

UKRAINE WATER SUPPLY AND SANITATION POLICY NOTE

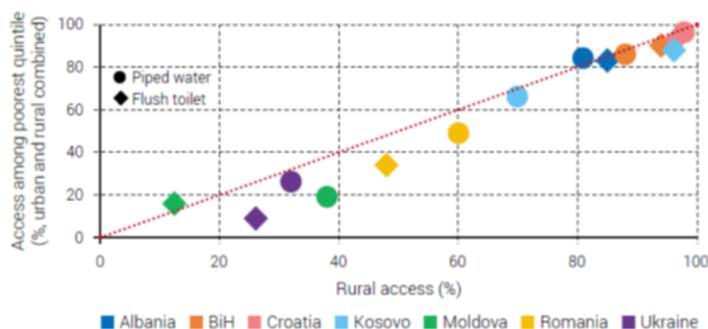
TOWARD IMPROVED, INCLUSIVE, AND SUSTAINABLE WATER SUPPLY AND SANITATION SERVICES

A. INTRODUCTION

1. This Policy Note outlines key challenges and identifies specific recommendations for improved, inclusive, and sustainable development of Ukraine’s water supply and sanitation (WSS) sector, which is important for the health and well-being of the country’s people, the economy, and the environment. Water touches every aspect of development and is linked with nearly every Sustainable Development Goal¹ (SDG). The issues facing the water sector, if not addressed, will affect other development agendas in Ukraine, such as food and energy security, jobs, equal access to services, and social inclusion, as well as adaptation to and mitigation of climate change. Like many other countries, the ongoing COVID-19 pandemic has affected Ukraine by exacerbating problems in poor performing sectors and increasing inequalities by driving people into poverty. The situation calls for integrated solutions to reverse that impact through greener, more resilient, and inclusive sustainable development. This WSS Policy Note aims to outline key challenges in the Ukrainian WSS sector and to recommend needed reforms toward sustainable WSS service provision to policy makers.

2. **Ukraine’s water sector faces significant challenges.** More than 10 million people do not have access to safely managed water services²; and more than 20 million people do not have access to centralized wastewater collection and treatment services, with implications on human health and environmental pollution. The combined effect of recent drought, flood, and pandemic unpreparedness have led to approximately 4 percent contraction of Ukraine’s GDP in 2020 (approximately US\$6 billion). In rural Ukraine, access to piped water supply and sanitation services is extremely low compared to other European countries, leading to significant disparities between urban and rural areas.³ **Figure 1** highlights these disparities with several countries in the subregion. While the

Figure 1. Rural Access among poorest population quintile



¹ See <https://sdgs.un.org/goals>, accessed in May 2021.

² To meet the criteria for a safely managed drinking water service, people must use an improved source meeting three criteria: it should be accessible on premises, water should be available when needed, and the water supplied should be free from contamination.

³ Danube Water Program, 2018. *Beyond Utility Reach? How to Close the Urban-Rural Access Gap: A Review of Rural Water and Sanitation Services in Seven Countries of the Danube Region*. Additional information is available at <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/929961526667935648/beyond-utility-reach-how-to-close-the-urban-rural-access-gap-a-review-of-rural-water-and-sanitation-services-in-seven-countries-of-the-danube-region>, accessed in May 2021. Figure 1 is taken from the above-mentioned report.

investment needed to maintain and expand the WSS infrastructure is estimated at 20 percent of GDP⁴, the annual investments in the sector are less than 0.2 percent (GDP approximately US\$137 billion in 2020⁵), leading to deterioration of infrastructure and services due to deferred maintenance and inadequate capital investments. Currently, there is no clear strategy on how the country will achieve the desired European Union (EU) water and environment standards and SDG 6: Ensure availability and sustainable management of water and sanitation for all, by 2030.

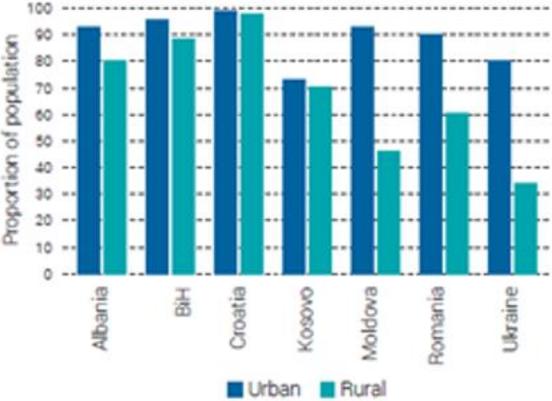
B. KEY WATER SUPPLY AND SANITATION SECTOR CHALLENGES

B.1 Access Challenges to Water Supply and Sanitation Service

3. Approximately 70 percent of the population of Ukraine has access to safely managed water service, but infrastructure and services are deteriorating, and the country will not achieve universal access to WSS by 2030. Recent estimates from the Ministry of Communities and Territories Development of Ukraine (Minregion)⁶ indicate that access to centralized piped water supply is about 70 percent, with only 50 percent of the population having access to centralized wastewater collection and treatment services. For a country that intends to align the sector requirements with the EU Drinking Water and Urban Wastewater Treatment Directives, the base level of WSS services is quite low, with approximately 10 million people not having access to safely managed water services and 20 million people not having access to centralized wastewater collection and treatment services⁷.

4. There are significant gaps in access to piped water supply and sanitation services in rural areas. According to the report *Beyond Utility Reach? How to Close the Urban-Rural Access Gap: A Review of Rural Water and Sanitation Services in Seven Countries of the Danube Region*⁸, of a total of 13.5 million rural dwellers in Ukraine, only around 4.6 million have access to piped water supply, provided either by communal municipal enterprises or by individual self-supply piped systems.

Figure 2. Population connected to piped water supply



The remaining 66 percent of the rural population is estimated to rely on non-piped self-supply, mostly shallow wells or tube wells. Inequalities between urban and rural areas are stark in terms of piped water access, flush toilet access, and sewer connections, with 34 percent, 26 percent, and just 8 percent in rural areas compared to 80 percent, 86 percent, and 75 percent, respectively, in urban areas⁹, which is a staggering difference between urban and rural access to WSS services, see **Figure 2**.

⁴ A total of €22–26 billion to achieve international service standards in Ukraine were estimated during the preparation of the first National Water Supply and Sanitation Strategic Plan by international consulting group COWI (with the financial support of Danish Cooperation for Environment in Eastern Europe) in 2003. No reassessment or update of these figures has been done since then.

⁵ World Bank data, for more information, visit <https://pubdocs.worldbank.org/en/226251492011114754/mpo-ukr.pdf>, accessed in May 2021.

⁶ Concept for the implementation of state policy in the field of centralized water supply and sanitation, Minregion, 2020.

⁷ Ibid.

⁸ Financed by the Danube Water Program, 2018. Figure 2 is also taken from the report.

⁹ Ibid.

B.1.1 Water Supply Challenges

5. Deteriorating infrastructure. Ukraine inherited large WSS infrastructure systems from the Soviet Union. Decades of underinvestment and poor maintenance have resulted in an asset base in dire need of rehabilitation and extension. Approximately 40 percent of Ukraine’s existing water supply networks are assessed as being in a critical condition¹⁰. Similarly, almost 35 percent of the water treatment facilities need rehabilitation or upgrade. The condition of pumping equipment is no better. This results in interruption of water supply services and high operating costs with the national average level of water losses estimated at about 36 percent, reflecting a combination of physical losses due to inadequate network maintenance and underinvestment in system replacement, and commercial losses.¹¹ The water metering level, at around 60 percent, is significantly below the average metering rate across the Danube region of 90 percent, negatively affecting commercial efficiency and reduction of water losses. The existing state of infrastructure contributes to significant energy consumption and high carbon emissions. Ukraine is one of the most energy-intensive countries in the world, affecting the efficiency of service delivery¹².

B.1.2 Wastewater Collection Challenges

6. Wastewater collection infrastructure is in poor condition. According to a Utility Performance Improvement Study¹³ (UPIS) carried out under the ongoing Ukraine Second Urban Infrastructure Project (UIP2), most of the existing wastewater collecting systems were built around 50 years ago. Many are oversized for the current demographic and economic realities and heavily undermaintained, resulting in both network infiltration and exfiltration as well as a significant number of blockages, which are affecting the service delivery and performance of the wastewater treatment plants (WWTPs). According to 2019 Utility Benchmarking Data¹⁴, average sewer blockages are more than 13 blockages/kilometer/year, which is more than three times higher than the Danube hub results¹⁵, standing at 4 blockages/km/yr¹⁶. According to the International Water Association (IWA)¹⁷, an indication of a well-maintained collecting system in good condition will be around 4 blockages/100 km/yr.

B.1.3 Wastewater Treatment Challenges

7. Wastewater treatment in Ukraine is also deteriorating due to the inadequate maintenance of existing treatment plants and lack of investments in new ones. Almost all WWTPs in Ukraine were constructed in the late 1970s and early 1980s of the last century¹⁸. They were designed following the traditional wastewater pollution removal process, where only two indicators were considered: Biological Oxygen Demand (BOD) and Suspended Solids (SS). Removal of suspended solids, whose molecules can contaminate the rivers, and reduction of the content of biodegradable organic matter (measured by the BOD) in wastewater, were considered sufficient. Treatment of biogenic substances such as nitrogen and phosphorus compounds by WWTPs has not been taken into account. Today we know that overconcentration of biogenic substances causes a lot of damage to the

¹⁰ Concept for the implementation of state policy in the field of centralized water supply and sanitation, Minregion, 2020.

¹¹ Ibid. However, the figure might be higher and closer to 45 percent, based on data from the Utility Performance Improvement Study (UPIS), which although it covers only 11 WSS utilities financed by the World Bank under the Second Urban Infrastructure Project (UIP2), given their variety and size (providing WSS services from 50,000 to 4,000,000 customers), could be considered rather representative.

¹² Energy costs for WSS utilities typically account for more than 30 percent of their operational expenditures.

¹³ Utility Performance Improvement Study, 2020, financed under the World Bank UIP2.

¹⁴ Utility Benchmarking Program in Ukraine is part of the Danube Water Program (for more information, visit <https://www.iawd.at/dwp/>), and covers 20+ of the biggest WSS utilities in the country.

¹⁵ Group of WSS utilities from Danube countries participating in benchmarking organized with the support of the Danube Water Program.

¹⁶ Sewer blockages measure the ability of wastewater collection systems to provide services to customers and indicate issues related to the effectiveness of routine operations and maintenance activities, the hydraulic performance of the network, and the general condition of the pipes.

¹⁷ More information on IWA can be found at <https://iwa-network.org/>, accessed in May 2021.

¹⁸ Utility Performance Improvement Study, 2020, financed under the World Bank UIP2.

ecosystems of natural water bodies as it triggers vigorous growth of cyanobacteria, reduces dissolved oxygen content, suffocates fish populations, causes littoral overgrowth, and complicates water purification. The observed deteriorating quality of water in water bodies in recent years is directly related to evolution of the processes of human-caused eutrophication¹⁹. The lack of proper wastewater treatment in many parts of Ukraine, exacerbated by the insufficient funding for proper maintenance of wastewater facilities, is contributing to the pollution of national and international waterways. There is almost no sludge utilization in the country, with 95 percent of sludge being stored in WWTPs' drying beds without further processing²⁰; these practices are also contributing to the increase of greenhouse gas emissions.

B.2 Governance Challenges

8. Incomplete legal and regulatory requirements and ineffective implementation monitoring. The following Laws of Ukraine comprise the main normative and legal acts in the sphere of centralized WSS: "On Housing and Communal Services," "On Drinking Water, Drinking Water Supply, and Wastewater Disposal," "On Natural Monopolies," "On State Regulation in the Utilities Sphere," the "Rules for Using Centralized Municipal Water Supply and Wastewater Disposal Systems in Settlements of Ukraine," "Procedure for the Formation of Tariffs for Centralized Water Supply and Wastewater Disposal," and "Procedure for Setting Tariffs for Centralized Water Supply and Wastewater Disposal." Although the legal and regulatory framework does contain a lot of service-level requirements, most of the obligations are somehow disconnected from the actual situation in the sector and scarcely contribute to its development and service delivery improvement. Key aspects such as protection of consumer rights, mechanisms to follow for the implementation of laws and regulations, the process of resource allocation, and transition periods, while imposing new requirements are still missing. A good illustration of the inconsistent legislative approach in the sector is the recent attempt to introduce EU Drinking Water Directive (DWD) obligations²¹, without appropriate assessment of investment needs and required implementation time, when even some EU Member States, themselves, have just initiated implementation preparations, see **Figure 3**.

Figure 3. Timeline for DWD implementation



9. Ukraine's WSS governance framework is highly fragmented, with administrative and legislative shortcomings that limit coordination and efficiency between national and local administration efforts. At the national level, Minregion is the institution in charge of developing countrywide WSS policies toward improvement and sustainability of WSS services. However, for the past 10 years no written policy and/or strategic document for the sector has been produced, a situation that was exacerbated by frequent leadership turnover in the ministry.

10. Utility ownership and scale of operations issues. In 1991, the state transferred housing and communal service enterprises (including WSS enterprises) to communal ownership of local authorities. Hence, the vertical control system ceased to exist and the management of local WSS systems was left at the discretion of local governments, which were not adequately prepared for this role. Such excessive fragmentation caused immense

¹⁹ Eutrophication is the excessive richness of nutrients in a lake or other body of water, frequently due to discharge from inadequately treated wastewater or runoff from the land, which causes a dense growth of plant life and death of animal life from lack of oxygen in the water.

²⁰ Concept for the implementation of state policy in the field of centralized water supply and sanitation, Minregion, 2020.

²¹ DWD published in December 2020 poses a requirement for application of a rating method to assess water leakages, which necessitates sufficient flow measurement data. Additionally, the directive sets new enhanced standards for drinking water safety, including eight new water quality parameters, a watch list of emerging substances, risk assessment, and a risk management-based approach to be used for the whole water supply chain. Source of the picture is European Chemical Agency, 2021.

difficulties for local authorities to ensure stable economic development and provision of utility services. According to the State Statistics Service of Ukraine, there are approximately 2,500 WSS enterprises of different ownership forms in the country today; mostly of municipal ownership, with around 1,400 serving a population from a few thousand to almost 4 million people in Kyiv. Along with the transfer of communal enterprises to local governments, all fixed assets (land, networks, facilities, etc.) have also been transferred to territorial communities. Currently, WSS asset ownership is mixed, with WSS infrastructure being on the balance sheet of municipally owned utilities set up as commercial entities, municipalities, and even the state.

11. Although municipal and, in limited cases, oblast WSS utilities provide services to around 70 percent of the population in Ukraine, the majority of these are small operators with limited capacity to invest and properly operate and maintain existing WSS infrastructure. In some rural areas, where there is centralized water supply, operation and maintenance is mostly commune or self-organized. National legislation and regulations are focused on urban WSS service provision, with laws regulating centralized communal services. Most service providers, both large and small, have limited incentives and means to improve WSS services because of the lack of adequate national policies, regulation deficiencies, and lack of funding. In addition, there is no streamlining process of business-planning and approval at local and/or national level to translate the legal requirements into measures aiming to achieve desired WSS service levels.

12. Regulatory deficiencies. The sector regulatory body, the National Energy and Utilities Regulatory Commission (NEURC), in charge of WSS tariffs review and approval, is not independent from political influences, and its work does not result in performance and service improvements. NEURC is based on a national regulatory model such as the OFWAT²², established to regulate private monopoly services, after the privatization of WSS assets in England. Yet, NEURC is regulating public utilities of various size and capacities, which are not profit-maximization driven; hence, it is not equipped with the required tools to incentivize investments. There is no process in place to guarantee that national policies and decisions (once available) will be enforced in utilities and ensure the required resources and time line for implementation. Since 2018, NEURC is no longer responsible for tariff approval for utilities serving fewer than 100,000 customers²³. For all utilities that are not regulated by the NEURC (covering small municipalities), tariffs are set by municipal councils, following an outdated tariff methodology, with no requirement of a periodic tariff review and allowing for significant discretion, which results in tariffs that do not cover costs, especially in election years.

13. Big municipalities are seldom involved in WSS service provision or regulatory issues because the required service levels are defined by national legislation; tariffs are approved by the NEURC (for licensees), and there is no specific base-level assessment or business-planning preparation and approval process at local (or national) level, which leaves limited room for decision-making for local authorities. The main reason for the current unsustainable situation is the implementation of different governance and regulatory approaches, which are not coherent and there are gaps and missing links. The lack of a clear national policy for the sector plus the status quo on key aspects such as tariff levels that remain significantly below cost-recovery contribute to the deterioration of the situation, resulting in a situation that could be described as a downward spiral²⁴.

²² The United Kingdom's Water Services Regulation Authority (OFWAT); for more information, visit <https://www.ofwat.gov.uk/>, accessed in May 2021.

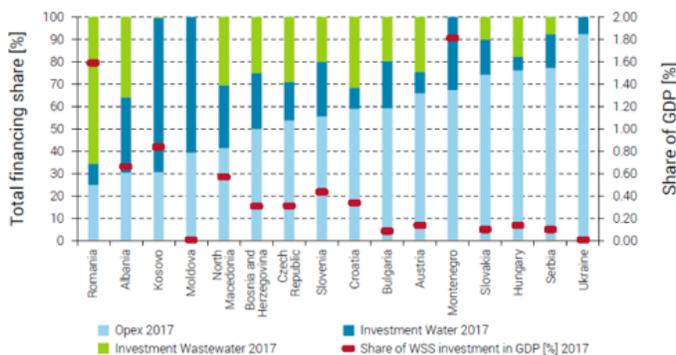
²³ This is a simplification because there are several criteria: (1) total population in the service area—less than 100,000 people; and (2) volumes: less than 300,000 cubic meters (m³) per year (for centralized water supply), less than 200,000 m³ per year (for centralized collection services).

²⁴ Downward or Vicious Spiral of Performance Decline of Utilities, Source of the picture: Water and Sanitation Program (WSP)/Public-Private Infrastructure Advisory Facility (PPIAF). 2002. *New Designs for Water and Sanitation Transactions: Making Private Sector Participation Work for the Poor*.

B.3 Funding Challenges

14. Investment needs for WSS are substantial and significantly exceed resources made available. The first National Water Supply and Sanitation Strategic Plan, prepared almost 20 years ago and never approved or implemented, estimated investment needs at about €4–6 billion to bring the water and sanitation systems in Ukraine to operational safety, and a total of €22–26 billion to achieve international WSS service standards. Unfortunately, no detailed national survey or WSS master-planning exercise has been done recently to update

Figure 4. WSS investments and their proportion of GDP



these figures. However, the fact that WSS utilities have suffered from underinvestment for more than three decades, a situation that persists today with only 8 percent of WSS sector expenditures being dedicated to investments, would suggest that the needs today are even larger.²⁵ This transforms to less than 0.2 percent of the GDP, while developed European countries spend more than 1 percent of the GDP to ensure that WSS assets are maintained in good operational condition for provision of quality WSS services²⁶, see **Figure 4**.

WSS sector in Ukraine is currently characterized by very low investments and by tariffs that do not cover operating costs, averaging coverage of around 0.85. The sources of funding in the WSS sector are limited, mainly coming from the so-called 3Ts – tariffs, transfers, and taxes²⁷. If tariffs are low, then transfers (both internal and external) and taxes need to balance the costs and revenues. In Ukraine, however, there are limited transfers to utilities, or subsidies from the national budget (municipalities support their own utilities if financial resources are available in local budgets). This situation, in combination with the lower-than-cost-recovery tariffs, leads to perpetual underfinancing of the sector. From an affordability perspective, there is a potential for raising tariffs, as the share of the monthly WSS expenditures for the poorest 40 percent of the population is around 1 percent. The main problem lies in the absence of a mid-to-long-term vision to lead and implement the necessary changes and reforms.

B.4 Broader Water Sector Context Challenges

16. Water resources are spatially and seasonally uneven, a situation exacerbated by climate change, with implications for supply in affected regions. Ukraine is not a water-scarce country²⁸, but its water resource endowments have a high dependence on runoff from outside the territory of the country. Several watersheds in the southern and eastern regions of the country, including Donbass and Kryvorizhzhya, have high demand for water and are likely to experience extremely high-water stress by 2030, particularly driven by the impact of climate change. In 2019, 11.1 billion (b) cubic meters (m³) of water was abstracted from surface and groundwater sources: surface water, 9.9b m³ and groundwater, 1.2b m³. The main water consumers were agricultural enterprises, industry, and utilities—agriculture enterprises used 39.4 percent, industry 38.5 percent, utilities 21.7 percent, and other sectors 0.4 percent²⁹.

²⁵ Danube Water Program, A State of the Sector Report, 2018 Update 2019. Further information can be found at <https://sos.danubis.org/>, accessed in May 2021.

²⁶ Ibid. The presented figure is taken from the report and provides comparison of Ukraine with other Danube countries.

²⁷ Concept developed by the Organization for Economic Co-operation and Development (OECD); for more information, see <https://www.oecd.org/water/>, accessed in May 2021.

²⁸ More details and international comparisons can be found at <https://worldwater.io/> and <http://www.fao.org/aquastat/en/>, accessed in May 2021.

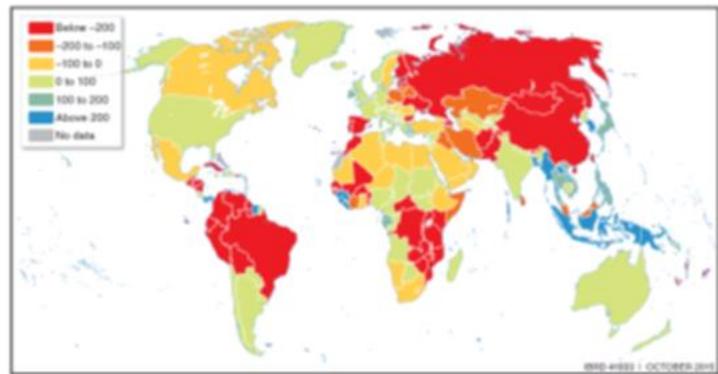
²⁹ Data from the State Agency of Water Resources of Ukraine, 2020.

17. Water quality concerns remain persistent in Ukraine, especially in urban and industrial areas. Issues related to quality are predominantly driven by point pollution of water resources, including factories, mining, and landfill sites, as well as municipal discharge of untreated sewage due to inadequate wastewater treatment. In addition, a gradual decrease in the volume of water in water bodies has been observed in the past decade due to climate change and evaporation, resulting in concentration of pollutants. Highly polluted areas usually coincide with densely populated urbanized areas where industries are located, such as in the industrial cities of Zaporizhia, Luhansk, and Donetsk. At the same time, the intensive development of industry and agriculture over the last 20 years, without the necessary attention to their environmental impacts, has led to a significant deterioration in the ecological status of water bodies. Moreover, most of Ukraine’s water bodies are experiencing diffuse pollution, with contamination coming from pesticides, phenols, other organics, and oil products. Since more than 75 percent of Ukraine's drinking water supply is taken from surface waters, quality issues not only reduce available sources, but also require more stringent treatment and disinfection, resulting in higher costs.

18. Groundwater faces high levels of mineralization and pollution. Although groundwater abstraction provides less than 25 percent of Ukraine's drinking water supply, some regions (oblasts) in the country, particularly in Eastern Ukraine, depend on groundwater while facing significant water quality challenges. These are mostly associated with high levels of iron and manganese. The mining industry continues to have negative impact on the quality of groundwater resources, where large numbers of dumps of production waste, tailings, and sludge, etc., lead to uncontrolled chemical and sometimes radioactive pollution. There is also a significant risk of environmental disasters due to the flooding of abandoned coal mines in the Donbas. According to preliminary estimates from the National Institute for Strategic Studies³⁰ and information received by the Ministry of Environmental Protection and Natural Resources of Ukraine (MoEPNR), in a flooding event the heavily contaminated water containing chemicals and radiation will turn the land unlivable and unusable for agriculture for many years. Like surface water, groundwater pollution reduces available water sources and may require more stringent treatment and disinfection.

19. Water security³¹ in Ukraine is threatened by climate-related risks, including droughts and floods, which result in substantial losses to the economy. In 2020 the country lost a total of about 234,000 hectares (approximately 3 percent) of winter crops due to drought in the southern regions³², which led to losses of total revenue of approximately 2 percent.³³ While droughts are an increasing challenge for the country, and expected to exacerbate in the future due to climate change³⁴, Ukraine is also exposed to increasingly high

Figure 5. The Spatial Distribution in Runoff will Become More Uneven to 2050



³⁰ Report on threats to the security of water supply in Eastern Ukraine, taking into account the flooding of mines and pollution of water sources, 2020.

³¹ “The capacity of a population to safeguard sustainable access to adequate quantities of and acceptable quality water for sustaining livelihoods, human well-being, and socioeconomic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability,” definition proposed by UN-Water, for further information, visit <https://www.unwater.org/publications/water-security-infographic/>, accessed in May 2021.

³² Presentation on crop losses in 2020, the Ministry of Economic Development, Trade, and Agriculture of Ukraine

³³ Ibid.

³⁴ For further information, refer to the World Bank’s 2016 report, *High and Dry: Climate Change, Water, and the Economy*, <https://www.worldbank.org/en/topic/water/publication/high-and-dry-climate-change-water-and-the-economy>, accessed in May 2021.

The map in Figure 5 is also taken from this study.

flood risks linked also to climate change and to anthropogenic activities, see **Figure 5**. The Global Facility for Disaster Reduction and Recovery (GFDRR) estimated³⁵ that a 100-year flood in Ukraine will affect over 2 million people, with damages of approximately US\$4 billion (4 percent of GDP in 2017), with impacts being greatest in some southwestern parts of the country. The largest flood event, since the country gained independence, occurred in 2008 and caused nearly 40 fatalities and US\$1 billion in damages. Infrastructure disruptions cost households and firms more than US\$390 billion each year in developing countries, and each dollar invested in resilience returns US\$4 worth of benefits on average (Hallegatte et al. 2019)³⁶. It is imperative that Ukraine invest in strengthening resilience of its infrastructure and its management practices through appropriate adaptation measures.

20. Ukraine has embarked on institutional reform efforts toward improved water resource management; however, implementation remains slow. The country is in the process of aligning its water resources governance framework with the EU Water and Environmental Policy Framework; however, the process has been slow. As part of this process, the State Agency for Water Resources of Ukraine (SAWRU) has established 12 Water Basin Resources Departments, as well as 13 Water Basin Councils. The agency's regional offices function as territorial bodies, which, in parallel with the basin councils, carry out water resources management functions. Although the SAWRU created a "road map" for the development of the first River Basin Management Plans (RBMPs) in Ukraine³⁷, there have been delays in elaboration of the plans, mainly as a result of capacity limitations at central and local levels.

C. TOWARD IMPROVED, INCLUSIVE, AND SUSTAINABLE WATER SUPPLY AND SANITATION SERVICE DELIVERY

C.1 Water Supply and Sanitation Sector Reform

21. WSS reform recommendations outlined in this Note tackle three key sector issues simultaneously: (i) improving governance to increase access, transparency, and accountability; (ii) enhancing regulation to improve performance and service quality; and (iii) reforming the funding approach to ensure cost-recovery and sustainability, as well as to diversify funding options. While the solutions proposed below are based on extensive local and international WSS sector experience, reform decisions should inevitably be taken by Ukrainian policy makers in consultation with all key stakeholders.

22. The three core elements of an effective governance framework in the WSS sector are transparency, participation, and accountability³⁸. Transparency should facilitate citizens' access to information and their understanding of decision-making mechanisms. Participation seeks to ensure that users are meaningfully involved in decision-making processes through rights and obligations, thus all stakeholders have incentives to adhere to and comply with legal rules and regulations. Accountability concerns the obligation of one actor to provide information about and/or justification for his or her actions in response to another actor with the power to make those demands and to apply sanctions for noncompliance³⁹. The following paragraphs outline specific reform actions to improve transparency, participation, and accountability in Ukraine's WSS sector.

³⁵ For further details, see <https://www.gfdr.org/en/publication/europe-and-central-asia-country-risk-profiles-floods-and-earthquakes>, accessed in May 2021.

³⁶ The World Bank RISE Framework, 2020.

³⁷ Following the resolution of the Cabinet of Ministers of Ukraine № 336, from May 18, 2017.

³⁸ For further information see World Bank's 2018 report, "Aligning Institutions and Incentives for Sustainable Water Supply and Sanitation Services"; additional information can be found at <https://openknowledge.worldbank.org/handle/10986/29795>, accessed in May 2021.

³⁹ Ibid.

25. **Box 1** presents the proposed roles and obligations of the different WSS sector stakeholders in the reform process (additional identification of the responsible institution is provided in the summary **Table 1**).

Box 1. Roles of Key Water Supply and Sanitation Sector Stakeholders in Reforms

Role of the State:

- Discuss, promote, agree, and initiate the reform; support the process by developing a standardized delegation contract (optional);
- Preserve minority voting rights in the association of owners (optional);
- Encourage aggregation of WSS asset owners (and hence utilities) by providing financial incentives; develop national sector policies and regulations;
- Benchmark operators' performance⁴² (optional).

Role of the National Energy and Utilities Regulatory Commission:

- Approve nationally acceptable WSS tariff methodology(ies). Due to the significant differences of service providers' size and capacity, the approval of at least two tariff-setting methodologies is encouraged – one of them to allow for the recovery of cost of debt by operators (RAB model: *Regulatory Asset Base multiplied by the Weighted Average of Cost of Capital*),⁴³ since some large operators in Ukraine have generated multimillion dollar debts to repay (mostly from International Financing Institutions [IFIs] guaranteed by the state);
- Provide technical support to owners/association of owners (optional); annual tariff review support in case of disagreement between owners and utilities;
- Prepare annual performance reports (Sunshine regulation).

Role of the municipalities:

- Adjust the required levels of WSS services;
- Approve investment programs and resource needs in the delegation contract;
- Approve WSS tariff in line with the financial model of the contract;
- Require that all WSS assets are insured (optional);
- Monitor and control contract implementation;
- Support regionalization through association with new WSS owners, and adjust delegation contract in case of new national sector requirements.

Role of the utilities:

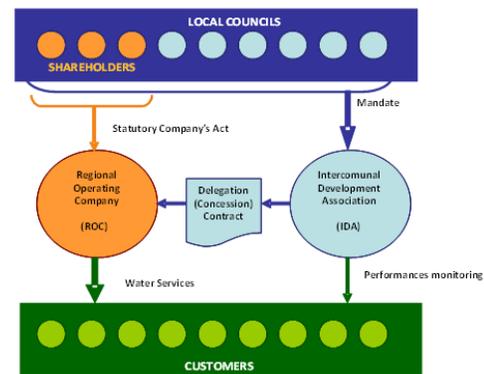
- Remove public WSS assets from their balance sheets (in agreement with the owner) to become pure operators;
- Propose adjustments to the standard delegation contract to reflect its baseline assessment of the required levels of services;
- Propose service targets to be achieved along with investment program and financial model supporting its delivery;
- Identify financing sources in collaboration with the owners, and secure funding.

⁴² Building on the ongoing benchmarking exercise administered and financed by the Danube Water Program is highly advisable.

⁴³ The World Bank supported the Bulgarian regulator to adjust its tariff methodology to small, medium, and big operators by differentiating required return on equity and marginal cost of debt. However, this still requires some level of aggregation of utilities, capacity development, and information availability, which with regulation of just 52 utilities cannot compare to the situation in Ukraine.

26. The proposed reforms along with new incentive and performance improvement framework to be embedded in the delegation contracts are similar to a series of successful reforms delivered in the past decade in Bulgaria and Romania, and a few decades ago in France and Portugal. Some of the institutional arrangements in Romania are presented in Figure 7, which is taken from the World Bank 2017 report, *Joining Forces for Better Services*. While such WSS reforms delivered very good results in European countries, the governance arrangements would need to be fine-tuned to the Ukrainian water supply and sanitation reality, including the local context and political economy.

Figure 7. Key players and governance of Romanian WSS sector



C.1.2 Institutional Reforms to Enhance Rural WSS Service Delivery

27. Extend WSS services to underserved rural areas through extension of existing utility service areas, creation of a dedicated national rural WSS company, and/or development of regional associations supporting service delivery in rural areas. The proposed long-term contractual approach would have limitations in addressing challenges with regard to WSS access in rural areas. Based on successful European experiences (such as the one in Bulgaria, France, Portugal, Romania, and the Netherlands), **two approaches, which can be implemented in parallel, for improvement of WSS service delivery (inclusion) in rural areas are recommended: (1) extension of existing service areas of utilities; and (2) creation of a dedicated a national rural WSS company.**

28. First, regarding extension of existing services to rural areas where technically and economically feasible, it is recommended that the government of Ukraine encourage and incentivize WSS asset owners to join together at oblast level and create associations to delegate WSS assets for operation, maintenance, and delivery of quality WSS services to the existing municipal operators. This would enable operators to expand services beyond the cities they operate in and cover suburban and surrounding areas, including small towns and even close-by villages. This can be done through the proposed long-term contractual approach, through adding and updating operators' service areas and obligations. Second, having in mind the vast rural territories outside densely populated urban areas in Ukraine as well as the limitations of stretching utilities' service areas, the creation of a

Figure 8. AdP ownership and expansion model



dedicated national rural WSS company to provide services in rural areas and ensure achievement of SDG 6 in Ukraine. International experience demonstrates that extending access in rural areas cannot progress without significant involvement of national authorities to (i) act as a WSS service provider of last resort where there is no interest from operators, to ensure access to quality services; and (ii) finance significant portion of the WSS infrastructure since distribution of costs to a small number of the population will result in affordability issues. A fine-tuning of the proposed second approach for Ukraine could also simply entail the establishment of a National Bulk Water Supply Company to ensure quality of water provision (similar to Aqua de Portugal [AdP]⁴⁴), while at the same time the national government would support the **development of regional**

⁴⁴ Figure 8 is taken from a presentation made by the company in 2018.

associations to strengthen existing communal services for distribution, operation, and maintenance of the small systems in rural areas.

29. Careful development of centralized collecting and treatment services in sparsely populated areas should be encouraged for wastewater services. Having in mind the challenges of other European countries to implement the Urban Wastewater Treatment Directive, the development and implementation of Individual and other Appropriate Systems (IAS) over centralized collecting systems (if there is no CS and/or WWTP) is encouraged in small settlements. Properly developed and implemented IAS can be used to ensure that wastewater is collected and treated before discharging to ensure achievement of the required environmental protection, while cutting not only significant investment costs, but also expenditures for operation and maintenance of CS and WWTP. Improved WSS access would also require the development of adequate social support and protection mechanisms to address connection issues (and possible future affordability issues) since a significant number of vulnerable households are living in rural areas of Ukraine.

C.1.3 Strengthening the Sector Financing Framework

30. Strengthen sector financing framework through cost-recovery tariffs, earmarked national budget funds, appropriate contracting methods, and innovative alternative financing sources such as climate funds. Closing the capital investment gap will be critical to achieve SDG WSS requirements in Ukraine. To achieve this, both national and local authorities should commit to gradual tariff increases, which allow the implementation of long-term contractual obligations, ultimately leading to development of creditworthy operators that can finance themselves from the market. Having in mind the experience from other European countries, big WSS service delivery improvements require significant funds from the national budget or access to EU grant transfers. The required investments in Ukraine's WSS sector clearly indicate that funding only through WSS tariffs will become unaffordable and may be extremely difficult in the short to medium term, especially if the government expects quick improvement of services. Hence, earmarked national budget funds for WSS infrastructure improvements and commitments on delivery of the proposed reforms can prepare Ukraine for leapfrog improvements in WSS services, gradual tariff increases, and implementation of the EU Water and Environment Directives. The government could also explore additional innovative approaches to ensure capital efficiency through different contracting methods and results-based financing. Other alternative financing options could include Climate Funds for climate adaptation or mitigation investments, or application of special taxes on certain commodities to support rural WSS investments.

C.1.4 Strengthening the Enabling Environment for Private Sector Participation

31. Reforming sector governance will also allow private sector participation (PSP) to bring know-how, innovations, and financing. Ukraine has a fair framework for Public Private Partnership (PPP), which is allowing municipalities to award PPP projects. However, some obstacles to implementing PPPs in Ukraine remain, such as, the existing budget legislation, where public bodies are restricted to budget commitments of only one year. Although these constraints are currently preventing the implementation of Design-Build-Operate (DBO) and Design-Build-Finance-Operate (DBFO) schemes in the WSS sector and can only be addressed by introducing multiannual programmatic budgeting in Ukraine, structuring and piloting other PSP options like the Performance-Based Management Contract (for nonrevenue water reduction and to improve the commercial cycle: metering, reading, billing, and collection and etc.) could be implemented in Ukraine. The clear obligations and financing outlined in the long-term delegation contract should be used as a platform for encouraging PSP.

C.1.5 Preparation of WSS Strategy

32. An overall WSS Sector Strategy needs to be developed to ensure the alignment of all efforts at national and local levels and to provide political vision, a coherent framework, and support. The strategy development and implementation would not only guarantee continued reform efforts but also signal any requirements for

further legislative and regulatory changes as well as propose ways to strengthen the capacity of Ukrainian institutions, which is critical to sustain infrastructure and delivery of services.

C.2 Broader Water Sector Reforms

33. Strengthen national and river basin water governance. Since Ukraine depends on runoff, which is mostly transboundary generated, it needs to develop a comprehensive integrated water resource management approach. A fundamental challenge for water resource management is that many issues, including water resources, environmental flows, and aquatic ecosystem issues, are inherently interjurisdictional. These issues are shaped mainly by the boundaries of watersheds and not the political or administrative jurisdictions at national and local levels. Achieving water quality and pollution discharge standards, for example, requires erosion control, managing fertilizer use in the agriculture sector, and rangeland management far upstream, in addition to all direct water-related measures. Ukraine needs to strengthen its national and river basin bodies to mitigate and resolve coordination problems and promote cooperation horizontally (i.e., across subsectors) and vertically (i.e., across administrative levels). The ongoing preparation of RBMPs is an excellent opportunity that needs to be used for introducing measures to tackle water pollution issues, like monitoring of big pollutants and application of significant penalties for not meeting environmental standards, along with increasing capacity, creating coordination mechanisms between all water users, and promoting governance improvement at river basin level.

34. Introduce adaptation measures to strengthen resilience to climate change while rebuilding and improving Ukraine's infrastructure systems. An effective climate change adaptation approach would require well-planned infrastructure and sound water management to reduce vulnerabilities and increase the margin of safety in water storage reserves, service capacity, and extreme event mitigation. Addressing the impact of climate change will require that the Ukrainian government implement adaptation measures such as rainwater harvesting, efficient irrigation, and flood resilience of irrigation schemes; improve land and water management at the watershed level; and develop early warning flood management systems, hazard mapping, etc.

35. Ensure sustainable financing of water resource infrastructure. Most of the water sector challenges boil down to the lack of funding and the low capacity of implementing authorities.⁴⁵ A new approach to finance water management and investment activities in Ukraine needs to be developed based on the polluter-pays principle and on balancing costs and sources of funding with emphasis on promotion of the circular economy, green initiatives, special earmarked funds for environment, and climate change related infrastructure. Financial responsibility could also be given to the river basin authorities to collect fees (special pollution fees as in France or abstraction/discharge fees as in Bulgaria) and to support bulky WSS investments. The Water Strategy, currently developed by the MoEPNR, should provide a clear road map on how sustainable sector financing will be achieved in Ukraine.

D. SUMMARY OF KEY POLICY RECOMMENDATIONS

36. The table below provides a summary of key sector issues and policy recommendations and indicates responsibilities as well as a proposed time line toward improved, inclusive, and sustainable WSS service delivery in Ukraine. Following a commitment from the government of Ukraine to embark on the proposed WSS reform efforts, the World Bank will assess all available options to provide support and financing.

⁴⁵ For example, on the recently approved National Irrigation and Drainage Strategy for Ukraine, 2019.

Table 1. Summary of the Key Policy Issues and Recommendations

Key issues	Priority actions	Responsibility	Time line	Expected outcomes
WSS Sector Reforms				
Rural urban disparities and SDG 6 lag: inadequate access to safely managed WSS infrastructure and services in rural areas Scale of operations: too many small systems in urban areas; large number and spatially dispersed rural systems; nonviable small service providers	<ul style="list-style-type: none"> • Prioritize optimized WSS investments in rural areas. • Increase national budget funding for rural WSS infrastructure. • Improve governance for rural service delivery by (1) extending service areas for existing operators; and (2) creating a national WSS company or bulk water supply company combined with development of regional associations to provide services in rural areas. 	Cabinet of Ministers, Minregion	Short-term (2–3 years)	Improved and inclusive access to WSS services
Institutional model and associated governance challenges: mixed ownership of assets and utilities; fragmented WSS governance framework; deteriorating WSS infrastructure and services; Nonviable small service providers	<ul style="list-style-type: none"> • Make all fixed WSS assets public property. • Develop and implement delegation contracts between WSS asset owners and operators. • Reform WSS regulation. • Implement annual monitoring and evaluation of contract implementation and tariff adjustments. • Strengthen WSS owners and operators' capacity. 	Minregion, municipalities, WSS operators Minregion, municipalities, president, Cabinet of Ministers Municipalities Minregion, NEURC Minregion, MoF, NEURC	Urgent (up to 18 months)	Improved access to WSS services Sustainable service delivery
Massive WSS financing gap, which cannot be bridged by tariffs alone	<ul style="list-style-type: none"> • Strengthen sector financing framework through cost-recovery tariffs and earmarked national budget funds. • Ensure capital efficiency through different contracting methods, including the delegation contracts and results-based financing approaches. • Explore diversified/alternative financing sources, such as Climate Funds, where appropriate, and hypothecated taxes such as appropriate tax surcharges on specific commodities. 	Minregion, MoF, NEURC	Urgent (next 18–24 months)	Sustainable service delivery
Lack of clear strategic framework	<ul style="list-style-type: none"> • Develop WSS Sector Strategy to ensure the aligning of all efforts at national and local levels and to provide political vision, a coherent framework, and support for the reform. 	Minregion (participatory approach)	Urgent ⁴⁶ (up to 18 months)	Improved and sustainable environment and livelihood

⁴⁶ WSS Strategy preparation should be run in parallel with the proposed reform measures. The strategy should indicate whether legislative changes are required to support reform efforts.

Broader Water Sector				
Increased occurrence and vulnerability to climate-related risks such as droughts and floods	<ul style="list-style-type: none"> • Develop National Water Strategy and other strategic documents (like Strategy for Prevention, Minimization of Negative Effects of Floods and Droughts, and Elimination of Consequences and Climate Change Adaptation Strategy). • Implement identified water resource protection measures and prioritize water-related resilience investments. 	MoEPNR, SAWRU, RBC	Short-term (2–3 years)	<p>Increased climate resilience</p> <p>Sustainable water resources</p>
Surface and groundwater quality deterioration due to pollution	<ul style="list-style-type: none"> • Prioritize wastewater management investment program and implementation of priority water resource protection measures in line with RBMPs. 	MoEPNR, SAWRU, RBC, SSGSU	Short-term (2–3 years)	Good Ecological Status of water bodies (WFD)
Lack of integrated water resource management	<ul style="list-style-type: none"> • Strengthen national and river basin water governance through completion of ongoing governance reforms, finalization of RBMPs, preparation of FRMPs and implementation of measures in developed programs. 	MoEPNR, SAWRU, RBC	Short-term (2–3 years)	Resilience to natural disasters

Notes: WSS = Water Supply and Sanitation; SDG = Sustainable Development Goal; NEURC = National Energy and Utilities Regulatory Commission; MoF = Ministry of Finance; MoEPNR = Ministry of Environmental Protection and Natural Resources of Ukraine; SAWRU = State Agency for Water Resources of Ukraine; RBC = River Basin Councils; RBMPs = River Basin Management Plans; SSGSU = State Service of Geology and Subsoil of Ukraine; WFD = Water Framework Directive; FRMPs = Flood Risk Management Plans.