

Background note

Preliminary analysis on reforming water-related economic instruments in Eastern Partner countries

**11th Roundtable on Financing Water
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This draft paper for consultation will inform discussions at the 11th Roundtable on Financing Water: regional meeting on the EU's Eastern Partnership (EaP) countries (Brussels, 30-31 May 2024), co-convened by the OECD and the European Commission.

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1 Introduction and key regional findings

Introduction

Since independence in the early 1990s, financing the operation, maintenance and improvement of water systems and ensuring water security has been an acute challenge for countries in the European Union's Eastern Partnership (EaP). Now, as work accelerates in the region to come into alignment with the EU's Water Acquis, that challenge has new urgency. While countries in the region have benefited from finance from bilateral and multilateral donors, the EU, and International Financial Institutions, mobilising domestic finance is crucial for long term water security.

As an implementing partner of the "EU4Environment – Water Resources and Environment Data" Programme, the OECD is focussed on improving the economic soundness of water strategies and policies in EaP countries through enhancing economic instruments for water management, identifying subsidies that impact efficient use of water, analysis and providing recommendations on water pricing; and supporting the mobilisation of financing for strategic priorities. Across the five EaP countries of Armenia, Azerbaijan, Georgia, Republic of Moldova and Ukraine, a key component of that work is supporting reforms to water-related economic instruments.

This background document, prepared for the OECD Roundtable for Financing Water, provides an overview of the current state of domestic finance mobilisation in each of the five EaP countries, examines how a given water-related economic instrument is functioning in each country, and outlines a planned reform which has been developed through the EU4Environment Water & Data Programme in collaboration with each country.

Regional context

The geography and water resources of the Eastern Partnership countries are diverse, including water rich grasslands, snow topped mountains, and arid regions with low rainfall. However, due to their histories the countries share a legacy with both physical (infrastructure for water, agricultural and industrial planning) as well as legal and regulatory similarities with how the water sector is governed, and financed. Most of the countries also share similar goals for their development trajectories – Moldova and Ukraine have begun accession negotiations with the EU while Georgia is a candidate country. Armenia is strengthening its relationship with the EU building upon its comprehensive and enhanced partnership agreement with the EU and Azerbaijan continues to collaborate closely. Coming into closer alignment with the EU water acquis is thus a key goal for the Eastern Partner countries.

Through these shared challenges and goals, comparative and regional analysis of the countries can be revealing. How has each country's approach to water management evolved over the past thirty years? What are the similarities? Mobilising domestic finance is critical for sustainable water security, but all five EaP countries continue to struggle with it, as taxes, fees, and tariffs related to water are often not just a practical economics question but complex social and political ones too.

Water-related economic instruments have both regulatory and fiscal functions

Pricing water appropriately is challenging but essential for water management. This is a fundamentally multidimensional challenge – water is essential for human health, economic development, and ecosystem health, with cultural, geological and historical dimensions. Careful management and planning are essential to preserve water resources. Unlike many other natural resources, the renewability of water resources is highly dependent on ecological conditions. Both surface and groundwater can be considered renewable or non-renewable depending on sufficient natural recharge, against abstraction rates and other trends impacting availability, such as climate change.

Water pricing is also crucial for compliance with the EU Water Acquis, being a key feature of the EU Water Framework Directive (WFD). While achieving the UN Sustainable Development Goals (SDGs) and SDG 6 – “Clean Water and Sanitation for All” – aims to achieve universal access to safe and affordable water resources and sanitation services by 2030. To achieve these goals, it is essential to reduce pollution, minimise the release of hazardous chemicals and materials, treat wastewater, improve water use efficiency and ensure sustainable abstraction. Water pricing can support policy objectives and help send the right signals to consumers and investors.

There are two primary dimensions to water management, and water pricing is a critical tool for achieving both:

- Water as a natural resource integral to the ecosystem, involving water abstraction, allocation among competing users (e.g. agriculture, industry and drinking water) and protection of water bodies.
- Water as a key element of water services, which generally require significant infrastructure, including investment, operation and management, to deliver water services to end users (Meran et al., 2021).

In turn, water-related economic instruments have two distinct but connected functions:

- Regulatory – to reduce negative environmental impacts and ensure the sustainable use of water resources through a price that reflects the real value of water; and
- Fiscal – to generate financial resources for protection, management and monitoring of water resources and possibly increase the monetary flow for investments in the water sector.

Each of the EaP countries has its own goals for water security, and specific economic, social and environmental contexts. But as the five country briefs in this paper make clear, there are also shared challenges. In one sense pricing water is simple – it should reflect the cost of maintaining, operating, and improving water-related infrastructure, while finding a balance between ensuring access for all while incentivising efficiency. In practice, choices are complicated by political, social, environmental and economic concerns. The governments of each EaP country are working hard to thread that needle, and with EU support, the EU4Environment Water & Data Programme continues to support those efforts.

The briefs in this background document are preliminary excerpts from implementation roadmaps that are under development, in consultation with national administrations. The focus is different for each country, and the recommendations presented here, developed with financial support from the EU, reflect the views of the authors, and not the European Commission, EU member states, or OECD member countries.

2 Armenia's water abstraction fees and water pollution taxes

Current situation

The existing economic instruments in Armenia's water sector have been applied for over two decades. With the adoption of the Water Code (2002), National Water Policy (2005) and the National Water Program (2006) the use of economic instruments was expanded, as more emphasis was put on application of the "polluter pays" and "user pays" principles.

However, there are several deficiencies in the current system of the water abstraction fees, and despite the requirements of the Water Code, National Water Policy and National Water Program, the "user pays" principles is applied only partially, and not in a consistent manner. Particularly:

- a special lower rate applies for the water supply companies and local self-governments in case of self-supplied communities, which is 20 times less than the rate for the other user for drinking-communal purposes;
- the fee for fisheries is applied only to a certain percentage (varying between 5% to 50%, according to location and to the type of the water resource) of the total volume abstraction, this creating unjustified privilege compared to other water use sector;
- the largest consumptive water use sector - irrigation, is not charged, if water is abstracted from surface bodies (except for Lake Sevan), and in case of abstraction from Lake Sevan the charges for irrigation are significantly lower, compared to other sectors;
- hydropower, although a non-consumptive user of water, is the largest water abstraction sector in Armenia, and at the time this study was launched did not pay any water abstraction fee;
- there are contradictions between different clauses of the Tax Code on the basis for calculation of the water abstraction fee (permitted quantity vs actual water use).

Challenges to be addressed

There are ambiguities in terms of the objectives of the current system of the water pollution taxes, being unclear whether the principle policy objective is to prevent the pollution of water bodies due to discharge of pollutants, compensate the damage caused due to pollution, or reduce the damage from pollutants. In addition to this, there are several other major issues with the current system of water pollution taxes in Armenia, including the following:

- for certain parameters, maximum allowable concentration (MACs) for fisheries are being used;
- the rationale behind doubling the rates for discharge of pollutants into Lake Sevan Basin, as well as Hrazdan and Getar Rivers in the territory of Hrazdan canyon is not clear, given that there are over 40 other rivers in the country, where water quality is assessed at "being at risk";

- the current system of water pollution taxes also violates the “polluter pays” and the equity principle, given that one of the most important pressure factors on water quality – the water supply and sanitation companies, are given special privileges;
- the current system contradicts the logic of the Water Code of Armenia, which clearly states that one of the basis for defining the water pollution taxes is the ecological status of water body, which receives the wastewater. Also, according to the Water Code, the type of wastewater and the level of their impact on water resources should be taken into consideration while defining the water pollution taxes, which is not the case now;
- the list of pollutants was developed over two decades ago and there is a need to revise the list, to incorporate the significant pressure sources on water quality, taking into consideration the River Basin Management Plans (RBMPs).

As a result of the above-mentioned deficiencies in the system of water abstraction fees and water pollution taxes, the total financial revenues are currently low as compared to the full costs of activities that would be required to achieve the water management objectives defined in Armenian law. This results from low levels of unitary fees that do not provide an incentive for efficient water use and do not internalise the full environmental and resource costs. In addition, the unfair distribution of charges among users’ groups, reveal a poor application of the “user pays” and “polluter pays” principles, despite the fact that this principle is one of the pillars of the current water-related Armenian legislation (also in line with the EU WFD). Thus, reforming economic instruments for water management in Armenia to make them more robust is prerogative.

Recommendations

The following chart shows proposed short-, medium- and long-term objectives of reforming water abstraction fees and water pollution taxes in Armenia. Through the National Policy Dialogue on Water, the EU4Environment Water and Data Programme in conjunction with Armenian stakeholders is working towards an action plan to reform these economic instruments.

	Water abstraction fees	Water pollution taxes
Short-term objective	Revenues from water abstraction fees must be sufficient to cover all expenses involved in proper management of water resources, water policy implementation, water resources monitoring, and compliance assurance with water use permit conditions	Revenues from water pollution taxes should take into account the costs associated to implementation of the measure from the RBMPs aimed at improving the qualitative status of water bodies at risk due to water quality
Medium- and long-term objective	Fee rates should take into account the resource costs of water abstraction, as well as provide an incentive for a more efficient use of water resources (reduced water abstraction)	Fee rates should take into account of the environmental costs of pollution, as well as provide an incentive for reduced polluting discharges in coherence with the need to protect aquatic ecosystems and their related uses

3 Azerbaijan's approach to water pricing for agriculture

Current situation

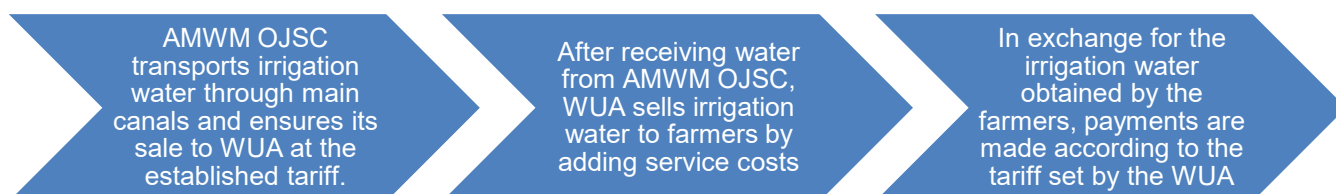
The government of Azerbaijan has developed various legislative frameworks and policies regarding water tariffs in the agriculture sector. For example, the government provides farmers with support in the form of direct payments through Water User Associations, administered by Amelioration Joint Stock Company (JSC). Yet, there has been limited evidence on how effective the current water pricing system is and what positive and negative effects of the current water-related policies exist.

The irrigation system is underpinned by ageing infrastructure with earth-based open canals that cause high water losses due to leakage and evaporation. Many farmers receive subsidies from government for their lands and the Amelioration JSC is subsidised by government to cover its operational expenses, as collected fees are very low compared to the cost of provided services. This is connected with large amount of water losses because of the poor state of most irrigation infrastructure and lack of water efficiency technology.

A critical issue is irrigation infrastructure needs to be repaired and transferred from earth-based ones to pipelines or concrete wall canal systems to reduce water losses due to leakage and evaporation.

Water User Associations (WUAs) are the last link in the organisation of the irrigation chain. WUAs buy water from the Amelioration JSC, which is authorised to take water from natural sources and deliver it to farms (at a fixed rate), and sells it to farmers. Distribution of irrigation water to landowners and collection of water consumption fees are carried out through WUAs.

In the current situation, the working mechanism of WUAs is carried out according to the following scheme.



The system faces the following issues:

- Weak technical and service provision capacity of WUAs.
- Low theoretical and technical knowledge of WUA members.
- In most cases, the intra-farm canals at the disposal of WUAs and other infrastructure are old and need rehabilitation
- Determination of liability limits between WUAs and covered farmers.

- Limited ability of WUAs to measure the amount of water they receive from the state and the amount of water lost.
- Implementation of state control of WUA by the institution that sells water to them (Azerbaijan Melioration and Water Management JSC)
- Failure to conclude an act of agreement regulating relations between WUA and farmers.

Considering these factors, the WUA institutional management form does not justify itself in the current situation. Thus, there are serious deficiencies in water distribution, fair supply, promotion of efficient use of water, accounting, collection of irrigation water service fees and establishment of transparent accounting, as well as regulation of farmer- WUA relations within the legal framework. As a country with limited water resources, there is a serious need to improve the WUA institutional approach and develop the legal, regulatory and economic mechanisms for the efficient use of water.

Pressures and challenges

Limited fresh water is unevenly distributed on the territory of Azerbaijan. The country's water resources are formed in transboundary rivers coming from the territory of neighbouring republics through the Kura, Aras, Samur and other rivers, and also in local river's surface waters and groundwater on its own territory. The assessment of Azerbaijan's freshwater resources was last carried by National Academy of Sciences in the 1970s and 1980s and therefore limited data exists to inform decision making.

Climate change has so far had a negative impact on the hydrological cycle, water resources, their temporal and territorial distribution, quantitative assessment, and reproduction of the characteristics of extreme currents. The mentioned hydro-ecological impacts cause a reduction in freshwater reserves. Therefore, the need for conservation, integrated management, and rational use of water resources against the background of global climate change is widely reflected in global challenges. Azerbaijan is vulnerable to climate change effects, and especially with the increase in the number and, duration of droughts and water shortages.

Changes in precipitation are also expected in the future, with rainfall becoming more variable with extended drier seasons and increased heavier precipitation months.

Azerbaijan's problems of primary irrigation include inefficient water use, failure of irrigation systems to meet the required policy objectives and technical and regulatory standards as well as extremely low funding of the development, reconstruction, normal operation, and maintenance of these systems.

Options for reform

- Appropriate economic instruments to address more efficient use of water include mobilising sufficient funds to finance baseline water pricing, normal water quality, maintenance of water supply facilities envisaging the introduction of concessions (the objective of irrigation water policy is to gradually increase charges for water consumption by the agricultural sector and at least fully offset the cost of water supply), and providing cost-effective and targeted support for the reconstruction of irrigation systems.
- In order to effectively use land resources and irrigation water, it is important to support the formation of cooperative relations between farmers. Currently, most of the farmers in the country own 1-2 hectares of land. The share of these landowners in ensuring food security in the country is huge. However, the application of modern irrigation systems in these lands is problematic. Small-scale farms, for example, cannot provide sufficient financial means to implement a drip irrigation system, which can reduce the demand for irrigation water by 40-50%. Building a pivot system on small plots

is also a complicated matter. For this, farmers must agree to cultivate the same plant in the form of associations and establish a pivot system. The creation of farmers' associations and the formation of cooperative relations can act as an effective tool in solving this problem. In addition, the introduction of a uniform cropping system in individual regions can also contribute to solving problems related to irrigation.

- Measures such as land consolidation and support for the formation of large farms also serve to solve the problems caused by the fragmentation of land plots. At present, certain works are being done in the country related to the consolidation of lands. In recent years, with state support large agricultural enterprises, in other words, agro holdings or agroparks, have been established in the country.
- Above mentioned approach to irrigation and drinking water sector water use reform can help to reduce government subsidies in the result of increase of water use efficiency.
- The EU4Environment Water and Data Programme is working with the Ministry of Ecology and Natural Resources and the Ministry of Agriculture to develop a roadmap and action plan to reform the subsidy schemes in this challenging policy area.

4 Reforming surface water abstraction fees in Georgia

Water governance in Georgia

The Government of Georgia's approach to water resources management is characterised by the absence of a single policy document. Instead, several strategic documents outline the vision for water resources management, including the Development Strategy of Georgia, the Fourth National Environmental Action Programme (NEAP) and the Agricultural Development Strategy of Georgia. These strategic documents emphasise, among other things, the importance of infrastructure development in ensuring access to clean water and effective sanitation, which are essential for the well-being of the Georgian population. Despite multiple efforts, issues such as inadequate infrastructure in high-mountainous settlements, inefficient water usage in agriculture, and the absence of cross-border river management agreements remain persistent in Georgia.

Georgia recently adopted the new Law of Georgia on Water Resources Management (May 2023). Although, this law isn't the only legislation regulating water use and protection; other laws also play a role, such as the Law of Georgia on Licences and Permits and the Law of Georgia on Energy and Water Supply. The new law, which meets the requirements of the EU's Water Framework Directive (WFD), establishes an integrated water resources management system, emphasising the principles of river basin management. It sets targets and standards for water quality, introduces monitoring and enforcement mechanisms, requires public participation and introduces a permit system for water abstraction.

On top of the national-level policies and strategic documents, Georgia is part of several international agreements. In recent years Georgia has been working to fulfil refers to the obligations made under the EU-Georgia Association Agreement (AA) requirements, that entered into force in 2016. Through the AA, Georgia committed to harmonise its domestic laws with EU directives and implementing global standards, particularly in areas related to environmental protection and water management. This includes a more systematic use of economic instruments, including water pricing, to cover the costs of water services and the development of river basin management plans.

Pressures and challenges

Regarding the purpose of water abstractions, hydropower emerges as the largest sector accounting for 92% of total water abstractions and 93% of surface water abstractions in 2022. However, the nature of water abstraction for hydropower differs significantly from other forms of water use as it is non-consumptive. Therefore, aggregation of all water abstraction activities could be tantamount to treating two different categories of water abstraction - consumptive and non-consumptive - as if they were identical.

Excluding hydropower, irrigation is the largest consumer of water resources, accounting for 97.7% of total surface water abstraction.

It is worth noting that the majority of sectors rely mainly on surface water for their water abstraction needs. For example, both the irrigation and fishery sectors rely exclusively on surface water for their water abstraction. Within the industrial sector (excluding hydropower), groundwater abstraction has consistently remained below 33% of total industrial water abstraction over the last five years. However, the main consumer of groundwater is the drinking water supply sector. In 2022, only 3% of the total water abstracted for water supply purposes came from surface water, with 97% coming from groundwater sources.

The introduction of surface water abstraction charges can provide incentives for responsible water use, contribute to environmental protection and provide financial resources for water management activities. Appropriate pricing mechanisms, such as water abstraction charges (WAC), are essential for efficient and sustainable water management. WAC should reflect the true cost of water resources and serve environmental and financial purposes.

Recommendations on the introduction of surface water abstraction charges

The following steps focus on supporting the Georgia in introducing surface water abstraction charges through the development of a detailed methodology.

- Step 1 – Selection of user base on which to set water charges
- Water charges should be defined at the sectoral level. First, this approach helps to mitigate the problem of cross-subsidisation of water abstraction between different types of users. Secondly, it allows for the creation of more effective incentive mechanisms to promote efficient water use and prioritise abstraction.
- Step 2 – Defining the jurisdiction of water charges.
- Water charges should be set at the river basin level to better support efficient water use, be better integrated into the overall river basin management process and be easier to define methodologically. In addition, setting charges at the river basin level will better serve to incentivise efficient water use and take into account the local challenges of river basins.
- Step 3 – Decision on methodology for setting water charges.
- The cost-based approach supports the development of river basin management activities and is easier to communicate. The development of the cost-based approach calculation tool for each river basin creates an easier metric to observe the level of remuneration from costs and create a more transparent approach to setting charges.
- Step 4 – Calculation of water charges.
- Due to data availability constraints, several actions need to be taken:
 - Establish a register of water users and collect their existing information.
 - Complete the water balance at river basin level.
 - Ensure that river basin priorities are taken into account by analysing existing river basin management plans and drafts to determine the costs of managing the basin.
 - Develop a transparent and standardised model for updating water charges in the future.
 - Incorporate inflationary processes into the calculations to prevent a decrease in available resources over time.
- Step 5 – Impact assessment of water charges and modification.
- Conducting a Regulatory Impact Assessment (RIA) as a decision-making framework for water charges will provide a comprehensive analysis that allows the comparison of different options. Two key considerations for a successful analysis are defining several policy options before conducting the impact assessment and ensuring the availability of high-quality data and existing public sector information to facilitate the modelling process.

- Step 6 – Awareness raising among water users.
- Involving users throughout ensures that decisions are clear. Awareness campaigns should highlight benefits such as improved water management and resource monitoring. Demonstrating how water charges support these objectives is essential, especially in the context of budget constraints. Stakeholders beyond water users should also be involved, highlighting the benefits of better water management. Analysis can be used to reinforce the need for charges in this process.
- Step 7 – Legal drafting, legislation of water charges in the parliament and setting up e-governance systems.

These steps and methodologies have been developed in consultation with national stakeholders through Georgia's National Policy Dialogue on Water, as well as in discussion with Georgia's Ministry of Environmental Protection and Agriculture. The EU4Environment Water and Data Programme looks forward to continuing to develop and implement the methodology described here.

5 Water tax reform in Moldova

Current situation

The water tax is the key economic instrument (EI) for water management in Moldova. It is intended to be applied to create incentives for water use efficiency and to prevent water wastage, or over-abstraction and eventual depletion of water supply sources. However, it is not effective from a regulatory nor fiscal standpoint. It does not encourage water use efficiency and water conservation or protect water resources from damage or over-abstraction (not least during droughts), nor does it help generate significant revenues to fund projects and activities towards implementation of the water policy objectives. More specific issues with the water tax include:

- Consistency with the existing institutional framework: application of the water tax is not entirely consistent with policy instrument including issuing special water use permits;
- Ease of administration: it is not that easy to administer the water tax due to several factors, including the difficulty to accurately measure the tax base;
- Revenue generation: the water tax does not generate significant revenues, more over the amounts due are often not collected in full, while revenues that are collected are at risk of being used for other local priorities, not always connected to water;
- Cost-efficiency: as a result of the above observations, the cost-efficiency is low; dynamic efficiency is also low as the tax rate is not regularly adjusted, neither to the recent (significant) inflation nor to the evolving value of water for specific water uses;
- Impact on competition: the possibility for some not to pay the water tax (totally or partially) distorts the rules of fair competition;
- Impact on income distribution and equity: questions exist on whether all user groups and water users are charged in a fair and balanced way. Industries and other economic agents located in the capital city pay the amount of water tax at the same or lower level than agents operating in some small rural districts of Moldova.

Options for reform

Some reforms are already underway in Moldova, with a reallocation of water tax revenues between the levels of the budgetary system from LPA level II budgets to LPA level I budgets, and a proportion to the State Budget. This measure is already planned and corresponds well to international experience, where appropriated water rent (and other natural resource rent) is shared between the national (state) and local public budgets. LPA level I and the State tax authorities have more administrative capacity and power for enforcement. Assuming the tax collection efficiency¹ at a quite realistic 95% and collection of say 80+% of the fines levied on the violators of water laws and regulations, one can expect that the tax revenues

¹ measured as the ratio of tax amounts due to the amounts collected, i.e. the ratio of tax revenues on accrual basis to tax revenues on cash basis.

collected (accounted for **on cash basis**) will increase by at least **MDL 3.5 million** per annum, in 2020 prices.

However, more ambitious reform efforts could have a more powerful impact. Options include:

- Clearly formulate and prioritise water policy objectives (aligned with the *EU acquis*) that the water tax should support;
- Ensuring coherence between the water tax and the design and performance of other relevant administrative (such as the requirement to have special water use permits and accurate water metering & reporting) and economic instruments (such as the taxation of irrigated land);
- Revisiting tax bases established for different water uses, as well as tax preferences and exemptions;
- Considering options for better differentiating tax rates and for establishing higher tax rates for some water uses where water adds much value, based upon current environmental and economic trends and priorities;
- Improving collection mechanism of the water tax - ideally jointly with collecting revenues generated by complementary EIs and revenues from taxes levied on other natural resources;
- Improving reporting on water tax amounts due and paid by water users;
- Considering options for ear-marking water tax revenues (e.g. via an ear-marked budgetary fund) for water policy objectives and priorities (including supporting regulation, water use permitting system, monitoring, implementation of metering programmes).

Potential impacts of reforms

Taken as a whole, these reforms could have significant impacts:

- Fiscal impact: increased (presumably, at least, doubled) water tax revenues (accounted for on *cash basis*) due to a fuller appropriation of the water rent, and a more fair taxation;
- Economic: more efficient water use; more public funds used more effectively for water sector priorities, fairer environment for competition; and reduced chances of conflicting incentives and interests;
- Environmental: more water available for maintaining environmental flows, supporting biodiversity, resilience against drought and for allocation to other productive uses - both in Moldova and downstream;
- Social: a faster progress in developing water systems and improving the quality of water services to the benefit of the population (importantly: the proposed measures do not envisage breaking the affordability thresholds).

The EU4Environment Programme is working closely with the government of Moldova to support the implementation of the water tax reform, supported by ongoing discussions at annual National Policy Dialogue.

6 Economic instruments to support freshwater ecosystem revitalisation in Ukraine

Current situation

Today, as part of the implementation of European directives, Ukraine is moving to integrated water resource management approaches based on the basin principle. The current water pricing policy (financial mechanisms) does not ensure the return of damage caused to water resources. The EU Water Framework Directive (WFD) envisages taking into account the cost coverage of water services, including environmental and resource costs, taking into account economic analysis and the "polluter pays" principle. It is the preparation of the economic analysis of water use that is an integral part of the River Basin Management Plans, the development of which is provided for by the WFD.

The process of drawing up River Basin Management Plans (RBMPs) in Ukraine has already begun and will be completed by the end of 2024. The next step is to create a financial toolkit for implementing the principles declared by the WFD. Achieving the main goal of the WFD can be realised only with the use of economic and financial instruments to move towards sustainable financing of the water sector.

Pressures and challenges

As a result of human activity, there is pollution and deterioration of the ecological state of river basins. The main sources of water pollution are wastewater discharges, inadequate condition of sewerage infrastructure and treatment facilities, non-compliance with the norms of water protection zones and diffuse pollution due to drainage of toxic substances from agricultural land. The data of the State Water Cadastre under the section "Water Use" indicate the use of surface waters in most areas of river basins. Only in the Vistula river basin water use is carried out mainly from underground sources. Water resources of Ukraine meet the needs of agriculture, utilities and industry. In recent years, until 2022, the pressure on water bodies has been increasing due to the increase in the volume of polluted wastewater discharges.

Significant volumes of untreated effluents discharge cause pollution of water bodies, a decrease in biological diversity and an increase in the mass of pollution-resistant hydrobionts and, as a result, an intensification of eutrophication of water areas. A significant negative impact on water bodies is exerted by dispersed (diffuse) runoff from agricultural and residential (urbanized) areas, as well as from areas occupied by industrial waste, landfills. The threat of transboundary pollution of river flow is also constant. The most tense situation has developed in the basins of the rivers of the Severskyi Donets, Inhul, Inhulets, and Azov sea rivers. There is also an increase in groundwater pollution, especially in regions of intensive mining with minerals.

As a result of global climate change, the frequency and amplitude of natural fluctuations in river flow are increasing, the risks of the harmful effects of water are increasing, the losses of which for Ukraine are estimated at an average of 1,5-2,0 billion UAH per year (5,5 million EUR). Floods threaten almost the entire Carpathian region and for the floodplain of lowland rivers with unregulated flow. The mountainous and foothill regions of the Ukrainian Carpathians have the greatest impact. A significant part of the mountain slopes is exposed to landslide processes, the activation of which occurs during the period of high floods. Mudflows are developing on 70% of mountain catchments in Zakarpattia, Ivano-Frankivsk, Lviv and Chernivtsi regions.

The main water problems of Ukraine include:

- natural scarcity of water resources, as well as their uneven distribution over territory and time;
- depletion of water resources and ecosystems as a result of a large volume of water intake for economic needs;
- a significant volume of polluting substances entering rivers as a result of discharges and planar washing;
- excessive regulation of river flow, which causes additional losses of water to evaporation, slowing of water exchange and, as a result, deterioration of water quality and degradation of riverbeds.

To a large extent, existing water problems are due to:

- the imperfection of the existing system of state management in the field of use, protection and restoration of water resources, the lack of a clear demarcation of water protection and water management functions;
- the need to accelerate harmonisation with EU legislation in the field of water use and protection.
- lack of adequate financing of the water sector, effective, modern economic mechanisms for stimulating rational water use;
- lack of awareness and low level of environmental culture of the population.

Recommendations

The lack of effective financial mechanisms for covering the costs of water use leads to excessive depletion of water bodies and the destruction of natural heritage. At the same time, climate changes necessitate the renewal of approaches to water use by economic sectors and more economical use of water resources. Options for reform include:

- Fees for water intake and water use to stimulate efficient water use, include costs for environmental protection measures, restoration of natural resources, etc.;
- Payment for pollution, in compliance with the "polluter pays" principle, should reflect the costs of environmental protection measures, the restoration of natural resources, the necessary introduction of taxes on certain chemical and fuel products, etc.;
- Tariffs for water supply and drainage must be economically justified, compensate for the costs of operation and maintenance of the infrastructure, contain a fixed mandatory investment component for the purpose of using it for the renewal of fixed assets, etc.;
- Incentives in the setting of tariffs for water supply and drainage should be targeted (incentives for liquidation of water losses, modernization of water supply and drainage networks, limitation of tax burden, etc.);

- The formation of state policy regarding rational (sustainable) water use should be carried out through the introduction of water-saving technologies and rational water use, state management innovations;
- Drinking water supply should remain a priority area of water use;
- In the field of industrial water use, it is necessary to implement new technological processes, which allows to reduce the specific consumption of water by an average of 20-30%);
- Creation of closed water supply systems with the aim of reducing the consumption of fresh water from natural reservoirs due to their multiple use in circulating water supply systems and reuse, which will reduce fresh water intake tenfold and reduce the discharge of wastewater into rivers. This direction also provides for the introduction of water audit as an effective management tool to minimize water losses and optimize water use, which will ensure significant water savings in all sectors of the economy;
- Formation of state policy to ensure a balanced combination of tariffs, taxes and transfers based on the water use strategy;
- Direct state aid through the financing of state and regional programs, subsidies, expenses for the development of water use, including the review of existing programs for their effectiveness and the change of funding directions (for example, capital expenditures for the introduction of new technologies in irrigation, water supply and drainage, etc.);
- Indirect state aid - support of investments in the industry by providing preferential loans to water users and state (local) guarantees for these loans, as well as revision of tax obligations, provision of tax benefits;
- Formation of state policy on creating appropriate conditions for attracting private investments, creating a favourable environment for doing business, protecting the rights of investors and investment incentives, etc. (creating a database of similar projects; ensuring effective conflict resolution mechanisms; functioning of modern international economic relations; creating a database investment projects, etc.);
- Implementation of the system of risk management, risk distribution and insurance in the field of water use.