0,1	0,1	0	0
Luga-Svynoriyka	0,2	0,4	0	0,1
Sian sub-basin				
Zavadivka	0,2	0,3	0	0,2
Vyshnia	0,2	2,2	0	0,2
Rakov	0,1	0,8	0	0,1
Zelenyi	0	0,6	0	0
Butsivskyi Canal	0	0,3	0	0,1
Shklo	0,3	0,7	0	0,4
Pyla	0,1	0,2	0,1	0
Gnoinets	1,5	3	0,1	0,2

Name	Pollutants			
	ammonium nitrogen, tonnes	nitrates, tonnes	Nitrites, tonnes	orthophosphates, tonnes
Total	225,4	1114,5	36,4	168,6

According to state water accounting data in the form No. 2TP-Vodkhoz (annual), in 2021, biogenic substances were discharged:

- 225 tonnes of ammonium nitrogen, which is 17% less than in 2020, mainly due to a reduction in discharges of these substances by Lvivvodokanal;
- 1,114.5 tonnes of nitrates, 10% less than last year, due to a decrease in the volume of nitrate discharges by Lvivvodokanal;
- 36 tonnes of nitrite, which is the same as in 2020;
- 169 tonnes of phosphates, 10% less than last year, due to a decrease in discharges of these substances by Lvivvodokanal and Chervonogradvodokanal.

According to state water use accounting data, about 97-99% of nutrients enter the surface waters of the Vistula River basin from housing and communal services. The largest volumes of nutrient discharges come from Lviv's wastewater into the Poltva River. According to 2021 data, 82% of ammonium nitrogen, 88% of nitrates, 88% of nitrites, and 82% of orthophosphates were discharged into the Poltva River.

The influence of nutrients on the state of the SWBs can be reflected in the values of phytoplankton, phytobenthos and macroliths and described through the eutrophication process.

The eutrophication assessment is based on two separate modules:

- biological indicators reflecting eutrophication;
- nutrients that express the main cause of eutrophication.

To assess the degree of eutrophication, the results of biological studies are required:

- phytoplankton (microscopic plant organisms living in water, cyanobacteria and algae);
- phytobenthos - bottom diatoms (microscopic and macroscopic diatoms);
- macrophytes - (aquatic vascular plants, mosses, macrophytes).

2.1.3. Pollution by hazardous substances

Hazardous substances are represented by priority pollutants. They are subject to control in accordance with the Order of the Ministry of Ecology and Natural Resources No. 45 and the draft Order of the Ministry of Ecology and Natural Resources 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.

However, the available information on the discharge of priority pollutants is currently quite limited. According to the 2TP Vodhosp (annual) reporting for 2021, only Lvivvodokanal provided information on the presence of pollutants in the discharge of return (waste) water included in the list of priority pollutants by Order of the Ministry of Ecology and Natural Resources of Ukraine No. 45, namely the content of lead and nickel.

In addition to the priority pollutants, 2TP Vodhosp's 2021 annual report contains information on discharges of oil products, surfactants, iron, manganese, copper, zinc, and total chromium into the surface waters of the Vistula basin (Table 15).

Table 15. Pollutant discharges into the surface waters of the Vistula basin (2021 data)*.

Name	Iron, t	Manganese, kg	Copper, kg	Petroleum products, kg	Nickel, kg	Lead, kg	Steam, kg	Chrome total, kg	Zinc, kg
Western Bug sub-basin									
Western Bug	2,7	-	-	87,7	-	-	643,7	-	-
Zolochivka	0,1	-	-	-	-	-	58,1	-	-

Name	Iron, t	Manganese, kg	Copper, kg	Petroleum products, kg .	Nickel, kg	Lead, kg	Steam, kg	Chrome total, kg	Zinc, kg
Poltva	29,2	138,2	533,2	-	335,7	355	17051,1	355	216,9
Miklashevka	0,0	-	-	0,2	-	-	-	-	-
Marunka	0,0	-	-	-	-	-	0,6	-	-
Yarychivka	0,1	0,0	0,0	7,4	-	-	221,9	-	-
Tymkovetskyi	0,0	-	-	-	-	-	0,8	-	-
Semyon	0,0	-	-	0,1	-	-	0,9	-	-
Kamenka	0,2	-	-	30,6	-	-	131,3	-	-
Kholoivka	0,0	-	-	-	-	-	5,3	-	-
Kiysky	0,0	-	-	3	-	-	2,4	-	-
Rata	0,1	-	-	3,9	-	-	28,7	-	-
Svynia	0,1	-	-	-	-	-	10,7	-	-
Balanda (Mlynivka)	0,0	-	-	3,2	-	-	0,2	-	-
Luga	0,3	-	-	-	-	-	-	-	-
Sian sub-basin									
Sian	0,0	-	-	-	-	-	0,1	-	-
Bukhta	0,0	-	-	-	-	-	0,1	-	-
Zavadivka	0,0	-	-	-	-	-	11,2	-	-
Vyshnia	0,0	-	-	-	-	-	10,0	-	-
Rakov	0,0	-	-	-	-	-	5,0	-	-
Zelenyi	0,0	-	-	-	-	-	1,2	-	-
Butsivskyi Canal	0,0	-	-	-	-	-	0,5	-	-
Shklo	0,0	-	-	1,7	-	-	15,4	-	-
Pyla	0,0	-	-	-	-	-	10,3	-	0,3
Gnoinets	0,0	-	-	-	-	-	21,6	-	-
Total	**32,8**	**138,2**	**533,2**	**137,8**	**335,7**	**355,0**	**18231,1**	**355,0**	**217,2**

* *The minus sign means that water users that discharge wastewater into the WRF did not indicate these ingredients in their water use reports in the form No. 2TP Vodkhoz (annual) for 2021.*

According to water accounting data in the form No. 2TP-annual (water management) for 2021, the following hazardous substances were recorded in the surface waters of the Vistula basin:

- total iron - 33 tonnes, down 7% from 2020;
- Synthetically produced surfactants - 18.2 tonnes, down 9% year-on-year;
- petroleum products - 138 kg, which is 17% less than in 2020;
- Manganese -138 kg, down 97% year-on-year;
- chrome - 355 kg, down 21.5% year-on-year;
- copper - 533 kg, down 90% from 2020;
- lead - 355 kg, up 89% year-on-year;
- Zinc - 217 kg, down 97% on 2020

The Vistula basin is characterised by a high iron content, largely due to natural factors. Accordingly, iron discharges have been detected in the wastewater of all enterprises in the basin.

Discharges of Synthetically produced surfactants increased mainly due to the volumes of discharges by ME Lvivvodokanal and, to a lesser extent, by ME Chervonogradvodokanal.

The decrease in oil product discharges was mainly due to a decrease in discharges by ME Lvivvodokanal (by 8.6%).

Only ME Lvivodokanal discharges other hazardous substances. In 2021, compared to 2020, there was a significant decrease in discharges of manganese, copper, chromium, and zinc due to a lower volume of wastewater flow to Lviv's sewage treatment plants and the reconstruction of Lvivvodokanal's treatment facilities. Last year, some of the city's enterprises also reduced or stopped production, including Iskra, Svitanok, a branch of Tekhvoenservice,

Almazinstrument, a branch of Lviv Dairy Plant Prometey, Microprylad, and Geos-Lviv.

The significant increase in lead emissions (by 89%) was due to the growth in the number of vehicles in Lviv.

The highest levels of hazardous pollutants are discharged into the Poltva River with wastewater from Lvivvodokanal (Table 16).

Table 16. Pollutant discharges in wastewater of ME Lvivvodokanal in the Western Bug sub-basin

Year	Name and amount of pollutants, t					
	Iron	Manganese	Chrome	Copper	Lead	Zinc
2017	35,58	2,529	0,343	3,2	0,862	2,447
2018	33,19	3,937	0,257	4,283	0,651	5,566
2019	22,9	3,479	0,356	3,98	0,479	5,083
2020	31,48	5,49	0,4525	5,49	0,0389	7,8885

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

The Vistula River basin is home to a wide range of industrial activities, including energy production (heat/hydroelectric power plants), mining (coal), chemicals, pharmaceuticals, textiles, pulp and paper, livestock and food production (dairies, breweries, etc.), which 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 Vistula River 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 dumps located in flood zones. Such a register should first include facilities in the Vistula River 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.

Recent studies conducted in the Vistula River basin have revealed insignificant exceedances of synthetic substances such

as pesticides, as well as insignificant exceedances of aromatic hydrocarbons and heavy metals such as zinc and copper, and nickel and mercury, which confirms the anthropogenic pressures on the Vistula River Basin Monitoring (VRBM).

There are 14 economic entities in the Lviv region that use ionising radiation sources, and the radioactive waste disposal site (3.8 hectares) is located 16 km from Lviv, in the village of Buda, Yavoriv district (9 km from the nearest station "Bryukhovychi"), owned by the State Corporation "Ukrainian State Association "Radon". Since 1989, medical and industrial radioactive waste has been brought there from all over western Ukraine. The disposal site has paramilitary guards and is located close to the watershed, but is in the Vistula basin.

In addition, the Vistula River basin is also exposed to hazards from spent tailings, sludge ponds and sedimentation tanks. The activities of coal, chemical and energy industry enterprises resulted in solid residues containing radioactive elements.

For example, the sour tar storage facility at the Lviv Research Oil and Gas Plant OJSC is classified as hazard class II. The storage facility contains sour tar containing sulphuric acid and oil products. The sludge pond for iron-zinc-containing wastewater of the former Sokal Chemical Fibre Plant is classified as hazard class III.

The remaining tailing ponds of coal and chemical enterprises are classified as hazard class IV, namely coal preparation waste (factory tailings, coal preparation) of Lvivsystemenergo and solid fraction of tailings (limestone) of Yavoriv SCCP "Sira".

Currently, all the facilities are inactive, closed or mothballed.

From time to time, the Regional Commission on Technogenic and Environmental Safety and Emergencies approves lists of potentially hazardous facilities registered in the State Register of Chemical Hazards and chemically hazardous facilities by the degree of chemical hazard. In the Vistula River basin, the Commission on Technogenic and Environmental Safety and Emergencies has registered 3 potentially hazardous areas of risk group I (high possibility of man-made emergencies), namely: Chervonohrad Mining and Industrial District, Volyn Mining and Industrial District and Sulphur State Chemical Plant (Novoyavorivsk).

Chemically hazardous enterprises use mainly ammonia, chlorine and acids (hydrochloric). The maximum amount of chemically hazardous substances transported by rail reaches 1,200 tonnes per day.

The basin is crossed by the oil pipeline of the Druzhba branch of the oil company, Ukrtransnafta, and the Prykarpattransnaftoprodukt product pipeline.

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.

Another source of water pollution in the Western Bug and Syan sub-basins is the deterioration of treatment facilities and the sludge waste accumulated as a result of long-term operation from sludge pits and filtration fields. The largest of these is located on the territory of the Lviv Wastewater Treatment Plant and covers an area of 22 hectares. It has accumulated more than 2 million tonnes of sludge, the storage of which does not meet environmental standards and therefore poses a potentially dangerous threat to the environment. The critical situation with wastewater treatment is in the cities of Chervonohrad, Sokal, Radekhiv, Rava-Ruska, Kamianka-Buzka, Zhovkva (Western Bug sub-basin) and the towns of Yavoriv, Novoyavorivsk, Mostyska and Rudky (Syan sub-basin).

Table 17. Register of facilities in the Vistula River basin that are at risk of accidental pollution

№	Object name
1	Tailings storage facility No. 1 of LvivSystemEnergo (Chervonogradskaya CPP)
2	Tailings dump No. 2 of LvivSystemEnergo (Chervonogradska CPP)
3	Tailings storage facility at the Yavoriv SCCP's Sulphur Processing Plant
4	Vizhomlya tailing dump at Yavoriv State Chemical Plant "Sira"
5	Tailings storage facility for ore flotation at Yavoriv SCCP "Sulphur"
6	Ash and slag lagoons at Dobrotvirskaya TPP
7	Sour tar storage facilities, Lviv Research Oil and Gas Plant OJSC
8	Sludge collector for iron-zinc-containing wastewater, Business SV, former chemical fibre plant
9	Zelenyi Misto (Green City)
10	SE lvovugol
11	ME Volynvuhillia

№	Object name
12	ME Lvivvodokanal
13	ME Chervonogradvodokanal
14	ME Sokalvodokanal
15	ME Kamyanka Vodokanal
16	ME Zolochivvodokanal
17	ME Zhovkva VVKG
18	ME Rava-Ruske BU №2
19	ME Radekhivske VKG
20	ME Novoyavorivskvodokanal of the Municipal Company
21	Rudkivske Housing and Communal Services
22	Busk water and sewerage company
23	Energia-Teplovodoservis LLC
24	ME Gorodotske

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 out in the RBMP. Hydromorphological changes resulting from economic activity affect the conditions of aquatic communities, which can lead to a deterioration in the ecological status of the SWB. The presence of hydromorphological changes in surface water bodies (SWBs) leads to the deterioration of the ecological status of many SWBs in the Vistula 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);
- 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 river channels were built primarily to accumulate water, with its subsequent use for agricultural, municipal and industrial purposes. In the Vistula basin, 27 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. As of 2021, there are 1,868 ponds in the Vistula basin, and the basin's overregulation ratio is 1. 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 on the rivers of the Vistula basin 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 SWBs 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.

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

Decreased natural flows in the context of climate change 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 riverbeds, banks and floodplains of the Vistula basin are urbanisation, flood protection, agriculture and shipping. As a result of these activities, the 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 Vistula basin, river straightening (morphological changes) occurs at 132 river reaches.

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 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).

Most cases of hydromorphological changes occur on small rivers in the Vistula basin. Small rivers, according to the classification of rivers by basin area used in the definition of the SWBs, are rivers with a catchment area of up to 100 km^2.

2.2. Groundwater

2.2.1. Pollution

An important characteristic of GWBs is their protection against contamination from the surface. The criteria for assessing protection are the thickness and lithological composition of water-resistant rocks in the roof. The protected underground storage facilities are those with water-resistant layers of more than 10 m thickness, conditionally protected - 3-10 m, and unprotected - those with less than 3 m of water-resistant sediments. Pressure groundwater is also protected by hydrodynamic conditions.

The greatest anthropogenic impact in the Vistula basin is experienced by non-pressure GWBs (UAA6610Q100, UAA6620Q100, UAA6610Q200, UAA6620Q200), which are unprotected from surface pollution. The shallow depth of water-containing sediments and the absence of aged water-resistant layers in the aeration zone create conditions for pollutants to enter these GWBs from the surface. The pressure GWBs and groups of pressure GWBs (UAA6610N100, UAA6620N100, UAA6610K100, UAA6620K100, UAA6610D100) are located under the water-resistant sediments, which makes it difficult for them to connect with surface ecosystems and provide protection against pollution from the surface. Due to their geological structure, these GWBs are mainly protected and conditionally protected within the basin.

Groundwater quality.

Non-pressure GWBs. In the Western Bug sub-basin, the quality composition of non-pressure groundwater is dominated by calcium hydrocarbonate, sometimes chloride-hydrocarbonate, sulfate-hydrocarbonate calcium,

sodium-calcium, magnesium-calcium groundwater with salinity up to 1 g/dm^3 . In the Siansub-basin, chloride, hydrocarbonate-sulfate-chloride sodium-calcium waters with salinity up to 1 g/dm are recorded^3 . Groundwater in the Vistula basin has an increased iron content, and within the boundaries of settlements - an increased nitrate content.

Pressure GWBs. In most areas of groundwater deposits in the Volyn region, the water meets the standards of physiological adequacy (0.2-0.5 g/dm^3). The water composition is calcium bicarbonate. Exceedance of the mineralisation standard at water intakes is practically not observed. In some cases, there are elevated hardness and iron content. In Lviv region, the main aquifers are Cretaceous marls, Neogene limestones and sandstones, and Quaternary alluvial gravel and pebble deposits. At most water intakes, the water is characterised by salinity levels of up to 1 g/dm^3 . The predominant chemical composition is calcium bicarbonate. In some areas, the normative indicators of mineralisation and hardness are exceeded, as well as the content of sulphates, chlorides and iron is increased. Due to the complex geological and hydrogeological conditions, the chemical composition of the GWBs is often not consistent. For example, massifs in Cretaceous sediments in some deposits are characterised by significant changes over time (increase in mineralisation due to sulphates). Significant heterogeneity is characteristic of the waters of the UAA6620N100, which is especially evident in the area of Novoyavorivsk, where the sulphate content is significantly increased. Therapeutic mineral waters of the "Naftusya" and other types are also associated with the UAA6620N100.

Point sources of pollution

Groundwater in the Vistula basin is subject to significant anthropogenic pressure. There are 1137 settlements, a significant number of industrial enterprises, and intensive agriculture. The basin is home to numerous mining, food, processing, light manufacturing, woodworking, utilities and transport companies.

Point source pollution (air emissions, wastewater discharges, solid waste storage) occurs over small areas, but is long-lasting and concentrated, so pollutants can affect groundwater in the long term.

Lvivvuhillya and Volynvuhillya are operating within the basin. Currently, Lvivvuhillya has 4 operating mines (12 mines were operating in the last century). In addition to the mines themselves, there are related businesses and infrastructure facilities (waste heaps, mine water ponds, a central processing plant, product warehouses, etc.) Dumps and waste heaps are sources of surface and groundwater pollution. There is an active runoff from the waste heaps and dumps into the Western Bug River; the runoff contaminates groundwater used by the population for drinking purposes. A significant excess of the normative content of a number of macro- and microelements was recorded in the wells. No transboundary impact of the above facilities has been identified.

There are 2 sulphur deposits within the SianRiver sub-basin - Yazivske and Nemyrovske. For a long time, sulphur was extracted here using open-pit and underground methods (underground sulphur smelting). Sulphur mining was stopped almost 20 years ago, and the area has been partially reclaimed. However, the groundwater contains increased levels of chlorine and sulphate. Currently, there are no other large-scale mining facilities in the area, and the environmental impact is minimised.

The impact of point sources of pollution on non-pressure GWBs is most often manifested in localised increases in mineralisation, sulphates and nitrates, as well as specific components of certain industrial enterprises.

The impact of point sources on the pressure GWBs has not been established.

Diffuse sources of pollution

Agriculture has the most significant impact on non-pressure groundwater bodies and groups of groundwater bodies. Almost all aquifers first from the surface within rural settlements are contaminated with nitrogen compounds. The deterioration of groundwater quality here is caused by the use of fertilisers and pesticides, the impact of land reclamation systems on agricultural land, livestock enterprises, etc.

Table 18 shows the data on the application of fertilisers and plant protection products in Lviv and Volyn regions in 2020.

Table 18. Pressures from pesticides, mineral and organic fertilisers in Volyn and Lviv oblasts as of 2022 (numerator) and minimum and maximum for the period 2007-2022 (denominator)

Administrative oblast	Mineral fertiliser application, 100% of nutrients per 1 ha of sown area, kg	Organic fertiliser application, thousand tonnes	Pesticide application, kg/ha
Volynska	254 63-295	325,9 303,0-590,5	1,931 0,48-2,39
Lviv	156 104-203	123,0 98,9-298,3	1,648 0,52-2,16

The discovery of large areas of nitrate contamination indicates a steady trend towards their accumulation in groundwater.

Pesticides are common pollutants in non-pressure underground water. In addition, the groundwater of the first aquifers from the surface is characterised by an increased content of iron of geogenic origin.

The reason for the high content of nitrates, nitrites and ammonium in the water of non-pressure GWBs is also the lack of centralised wastewater disposal. For example, in Lviv Oblast, 47.6% of the population is covered by centralised wastewater services, while in Volyn Oblast, only 31%.

Thus, the impact of diffuse sources of pollution on non-pressure GWBs causes them to be contaminated with nitrates and other nitrogen compounds.

The impact of diffuse sources on pressure GWBs has not been established.

2.2.2. Volumes/ reserves

In general, the territory is characterised by relatively favourable conditions for the formation of groundwater resources. Non-pressure GWBs are used for individual water supply in urban-type settlements in rural areas, while pressure GWBs are used for centralised water supply.

No assessment of groundwater resources in non-pressure aquifers has been carried out in Ukraine. As for the pressurised aquifers with drinking water, their projected resources were assessed within administrative regions (Table 19). The availability of drinking water resources per capita is 2.53 m^3 /d in Volyn Oblast and 1.46 m^3/d in Lviv Oblast.

According to Geoinform SE, the exploration of the forecast groundwater resources (FGR) in Volyn and Lviv oblasts (ratio of operational groundwater reserves (OGR) to FGR, %) is 13.7 and 36.7%, respectively, i.e., this indicator is higher in Lviv oblast due to a much more intensive anthropogenic load.

Table 19. Estimated groundwater resources, exploitable reserves and production (2020).

Oblast	FGR, ths. m^3/day	FGR on 1 person, m^3/day	OGR (A+B+C), thousand m^3/day	Explo-ration, %	Extraction from FGR, thousand m^3/day	Extraction from OGR, thousand m^3/day	Develop-ment of the OGR, %	Develop-ment of the FGR, %
Volynska	2586,3	2,52	354,09	13,7	104,997	69,99	20	4
Lviv	3644,1	1,46	1338,5	36,7	315,831	290,7	22	9

In Volyn region, the development of inferred resources is 4%, and producing reserves are 20%. In Lviv region, these figures are slightly higher: the development of forecasted resources is 9%, and exploited reserves are 22%. These figures indicate the possibility of a significant increase in groundwater production.

At the same time, it should be noted that groundwater in the pressure horizons is affected by the development of certain groundwater deposits. For example, in the groups of UAA6610K100 GWB, depression sinkholes were formed in places of intensive water withdrawal (Mageriv, Rava-Ruska, Kamianka-Buzka, Sokal, Chervonohrad group of water intakes, Volodymyr-Volynskyi, Novovolynsk).

It should be noted that Volyn and Lviv oblasts are among those regions of Ukraine where groundwater accounts for 97-99% of the centralised water supply. However, the share of the population covered by centralised water supply is only 46% in Volyn Oblast and 54% in Lviv Oblast. The rest of the population satisfies their household drinking needs mainly at the expense of non-pressure GWBs.

Thus, taking into account the above data, no negative impact from anthropogenic groundwater abstraction has been recorded for the non-pressure GWBs identified in the Vistula basin. As for the pressurised GWBs, the negative impact of water abstraction is manifested in the form of depression funnels within the operational water intakes. However, in the majority of the distribution of pressurised GWBs, the negative impact of water withdrawal at current production volumes is not observed.

2.2.3. Other significant anthropogenic impacts

The impact of military operations on the status of GWBs

Russian aggression is a significant negative factor in the anthropogenic impact on the environment.

Non-pressure GWBs. The quality of non-pressure GWBs 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 GWBs are expected due to military operations.

Pressure GWBs. The peculiarity of the territory of the western part of Ukraine is the increase in the number of people who migrated from the eastern and central regions of Ukraine. Therefore, a certain increase in groundwater extraction from pressure GWBs within the Vistula basin should be expected. However, no significant changes in the quantitative state of the pressure GWBs are expected due to military operations.

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

Assessment of the risk of not achieving "good" status

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

As for non-pressure GWBs, their quality condition within settlements is poor (nitrate pollution) (Table 2.2.3). There is no data on the chemical composition of non-pressure GWBs 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 most likely at risk of failing to achieve 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 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 contamination, the pressure water treatment plant is not at risk of failing to achieve good quality (chemical) condition (Table 21).

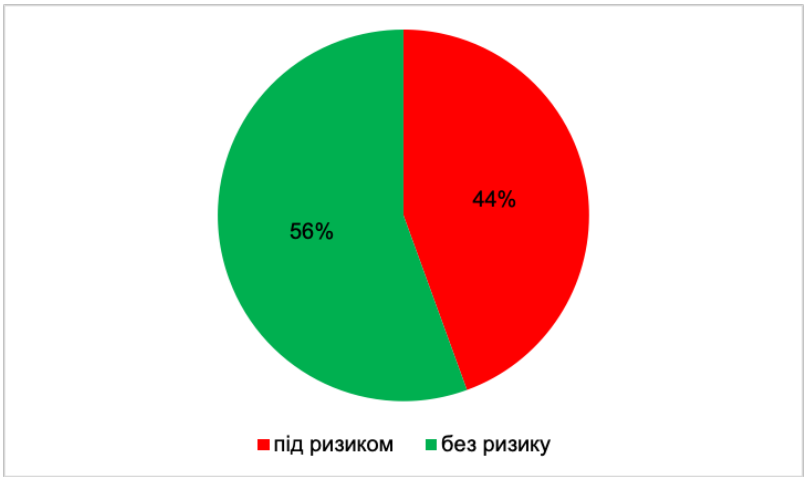


Fig. 16. Assessment of the risk of failure to achieve good chemical condition of the GWBs

Assessing the risk of not achieving good quantitative status

There is no negative impact from anthropogenic groundwater abstraction for the pressurised and non-pressurised GWBs identified in the Vistula basin. Long-term and steady downward trends are recorded in spatially limited areas. According to the available data, there is no risk of failure to achieve a good quantitative status for both pressurised and non-pressurised GWBs (Tables 20, 21).

Table 20: Risk of not achieving the environmental objectives of non-pressure GWBs

№	GWBs code	Area, km^2	Aquifer (complex)	Type of water use	Risk of not achieving environmental goals	
					Quality	Quantity
1	UAA6610Q100	2586	HG in alluvial sediments of Holocene floodplains and the first-second overflow terraces of the Upper Neopleistocene (a1-2 PIII+aH) of the Western Bug subbasin.	Domestic and drinking water, salt	At risk Organic pollution (nitrates, nitrites, ammonia).	No risk
2	UAA6620Q100	450,1	HG in alluvial sediments of Holocene floodplains and the first-second overflow terraces of the Upper Neopleistocene (a1-2 PIII+aH) of the Siansubbasin.	Domestic and drinking water, salt	At risk Organic pollution (nitrates, nitrites, ammonia).	No risk

3	UAA6610Q200	985,1	VC in glacial, lacustrine-glacial, fluvioglacial Middle Neopleistocene sediments (g,lg,fPII) of the Western Bug sub-basin.	Domestic and drinking water, salt	At risk Organic pollution (nitrates, nitrites, ammonia).	No risk
4	UAA6620Q200	797,7	VC in glacial, lacustrine-glacial, fluvioglacial Lower-Middle Neopleistocene sediments (g,lg,fPI-II) of the Siansub-basin.	Domestic and drinking, agricultural	At risk Organic pollution (nitrates, nitrites, ammonia).	No risk

Table 21: Risk of not achieving the environmental targets of the pressure water treatment plants

№	GWBs Code	Area, km^2	Aquifer (complex)	Type of water use	Risk of not achieving environmental goals	
					Quality	Quantity
1	UAA6610N100	181,9	VG in the Middle Miocene sediments (N1) of the Western Bug sub-basin	Domestic, drinking and agricultural water	No risk	No risk
2	UAA6620N100	287	HG in Middle Miocene sediments (N1) of the Siansub-basin	Domestic, drinking and agricultural water	No risk Local pollution of the territory during the development of native sulphur deposits.	No risk Formation of depression funnels at certain water intake sites
3	UAA6610K100	10170	HG in Santonian-Maastrichtian sediments (K2st-m) of the Western Bug sub-basin	Domestic, drinking and agricultural water	No risk Pollution of the territory during the development of coal deposits.	No risk Formation of depression funnels at certain water intake sites
4	UAA6620K100	92,76	HG in Maastrichtian sediments (K2m) of the Siansub-basin	Domestic, drinking and agricultural water	No risk	No risk Formation of depression funnels at certain water intake sites
5	UAA6610D100	471,3	VC in the sediments of the Red River series of the Upper Devonian D3 sub-basin of the Western Bug	Domestic, drinking and agricultural water	No risk	No risk

Other significant anthropogenic impacts

Climate change

Everyone knows that our planet is experiencing global climate change. But few people realise that some of the consequences of global warming are already affecting us today. Reduced rainfall, drying up of rivers, springs and wells, and the expansion of arid zones in Ukraine are just a small list of negative phenomena that we are encountering more and more often.

Over the past 30 years, the average annual temperature in Ukraine has already risen by 1°C. All seasons in Ukraine have become warmer. According to the Ministry of Ecology and Natural Resources, the average summer temperature in Ukraine has risen by 1.3°C, the average winter temperature by 0.9°C, the average spring temperature by 0.9°C, and the average autumn temperature by 0.4°C. As a result, droughts have intensified, the water content of rivers and lakes has changed, and extreme weather events that are not typical for Ukraine have emerged.

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. These 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.

Rising temperatures and changes in the moisture regime will lead to further changes in river flows and, accordingly, in the water supply of certain regions. The results of such studies show that the vast majority of administrative regions of Ukraine will experience a decrease in surface water runoff due to warming (increased surface air temperatures, increased evaporation) and reduced precipitation.

According to the UK National Meteorological Service, river flows in Central and Eastern Europe, including Ukraine, will decrease by 50% in the summer in the mid-21st century.

Other studies have shown that by the middle of this century, there will be a significant decrease in water resources in the

plains of Ukraine (up to 70% in the south-east), and an increase in water flow in the rivers of the Western region will manifest itself in the formation of catastrophic floods on mountain rivers.

In 2021, a study[5] was published to assess future climate change in Ukraine based on the analysis of climate projections for the 21st century using modern scenarios - representative concentration trajectories (RCPs), and data from global and regional numerical climate models.

As a result of the study, simulated changes in the average annual river flow (flow rate) in the Vistula basin for two future periods (2041-2070 and 2071-2100) were calculated under the RCP 2.6 and RCP 8.5 scenarios.

Projections of river runoff in the Western Bug basin indicate a decrease in runoff in all months except February. In some months, the runoff may decrease by up to -28% under RCP 2.6 and up to -30% under RCP 8.5. The largest reduction in runoff is expected during the autumn low water period under both scenarios. The slight increase in runoff in February is obviously due to a temporal shift in the onset of the spring flood peak under climate change. By the end of the century, under the RCP 8.5 scenario, a significant decrease in runoff by 25-32% is projected during the autumn low water mark, which will lead to a shortage of local water resources in the region.

The water and heat balance of the river basin 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.

According to forecasts, in the period 2041-2070, fluctuations in the average annual water flow of the Vistula basin rivers will range from -10% to +6%. The flow will not remain uniform throughout the year. In some months, the runoff may decrease by up to -30% according to the RCP 8.5. The largest reduction in runoff is expected during the autumn low water period under both scenarios. This will lead to a shortage of water resources in rural communities in Lviv and Volyn oblasts.

Pollution of water bodies with solid waste, including plastic

Microplastics are any plastic less than 5 mm in size. Its toxicity and negative impact on the environment have been discussed quite recently.

The consumption of plastics has increased more than 50 times over the past half decade. Between 60 and 90% of microplastics are washed off the roads. Almost 200 grams of microplastics are emitted for every 1000 kilometres driven by a car, and another 25% is released during the washing of synthetic fabrics, which gradually stratify into small microfibres. Particles are also often released during the production of plastic products and additives. Small plastic granules are added to detergents for an abrasive effect, and powdered plastics are also added to cosmetic powders, creams, and toothpastes.

As humanity has not yet reached a level of development that would recycle at least 90% of all plastic waste, the problem is becoming a global environmental issue.

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 Vistula river basin, but to the whole country and reflects the problem of waste management at both national and local levels.

The increased content of microplastics in rivers and water bodies, their particle size, and chemical properties determine their bioavailability to microorganisms. Based on the analyses conducted, it has been proven that almost all microorganisms and algae contain microplastics inside or on the surface. It is also found in crustaceans and corals. More than 90% of fish contain microplastics, which are implanted in the body's fibres and contribute to the accumulation of toxins in them. Consequently, it enters the human body through the food chain.

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.

No special studies have been conducted on the amount of waste on the banks and directly in rivers and water bodies in the Vistula 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

[5] 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.

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.

Studies of alien aquatic species in the Vistula basin are not systematic and are sporadic.

According to the report of the research work "Determination of reference conditions in the Vistula River Basin", in the Western Bug sub-basin, the results of macrophyte surveys show the presence of the invasive species Elodea canadensis, while among the true aquatic plants only Elodea canadensis, which belongs to the American invasive plants, and Callitriche cophocarpa are found. In the Siansub-basin, the Shklo River contains the adventive species Elodea canadensis, which, although an indicator of anthropogenic interference, is also an indicator of a mesotrophic environment. Five alien fish species have been recorded in the Western Bug sub-basin, and 4 in the Xian sub-basin. Over the past few decades, the fish fauna of the Shatsk Lakes has been replenished with invasive fish species (rotanus head, brown dwarf catfish), which have been quite successful in naturalising and have begun to put considerable pressure on the native fish fauna. Studies have shown that the introduction of the American catfish I. nebulosus into the waters of the Shatsk National Nature Park reduced fish productivity by 28 times.

The reasons for the appearance of alien species in the rivers of the Vistula basin 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.

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.

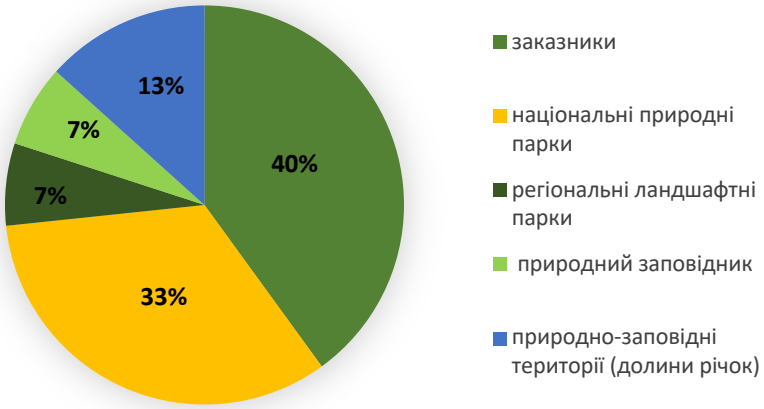
On 30 November 2018, six countries - the Republic of Belarus, Georgia, the Republic of Moldova, Norway, Switzerland and Ukraine - officially approved the lists of Emerald Network sites on their territories. The updated list of Emerald Network sites was approved on 2 December 2022. The Emerald Network of Ukraine includes 377 territories[6] , and covers about 8% of Ukraine's territory.

There are 15 Emerald Network sites in the Vistula basin, covering approximately 18.6% (2359.31 km^2) of the basin area.

By category (Fig. 17), the sites of the Vistula Emerald Network are divided into:

- nature reserve - 6
- national natural park - 5
- nature reserve - 1
- regional landscape park - 1
- Nature reserves (river valleys) - 2

Figure 17. Distribution of Emerald Network facilities by category (%)



None of the sites has a management and development plan. The list of sites of the Vistula Emerald Network is presented in Annex 4.

Impact of military operations

No cases of military operations impacting the Emerald Network sites in the Vistula basin have been recorded.

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" of 18 December 1998 No. 2024, 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 (Article 7), "Member States shall identify in each river basin:

- 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 providing water consumption for more than 50 people and
- Those water bodies that are intended for future use for the same purpose.

There are 616 water intakes in the Vistula basin, *including* 471 groundwater intakes and 145 surface water intakes (Figure

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

18).

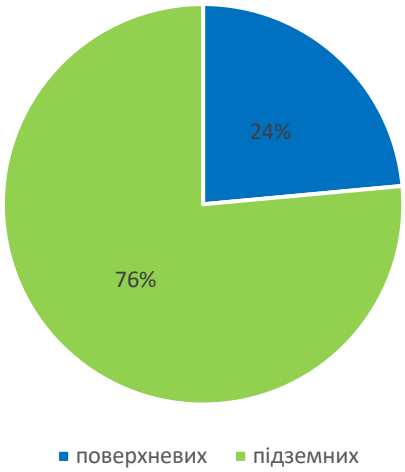


Figure 18. Distribution of drinking water intakes by type (%)

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 (part thereof) is a water body (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 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.

In the Vistula River basin (as of July 2023), there are 25 recreational and leisure facilities (Annex 5).

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, the Vistula RBD proposes to recognise 57 SWBs as vulnerable zones, which is 21% of the total number of SWBs in the Vistula 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), AND 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 Vistula basin, in 2023, monitoring was carried out at 23 monitoring sites at 17 SWBs, including:

- 8 monitoring points have been set up on the transboundary sections of the SWBs, defined in accordance with interstate agreements on cooperation on transboundary water bodies
- 1 monitoring point has been installed at the SWBs from which water is abstracted to meet the drinking and household needs of the population
- 2 monitoring points were installed to determine reference conditions and at the Emerald Network sites.

4.1.2. Hydromorphological assessment / status

Hydromorphological monitoring in 2021-2023 was carried out at 12 SWBs.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. According to the assessment results, 9 SWBs are classified as nearly natural, and 3 SWBs are classified as slightly modified (Fig. 19).

Figure 19. Distribution of SWBs according to the results of hydromorphological assessment

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 the content of pollutants in surface waters carried out at 23 monitoring points in the period 2021-2023, 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.

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 biphenyl ethers (esters), chloralkanes, C10-13, chlorphenvinphos mixture of cis and trans isomers, di(2-ethylhexyl)-phthalate, diuron, isoproturon, pentachlorophenol, tributyltin compounds (tributyltin cation), trifluralin, 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 results of the assessment of the chemical state of the SWBs are presented in Annex 8.

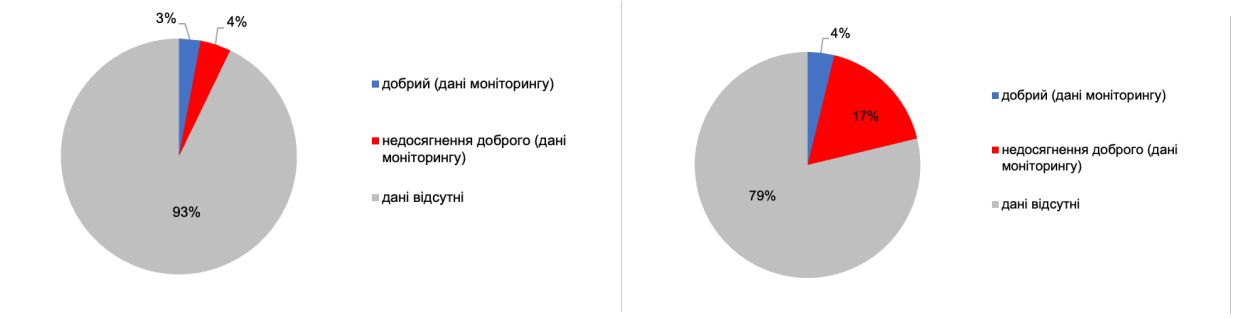
The chemical status was assessed on the basis of monitoring data obtained as part of the diagnostic and operational monitoring programmes for 18 SWBs in 2021-2023.

Based on the results of the assessment of the chemical status of the SWBs for the period 2021-2023, the following conclusions can be drawn from the monitoring data (Table 22):

- chemical condition is "good" – 7 linear SWBs (3% of the total number of linear SWBs). The total length of the pipeline is 119 km (4% of the total length of linear SWBs).
- chemical condition "failure to achieve good" – 10 linear SWBs (4% of the total number of linear SWBs). By the length of the SWBs, this is 540 km (17% of the total length of linear SWBs); 1 polygonal SWB (3% of the total number of polygonal SWBs). In terms of the area of the SWBs, it is 26 km^2 (24% of the total area of polygonal SWBs).

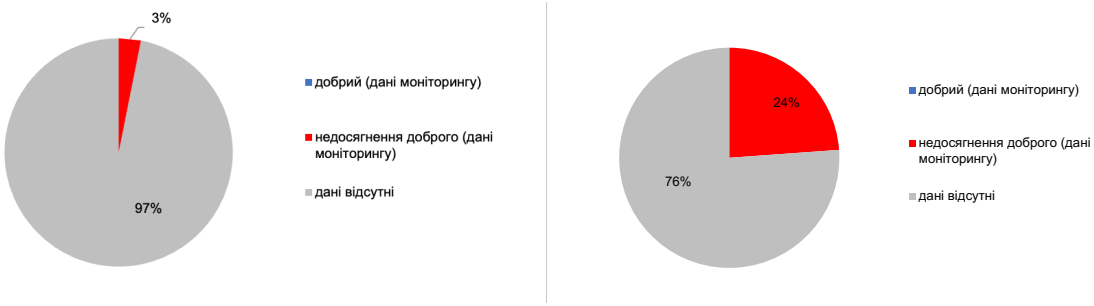
Table 22. Chemical status of the SWBs in 2022 (based on monitoring data)

Chemical status	number of linear SWBs	total length of the SWBs, km	number of polygonal SWB	total area of the SWB, km^2
"good"	7	119	0	0
"failure to achieve the good"	10	540	1	26



a) by number *b) by total length*

Figure 20: Assessment of the chemical status of linear SWBs based on monitoring results



a) by number *b) by total area*

Figure 21: Assessment of the chemical status of polygonal SWBs based on monitoring results

The following substances have been found to exceed the EQS_{MAX} - maximum permissible concentration and/or EQS_{ave} - average annual concentration:

- fluoranthene (for 2 SWBs)
- Lead and its compounds (for 1 SWBs)
- mercury and its compounds (for 1 SWBs)
- Nickel and its compounds (for 1 SWBs)
- benzo(a) pyrene (for 10 SWBs)
- benzo(b) fluoranthene (for 1 SWBs)
- benzo(k) fluoranthene (for 1 SWBs)
- benzo(g,h,i) perylene (for 1 SWBs)
- dicofol (for 2 SWBs)
- acloniphene (for 1 SWBs)
- dichlorvos (for 1 SWBs).

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 State Agency of Ukraine for Water Resources 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 status 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 status 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 23), the following was established:

- chemical condition is "good" – 8 linear SWBs (3% of the total number of linear SWBs), with a length of 134 km (4% of the total length of linear SWBs).
- chemical status of "not achieving good" – 146 linear SWBs (62% of the total number of linear SWBs), with a length of 1550 km (50% of the total length of linear SWBs).

Table 23: Chemical status of the SWBs based on interpolation of monitoring data

Chemical status	number of SWB	total length of the SWB, km
"good"	8	134
"failure to achieve the good"	146	1550

A summary assessment of the chemical condition of the SWBs is provided in Annex 8, Table 23 and Figures 21, 22.

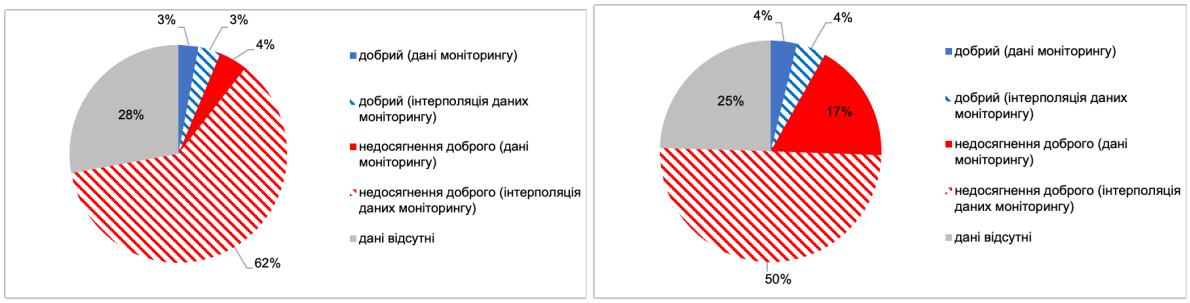
Table 24. Total assessment of the chemical status of the SWBs for 2021-2023 (monitoring data + interpolation of monitoring data)

Chemical status	number of SWB	total length of the SWB, km	number of SWB	total area of the SWB, km^2
"good"	15	253	0	0
"failure to achieve the good"	156	2090	1	26

For 18 SWBs, the reliability of the assessment of the correct chemical state determination was determined according to the criteria of Annex 11 of the Order and corresponds to the average level of reliability.

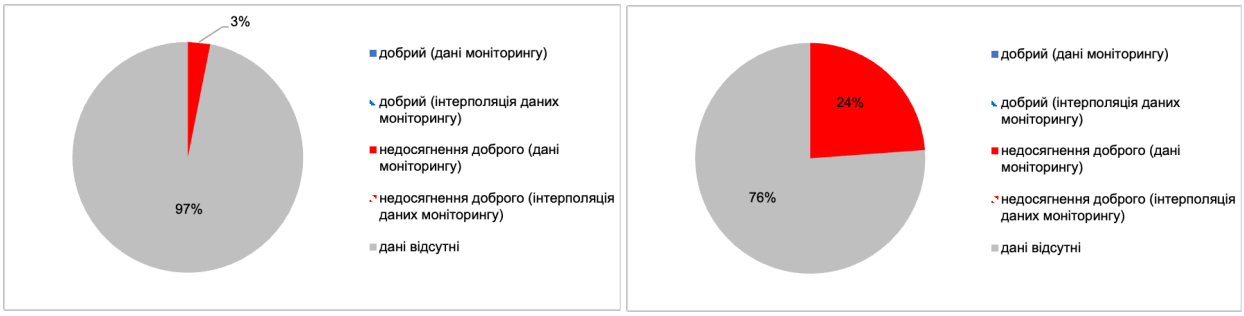
154 SWBs were assessed with a low level of assessment reliability based on the transfer of results obtained under the surface water quality monitoring programme to SWBs where monitoring was not conducted in the specified period, according to the aggregation of SWBs.

Taking into account the interpolation of monitoring data, the chemical status was assessed for 172 SWBs.



by the number of SWBs *length of SWBs*

Figure 22 Total assessment of the chemical state of linear SWBs



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

Figure 23 Total assessment of the chemical state of polygonal SWBs

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 status of the SWBs, we used data on the monitoring of the content of synthetic and non-synthetic specific substances typical for the Vistula RBD: copper, zinc, chromium, arsenic, acetochlor, carbaryl, metholachlor, terbutylazine, carbamazepine, triclosan, fluconazole.

Background concentrations of non-synthetic specific substances were not taken into account when assessing the ecological status of the SWBs.

The monitoring of the Vistula RBD by biological indicators was carried out in 2021-2023.

In the Vistula RBD, according to 2023 data, the ecological status was assessed for 12 SWBs, including 11 linear ones with a length of 521.9 km and 1 polygonal one with an area of 25.6 km^2 . The results of the assessment of the ecological status of the SWBs are presented in the table and annex.

Table 25. Ecological status of the SWBs (linear)

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"	2	0,8	40,4	13,0
"good"	6	2,5	251,0	8,1
"moderate"	3	1,3	230,6	7,4
"poor"	0	0	0	0
"bad"	0	0	0	0

Table 26. Ecological status of the SWBs (polygonal)

Ecological status	Number of polygonal SWBs	Percentage of the total number of polygonal SWBs, %	Area of polygonal SWBs, km	Percentage of the total area, %
"high"	0	0	0	0
"good"	1	3,1	25,6	23,5
"moderate"	0	0	0	0
"poor"	0	0	0	0
"bad"	0	0	0	0

The level of reliability of the ecological status assessment for all 12 SWBs is average.

For 2 linear SWBs with a total length of 40.4 km, "high" ecological status was achieved. "Good" ecological status was

achieved in 6 linear SWBs with a total length of 251.0 km and 1 polygonal SWB with an area of 25.6 km^2 .

The environmental targets for achieving "good" ecological status were achieved in 8 linear SWBs of the Vistula River Basin by 21.1% of the total length of linear SWBs and in 1 polygonal SWB which is 23.5% of the total area of polygonal SWBs.

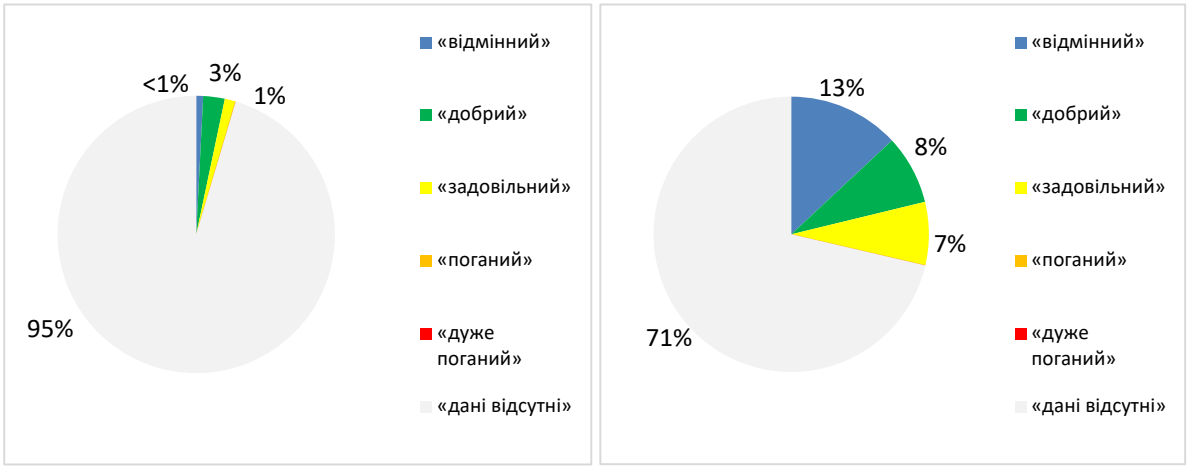
The potential for moderate ecological status was determined on 3 linear SWBs with a length of 230.6 km (7.4% of the total length of SWBs).

None of the assessed SWBs were classified as in "poor" or "bad" ecological status.

The results of the ecological status assessment of the Vistula RBD SWBs for 2021-2023 are presented for linear and polygonal SWBs in Fig. 24 (by number of SWBs) and Fig. 25 (by SWBs length).

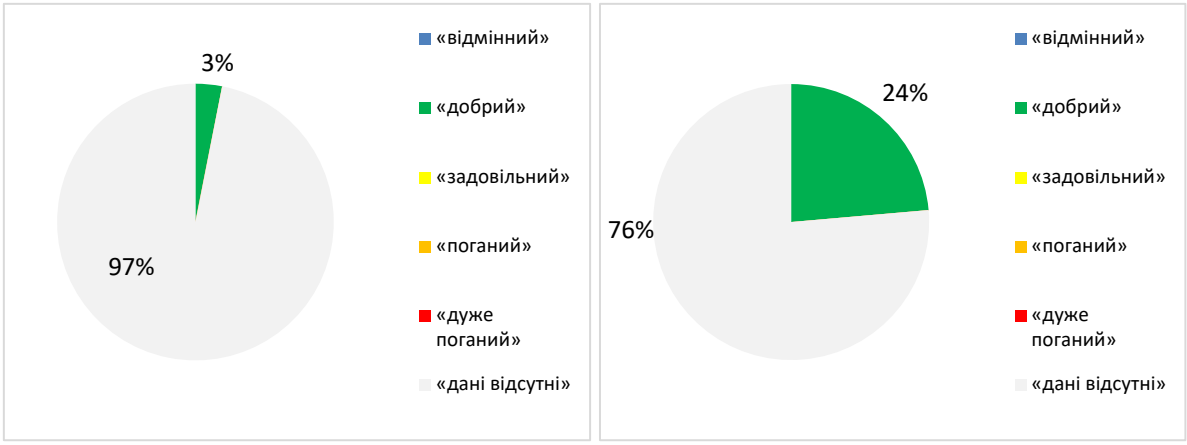
The results of the ecological status assessment are presented for the linear SWBs of the "rivers" category.

The results of the ecological status assessment are presented for polygonal SWBs of the "lakes" category.



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

Figure 24. Assessment of the ecological status of the linear SWBs



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

Figure 25. Assessment of the ecological status of the polygonal SWBs

4.1.5. Ecological potential assessment

For an AWBs or HMWBs, the environmental objective is to achieve good ecological potential, for which less stringent criteria are applied with respect to impacts associated with hydromorphological changes.

The ecological potential of an AWBs or HMWBs is determined in accordance with the classification established for determining the status of the SWBs 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 Vistula RBD, the ecological potential was assessed for 5 linear SWBs with a length of 97.6 km based on the data of 2021-2023. The results of the assessment of the ecological potential of the SWBs are presented in the table and annex.

Table 27 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	0,8	33,6	1,1
"modearte"	2	0,8	23,7	0,8
"poor"	1	0,4	40,2	1,3
"bad"	0	0	0	0

The level of confidence in the ecological potential assessment for 21 SWBs is medium.

Good ecological potential has been achieved in 2 linear SWBs with a total length of 33.6 km.

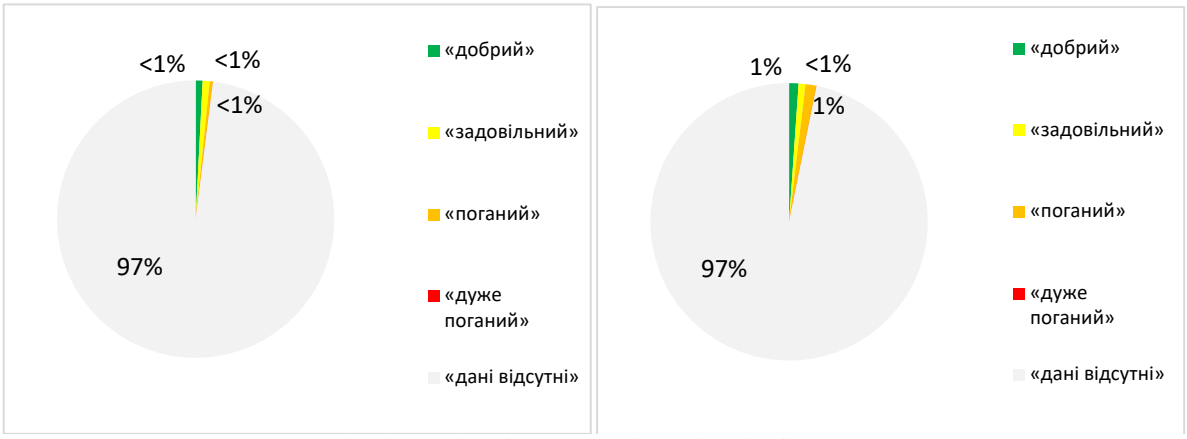
The environmental objectives for achieving "good" ecological potential were met in 2 SWBs, or 0.8% of the total length of linear SWBs.

Moderate ecological potential was identified for 2 linear SWBs with a length of 23.7 km (0.8% of the total length).

The "poor" ecological potential was determined for 1 SWB with a length of 40.2 km, which is 1.3% of the total length of the SWBs. The Poltva River (UA_A6.6.1_0015) was identified as having "poor" ecological potential in the Vistula RBD due to non-compliance with the EQS for biological indicators: vascular plants and benthic macroinvertebrates.

None of the assessed SWBs were classified as having "bad" ecological potential.

The results of the ecological potential assessment are presented for linear SWBs in Fig. 26.



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

Figure 26. Assessment of the ecological potential of the linear SWBs

4.2. Groundwater

4.2.1. Monitoring system

The quantitative and chemical status 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 listed in Annex 2 of the Procedure for State Water Monitoring (Table 28). 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 28. Procedure for state water monitoring - Indicators and frequency of state monitoring of GWBs

The subject of the monitoring	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	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 20 state groundwater monitoring sites within the Vistula basin, including 12 operating, 1 mothballed, and the status of 7 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 status of the GWBs with sufficient reasonableness.

Based on the information from previous studies, it can be assumed that the water quality of non-pressure GWBs is most likely poor due to nitrogen pollution from diffuse sources within agricultural landscapes. As for the water of pressurised GWBs, 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 GWBs, 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 the 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 GWBs 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 observation points, it is necessary to carry out diagnostic monitoring of groundwater quality indicators of all identified GWBs at all observation wells. All designated and within the Vistula basin are subject to diagnostic and operational monitoring procedures, as all non-pressure GWBs are associated with surface ecosystems, while pressure GWBs are used for water supply to the population, and the average water withdrawal from them for drinking and domestic needs 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. In the annex to the above-mentioned order, 49 observation points are identified in the Vistula basin (Tables 29, 30).

Table 29. Observation points (o.p.) for groundwater monitoring in the Vistula River basin

Number of o.p.	GWBs code	Name of the GWBs	Number of points on the GWBs
49	UAA6600Q100	GWBs in alluvial sediments of floodplains, first and second terraces	7
	UAA6600N100	GWBs in Upper Miocene sediments	9
	UAA6600K100	GWBs in Upper Cretaceous sediments	30
	UAA6600D200	GWBs in the Upper Devonian sediments	3

Table 30. Groundwater monitoring sites in the Sia nand Western Bug sub-basins

Sub-basin	Number of o.p.	GWBs code	Number of o.p. under the GWBs
Sian	13	UAA6620Q100	4
		UAA6620N100	9
Western Bug	36	UAA6610Q100	3
		UAA6610K100	30
		UAA6610D200	3

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. Based on the results of the inventory, a decision will be made to repair or plug the wells and drill additional observation wells.

In the future, the priority is to resume groundwater monitoring.

At present, the only real opportunity to obtain information on the state of the GWBs is to involve water users' information - the results 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.

Since intensive agricultural production is carried out within the basin and, according to available data, the waters of non-pressure IWRs are widespreadly contaminated with nitrogen compounds, special attention should be paid to improving the quality of the non-pressure GWBs after monitoring is resumed. One of the problems is that the existing observation points for non-pressure GWBs 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 GWBs. Obtaining information on background areas would allow more reasonable determination of the quality of non-pressure GWBs 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 in the monitoring network located in areas with minimal anthropogenic load, 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

Protected areas (territories)

The 2024 State Water Monitoring Programme for the Vistula Basin includes monitoring sites within two categories of protected areas (territories):

- at the SWBs, where water is abstracted to meet the drinking and household needs of the population - 1 monitoring point, which is related to operational monitoring (Annex 6);

- 2 monitoring points at SWBs located within the Emerald Network sites as part of operational monitoring (Annex 6).

5 LIST OF ENVIRONMENTAL OBJECTIVES FOR SURFACE WATER, GROUNDWATER AND PROTECTED AREAS (TERRITORIES) 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.

Environmental objectives for surface water

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

- 10 SWBs are not at risk of failing to achieve good ecological status/potential, 20 SWBs are possibly at risk, and 239 SWBs are at risk;
- 250 SWBs are at no risk of not achieving good chemical status, and 19 SWBs are at risk.

By 2030, 23 SWBs will achieve good ecological status/potential, of which 10 SWBs are currently not at risk (they need to maintain this status), and 13 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 pressures assessment and will achieve environmental objectives through the implementation of the PoM.

The remaining at-risk or potentially at-risk SWBs in the basin (246 SWBs) could reach good ecological status/potential by 2036 or 2042, provided that the PoM.

By 2030, 257 SWBs will achieve good chemical status, including 250 SWBs that are currently not at risk (they need to maintain this status), 7 SWBs that are at risk of not achieving environmental objectives based on the results of the anthropogenic pressures assessment and will achieve environmental objectives through the implementation of environmental protection measures. The remaining 12 SWBs, which are at risk according to the results of the anthropogenic pressure assessment, will achieve the environmental objectives not earlier than 2036 or 2042, provided that the environmental protection measures are implemented.

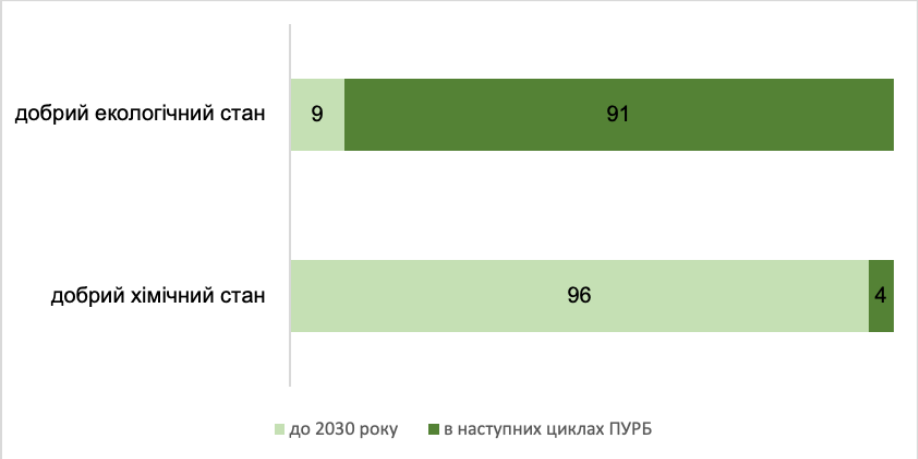


Figure 27. Timeframe for achieving the environmental objectives of the SWBs

Annex 8 (Table 1) lists the environmental objectives of the SWBs, the timeframe for achieving them, reasons for postponement and setting less stringent objectives.

Environmental objectives for groundwater

Environmental targets are set for each GWBs in terms of both their quantitative and qualitative (chemical) status. According to the WFD, the main objective is to achieve good groundwater status. Additional objectives for each individual GWBs are set depending on the existing quantitative and qualitative status of the GWBs, their use or potential use for public water supply, anthropogenic pressure and possible impact on surface ecosystems.

The main criterion for the good quantitative status of the GWBs should be the absence of groundwater depletion, i.e. the condition of aquifers in which, under the influence of artificial drainage, the decrease 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 GWBs is based on information on the level regime, groundwater extraction volumes and their comparison with the resources and approved operational reserves.

For non-pressure GWBs, the criteria for good status also include the appropriate condition of the associated surface water bodies and the absence of negative impacts on surface ecosystems, primarily vegetation suppression.

The criteria for good quality (chemical) status of the GWBs are the natural background content of chemical elements and compounds and the standards set for drinking water by the State Sanitary Norms and Rules "Hygienic Requirements for Drinking Water Intended for Human Consumption" (DSanPiN 2.2.4-171-10).

Quantitative state of non-pressure GWBs

In Ukraine, there is no accounting of the volume of water extracted by private water consumers from non-pressure GWBs. There is currently no evidence of significant downward trends in the levels of non-pressure GWBs in the Vistula basin. Significant changes in the quantitative status of non-pressure GWBs are observed in areas of land reclamation and peat extraction, where drainage activities are targeted.

The environmental objective is to avoid depletion of groundwater and no deterioration in its quantity.

Qualitative (chemical) state of non-pressure GWBs

The majority of non-pressure GWBs are used by the rural population to meet their drinking needs, therefore, to assess the quality state, the standards of Sanitary and Epidemiological Norms 2.2.4-171-10 should be used, 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 and Regulations 2.2.4-171-10 and no deterioration in the quality of the water.

Quantitative state of GWBs

Despite the fact that depression sinkholes have been recorded within some areas, their area is insignificant compared to the area of designated GWBs. According to the available data on water withdrawal at operational water intakes, depletion and deterioration of the quantitative state of pressure GWBs is not expected in the coming years.

The environmental objective is to avoid depletion of groundwater and no deterioration in its quantity.

Qualitative (chemical) state of pressure GWBs

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 levels are close to the maximum permissible concentrations. In particular, in the Vistula basin, the natural state of the water in the pressure water supply systems contains excessive levels of sulphates and iron.

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 closer to the surface. Therefore, for each GWBs, it is necessary to have information on the intervals of changes in the content of components of the chemical composition of water.

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 poor state of groundwater monitoring over the past decades and, consequently, insufficient information on the current state of the GWBs allows defining environmental objectives only in the most general form. In the course of monitoring, the environmental objectives for each GWBs will be refined.

Annex 8 shows the environmental targets for the GWBs and their groups.

It should be noted that the improvement of the status of non-pressure GWBs under the conditions of implementation of measures to reduce the impact of diffuse sources of pollution should be expected much later than the improvement of the condition of surface water bodies due to their location in the geological environment and a significant amount of accumulated pollutants (primarily nitrates). Given the current situation and a realistic forecast of when large-scale environmental protection measures could be implemented, such an improvement should not be expected before 2042.

Of the currently identified GWBs and their groups, all 9 will reach good quantitative status by 2030, and 5 will reach good chemical status (56% of the identified GWBs and their groups). The remaining 5 groups of GWBs (non-pressure) are projected to reach good chemical (qualitative) status not earlier than 2042 (Fig. 28), provided that large-scale measures are implemented to reduce the load from diffuse sources of pollution within agricultural landscapes.

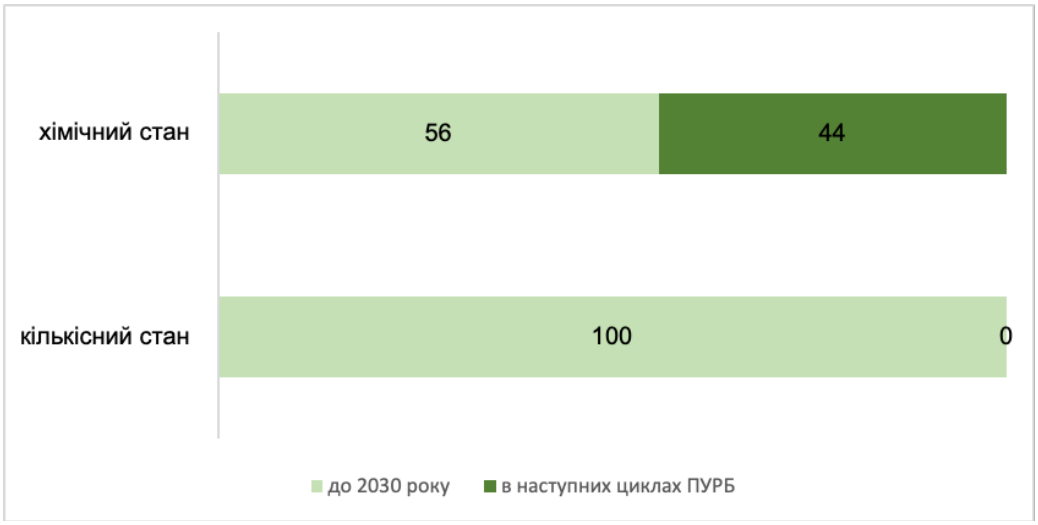


Figure 28. Timeframe for achieving the environmental objectives of the GWBs , %.

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 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 Vistula basin have undergone significant changes.

6.1 Economic development of the basin

Territorially, the Vistula River Basin area within Ukraine covers 2 oblasts, which is 2.13% of the country's territory.

As of 2019, the total population of the river basin is 1.444 million people, which is 3.4% of Ukraine's population.

Table 31. Share of area and population of oblasts within the Vistula RBD, %

Oblasts	Share of the region's area within the basin	Share of the region's population within the basin
Volynska	21	27
Lviv	40	46

Analysis of Vistula RBD GRP. In 2019, RBV Vistula's GRP amounted to UAH 119071.58 million. The dynamics of this indicator over the entire study period of 2015-2019 demonstrates a tendency to grow at different rates in different periods - the highest GRP growth rates were observed in 2017 (at 30%), while in 2018 these rates decreased significantly (to 19.7%). The share of the basin's GRP in the country's total GDP averages 2 to 3% (Table 32).

Table 32. GRP dynamics of the Vistula RBG, 2016-2020

Indicators	2015	2016	2017	2018	2019
GRP in actual prices, UAH billion.	52,1	62,5	81,8	97,9	119,1
The share of the basin's GRP in Ukraine's total GDP, %	2,6	2,6	2,7	2,7	3,0
Growth rate of the basin's GRP, % to the previous year	100,0	120,0	130,9	119,7	121,7

In terms of the Vistula basin regions, the highest GRP is accounted for by Lviv Oblast. According to this indicator, in 2019, Lviv region produced 82.8% of the GRP within the river basin, and Volyn region - 17.2% of the GRP.

The GRP per capita in the Vistula basin is UAH 83.3 thousand, which is lower than in the whole of Ukraine.

Per capita income by region: Lviv region - UAH 84.82 thousand, Volyn region - UAH 72.7 thousand.

Analysis of the Vistula RBD GVA. The value of GVA in actual prices (2019) for the basin area is UAH 87.6 billion, or 2.6% of Ukraine's total GVA.

In the overall structure of the basin's GVA, the manufacturing industry has the largest share, accounting for UAH 10.3 billion or 11.8%, and its share in the total GVA of Ukraine is 2.4%. GVA by type of economic activity in the Vistula RBD is shown in Table 26. Among the water-dependent sectors of the economy, agriculture, forestry and fisheries account for a fairly high share in the overall structure of the RBD Vistula GRP - UAH 7.8 billion or 8.9%, which corresponds to 2.2% of the total GRP of Ukraine.

Transport, warehousing, postal and courier services also account for a significant share of the basin's total GVA, amounting to UAH 6.4 billion or 7.3%, and making up 2.4% of Ukraine's total GVA.

The share of other water-dependent economic activities ranges from 0.5% to 4.7%.

Other, non-water-dependent economic activities of the Vistula RBD account for 64.5% of the total GVA, while the share of water-dependent economic activities in the basin is 35.5%.

Table 33. GVA of the Vistula Basin by economic sector, 2019.

Sectors of the economy	GVA, billion UAH	Share in the GVA Ukraine, %	Share in the GVA of the basin, %
Agriculture, forestry and fisheries	7,8	2,2	8,9
Mining and quarrying	4,1	1,8	4,7
processing industry	10,3	2,4	11,8
supply of electricity, gas, steam and air conditioning	2,0	1,6	2,3
Water supply; sewerage, waste management	0,4	3,0	0,5
transport, warehousing, postal and courier services	6,4	2,4	7,3

Sectors of the economy	GVA, billion UAH	Share in the GVA Ukraine, %	Share in the GVA of the basin, %
TOTAL water-dependent economic activities	31,0	13,4	35,5
Other types of economic activity	56,6	1,7	64,5
IN TOTAL ACROSS THE BASIN	**87,6**	**15,1**	**100**

The total GVA of water-dependent economic activities in the Vistula RBD in the total GVA of Ukraine during 2015-2019 ranges from UAH 15.6 billion (11.9% in 2015) to UAH 31.0 billion (13.4% in 2019) and shows an upward trend. This dynamics is closely related to the high growth rate of GRP in the Vistula RBD during this period.

The highest growth rates of GVA were observed in 2017 and amounted to UAH 24.5 billion, or 15.1% of Ukraine's total GVA.

Among the water-dependent sectors of the economy that showed a decline in the GVA indicator between 2015 and 2019 are the supply of electricity, gas, steam and air conditioning from 2.3% (in 2015) to 1.6% (in 2019), as well as transport, warehousing, postal and courier activities from 2.6% (in 2015) to 2.4% (in 2019). All other water-dependent sectors of the economy show an increase in the GVA over this period.

By region, Lviv Oblast accounts for 22.9% of the total GVA of water-dependent industries in the total GVA, while Volyn Oblast accounts for only 4.7%.

This share of water-dependent industries in the total GVA of these regions is primarily due to the high share of agriculture, forestry, fisheries, and manufacturing in the overall structure of GVA.

6.2 Characteristics of modern water use

In 2020, water users withdrew 59.475 million m^3 of water from groundwater and surface water bodies in the Vistula River basin, which is 0.6% of the total water withdrawal in Ukraine.

In the ratio of water use volumes by their distribution by sources of abstraction, water abstraction from groundwater bodies prevails (92% of water abstraction in the basin). This is due to the poor quality of surface water, which is contaminated by wastewater from enterprises and households.

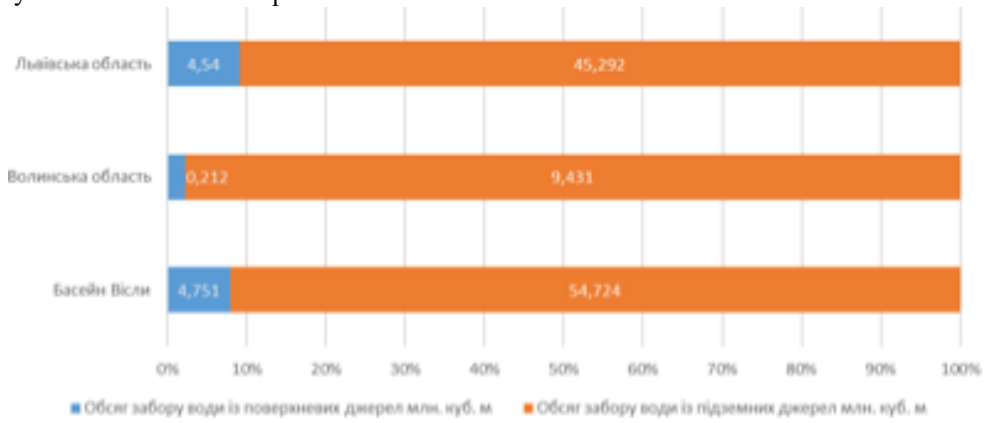


Figure 29. Distribution of water sources by region

The majority (89.4%) of water abstraction is carried out in the sub-basin of the Western Bug River, and accordingly, the majority (83.8%) of water abstraction is carried out by water users in Lviv Oblast.

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

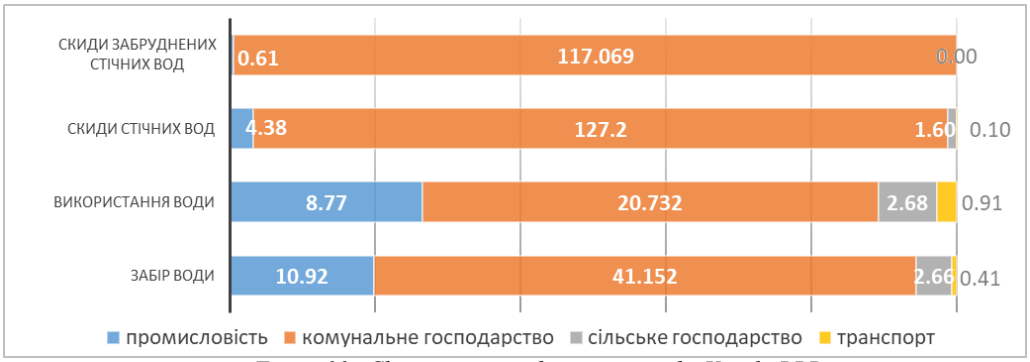


Figure 30. Characteristics of water use in the Vistula RBD

The structure of water use is as follows: 70% of water resources are withdrawn by housing and communal services, 17.95% by industry, 4.46% by agriculture, 0.69% by transport, 5.39% by general government (water supply to rural population) and 1.52% by other sectors.

Water use in the basin is 41.94 million m^3, which is only 0.58% of the total water use in Ukraine, of which 86% is used in the Western Bug sub-basin and only 14% in the Sian sub-basin.

The peculiarity of water use in the Vistula RBD is that the city of Lviv is located on the border of the hydrographic zoning of the Vistula and Dniester basins. Water supply and sewerage systems are located within the two basins: water is taken from the Dniester River basin and discharged into the Vistula RBD. In this regard, the wastewater discharge into the Vistula RBD is 2.5 times higher than the water intake.

A detailed description of water use in the Vistula RBD by economic sector is presented in Annex 9.1.

As for the structure of wastewater discharge, 95.2% of wastewater is discharged into surface water bodies by housing and communal services, 3.27% by industrial water users, and 1.2% by agriculture.

The majority of 88.28% of the wastewater volume is polluted wastewater, 9.6% is normatively treated at wastewater treatment plants and 2.12% is normatively clean without treatment.

Almost all (more than 99%) of the polluted wastewater comes from water users in the housing and utilities sector.

Information on wastewater discharges to water bodies by categories of discharged water is provided in Annex 9.2.

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

- GVA generated by the industry is an economic indicator of the sector's weight in the basin'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 34. Water intensity of economic sectors

Industry sector	Water intake, million m^3	GVA, UAH million	Water capacity GVA, m^3/1000 UAH
Industry	10,923	16336,65	0,67
Housing and utilities	41,152	438,48	93,85
Agriculture	2,66	7801,38	0,34
Transport	0,408	6358,84	0,06
Total for the basin	**59,48**	**87634,57**	**0,68**

Table 35. Socio-economic weight of the main water users

Sectors of the economy	Scope of GVA creation	Water intake by the industry	Water intensity of the industry	Dependence water quality	Waste water contamination
Energy	low	moderate	moderate	low	low
Chemical industry	moderate	low	low	low	low
Mechanical engineering and metalworking	high	low	low	low	low
Food industry	high	moderate	low	high	moderate
Coal industry	moderate	moderate	low	low	low
Housing and utilities	low	high	high	high	high
Fisheries	moderate	moderate	moderate	moderate	low
Other types of agriculture (including livestock and crop production)	moderate	moderate	moderate	moderate	low
Transport	low	low	low	low	low
Recreation and security health	low	low	low	moderate	low
Education	moderate	low	low	moderate	moderate

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 basin.

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 - food industry, or moderate dependence on at least 4 indicators - fisheries and other agricultural activities.

Group 3 **"Specific dependence"** - those with high dependence on more than one of the indicators

– machine building and metalworking, and moderate dependence on two or more indicators in energy, coal mining, and education.

Group 4 **"Moderate dependence"** includes those with moderate dependence on at least 1 indicator, including the chemical industry, recreation and healthcare.

Group 5, **"Dependence without water use",** includes economic sectors that use water without or with very little abstraction from natural water bodies, generate insignificant amounts of GWP and are not significant polluters. Transport is included in this group.

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 (93.85 $^{m3/1000}$ UAH).

The level of water supply in the river basin per capita is below the minimum level of water supply according to the UN classification (1.7 thousand cubic metres per year per capita) and amounts to 0.05 thousand cubic metres per year.

6.2.1 Municipal water use

The municipal water use in the Vistula RBD is to meet the drinking and domestic needs of the population and to transmit water to subscribers. The most important municipal water use is concentrated in large cities such as Lviv, Chervonohrad, Sokal, Radekhiv, Kamianka-Buzka, Zolochiv, Zhovkva, Busk, Novovolynsk, etc.

In 2020, water users in the housing and communal sector withdrew 41.152 million cubic metres of water as a result of their activities, which is almost 70% of the total water withdrawal in the basin.

The peculiarity of this basin is that 99.35% of the needs of the population and subscribers are met from groundwater and only 0.65% from surface water from the Zelenyi Potik River (sub-basin of the Sian River) for the needs of the population and subscribers of the Mostyska Vodokanal and from the Gamaliyivka Reservoir (sub-basin of the Western Bug River) for the needs of the population and subscribers of Lvivteploenergo.

Lvivvodokanal is the largest water user in the housing and utilities sector.

The percentage of water losses in the basin is 32.5% and amounts to 14,397 million cubic metres of water, varying by sub-basin from 5.7% (Sian River sub-basin), 27.6% (Western Bug sub-basin, Volyn Oblast) to 36.3% (Western Bug sub-basin, Lviv Oblast). The average percentage of water losses in the basin is slightly lower than the average value of water losses during transportation in Ukraine (37.6%).

The housing and utilities sector is the main polluter of the basin and discharges 99.23% of polluted wastewater.

6.2.2 Industrial water use (by major water users)

Water abstraction by industrial water users is 18.4% in the basin (10.923 million m^3).

The needs of industrial water users are met mainly from groundwater bodies (74%) and surface water bodies (26%).

According to the state water accounting in the Vistula RBD, the main industrial water use is carried out by water users in the mining sector (40% of the abstraction, with coal mining being the leader), the processing industry (35% of the abstraction, with beverage production being the leader) and the energy sector (25% of the abstraction, with electricity production being the leader). The main industrial water users are the powerful mining enterprises of Volynvuhillya: Buzhanska mine, Novovolynska mine No. 9, and Lvivvuhillya: Stepova Mine, Chervonogradska Mine, Mezhirichanska Mine, Velykomostivska Mine; large beverage production enterprises of the State Enterprise Ukrspirt: Storonybabske MPD, Strutynske MPD, Vuzlivske MPD, as well as a powerful power plant of DTEK Zakhidenergo, Dobrotvirska TPP).

The leader in terms of water withdrawal among the regions in the basin is Lviv region, whose industrial water users withdraw more than 80.07% of the total water withdrawal in the basin.

Industrial enterprises in the Lviv region alone discharged 0.614 million m^3 of polluted wastewater into surface waters, the largest amount being 0.586 million m^3 Radekhivskyi Sugar LLC.

6.2.3 Water use in agriculture

In agriculture, water resources are used mainly for water supply for fish farming, livestock and poultry farming, preparation of solutions for land cultivation and irrigation of crops.

60.7% of the agricultural water supply needs (1.609 million m^3) in the Vistula RBD are met from surface water sources, and 39.3% from groundwater (1.042 million m^3). The structure of water abstraction for agricultural purposes is dominated by fisheries - 57% of the total abstraction in this category.

In 2020, agricultural water users discharged 1.604 million m^3 of wastewater into surface water bodies, which is 1.2% of the total water discharge in the basin.

Agriculture does not exert significant pressure on the water resources of the Vistula RBD due to the almost absence of polluted water discharges from water users in this sector. The bulk (99.6 per cent) of the wastewater discharged by agricultural water users is normatively clean water without treatment .

6.2.4 Water use in transport

Water users in the transport sector withdrew 0.408 million m^3 and used 0.905 million m^3, of which 0.295 million m^3 was used for drinking and sanitary needs (including for the needs of the population), and the remaining 0.61 million m^3 (67%) for production needs.

Among the large transport companies in the region are branches of Ukrzaliznytsia, Ukrtransgaz, Ukrtransnafta, and others (a total of 41 water users, of which 11 are in Volyn Oblast).

The transport sector discharged 0.096 million m^3 of wastewater, of which 0.023 million m^3 was normatively clean without treatment.

Transport companies are characterised by significant consumption in water recycling and reuse systems, which totalled 0.136 million m^3 in 2020.

6.2.5 Other types of water use

Among the other types of water use in the Vistula RBD, the public administration sector should be singled out. Water use in this sector is limited to groundwater resources, mainly for the needs of the rural population and to ensure the functioning of the production units of the Galician Customs of the State Customs Service.

Within the Vistula RBD, water users in this sector withdrew 3.205 million m^3 of water (5.39% of the total withdrawal). Water users in this sector discharged 0.061 million m^3 of wastewater into surface water bodies, of which 60.66% is polluted (0.037 million m^3) due to inefficient operation of the treatment facilities of the Galician Customs of the State Service.

Other types of water use withdraw 0.905 million m^3 of water, which is 1.52% of the total water withdrawal in the basin.

The needs of water users in these sectors are met mainly from groundwater bodies - 97.79% (0.885 million m^3).

Other sectors of the economy include education, healthcare and defence, which use water resources mostly from underground water sources. In 2020, water users in these sectors discharged 0.313 million m^3 of wastewater into surface water bodies, which is 0.23% of the total water discharge in the basin, but other types of water use put pressure on water resources, as 84.03% of the 0.263 million m^3 discharged into surface water resources is polluted wastewater.

6.3 Forecast of water demand by major economic sectors

Water demand forecasts for the entire river basin and by major economic sectors are made for the period of the River Basin Management Plan (until 2030) under three scenarios: realistic, optimistic and pessimistic.

The basis for calculating the forecast is the water abstraction rates within the Vistula RBD 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, taking into account regional development strategies. The increment of optimistic and pessimistic scenarios was calculated by determining the average annual deviations for previous years from the forecasted values.

The forecast of water withdrawal for the short-term period - for 2021 - was made on the basis of the consensus forecast of the Ministry for Development of Economy, Trade and Agriculture of Ukraine (April 2021), taking into account regional strategies - the Volyn Oblast Development Strategy for the period up to 2027 and the Lviv Oblast Development Strategy for the period 2021-2027.

Ukraine's GDP forecast indicates a resumption of the positive trend in economic development after the significant losses in 2020 caused by the COVID-19 pandemic, showing growth in 2021-2023 with gradual stabilisation in the subsequent period. Thus, GDP growth is expected to reach 4.1% in 2021.

For the medium-term period of 2022-2024, GDP is expected to grow by 3.7% in 2022, and in 2023-2024, Ukraine's economic growth rate will be 3.5% in 2023 and 3.9% in 2024. The regional strategies envisage slightly lower forecasts of GRP growth, in particular, 2.5% in 2022 and 3.5% by the end of 2024.

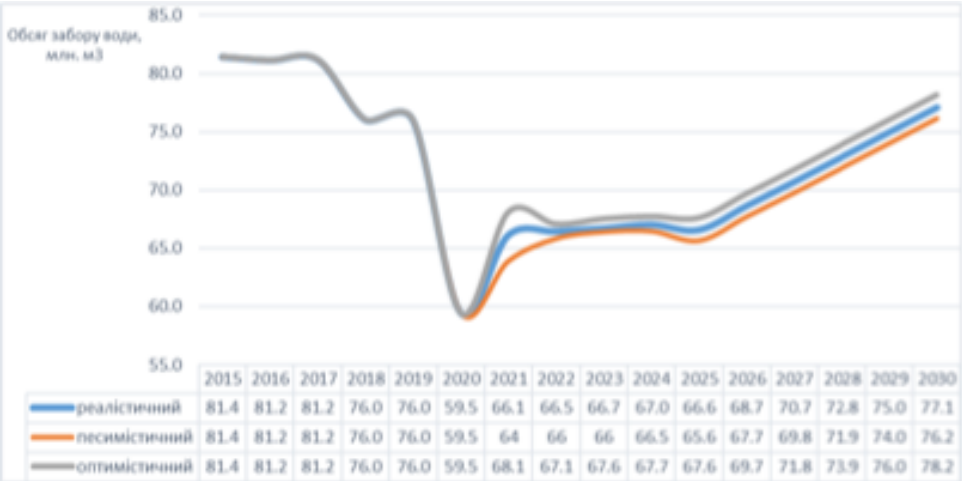
The long-term forecast period - 2024-2030 - was calculated based on the forecast values of the World Bank's global development indicators, Oxford Economic Forecasting, which forecasts Ukraine's GDP growth by 3.2% annually until 2030.

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 regional strategies forecast the economic development of the river basin, primarily through the implementation of smart specialisation principles in the region's economy, comprehensive modernisation, structural transformation of not only industry but also all major sectors of the economy - agriculture, transport, communications, etc. and their integration with the region's innovation and research and education systems. The forecast is based on the assumption of gradual development of economic activities defined by the priorities of smart specialisation of the region, increase of their share in the regional economy and positive impact on related industries.

The analysis of Figure 31 shows an increase in water use in the Vistula RBD in 2021, a slight decrease in 2022, and further gradual stabilisation of the trend. 2025 - a slight decrease in water withdrawals due to a slowdown in economic growth. In the period 2026-2030, there is a trend of consistent growth in water intake due to the growing needs of economic sectors.

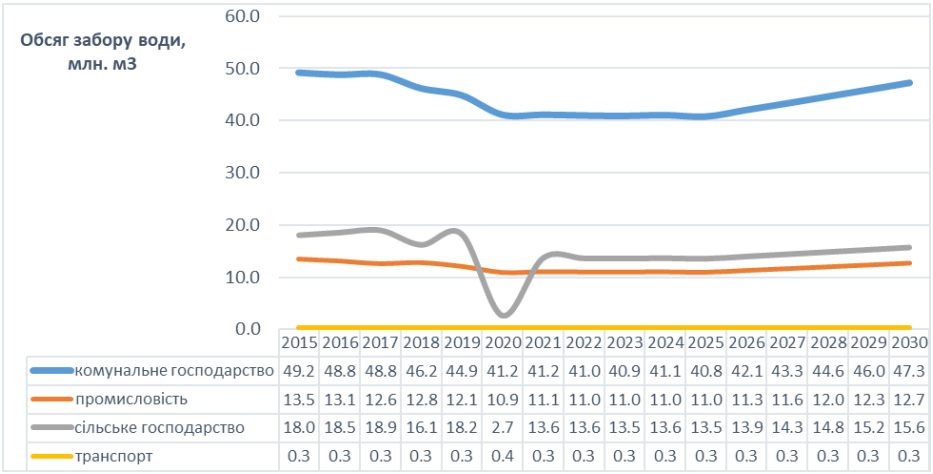


	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
реалістичний	81.4	81.2	81.2	76.0	76.0	59.5	66.1	66.5	66.7	67.0	66.6	68.7	70.7	72.8	75.0	77.1
песимістичний	81.4	81.2	81.2	76.0	76.0	59.5	64	66	66	66.5	65.6	67.7	69.8	71.9	74.0	76.2
оптимістичний	81.4	81.2	81.2	76.0	76.0	59.5	68.1	67.1	67.6	67.7	67.6	69.7	71.8	73.9	76.0	78.2

Figure 31. Forecast of water withdrawals in the Vistula RBD until 2030.

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

An analysis of water use data shows that in 2020, there was a 22% drop in water withdrawals in the basin, with the largest drop in the agriculture sector - almost 7 times. This may be due to both the decline in the agricultural production index in 2020 and the conversion of water use reporting to electronic format and incomplete reporting data.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
комунальне господарство	49.2	48.8	48.8	46.2	44.9	41.2	41.2	41.0	40.9	41.1	40.8	42.1	43.3	44.6	46.0	47.3
промисловість	13.5	13.1	12.6	12.8	12.1	10.9	11.1	11.0	11.0	11.0	11.0	11.3	11.6	12.0	12.3	12.7
сільське господарство	18.0	18.5	18.9	16.1	18.2	2.7	13.6	13.6	13.5	13.6	13.5	13.9	14.3	14.8	15.2	15.6
транспорт	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

Figure 32. Forecast of water withdrawals in the Vistula RBD by 2030 by economic sector

The municipal sector saw a slight decline in water withdrawals in 2020 by 8%. In 2021-2025, water withdrawals in this

sector are projected to decrease. Projected trends in the demographic situation in the Vistula RBZ oblasts indicate a further decline in the population, at least 4% lower in 2030 than in 2018. Given that the main users in this sector are households, the volume of water withdrawals in this sector will decrease accordingly. An additional reason is the increase in tariffs for centralised water supply and wastewater disposal and the resulting more economical use of water.

Starting from 2026, water intake by the utilities sector is expected to stabilise and gradually increase.

For the industry in the Vistula RBD, a consistent downward trend in projected water abstraction volumes is expected until 2026. An increase in water abstraction in the study basin is expected between 2026 and 2030. The growth may be about 10% compared to 2020.

Significant changes are expected in the mining sector, where negative trends have been observed since 2005. The realistic prospect of closing down the least profitable mines and privatising the remaining ones could lead to a critical reduction in the coal industry.

The forecast of water abstraction for agricultural purposes in the Vistula RBD is characterised by significant fluctuations. After a drop in abstraction in 2020, an increase in water abstraction is expected in 2021 in this sector.

Given its cross-border location and focus on European markets, the river basin has all the potential to develop the priority agricultural sector - organic production. Strategic planning documents forecast stimulating the processing of agricultural products and developing the production of goods with a high share of added value. This is an additional factor for the projected increase in water intake.

In the long-term period up to 2030, there is a trend towards a gradual increase in water use in the basin's regions.

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 characterisation of water services and water use in the Vistula 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 budgets of all levels (rent, environmental tax for discharges into water bodies, lease of water bodies);

III. Water supply services for irrigation.

I. PAYBACK OF CENTRALISED WATER SUPPLY AND SEWERAGE SERVICES

In the Vistula basin, 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.

Water and sewerage companies receive the largest revenues. According to the calculations, the water and sewerage company - the NEURC licensee in the Vistula basin (1 licensee, 2% of the Ukrainian market) received about UAH 414 million (including VAT) in 2020.

The payback of water supply and wastewater services, calculated as the ratio of tariff to cost, is more than 100% in the Vistula basin. 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 wastewater), 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 by basin licensees is 91.8%, which corresponds to the average level.

The condition of the water supply and sewerage networks in the Vistula basin is unsatisfactory, which affects water quality. The main source of investment in 2020 in the Vistula 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.

Given that the profit in the tariffs was on average 2%, in the Vistula basin, according to the calculations, the profit of the utility company of the NEURC licensee was about UAH 41 million. However, none of the companies provided for the use of profit 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. COST-EFFECTIVENESS OF WATER RESOURCE USE (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, local budgets are charged for the use of water bodies for aquaculture:

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 30.8 million from business entities in the Vistula basin by administrative region in 2017, UAH 31.7 million in 2018, UAH 31 million in 2019, and UAH 30.9 million in 2020. The maximum rent revenues to the budgets in the Vistula basin were observed in 2018.
Since 2018, there has been a downward trend in the amount of rent for special water use.

The bulk of the rent for special water use comes from water users in the Lviv region - 93-94%.

Table 36. Dynamics of rent revenues from special water use to the state and local budgets in the Vistula basin, UAH

Region / year	2017		2018		2019		2020	
	state budget	local budgets	state budget	local budgets	state budget	local budgets	state budget	local budgets
Volynska	1192313,8	706050,4	1062061,2	868959,1	1192313,8	975782,3	1050310,7	859349,2
Lviv	15848223,7	13005177,7	16376677,8	13405622,0	15848223,7	12972612,1	15955719,6	13059509,5
Together	17040537,5	13711228,1	17438739,0	14274581,1	17040537,5	13948394,4	17006030,3	13918858,6
Total for the basin	**30751765,6**		**31713320,09**		**30988931,97**		**30924888,92**	

B. Environmental tax on discharges of pollutants into water bodies

In the Vistula River basin area, in 2017-2020, 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 4-5 million annually. More than half of these funds (55%) are collected by local budgets in accordance with the budget allocation (Table 37). The largest amount of environmental tax was collected in 2017. More than 90% of environmental tax payments for pollutant discharges into water bodies are collected in Lviv region.

Table 37. Revenues from environmental tax on discharges into water bodies to the state and local budgets in the Vistula basin, UAH

Region /year	2017		2018		2019		2020	
	state budget	local budgets	state budget	local budgets	state budget	local budgets	state budget	local budgets
Volynska	70304,7	281218,9	205266,3	250881,1	179965,9	219958,4	203560,4	248796,1
Lviv	956796,6	3827186,5	1705439,6	2084427,2	1657965,6	2026403,4	1990712,2	2433093,7
Together	1027101,3	4108405,4	1910705,9	2335308,3	1837931,5	2246361,8	2194272,5	2681889,8
Total by basin	**5135506,688**		**4246014,159**		**4084293,334**		**4876162,394**	

C. Payment for the lease of water bodies

The weighted average rent is unified for all water bodies in the Vistula basin and is constantly increasing. Its dynamics is as follows: in 2017 - 156.9, in 2018-2020 - 162.7 UAH/ha.

In the Vistula RBD, there is a trend towards an increase in revenues from the lease of water bodies, almost 2 times as much as in 2017. According to estimates, local budgets in the basin's oblasts received rent for water bodies (or parts thereof) in the amount of UAH 125-202 thousand, or 1.2-1.4% of the national figure, in 2017-2020.

In total, local budgets of all levels in Ukraine received UAH 125 thousand in 2017, UAH 152 thousand in 2018, UAH 164 thousand in 2019, and UAH 202 thousand in 2020 for the lease of water bodies in the basin (Table 33).

The highest revenues are in Lviv region.

Table 33. Dynamics of rent revenues to local budgets in the Vistula RBD, UAH

Region/year	2017	2018	2019	2020
Volynska	36953,9	38063,4	40771,3	47302,3
Lviv	88243,2	113552,6	122817,8	154248,4
Total for the basin	**125197,2**	**151616,0**	**163589,2**	**201550,6**

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 CMU of Ukraine. According to local budget reports, no fees for the special use of fish and other aquatic bioresources within the Vistula RBD were received in 2017-2020.

2) EXPENDITURES ON WATER RESOURCES IN THE VISTULA RIVER BASIN

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 39-41.

These 2 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 2020, UAH 212.739 million was allocated. In 2018 and 2019, the information on capital and current expenditures provided in the state statistical reports is the same in the respective regions.

In 2020, capital and current expenditures decreased by almost 2 times in the area of soil, groundwater and surface water protection and rehabilitation. Current investments in Waste Water Treatment increased by 30% in 2020 compared to 2019.

Table 39. Dynamics of capital investments in the Vistula RBD, thousand UAH

Oblast	2017			2018			2019			2020		
	In total for environmental protection programmes, including:	Waste water treatment	protection and soil rehabilitation, underground and surface water	In total for environmental protection programmes, including:	Waste water treatment	protection and soil rehabilitation, underground and surface water	In total for environmental protection programmes, including:	Waste water treatment	protection and soil rehabilitation, underground and surface water	In total for environmental protection programmes, including:	Waste water treatment	protection and soil rehabilitation, underground and surface water
Volynska	4052,7	1809,3	0,0	7573,6	5835,1	19,7	7573,6	5835,1	19,7	6855,1	5525,9	0,0
Lviv	242086,7	42079,1	62970,7	221270,4	70470,1	46216,8	221270,4	70470,1	46216,8	66055,0	19167,8	7904,2
Together by basin	246139,4	43888,4	62970,7	228844,0	76305,2	46236,5	228844,0	76305,2	46236,5	72910,0	24693,7	7904,2
% of programmes from the total indicator		17,8	25,6		33,3	20,2		33,3	20,2		33,9	10,8
A total of 2 water protection programmes		106859,1			122541,8			122541,8			32597,9	

Table 40. Dynamics of current deposits in the Vistula RBD, thousand UAH

Oblast	2017			2018			2019			2020		
	In total for environmental protection programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	In total for environmental protection programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	In total for environmental protection programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	In total for environmental protection programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water
Volynska	35873,9	22087,9	364,1	60111,1	30578,0	253,6	60111,1	30578,0	253,6	62049,2	35734,9	251,3
Lviv	178630,1	72119,3	15959,9	208340,4	86526,9	30059,5	208340,4	86526,9	30059,5	242540,0	124747,9	19407,3
Together in the basin	214504,0	94207,3	16324,0	268451,4	117104,9	30313,1	268451,4	117104,9	30313,1	304589,2	160482,8	19658,6
% of programmes from the total		43,9	7,6		43,6	11,3		43,6	11,3		52,7	6,5
A total of 2 water protection programmes		110531,2			147418,0			147418,0			180141,4	

Table 41. Dynamics of capital and current investments in Vistula RBD, thousand UAH

Oblast	2017			2018			2019			2020		
	In total for environmental protection programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	In total for environmental protection programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	In total for environmental protection programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water	In total for environmental protection programmes, including:	Waste water treatment	Protection and rehabilitation of soil, groundwater and surface water
Volynska	39926,6	23897,2	364,1	67684,7	36413,1	273,4	67684,7	36413,1	273,4	68904,2	41260,8	251,3
Lviv	420716,8	114198,4	78930,6	429610,8	156997,0	76276,3	429610,8	156997,0	76276,3	308595,0	143915,7	27311,6
Together in the basin	460643,4	138095,6	79294,7	497295,4	193410,1	76549,7	497295,4	193410,1	76549,7	377499,2	185176,5	27562,8
% of programmes from the total		30,0	17,2		38,9	15,4		38,9	15,4		49,1	7,3
A total of 2 water protection programmes		217390,3			269959,8			269959,8			212739,3	

B. State budget expenditures for the maintenance of water infrastructure under the management of the SAWR

In the Vistula RBD, water infrastructure maintenance activities are carried out by organisations under the management of the State Water Agency located in the respective areas of the basin, taking into account the basin management principle. The governing body of the Vistula RBD is the Western Bug and Syan River Basin Water Resources Administration. Additionally, operational activities in Volyn Oblast are carried out by the Regional Water Resources Office in Volyn Oblast.

Expenditures for the operation of water infrastructure in 2020 were made under the budget programme "Operation of the State Water Management Complex and Water Resources Management", in the Vistula RBD the expenditures in 2020 amounted to UAH 33443.3 thousand.

DETERMINING THE PAYBACK OF WATER RESOURCES USE IN THE VISTULA BASIN

If the payback ratio of water use, calculated by the formula

"Income / Expenses * 100"

- **is more than 100 per cent**, this means that all costs are reimbursed through the payment of tax and non-tax revenues for services to budgets of all levels or through tariffs; budget revenues, if used for their intended purpose, can be used for the restoration of water resources; 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 the budget or the enterprise are not covered by the revenues received.

The calculated payback on water use is **14.6%**, which means that costs are higher than tax revenues for water services (Table 37).

This level of payback indicates a critical situation in terms of covering the costs of water services. Payment receipts are significantly lower than expenditures from the state and local budgets. The main share of expenditures (49% of all expenditures on environmental measures) is made up of funds from the state and local budgets allocated to measures in the area of "Wastewater treatment". Current expenditures in this area are more than 6 times higher than capital investments. This indicates that measures related to the current costs of wastewater treatment are mainly financed, while investments in improving wastewater systems and treatment facilities are financed at a rather low level.

The calculated level of cost coverage indicates that the tax mechanisms in the area of water resources recovery in the Vistula RBD do not ensure the sustainability of service provision.

Table 42. Balance of revenues and capital expenditures in 2020 in the Vistula RBD

<table>
<tr><th>SOURCES</th><th>Receipts, thousand UAH</th><th>EXPENSES</th><th>Expenses, thousand UAH</th></tr>
<tr><td>Rent payment special water use (state and local budgets)</td><td>30924,9</td><td>Capital expenditure
Current investments in reproduction protection of water resources</td><td>212739,3</td></tr>
<tr><td>Environmental tax for discharges into water Objects (state and local budgets)</td><td>4876,2</td><td rowspan="3">Expenditures from the of the state budget for the operation of the state water management complex</td><td rowspan="3">33443,3</td></tr>
<tr><td>Rent for water bodies (parts thereof) provided for use on the terms of leases (local budgets)</td><td>201,6</td></tr>
<tr><td>Payment for aquatic bioresources</td><td>0</td></tr>
<tr><td>TOTAL RECEIPTS</td><td>36002,6</td><td>TOTAL EXPENSES</td><td>246182,6</td></tr>
<tr><td>ROI</td><td colspan="3">14,6 %</td></tr>
</table>

6.4.2 Water tariffs

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 water 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 cubic metres, and the volume of water disposal is more than 200,000 cubic metres.

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.

In general, the established tariffs of the NEURC enterprises (Lvivvodokanal) for business entities in the field of water and wastewater treatment are 1.5-3 times lower than for consumers who are not business entities in this field (households, budgetary organisations, industrial enterprises). The tariffs are as follows:

a) **for centralised water supply**:

- for consumers who are business entities in the field of centralised water supply and sewerage - UAH 5.78 per 1 cubic metre (excluding value added tax);
- consumers who are not business entities in the field of centralised water supply and sewerage - UAH 12.71 per 1 cubic metre (excluding value added tax).

b) for centralised sewage disposal:

- to consumers who are business entities in the field of centralised water supply and sewerage - UAH 1.90 per 1 cubic metre (excluding value added tax);
- for consumers who are not business entities in the field of centralised water supply and sewerage - UAH 6.18 per 1 cubic metre (excluding value added tax).

As of the beginning of 2021, tariffs for centralised water supply and sewerage were set by the NEURC in the Vistula RBD 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 cost of services of the NEURC licensees in the Vistula RBD continue to be **labour** costs **(with deductions) and electricity purchase**. Their shares are 41% and 31% in water supply and 32% and 36% in wastewater disposal, respectively. 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.

In the structure of the weighted average tariffs for centralised water supply and sewerage of the Vistula RBD licensees, the main share is made up of labour costs (31 and 32% respectively) and electricity (36%).

Water supply and sewerage services are provided in the Vistula RBD by enterprises licensed by local authorities - these are municipal 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 2-6 times higher than those of the NEURC licensees.

The tariffs set by local government licensees are higher in Lviv region. Their amount is periodically reviewed and determined in accordance with the decisions of the executive committees of city councils.

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 cubic metres per day and the water user does not have its own water intake facilities. The rent rates in the Vistula RBD 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 Vistula RBD, the rates for groundwater use are among the highest in Ukraine.

Fees for water pollution are collected 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: emission rates increased by more than 2.2 times in accordance with the Tax Code of Ukraine.

Currently, the Verkhovna Rada of Ukraine is considering draft law 5600, which provides for changes in rent rates.

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.

Cost of irrigation services

The procedure for determining the cost and provision of paid services by budgetary organisations under the management of the State Agency of Water Resources of Ukraine was approved by the joint order of the Ministry of Ecology, the Ministry of Economy and the Ministry of Finance dated 25.12.2013 No. 544/1561/1130. The amount of contractual (free) prices for services is determined on the basis of economically justified costs directly related to their provision.

Costs of providing (performing) paid services include direct labour costs, direct material costs and other direct costs, general business expenses, including costs of renewal and modernisation of fixed assets used. The costs of renewal and modernisation of fixed assets used include capital expenditures, which are calculated at 10% of direct costs related to the provision of water intake for irrigation.

The cost of water supply services for agricultural producers for irrigation of agricultural land is determined by water management organisations, taking into account the costs from the point of water allocation. This cost may be set differentially, taking into account technological features.

According to the organisation's calculations, the costs of water supply to and from the point of water separation, which are not covered by budgetary funding, are included in the calculation of the contract price (including electricity, capital expenditures, wages).

The cost of a service may be revised due to changes in the conditions of production and sale of the service that are independent of the business activity, and those cost components for which price changes have occurred are subject to adjustment, which helps to ensure the economic reasonableness of the cost of the service.

The cost of electricity and the cost of in-house services are important components of the cost of water intake for irrigation. Over the past three years, the cost of this service has increased mainly due to the rising cost of electricity and partly due to the increase in the basic social standard of the minimum wage.

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 State Agency of Ukraine for Water Resources.

In the Vistula RBD, no irrigation water abstraction services are provided.

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 Vistula RBD, which were funded by existing national targeted programmes/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).

Among the numerous national environmental programmes developed in Ukraine, we will first analyse the implementation of the **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. The implementation of this programme is important both in the context of the preparation of the Vistula RBMP and the implementation of measures to achieve the strategic environmental objective for the Vistula RBD.

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 Sector Programme should consolidate state and local funds specifically for the implementation of the tasks and objectives of the Dnipro Programme. 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 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 each year when the draft law on the State Budget 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 in a timely manner.

The main implementer of the Dnipro Programme is the SAWR. If we analyse in detail the distribution of state budget expenditures on Ukraine's SAWR in recent years, we can see the following trend. State funds are allocated mainly for the costs of consumption of the water sector, wages, utilities, the share of funding from the state budget, for example, in 2020 was: from the general fund - 93.5% (UAH 2092158.5 thousand), from the special fund 81.1% (UAH 2261343.4 thousand). 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 4,561,352.5 thousand (90.8%).

In the context of the Vistula RBD, all these generalisations and conclusions on the implementation and financing of the Programme are approximated to the relevant regional water management units. The maintenance of water infrastructure in the Vistula RBM is carried out by organisations under the management of the SAWR located in the respective oblasts - the BUVR of the Western Bug and Syan rivers within the Lviv Oblast (67%) and the ROVR in the Volyn Oblast (33%). 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 SAWR, rather than on a basin basis.

The issue of extending the Programme from 2022 to 2024 until the period of preparation of the RBMP is being 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 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.

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 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. In order to achieve this, the Drinking Water Programme was intended 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. 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) are 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 ranks 125th in the world ranking. At the same time, the national target programme Drinking Water of Ukraine is not being implemented or funded at all. The last time the Drinking Water Programme was funded was in 2018. Thus, in 2018, the State Budget of Ukraine allocated as much as UAH 200 million for the Drinking Water Programme, while only water and sewerage companies of 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. During 2019-2020, the Drinking Water Programme was not funded and in 2020 it ended altogether.

One of the elements of the RBMP structure is Section 3 "Areas (territories) to be protected and their mapping: Emerald Network facilities; 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", 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 (NRF Programme).

Based on the results of the accounting of NRF territories and objects submitted by the executive authorities at the local level, which 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 Ukrainian NRF 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 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 under the state management of the Ministry of Ecology and is funded through the state budget programme "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 PAs, totalling UAH 429581.5 thousand. In general, the performance indicators under this budget programme were met.

The result of the underfunding of 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 on 17 June 2009 No. 743-r (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 technologically polluted lands (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 to be reclaimed, and 294,000 hectares of underutilised land need to be improved.

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).

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 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.

In order to finance environmental protection and resource conservation measures, special-purpose environmental protection funds 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, in Ukraine, there is a paradoxical situation: business entities that pollute the environment pay for it, 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" No. 634 dated 7.05.1998 (as amended by the Resolution of the Cabinet of Ministers of Ukraine No. 1065 dated 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. 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 CMU. However, not a single Ukrainian enterprise 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 amounted to 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, were allocated for the implementation of environmental protection measures. This also includes the allocation of funds for the national budget programmes Dnipro and Drinking Water, the actual state of funding for 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%), and the Ministry of Ecology (now the Ministry of Environment) (9%) received the most, State Environmental Inspectorate (4%), State Geological Survey (2%).

The State Budget for 2020 allocated UAH 496.356 million to finance environmental protection measures. It is obvious that such expenditures cannot play a significant role in solving environmental problems, including the issue of pollution and water 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 RBMPs to achieve a good environmental status for the SWBs of each RBD. 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 the environmental tax should be urgently restored and increased in the targeted use of environmental tax funds and that an extra-budgetary State Environmental Protection Fund should be established for this purpose, with clear directions for the use of funds and the creation of 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 activities in line with high European standards.

Public investment projects in Ukraine have once again proved to be inefficient and highly dependent on state funding. At the same time, no investment projects have been developed to improve the ecological status of the Vistula RBD in Lviv and Volyn oblasts.

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 were healthcare and social protection (18%), sports (14%), road infrastructure (12%), energy supply and sewerage (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 measures, it can be stated that in the two oblasts that are part of the Vistula RBM, targeted regional programmes have been developed and approved by the sessions of the oblast councils in areas in line with the national target programmes. Each oblast develops its own environmental development programme, adding the specifics of the region. For example, within the Lviv and Volyn Oblasts, the Vistula RBM emphasised and gave preference to the construction of wastewater systems, reconstruction of sewerage networks and treatment facilities. However, environmental protection measures in the Vistula RBM were not funded under these programmes.

Both national and regional programmes are funded not on a basin basis, but on an administrative-territorial basis, so in the context of reviewing the implementation of programmes or activities, including ways to achieve the set goals in the Vistula RBD, it is reasonable to assume that their funding at the regional level is practically very different, both in terms of the amount of capital investment and the number of projects implemented.

Of course, given the economic situation in the country, the state budget is not able to finance significant expenditures on water management and reclamation, housing and communal services, or environmental protection, so at present and in the near future, to solve the problems addressed by the regional programmes, some new administrative units 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 donors, and to lay the foundation for future action planning. And the first thing that should help local communities, lay the foundation for planning actions for the future, should be the first Vistula RBMP with specific measures for each identified SWB of the Vistula RBD.

8 A COMPLETE LIST OF PROGRAMMES (PLANS) FOR THE RIVER BASIN OR SUB-BASIN AREA, THEIR CONTENT 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-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 have been developed by the Western Bug and Syan BUVR and ROVR in Volyn Oblast 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 Western Bug and Syan River Basin Council.

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 82 measures (67 main and 15 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 status.

In addition to these measures, the PoM also includes other measures aimed at addressing other SWMI of the Vistula 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 pressure 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 - 56;

- biogenic substances - 57;

- hazardous substances - 56.

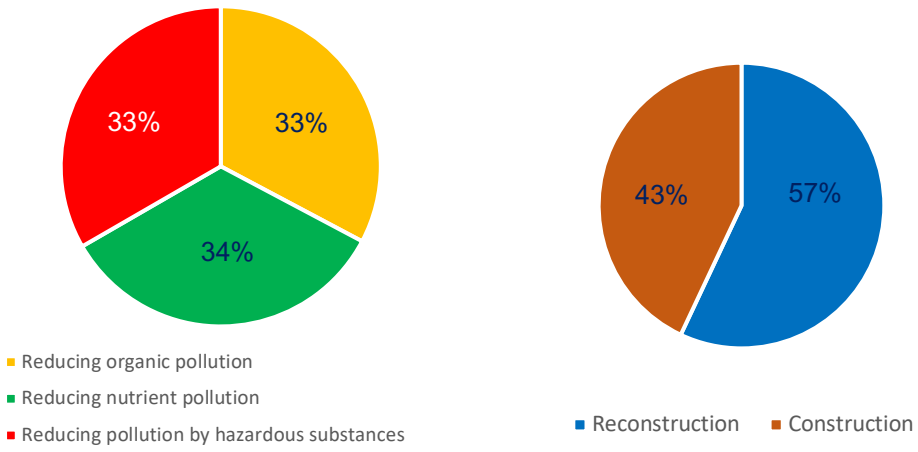


Figure 33. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point and diffuse sources and the way they are implemented (reconstruction or construction of STPs and SN), %

Measures aimed at reducing pollution by nutrients (diffuse sources) also include "Establishment of water protection zones and bank protection strips for water bodies in the Vistula river basin area within Lviv and Volyn oblasts" (#66, Annex

11).

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%) with a population equivalent (PE) of 2,000 or more. Reconstruction/modernisation of STPs and SN is envisaged in 20 communities, including 10 communities with tertiary (proper) wastewater treatment with removal of nitrogen and phosphorus compounds. The share of polluted wastewater discharged into surface water bodies of the Vistula basin is 90.2% of the total volume of wastewater discharged. Primarily, these are municipal enterprises in Lviv Oblast, so the main measures are aimed at reconstruction/modernisation of existing treatment facilities in the cities: Lviv, Chervonohrad, Sokal, and Zolochiv. In addition, there are many non-sewerage settlements in the basin that do not have sewage treatment plants, and construction of new sewage treatment plants and sewage treatment facilities is planned in 27 settlements in the basin. There is a tendency for the intention to aggregate (combine) the STPs and SN of neighbouring settlements in the community into separate agglomerations (treatment clusters).

Among the measures aimed at reducing pollution by organic, biogenic and hazardous substances (diffuse and point sources), 52 relate to SWB 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. 34.

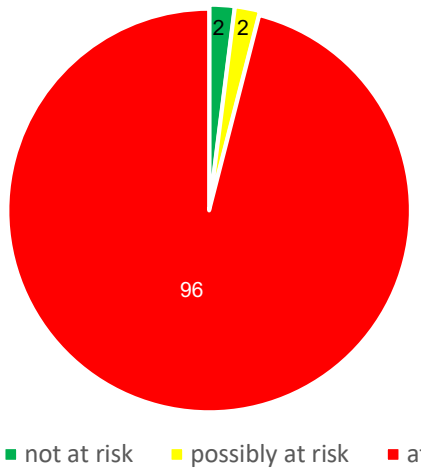


Figure 34. Measures aimed at reducing pollution by organic, biogenic and hazardous substances from point sources of pollution depending on the risk assessment of the SWB, %

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

5 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. A set of measures is envisaged to restore (improve) the hydromorphological characteristics of watercourses, namely the upper reaches of the Western Bug River, the Krasnosilka, Zavadivka and Blekh Rivers, and the Dobrotvir Reservoir within the territories of 6 territorial communities in Lviv Oblast. It is planned to remove barriers in the riverbed that disrupt the continuity of water flow; improve the continuity of flow for biota migration, etc. All of the SWB were assessed as being "at risk". When developing the measures, it was taken into account that the environmental objectives are to achieve a "good" status/potential for 5 SWB.

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 Vistula River sub-basin within Lviv and Volyn Oblasts" (#67). All water users in the sub-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 four measures aimed at reducing (mitigating) adverse impacts on the hydrological regime and morphological characteristics of the SWB during the implementation of infrastructure projects. These measures are aimed at stabilising/restoring the hydrological regime and morphological characteristics in case of disruption of the free flow of rivers, hydraulic connection between river channels and their floodplains, hydrological changes, modification of river morphology and provide for the preservation of the natural characteristics of river channels and floodplains located in the project area. All SWB have been assessed as being "at risk".

8.2 Groundwater

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

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 observation wells.

b. The inventory will identify wells that need to be repaired, plugged or abandoned.

c. 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 state of groundwater, including from point and diffuse sources.

d. 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.

8.2.2 Measures aimed at preventing groundwater depletion

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 state of the GWB.

8.2.3 Planned infrastructure projects and measures to reduce their impact on surface water

The PoM does not include infrastructure projects and measures aimed at reducing their impact on ground water.

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 the communities of the Vistula sub-basin. It is planned to hold the Wetlands Day (2 February), International Water Day (22 March), Western Bug Day (14 August), and Clean Banks Day (third Saturday of September) every year. 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 area of solid waste management. Implementation of local measures by local executive authorities to conserve, protect and restore water resources.

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 (82%). Some measures are aimed at addressing several SWMI. The vast majority of main measures relate to settlements with a population of 2,000 to 10,000 - 29 (45%). There are 6 (9%) measures for settlements with less than 2 thousand inhabitants. For settlements with a population from 10 to 100 thousand, there are 17 measures (26%), and these are measures in the district centres of Lviv and Volyn regions. There are 13 (20%) measures for agglomerations with a population of more than 100 thousand (Lviv city territorial community).

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 22,553 million, with an estimated UAH 7,275 per capita (3.1 million people, 2020 data) (UAH 1,212 per year).

Among the main measures, only one with a very high level of efficiency was identified: Reconstruction of Sewage Treatment Facilities of Lvivvodokanal (Lviv), costing UAH 10,827 million, which is 48% of the cost of all measures and very high social efficiency (impact on 1.150 million people).

The group with a high level of efficiency includes 16 measures with a total value of UAH 7,649 million (34%), two of which are worth more than UAH 1 billion. The social impact is expected to reach 12,866.4 thousand people. These measures are aimed at reducing pollution with organic, nutrient and hazardous substances from the largest cities of the Vistula basin: Lviv, Chervonohrad, Novovolynsk, Novoyavorivsk, Volodymyr, and Liuboml. All the objects of the measures belong to the housing and communal sector. 11 measures in this group are related to the reconstruction of sewerage networks and treatment facilities in Lviv.

The medium efficiency group comprises 37 measures with a total cost of UAH 3,332 million (14%), which are characterised by medium to low cost of measures. All the measures in this group are aimed at reducing pollution by organic, biogenic and hazardous substances (SWMI 1 - 3) from small towns and villages in the sub-basin: Zolochiv, Horodok, Zhovkva, Sokal, Novyi Yarichiv, Kamianka-Buzka, Busk, Yavoriv, Rava-Ruska, Mostyska, Shatsk, Rudky, Ivanychi, Sudova Vyshnia, Hlynyany. The social effect is 252 thousand people. All the objects of the measures belong to the housing and utilities sector.

The group with low efficiency includes 8 measures with a total cost of UAH 737 million (3%). Measures in this group are 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 (SWMI 4), namely the revitalisation of the Blekh, Krasnosilka, Zavadivka rivers, the upper reaches of the Western Bug and restoration of the Dobrotvir reservoir. The social effect is 331 thousand people.

The group with a very low level of effectiveness includes 5 measures with a total value of UAH 6 million (less than 1%), which are aimed at mitigating the impact of planned infrastructure projects (SWMI 5) and improving hydromorphological indicators (SWMI 4). The implementation of these measures will achieve a social effect for 4.2 thousand people. The economic sector's pressure on water resources is minimal and corresponds to the lowest score.

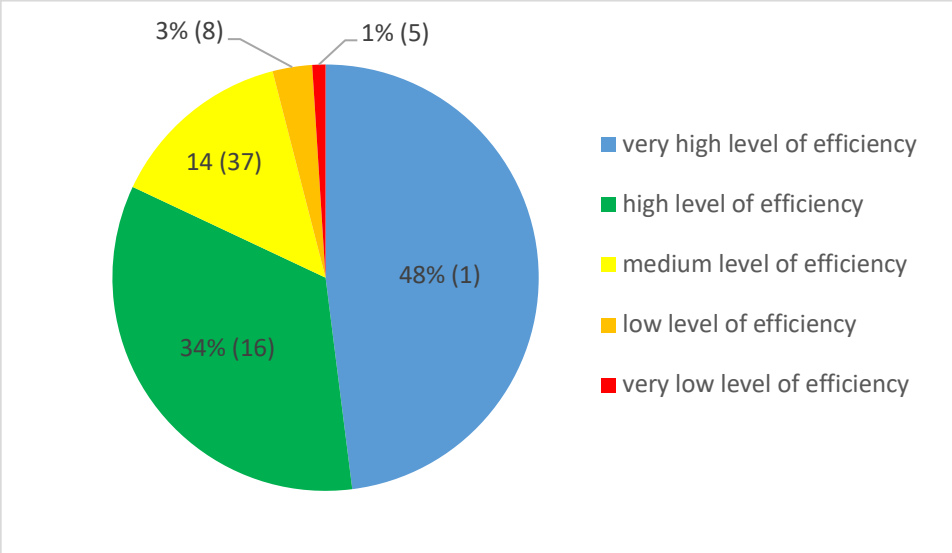


Figure 35. Distribution of main measures with different levels of efficiency by total cost of measures (number of measures in brackets)

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 Western Bug and Syan River Basin Management Office (BUVR) together with the Regional Water Resources Office (ROVR) in Volyn Oblast consulted with the main water users and the public of Lviv and Volyn oblasts on the SWMI, developed a full list of programmes (plans) for the Vistula basin, their content and problems to be solved (PoM), and prepared a draft Vistula River Basin Management Plan for 2025-2030.

In order to prepare the Vistula RBMP in a timely manner, the Ministry of Environmental Protection and Natural Resources of Ukraine approved a schedule for the development of the draft Vistula River Basin Management Plan by Order No. 313 of 27 November 2020, and issued Order No. 1105 of the State Agency of Water Resources of Ukraine of 18 December 2020 "On the Development of Draft River Basin Management Plans".

The Western Bug and Syan BUVR specialists have repeatedly participated in meetings and trainings, as well as online seminars organised by the SAWR and the Centre for Advanced Training of Water Management Professionals (Kyiv) on the preparation of PoM in general. These workshops involved representatives of local governments, water users in the basin and other stakeholders.

Also on 30 March 2023, a communication training for representatives of water resources basin management departments, water utilities and other stakeholders from 9 regions of Ukraine was held in Lviv, dedicated to the current issues of preparing and including effective and realistic PoM in RBMP. The event was organised by the SAWR in cooperation with the EU4Environment - Water and Data Facility, the Association of Water Utilities of Ukraine "Ukrvodokanalekologiya" and the Centre for Advanced Training of Water Management Professionals. The training was facilitated by experts with practical experience in developing RBMPs from Blue Rivers Environmental Consulting. The training focused on effective and efficient planning of measures aimed at addressing water and environmental issues arising from the activities of public utilities that pose a risk to SWBs.

In order to ensure the preparation of the PoM in the process of developing the Vistula RBMP for the period 2025-2030, the Western Bug and Syan BUVR prepared and sent letters to the economic entities of Lviv and Volyn oblasts that provide water supply and sewerage services (water utilities), industrial and agricultural enterprises in the region, that discharge waste water into SWB of the Vistula basin to provide proposals for the PoM aimed at addressing the SWMI of the Vistula river basin (pollution by organic, nutrient and hazardous substances, hydromorphological changes, uncontrolled water use, clogging, etc).

The BUVR specialists processed the received proposals, summarised and presented the draft RBMP for the Vistula River for the period 2025-2030 at the regular meeting of the Western Bug and Syan River Basin Council on 22 January 2024.

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 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 number of public engagement activities, which were announced on 28 February 2024 on the website at the following link: https://davr.gov.ua/news/derzhvodagentstvo-iniciyuye-zahodi-iz-zaluchennya-gromadskosti-do-obgovorennya-proyektiv-purb The Western Bug and Syan BUVR sent out invitations to water users, all territorial communities and other stakeholders in the Vistula river basin on 22 February 2024. The invitation to the public consultations of the draft Vistula RBMP was also published on 27 February 2024 on the Facebook page of the Western Bug and Syan BUVR at the following link:
https://www.facebook.com/lviv.davr.gov.ua/posts/pfbid0xwLWkDqKpVQuqeLTG9ThKrDEkRJvVGtw9RgkRirNXcVqLYeurFzVwghRgejTNDiEl.

In order to present the results of the analysis of the status of SWB in the Vistula River Basin and the relevant PoM, 7 infographics were developed: basin location features; SWMI; ecological status of the SWBs (by biological indicators); chemical status of the SWBs; hydromorphological changes; 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-visli34

On 29 February 2024, a public discussion of the draft Vistula RBMP was held in Lviv. The event was attended by representatives of the authorities, water management organisations, members of the basin council, representatives of local communities, major water users of the Vistula river basin area (water utilities), scientists, NGOs and other stakeholders (58 people in total). The results of the analysis of the Western Bug and Syan sub-basins and the PoM were presented at the event, 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 (Annexes 1 and 2 to the report on the results of the public consultations). Information about the event is available on the website of the SAWR https://davr.gov.ua/news/u-lvovi-vidbulosya-gromadske-obgovorennya-proyektu-planu-upravlinnya-richkovim-basejnom-visli

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 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 Vistula RBMP will be entered by the SAWR into the Unified Register of Strategic Environmental Assessment together with the approved Vistula 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 restoration are the Ministry of Ecology, the SAWR, the State Geological Survey, the State Ecological Inspectorate and other bodies in accordance with the law.

Table 43. Executive authorities in the field of water use and protection and water resources reproduction

Name	Address	Address of the official website
Ministry of Environmental Protection and Natural Resources of Ukraine (MENR)	35, Metropolyt Vasyl Lypkivskyi Street, м. 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 44. 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 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
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	The Water Code of Ukraine of 6 June 1995, No. 213/95-BP (Bulletin of the Verkhovna Rada of	https://zakon.rada.gov.ua/laws/show/213/95-

Name of the body	Legal act	Link on the official website of the Parliament of Ukraine
Ukraine (Derzhgeonadra)	Ukraine (VVR), 1995, No. 24, p. 189) - Article 17	%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 Vistula river basin area, 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 Vistula river basin area, the SAWR established the Western Bug and Sian River Basin Water Resources Management.

Name of the organisation	Address.	Telephone/fax	Email.	Website.
Basin water resources management of the Western Bug and Sianrivers (Western Bug and Syan River Basin BUVR)	79017, м. Lviv, 14 Rodyny Krushelnytskoho Str.	(0322) 75-10-28	01038909@mail.gov.ua	buvrzbts.davr.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 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 Ministry of Ecology and Natural Resources of Ukraine 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 Western Bug and SianRiver Basin Water Resources Management is a budgetary non-profit organisation that belongs to the management of the State Agency of Ukraine for Water Resources. The Regulation on the Western Bug and Syan River Basin Water Resources Management was approved by the Order of the State Agency of Ukraine for Water Resources dated 11.09.2023 No. 113
https://buvrzbts.davr.gov.ua/%d0%bf%d0%be%d0%bb%d0%be%d0%b6%d0%b5%d0%bd%d0%bd%d1%8f/

The purpose of the 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 Vistula River Basin area, to promote integrated water resources management within the Vistula River Basin area, to ensure coordination of interests and coordination of actions of stakeholders in water resources management within the Vistula River Basin area, to promote cooperation between central and local executive authorities, local authorities and other stakeholders. The Western Bug and Syan Basin Council is an advisory body of the State Agency of Water Resources of Ukraine within the Vistula River Basin area. The Regulation on the Western Bug and Syan Basin Council was approved by the Order of the State Agency of Water Resources of Ukraine No. 986 dated 27.12.2018 (https://davr.gov.ua/polozhennya-basejnovoi-radi-zahidnogo-bugu-i-syanu2).

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 Ecology and/or the State Agency of Water Resources of Ukraine 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 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 Republic of Poland on Cooperation in the Field of Water Management on Boundary Waters of 10 October 1996 (https://zakon.rada.gov.ua/laws/show/616_166#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 (https://zakon.rada.gov.ua/laws/show/126-2017-%D0%BF#Text).

On 10 October 1996, the Agreement between the Government of Ukraine and the Government of the Republic of Poland on Cooperation in the Field of Water Management on Border Waters was signed (https://zakon.rada.gov.ua/laws/show/616_166#Text).

In accordance with Article 15 of the Agreement, the Ukrainian-Polish Commission on Boundary Waters was established.

The scope of cooperation consists in economic, scientific and technical cooperation between the Contracting Parties in the field of water management on border waters, which takes into account the principles of protection of the natural environment, cultural heritage and the provisions of international agreements in this area, is specified and reflected in 15 paragraphs of the Agreement and 18 Articles.

The Commission is guided in its work by the principles and provisions of the Agreement and the Charter. The Charter defines the forms of work of the Commission and its bodies.

The Commission consists of the Government Plenipotentiaries for Cooperation on Boundary Waters (hereinafter referred to as the Plenipotentiaries), Deputy Plenipotentiaries, Secretaries, members and heads of Working Groups of both Parties. Within the framework of the Commission, 4 groups have been established:

1. Working Group on Boundary Waters Planning;

2. Working Group on Flood Protection, Regulation and Land Reclamation;

3. Working Group on the Protection of Border Waters from Pollution;

4. Working Group on Hydrometeorology and Hydrogeology;

The Commission meets annually on the Ukrainian and Polish sides alternately, and is chaired by the Commissioner of the Organising Party or his/her deputy.

At the Commission, the Working Groups report on the work done in the previous year, consider the most important issues of a different nature that fall outside the competence of the Working Groups, and make the relevant decisions set out in the Minutes of the Commission meeting.

The Groups work on the basis of the Groups' work plan approved by the Commission, which consists of the Group's tasks, organisational principles and their implementation.

The Working Groups, within the framework of the powers stipulated by the Groups' Charter, hold working meetings and conferences annually on the territory of each of the contracting Parties. As a result of the meetings, they develop the necessary proposals for entries in the minutes of the Commission's meeting, ways to implement them, identify possible

contractors, and indicative funding for the work identified.

The results of the meeting of the Commission shall be drawn up in the minutes, which shall be signed by the Commissioners or their deputies at the end of the meeting of the Commission and submitted to the competent authorities of both states for approval. The minutes in both languages shall have equal force and shall enter into force under the conditions provided for in Article 15, paragraph 9 of the Agreement.

Between meetings, the Commission works in accordance with the tasks and work plans of the Deputy Commissioners and Working Groups set out in the Commission's protocol.

11 THE PROCEDURE FOR OBTAINING INFORMATION, INCLUDING PRIMARY INFORMATION, ON THE STATE OF SURFACE AND GROUNDWATER

In order to ensure proper organization of access to public information, implementation of the Law of Ukraine “On Access to Public Information”, Decree of the President of Ukraine dated May 5, 2011 No. 547 “Issues of ensuring access to public information by executive bodies”, resolutions of the Cabinet of Ministers of Ukraine dated May 25, 2011 No. 583 “Issues of implementation of the Law of Ukraine “On Access to Public Information” in the Secretariat of the Cabinet of Ministers of Ukraine, central and local executive bodies” (Official Gazette of Ukraine, 2011, No. 41, p. 1694), dated October 21, 2015 No. 835 “On approval of the Regulation on data sets subject to publication in the form of open data” (Official Gazette of Ukraine, 2015, No. 85, p. 2850), by order of the Ministry of Environment dated December 2, 2021 No. 793, registered with the Ministry of Justice of Ukraine on February 1, 2022 under No. 123/37459, approved the Procedure for compiling, submitting and processing requests for information, managed by the Ministry of Environmental Protection and Natural Resources of Ukraine, a form for submitting a request for information in writing, a form for submitting a request for information by e-mail and a form for submitting a request for information by telephone.

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 VISTULA RIVER BASIN

MANAGEMENT PLAN

2025-2030

Annex 1. List of identified SWBs in the Vistula RBD

The risk of not achieving the environmental objectives of the SWB: 1 – no risk, 2 – possibly at risk, 3 – at risk.

Linear SWBs

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	Western Bug	Western Bug	Nerev		13,9	HMWB	UA_A6.6.1_0001	1	2	3	3	3
Vistula	Western Bug	Western Bug	Nerev		5,8	HMWB	UA_A6.6.1_0002	1	3	3	3	3
Vistula	Western Bug	Western Bug	Nerev		26,9	HMWB	UA_A6.6.1_0003	2	3	3	3	3
Vistula	Western Bug	Western Bug	Nerev	UA_R_16_L_2_Si	49,8	River	UA_A6.6.1_0004	3	3	1	3	3
Vistula	Western Bug	Western Bug	Nerev	UA_R_16_L_1_Si	156,0	River	UA_A6.6.1_0006	3	2	1	3	3
Vistula	Western Bug	Western Bug	Nerev	UA_R_16_XL_1_Si	161,6	River	UA_A6.6.1_0007	2	3	1	3	3
Vistula	Western Bug	Zolochivka (Belzec)	Western Bug		4,5	HMWB	UA_A6.6.1_0008	1	3	3	3	1
Vistula	Western Bug	Zolochivka (Belzec)	Western Bug		10,6	HMWB	UA_A6.6.1_0009	1	3	3	3	1
Vistula	Western Bug	Zolochivka (Belzec)	Western Bug		1,8	HMWB	UA_A6.6.1_0010	1	3	3	3	1
Vistula	Western Bug	Zolochivka (Belzec)	Western Bug	UA_R_16_M_2_Si	14,5	River	UA_A6.6.1_0012	3	3	1	3	1
Vistula	Western Bug	Untitled	Zolochivka		14,5	HMWB	UA_A6.6.1_0013	1	3	3	3	1
Vistula	Western Bug	Poltva (Pelchev)	Western Bug		8,3	HMWB	UA_A6.6.1_0014	3	1	3	3	3
Vistula	Western Bug	Poltva (Pelchev)	Western Bug		40,2	HMWB	UA_A6.6.1_0015	3	2	3	3	3
Vistula	Western Bug	Poltva (Pelchev)	Western Bug		9,3	HMWB	UA_A6.6.1_0016	3	3	3	3	3
Vistula	Western Bug	Malekhivka	Poltva		8,9	HMWB	UA_A6.6.1_0017	1	3	3	3	1
Vistula	Western Bug	Miklashevsky Stream	Poltva		10,4	HMWB	UA_A6.6.1_0018	2	1	3	3	1
Vistula	Western Bug	Squirrel	Poltva		18,4	HMWB	UA_A6.6.1_0019	1	2	3	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	Western Bug	Squirrel	Poltva		11,2	HMWB	UA_A6.6.1_0020	1	1	3	3	1
Vistula	Western Bug	Marusia (Marunka)	Belka (Kotsurivsky)		14,8	HMWB	UA_A6.6.1_0021	1	1	3	3	1
Vistula	Western Bug	Kishinev	Squirrel (Kotsurovsky)		10,8	HMWB	UA_A6.6.1_0022	1	2	3	3	1
Vistula	Western Bug	Humus (Pshegnuvka)	Poltva		6,8	HMWB	UA_A6.6.1_0023	1	3	3	3	1
Vistula	Western Bug	Humus (Pshegnuvka)	Poltva		8,1	HMWB	UA_A6.6.1_0024	1	3	3	3	1
Vistula	Western Bug	Humus (Pshegnuvka)	Poltva	UA_R_16_M_2_Si	4,2	River	UA_A6.6.1_0025	1	3	1	3	1
Vistula	Western Bug	Yaktorivskyi stream	Humus	UA_R_16_S_2_Ca	1,4	River	UA_A6.6.1_0026	1	3	1	3	1
Vistula	Western Bug	Yaktorivskyi stream	Humus		7,4	HMWB	UA_A6.6.1_0027	1	3	1	3	1
Vistula	Western Bug	Tymkovetskyi Stream	Humus		7,1	HMWB	UA_A6.6.1_0028	1	3	3	3	1
Vistula	Western Bug	Tymkovetskyi Stream	Humus		20,1	HMWB	UA_A6.6.1_0029	2	3	3	3	1
Vistula	Western Bug	Yarychivka (Yarychivska canal	Poltva		19,5	HMWB	UA_A6.6.1_0030	3	3	3	3	1
Vistula	Western Bug	Yarychivka (Yarychivska canal	Poltva		3,1	HMWB	UA_A6.6.1_0032	1	2	3	3	1
Vistula	Western Bug	Yarychivka (Yarychivska canal	Poltva		20,9	HMWB	UA_A6.6.1_0033	2	3	3	3	1
Vistula	Western Bug	Mlynivka (Nedilchyna)	Yarychivka (Yarychivska canal	UA_R_16_S_2_Si	31,9	River	UA_A6.6.1_0034	1	3	1	3	1
Vistula	Western Bug	Untitled	Poltva		12,0	HMWB	UA_A6.6.1_0035	1	3	3	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	Western Bug	Dumna (Dumny, Remenivka)	Poltva		28,3	HMWB	UA_A6.6.1_0036	2	3	3	3	1
Vistula	Western Bug	Dumna (Dumny, Remenivka)	Poltva		23,8	HMWB	UA_A6.6.1_0037	1	3	3	3	1
Vistula	Western Bug	Kapelka	Thought Stream		8,3	HMWB	UA_A6.6.1_0038	1	3	3	3	1
Vistula	Western Bug	Kapelka	Thought Stream		1,5	HMWB	UA_A6.6.1_0039	1	3	3	3	1
Vistula	Western Bug	Golohirka	Poltva		8,1	HMWB	UA_A6.6.1_0040	1	3	3	3	1
Vistula	Western Bug	Golohirka	Poltva		3,9	HMWB	UA_A6.6.1_0041	1	3	3	3	1
Vistula	Western Bug	Golohirka	Poltva		13,3	HMWB	UA_A6.6.1_0042	1	3	3	3	1
Vistula	Western Bug	Untitled	Golohirka		11,2	HMWB	UA_A6.6.1_0043	1	3	3	3	1
Vistula	Western Bug	Slotvina	Western Bug		21,9	HMWB	UA_A6.6.1_0044	1	3	3	3	1
Vistula	Western Bug	Rakytna (Rokytna)	Western Bug		14,7	HMWB	UA_A6.6.1_0045	1	3	3	3	1
Vistula	Western Bug	Untitled	Western Bug		13,9	HMWB	UA_A6.6.1_0046	3	3	3	3	1
Vistula	Western Bug	Semen (Hrytskova)	Western Bug		10,6	HMWB	UA_A6.6.1_0047	2	3	3	3	1
Vistula	Western Bug	Horpinka (Ostruvka)	Western Bug		19,7	HMWB	UA_A6.6.1_0048	1	3	3	3	1
Vistula	Western Bug	Kamenka (Zhultantsy)	Western Bug	UA_R_16_S_2_Si	28,7	River	UA_A6.6.1_0049	1	3	1	3	1
Vistula	Western Bug	Kamenka (Zhultantsy)	Western Bug	UA_R_16_M_2_Si	6,9	River	UA_A6.6.1_0050	1	3	1	3	1
Vistula	Western Bug	Kamenka (Zhultantsy)	Western Bug		0,8	HMWB	UA_A6.6.1_0051	1	3	3	3	1
Vistula	Western Bug	Kamenka (Zhultantsy)	Western Bug	UA_R_16_M_2_Si	4,1	River	UA_A6.6.1_0052	3	3	1	3	1
Vistula	Western Bug	Father	Western Bug		7,3	HMWB	UA_A6.6.1_0053	1	3	3	3	1
Vistula	Western Bug	Yasinitsky	Western Bug	UA_R_16_S_2_Si	15,9	River	UA_A6.6.1_0054	1	3	1	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	Western Bug	Bobrovka	Western Bug		17,9	HMWB	UA_A6.6.1_0055	1	3	3	3	1
Vistula	Western Bug	Untitled	Western Bug		11,1	HMWB	UA_A6.6.1_0056	1	3	3	3	1
Vistula	Western Bug	Untitled	Western Bug	UA_R_16_S_1_Si	2,0	River	UA_A6.6.1_0057	1	3	1	3	1
Vistula	Western Bug	Holoivka	Western Bug		13,9	HMWB	UA_A6.6.1_0058	2	2	3	3	1
Vistula	Western Bug	Holoivka	Western Bug		3,9	HMWB	UA_A6.6.1_0059	1	2	3	3	1
Vistula	Western Bug	Kiysky Stream	Western Bug		11,9	HMWB	UA_A6.6.1_0060	3	2	3	3	1
Vistula	Western Bug	Kiysky Stream	Western Bug	UA_R_16_S_1_Si	1,9	River	UA_A6.6.1_0061	3	3	1	3	1
Vistula	Western Bug	Intersection	Western Bug	UA_R_16_S_2_Si	10,3	River	UA_A6.6.1_0062	1	1	1	1	1
Vistula	Western Bug	Intersection	Western Bug	UA_R_16_S_1_Si	8,9	River	UA_A6.6.1_0063	1	1	1	1	1
Vistula	Western Bug	Rata	Western Bug	UA_R_16_S_2_Si	4,1	River	UA_A6.6.1_0064	1	3	1	3	1
Vistula	Western Bug	Rata	Western Bug		43,0	HMWB	UA_A6.6.1_0065	3	3	3	3	1
Vistula	Western Bug	Rata	Western Bug	UA_R_16_L_1_Si	24,3	River	UA_A6.6.1_0066	3	2	1	3	1
Vistula	Western Bug	Heifer	Rata		9,8	HMWB	UA_A6.6.1_0067	1	3	3	3	1
Vistula	Western Bug	Moshanka	Rata	UA_R_16_S_2_Si	26,1	River	UA_A6.6.1_0068	1	3	1	3	1
Vistula	Western Bug	Moshanka	Rata		0,4	HMWB	UA_A6.6.1_0069	1	3	3	3	1
Vistula	Western Bug	River	Moshanka		9,9	HMWB	UA_A6.6.1_0070	1	3	3	3	1
Vistula	Western Bug	Marunka	Moshanka		16,5	HMWB	UA_A6.6.1_0071	1	3	3	3	1
Vistula	Western Bug	White	Rata	UA_R_16_S_2_Si	22,3	River	UA_A6.6.1_0072	1	3	1	3	1
Vistula	Western Bug	White	Rata	UA_R_16_M_2_Si	19,1	River	UA_A6.6.1_0073	1	3	1	3	1
Vistula	Western Bug	Ugrynka	White		15,5	HMWB	UA_A6.6.1_0074	1	3	3	3	1
Vistula	Western Bug	Divna (Kuninsky)	White		10,3	HMWB	UA_A6.6.1_0075	1	3	3	3	1
Vistula	Western Bug	Untitled	Rata		11,7	HMWB	UA_A6.6.1_0076	1	3	3	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	Western Bug	Pig	Rata		21,7	HMWB	UA_A6.6.1_0077	3	3	3	3	1
Vistula	Western Bug	Pig	Rata	UA_R_16_M_2_Si	25,0	River	UA_A6.6.1_0078	1	3	1	3	1
Vistula	Western Bug	Mlynivka	Pig		24,5	HMWB	UA_A6.6.1_0079	2	3	3	3	1
Vistula	Western Bug	Mogilyansky Canal	Pig		18,9	HMWB	UA_A6.6.1_0080	1	3	3	3	1
Vistula	Western Bug	Balance	Pig		15,8	HMWB	UA_A6.6.1_0081	1	3	3	3	1
Vistula	Western Bug	Derevenka (Kryvulya, Derevenka	Pig	UA_R_16_S_2_Si	21,0	River	UA_A6.6.1_0082	1	3	1	3	1
Vistula	Western Bug	Derevenka (Kryvulya, Derevenka	Pig		17,2	HMWB	UA_A6.6.1_0083	1	3	3	3	1
Vistula	Western Bug	Sour cream	Village (Kryvulya, Derevnya		15,2	HMWB	UA_A6.6.1_0084	1	3	3	3	1
Vistula	Western Bug	Chervonets	Sour cream		10,4	HMWB	UA_A6.6.1_0085	1	3	3	3	1
Vistula	Western Bug	Rakytnya	Rata		11,3	HMWB	UA_A6.6.1_0086	1	2	3	3	1
Vistula	Western Bug	Zeldec	Rata		5,1	HMWB	UA_A6.6.1_0087	1	3	3	3	1
Vistula	Western Bug	Zeldec	Rata		21,3	HMWB	UA_A6.6.1_0088	1	3	3	3	1
Vistula	Western Bug	Zeldec	Rata		4,6	HMWB	UA_A6.6.1_0089	1	2	3	3	1
Vistula	Western Bug	Bolotnya	Rata		14,6	HMWB	UA_A6.6.1_0090	1	2	3	3	1
Vistula	Western Bug	Bolotnya	Rata		8,5	HMWB	UA_A6.6.1_0091	1	2	3	3	1
Vistula	Western Bug	Bolotnya	Rata		13,9	HMWB	UA_A6.6.1_0092	1	2	3	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	Western Bug	Untitled	Bolotnya		10,3	HMWB	UA_A6.6.1_0093	1	2	3	3	1
Vistula	Western Bug	Untitled	Western Bug		3,9	HMWB	UA_A6.6.1_0094	1	1	3	3	1
Vistula	Western Bug	Untitled	Western Bug		10,3	HMWB	UA_A6.6.1_0095	1	2	3	3	1
Vistula	Western Bug	Solokia	Western Bug		14,3	HMWB	UA_A6.6.1_0096	2	2	3	3	1
Vistula	Western Bug	Solokia	Western Bug		30,7	HMWB	UA_A6.6.1_0097	1	2	3	3	1
Vistula	Western Bug	Richytsia	Solokia		1,4	HMWB	UA_A6.6.1_0098	1	2	3	3	1
Vistula	Western Bug	Richytsia	Solokia		8,6	HMWB	UA_A6.6.1_0099	1	2	3	3	1
Vistula	Western Bug	Untitled	Solokia		11,5	HMWB	UA_A6.6.1_0100	1	2	3	3	1
Vistula	Western Bug	White Stream (Bilostik)	Western Bug	UA_R_16_S_2_Ca	7,7	River	UA_A6.6.1_0101	1	1	1	1	1
Vistula	Western Bug	White Stream (Bilostik)	Western Bug		3,1	HMWB	UA_A6.6.1_0102	1	1	3	3	1
Vistula	Western Bug	White Stream (Bilostik)	Western Bug		3,0	HMWB	UA_A6.6.1_0103	1	1	3	3	1
Vistula	Western Bug	White Stream (Bilostik)	Western Bug		16,4	HMWB	UA_A6.6.1_0104	1	2	3	3	1
Vistula	Western Bug	Bushkiv	Bialystok		11,6	HMWB	UA_A6.6.1_0105	1	1	3	3	1
Vistula	Western Bug	Mlynivka	Bialystok		11,6	HMWB	UA_A6.6.1_0106	1	2	3	3	1
Vistula	Western Bug	Mlynivka	Bialystok		0,3	HMWB	UA_A6.6.1_0107	1	1	3	3	1
Vistula	Western Bug	Untitled	Western Bug		9,8	HMWB	UA_A6.6.1_0108	1	2	3	3	1
Vistula	Western Bug	Untitled	Western Bug		8,7	HMWB	UA_A6.6.1_0109	1	2	3	3	1
Vistula	Western Bug	Krasnoselka	Western Bug		4,5	HMWB	UA_A6.6.1_0110	1	2	3	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	Western Bug	Gatkovka	Western Bug		2,7	HMWB	UA_A6.6.1_0111	1	2	3	3	1
Vistula	Western Bug	Gatkovka	Western Bug		6,7	HMWB	UA_A6.6.1_0112	1	2	3	3	1
Vistula	Western Bug	Spasivka (Stasivka)	Western Bug		16,1	HMWB	UA_A6.6.1_0113	2	2	3	3	1
Vistula	Western Bug	Spasivka (Stasivka)	Western Bug	UA_R_16_M_1_Si	11,8	River	UA_A6.6.1_0114	1	2	1	2	1
Vistula	Western Bug	Drahanka (Karbuv, Zaliznia)	Stasivka		13,6	HMWB	UA_A6.6.1_0115	1	2	3	3	1
Vistula	Western Bug	Drahanka (Karbuv, Zaliznia)	Stasivka		3,5	HMWB	UA_A6.6.1_0116	1	2	3	3	1
Vistula	Western Bug	Varezhanka (Varyazhanka)	Western Bug		1,7	HMWB	UA_A6.6.1_0117	1	2	3	3	1
Vistula	Western Bug	Varezhanka (Varyazhanka)	Western Bug		19,0	HMWB	UA_A6.6.1_0118	1	2	3	3	1
Vistula	Western Bug	Untitled	Western Bug		0,8	HMWB	UA_A6.6.1_0119	1	3	3	3	1
Vistula	Western Bug	Untitled	Western Bug		8,5	HMWB	UA_A6.6.1_0120	1	3	3	3	1
Vistula	Western Bug	Untitled	Western Bug		2,2	HMWB	UA_A6.6.1_0121	1	3	3	3	1
Vistula	Western Bug	Untitled	Western Bug		14,9	HMWB	UA_A6.6.1_0122	1	3	3	3	1
Vistula	Western Bug	Studzianka	Western Bug		5,9	HMWB	UA_A6.6.1_0123	1	3	3	3	1
Vistula	Western Bug	Studzianka	Western Bug		7,8	HMWB	UA_A6.6.1_0124	1	3	3	3	1
Vistula	Western Bug	Studzianka	Western Bug	UA_R_16_M_1_Si	14,9	River	UA_A6.6.1_0125	1	3	1	3	1
Vistula	Western Bug	Meadows	Western Bug		11,9	HMWB	UA_A6.6.1_0126	1	3	3	3	1
Vistula	Western Bug	Meadows	Western Bug		6,9	HMWB	UA_A6.6.1_0127	1	3	3	3	1
Vistula	Western Bug	Meadows	Western Bug	UA_R_16_M_1_Si	34,9	River	UA_A6.6.1_0128	2	3	1	3	1
Vistula	Western Bug	Meadows	Western Bug	UA_R_16_L_1_Si	39,6	River	UA_A6.6.1_0129	2	3	1	3	1
Vistula	Western Bug	Strip	Meadows		15,2	HMWB	UA_A6.6.1_0130	1	3	3	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	Western Bug	Strip	Meadows		4,3	HMWB	UA_A6.6.1_0131	1	3	3	3	1
Vistula	Western Bug	Strip	Meadows		5,3	HMWB	UA_A6.6.1_0132	2	3	3	3	1
Vistula	Western Bug	Untitled	Meadows		4,7	HMWB	UA_A6.6.1_0133	1	3	3	3	1
Vistula	Western Bug	Untitled	Meadows		5,9	HMWB	UA_A6.6.1_0134	1	3	3	3	1
Vistula	Western Bug	Luga-Svinoriyka	Meadows		8,2	HMWB	UA_A6.6.1_0135	1	3	3	3	1
Vistula	Western Bug	Luga-Svinoriyka	Meadows	UA_R_16_S_1_Si	4,0	River	UA_A6.6.1_0136	1	3	1	3	1
Vistula	Western Bug	Luga-Svinoriyka	Meadows	UA_R_16_M_1_Si	28,2	River	UA_A6.6.1_0137	3	3	1	3	1
Vistula	Western Bug	Pigsty	Meadows - Svinoriyka		14,1	HMWB	UA_A6.6.1_0138	1	3	3	3	1
Vistula	Western Bug	Pigsty	Meadows - Svinoriyka		6,2	HMWB	UA_A6.6.1_0139	1	3	3	3	1
Vistula	Western Bug	Pigsty	Meadows - Svinoriyka	UA_R_16_M_1_Si	1,4	River	UA_A6.6.1_0140	1	3	1	3	1
Vistula	Western Bug	Pigsty	Meadows		8,5	HMWB	UA_A6.6.1_0141	1	3	3	3	1
Vistula	Western Bug	Pigsty	Meadows		9,6	HMWB	UA_A6.6.1_0142	1	3	3	3	1
Vistula	Western Bug	Rylovitsa	Meadows		8,5	HMWB	UA_A6.6.1_0143	1	3	3	3	1
Vistula	Western Bug	Rylovitsa	Meadows		9,7	HMWB	UA_A6.6.1_0144	1	3	3	3	1
Vistula	Western Bug	Rylovitsa	Meadows	UA_R_16_M_1_Si	4,0	River	UA_A6.6.1_0145	1	3	1	3	1
Vistula	Western Bug	Scrofula	Western Bug		9,5	HMWB	UA_A6.6.1_0146	1	3	3	3	1
Vistula	Western Bug	Scrofula	Western Bug		13,5	HMWB	UA_A6.6.1_0147	1	3	3	3	1
Vistula	Western Bug	Untitled	Western Bug		18,0	HMWB	UA_A6.6.1_0148	1	3	3	3	1
Vistula	Western Bug	Thin channel	Western Bug		13,4	HMWB	UA_A6.6.1_0149	1	3	3	3	1
Vistula	Western Bug	Neretva	Western Bug		9,1	HMWB	UA_A6.6.1_0150	1	3	3	3	1
Vistula	Western Bug	Neretva	Western Bug	UA_R_16_M_1_Si	24,7	River	UA_A6.6.1_0151	1	3	1	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	Western Bug	Gapa (Yagodynka)	Western Bug		14,1	HMWB	UA_A6.6.1_0152	3	3	3	3	1
Vistula	Western Bug	Gapa (Yagodynka)	Western Bug		2,7	HMWB	UA_A6.6.1_0153	1	3	3	3	1
Vistula	Western Bug	Gapa (Yagodynka)	Western Bug		5,1	HMWB	UA_A6.6.1_0155	1	3	3	3	1
Vistula	Western Bug	Sandy	Gapa (Yagodynka)		14,8	HMWB	UA_A6.6.1_0156	1	3	3	3	1
Vistula	Western Bug	Sandy	Gapa (Yagodynka)		4,4	HMWB	UA_A6.6.1_0157	1	3	3	3	1
Vistula	Western Bug	Bystryak	Western Bug		14,7	HMWB	UA_A6.6.1_0158	1	3	3	3	1
Vistula	Western Bug	Bystryak	Western Bug	UA_R_16_M_1_Si	10,4	River	UA_A6.6.1_0159	1	3	1	3	1
Vistula	Western Bug	Turk Canal	Turske water reservoir (Lake Tu		32,1	AWB	UA_A6.6.1_0161	1	3	1	3	1
Vistula	Western Bug	Terebovitsky Canal			7,4	AWB	UA_A6.6.1_0164	1	3	1	3	1
Vistula	San	San (San)	Vistula	UA_R_10_S_4_Si	2,9	River	UA_A6.6.2_0001	1	1	1	1	1
Vistula	San	San (San)	Vistula	UA_R_10_S_3_Si	27,9	River	UA_A6.6.2_0002	2	1	1	2	1
Vistula	San	San (San)	Vistula	UA_R_10_M_3_Si	31,2	River	UA_A6.6.2_0003	1	1	1	1	1
Vistula	San	Rika	San	UA_R_10_S_4_Si	0,2	River	UA_A6.6.2_0004	1	1	1	1	1
Vistula	San	Rika	San	UA_R_10_S_3_Si	24,4	River	UA_A6.6.2_0005	1	1	1	1	1
Vistula	San	Vär	San	UA_R_16_M_2_Si	14,3	River	UA_A6.6.2_0006	1	2	1	2	1
Vistula	San	Untitled	Elm	UA_R_16_S_2_Si	5,0	River	UA_A6.6.2_0007	1	2	1	2	1
Vistula	San	Bibiska	Elm	UA_R_16_S_2_Si	18,4	River	UA_A6.6.2_0008	1	2	1	2	1
Vistula	San	Shlamivka	Bibiska	UA_R_16_S_2_Si	5,0	River	UA_A6.6.2_0009	1	2	1	2	1
Vistula	San	Vortex	Elm	UA_R_16_S_2_Si	14,7	River	UA_A6.6.2_0010	1	2	1	2	1
Vistula	San	Vortex	Elm	UA_R_16_M_2_Si	17,0	River	UA_A6.6.2_0011	1	2	1	2	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	San	Nettle	Vortex	UA_R_16_S_2_Si	6,3	River	UA_A6.6.2_0012	1	2	1	2	1
Vistula	San	Tarnawa	Vortex	UA_R_16_S_3_Si	0,2	River	UA_A6.6.2_0013	1	2	1	2	1
Vistula	San	Tarnawa	Vortex	UA_R_16_S_2_Si	9,9	River	UA_A6.6.2_0014	1	2	1	2	1
Vistula	San	Chizhki	Vortex	UA_R_16_S_2_Si	13,9	River	UA_A6.6.2_0015	1	2	1	2	1
Vistula	San	Vyrva stream	Elm	UA_R_16_S_2_Si	12,1	River	UA_A6.6.2_0016	3	2	1	3	1
Vistula	San	Bay	Elm	UA_R_16_S_2_Si	18,6	River	UA_A6.6.2_0017	1	3	1	3	1
Vistula	San	Bay	Elm	UA_R_16_M_2_Si	10,4	River	UA_A6.6.2_0018	2	3	1	3	1
Vistula	San	Alder	Bay	UA_R_16_S_2_Si	10,8	River	UA_A6.6.2_0019	1	2	1	2	1
Vistula	San	Butsivskyi Canal	Cherry	UA_R_16_S_2_Si	5,2	River	UA_A6.6.2_0020	1	3	1	3	1
Vistula	San	Butsivskyi Canal	Cherry		5,8	HMWB	UA_A6.6.2_0021	3	3	3	3	1
Vistula	San	Cherry	San		6,2	HMWB	UA_A6.6.2_0022	1	3	3	3	3
Vistula	San	Cherry	San	UA_R_16_M_2_Si	42,3	River	UA_A6.6.2_0023	3	3	1	3	3
Vistula	San	Cherry	San	UA_R_16_M_1_Si	23,2	River	UA_A6.6.2_0024	2	3	1	3	3
Vistula	San	Cherry	Cherry		22,3	HMWB	UA_A6.6.2_0025	1	3	3	3	1
Vistula	San	Untitled	Vyshyvanka		12,5	HMWB	UA_A6.6.2_0026	1	3	3	3	1
Vistula	San	Untitled	Cherry		4,0	HMWB	UA_A6.6.2_0027	1	3	3	3	1
Vistula	San	Untitled	Cherry		10,6	HMWB	UA_A6.6.2_0028	1	3	3	3	1
Vistula	San	Crayfish (Rakuv)	Cherry		8,2	HMWB	UA_A6.6.2_0029	2	1	3	3	1
Vistula	San	Crayfish (Rakuv)	Cherry	UA_R_16_M_2_Si	13,8	River	UA_A6.6.2_0030	1	2	1	2	1
Vistula	San	Puddles	Crayfish		9,9	HMWB	UA_A6.6.2_0031	3	1	3	3	1
Vistula	San	Clay	Crayfish		19,3	HMWB	UA_A6.6.2_0032	2	2	3	3	1
Vistula	San	Mlynivka	Cherry		16,7	HMWB	UA_A6.6.2_0033	1	3	3	3	1
Vistula	San	Horosnitsa	Cherry		11,7	HMWB	UA_A6.6.2_0034	1	3	3	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	San	Black stream	Cherry	UA_R_16_S_2_Si	8,0	River	UA_A6.6.2_0035	1	3	1	3	1
Vistula	San	Black stream	Cherry	UA_R_16_S_1_Si	4,3	River	UA_A6.6.2_0036	1	3	1	3	1
Vistula	San	January	Cherry	UA_R_16_S_2_Si	16,7	River	UA_A6.6.2_0037	1	3	1	3	1
Vistula	San	January	Cherry	UA_R_16_M_2_Si	8,1	River	UA_A6.6.2_0038	1	3	1	3	1
Vistula	San	January	Cherry	UA_R_16_M_1_Si	2,9	River	UA_A6.6.2_0039	2	3	1	3	1
Vistula	San	Untitled	January		7,0	HMWB	UA_A6.6.2_0040	1	3	3	3	1
Vistula	San	Untitled	January		8,1	HMWB	UA_A6.6.2_0041	1	3	3	3	1
Vistula	San	Sekonitsa	January		16,1	HMWB	UA_A6.6.2_0042	1	3	3	3	1
Vistula	San	Green	January	UA_R_16_S_2_Si	16,9	River	UA_A6.6.2_0043	2	3	1	3	1
Vistula	San	Green	January		1,8	HMWB	UA_A6.6.2_0044	1	3	3	3	1
Vistula	San	Unnamed (right tributary of the	Cherry		8,2	HMWB	UA_A6.6.2_0045	1	3	3	3	1
Vistula	San	Untitled (right tributary)	Cherry		2,9	HMWB	UA_A6.6.2_0046	1	3	3	3	1
Vistula	San	Untitled	Untitled (right tributary)	UA_R_16_S_2_Si	5,3	River	UA_A6.6.2_0047	1	3	1	3	1
Vistula	San	Untitled	Untitled (rights inflow)		5,4	HMWB	UA_A6.6.2_0048	1	3	3	3	1
Vistula	San	Untitled	Cherry	UA_R_16_S_2_Si	6,6	River	UA_A6.6.2_0049	1	3	1	3	1
Vistula	San	Untitled	Cherry		3,5	HMWB	UA_A6.6.2_0050	1	3	3	3	1
Vistula	San	Untitled	Cherry		8,7	HMWB	UA_A6.6.2_0051	1	3	3	3	1
Vistula	San	Glass	San	UA_R_16_S_2_Si	7,0	River	UA_A6.6.2_0052	1	3	1	3	3
Vistula	San	Glass	San		3,3	HMWB	UA_A6.6.2_0054	1	3	3	3	3

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	San	Glass	San	UA_R_16_M_2_Si	30,0	River	UA_A6.6.2_0055	3	3	1	3	3
Vistula	San	Saw	Glass	UA_R_16_S_2_Si	5,9	River	UA_A6.6.2_0056	3	3	1	3	1
Vistula	San	Bolshoi Gnoynets	Hnoenets		10,9	HMWB	UA_A6.6.2_0057	1	2	3	3	1
Vistula	San	Bolshoi Gnoynets	Hnoenets	UA_R_16_S_2_Si	0,1	River	UA_A6.6.2_0059	1	3	1	3	1
Vistula	San	Untitled	Hnoenets	UA_R_16_S_2_Si	6,9	River	UA_A6.6.2_0060	1	3	1	3	1
Vistula	San	Maly Gnoinets	Pustule	UA_R_16_S_2_Si	5,7	River	UA_A6.6.2_0061	1	3	1	3	1
Vistula	San	Maly Gnoinets	Pustule	UA_R_16_S_2_Si	1,1	River	UA_A6.6.2_0063	1	3	1	3	1
Vistula	San	Pustule	Glass	UA_R_16_S_2_Si	3,5	River	UA_A6.6.2_0064	1	3	1	3	1
Vistula	San	Pustule	Glass		3,6	HMWB	UA_A6.6.2_0065	1	3	3	3	1
Vistula	San	Rulivsky Potok	Glass		8,8	HMWB	UA_A6.6.2_0066	2	3	3	3	1
Vistula	San	Shan	Glass		25,0	HMWB	UA_A6.6.2_0067	1	3	3	3	1
Vistula	San	Retichin	Glass		17,8	HMWB	UA_A6.6.2_0068	1	3	3	3	1
Vistula	San	Retichin	Glass		5,4	HMWB	UA_A6.6.2_0069	1	3	3	3	1
Vistula	San	Lipovets	Retichin		13,0	HMWB	UA_A6.6.2_0070	1	3	3	3	1
Vistula	San	Gatka	Glass	UA_R_16_S_2_Si	10,3	River	UA_A6.6.2_0071	2	3	1	3	1
Vistula	San	Zavadivka (Liubachivka)	San		11,5	HMWB	UA_A6.6.2_0072	1	3	3	3	3
Vistula	San	Zavadivka (Liubachivka)	San	UA_R_16_M_2_Si	5,2	River	UA_A6.6.2_0073	1	3	1	3	3
Vistula	San	Zavadivka (Liubachivka)	San	UA_R_16_M_2_Si	2,9	River	UA_A6.6.2_0075	1	3	1	3	3
Vistula	San	Volena	Zavadivka (Liubachivka)	UA_R_16_S_2_Si	8,1	River	UA_A6.6.2_0076	3	3	1	3	1
Vistula	San	Stinker	Zavadivka (Liubachivka)	UA_R_16_S_2_Si	8,4	River	UA_A6.6.2_0077	1	3	1	3	1

River basin	River sub-basin	Name of the SWB	Where the SWB flows into	Type of SWB	Length, km	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	The risk of not achieving environmental objectives	
											good ecological status/potential	good chemical status
Vistula	San	Smerdekh	Zavadivka (Liubachivka)	UA_R_16_S_2_Si	15,7	River	UA_A6.6.2_0078	2	3	1	3	1
Vistula	San	Blech	Zavadivka	UA_R_16_S_2_Si	19,2	River	UA_A6.6.2_0079	2	3	1	3	1
			(Lyubachivka)									
Vistula	San	Solotva	Zavadivka (Liubachivka)	UA_R_16_S_2_Si	10,3	River	UA_A6.6.2_0080	1	3	1	3	1
Vistula	San	Untitled	Solotva	UA_R_16_S_2_Si	7,0	River	UA_A6.6.2_0081	1	3	1	3	1
Vistula	San	Smolinka	Solotva	UA_R_16_S_2_Si	9,6	River	UA_A6.6.2_0082	1	3	1	3	1
Vistula	San	Untitled	Smolinka	UA_R_16_S_2_Si	7,5	River	UA_A6.6.2_0083	1	3	1	3	1
Vistula	San	Dry Linden	Solotva	UA_R_16_S_2_Si	11,1	River	UA_A6.6.2_0084	1	3	1	3	1

Polygonal SWBs

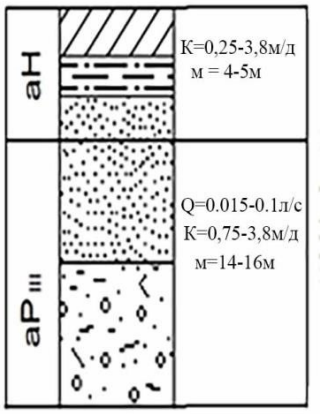
River basin	River sub-basin	Name of the SWB	Type of SWBs	Area, km2	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	Risk of not achieving environmental objectives	
										Good ecological status/potential	good chemical status
Vistula	Western Bug	Dobrotvirske reservoir		4,84	HMWB	UA_A6.6.1_0005	3	3	3	3	3
Vistula	Western Bug	Zolochivske Reservoir		0,97	HMWB	UA_A6.6.1_0011	1	3	3	3	1
Vistula	Western Bug	Gamaleya reservoir		0,87	HMWB	UA_A6.6.1_0031	3	3	3	3	1
Vistula	Western Bug	Lake. Lake Yagodynske	UA_L_16_S_SH_1_Si	0,61	lake	UA_A6.6.1_0154	1	3	1	3	1
Vistula	Western Bug	Tursk reservoir		14,08	HMWB	UA_A6.6.1_0160	1	3	3	3	1

River basin	River sub-basin	Name of the SWB	Type of SWBs	Area, km2	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	Risk of not achieving environmental objectives	
										Good ecological status/potential	good chemical status
Vistula	Western Bug	Lake. Orikhove Lake	UA_L_16_M_SH_1_O	5,86	lake	UA_A6.6.1_0162	1	3	1	3	1
Vistula	Western Bug	Lake. Lake Terebovytske	UA_L_16_S_SH_1_O	0,55	lake	UA_A6.6.1_0163	1	3	1	3	1
Vistula	Western Bug	Nedilchynske reservoir		0,36	AWB	UA_A6.6.1_0165	1	3	3	3	1
Vistula	Western Bug	Solokia reservoir		1,27	AWB	UA_A6.6.1_0166	1	2	2	2	1
Vistula	Western Bug	Bulk storage reservoir		0,54	HMWB	UA_A6.6.1_0167	1	1	3	3	1
Vistula	Western Bug	Lake. Pulemetske Lake	UA_L_16_L_I_1_Si	14,84	lake	UA_A6.6.1_0168	2	3	1	3	1
Vistula	Western Bug	Lake. Svityaz Lake	UA_L_16_L_I_1_Si	25,60	lake	UA_A6.6.1_0169	1	3	1	3	1
Vistula	Western Bug	Lake. Chornoe Bolshoe Lake	UA_L_16_S_SH_1_Si	0,80	lake	UA_A6.6.1_0170	1	3	1	3	1
Vistula	Western Bug	Lake. Lake Lucimer	UA_L_16_M_I_1_Si	4,46	lake	UA_A6.6.1_0171	1	3	1	3	1
Vistula	Western Bug	Lake. Lake Ostrovianske	UA_L_16_M_ SH_1_Si	2,52	lake	UA_A6.6.1_0172	1	3	1	3	1
Vistula	Western Bug	Lake. Luki	UA_L_16_M_ SH_1_Si	6,29	lake	UA_A6.6.1_0173	1	1	1	1	1
Vistula	Western Bug	Lake. Lake Peremut	UA_L_16_M_ SH_1_Si	1,48	lake	UA_A6.6.1_0174	1	1	1	1	1
Vistula	Western Bug	Lake. Pisochne Lake	UA_L_16_M_I_1_Si	1,86	lake	UA_A6.6.1_0175	2	3	1	3	1
Vistula	Western Bug	Lake. Krymno	UA_L_16_M_ SH_1_Si	1,43	lake	UA_A6.6.1_0176	1	1	1	1	1
Vistula	Western Bug	Lake. Bolshoye Pishchanskoye Lake	UA_L_16_S_I_1_Si	0,74	lake	UA_A6.6.1_0177	2	3	1	3	1
Vistula	Western Bug	Lake. Radožeči Lake	UA_L_16_S_I_1_Si	0,77	lake	UA_A6.6.1_0178	2	2	1	2	1
Vistula	Western Bug	Lake. Mshane Lake	UA_L_16_S_SH_1_Si	0,82	lake	UA_A6.6.1_0179	1	2	1	2	1
Vistula	Western Bug	Lake. Purity	UA_L_16_S_SH_1_O	0,55	lake	UA_A6.6.1_0180	1	2	1	2	1
Vistula	Western Bug	Korteliske reservoir		0,96	HMWB	UA_A6.6.1_0181	1	2	3	3	1
Vistula	Western Bug	Lake. Lake Luke	UA_L_16_M_I_1_O	1,27	lake	UA_A6.6.1_0182	1	3	1	3	1
Vistula	Western Bug	Lake. Consecration lake	UA_L_16_S_SH_1_O	0,62	lake	UA_A6.6.1_0183	1	2	1	2	1
Vistula	Western Bug	Lake. Orikhovets Lake	UA_L_16_M_SH_1_O	1,19	lake	UA_A6.6.1_0184	1	2	1	2	1

River basin	River sub-basin	Name of the SWB	Type of SWBs	Area, km2	Category of SWB	SWB code	Point sources	Diffuse sources	Hydromorphology	Risk of not achieving environmental objectives	
										Good ecological status/potential	good chemical status
Vistula	San	Artificial reservoir		6,02	AWB	UA_A6.6.2_0053	1	3	3	3	1
Vistula	San	Velykyi Hnoyenets reservoir		0,58	HMWB	UA_A6.6.2_0058	1	3	3	3	1
Vistula	San	Maly Gnoenets reservoir		1,43	HMWB	UA_A6.6.2_0062	1	3	3	3	1
Vistula	San	Zavadivka reservoir		2,95	HMWB	UA_A6.6.2_0074	1	3	3	3	1
Vistula	San	Krakovets Reservoir		1,73	AWB	UA_A6.6.2_0085	1	3	3	3	1

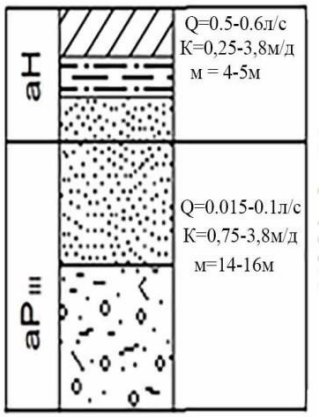
Annex 1 Characteristics of the identified GWBs and groups of GWBs in the Vistula RBD

Table 1: Characteristics of the GWBs in alluvial deposits of Holocene floodplains and I-II upper Neopleistocene floodplain terraces of the Western Bug River sub-basin

Parameters	Characteristics	Lithological and hydrogeological column
GWBs code	UAA6610Q100	
Name of the GWBs	Alluvial, floodplain and I-II floodplain terraces	
Area of distribution, km2	2586,0	
Geological index	1) aH 2) a1-2PIII	
Lithology	1) alluvial Holocene Deposits of river channels and floodplains (sands, sandy loams, loams) 2) alluvial deposits of the upper Neopleistocene I-II overflank areas river terraces (sands, sandy loams, loams)	
Groundwater or pressure water	1) Soil 2) Groundwater, in some places low pressure	
Composition of overlying sediments	Loess loam, sandy loam, soil layer	
Aquifer thickness, m Min, Max, Average	1) 4-5 2) 14-16	
Filtration coefficient, K, m/day. Min, Max, Average	1) from 0.25 to 3.80 2) from 0.75 to 2.66	
Coeff. of water supply, Km, m2 /day. Min, Max, Average		
Groundwater level, m Min, Max, Average of the observed period	1) 0-0,75- 1,5 2) 0,75-1,5; 3,0-5,0	
Annual amplitudefluctuation level, m	1) 1-1,5; 2) 1-2	
Water withdrawal >10 m3 /day: yes/no	Yes	
The number of operational wells	> 50 single	
It is used for drinking water, agricultural or industrial water supply	Commercial and drinking water and agricultural water supply	
Flow rate of wells or sources, l/s	1) - 2) 0.015-0.1 at lower levels about 1.0 m	
Chemical composition (main cations and anions)		
Main power supply	Infiltration of precipitation, partially surface watercourses	
Interaction with surface by the waters	Intensity of communication: - by the duration of the selection delay of groundwater on the river runoff "τ": from very intense, with a period τ up to 1 year - in floodplains and up to intensive, with a period of τ 1-5 years, - in floodplain terraces; - by the coefficients of the relationship between surface and underground resources water (Ksv.=0.95-0.98).	
The trend of change level (down, up)	Natural fluctuations depending on the amount of precipitation	
The predominant human activity above the object	Water extraction, for drinking and agricultural water supply	
Chemical state	Good. Local product contamination	

Parameters	Characteristics	Lithological and hydrogeological column
	decomposition of organic matter (nitrates, nitrites, ammonia).	
Quantitative state	Good. Aquifer in alluvial Holocene and I-II Floodplain terraces are a source of water supply of individual farms	
Reliability of information (high low)	High	
Amount of annual precipitation, mm	By weather stations: Lviv - 740 mm Sycamores. Mostiska	

Table 2: Characteristics of the GWBs in alluvial deposits of floodplains and I-II overflow terraces of the Upper Neopleistocene and Holocene of the San River sub-basin

Parameters.	Characteristics	Lithological and hydrogeological column
GWBs code	UAA6620Q100	
Name of the GWBs	Alluvial, floodplain and I-II floodplain terraces	
Area of distribution, km^2	450,1	
Geological index	1) *aH* 2) *a1-2PIII*	
Lithology	1) alluvial Holocene Deposits of river channels and floodplains (sands, sandy loams, loams) 2) alluvial deposits of the upper Neopleistocene I-II overflank areas river terraces (sands, sandy loams, loams)	
Groundwater or pressure water	1) Soil 2) Groundwater, in some places low pressure	
Composition of overlying sediments	Loess loam, sandy loam, soil layer	
Aquifer thickness, m Min, Max, Average	1) 4-5 2) 14-16	
Filtration coefficient, K, m/day. Min, Max, Average	1) from 0.25 to 3.80 2) from 0.75 to 2.66	
Coeff. of water supply, Km, m^2 /day. Min, Max, Average		
Groundwater level, m Min, Max, Average of the observed period	1) 0-0,75- 1,5 2) 0,75-1,5; 3,0-5,0	
Annual amplitude fluctuation level, m	1) 1-1,5; 2) 1-2	
Water withdrawal >10 m^3 /day: yes/no	Yes	
The number of operational wells	> 50 single	
Used for drinking, agricultural or industrial water supply	Domestic drinking and agricultural water supply	
Flow rate of wells or sources, l/s	1) 0,5-0,6 2) 0.1-0.5 at level reductions of about 1.0 m, sources - up to 0.1	
Chemical composition (main cations and anions)		
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 "τ": from very intensive, with a period of τ up to 1 year, in floodplains to intensive, with a period of τ 1-5 years, in floodplain terraces; - by the coefficients of connection between surface and underground resources water (Ksv.=0.95-0.98).	
The trend of change level (decreasing-increasing)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Water extraction for drinking, domestic and agricultural water supply	
Chemical state	Good. Local pollution by organic decomposition products (nitrates, nitrites, ammonia).	

Parameters.	Characteristics	Lithological and hydrogeological column
Quantitative state	Good. The aquifer in the Holocene alluvial deposits and I-II floodplain terraces is a source of water supply for some farms	
Reliability of information (high/low)	High	
Amount of annual precipitation, mm	In the mountainous part - 1200mm. According to weather stations: Rack - 930 mm String - 786 mm Lviv - 740 mm	

Table 3. Characteristics of the GWB glacial, lake-glacial, and fluvio-glacial deposits of the Middle Neopleistocene of the Western Bug River basin

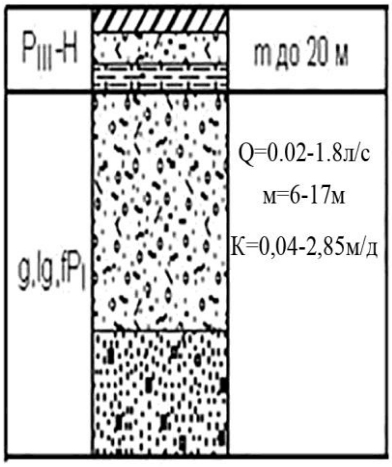
Parameters.	Characteristics	Lithological and hydrogeological column
GWB code	UAA6610Q200	
Name of the GWB	Glacial, lake-glacial, fluvio-glacial	
Area of distribution, km^2	985,1	
Geological index	*g,lg,fP$_{II}$*	
Lithology	Glacial, lake-glacial, fluvio-glacial deposits medium Neopleistocene (loams, sandy loams, sands)	
Groundwater or pressure water	Soil	
Composition of overlying sediments	Vegetation layer loams and sandy loam	
Aquifer thickness, m Min, Max, Average	6-17	
Filtration coefficient, K, m/day. Min, Max, Average	0,04-2,85	
Coeff. of water supply, Km, m^2 /day. Min, Max, Average		
Groundwater level, m, Min, Max, Average over the observed level period	3-5	
Annual amplitude level fluctuations, m	0,5-2	
Water withdrawal >10 m^3 /day: yes/no	Mostly no	
Number of of production wells		
Used for drinking, agricultural or industrial water supply	Domestic drinking and agricultural individual water supply	
Flow rate of wells or sources, l/s	sources - 0.02-1.8	
Chemical composition (main cations and anions)	The waters are fresh	
Main power supply	Infiltration of precipitation	
Relationship with surface water	Intensity of connection by duration of delay in groundwater withdrawal for river flow "**τ") -** very intense with a period of **τ** up to 1 year	
The trend of change level (decreasing-increasing)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	selection groundwater water for water supply	
Chemical state	Good. Local pollution by decomposition products organic substances (nitrates, nitrites, ammonia).	
Quantitative state	Used by households and small businesses	
Reliability of information (high/low)	High	
Amount of annual precipitation, mm	According to the Lviv weather station - 740 mm	

Table 4. Characteristics of the GWBs in glacial, lake-glacial, and fluvio-glacial deposits of the Neopleistocene of the San River basin

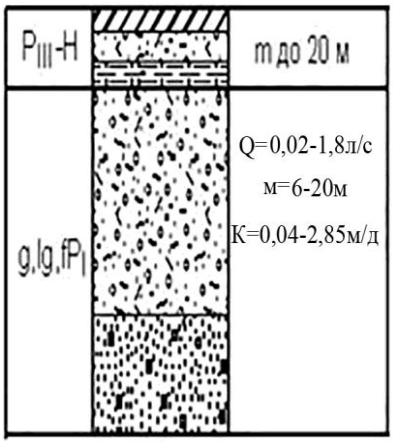
Parameters	Characteristics	Lithological and hydrogeological column
Groundwater massif code	UAA6620Q200	
Name of the groundwater body	Glacial, lake and glacial, fluvioglacial	
Area of distribution, km^2	797,7	
Geological index	*g,lg,fP$_{I-II}$*	
Lithology	Glacial, lacustrine-glacial, fluvioglacial deposits of the Lower-Middle Neopleistocene (loams, sandy loams, sands)	
Groundwater or pressure water	Soil	
Composition of overlying sediments	Vegetation layer loams and sandy loam	
Aquifer thickness, m Min, Max, Average	6-20	
Filtration coefficient, K, m/day. Min, Max, Average	0,04-2,85	
Coeff. of water supply, Km, m^2 /day. Min, Max, Average		
Groundwater level, m, Min, Max, Average for the observation period	0-15	
Annual amplitude level fluctuations, m	0,5-2	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of of production wells		
Used for drinking, agricultural or industrial water supply	Domestic drinking and agricultural individual water supply	
Flow rate of wells or sources, l/s	sources - 0.02-1.8	
Chemical composition (main cations and anions)	Fresh calcium hydrocarbonate, sodium hydrocarbonate-sulfate waters with salinity from 0.3 g/dm^3 to 1.8 g/dm^3	
Main power supply	Infiltration of atmospheric precipitation	
Relationship with surface water	Intensity of connection by duration of delay in groundwater withdrawal for river flow "**τ**") - very intensive with a period of **τ** up to 1 year	
The trend of change level (decreasing-increasing)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Groundwater extraction for water supply	
Chemical state	Good. Local pollution by organic decomposition products (nitrates, nitrites, ammonia).	
Quantitative state	Used by households and small businesses	
Reliability of information (high/low)	High	
Amount of annual precipitation, mm	In the mountainous part - 1200 mm. According to weather stations: Turka - 930 mm Stryi - 786 mm Lviv - 740 mm	

Table 5. Characteristics of a group of GWB in the Middle Miocene sediments of the Western Bug River basin

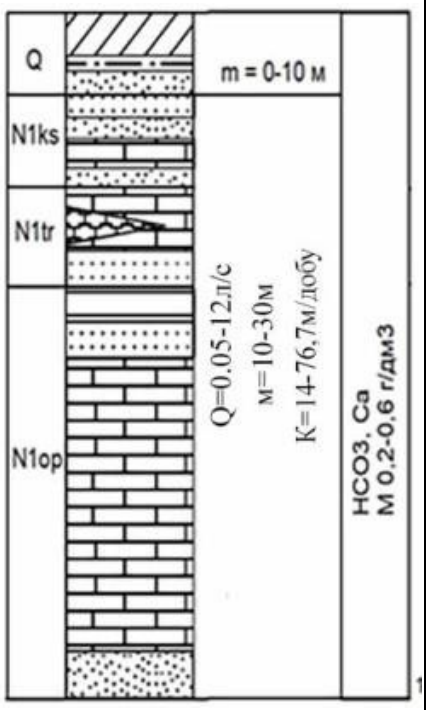
Parameters.	Characteristics	Lithological and hydrogeological column
Code of the GWBs	UAA6610N100	
The name of the GWB	Middle Miocene	
Area of distribution, km^2	181,9	
Geological index	The aquifer in the Middle Miocene sediments ($N)_1$ unites N_1 *ks*, N_1 *tr*, N_1 *op*	
Lithology	Kosiv and Tirasian sediments, Opillya world (limestone, sandstone, sands, gypsum, anhydrite)	
Groundwater or pressure water	Pressure and non-pressure	
The composition overlapping sediments	Loam, sandy loam, vegetation layer	
The power of aquifer layer, m Min, Max, Average	10-30	
Filtration coefficient, K m/day. Min, Max, Average	from 0.14 to 76.7	
Water supply coefficient, Km, m^2 /day. Min, Max, Average		
Groundwater level, m Min, Max Average for observation period	from 2 to 25	
Annual amplitude fluctuation level, m	0,2-0,5	
Water withdrawal >10 m^3 /day: yes/ no	Yes	
The number of operational wells		
It is used for drinking water, agricultural or industrial water supply	Commercial and drinking water and agricultural water supply	
Flow rate of wells or sources, l/s	wells - from thousandths of a share up to 12	
Chemical composition (main cations and anions)	Fresh water (mineralisation - 0.2-0.7 g/dm^3); dominated by calcium bicarbonate (HCO_3 , Ca)	
Main power supply	Infiltration of precipitation, surface water courses	
The relationship surface water	Intensity of communication: - by the duration of the delay groundwater extraction for river water drain "**τ**": from very intense, with for a period τ up to 1 year, - in floodplains and to a very difficult one, with a period of τ more than 10 years, in watersheds territories; - by the coefficients of the relationship between resources of surface and groundwater (Ksv.=0.95-0.98)	
The trend of change level (down, up)	Natural fluctuations in dependence on the amount of precipitation; lowering the levels on the sites intensive operation of underground waters	
The predominant human activity over the object	Intensive exploitation of groundwater (formation of depression funnels, drainage of wetlands areas, karst development)	
Chemical state	Good. Local contamination of the territory during exploration and development of native sulphur deposits	
Quantitative state	Good. The aquifer complex is used for water supply to settlements	
Reliability of information (high/low)	High	
Amount of annual precipitation, mm	According to the Lviv weather station - 740 mm	

Table 6. Characteristics of a group of GWBs in the Middle Miocene sediments of the San River basin

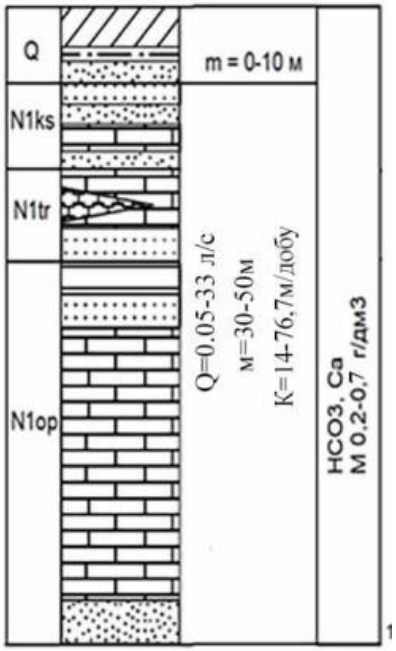
Parameters.	Characteristics	Lithological and hydrogeological column
Code of the GWB	UAA6620N100	
The name of the group GWBS	Middle Miocene	
Area of distribution, km^2	287,0	
Geological index	Aquifer in Middle Miocene sediments (N_1) unites N_1 *ks*, N_1 *tr*, N_1 *op* Kosiv and Tirasian sediments,	
Lithology	Opillya world (limestone, sandstone, sands, gypsum, anhydrite)	
Groundwater or pressure water	Pressure and non-pressure	
The composition overlapping sediments	Loam, sandy loam, vegetation layer	
The power of aquifer layer, m Min, Max, Average	30-50	
Filtration coefficient, K, m/day Min, Max, Average	from 0.14 to 76.7	
Water supply coefficient, Km, m^2 /day. Min, Max, Average		
Groundwater level, m Min, Max Average for observation period	from 0.5 to 27.2	
Annual amplitude fluctuation level, m	0,20-0,5	
Water withdrawal >10 m^3 /day: yes/ no	Yes	
The number of operational wells		
It is used for drinking water, agricultural or industrial water supply	Commercial and drinking water and agricultural water supply	
Flow rate of wells or sources, l/s	wells - from hundredths to 33; on average 1-1.2	
Chemical composition (main cations and anions)	Fresh waters (salinity - 0.2-0.7 g/dm^3); calcium hydrocarbonate (HCO_3 , Ca) prevails	
Main power supply	Infiltration of precipitation and water from surface watercourses	
The relationship with surface water	Intensity of communication: - by the duration of the delay in groundwater withdrawal for river flow "**τ**": from very intensive, with a period of τ up to 1 year, in floodplains to very difficult, with a period of τ over 10 years, in watershed areas; - coefficients of connection between surface and groundwater resources at the fields groundwater: very intense (Ksv.=0.95-0.98)	
The trend of change level (decreasing-increasing)	Natural fluctuations depending on the amount of precipitation; lower levels in areas of intensive groundwater exploitation	
The predominant human activity over the object	Intensive exploitation of groundwater (formation of depression funnels, drainage of wetlands areas, karst development)	
Chemical state	Good. Local contamination of the territory during exploration and development of native sulphur deposits	
Quantitative state	Good. The aquifer complex is used to supply water to settlements	
Reliability of information (high/low)	High	
Amount of annual precipitation, mm	In the mountainous part - 1200 mm. According to weather stations: Turk - 930 mm Stryi - 786 mm Lviv - 740 mm	

Table 7. Characteristics of the groundwater GWB in the Santon-Maastrichtian deposits of the Upper Cretaceous of the Western Bug River basin

Parameters	Characteristics	Lithological and hydrogeological column
Code of the GWB	UAA6610K100	
The name of the GWB	Santon-Maastrichtian Upper Cretaceous strata	
Area of distribution, km^2	10310,0	
Geological index	*K_2 st-m*	
Lithology	Marl, chalk	
Groundwater or pressure water	Pressure	
The composition of the overlapping sediments	Low-permeability marl and chalk strata ("colmatation zone" of the Upper Cretaceous - (*eK_2*), represented by an amorphous clay mass with inclusions of marl fragments	
Aquifer thickness, m Min, Max, Average	from 10 to 80 m, effective power - 7-53 m	
Filtration coefficient, K, m/day. Min, Max, Average		
Water supply coefficient, Km, m^2 /day. Min, Max, Average	In river valleys - 250-500 in watersheds – 10 - 50	
Groundwater level, m. Min, Max, Average for the observation period period	From +1.5-8 in river valleys to 15-22 in watersheds	
Annual level fluctuation amplitude, m	1-1,5	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of operational wells	> 80 group and single water intakes	
It is used for drinking, agricultural or industrial water supply	Domestic, drinking and agricultural water supply	
Flow rate of wells or sources, l/s	Wells and springs on average 0.6-22	
Chemical composition (main cations and anions)	Fresh waters (salinity - 0.5-0.9); mainly sodium chloride-hydrocarbonate, sodium hydrocarbonate-chloride	
Main power supply	Infiltration of precipitation, water inflow from adjacent aquifers	
Interrelation with surface water	: Communication intensity. - by the duration of the delay in groundwater withdrawal for river flow "τ": from very intensive, with a period of τ up to 1 year, to intensive, with a period of **τ** 1-5 years, - in the valleys of major rivers; is very difficult, with a period τ of more than 10 years, in the valleys of its tributaries; - by the coefficients of connection between surface and groundwater resources at groundwater deposits: very close (Ksv. = 0.8-1.0)	
The trend of level changes (down, up)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Groundwater extraction for water supply	
Chemical state	Good	
Quantitative state	Good. The aquifer is the main source of water supply for cities and other settlements	
Reliability of information (high/low)	High	
Amount of annual precipitation, mm	According to the Lviv weather station - 740 mm	

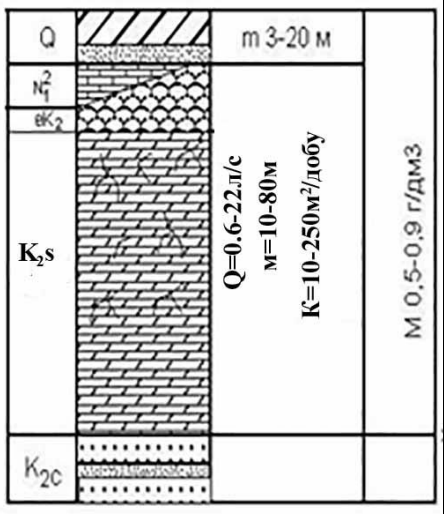


Table 8. Characteristics of the groundwater GWB in the Upper Cretaceous Maastrichtian deposits of the San River basin

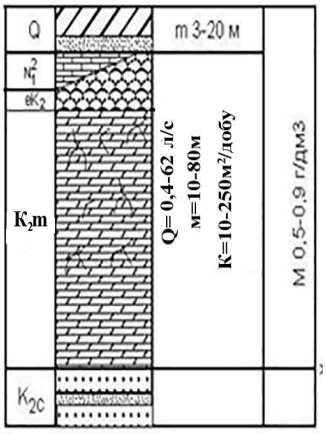
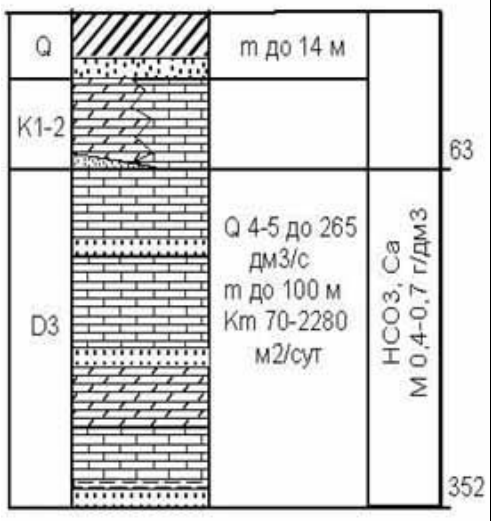
Parameters	Characteristics	Lithological and hydrogeological column
Code of the GWB	UAA6620K100	
The name of the GWB	Maastrichtian Stage of the Upper Cretaceous	
Area of distribution, km^2	92,8	
Geological index	*K m₂*	
Lithology	Marl, chalk	
Groundwater or pressure water	Pressure	
Composition of overlying sediments	The poorly permeable marl and chalk strata ("colmatation zone" of the Upper Cretaceous - (*eK₂*), represented by amorphous clay mass with inclusions of marl fragments	
Aquifer thickness, m Min, Max, Average	from 10 to 80 m, effective power - 7-53 m	
Filtration coefficient of filtration, K, m/day. Min, Max, Medium	0,02-1,5-40	
Water supply coefficient, Km, m^2 /day. Min, Max, Average	In river valleys - 250-500 in watersheds - 10-50	
Groundwater level, m. Min, Max, Average for the observation period	3-10	
Annual level fluctuation amplitude, m	1-1,5	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of operational wells	> 10	
It is used for drinking, agricultural or industrial water supply	Domestic drinking and agricultural water supply	
Flow rate of wells or sources, l/s	Wells and springs on average 0.4-6.2	
Chemical composition (main cations and anions)	Fresh waters (salinity - 0.5-0.9); mainly sodium chloride-hydrocarbonate, sodium hydrocarbonate-chloride	
Main power supply	Infiltration of precipitation, water inflow from adjacent aquifers	
Interrelation with surface water	: Communication intensity. - by the duration of the delay in groundwater withdrawal for river flow "τ": from very intensive, with a period of τ up to 1 year, to intensive, with a period of **τ** 1-5 years, - in the valleys of major rivers; is very difficult, with a period τ of more than 10 years, in the valleys of its tributaries; - by the coefficients of connection between surface and groundwater resources (Ksv. = 0.8-1.0)	
The trend of level changes (down, up)	Natural fluctuations depending on the amount of precipitation	
Prevalence of human activity over the object	Groundwater extraction for water supply	
Chemical status	Good	
Quantitative state	Good. The aquifer is the main source of water supply for cities and other settlements	
Reliability of information (high/low)	High	
Amount of annual precipitation, mm	In the mountainous part - 1200 mm. According to weather stations: Rack - 930 mm String - 786 mm Lviv - 740 mm	

Table 9. Characteristics of the groundwater GWB in the Upper Devonian sediments of the Western Bug River basin

Parameters	Characteristics	Lithological and hydrogeological column
GWB Code	UAA6610D100	
GWB Name	Upper Devon	
Area of distribution, km^2	471,3	
Geological index	*D$_3$*	
Lithology	Sandstones with interlayers of mudstones and siltstones, limestones, dolomites	
Groundwater or pressure water	Pressure	
The composition overlapping sediments	Marls, chalk, sandstones Upper Cretaceous	
Capacity of the aquifer layer, m. Min, Max	40-80	
Coeff. of filtration, K, m/day. Min, Max, Medium	From 0.14-0.3 to 9.5-34	
Coeff. of water supply, Km, m^2 /day. Min, Max, Average	From 70 to 2280	
Groundwater level, m, Min, Max, Average for the observation period	From +17.8 to 9.3	
Annual level fluctuation amplitude, m	0,3-0,5	
Water withdrawal >10 m^3 /day: yes/no	Yes	
Number of of production wells	4 group and single water intakes	
It is used for drinking, agricultural and or industrial water supply	Domestic, drinking and agricultural water supply	
Flow rate of wells or sources, litres per second	Wells - from 4-5 to 265	
Chemical composition (main cations and anions)	Fresh waters (salinity - 0.4-0.7); mainly calcium hydrocarbonate (HCO_3 , Ca)	
The main power source	Groundwater flow from overlying aquifers	
Interrelation with surface water	The intensity of connection at the fields in terms of coefficients of connection between surface and groundwater resources is very close (Ksv.=0.8-1.0)	
The trend change of the level (decreasing - increasing)	Natural fluctuations depending on the amount of precipitation	
The predominant human activity	Groundwater extraction for water supply	
Chemical state	Good	
Quantitative state	Good. The aquifer is used for centralised water supply.	
Reliability of information (high low)	High	
Amount of annual precipitation, mm	According to the Lviv weather station - 740 mm	

Annex 2 List of cases of destruction, stoppages, and disruptions of the technological process of enterprises in the Vistula RBD

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	Oblast
26.03.2022	Oil depot of PE Oil Terminal Lviv Oil Depot	Oil and gas industry	Petroleum products	Environment + Population	Disruption of the technological process	49.86	24.05	Lviv	Lviv city	Lviv	Lviv

Annex 3 List of Emerald Network sites within the Vistula Basin

№	River basin	River sub-basin	Name of the territory	Code.	Area, km^2
1	Vistula	Western Bug	Shatsky National Park / Shatskyi	UA0000025	541,28
2	Vistula	Western Bug	Yavorivskyi National Nature Park	UA0000030	71,2
3	Vistula	Sian	Nadsianskyi Regional Landscape Park	UA0000118	194,49
4	Vistula	Western Bug	Northern Podolia National Nature Park / Pivnichne Podillia	UA0000120	170,33
5	Vistula	Western Bug, Sian	Roztochia Nature Reserve	UA0000121	66715,0
6	Vistula	Western Bug	National Nature Park "Western Pobuzhzhia" / Zakhidne Pobuzhzhia	UA0000167	142,22
7	Vistula	Sian	Cholhynskyi Ornithological Reserve	UA0000178	33,79
8	Vistula	Western Bug, Sian	Zavadivskyi Nature Reserve	UA0000179	85,26
9	Vistula	Western Bug	Bolotnia Nature Reserve	UA0000180	222,36
10	Vistula	Sian	Prylbytskyi Nature Reserve	UA0000246	2,18
11	Vistula	Western Bug	Sokalskyi Nature Reserve	UA0000248	8,94
12	Vistula	Western Bug	Prybuzhzhia National Nature Park	UA0000251	142,63
13	Vistula	Western Bug	Markovichi Nature Reserve	UA0000258	0,53
14	Vistula	Sian	Vigor river valley	UA0000322	5,05
15	Vistula	Sian	Vyrva river valley	UA0000323	96,26

Annex 4 List of places of recreation and leisure within the Vistula basin

№	Name	Address	Territorial community	District	Location coordinates
1	Lake Molodezhnoye in Zdorovye Park is a place for swimming and sport fishing	Zolochiv City Council, Zolochiv Municipal Housing and Communal Services Zolochiv, Shashkevycha str.	Zolochivska TG	Zolochivskyi	49.795229^0 , 24.900945^0
2	Lake for swimming and sport fishing	Hotel and recreation complex of Lviv Switzerland LLC 1b Ozerna St., Davydiv village	Davydivska TG	Lviv	49.772503°, 24.123782°
3	Lake for swimming and sport fishing	Hotel complex "Kolyba" 14, Lvovska str., Bryukhovychi village	Lviv TG	Lviv	49.908127°, 23.961063°
4	Lake for swimming	FOP Savchuk Albina Evgenievna 20a Kurortna St., Bryukhovychi village	Lviv TG	Lviv	49.905226°, 23.956972°
5	Lake for swimming and sport fishing	Recreation centre "Albatross" Volya Hamulecka village	Lviv TG	Lviv	49.924945°, 23.996740°
6	Lake for swimming	Recreation complex "Palmira Resort" Pidberiztsi village, 17 Halytska Street,	Podberiztsivska TG	Lviv	49.814938°, 24.168699°
7	Swimming pond	"SOSNA PARK FOP Dmyterko O.M. Sosnivka village, 1A V. Stefanyka str.	Davydivska TG	Lviv	49.785443°, 24.151240°
8	Luga	Volodymyr-Volynskyi	Vladimirskaya TG	Vladimirsky	50.840531°, 24.315324°
9	Luga	Zarichchya village	Vladimirskaya TG	Vladimirsky	50.840531°, 24.315324°
10	Luga	Khrypalychi village	Ustiluzka TG	Vladimirsky	50.858001°, 24.256056°
11	Pavlivske Lake	Pavlivka village	Pavlivska TG	Vladimirsky	50.627978°, 24.473062°
12	Pavlivske Lake	Pavlivka village	Pavlivska TG	Vladimirsky	50.627551°, 24.479629°
13	Luga-Svynoriyka	Lokachi village	Lokachi TG	Vladimirsky	50.730321°, 24.646697°
14	Radozhychi Lake	Gornyky	Volyn region, Ratnivska TG	Kovelsky	51.734522°, 24.491715°
15	Lake Purity	Brody village	Volyn region, Kovel district Ratnivska TG	Kovelsky	51.763372°, 24.536664°
16	Lake Luki	Samary	Volyn region, Kovel district Samarivska TG	Kovelsky	51.866355°, 24.624351°

№	Name	Address	Territorial community	District	Location coordinates
17	Lake Svyatoe	Tur	Volyn region, Kovel district Zabolotivska TG	Kovelsky	51.670576°, 24.260147°
18	Shakhtarske Lake	Nyzkynychi village, Novovolynsk	Novovolynsk TG	Vladimirsky	50.728056°, 24.186857°
19	Pisochne Lake	Hayivka village	Shatsk TG	Kovelsky	51.561115°, 23.916059°
20	Svityaz Lake	Shatsk, NGO "Gryada" (Ridge)	Shatsk TG	Kovelsky	51.514474°, 23.888183°
21	Svityaz Lake	Svityaz village, camp "Hart" of Lesya Ukrainka Volyn National University	Shatsk TG	Kovelsky	51.481928°, 23.805878°
22	Svityaz Lake	Svityaz, Pension "Shatski Ozera" (Pension "Shatski Ozera" village. Svityaz, 2 Gayova St. Nester House)	Shatsk TG	Kovelsky	51.477680°, 23.812157°
23	Svityaz Lake	Svityaz "Meteorological Station" and "Nester House	Shatsk TG	Kovelsky	51.481562°, 23.847457°
24	Svityaz Lake	ur. Topolina Lake Svityaz (Shatsk National Park, village. Svityaz, st. 61 Oktyabrskaya Street)	Shatsk TG	Kovelsky	51.491544°, 23.867478°
25	Svityaz Lake	Recreation centre "Nezabudka (Shatsk National Park, Svityaz village, 61 Zhovtneva str.)	Shatsk TG	Kovelsky	51.475549°, 23.818593°

Annex 5 List of surface water monitoring sites in the Vistula basin

№	SWB code	Name of the SWB	Name of the monitoring point	Code of the monitoring point	Geographical coordinates		River basin	Sub-basin	SWB category	Type of SWB
					Longitute	Latitude				
	Operational monitoring									
1	UA_A6.6.1_0004	Western Bug	763 km, Busk	UA_A6.6.1_0004_01	24°35'52,28 "E	49°58'20,15 "N	Vistula	Western Bug	river	UA_R_16_L_2_Si
2	UA_A6.6.1_0004	Western Bug	722 km, Kamianka-Buzka	UA_A6.6.1_0004_02	24°20'57,68 "E	50°6'40,63 "N	Vistula	Western Bug	river	UA_R_16_L_2_Si
3	UA_A6.6.1_0006	Western Bug	701 km, Staryi Dobrotvir village	UA_A6.6.1_0006_01	24°22'42,56 "E	50°13'58,71 "N	Vistula	Western Bug	river	UA_R_16_L_2_Si
4	UA_A6.6.1_0006	Western Bug	665 km, Sokal	UA_A6.6.1_0006_02	24°16'21,56 "E	50°29'6,28 "N	Vistula	Western Bug	river	UA_R_16_L_1_Si
5	UA_A6.6.1_0006	Western Bug	637 km, Lytovezh village, bridge of the Novovolynsk-Chernohrad motorway, border with the Republic of Poland	UA_A6.6.1_0006_03	24° 11' 16,75 "E	50° 37' 4,96 "N	Vistula	Western Bug	river	UA_R_16_L_1_Si
6	UA_A6.6.1_0006	Western Bug	571 km, Ambukiv village, 500 m below the confluence of the Huchva River , border with the Republic of Poland	UA_A6.6.1_0006_04	23° 58' 7,42 "E	50° 48' 38,71 "N	Vistula	Western Bug	river	UA_R_16_L_1_Si
7	UA_A6.6.1_0007	Western Bug	546 km, Ustyluh, 500 m below the confluence of the Ustyluh River, border with the Republic of Poland	UA_A6.6.1_0007_01	24° 8' 34,26 "E	50° 52' 10,02 "N	Vistula	Western Bug	river	UA_R_16_XL_1_Si
8	UA_A6.6.1_0007	Western Bug	419 km, Zabuzhzhya village, border with Poland and Belarus	UA_A6.6.1_0007_02	23° 41' 4,34 "E	51° 22' 41,85 "N	Vistula	Western Bug	river	UA_R_16_XL_1_Si
9	UA_A6.6.1_0012	Zolochivka	12 km, Khilchytsi village, impact of Zolochiv wastewater	UA_A6.6.1_0012_01	24°51'16.96 "N	49°50'14.31 "N	Vistula	Western Bug	river	UA_R_16_M_2_SI
10	UA_A6.6.1_0015	Poltva	49 km, Kamianopil village, impact on the Zakhidnyi Buh River, discharge from the treatment plant of the largest polluter Lvivvodokanal	UA_A6.6.1_0015_01	24° 9'57,71 "E	49°52'12,18 "N	Vistula	Western Bug	HMWB	no
11	UA_A6.6.1_0017	Malekhivka	6 km, Malekhiv village, under the bridge on the Lviv-Zhovkva road, impact of drainage water from the Zbyranka solid waste landfill	UA_A6.6.1_0017_01	24° 3'31.78 "E	49°53'31.52 "N	Vistula	Western Bug	HMWB	no
12	UA_A6.6.1_0021	Marunka	8 km, Vynnyky, under the bridge of the Lviv ring road, impact of Vynnyky runoff	UA_A6.6.1_0021_01	24° 9'2.23 "E	49°48'12.77 "N	Vistula	Western Bug	HMWB	no
13	UA_A6.6.1_0060	Kiysky Stream	11 km, Nestanychi village, Chervonohrad district	UA_A6.6.1_0060_01	24°29'18,01 "E	50°14'27,04 "N	Vistula	Western Bug	HMWB	no

№	SWB code	Name of the SWB	Name of the monitoring point	Code of the monitoring point	Geographical coordinates		River basin	Sub-basin	SWB category	Type of SWB
					Longitute	Latitude				
14	UA_A6.6.1_0066	Rata	3.5 km, Mezhyrichchia village, Chervonohrad district	UA_A6.6.1_0066_01	24°12'58,89 "E	50°19'56,89 "N	Vistula	Western Bug	River	UA_R_16_L_1_Si
15	UA_A6.6.1_0068	Moshanka	22 km, Seredkevychi village, Roztocze nature reserve (Emerald Network, reference conditions for the Vistula basin)	UA_A6.6.1_0068_01	23°32'35.11 "E	50° 9'8.17 "N	Vistula	Western Bug	river	UA_R_16_S_2_Si
16	UA_A6.6.1_0077	Svynia	23 km, Vyazova village, impact of the sewage from the town of Zhovkva	UA_A6.6.1_0077_01	24° 0'3.83 "E	50° 6'20.76 "N	Vistula	Western Bug	HMWB	no
17	UA_A6.6.1_0169	Svityaz Lake	c. Svityaz village, influence of Svityaz village	UA_A6.6.1_0169_01	23°50'35,4 "E	51°28'43,3 "N	Vistula	Western Bug	lake	UA_L_16_L_I_1_Si
18	UA_A6.6.2_0006	Vyar (Vigor)	26 km, border with the Republic of Poland, Pidmoshychi village, Sambir district, under the bridge of the T1418 road	UA_A6.6.2_0006_01	22°47'31,37 "E	49°39' 22,49 "N	Vistula	Xiang	river	UA_R_16_M_2_Si
19	UA_A6.6.2_0024	Vyshnia	34 km, drinking water intake of the Municipal Company "Vodokanal" in Mostyska	UA_A6.6.2_0024_01	23°12'21,98 "E	49°48'45,533 "N	Vistula	Xiang	river	UA_R_16_M_1_Si
20	UA_A6.6.2_0024	Vyshnia	20 km, Cherneve village, border with the Republic of Poland, under the bridge of the Mostyska-Krakovets road	UA_A6.6.2_0024_02	23° 5' 0,14 "E	49° 52' 20,28 "N	Vistula	Xiang	river	UA_R_16_M_1_Si
21	UA_A6.6.2_0055	Shklo	46 km, Krakovets village, border with the Republic of Poland, under the bridge of the road Lviv - Krakovets village	UA_A6.6.2_0055_01	23° 11' 34,72 "E	49° 57' 9,38 "N	Vistula	Xiang	river	UA_R_16_M_2_Si
22	UA_A6.6.2_0075	Zavadivka	79 km, Hrushev village, Yavoriv district, border with the Republic of Poland	UA_A6.6.2_0075_01	23° 19' 2,25 "E	50° 5' 12,12 "N	Vistula	Xiang	river	UA_R_16_M_2_Si
23	UA_A6.6.2_0079	Rybnaya	1 km, Hrushev village, Roztochya nature reserve (Emerald Network, impact of water user enterprises in Nemyriv)	UA_A6.6.2_0079_01	23°19'5.83 "E	50° 5'53.07 "N	Vistula	Xiang	river	UA_R_16_S_2_Si

Annex 6 Integrated assessment table of the state of the SWBs in the Vistula River basin for 2021-2023

#	Surface water body				Biological indicators						Hydromorphological indicators - high status (Yes/No)	Chemical and physicochemical parameters	Basin specific		Environmental status	Assessment reliability level*.	Artificial and substantially modified IPA			Chemical state	
	Name of river/lake/transitional/coastal	Code.	Type	The length of the pipeline, km	Phytoplankton	Microphytobenthos	Vascular plants	Bottom macroinvertebrates	The state of the MPA by biological indicators	Assessment reliability level*.			Basin specific	Assessment reliability level*.			Artificial MPV (Yes/No)	Substantially amended MOU (Yes/Candidate)	Environmental potential	Chemical state****.	Assessment reliability level*.
1	Western Bug	UA_A6.6.1_0004	UA_R_16_L_2_Si	49,8	n/a	A/A	n/a	V/A	3	C	Yes	3	3	C	3	C				ND	C
2	Western Bug	UA_A6.6.1_0006	UA_R_16_L_1_Si	156,0	A/A	V/A	A/C	V/A	2	C	Yes	3	2	C	2	C				ND	C
3	Western Bug	UA_A6.6.1_0007	UA_R_16_XL_1_Si	161,6	V/A	V/A	A/C	V/A	3	C	Yes	2	2	C	3	C				ND	C
4	Zolochivka	UA_A6.6.1_0012	UA_R_16_M_2_SI	14,5	n/a	V/A	n/a	A/A	2	C	Yes	3	2	C	2	C				D	C
5	Poltva	UA_A6.6.1_0015	no	40,2	V/V	S/W	V/C	V/V	4	C	-	n/a	3	C		C		HMWB	4	ND	C
6	Malekhivka	UA_A6.6.1_0017	no	8,9	V/A	V/V	V/C	V/A	3	C	-	n/a	2	C		C		HMWB	3	ND	C
7	Marunka	UA_A6.6.1_0021	no	14,8	V/A	V/A	V/C	A/A	3	C	-	n/a	2	C		C		HMWB	3	ND	C
8	Kyiv Stream	UA_A6.6.1_0060	no	11,9	A/V	n/a	n/a	n/a	2	C	-	n/a	2	C		C		HMWB	2	D	C
9	Rata	UA_A6.6.1_0066	UA_R_16_L_1_Si	24,3	A/V	A/V	V/C	A/A	2	C	Yes	2	3	C	2	C				ND	C
10	Moshanka	UA_A6.6.1_0068	UA_R_16_S_2_Si	26,1	n/a	A/V	n/a	A/A	1	C	Yes	2	2	C	1	C				D	C
11	Svynia	UA_A6.6.1_0077	no	21,7	V/A	V/V	A/C	V/A	2	C	-	n/a	2	C		C		HMWB	2	ND	C
12	Luga	UA_A6.6.1_0129	UA_R_16_L_1_Si	39,6	n/a	n/a	n/a	n/a	n/a	-	-	n/a			-	-				ND	C
13	Svityaz Lake	UA_A6.6.1_0169	UA_L_16_L_I_1_Si	25,60	A/V	V/A	A/C	V/A	2	C	-	2	2	C	2	C				ND	C
14	Vär	UA_A6.6.2_0006	UA_R_16_M_2_Si	14,3	n/	A/A	n/a	A/A	1	C	Yes	2	3	C	1	C				D	C
15	Vyshnia	UA_A6.6.2_0024	UA_R_16_M_1_Si	23,2	n/a	S/W	V/C	S/A	2	C	No.	2	3	C	2	C				ND	C
16	Shklo	UA_A6.6.2_0055	UA_R_16_M_2_Si	30,0	n/a	V/A	n/a	A/A	2	C	No.	3	2	C	2	C				D	C
17	Zavadivka	UA_A6.6.2_0075	UA_R_16_M_2_Si	2,9	n/a	V/A	n/a	V/A	2	C	No.	2	2	C	2	C				D	C
18	Blech	UA_A6.6.2_0079	UA_R_16_S_2_Si	19,2	n/a	V/V	n/a	A/A	3	C	Yes	2	2	C	3	C				D	C

Notes:

- not applicable

н/пр no monitoring was conducted

б/о without assessment

Level of reliability of the assessment **

B high

C medium

H low

Ecological status/potencial:

1	High
2	Good
3	Moderate
4	Poor
5	Bad

Chemical status**

D	Good
ND	Failing to achieve good

Annex 8 Achievement of environmental objectives for the Vistula RBD in 2030

Table 1: Achievement of the environmental objectives of the SWB in 2030

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[7]	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)[8]
				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	Intersection	UA_A6.6.1_0062	UA_R_16_S_2_Si	risk-free	risk-free	yes	yes	
2	Intersection	UA_A6.6.1_0063	UA_R_16_S_1_Si	risk-free	risk-free	yes	yes	
3	White Stream (Bilostik)	UA_A6.6.1_0101	UA_R_16_S_2_Ca	risk-free	risk-free	yes	yes	
4	Lake. Luki	UA_A6.6.1_0173	UA_L_16_M_ SH_1_Si	risk-free	risk-free	yes	yes	
5	Lake. Lake Peremut	UA_A6.6.1_0174	UA_L_16_M_ SH_1_Si	risk-free	risk-free	yes	yes	
6	Lake. Krymno	UA_A6.6.1_0176	UA_L_16_M_ SH_1_Si	risk-free	risk-free	yes	yes	
7	San (Xiang)	UA_A6.6.2_0001	UA_R_10_S_4_Si	risk-free	risk-free	yes	yes	
8	San (Xiang)	UA_A6.6.2_0003	UA_R_10_M_3_Si	risk-free	risk-free	yes	yes	
9	Rika	UA_A6.6.2_0004	UA_R_10_S_4_Si	risk-free	risk-free	yes	yes	
10	Rika	UA_A6.6.2_0005	UA_R_10_S_3_Si	risk-free	risk-free	yes	yes	
11	Western Bug	UA_A6.6.1_0004	UA_R_16_L_2_Si	at risk	at risk	yes	yes	
12	Western Bug	UA_A6.6.1_0006	UA_R_16_L_1_Si	at risk	at risk	yes	yes	
13	Western Bug	UA_A6.6.1_0007	UA_R_16_XL_1_Si	at risk	at risk	yes	yes	
14	Zolochivka (Belzec)	UA_A6.6.1_0012	UA_R_16_M_2_Si	at risk	risk-free	yes	yes	

[7] PR - SWB of natural categories (rivers, lakes, transitional, coastal), HMWB/AWB – heavily modified or artificial SWB

[8] 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)[7]	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)[8]
				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)	
15	Poltva (Pelchev)	UA_A6.6.1_0014	HMWB	at risk	at risk	yes	yes	
16	Poltva (Pelchev)	UA_A6.6.1_0015	HMWB	at risk	at risk	yes	yes	
17	Poltva (Pelchev)	UA_A6.6.1_0016	HMWB	at risk	at risk	yes	yes	
18	Kamenka (Zhultantsy)	UA_A6.6.1_0052	UA_R_16_M_2_Si	at risk	risk-free	yes	yes	
19	Rata	UA_A6.6.1_0066	UA_R_16_L_1_Si	at risk	risk-free	yes	yes	
20	Pig	UA_A6.6.1_0077	HMWB	at risk	risk-free	yes	yes	
21	Meadows	UA_A6.6.1_0129	UA_R_16_L_1_Si	at risk	risk-free	yes	yes	
22	Gapa (Yagodynka)	UA_A6.6.1_0152	HMWB	at risk	risk-free	yes	yes	
23	Cherry	UA_A6.6.2_0023	UA_R_16_M_2_Si	at risk	at risk	yes	yes	
24	Western Bug	UA_A6.6.1_0001	HMWB	at risk	at risk	unknown	unknown	BB, TP
25	Western Bug	UA_A6.6.1_0002	HMWB	at risk	at risk	unknown	unknown	BB, TP
26	Western Bug	UA_A6.6.1_0003	HMWB	at risk	at risk	unknown	unknown	BB, TP
27	Zolochivka (Belzec)	UA_A6.6.1_0008	HMWB	at risk	risk-free	unknown	yes	TP
28	Zolochivka (Belzec)	UA_A6.6.1_0009	HMWB	at risk	risk-free	unknown	yes	TP
29	Zolochivka (Belzec)	UA_A6.6.1_0010	HMWB	at risk	risk-free	unknown	yes	TP
30	Untitled	UA_A6.6.1_0013	HMWB	at risk	risk-free	unknown	yes	TP
31	Malekhivka	UA_A6.6.1_0017	HMWB	at risk	risk-free	unknown	yes	TP
32	Miklashevsky Stream	UA_A6.6.1_0018	HMWB	at risk	risk-free	unknown	yes	TP
33	Squirrel	UA_A6.6.1_0019	HMWB	at risk	risk-free	unknown	yes	TP
34	Squirrel	UA_A6.6.1_0020	HMWB	at risk	risk-free	unknown	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)	
35	Marusia (Marunka)	UA_A6.6.1_0021	HMWB	at risk	risk-free	unknown	yes	TP
36	Kishinev	UA_A6.6.1_0022	HMWB	at risk	risk-free	unknown	yes	TP
37	Humus (Pshegnuvka)	UA_A6.6.1_0023	HMWB	at risk	risk-free	unknown	yes	TP
38	Humus (Pshegnuvka)	UA_A6.6.1_0024	HMWB	at risk	risk-free	unknown	yes	TP
39	Humus (Pshegnuvka)	UA_A6.6.1_0025	UA_R_16_M_2_Si	at risk	risk-free	unknown	yes	TP
40	Yaktorivskyi stream	UA_A6.6.1_0026	UA_R_16_S_2_Ca	at risk	risk-free	unknown	yes	TP
41	Yaktorivskyi stream	UA_A6.6.1_0027	HMWB	at risk	risk-free	unknown	yes	TP
42	Tymkovetskyi Stream	UA_A6.6.1_0028	HMWB	at risk	risk-free	unknown	yes	TP
43	Tymkovetskyi Stream	UA_A6.6.1_0029	HMWB	at risk	risk-free	unknown	yes	TP
44	Yarychivka (Yarychivska canal	UA_A6.6.1_0030	HMWB	at risk	risk-free	unknown	yes	TP
45	Yarychivka (Yarychivska canal	UA_A6.6.1_0032	HMWB	at risk	risk-free	unknown	yes	TP
46	Yarychivka (Yarychivska canal	UA_A6.6.1_0033	HMWB	at risk	risk-free	unknown	yes	TP
47	Mlynivka (Nedilchyna)	UA_A6.6.1_0034	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
48	Untitled	UA_A6.6.1_0035	HMWB	at risk	risk-free	unknown	yes	TP
49	Dumna (Dumny, Remenivka)	UA_A6.6.1_0036	HMWB	at risk	risk-free	unknown	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	Dumna (Dumny, Remenivka)	UA_A6.6.1_0037	HMWB	at risk	risk-free	unknown	yes	TP
51	Kapelka	UA_A6.6.1_0038	HMWB	at risk	risk-free	unknown	yes	TP
52	Kapelka	UA_A6.6.1_0039	HMWB	at risk	risk-free	unknown	yes	TP
53	Golohirka	UA_A6.6.1_0040	HMWB	at risk	risk-free	unknown	yes	TP
54	Golohirka	UA_A6.6.1_0041	HMWB	at risk	risk-free	unknown	yes	TP
55	Golohirka	UA_A6.6.1_0042	HMWB	at risk	risk-free	unknown	yes	TP
56	Untitled	UA_A6.6.1_0043	HMWB	at risk	risk-free	unknown	yes	TP
57	Slotvina	UA_A6.6.1_0044	HMWB	at risk	risk-free	unknown	yes	TP
58	Rakytna (Rokytna)	UA_A6.6.1_0045	HMWB	at risk	risk-free	unknown	yes	TP
59	Untitled	UA_A6.6.1_0046	HMWB	at risk	risk-free	unknown	yes	TP
60	Semen (Hrytskova)	UA_A6.6.1_0047	HMWB	at risk	risk-free	unknown	yes	TP
61	Horpinka (Ostruvka)	UA_A6.6.1_0048	HMWB	at risk	risk-free	unknown	yes	TP
62	Kamenka (Zhultantsy)	UA_A6.6.1_0049	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
63	Kamenka (Zhultantsy)	UA_A6.6.1_0050	UA_R_16_M_2_Si	at risk	risk-free	unknown	yes	TP
64	Kamenka (Zhultantsy)	UA_A6.6.1_0051	HMWB	at risk	risk-free	unknown	yes	TP
65	Father	UA_A6.6.1_0053	HMWB	at risk	risk-free	unknown	yes	TP
66	Yasinitsky	UA_A6.6.1_0054	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
67	Bobrovka	UA_A6.6.1_0055	HMWB	at risk	risk-free	unknown	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)	
68	Untitled	UA_A6.6.1_0056	HMWB	at risk	risk-free	unknown	yes	TP
69	Untitled	UA_A6.6.1_0057	UA_R_16_S_1_Si	at risk	risk-free	unknown	yes	TP
70	Holoivka	UA_A6.6.1_0058	HMWB	at risk	risk-free	unknown	yes	TP
71	Holoivka	UA_A6.6.1_0059	HMWB	at risk	risk-free	unknown	yes	TP
72	Kiysky Stream	UA_A6.6.1_0060	HMWB	at risk	risk-free	unknown	yes	TP
73	Kiysky Stream	UA_A6.6.1_0061	UA_R_16_S_1_Si	at risk	risk-free	unknown	yes	TP
74	Rata	UA_A6.6.1_0064	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
75	Rata	UA_A6.6.1_0065	HMWB	at risk	risk-free	unknown	yes	TP
76	Heifer	UA_A6.6.1_0067	HMWB	at risk	risk-free	unknown	yes	TP
77	Moshanka	UA_A6.6.1_0068	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
78	Moshanka	UA_A6.6.1_0069	HMWB	at risk	risk-free	unknown	yes	TP
79	River	UA_A6.6.1_0070	HMWB	at risk	risk-free	unknown	yes	TP
80	Marunka	UA_A6.6.1_0071	HMWB	at risk	risk-free	unknown	yes	TP
81	White	UA_A6.6.1_0072	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
82	White	UA_A6.6.1_0073	UA_R_16_M_2_Si	at risk	risk-free	unknown	yes	TP
83	Ugrynka	UA_A6.6.1_0074	HMWB	at risk	risk-free	unknown	yes	TP
84	Divna (Kuninsky)	UA_A6.6.1_0075	HMWB	at risk	risk-free	unknown	yes	TP
85	Untitled	UA_A6.6.1_0076	HMWB	at risk	risk-free	unknown	yes	TP
86	Pig	UA_A6.6.1_0078	UA_R_16_M_2_Si	at risk	risk-free	unknown	yes	TP
87	Mlynivka	UA_A6.6.1_0079	HMWB	at risk	risk-free	unknown	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[7]	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)[8]
				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)	
88	Mogilyansky Canal	UA_A6.6.1_0080	HMWB	at risk	risk-free	unknown	yes	TP
89	Balance	UA_A6.6.1_0081	HMWB	at risk	risk-free	unknown	yes	TP
90	Derevenka (Kryvulya, Derevka	UA_A6.6.1_0082	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
91	Derevenka (Kryvulya, Derevenka	UA_A6.6.1_0083	HMWB	at risk	risk-free	unknown	yes	TP
92	Sour cream	UA_A6.6.1_0084	HMWB	at risk	risk-free	unknown	yes	TP
93	Chervonets	UA_A6.6.1_0085	HMWB	at risk	risk-free	unknown	yes	TP
94	Rakytnya	UA_A6.6.1_0086	HMWB	at risk	risk-free	unknown	yes	TP
95	Zeldec	UA_A6.6.1_0087	HMWB	at risk	risk-free	unknown	yes	TP
96	Zeldec	UA_A6.6.1_0088	HMWB	at risk	risk-free	unknown	yes	TP
97	Zeldec	UA_A6.6.1_0089	HMWB	at risk	risk-free	unknown	yes	TP
98	Bolotnya	UA_A6.6.1_0090	HMWB	at risk	risk-free	unknown	yes	TP
99	Bolotnya	UA_A6.6.1_0091	HMWB	at risk	risk-free	unknown	yes	TP
100	Bolotnya	UA_A6.6.1_0092	HMWB	at risk	risk-free	unknown	yes	TP
101	Untitled	UA_A6.6.1_0093	HMWB	at risk	risk-free	unknown	yes	TP
102	Untitled	UA_A6.6.1_0094	HMWB	at risk	risk-free	unknown	yes	TP
103	Untitled	UA_A6.6.1_0095	HMWB	at risk	risk-free	unknown	yes	TP
104	Solokia	UA_A6.6.1_0096	HMWB	at risk	risk-free	unknown	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)	
105	Solokia	UA_A6.6.1_0097	HMWB	at risk	risk-free	unknown	yes	TP
106	Richytsia	UA_A6.6.1_0098	HMWB	at risk	risk-free	unknown	yes	TP
107	Richytsia	UA_A6.6.1_0099	HMWB	at risk	risk-free	unknown	yes	TP
108	Untitled	UA_A6.6.1_0100	HMWB	at risk	risk-free	unknown	yes	TP
109	White Stream (Bilostik)	UA_A6.6.1_0102	HMWB	at risk	risk-free	unknown	yes	TP
110	White Stream (Bilostik)	UA_A6.6.1_0103	HMWB	at risk	risk-free	unknown	yes	TP
111	White Stream (Bilostik)	UA_A6.6.1_0104	HMWB	at risk	risk-free	unknown	yes	TP
112	Bushkiv	UA_A6.6.1_0105	HMWB	at risk	risk-free	unknown	yes	TP
113	Mlynivka	UA_A6.6.1_0106	HMWB	at risk	risk-free	unknown	yes	TP
114	Mlynivka	UA_A6.6.1_0107	HMWB	at risk	risk-free	unknown	yes	TP
115	Untitled	UA_A6.6.1_0108	HMWB	at risk	risk-free	unknown	yes	TP
116	Untitled	UA_A6.6.1_0109	HMWB	at risk	risk-free	unknown	yes	TP
117	Krasnoselka	UA_A6.6.1_0110	HMWB	at risk	risk-free	unknown	yes	TP
118	Gatkovka	UA_A6.6.1_0111	HMWB	at risk	risk-free	unknown	yes	TP
119	Gatkovka	UA_A6.6.1_0112	HMWB	at risk	risk-free	unknown	yes	TP
120	Spasivka (Stasivka)	UA_A6.6.1_0113	HMWB	at risk	risk-free	unknown	yes	TP
121	Spasivka (Stasivka)	UA_A6.6.1_0114	UA_R_16_M_1_Si	possibly at risk	risk-free	unknown	yes	TP
122	Drahanka (Karbuv, Zaliznia)	UA_A6.6.1_0115	HMWB	at risk	risk-free	unknown	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)	
123	Drahanka (Karbuv, Zaliznia)	UA_A6.6.1_0116	HMWB	at risk	risk-free	unknown	yes	TP
124	Varezhanka (Varyazhanka)	UA_A6.6.1_0117	HMWB	at risk	risk-free	unknown	yes	TP
125	Varezhanka (Varyazhanka)	UA_A6.6.1_0118	HMWB	at risk	risk-free	unknown	yes	TP
126	Untitled	UA_A6.6.1_0119	HMWB	at risk	risk-free	unknown	yes	TP
127	Untitled	UA_A6.6.1_0120	HMWB	at risk	risk-free	unknown	yes	TP
128	Untitled	UA_A6.6.1_0121	HMWB	at risk	risk-free	unknown	yes	TP
129	Untitled	UA_A6.6.1_0122	HMWB	at risk	risk-free	unknown	yes	TP
130	Studzianka	UA_A6.6.1_0123	HMWB	at risk	risk-free	unknown	yes	TP
131	Studzianka	UA_A6.6.1_0124	HMWB	at risk	risk-free	unknown	yes	TP
132	Studzianka	UA_A6.6.1_0125	UA_R_16_M_1_Si	at risk	risk-free	unknown	yes	TP
133	Meadows	UA_A6.6.1_0126	HMWB	at risk	risk-free	unknown	yes	TP
134	Meadows	UA_A6.6.1_0127	HMWB	at risk	risk-free	unknown	yes	TP
135	Meadows	UA_A6.6.1_0128	UA_R_16_M_1_Si	at risk	risk-free	unknown	yes	TP
136	Strip	UA_A6.6.1_0130	HMWB	at risk	risk-free	unknown	yes	TP
137	Strip	UA_A6.6.1_0131	HMWB	at risk	risk-free	unknown	yes	TP
138	Strip	UA_A6.6.1_0132	HMWB	at risk	risk-free	unknown	yes	TP
139	Untitled	UA_A6.6.1_0133	HMWB	at risk	risk-free	unknown	yes	TP
140	Untitled	UA_A6.6.1_0134	HMWB	at risk	risk-free	unknown	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)	
141	Luga-Svinoriyka	UA_A6.6.1_0135	HMWB	at risk	risk-free	unknown	yes	TP
142	Luga-Svinoriyka	UA_A6.6.1_0136	UA_R_16_S_1_Si	at risk	risk-free	unknown	yes	TP
143	Luga-Svinoriyka	UA_A6.6.1_0137	UA_R_16_M_1_Si	at risk	risk-free	unknown	yes	TP
144	Pigsty	UA_A6.6.1_0138	HMWB	at risk	risk-free	unknown	yes	TP
145	Pigsty	UA_A6.6.1_0139	HMWB	at risk	risk-free	unknown	yes	TP
146	Pigsty	UA_A6.6.1_0140	UA_R_16_M_1_Si	at risk	risk-free	unknown	yes	TP
147	Pigsty	UA_A6.6.1_0141	HMWB	at risk	risk-free	unknown	yes	TP
148	Pigsty	UA_A6.6.1_0142	HMWB	at risk	risk-free	unknown	yes	TP
149	Rylovitsa	UA_A6.6.1_0143	HMWB	at risk	risk-free	unknown	yes	TP
150	Rylovitsa	UA_A6.6.1_0144	HMWB	at risk	risk-free	unknown	yes	TP
151	Rylovitsa	UA_A6.6.1_0145	UA_R_16_M_1_Si	at risk	risk-free	unknown	yes	TP
152	Scrofula	UA_A6.6.1_0146	HMWB	at risk	risk-free	unknown	yes	TP
153	Scrofula	UA_A6.6.1_0147	HMWB	at risk	risk-free	unknown	yes	TP
154	Untitled	UA_A6.6.1_0148	HMWB	at risk	risk-free	unknown	yes	TP
155	Thin channel	UA_A6.6.1_0149	HMWB	at risk	risk-free	unknown	yes	TP
156	Neretva	UA_A6.6.1_0150	HMWB	at risk	risk-free	unknown	yes	TP
157	Neretva	UA_A6.6.1_0151	UA_R_16_M_1_Si	at risk	risk-free	unknown	yes	TP
158	Gapa (Yagodynka)	UA_A6.6.1_0153	HMWB	at risk	risk-free	unknown	yes	TP
159	Gapa (Yagodynka)	UA_A6.6.1_0155	HMWB	at risk	risk-free	unknown	yes	TP
160	Sandy	UA_A6.6.1_0156	HMWB	at risk	risk-free	unknown	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)	
161	Sandy	UA_A6.6.1_0157	HMWB	at risk	risk-free	unknown	yes	TP
162	Bystryak	UA_A6.6.1_0158	HMWB	at risk	risk-free	unknown	yes	TP
163	Bystryak	UA_A6.6.1_0159	UA_R_16_M_1_Si	at risk	risk-free	unknown	yes	TP
164	Turk Canal	UA_A6.6.1_0161	AWB	at risk	risk-free	unknown	yes	TP
165	Terebovitsky Canal	UA_A6.6.1_0164	AWB	at risk	risk-free	unknown	yes	TP
166	San (Xiang)	UA_A6.6.2_0002	UA_R_10_S_3_Si	possibly at risk	risk-free	unknown	yes	TP
167	Vär	UA_A6.6.2_0006	UA_R_16_M_2_Si	possibly at risk	risk-free	unknown	yes	TP
168	Untitled	UA_A6.6.2_0007	UA_R_16_S_2_Si	possibly at risk	risk-free	unknown	yes	TP
169	Bibiska	UA_A6.6.2_0008	UA_R_16_S_2_Si	possibly at risk	risk-free	unknown	yes	TP
170	Shlamivka	UA_A6.6.2_0009	UA_R_16_S_2_Si	possibly at risk	risk-free	unknown	yes	TP
171	Vortex	UA_A6.6.2_0010	UA_R_16_S_2_Si	possibly at risk	risk-free	unknown	yes	TP
172	Vortex	UA_A6.6.2_0011	UA_R_16_M_2_Si	possibly at risk	risk-free	unknown	yes	TP
173	Nettle	UA_A6.6.2_0012	UA_R_16_S_2_Si	possibly at risk	risk-free	unknown	yes	TP
174	Tarnawa	UA_A6.6.2_0013	UA_R_16_S_3_Si	possibly at risk	risk-free	unknown	yes	TP
175	Tarnawa	UA_A6.6.2_0014	UA_R_16_S_2_Si	possibly at risk	risk-free	unknown	yes	TP
176	Chizhki	UA_A6.6.2_0015	UA_R_16_S_2_Si	possibly at risk	risk-free	unknown	yes	TP
177	Vyrva stream	UA_A6.6.2_0016	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
178	Bay	UA_A6.6.2_0017	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
179	Bay	UA_A6.6.2_0018	UA_R_16_M_2_Si	at risk	risk-free	unknown	yes	TP
180	Alder	UA_A6.6.2_0019	UA_R_16_S_2_Si	possibly at risk	risk-free	unknown	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)	
181	Butsivskyi Canal	UA_A6.6.2_0020	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
182	Butsivskyi Canal	UA_A6.6.2_0021	HMWB	at risk	risk-free	unknown	yes	TP
183	Cherry	UA_A6.6.2_0022	HMWB	at risk	at risk	unknown	unknown	BB, TP
184	Cherry	UA_A6.6.2_0024	UA_R_16_M_1_Si	at risk	at risk	unknown	unknown	BB, TP
185	Cherry	UA_A6.6.2_0025	HMWB	at risk	risk-free	unknown	yes	TP
186	Untitled	UA_A6.6.2_0026	HMWB	at risk	risk-free	unknown	yes	TP
187	Untitled	UA_A6.6.2_0027	HMWB	at risk	risk-free	unknown	yes	TP
188	Untitled	UA_A6.6.2_0028	HMWB	at risk	risk-free	unknown	yes	TP
189	Crayfish (Rakuv)	UA_A6.6.2_0029	HMWB	at risk	risk-free	unknown	yes	TP
190	Crayfish (Rakuv)	UA_A6.6.2_0030	UA_R_16_M_2_Si	possibly at risk	risk-free	unknown	yes	TP
191	Puddles	UA_A6.6.2_0031	HMWB	at risk	risk-free	unknown	yes	TP
192	Clay	UA_A6.6.2_0032	HMWB	at risk	risk-free	unknown	yes	TP
193	Mlynivka	UA_A6.6.2_0033	HMWB	at risk	risk-free	unknown	yes	TP
194	Horosnitsa	UA_A6.6.2_0034	HMWB	at risk	risk-free	unknown	yes	TP
195	Black stream	UA_A6.6.2_0035	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
196	Black stream	UA_A6.6.2_0036	UA_R_16_S_1_Si	at risk	risk-free	unknown	yes	TP
197	January	UA_A6.6.2_0037	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
198	January	UA_A6.6.2_0038	UA_R_16_M_2_Si	at risk	risk-free	unknown	yes	TP
199	January	UA_A6.6.2_0039	UA_R_16_M_1_Si	at risk	risk-free	unknown	yes	TP
200	Untitled	UA_A6.6.2_0040	HMWB	at risk	risk-free	unknown	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)	
201	Untitled	UA_A6.6.2_0041	HMWB	at risk	risk-free	unknown	yes	TP
202	Sekonitsa	UA_A6.6.2_0042	HMWB	at risk	risk-free	unknown	yes	TP
203	Green	UA_A6.6.2_0043	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
204	Green	UA_A6.6.2_0044	HMWB	at risk	risk-free	unknown	yes	TP
205	Unnamed (right tributary of the	UA_A6.6.2_0045	HMWB	at risk	risk-free	unknown	yes	TP
206	Unnamed (right tributary of the	UA_A6.6.2_0046	HMWB	at risk	risk-free	unknown	yes	TP
207	Untitled	UA_A6.6.2_0047	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
208	Untitled	UA_A6.6.2_0048	HMWB	at risk	risk-free	unknown	yes	TP
209	Untitled	UA_A6.6.2_0049	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
210	Untitled	UA_A6.6.2_0050	HMWB	at risk	risk-free	unknown	yes	TP
211	Untitled	UA_A6.6.2_0051	HMWB	at risk	risk-free	unknown	yes	TP
212	Glass	UA_A6.6.2_0052	UA_R_16_S_2_Si	at risk	at risk	unknown	unknown	BB, TP
213	Glass	UA_A6.6.2_0054	HMWB	at risk	at risk	unknown	unknown	BB, TP
214	Glass	UA_A6.6.2_0055	UA_R_16_M_2_Si	at risk	at risk	unknown	unknown	BB, TP
215	Saw	UA_A6.6.2_0056	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
216	Bolshoi Gnoynets	UA_A6.6.2_0057	HMWB	at risk	risk-free	unknown	yes	TP
217	Bolshoi Gnoynets	UA_A6.6.2_0059	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
218	Untitled	UA_A6.6.2_0060	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
219	Maly Gnoinets	UA_A6.6.2_0061	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[7]	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)[8]
				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)	
220	Maly Gnoinets	UA_A6.6.2_0063	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
221	Pustule	UA_A6.6.2_0064	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
222	Pustule	UA_A6.6.2_0065	HMWB	at risk	risk-free	unknown	yes	TP
223	Rulivsky Potok	UA_A6.6.2_0066	HMWB	at risk	risk-free	unknown	yes	TP
224	Shan	UA_A6.6.2_0067	HMWB	at risk	risk-free	unknown	yes	TP
225	Retichin	UA_A6.6.2_0068	HMWB	at risk	risk-free	unknown	yes	TP
226	Retichin	UA_A6.6.2_0069	HMWB	at risk	risk-free	unknown	yes	TP
227	Lipovets	UA_A6.6.2_0070	HMWB	at risk	risk-free	unknown	yes	TP
228	Gatka	UA_A6.6.2_0071	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
229	Zavadivka (Liubachivka)	UA_A6.6.2_0072	HMWB	at risk	at risk	unknown	unknown	BB, TP
230	Zavadivka (Liubachivka)	UA_A6.6.2_0073	UA_R_16_M_2_Si	at risk	at risk	unknown	unknown	BB, TP
231	Zavadivka (Liubachivka)	UA_A6.6.2_0075	UA_R_16_M_2_Si	at risk	at risk	unknown	unknown	BB, TP
232	Volena	UA_A6.6.2_0076	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
233	Stinker	UA_A6.6.2_0077	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
234	Smerdekh	UA_A6.6.2_0078	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
235	Blech	UA_A6.6.2_0079	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
236	Solotva	UA_A6.6.2_0080	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
237	Untitled	UA_A6.6.2_0081	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[7]	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)[8]
				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)	
238	Smolinka	UA_A6.6.2_0082	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
239	Untitled	UA_A6.6.2_0083	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
240	Dry Linden	UA_A6.6.2_0084	UA_R_16_S_2_Si	at risk	risk-free	unknown	yes	TP
241	Dobrotvirske reservoir	UA_A6.6.1_0005	HMWB	at risk	at risk	unknown	unknown	BB, TP
242	Zolochivske Reservoir	UA_A6.6.1_0011	HMWB	at risk	risk-free	unknown	yes	TP
243	Gamaleya reservoir	UA_A6.6.1_0031	HMWB	at risk	risk-free	unknown	yes	TP
244	Lake. Lake Yagodynske	UA_A6.6.1_0154	UA_L_16_S_SH_1_Si	at risk	risk-free	unknown	yes	TP
245	Tursk reservoir	UA_A6.6.1_0160	HMWB	at risk	risk-free	unknown	yes	TP
246	Lake. Orikhove Lake	UA_A6.6.1_0162	UA_L_16_M_SH_1_O	at risk	risk-free	unknown	yes	TP
247	Lake. Lake Terebovytske	UA_A6.6.1_0163	UA_L_16_S_SH_1_O	at risk	risk-free	unknown	yes	TP
248	Nedilchynske reservoir	UA_A6.6.1_0165	AWB	at risk	risk-free	unknown	yes	TP
249	Solokia reservoir	UA_A6.6.1_0166	AWB	possibly at risk	risk-free	unknown	yes	TP
250	Bulk storage reservoir	UA_A6.6.1_0167	HMWB	at risk	risk-free	unknown	yes	TP
251	Lake. Pulemetske Lake	UA_A6.6.1_0168	UA_L_16_L_I_1_Si	at risk	risk-free	unknown	yes	TP
252	Lake. Svityaz Lake	UA_A6.6.1_0169	UA_L_16_L_I_1_Si	at risk	risk-free	unknown	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[7]	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)[8]
				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)	
253	Lake. Chornoe Bolshoe Lake	UA_A6.6.1_0170	UA_L_16_S_SH_1_Si	at risk	risk-free	unknown	yes	TP
254	Lake. Lake Lucimer	UA_A6.6.1_0171	UA_L_16_M_I_1_Si	at risk	risk-free	unknown	yes	TP
255	Lake. Lake Ostrovianske	UA_A6.6.1_0172	UA_L_16_M_ SH_1_Si	at risk	risk-free	unknown	yes	TP
256	Lake. Pisochne Lake	UA_A6.6.1_0175	UA_L_16_M_I_1_Si	at risk	risk-free	unknown	yes	TP
257	Lake. Bolshoye Pishchanskoye Lake	UA_A6.6.1_0177	UA_L_16_S_I_1_Si	at risk	risk-free	unknown	yes	TP
258	Lake. Radožeči Lake	UA_A6.6.1_0178	UA_L_16_S_I_1_Si	possibly at risk	risk-free	unknown	yes	TP
259	Lake. Mshane Lake	UA_A6.6.1_0179	UA_L_16_S_SH_1_Si	possibly at risk	risk-free	unknown	yes	TP
260	Lake. Purity	UA_A6.6.1_0180	UA_L_16_S_SH_1_O	possibly at risk	risk-free	unknown	yes	TP
261	Kortelyske Reservoir	UA_A6.6.1_0181	HMWB	at risk	risk-free	unknown	yes	TP
262	Lake. Lake Luke	UA_A6.6.1_0182	UA_L_16_M_I_1_O	at risk	risk-free	unknown	yes	TP
263	Lake. Consecration lake	UA_A6.6.1_0183	UA_L_16_S_SH_1_O	possibly at risk	risk-free	unknown	yes	TP
264	Lake. Orikhovets Lake	UA_A6.6.1_0184	UA_L_16_M_SH_1_O	possibly at risk	risk-free	unknown	yes	TP
265	Artificial reservoir	UA_A6.6.2_0053	AWB	at risk	risk-free	unknown	yes	TP
266	Velykyi Hnoyenets reservoir	UA_A6.6.2_0058	HMWB	at risk	risk-free	unknown	yes	TP
267	Maly Gnoenets reservoir	UA_A6.6.2_0062	HMWB	at risk	risk-free	unknown	yes	TP
268	Zavadivka reservoir	UA_A6.6.2_0074	HMWB	at risk	risk-free	unknown	yes	TP

№	Title SWB	Code SWB	Category (PR, HMWB/AWB)[7]	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)[8]
				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)	
269	Krakovets Reservoir	UA_A6.6.2_0085	AWB	at risk	risk-free	unknown	yes	TP

[4] NR - natural MPAs (rivers, lakes, transitional, coastal), AI/AS - significantly altered or artificial MPAs

[5] NN - natural causes, TA - technical causes (lack of technical solution, technical inappropriateness or impracticability), VH - disproportionately high cost, VO - causes related to military operations, temporary occupation of the territory, NA - unknown causes

Table 2: Achievement of environmental objectives by GWBs and their groups

№	GWB code	Name of the GWB	Quantitative status		Chemical status		Reason for the postponement[9]	Reason for setting less stringent targets[10]	Notes[11]
			Objective	Timeframe for achievement	Objective	Timeframe for achievement			
Groups of non-pressure GWBs									
1	UAA6610Q100	Alluvial, Holocene and I-II floodplain of the Upper Neopleistocene floodplain terraces of the Western Bug River basin	Good status	2030	Good status	2042	T,S	NA	EO
2	UAA6620Q100	Alluvial, Holocene and I-II floodplain of the Upper Neopleistocene floodplain terraces of the SianRiver basin	Good status	2030	Good status	2042	T, S	NA	EO
3	UAA6610Q200	Glacial, lake-glacial, Middle Neopleistocene fluvioglacial of the Western Bug River basin	Good status	2030	Good status	2042	T, S	NA	EO
4	UAA6620Q200	Glacial, lacustrine-glacial, fluvio-glacial Lower-Middle Neopleistocene of the SianRiver basin	Good status	2030	Good status	2042	T, S	NA	EO
Pressure GWBs and groups of pressure GWBs									
5	UAA6610N100	Middle Miocene deposits Western Bug river basin	Good status	2030	Good status	2030			EO
6	UAA6620N100	Middle Miocene deposits SianRiver basin	Good status	2030	Good status	2030			EO
7	UAA6610K100	Santon-Maastrichtian Upper Cretaceous of the Zakhid River basin ny Bug	Good status	2030	Good status	2030			EO
8	UAA6620K100	Maastrichtian tier of the upper Cretaceous of the SianRiver basin	Good status	2030	Good status	2030			EO
9	UAA6610D100	The Upper Devonian deposits are a Western Bug River seine	Good status	2030	Good status	2030			EO

[9] T - technical reasons, H - disproportionately high cost, S - existing natural state

[10] not applicable (NA) in the first cycle of the RBMP 2025-2030

[11] 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

Annex 9.1 Characteristics of water use in the Vistula RBD

Name of economic sectors	The volume of the fence water, million m^3	Volume water used, million m3	Share of total water withdrawal within the basin, %
Industry	10,923	8,771	18,4
including energy mining industry food industry forestry woodworking pulp and paper chemical industry petrochemical industry oil refining industry	2,893 4,273 0,741 0,022 0,076 0,036 0,733 0,013	3,101 0,826 1,508 0,131 0,108 0,049 0,760 0,013	
Housing and utilities economy	41,152	20,732	69,2
Agriculture	2,66	2,678	4,5
including fisheries irrigation agricultural enterprises	1,518 1,133	1,348 1,330	
Transport	0,408	0,905	0,7
Other	4,337	8,847	7,3
Total for the basin	59,48	41,942	100

Annex 9.2 Discharges of wastewater into water bodies by categories of water discharged by the Vistula RBD

Name of economic sectors	Volume of water discharged, million m^3	including			Share of the total discharge within of the basin, %.
		polluted	normatively clean without purification	regulatory cleared on structures	
Industry	4,379	0,614	1,156	2,61	3,3
including energy mining industry food industry forestry and woodworking pulp and paper chemical industry petrochemical industry oil refinery industry	0,157 2,065 0,960 0,095 0,076 0,004 0 0,001	0,610	0,157	2,065 0,350 0,095 0,004	
Housing and utilities	127,20	117,069	0	10,132	95
Agriculture	1,604	0	1,597	0,006	1,2
Including fisheries irrigation agricultural enterprises	1,597 0,006		1,597	0,006	
Transport	0,096	0	0,023	0,073	<0,1
Other	0,491	0,403	0,071	0,016	<1
Total for the basin	133,77	118,086	2,847	12,837	100

Annex 10 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 of 24 May 2012. No. 4836-VI (hereinafter the Dnipro-2021 Programme).**
Name of the conservation measure national target programme or fund	Ensuring the development of land reclamation and improvement of the environmental condition of irrigated and drained land.
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 provided for the implementation of measures to ensure the development of land reclamation and improve the environmental condition of irrigated and drained land in the amount of UAH 30090.49 million for the entire period of implementation from 2013 to 2021 (9 years). 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 t o 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 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%), which has led to a significant Failure to complete its tasks and activities in a timely manner.
Achievement of set goals	The set goals were not achieved. The reason for this is the low amount of actual funding for tasks and activities from all sources of funding.
Name of the programme/fund/project	**"National targeted programme for the development of water economy and 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 national target programme or fund	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 in relation to climate change. №9. Droughts and water shortages.

Implementation of environmental protection measures and their financing	The Dnipro-2021 Programme provided funding for the implementation of the measure in the amount of UAH 1668.6 million for the entire period of implementation 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, the Dnipro-2021 Programme has r e c e i v e d UAH 283.6 million from the budgets of all levels and UAH 283.6 million less than the envisaged need, which has led to a significant failure to complete its tasks and activities on time. For example, the use of funds in accordance with the departmental and programme classifications of expenditures and crediting of the state budget in 2020 for the implementation of this measure within the Dnipro-2021 Programme by the State Agency of Water Resources of Ukraine was UAH 205,000.0 thousand was used in total (4.2% of the total expenditures for 2020)
Achievement of set goals	The set goals were not achieved. The reason for this is the low amount of actual funding for tasks and activities from all sources of funding.
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 national target programme or fund	Protecting rural settlements and agricultural land from the harmful effects of water
Relevance of the environmental measure to the main water and environmental issues	No. 5 Hydromorphological changes. No. 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 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 period of implementation from 2013 to 2021 (9 years). This measure was intended to continue the implementation of the previously existing "Comprehensive Programme for Protection against Harmful Effects of Water from Rural Settlements and Agricultural Lands 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 start of the Dnipro-2021 Programme's activities, as of 1 January 2020, UAH 267.152 million of the envisaged need has been allocated from budgets of all levels and other sources.
Achievement of set goals	The set goals were not achieved. The reason for this is the low amount of actual funding for tasks and activities from all sources of funding.
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 national target programme or fund	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	No. 1 Organic pollution. №2. Pollution by nutrients. №3. Pollution by hazardous substances. №5. Hydromorphological changes. №6. Spread of invasive species. No. 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 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 introduce 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, and enhancing the role of existing ones and creating new ones

	water resources basin administrations; implement water-saving technologies that improve the functioning of the water management and reclamation complex; improve standards and regulations on the use of water resources and limits for water intake and discharge of pollutants into water bodies; develop and implement analytical methods for assessing and determining the risk of negative impact of certain types of economic activity on water resources; and improve the system of state water management. 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, 17% has been allocated. State funds are allocated mainly for the costs of consumption of the water sector, labour remuneration, and utilities, the share of which was financed from the state budget in 2020, for example: 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 on the functioning of the water sector in 2020 amounted to UAH 435,3501.9 thousand (86.7%) of total expenditures. At the same time, the following funds were allocated from the state fund for the development of the water sector UAH 144620 thousand were allocated to the general fund and UAH 524549.1 thousand to the special fund, which totalled UAH 669169.1 thousand (13.3%) of the expenditures for the entire Programme.
Achievement of set goals	The targets were partially achieved. The reason for this is the low amount of actual funding for tasks and activities from all sources of funding.
Name of the programme/fund/project	**National Target Programme "Drinking Water of Ukraine for 2011-2020" approved by the Law of Ukraine No. 2455-IV dated 03 March 2005**
The name of the environmental protection of the national target programme or fund	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 using the latest materials, technologies, equipment and devices
Relevance of the environmental measure to the main water and environmental issues	No. 1 Organic pollution. №2. Pollution by nutrients. №3. Pollution by hazardous substances. №5. Hydromorphological changes. №6. Spread of invasive species. No. 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 estimated amount of funding for the Programme was UAH 9,471.7 million (*in 2010 prices)*, including UAH 3,004.3 million 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, devices 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 in the field of drinking water supply and wastewater disposal in line with the EU standards, taking into account national peculiarities, including in terms of increasing liability for violation of environmental pollution standards, primarily discharges of 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: In 2018 - UAH 200 million (the need is UAH 1.3 billion), in 2019 - no funds were allocated at all. 2020: no funds were allocated at all. 2021: no funds were allocated at all.
Achievement of set goals	The set goals were not achieved. The reason is the lack of funding for the project from the state budget.
Name of the programme/fund/project	**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 2005, No. 70-p.**
Name of the conservation measure national target programme or fund	Preservation and expansion of the country's nature reserve fund. RBMP / Section 3 "Areas (territories) to be protected and their mapping: Emerald Network facilities; sanitary protection zones; protection zones for valuable aquatic bioresources; surface/groundwater bodies used for recreational, medical, resort and health purposes, as well as waters intended for bathing; areas vulnerable to (accumulation of) nitrates"
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 in relation to climate change. №8. Floods and floods, flooding of territories. №9. Droughts and water shortages.

Implementation of environmental protection measures and their financing	In 2019, the number of nature reserve fund (NRF) sites and territories of national and local importance increased by 116 units with a total area of 94224.2 hectares. In 2019, 116 territories and objects of the nature reserve fund were created (declared), 9 were expanded, 3 were reduced in area, 1 status was cancelled and 13 objects were changed in category. 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 (state fund) and UAH 25644.9 thousand (special fund) were spent on measures to preserve and expand the protected areas, totalling UAH 429581.5 thousand. In general, the performance indicators under this budget programme have been met. The area of protected areas in Ukraine was increased by 1%.
Achievement of set goals	The set goals have been 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 national target programme or fund	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. №6. Spread of invasive species. №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	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 the lower-level spending unit, were responsible for the implementation of the Programme. As of 1 January 2021.
	500,000 hectares of degraded, unproductive and technologically contaminated land are to be conserved, 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	The set goals were not achieved.
Name of the programme/fund/project	**Environmental Protection Funds (hereinafter referred to as EPFs)**

Name of the conservation measure national target programme or fund	Protection of the surrounding natural environment (targeted financing of environmental protection 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. №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 in relation to climate change. №8. Floods and floods, flooding of territories. №9. Droughts and water shortages.
Implementation of environmental protection measures and their financing	Currently, Ukraine has a three-tiered 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 (hereinafter referred to as NPD), including water resources, is carried out at the expense of the State Budget of Ukraine and local budgets, funds from enterprises, institutions and organisations, voluntary contributions and other funds.
	Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Regulation on the State Environmental Protection Fund" No. 634 dated 7.05.1998 (as amended by the Resolution of the Cabinet of Ministers of Ukraine 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 amounted to more than 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, were 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 between departments and entities, the following picture emerges; the State Agency of Water Resources (38%), local budgets (24%), SAUEZM (22%), and the Ministry of Environment (now the Ministry of Ecology) (9%) received the most environmental funds, State Environmental Inspectorate (4%), State Geological Survey (2%). 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 Ensuring environmental modernisation of business entities themselves.

Achievement of set goals	The set goals were not achieved. In fact, the entirety of the environmental tax collected is dispersed within the general and special funds of the state and local budgets.
Name of the programme/fund/project	**"The Environmental Protection Programme for 2016-2020 was approved by the decision of the Lviv Regional Council on 26 April 2016, No. 161.**
Name of the conservation measure national target programme or fund	Implementation of environmental protection measures at the most environmentally hazardous facilities, stabilisation of the environment and, based on active efforts to institutionalise environmental policy, creation of conditions for gradual improvement of the environmental situation in the 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. №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 in relation to climate change. №8. Floods and floods, flooding of territories. №9. Droughts and water shortages. Vistula RBM / RBM of rivers in the region (40% of the region's area)
Implementation of environmental protection measures and its	The total amount of funding for the Programme for 2016 was UAH 291378.24 thousand, including
funding	including: funds of the Regional Environmental Protection Fund within the regional budget - UAH 32149.0 thousand, the State Budget of Ukraine (State Environmental Protection Fund) - UAH 254229.24 thousand, other local budgets - UAH 5000.0 thousand. In 2020-2021, environmental protection measures totalling UAH 76140.7 thousand were approved in the Lviv region. The main source of funding is from environmental funds. In 2020, UAH 26213.181 thousand (61%) of the approved amount of UAH 42900.0 thousand for the implementation of environmental measures was financed, and in 2021, out of the planned UAH 33240.7 thousand, UAH 32360.613 thousand (97%) was financed. Having analysed the distribution of funds by priorities, the bulk of the resources was spent on water protection, as the projects for the construction or reconstruction of water treatment facilities are the most expensive. Approximately 10% of the planned funds were allocated for the development of protected areas, biodiversity conservation, and forest protection and restoration. One of the key issues is also land protection, including flood protection and reclamation, with over 10% of total funding allocated to this area. In the Vistula basin in the Lviv region, 11 environmental measures totalling UAH 16154.0 thousand were approved for 2020-2021, which is 21% of the total.
Achievement of set goals	The targets were partially achieved.

Name of the programme/fund/project	**Environmental Protection Programme for 2016-2020 was approved by the decision of the Lviv Regional Council of 26 April 2016 No. 161**
Name of the conservation measure national target programme or fund	**Construction of a sewerage network on Yasna Street in Bryukhovychi, Lviv 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. Yarychivka (Yarychivskyi Canal)/UA_A6.6.1_0030
Implementation of environmental protection measures and their financing	Sewerage networks of plastic non-pressure pipes with a diameter of 200 mm and a length of 500 metres were laid, and 13 sewerage wells were installed. As a result, 30 households will be provided with organised sewage collection. Works completed and the facility put into operation Planned, financed and disbursed - UAH 1200.0 thousand. Co-financing - UAH 220.97 thousand.
Achievement of set goals	Set goals achieved
Name of the programme/fund/project	**"Environmental Protection Programme for 2016-2020 approved by the decision of the Lviv Regional Council of 26 April 2016 No. 161.**
Name of the conservation measure national target programme or fund	**Reconstruction of the discharge collector of treated wastewater from Chervonogradsky treatment facilities in Dobryachyn village, Sokal district, Lviv region, on the section from the Chervonohrad-Sokal motorway to the Western Bug River (Adjustment)**
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. MOU Western Bug/UA_A6.6.1_0006
Implementation of environmental protection measures and their financing	Excavation works were carried out, a sand base for the pipelines was laid, and pipelines made of 630 mm diameter polyethylene pipes were laid over a length of 156 m. The measure is being taken to ensure reliable and trouble-free operation of the Chervonogradske wastewater treatment plant. Work in progress, transitional facility Planned, financed and disbursed - UAH 400.0 thousand. Co-financing - UAH 376.0 thousand.
Achievement of set goals	Set goals achieved
Name of the programme/fund/project	**"Environmental Protection Programme for 2016-2020 approved by the decision of the Lviv Regional Council of 26 April 2016 No. 161.**
Name of the conservation measure national target programme or fund	**Reconstruction of sewage treatment facilities in Novyi Yarychiv, Kamianka-Buzka district, Lviv 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. Yarychivka (Yarychivskyi Canal)/UA_A6.6.1_0033
Implementation of environmental protection measures and their financing	Earthworks were carried out to construct foundations for the biological treatment plant tank. The building of the sewage pumping station was reconstructed, 1 pump was replaced; 265.7 m of sludge was removed from the bioponds[3] . The works are carried out to improve the quality of domestic wastewater treatment and prevent pollution of surface waters of the Western Bug River basin. The facility is not completed Planned, financed and disbursed - UAH 400.0 thousand. Co-financing - UAH 193.15 thousand.
Achievement of set goals	Set goals achieved
Name of the programme/fund/project	**"Environmental Protection Programme for 2016-2020 approved by the decision of the Lviv Regional Council of 26 April 2016 No. 161.**
Name of the conservation measure national target programme or fund	**Preparation of design and estimate documentation "Reconstruction of sewage treatment facilities in Sokal, Lviv region, with a decrease in capacity to 10 thousand m3/day"**
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. Western Bug/UA_A6.6.1_0006
Implementation of environmental protection measures and their financing	Design and estimate documentation was prepared for the future reconstruction of the wastewater treatment facilities, which will ensure high-quality wastewater treatment, improve the performance of sewage treatment facilities, and improve the environmental condition of the Western Bug River basin UAH 900.0 thousand was planned, UAH 471.199 thousand was financed and disbursed. Co-financing - UAH 67.8 thousand.
Achievement of set goals	The objectives have been partially achieved. Project implementation is ongoing.
Name of the programme/fund/project	**"The Environmental Protection Programme for 2016-2020 was approved by the decision of the Lviv Regional Council on 26 April 2016, No. 161.**
Name of the conservation measure national target programme or fund	**Construction of water supply and sewerage networks in the development quarter within Sahaidachnoho and Shevchenka streets in Velyki Mosty, Sokal district Lviv region (Adjustment)**
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. Rata/UA_A6.6.1_0066
Implementation of environmental protection measures and their financing	The measure was not implemented - the customer did not receive a work permit in time Planned - UAH 5,400.0 thousand

Achievement of set goals	The set goals were not achieved. The customer did not receive a work permit in time
Name of the programme/fund/project	**"Environmental Protection Programme for 2016-2020 approved by the decision of the Lviv Regional Council of 26 April 2016 No. 161.**
Name of the conservation measure national target programme or fund	**Reconstruction of hydraulic units and reservoirs in the botanical garden of the Ivan Franko National University of Lviv at 44 Cheremshyny Street in Lviv**
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. №9. Droughts and water shortages. Marusya (Marunka)/UA_A6.6.1_0021
Implementation of environmental protection measures and their financing	Work was carried out to restore external stormwater drainage networks in the adjacent area of the pond, repair the dam and restore the bridge connecting the island part of the pond with the rest of the territory, complete the laying of hard surface paths and install outdoor lighting. Restoration of the damaged ecosystem reservoirs and the regime of water filling and water regulation to ensure the necessary ecological regime for wetland plant groups. Activity completed
	Planned, financed and disbursed - UAH 781.0 thousand. Co-financing - UAH 8.1 thousand.
Achievement of set goals	Set goals achieved
Name of the programme/fund/project	**"Environmental Protection Programme for 2016-2020 approved by the decision of the Lviv Regional Council of 26 April 2016 No. 161.**
Name of the conservation measure national target programme or fund	**Improvement of the technical condition (cleaning) and improvement of the Bilka River tributary in Zvenyhorod village, Pustomyty district, Lviv region (major repairs). Adjustments**
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. Bilka/UA_A6.6.1_0019
Implementation of environmental protection measures and their financing	The company cut d o w n 30 trees, skidded wood, and uprooted stumps; earthworks included cleaning the channel bed of canals with a total length of 368 metres and restoring the body of an earthen dam. 50 households and 25 hectares of agricultural land were protected from flooding. The event was completed Planned, financed and disbursed - UAH 400.0 thousand. Co-financing - UAH 110.43 thousand.
Achievement of set goals	Set goals achieved
Name of the programme/fund/project	**"Environmental Protection Programme for 2021-2025" approved by the decision of the Lviv Regional Council of 23 February 2021 No. 72.**

Name of the conservation measure national target programme or fund	**Construction of sewage treatment facilities in the village of Mizhenets, Starosambir district, Lviv region. Adjustments**
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. Vyrva Stream/UA_A6.6.2_0016
Implementation of environmental protection measures and their financing	Excavation works, installation of a foundation slab for the biological treatment plant, installation of a biological wastewater treatment plant - 1 unit, installation of a secondary settling tank and contact tanks - 2 units, installation of reinforced concrete wells - 10 units. Repair works in the administrative and production building and pumping station: masonry partitions, waterproofing, plastering and puttying of walls, roofing, flooring flooring. Installation of of foundations for equipment; laying of polyethylene pipelines - 40 m. The works are carried out to stop the discharge of untreated wastewater into the Vyrva River, which flows into the San River. The object is not completed Planned, financed and disbursed - UAH 3000.0 thousand. Co-financing - UAH 200.0 thousand
Achievement of set goals	The objectives have been partially achieved. Project implementation is ongoing
Name of the programme/fund/project	**"Environmental Protection Programme for 2021-2025" approved by the decision of the Lviv Regional Council of 23 February 2021 No. 72.**
Name of the conservation measure national target programme or fund	**Sewerage of the t o w n . Sudova Vyshnia, Mostyska district, Lviv region. Construction of sewerage systems and treatment facilities with a capacity of 500 m3/day. Adjustments**
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. Vyshnia/ UA_A6.6.2_0023 Crayfish/UA_A6.6.2.0030 Clay/UA_A6.6.2.0032
Implementation of environmental protection measures and their financing	Continuation of works. Sewerage systems were laid for 400 m, 3 - sewage pumping stations. As a result of the project implementation, modern wastewater treatment technologies will be introduced, reducing the environmental load on the Vyshnia River and environmental pollution. The event is not completed. Planned, financed and disbursed - UAH 3000.0 thousand. Co-financing - UAH 9947.03 thousand.
Achievement of set goals	The objectives have been partially achieved. Project implementation is ongoing
Name of the programme/fund/project	**"Environmental Protection Programme for 2021-2025" approved by the decision of the Lviv Regional Council of 23 February 2021 No. 72.**

Name of the conservation measure national target programme or fund	**Implementation of measures to combat the harmful effects of the waters of the Vyshnia River and its tributaries in the village of Vyshnia, Rudkiv City Council (territorial community), Sambir District, Lviv 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. Vyshnia/ UA_A6.6.2_0023
Implementation of environmental protection measures and their financing	The channel of a tributary of the Vyshnia River was cleared over a length of 900 metres; a protective dam No. 1 was constructed 400 m . p . ; protective dam No. 2 was built - 500 m . p . ; construction of mine outlet No. 1 - 1 structure and mine outlet No. 2 - 1 structure was carried out. The hydrological regime and sanitary condition of the Vyshnia furnace area were restored and improved. PlannedUAH 583.0 thousand, financed - UAH 560.583 thousand, disbursed - UAH 487.175 thousand Co-financing - UAH 54.85 thousand.
Achievement of set goals	The set goals have been achieved. The event is completed, the work has been carried out in full
Name of the programme/fund/project	**"Environmental Protection Programme for 2021-2025" approved by the decision of the Lviv Regional Council of 23 February 2021 No. 72.**
Name of the conservation measure	**Scientific research to develop Section IV of the river management plan**
national target programme or fund	**Western Bug and Syan sub-basins**
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 in relation to climate change. №8. Floods and floods, flooding of territories. №9. Droughts and water shortages. Vistula RBD/ SWBs of rivers in the region
Implementation of environmental protection measures and their financing	Classification tables have been developed to determine the ecological status of surface waters in the Vistula river basin based on physical, chemical and hydrobiological indicators. The classification tables are an integral part of the Western Bug and Syan River Sub-basin Management Plan. Activity completed UAH 90.0 thousand was planned, financed and disbursed in 2021.
Achievement of set goals	Set goals achieved
Name of the programme/fund/project	**The Regional Programme "Drinking Water of Ukraine" in Lviv Oblast for 2012-2020" was approved by the Regional Council on 03.07.2012, No. 547.**

Name of the conservation measure national target programme or fund	1) Construction, reconstruction and overhaul of water supply systems in the settlements of Lviv region. 2) Construction and reconstruction of water intake facilities, in particular in low-water settlements and those with the highest water quality deviations, with the prospect of attracting new subscribers. 3) Implementation of drinking water treatment plants in centralised water supply 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. Vistula RBD/ SWBs of rivers in the region (40% of the region's area)
Implementation of environmental protection measures and their financing	A mandatory condition of the Programme was co-financing from local budgets and/or other sources, taking into account the tax capacity index of individual administrative territorial units (ATUs) in the following ratio: up to UAH 0.5 million inclusive - 20% of the regional budget; from UAH 0.51 to 0.8 million inclusive - 30% to the regional budget; from UAH 0.81 to 1.0 million. - 40% to the regional budget; more than UAH 1.0 million. - 50% of the regional budget. In 2019, the Programme was funded in the amount of UAH 22629.874 thousand, of which
	15000.0 thousand UAH. - funds of the regional budget, UAH 7629.874 thousand. - funds from local budgets. Cash expenditures under the Programme activities in 2019 amounted to UAH 21606.876 thousand, of which UAH 13977.002 thousand were from the oblast budget, UAH 7629.874 thousand - UAH - local budgets.
Achievement of set goals	The targets were partially achieved. The reconstruction of water supply and sewage networks, WSS, SSS, and KOS was carried out only in certain settlements of the region.
Name of the programme/fund/project	**The Regional Programme for the Development of Nature Reserves in Lviv Oblast for 2009-2020 was approved by the decision of the Lviv Oblast Council of 02.12.2008 No. 765.** **Regional Environmental Protection Fund.**
Name of the conservation measure national target programme or fund	Preservation and development of the nature reserve fund of Lviv region.
Relevance of the environmental measure to the main water and environmental issues	№7. Issues related to the relationship between water quantity and quality in relation to climate change. №8. Floods and floods, flooding of territories. №9. Droughts and water shortages. Vistula RBD/ SWBs of rivers in the region (40% of the region's area)

Implementation of environmental protection measures and their financing	In 2020, the regional budget allocated UAH 1,521.8 thousand from the general fund and UAH 218.8 thousand from the special fund for the preservation of the nature reserve fund of Lviv region. In practice, these funds were used to maintain the administrations of regional UAH 1,435.8 thousand in landscape parks of the region.
Achievement of set goals	The targets have been partially achieved. Funds are allocated only for the minimum maintenance and operation of the radio stations.
Name of the programme/fund/project	**"The Programme for Monitoring the Natural Environment of Lviv Oblast for 2011-2015 and for the Perspective until 2020 was approved by the Regional Council o n 13 December 2011, No. 322. Regional Environmental Protection Fund.**
Name of the conservation measure national target programme or fund	Monitoring the state of the environment in Lviv 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. Vistula RBD/ SWBs of rivers in the region (40% of the region's area)
Implementation of environmental protection measures and its funding	The purpose of the Programme was to provide for measures to ensure that the automated
	The company provides administrative bodies and relevant regional services with data on the state of the environment and scientifically based recommendations for making management decisions on operational monitoring of the environment and preventing negative environmental situations. The measures to be taken to implement the Programme were to be financed from the state budget, the State and Regional Environmental Protection Funds. To implement certain points of the Programme, it was also possible to attract funds from various investment projects involving both domestic and international organisations, grants and sponsorship. The justification for financing activities from budgetary funds is carried out in accordance with the following requirements Unfortunately, one of the first monitoring programmes developed with the participation of both environmental monitoring entities, scientists and the public has not been implemented. In recent years, the regional ONPS fund has allocated meagre funds (UAH 150-200 thousand) to the laboratory of the State Environmental Inspectorate in Lviv Oblast for the purchase of chemicals, calibration of equipment in order to exercise inspection powers, including control of business entities that discharge untreated wastewater.
Achievement of set goals	The goals were not achieved due to the lack of funding for the event.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27. The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Construction and reconstruction of water supply and sewerage facilities and networks **:** Water supply and sewerage

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. Vistula RBD/ SWBs of rivers in the region (21% of the oblast area)
Implementation of environmental protection measures and their financing	The Programme activities were financed from the state and local budgets, as well as other sources not prohibited by law. The amount of funding is determined annually during the drafting of the State Budget of Ukraine for the respective year, during the formation of the local budget, taking into account the real budgetary capacity. According to the Programme, the estimated amount of funding is UAH 43.444 million, including UAH 30.150 million from the state budget, UAH 12.174 million from the local budget, and other sources not prohibited by law - UAH 1.12 million.
Achievement of set goals	The set goals were not achieved. Implementation of the planned activities was funded by only 7%.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27. The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Construction and reconstruction of water supply and sewerage facilities and networks **:** sewerage
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. Vistula RBD/ SWBs of rivers in the region (21% of the oblast area)
Implementation of environmental protection measures and their financing	According to the Programme, the estimated amount of funding is UAH 204.674 million, including UAH 54.2 million from the state budget, UAH 5.508 million from the local budget, and UAH 144.966 million from other sources not prohibited by law.
Achievement of set goals	The targets were partially achieved. The implementation of the planned activities was funded by 75%.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27.**
Name of the conservation measure national target programme or fund	Clearing the channel of the Western Bug River on the border with the Republic of Poland
Compliance with the environmental measure key water and environmental issues	№5. Hydromorphological changes. Western Bug / UA_A6.6.1_0007
Implementation of environmental protection measures and their financing	At the expense of the state budget, the Programme envisaged the following activities clearing the channel of the Western Bug River on the border with the Republic of Poland The total amount of funds was UAH 0.34 million.
Achievement of set goals	The targets were not achieved due to lack of funding.

Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27. The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Improvement of the hydrological regime and sanitary condition state of the river Rylovytsia in the city of Volodymyr-Volynskyi
Compliance with the environmental measure key water and environmental issues	№5. Hydromorphological changes. №6. Spread of invasive species.
	Rylovytsia / UA_A6.6.1_0145.
Implementation of environmental protection measures and their financing	At the expense of the state and local budgets, the Programme provided for the improvement of the hydrological condition of the Rylovytsia River in Volodymyr-Volynskyi The total amount of funds was UAH 1.750 million, including UAH 0.558 million from the state budget and UAH 1.192 million from local budgets.
Achievement of set goals	The targets were partially achieved. Only 21% of the planned activities were funded.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27. The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Regulation of rivers, restoration and maintenance offavourable and sanitary state of water bodies
Relevance of the environmental measure to the main water and environmental issues	No. 5 Hydromorphological changes. No. 7 Issues related to the relationship between water quantity and quality in relation to climate change. №8. Floods and floods, flooding of territories. Vistula RBD/ SWBs of rivers in the region (21% of the oblast's area).
Implementation of environmental protection measures and its funding	The Programme envisaged funding of UAH 2.137 million to implement these measures, including UAH 2.137 million from local budgets.
Achievement of set goals	The targets were not achieved due to lack of funding.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Construction of flood protection dams
Compliance with the environmental measure key water and environmental issues	№8. Floods and floods, flooding of territories Vistula RBD/ SWBs of rivers in the region (23% of the oblast's area).
Implementation of environmental protection measures and their financing	The Programme envisaged funding from local budgets in the amount of UAH 0.489 million to implement these measures.

Achievement of set goals	The targets were partially achieved. The implementation of the Programme's environmental protection measures was funded by 88%.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27.** **The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Construction and reliability enhancement of hydraulic structures
Relevance of the environmental measure to the main water and environmental issues	№8. Floods and floods, flooding of territories. Vistula RBD/ SWBs of rivers in the region (21% of the oblast area).
Implementation of environmental protection measures and their financing	The Programme envisaged funding of UAH 6.213 million to implement these measures, including: UAH 0.405 million from the state budget. from local budgets in the amount of UAH 5.808 million.
Achievement of set goals	The targets were partially achieved. The Programme's activities are 65% funded.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27.** **State Fund for Environmental Protection.**
Name of the conservation measure national target programme or fund	Coastal protection: Measures to strengthen the bank of the Western Bug River in the area of border marker 1055 in the Shatsk district of Volyn region
Compliance with the environmental measure key water and environmental issues	№5. Hydromorphological changes. Western Bug/ UA_A6.6.1_0007.
Implementation of environmental protection measures and their financing	The Programme envisaged funding from the state budget in the amount of UAH 6.3 million to implement these measures.
Achievement of set goals	The targets were not achieved due to lack of funding.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27.** **The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Protection of atmospheric air
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. Vistula RBD/ SWBs of rivers in the region (21% of the oblast area).

Implementation of environmental protection measures and their financing	The Programme provided funding in the amount of UAH 3.4 million for these activities, including: from the state budget - UAH 3.1 million. from local budgets - UAH 0.15 million,
Achievement of set goals	The targets were partially achieved. The Programme's activities have been funded by 52%.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27.** **The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	**Protection and rational use of land:** Restoring the reclamation network to promote economic growth in rural areas of Volyn 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 in relation to climate change. №8. Floods and floods, flooding of territories. №9. Droughts and water shortages. Vistula RBD/ SWBs of rivers in the region (2% of the oblast area).
Implementation of environmental protection measures and their financing	The Programme provided funding in the amount of UAH 2.051 million to implement these measures, including: from local budgets - UAH 0.257 million; own funds - UAH 1.794 million...
Achievement of set goals	The set goals have been achieved. The Programme activities were fully funded.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27.** **Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Protection and rational use of natural plant resources, preservation of green spaces
Relevance of the environmental measure to the main water and environmental issues	№5. Hydromorphological changes. №6. Spread of invasive species. №7. Issues related to the relationship between water quantity and quality associated with climate change. Vistula RBD/ SWBs of rivers in the region (21% of the region's area).
Implementation of environmental protection measures and their financing	The Programme provided funding in the amount of UAH 21.169 million to implement these measures, including: from local budgets - UAH 4.809 million; own funds - UAH 16.360 million.

Achievement of set goals	The set goals were not achieved. The Programme's activities are only 14% funded
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the**
	Volyn Regional Council of 10.02.2016 No. 2/27. **The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Protection and rational use of wildlife 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. №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 in relation to climate change. №8. Floods and floods, flooding of territories. №9. Droughts and water shortages. Vistula RBD/ SWBs of rivers in the region (21% of the oblast area).
Implementation of environmental protection measures and their financing	The Programme provided funding in the amount of UAH 21.49 million to implement these measures, including: from the state budget - UAH 9.40 million; from local budgets - UAH 7.80 million; own funds - UAH 0.36 million; funds raised (grant funds) - UAH 3.93 million.
Achievement of set goals	The set goals were not achieved. The Programme's activities have been funded by only 13%.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27.** **The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Preservation of the nature reserve fund
Compliance with the environmental measure key water and environmental issues	№7. Issues related to the relationship between water quantity and quality associated with climate change. The Vistula RBZ (Western Bug sub-basin) / IBA of the region's rivers (21% of the region's area).
Implementation of environmental protection measures and their financing	The Programme provided funding in the amount of UAH 4.04 million for these activities, including: from the state budget - UAH 0.19 million. from local budgets - UAH 3.85 million.

Achievement of set goals	The set goals were not achieved. The Programme's activities are only 22% funded
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27.** **The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Rational use and storage of production and household waste
Compliance with the environmental measure key water and environmental issues	№4. Littering with plastic and other solid waste. Vistula RBD/ SWBs of rivers in the region (21% of the oblast area).
Implementation of environmental protection measures and their financing	The Programme provided funding in the amount of UAH 61.645 million to implement these measures, including: from the state budget - UAH 48.824 million. from local budgets - UAH 12.821 million.
Achievement of set goals	The set goals were not achieved. The Programme's activities have been funded by only 24%.
Name of the programme/fund/project	**Regional Environmental Programme "Ecology 2016-2022", approved by the decision of the Volyn Regional Council of 10.02.2016 No. 2/27.** **The State Fund for Environmental Protection. Local environmental protection funds.**
Name of the conservation measure national target programme or fund	Science, environmental education
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 in relation to climate change. №8. Floods and floods, flooding of territories. №9. Droughts and water shortages. Vistula RBD/ SWBs of rivers in the region (21% of the oblast area)
Implementation of environmental protection measures and their financing	The Programme envisaged funding of UAH 6.758 million to implement these measures, including: from the state budget - UAH 0.75 million from local budgets - UAH 6.008 million.
Achievement of set goals	The set goals were not achieved. The Programme's activities are only 30% funded

Annex 11. Full list of mesures presented separately in Excel format

Annex 12 Cost-effectiveness analysis of the PoM

№	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 *thousands of people*	Social efficiency	Total cost of investment *million UAH*	Value for money
1	2	3	4	5	6	7	*8*	9	*10*	11
10	"Comprehensive reconstruction of sewerage and modernisation of treatment facilities of Lvivvodokanal in the city of Lviv, Lviv district, Lviv region"	**4,5**	**very high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	10827,33	5
13	Project "Construction of a workshop for thermal utilisation of sewage sludge at the sewage treatment plant in Lviv, Lviv district, Lviv region"	**4,25**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	900,00	4
15	Project "Reconstruction of the main sewerage collector of the city of Lviv (Poltva River) on the section from Khimichna Street - Torfiana Street to Lviv KOS-2 of Lviv COMMUNITY of Lviv district of Lviv region"	**4,25**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	755,00	4
6	Reconstruction of sewage treatment facilities and networks in Novovolynsk and Blahodatne village, Novovolynsk COMMUNITY, Volodymyr district, Volyn region	**4**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	56	3	1763,00	5
7	Reconstruction of sewage treatment plants and networks in Chervonograd, Silets and Hirnyk villages, Chervonogradska COMMUNITY, Chervonograd district, Lviv region	**4**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	72,7	3	1308,60	5
12	"Construction of a mechanical sludge dewatering workshop at a wastewater treatment plant"	**4**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	176,00	3
16	Project "Comprehensive reconstruction of sewage pumping station (SPS) No. 4 in Lviv, Lviv COMMUNITY, Lviv district, Lviv region"	**4**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	261,50	3
17	Project "Comprehensive reconstruction of sewage pumping station (SPS) No. 5 in Lviv, Lviv COMMUNITY, Lviv district, Lviv region"	**4**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	160,60	3
18	Project "Comprehensive reconstruction of sewage pumping station (SPS) No. 7 in Lviv, Lviv COMMUNITY, Lviv district, Lviv region"	**4**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	150,00	3
21	Project "Wastewater heat recovery project at the discharge from the sewage treatment plant of Lviv city of Lviv COMMUNITY, Lviv district, Lviv region"	**4**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	232,00	3
11	"Reconstruction of PS 35/6 at the treatment plant" (available design and construction documents)	**4**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	260,00	3
14	Project "Construction of a storm water treatment plant for sewage from sewage machines of non-sewerage areas at the sewage treatment plant of Lviv city of Lviv COMMUNITY, Lviv district, Lviv region"	**3,75**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	30,00	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 *thousands of people*	Social efficiency	Total cost of investment *million UAH*	Value for money
19	Project "Comprehensive reconstruction of the sewage pumping station (SPS) (Bryukhovychi village) in Lviv city, Lviv COMMUNITY, Lviv district, Lviv region"	**3,75**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	43,50	2
20	Project "Comprehensive reconstruction of the sewage pumping station (SPS) (Kholodnovidka village) in Lviv, Lviv COMMUNITY, Lviv district, Lviv region"	**3,75**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	1150	5	30,50	2
47	Reconstruction of sewage treatment facilities and networks in the city of Volodymyr, Volodymyrska COMMUNITY, Volodymyr district, Volyn region	**3,5**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	30	2	540,00	4
49	Project "Reconstruction of sewage treatment facilities with a capacity of 1000 m3/day for complete biological treatment of sewage in the city of Lyuboml, Lyuboml COMMUNITY, Kovel district, Volyn region"	**3,5**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	28,9	2	520,20	4
61	Reconstruction of sewage treatment facilities and networks in Novoyavorivsk, Novoyavorivska COMMUNITY, Yavoriv district, Lviv region	**3,5**	**high**	SWMI 1 SWMI 2 SWMI 3	3	5	28,8	2	518,40	4
5	Reconstruction of sewage treatment plants and networks in Sokal and Zhvyrka, Sokalska COMMUNITY, Chervonohrad district, Lviv region	**3,25**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	25,1	2	451,80	3
9	Reconstruction of sewage treatment plants and construction of sewerage networks in Zolochiv, construction of sewage treatment plants in Sasiv village and Bilyi Kamen village, Zolochivska COMMUNITY, Zolochiv district, Lviv region	**3,25**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	20	2	390,00	3
26	Reconstruction of sewage treatment facilities and construction of sewerage networks in Novyi Yarychiv, Zapytiv and Neslukhiv villages, Novyi Yarychivska COMMUNITY, Lviv district, Lviv region	**3,25**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	12,9	2	232,20	3
31	Reconstruction of sewage treatment facilities and networks in Kamianka-Buzka, Kamianka-Buzka COMMUNITY, Lviv district, Lviv region	**3,25**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	10,7	2	192,60	3
40	Reconstruction of sewage treatment facilities and networks in Zhovkva, Zhovkva COMMUNITY, Lviv district, Lviv region	**3,25**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	13,4	2	241,20	3
57	Reconstruction of sewage treatment facilities and networks in Horodok, Horodok COMMUNITY, Lviv district, Lviv region	**3,25**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	16,2	2	291,60	3
59	Construction of sewage treatment plants and networks, sewage pumping stations in Yavoriv, Yavorivska COMMUNITY, Yavoriv district, Lviv region	**3,25**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	13	2	234,00	3
3	Reconstruction of sewage treatment facilities and networks in Busk, Busk COMMUNITY, Zolochiv district, Lviv region	**3**	**average**	SWMI 1 SWMI 2 SWMI	3	5	9,7	1	77,60	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 *thousands of people*	Social efficiency	Total cost of investment *million UAH*	Value for money
				3						
8	Project "Modernisation of sewerage networks and sewage treatment facilities of the Municipal Enterprise "Dobrobut" of the Shatsk Village Council in the village of Shatsk, the village of Melnyky and the village of Hayivka, Shatsk COMMUNITY, Kovel district, Volyn region"	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	6,4	1	51,20	3
24	Project "New construction of external sewerage networks and treatment facilities for domestic wastewater treatment in Pidberiztsi and Pidhirne villages of Lviv district, Lviv region"	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	6,2	1	54,28	3
34	Reconstruction of sewerage and water supply facilities of Radekhivskyi Sugar LLC, Radekhivska COMMUNITY, Chervonohrad district, Lviv region	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	3,8	1	81,70	3
35	Reconstruction of sewage treatment facilities and networks in Rava-Ruska, Rava-Ruska COMMUNITY, Lviv district, Lviv region	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	8,3	1	66,40	3
36	Construction of sewage treatment plants and networks in Volytsia village, Hiyche village and Potelych village, Rava-Ruska COMMUNITY, Lviv district, Lviv region,	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	7	1	56,00	3
46	Project "Construction of a 2 km long pressure sewerage collector and reconstruction of filtration fields of the "Ivanychi village housing and communal services" in Ivanychi village, Ivanychi COMMUNITY, Volodymyr district, Volyn region"	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	7,1	1	56,80	3
50	Construction of sewage treatment plants and networks in Zabolottya village and Tur village, Zabolottya COMMUNITY, Kovel district, Volyn region	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	6,6	1	52,80	3
54	Reconstruction of sewage treatment facilities and networks in Rudky, Rudkivska COMMUNITY, Sambir district, Lviv region	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	6,5	1	52,00	3
55	Reconstruction of sewage treatment facilities and networks in Mostyska, Mostyska COMMUNITY, Yavoriv district, Lviv region	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	9,4	1	170,00	3
56	Project "New construction of sewerage networks and auxiliary structures on L. Ukrainka Street, Shashkevych Street, I. Franko Street, Kotsiubynskoho Street, Yavornytskoho Street, Zavodska Street, and part of Stus Street in the town of Sudova Vyshnia of Sudovovyshnyanska COMMUNITY, Yavoriv district, Lviv region"	**3**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	6,4	1	51,20	3
22	Construction of sewage treatment facilities and networks in Yampil village, Murovanka COMMUNITY, Lviv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	2,1	1	16,80	2
23	Construction of sewage treatment plants and networks in	**2,75**	**average**	SWMI 1 SWMI	3	5	5	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 *thousands of people*	Social efficiency	Total cost of investment *million UAH*	Value for money
	Borshchovychi and Zapytiv villages, Novoyarichivska COMMUNITY, Lviv district, Lviv region			2 SWMI 3						
25	Construction of sewage treatment facilities and networks in Hlynyany, Hlynyany COMMUNITY, Zolochiv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	3,2	1	41,69	2
29	Construction of sewage treatment plants and networks in Velyke Kolodne village and Remeniv village, Zhovtanetska COMMUNITY, Lviv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	5,7	1	44,00	2
30	Construction of sewage treatment plants and networks in Ozhydiv village, Buska COMMUNITY, Zolochiv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	2,1	1	16,80	2
32	Construction of sewage treatment plants and networks in Batyatychi village, Kamianka-Buzka COMMUNITY, Lviv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	2	1	16,00	2
33	Reconstruction of sewage treatment facilities and networks in Pavliv village, Radekhivska COMMUNITY, Chervonohrad district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	4,6	1	36,80	2
37	Reconstruction of sewage treatment facilities and networks in Velyki Mosty Velykomostivska COMMUNITY, Chervonohrad district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	5,8	1	46,40	2
41	Reconstruction of sewage treatment plants and networks in Volya-Vysotska village, Zhovkva COMMUNITY, Lviv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	1,7	1	13,60	2
42	Construction of sewage treatment plants and networks in Turynka village, Zhovkva COMMUNITY, Lviv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	2,4	1	19,20	2
44	Project "Construction of sewage treatment plants in Belz, Chervonohrad district, Lviv region"	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	2,1	1	17,10	2
48	Reconstruction of sewage treatment facilities and networks in the village of Lokachi, Lokachi COMMUNITY, Volodymyr district, Volyn region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	3,9	1	31,20	2
51	Construction of sewage treatment plants and networks in Hirnyky village and Zhyrychi village, Ratnivska COMMUNITY, Kovel district, Volyn region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	4,4	1	35,20	2
52	Construction of sewage treatment facilities and networks in Mizhenets village, Dobromylska COMMUNITY, Sambir district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	1	1	8,00	2
53	Construction of sewage treatment plants and networks in Pidhaichyky village, Rudkivska COMMUNITY, Sambir district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	2	1	16,40	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 *thousands of people*	Social efficiency	Total cost of investment *million UAH*	Value for money
58	Construction of sewage treatment plants and networks in Shklo village, Novoyavorivska COMMUNITY, Yavoriv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	5,7	1	46,00	2
60	Reconstruction of sewage treatment facilities and networks in the village of Starychi, Novoyavorivska COMMUNITY, Yavoriv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	3,5	1	28,00	2
62	Construction of sewage treatment plants and networks in Nagachiv village, Yavorivska COMMUNITY, Yavoriv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	2	1	16,40	2
64	Construction of sewage treatment facilities and networks in Verblyany village (military camp No. 28), Yavorivska COMMUNITY, Yavoriv district, Lviv region	**2,75**	**average**	SWMI 1 SWMI 2 SWMI 3	3	5	5	1	40,00	2
67	Improving state accounting of water use within the Vistula River basin districts of Lviv and Volyn oblasts	**2,25**	**low**	SWMI 4, SWMI 6, SWMI 9	3	3	0	1	36,387	2
45	Revitalisation of the Krasnosilka river Sokalska, Belzka, Chervonohradska COMMUNITY, Chervonohrad district, Lviv region	**2**	**low**	SWMI 4	1	1	157,6	3	70,00	3
63	Revitalisation of the Zavadivka River Yavorivska COMMUNITY, Yavoriv district, Lviv region	**2**	**low**	SWMI 4	1	1	52,2	3	70,00	3
65	Revitalisation of the Blekh River Yavorivska COMMUNITY, Yavoriv district, Lviv region	**2**	**low**	SWMI 4	1	1	52,2	3	90,00	3
1	Revitalisation of the upper reaches of the Zakhidnyi Buh River Zolochivska COMMUNITY, Zolochiv district, Lviv region	**1,75**	**low**	SWMI 4	1	1	49,2	2	50,00	3
66	Establishment of water protection zones and coastal protection strips for water bodies in the Vistula river basin area within Lviv and Volyn oblasts	**1,75**	**low**	SWMI 2 SWMI 4	2	1	0	1	320,00	3
4	Restoration of the storage volume, dredging of the Dobrotvir reservoir on the Western Bug River (with the obligatory preservation of the natural morphological characteristics of the channel and banks), Dobrotvir COMMUNITY, Chervonohrad district, Lviv region	**1,75**	**low**	SWMI 4	1	1	10	2	100,00	3
43	Establishment of protected areas and conservation of wetlands in Chervonohrad district, Lviv region	**1,5**	**low**	SWMI 4, SWMI 9	2	1	10	2	1,05	1
2	Conservation and restoration of the natural diversity of the Verkhobuzkyi landscape reserve of local importance, Zolochivska COMMUNITY, Zolochiv district, Lviv region	**1,25**	**very low**	SWMI 4, SWMI 9	2	1	1	1	1,50	1
28	Mitigation of the impact of the planned infrastructure project Construction of the northern section of the Lviv bypass road, Lviv region, Ukraine (category A)	**1,25**	**very low**	SWMI 5	1	1	0,258	1	3	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 *thousands of people*	Social efficiency	Total cost of investment *million UAH*	Value for money
27	Mitigation of the impact of the planned infrastructure project aimed at improving the transport and operational condition of roads on the approaches to the Ukraine-EU border crossing points in Lviv region (road M09), Velykyi Doroshiv village, Lviv district, Lviv region	**1**	**very low**	SWMI 5	1	1	0,857	1	0,5	1
38	Mitigation of the impact of the planned infrastructure project aimed at improving the transport and operational condition of roads on the approaches to the Ukraine-EU border crossing points in Lviv region (road M09), Moshchana village, Lviv district, Lviv region	**1**	**very low**	SWMI 5	1	1	0,12	1	0,5	1
39	Mitigation of the impact of the planned infrastructure project aimed at improving the transport and operational condition of roads on the approaches to the Ukraine-EU border crossing points in Lviv region (road M09), Dobrosyn village, Lviv district, Lviv region	**1**	**very low**	SWMI 5	1	1	2,037	1	0,5	1