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Assessing the enabling conditions for investment in Armenia's water security

Scorecard pilot test

Environment Working Paper No. 241

By Delia Sanchez Trancon (1) and Guy Halpern (1)

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Abstract

This paper is part of a subset of working papers within the Environment Working Paper series, presenting research on the enabling environment for investment in water security. The subset includes country and regional projects aimed at pilot testing the Scorecard, designed to assess the enabling environment for investment in water security. The paper “Assessing the Enabling Conditions for Investment in Water Security: Scorecard Pilot Test in Asian Countries” delineates the findings from the initial phase.

This paper marks the commencement of the second round of pilot tests in the EU’s Eastern Partnership Countries.

It presents the results obtained from assessing the enabling environment for investment in water security in Armenia, using the Scorecard. It also presents policy recommendations based on the priority investment barriers identified during stakeholder consultations in the country, involving representatives from various Ministries engaged in water security and international donors. The assessment and recommendations cover the public investment framework and its impact on water-related sectors, the water investment framework, project bankability and sustainability, as well as the contribution of other economic sectors to water security.

Keywords: water security, investment, public and private finance, enabling environment, tool, data, policy, regulation, water supply, sanitation, wastewater, water resource management, irrigation, Armenia.

JEL Classification: H23, H41, H51, H54, L32, L38, L50, L95, L98, Q25, Q53, Q54, Q58.

Résumé

Ce document fait partie d'un ensemble de documents de travail dans la série des Documents de Travail sur l'Environnement, présentant des recherches sur l'environnement favorable à l'investissement dans la sécurité hydrique. L'ensemble comprend des projets nationaux et régionaux visant à tester le Scorecard, conçu pour évaluer l'environnement favorable à l'investissement dans la sécurité hydrique. Le document « Évaluation des Conditions Favorables à l'Investissement dans la Sécurité hydrique. Test Pilote du Scorecard dans les Pays Asiatiques » décrit les résultats de la phase initiale.

Ce document marque le début de la deuxième série de tests pilotes dans les pays du Partenariat Oriental de l'UE.

Le rapport présente les résultats obtenus lors de l'évaluation de l'environnement favorable à l'investissement dans la sécurité hydrique en Arménie, en utilisant le Scorecard. Il propose également des recommandations politiques basées sur les barrières d'investissement prioritaires identifiées lors des consultations avec les parties prenantes dans le pays, impliquant des représentants de divers ministères engagés dans la sécurité hydrique et des donateurs internationaux. L'évaluation et les recommandations couvrent le cadre d'investissement public et son impact sur les secteurs liés à l'eau, le cadre d'investissement en eau, la bancabilité et la durabilité des projets, ainsi que la contribution d'autres secteurs économiques à la sécurité hydrique.

Mots clés : sécurité hydrique, investissement, financement public et privé, environnement favorable, outil, données, politique, réglementation, approvisionnement en eau, assainissement, eaux usées, gestion des ressources en eau, irrigation, Arménie.

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The project was undertaken in collaboration with – and with the financial support of – the European Commission through the EU4Environment Water Resources and Environmental Data Programme. This collaboration and support have been particularly fruitful. The OECD is grateful to the European Commission for its financial support, which made these analyses possible.

Special gratitude is extended to Vahagn Tonoyan, National Expert, for his impeccable expertise in water-related matters and the support provided for this project. The team would like to extend warm thanks to Gayane Gabrielyan, Deputy Minister of the Ministry of Environment of the Republic of Armenia and Martiros Nalbandyan, Deputy Chairman of the Water Committee of the Ministry of Territorial Administration and Infrastructures of the Republic of Armenia, for their unwavering support and leadership throughout the process. This report was enriched by the valuable contributions from Lilit Ahrhanyan from the Ministry of Environment of the Republic of Armenia and Hrayr Yesayan from the Ministry of Finance of the Republic of Armenia. The Ministry of Environment support to this project was particularly successful in engaging with a range of national stakeholders, including of the Republic of Armenia through two national workshops in 2023.

The responsibility for the content of this publication lies with the authors.

Executive Summary

To achieve SDG 6, Armenia will have to mobilise additional investments to its water sector and optimise existing finance. Currently, only 0.5% of the available SDGs funding from the United Nations is allocated to SDG 6, and with only six years remaining to 2030, intensified efforts are necessary. To fulfill its international obligations regarding water security, Armenia must create an attractive investment environment while protecting its water resources.

The Water team of the Climate, Water and Biodiversity Division in the Environment Directorate has developed a Scorecard tool to assess the enabling conditions for investment in water security at the national level. This tool serves to identify existing barriers to investment in water security and act as a catalyser for policy reforms aimed at addressing them.

Enabling conditions for investment in water security are categorised into four dimensions, with only one specific to water related investments. This highlights the imperative for cross-sectoral collaboration, especially with economic sectors using and consuming water. It also points to the importance of raising awareness about the risks and opportunities related to water security. The dimensions include the country's policy framework for investment (dimension 1), the water policy framework for investment (dimension 2), the framework to make projects bankable and sustainable (dimension 3), and the contribution of other economic sectors to water security (dimension 4).

The tool explores these four dimensions by identifying key indicators to aid governments and relevant partners in removing investment barriers. These indicators are divided into sub-indicators, covering major risks and financial, environmental, and social returns for both public and private investors. Each indicator is assigned an equal weight within the dimension to capture the broad spectrum of county specific enabling conditions for investment in water security. At this stage of the tool's development, each dimension has been assigned an equal weight. Countries are then classified by their stage of enabling policies, beginning with "nascent", to "engaged", "capable", "effective", and finally a "model stage".

This assessment of the enabling conditions for investment in water security in Armenia, conducted as part of the European Union funded *EU4Environment Water Resources and Environmental Data Programme*, offers policy makers a snapshot of the current situation and recommendations on how to enhance the enabling environment for investment in water security.

What is the current status of the enabling environment for investment in water security in Armenia?

Armenia has made significant efforts to enhance the enabling conditions for investment in water security, reaching an *engaged* stage, with an overall score of 8.39 out of 20. However, important barriers remain in all four dimensions of the assessment, offering areas for reform and future scope to increase the final score.

The water policy framework, scoring 2.3 out of 5, conceals important disparities between sectors. The principal obstacles identified include limited sectoral investment plans, a lack of strategy to cover the section of the population not served by water services, and the overall financial sustainability of service providers.

The drinking water policy framework achieved a score of 3.6 out of 5, reflecting Armenia's success in attracting private investment for drinking water and wastewater services. However, challenges persist in relation to the sustainability of the service and in extending access to remote areas. 20% of the population still lacks access to regulated services.

Water resource management in the country is considered robust. However, the ineffective application of economic instruments to support water security reduces the score to 2.1 out of 5. Sanitation and irrigation sectors obtained low scores of 1.7 and 1.9, respectively. Both sectors are lacking detailed, updated sectoral plans and investment plans, and their regulatory frameworks need enhancement.

Armenia has a project framework that emphasises the environmental and social sustainability of projects, resulting in a score of 2.5 out of 5, for dimension 3, the framework to make projects bankable and sustainable. This framework promotes stakeholder participation throughout project cycles, ensuring that users and communities are integrally involved at every stage of project development. However, projects' financial viability is limited, partly due to the lack of a standardised cost-benefit analysis methodology. In addition, several conditions constrain future investments, including limited absorption capacity for project funding, an unclear definition of the unit implementing projects, and the lack of a clear, updated project pipeline.

Overall, economic sectors do not actively contribute to water security, evidenced by the low score of 0.8 for dimension 4. Armenia's economic sector strategies need to include water resources conservation and address existing gaps, ensuring water security for all. There is an absence of an overarching national policy to ensure that economic sectors contribute to water security.

What can be prioritised to improve the enabling environment for investment?

The Armenian Ministry of Environment is committed to raising service standards and ensuring nationwide water security, aligning with the objectives of key stakeholders including the Ministry of Finance and international donors.

In a July 2023 workshop on this enabling environment assessment and an October 2023 workshop on Financing Water Security in Armenia, key stakeholders identified three priorities to be addressed based on this assessment. These were noted by the Deputy Minister of the Ministry of Environment, officials from the Ministries of Finance and Statistics, and international donors:

- Develop a comprehensive national water security strategy that guides government, donor, and private investments in water security.
- Develop and adopt detailed investment plans for drinking water, sanitation, and irrigation sectors.
- Incorporate into the existing legal and regulatory frameworks the 20% of the population that currently lack water and sanitation service delivery.

These three priority barriers, discussed in the document and based on OECD member countries' experiences, can stimulate discussions, and inform decisions on policy and regulatory reforms to enhance water security in Armenia. Addressing these barriers not only sends a strong signal to potential investors but also strategically tackles core issues, positively impacting other enabling conditions.

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1. The enabling environment for investment in water security in Armenia

Under the EU4Environment Water Resources and Environmental Data Programme (EU4Env Water & Data), the OECD has been assessing finance for water security in the European Union's Eastern Partnership countries – Armenia, Azerbaijan, Georgia, Moldova, and Ukraine.

Action on financing water security under the EU4Environment Water & Data programme is focused on the implementation of River Basin Management Plans Programs of Measures, including Nature-based Solutions. This includes developing recommendations on domestic finance mobilisation through instruments such as water tariffs and charges, the management of water user associations, and identifying innovative and cost-effective approaches for financing the River Basin Management Planning Programmes of Measures implementation.

As part of that work, the OECD, under EU4Env Water & Data, has undertaken an assessment of the enabling environment for investment in water security in Armenia. This is the first assessment under EU4Env Water & Data, and assessments in Azerbaijan, Georgia, Moldova and Ukraine will follow. Following an initial successful piloting of the Scorecard in seven Asian countries in collaboration with the Asian Development Bank, Armenia was assessed based on an updated version of the Scorecard.

The findings of the assessment were discussed during a Workshop on Financing Water Security in Yerevan, Armenia, on 27 October 2023. In the context of this discussion, the assessment created linkages with the ongoing EU4Env Water & Data programme implementation including research focused on reforming Armenia's charges for surface water abstraction and water pollution, as well as examining the economic and technical performance of the country's Water User Associations.

This assessment of the enabling environment for investments in water security is based on external data sources (for Dimension 1 as well as some indicators in Dimension 2 and 3) and data collected by a national expert. This document reflects the opinion of the authors, and not that of the OECD nor its Member Countries, nor that of the European Commission, who fund the EU4Env Water & Data Programme.

1.1. The assessment of the enabling environment for investment in water security

Armenia has made significant efforts in enhancing the enabling conditions for investment in water security, as evidenced by its overall score of 8.39. All dimensions score above average of the initial pilot test in Asian countries,¹ except for D4, which scores 0.8, thereby decreasing the overall scoring, Figure 1.1.

Armenia's drinking water supply is attractive for private investment and serves as a model for the region. Water and wastewater services are provided largely through a lease contract with a private service provider. Nevertheless, important obstacles remain in ensuring the long-term viability of investments in

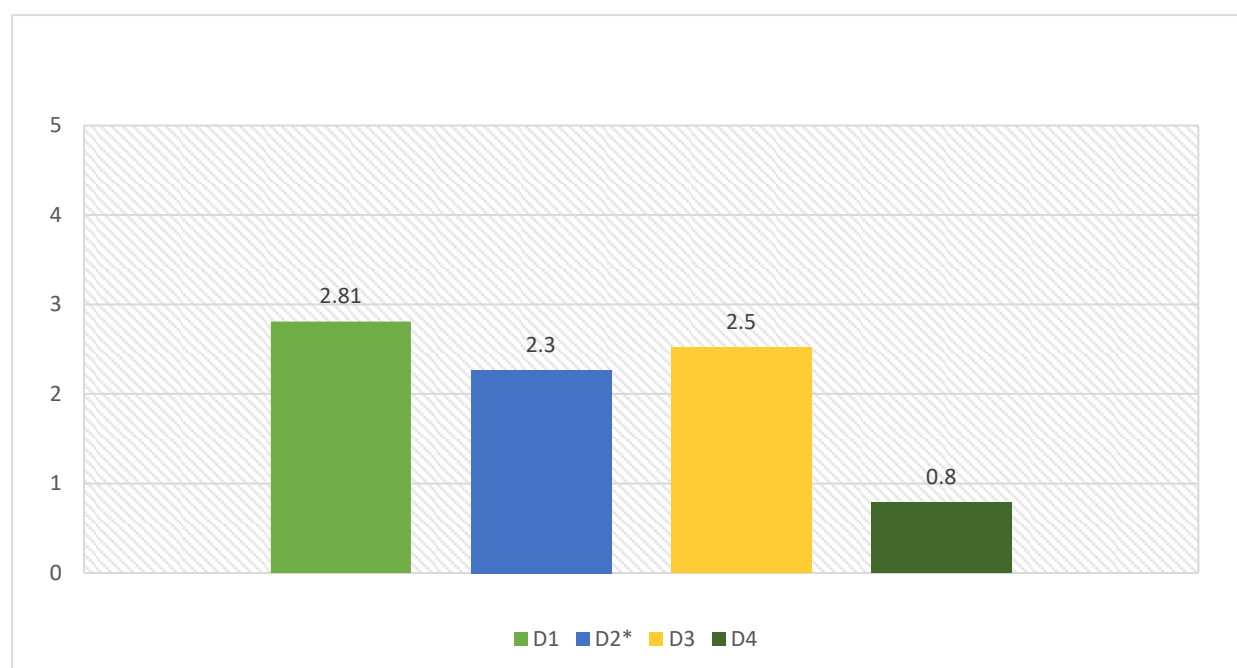
¹ The results from the initial pilot test in seven Asian countries, carried out in collaboration with the Asian Development Bank can be found in the following report: (Sanchez Trancon et al., 2024_[20]).

water and wastewater service delivery. There is also a need to attract investments to other crucial sectors, such as sanitation and irrigation.

The Ministry of Environment is dedicated to elevating service standards and ensuring water security nationwide. Furthermore, key stakeholders, including the Ministry of Finance and international donors, are aligned with the government's objectives on improving service standards and ensuring water security. By tackling the barriers across sectors and ministries, the government will not only send a strong message to potential investors but also address the core conditions for financing water security domestically.

Progress in this area is also aligned with Armenia's European Union relations, through the EU and Armenia Comprehensive and Enhanced Partnership Agreement (CEPA). The agreement advances the bilateral relations between the European Union and Armenia to a new, partnership level and regulates cooperation in political and economic sectors, while enhancing trade relations, providing a long-term basis for integrating and strengthening EU–Armenia relations. Regarding the water sector, Armenia will take obligations to approximate its legislation to EU acts and international instruments, this approximation will include 5 EU Directives: Water Framework Directive, Floods Directive, Urban Wastewater Directive, Drinking Water Directive and Nitrates Directive. Enabling finance is key to driving progress in this area.

Figure 1.1. An attractive enabling environment for private investment, still facing major challenges to ensure water security



Note: Dimension 2 covers water resource management, urban and rural drinking water, urban and rural sanitation, hydropower, and irrigation. Data for rural and urban drinking water are analysed together because no disaggregated data are available; the same applies to sanitation.
Source: Authors' analysis based on data provided by national consultant using references to official sources.

1.2. D1: An adequate policy framework for investment

Armenia, situated in the South Caucasus region of Eurasia, is a landlocked country bordered by Türkiye to the west, Georgia to the north, Azerbaijan to the east, and Iran to the south. With a population of approximately three million people, Armenia is a unitary, multiparty, and democratic nation. Its capital city

is Yerevan, and the official language is Armenian. Table 1.1 displays key indicators, offering essential context for the country.

Table 1.1 Armenia country statistics

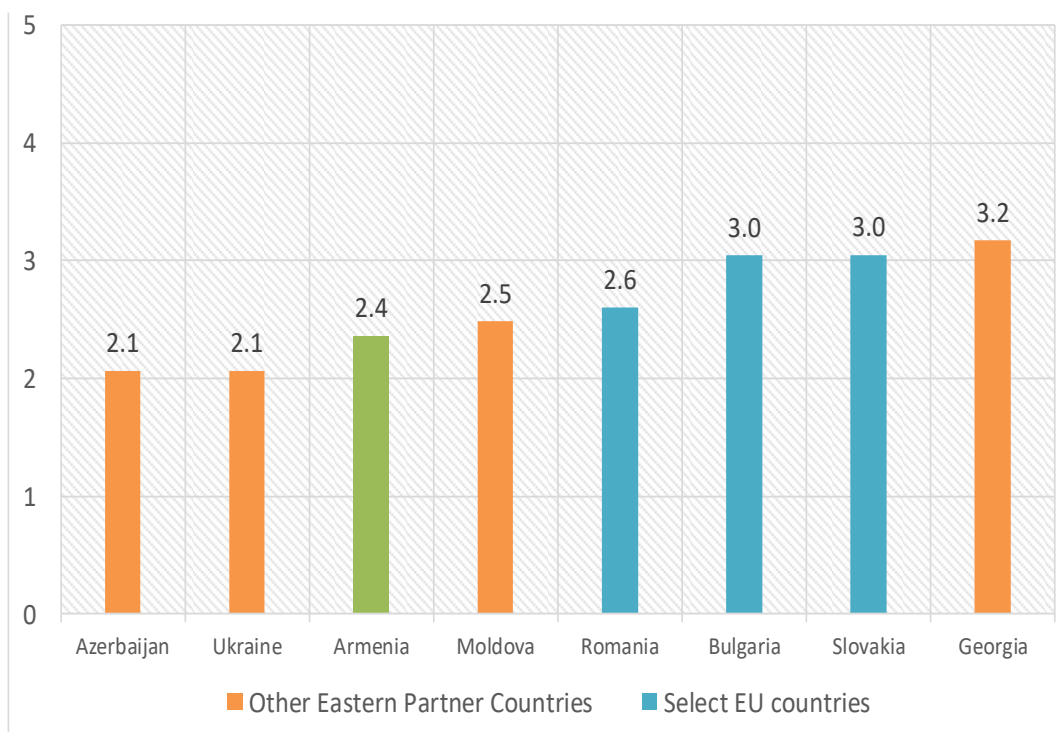
| Armenia | | Year |
|--|---------------------|------|
| World Bank Income Group | Upper middle income | 2023 |
| Total Population | 2 780 469 | 2022 |
| GDP USD (current) | 19.50 billion | 2022 |
| GDP growth | 12.6% | 2022 |
| GDP per capita (PPP) USD (current international) | 18 941 | 2022 |

Sources: World Bank Group (2022).

For the D1 analysis, a selection of countries was chosen for comparison, striking a balance between the quality of available data and social, economic, and geographical similarities to Armenia. The chosen countries are the EU member states of Bulgaria, Romania and Slovakia and the former Soviet republics of Azerbaijan, Georgia, Moldova and Ukraine, all EU Eastern Partnership countries.

Armenia ranks low compared to the selected countries yet achieves an overall score around the half-way margin, as presented in Figure 1.2. When compared only to EU Eastern Partnership countries, Armenia's score is near the regional average.

Figure 1.2. An investment policy framework similar to neighbouring countries

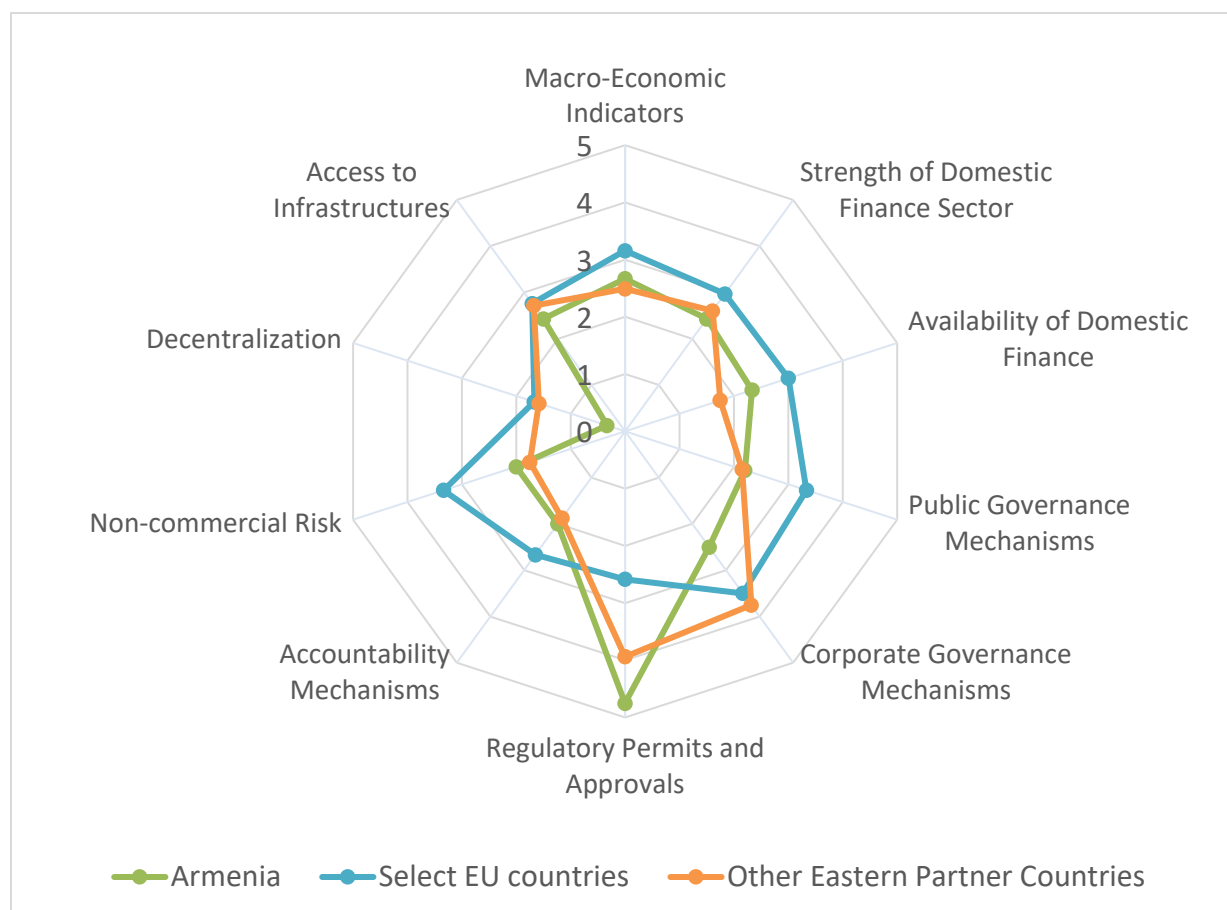


Note: Average D1 scoring of Armenia and a selection of other economies.

Source: Author's analysis of data from OECD-UCLG World Observatory on Subnational Government Finance and Investment, World Bank, IMF, World Economic Forum, and Fitch.

Armenia's stronger enabling conditions for attracting investment are its Regulatory Permits and Approvals (World Bank, 2019^[11]) and Availability of Domestic Finance (World Bank, 2022). However, regarding its Decentralization (OECD, 2022^[22]), Corporate Governance Mechanisms (World Bank, 2019^[11]), and Public Governance Mechanisms (Kaufmann, Kray and Mastruzzi, 2021^[31]), the country scores lower than the selected countries. Figure 1.3 presents the detailed scoring of each indicator, comparing Armenia with the average of select EU member states and other partner countries.

Figure 1.3. Armenia excels in Regulatory Permits and Approvals and is on par with eastern partner countries for other indicators



Note: Comparison of Armenia's score in each indicator of D1 with the average scores of the selections of EU countries and Eastern partner countries respectively. Here "Select EU countries" refers to Bulgaria, Romania, and Slovakia and "Other Eastern Partner countries" refers to Azerbaijan, Ukraine, Moldova, and Ukraine.

Source: Authors' analysis of data from OECD, World Bank, IMF, World Economic Forum, and Fitch.

Armenia's highest score, pertaining to regulatory permits and approvals, stems from the nation's concerted efforts to reform and enhance the business environment in recent years. From starting a business to getting electricity, improvements across the board have seen the country score well on the World Bank's Doing Business index (World Bank, 2019^[11]).

A stark difference can be observed between the three EU member states and the other selected countries, including Armenia, for the indicators Non-Commercial Risk, Accountability Mechanisms and Public Governance Mechanisms, largely related to heightened tension and greater political instability in the region.

Decentralization scores are low for all countries of the study but are especially low for Armenia. This indicator measures the significance of subnational governments in the overall economy². A high decentralization score indicates that responsibilities are shared across different layers of government, an important factor in the enabling environment for water security (World Bank, 2022, p. 14_[4]). Armenia's subnational government's expenditure and revenue are below the 3% of GDP threshold to earn a point on the five-point scale. It is also pertinent to note that Armenia has a population of only three million, with one-third living in the capital.

The assessment of public investment management was excluded from D1 scoring, as most countries lack relevant data. According to the IMF's public investment management assessment (PIMA), Armenia's has made some positive progress on public investment management in recent years. However, public capital stock has been declining, dropping by more than half since the turn of the century. Public investment has remained low compared to regional peers, partly due to a focus on recurrent spending rather than capital expenditure. Although there has been some increase in public investment in recent years, it has not reversed the downward trend (International Monetary Fund, 2019_[5]).

Efficiency gaps in infrastructure investment exist, with disparities in physical outputs and quality. Armenia is increasingly relying on external financing for major projects, posing challenges for public investment management (International Monetary Fund, 2019_[5]).

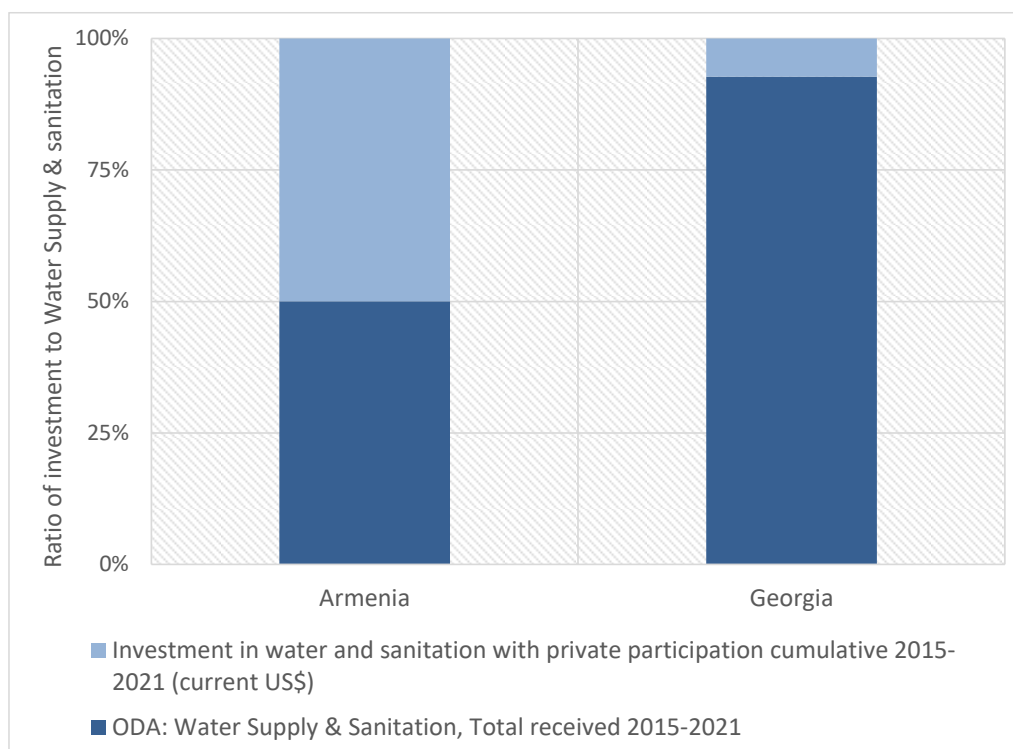
The country's institutions for planning, budgeting, and implementing public investments are underperforming, particularly in project appraisal, budgeting for investment, and project selection. This has a major impact in water security, as presented in D3. To scale up public investments effectively, reforms are needed at the planning, allocation, and implementation stages, addressing issues like project selection criteria, budget credibility, and procurement capacity. Additionally, the Audit Chamber's role needs clarification, and oversight of externally financed projects should be improved (International Monetary Fund, 2019_[5]).

1.3. D2: An attractive water policy framework for private drinking water services, still limited for sanitation and irrigation

Armenia has successfully fostered favourable conditions for private sector involvement in drinking water and wastewater service delivery. As illustrated in Figure 1.4, investment with private participation represents the highest part of investment in water and sanitation mainly due to Armenia's lease contract with a private sector service provider for water and wastewater services. However, these advancements do not benefit the entire population; approximately 20% still lack access to formalised service delivery.

² The rationale for the selection of decentralization as a variable stem from the fact that, in most countries, water authorities are typically municipal-level governments and sub-basin authorities. However, the level of funding absorption and execution varies significantly depending on the country and the region. This variance has a substantial impact on the delivery of water and sanitation services, the successful implementation of water resource management projects, and is often associated with a limited capacity to implement and enforce economic instruments. Due to a lack of access to localized data on government absorption and execution, and the challenge of making a direct and nationally meaningful assessment, the decentralization indicator was chosen as an alternative.

Figure 1.4. Armenia achieves a higher ratio of private investment to ODA in water and sanitation sector (2015-2021)



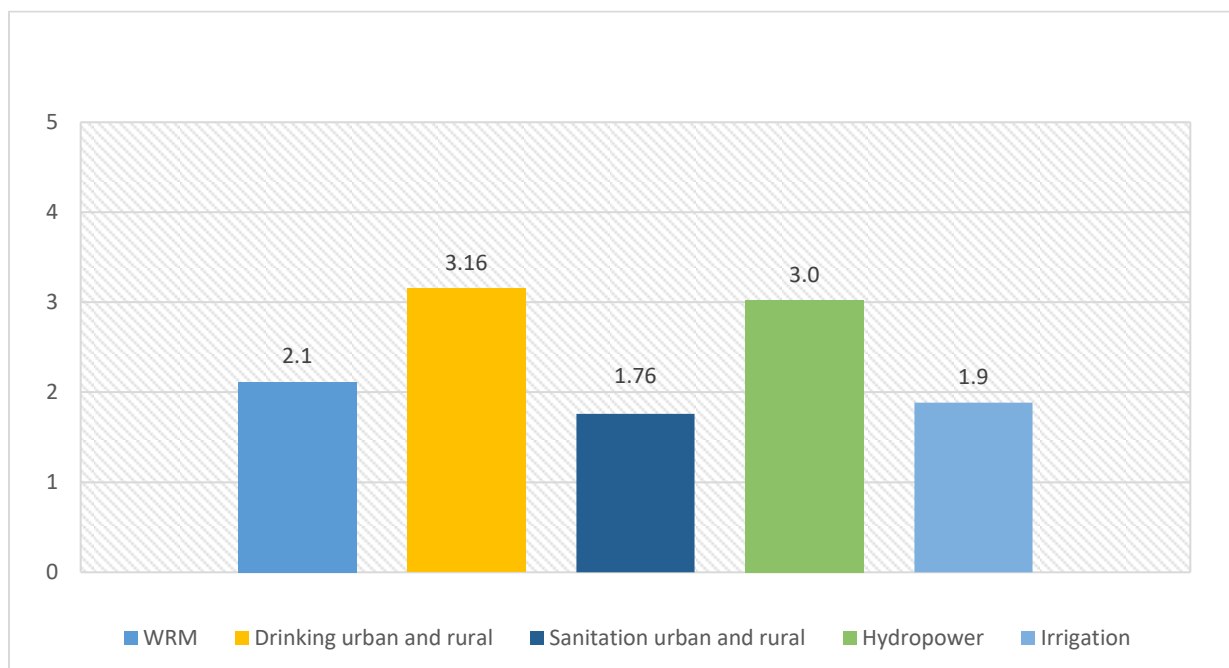
Note: Georgia has been included in the figure to illustrate the investment ratio of another neighbouring country. Once the assessment of the enabling environment in the region is complete, further analysis and benchmarks could be carried out.

Source: World Bank 2022 and OECD.

These enabling conditions are not apparent in other sectors, such as sanitation and irrigation. The sanitation sector lags, as evidenced by its low score. Major impediments include the lack of a cohesive sectoral plan tied to investment strategies and the absence of technical standards for wastewater treatment. Consequently, Armenia does not have wastewater treatment, only mechanical filtering, and lacks sewerage infrastructure in some areas. Only 11% of Armenians have access to safely managed sanitation services, a stark contrast to the 80% who have safely managed water supply services. The barriers to investment in irrigation include the lack of comprehensive data on the physical condition of irrigation infrastructure and the lack of an investment plan guiding a pipeline of potential projects.

The current data does not differentiate between rural and urban areas, limiting the depth of the analysis. This gap arises from the contract arrangement with the service provider. While serving 80% of the population, it is not required to report separate data on water and wastewater service levels, nor rural and urban. The remaining 20% of the population relies on self-supply models. This level of data aggregation limits an in-depth analysis and presents a challenge in pinpointing investment barriers specific to different population locations.

Figure 1.5. A strong water policy framework for drinking water and hydropower.



Note: Data for rural and urban drinking water are analysed together because no disaggregated data are available; the same applies to sanitation. Irrigation covers bulk water for irrigation.

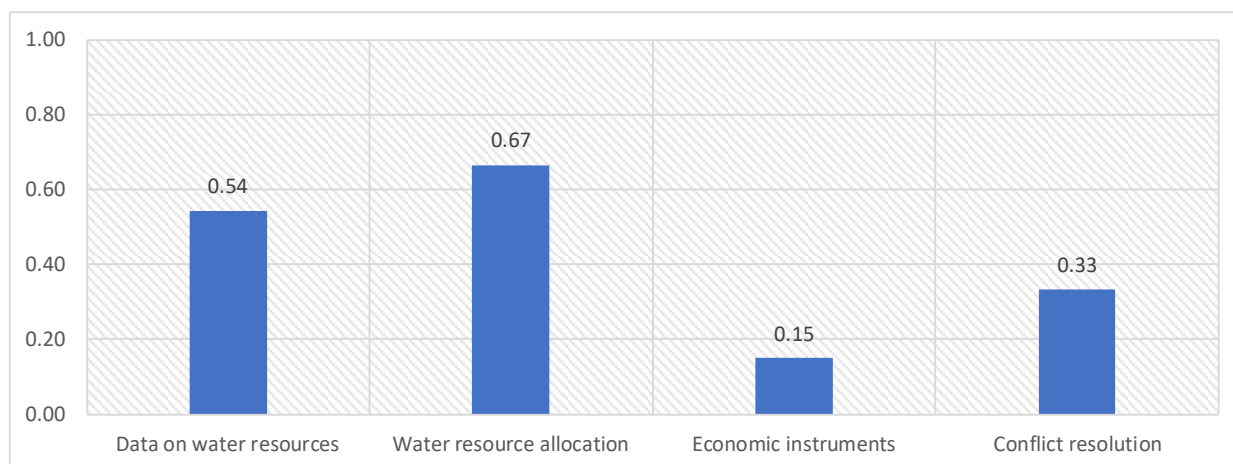
Source: Authors' analysis based on data provided by national consultant using references to official sources.

1.3.1. A robust water resources management framework with limited economic instruments, putting at risk water related investments

Armenia has a robust water resource management framework, exemplified by the Water Code. This framework addresses key investment prerequisites, such as access to water resource data, clear delineation of roles and responsibilities, and established mechanisms for water allocation and permits. However, the economic instruments currently in place are inadequate for preventing over-abstraction and pollution.

These shortcomings introduce risks to ongoing water-related investments due to unchecked pressures. While the low charges may initially appeal to investors, they are likely to result in higher costs over time, particularly for additional water treatment and sourcing. This becomes particularly evident when water quality deteriorates to a point where it is unsuitable for economic activities. Moreover, potential regulatory risks can emerge when addressing water pollution and over-abstraction at the national level, especially during extreme events.

Figure 1.6. A robust water resources management with limited efficacy of economic instruments



Note: The scoring for the water resource management policy framework has been calculated based on the responses provided to the following questions: Data on water resources refers to the question “Is data on current and future water resources availability, demand and supply forecast and water risks available?”. Water resource allocation refers to the question “Do water resource allocation mechanism support water security investment?”. Economic instruments refer to the question “Are economic instruments coherent between sectors?”. Conflict resolution refers to the question “Are mechanism to solve conflicts between water users effective?”. For further details on the question and respective sub-questions, please refer to Annex A of the Enabling Environment report.

Source: Authors’ analysis based on data provided by the consultants providing references to official sources.

River Basin Management plans, along with the Water Sector Adaptation Plan (2002), provide data on both current and projected water resources required for potential investors. The plans outline assessment methodologies and establish specific guidelines for water consumption, water loss norms, return water calculations, per capita water usage, and water demand (per hectare) for the irrigation and drinking water supply sectors. Such comprehensive data equip planning authorities to make informed decisions regarding investments and associated water use permit applications.

However, data gaps remain in terms of infrastructure inventory (water supply and sanitation, and irrigation). Addressing this issue is one of the current priorities for the Water Committee of the Ministry of Territorial Administration of Armenia. Clarity over long-term water availability from transboundary sources is also a risk. Notably, the Fourth National Communication to UNFCCC (2020) and the Water Sector Adaptation Plan (2022) delve into water vulnerability in the context of climate change. It highlights anticipated river flow reductions, forecasted alterations in river inflow to primary reservoirs, and projected shifts in the Lake Sevan water balance, which may need updating the current data based on the upstream water flow changes.

The Water Code of Armenia offers a robust policy framework that champions water resources allocation, providing clarity to investors. A new draft, currently under discussion, aims to further address issues pertaining to water security. This Code defines the legal status of all water resources and establishes the Water Resources Management and Protection Body. This body is responsible for delineating the boundaries of usable surface and groundwater resources, allocating water, and issuing water use permits. Such provisions offer investors clear insights into the available water supply.

The Code introduces the concepts of “Water Scarcity” and “Drought,” laying down the criteria for suspending a water use permit. During drought or water scarcity events, it mandates that water resource allocation prioritize essential water use. Article 92 of the Code discusses drought events but lacks quantitative guidelines. It suggests measures such as limiting water abstraction, restricting water use in drought-affected areas, and mandating the water system management body to source water from new or alternative sources.

Economic instruments currently in place are insufficient to avoid excessive water resource abstraction and pollution. The pollution charges, as they stand, are set at such low rates that they fail to effectively curb pollution. Armenia's Tax Code (Article 169) stipulates the water pollution tax, calculated per ton of pollutant discharge. However, this system contradicts the "polluter pays" and equity principles. Notably, water supply and sanitation companies receive special exemptions for pollution. Additionally, the list of pollutants is outdated and does not account for the substantial impact from sectors like mining. At present, the mining sector's contribution to the water pollution tax is disproportionately low relative to the strain that mining activities place on water bodies. As per the "Environment and Natural Resources in the Republic of Armenia for 2021" report (Statistical Committee of Armenia, 2022), over 90% of water pollution taxes originate from Yerevan city, predominantly from wastewater. At the same time, there is neither a standard nor a mandate for wastewater treatment, compromising the nation's water quality.

Abstraction charges do not adequately represent water scarcity and are not consistently levied across users, varying based on the resource's condition and its use. Only select regions factor in water scarcity when determining abstraction charges. For example, abstraction fees for groundwater sources are applied to 50% of the total volume for fisheries in the Ararat and Armavir regions due to the depletion of the Ararat Artesian Basin, and 5% in other parts of the country (Articles 204 and 205 of the Tax Code).

However, other sectors do not consider water scarcity. Drinking and wastewater water service providers enjoy a significantly reduced water abstraction charge rate, which is 20 times lower than for other sectors and does not factor water scarcity. This preferential rate was established two decades ago to entice international operators.

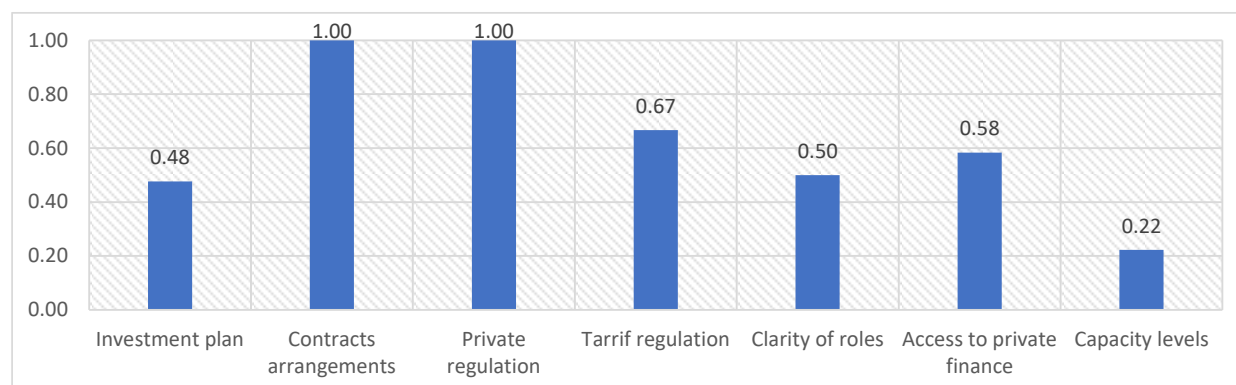
In terms of dispute resolution in the water sector, there was a Dispute Resolution Commission under the National Water Council but it was dissolved in 2019, leaving only the courts as the mechanism to solve water-related disputes. Conflicts are addressed through the standard judicial system, while applying to courts is often very lengthy and resource intensive process for all parties involved in the dispute. The absence of a dedicated authority to manage water-related disputes may create uncertainty for investors, increasing concerns about potential water allocation risks.

While the roles and responsibilities concerning water resource allocation and the issuance of water use permits are well-defined, the sector suffers from inadequate funding. This underfunding is evident in the staffing: the Water Use Permitting Division operates with four employees, and the Basin Management Organizations—which oversee water resource management across basins averaging 5,000 km²—have only 2-3 staff members. There is also a pressing need to improve the capacity in relation to water allocation.

1.3.2. An attractive policy framework for private operators, having service sustainability challenges

Although the government set clear targets for drinking water services in 2016, and has created contract arrangements favourable for private investors, 20% of the population still depends on self-supply, without a clear strategy yet to provide them service. The regulatory framework stands out in the region, but financial performance faces challenges. Tariffs, overseen by the Public Service Regulatory Commission, primarily cover operational costs. The financial challenges on the water and wastewater sector is clear, evidenced by high water losses and a Debt Service Ratio of 4.4, mirroring regional challenges. There is thus a recognized need in Armenia for a sectoral investment plan to determine funding and strategic long-term allocation.

Figure 1.7. An attractive policy framework for private operators, with challenges for service sustainability



Note: The figure presents data for urban and rural areas, no disaggregated data is available in the country.

The scoring for the drinking water policy framework has been calculated based on the responses provided to the following questions: *Investment plan* refers to the question “Is a strategic investment plan in place including water security?”. *Contracts arrangements* refers to the question “Are contracts arrangement for service providers attractive for investment?”. *Private regulation* refers to the question “Does the regulatory environment support private investment?”. *Tarif regulation* refers to the question “Are economic policy instruments in place enough to ensure investment?”. *Clarity of roles* refers to the question “Is the legal status of stakeholders participating in the investment clear?”. *Access to private finance* refers to the question “Are water service providers allowed and able to access private finance?”. *Capacity levels* refers to the question “What are service authorities and service providers capacity levels?”. For further details on the question and respective sub-questions, please refer to Annex A of the Enabling Environment report.

Source: Authors analysis based on data provided by the consultants providing references to official sources.

Elements of sectoral investment plans exist, but consolidation of this information, along with further analysis, is crucial for determining funding needs and strategic allocation. For instance, the targets for drinking water services set by the government cover aspects such as water access, quality, losses, tariff collection rates, and other related metrics. However, a tangible investment plan, aligned with these targets, is yet to be established. Instead of a formal target update process, investments in Armenia often tend to be reactionary, based on immediate needs, which sometimes results in delays.

Contract arrangements in Armenia are notably attractive for private investors due to the clarity in roles, responsibilities, and the containment of potential risks for operators. Service providers are primarily tasked with the operation and maintenance of the network. The current contract mandates the operator to cover 80% of the population, reaching 45 urban and 359 rural settlements. The contract clearly presents conflict resolution mechanisms. However, it leaves 20% of the population reliant on self-supply, without a clear strategy for their service delivery.

The regulatory framework for private operators in Armenia is exemplary in the region, despite challenges in service delivery outputs (see Figure 1.8). The Public Service Regulatory Commission, an independent entity, oversees tariff methodologies, licensing, monitoring, and evaluations for water and wastewater services. The contract delineates monitoring indicators and reporting mandates (annual, quarterly, monthly, special cases, etc.), but a lack of data differentiation between rural and urban areas hampers detailed service quality oversight.

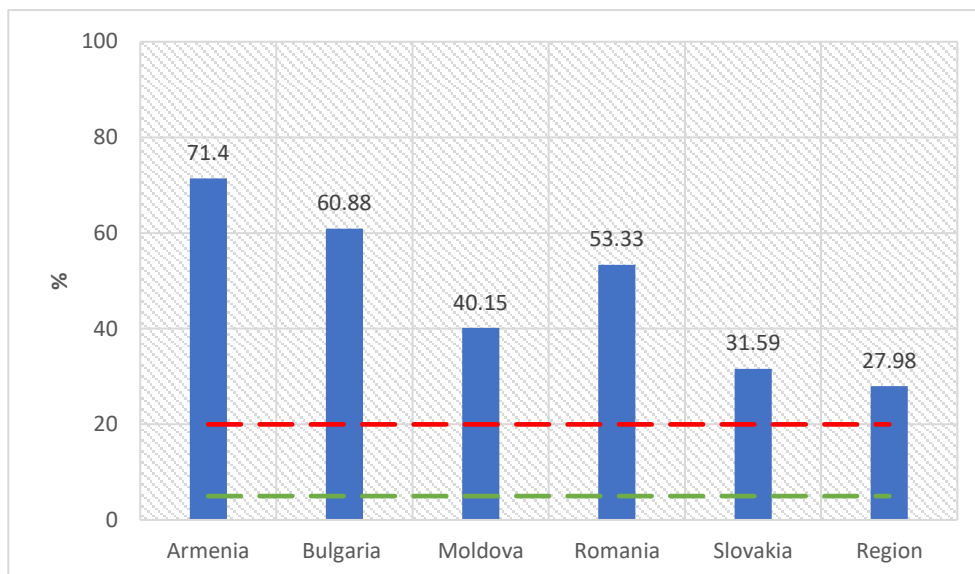
Regarding tariffs, the regulator employs an independent methodology for cost assessment and tariff revisions, with an annual adjustment that considers inflation and electricity prices. However, tariffs do not achieve cost recovery, covering only operational and maintenance expenses and excluding capital expenditures.

The lease contract outlines provisions for drinking water and wastewater tariffs. According to the contract, baseline tariffs will peak in 2022-2023 and then gradually decline by 2030, with annual adjustments based

on water supply volume, inflation, and electricity price changes. For regular customers, tariffs cover over 96% of operational and maintenance costs, while for socially vulnerable groups, it's over 86%, with the government subsidizing the difference. The current contract arrangement has a unified and single tariff for the whole country.

Service authorities currently lack the capability to enhance service provision. The Water Committee, despite having some capacity to identify bankable projects, falls short in areas like cost-benefit analysis and financial statement preparation. Consequently, Project Implementation Units often step in to assist the Water Committee. Currently, there is a lack of clarity on which body is responsible for implementing projects. This limits even further the absorption capacity of potential investment in water and the technical expertise required to ensure project sustainability in terms of economic, social and environmental factors.

Figure 1.8. Non-revenue water is extremely high

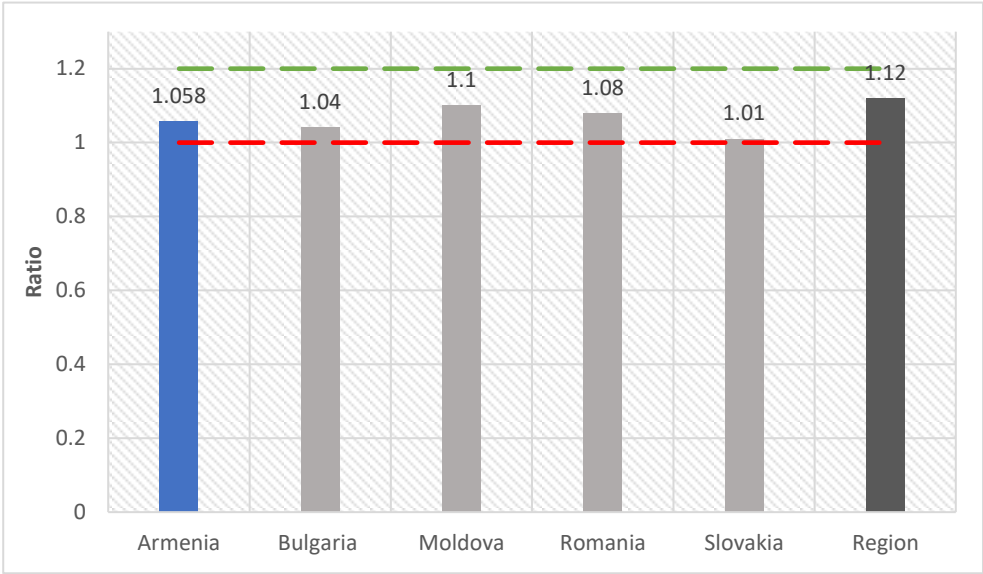


Note: The line dots represent the recommendations for non-revenue water. Above 20% of water losses it is considered very important losses, under 5% it is considered negligible losses. Non-revenue water: refers to the water that is produced and enters the distribution system but is not billed to customers. It can be the result of physical losses (like leaks, bursts, and overflows), commercial losses (like meter inaccuracies or theft), and unbilled authorized consumption (like water used for firefighting or public fountains). The acceptable level of non-revenue water varies by country and region, depending on various factors such as the age of the infrastructure, maintenance practices, metering accuracy, and the regulatory environment. Advanced infrastructures might have low levels of 5-10%. Levels above 20% are high, and over 40-50% indicate severe inefficiencies.

Data for Armenia covers the entire service area of the unified operator of water supply and sanitation, data for Bulgaria covers 30 utilities, data for Moldova covers 40 utilities, data for Romania covers 3 utilities, data for Slovakia covers 10 utilities.

Source: Data from the Public Services Regulatory Commission of Armenia and authors' analysis based on data provided by the consultants providing references to official sources.

Figure 1.9. Operating cost coverage on par with the other countries

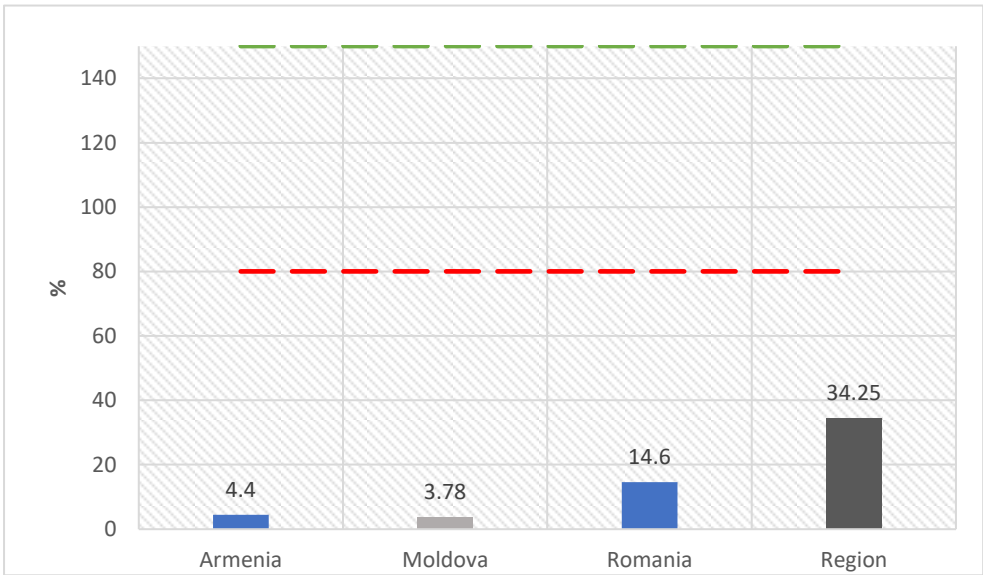


Note: The line dots represent the recommendations for operating cost coverage. Above 1.2 the total annual operational revenues are sufficiently high to the total annual operating costs, under 0.8 it is considered that revenues are too short to cover costs. Operating cost coverage evaluates a water utility's ability to cover operating costs with its revenues. Ratios above 1 indicate sufficient revenues; below 1 suggests insufficiency. Ideally, the ratio is 1.2 or higher, allowing for debt service, capital improvements, or reserves. A 1.0 ratio means revenues just cover costs, while below 1.0 signals potential financial challenges.

Data for Armenia covers one utility, data for Bulgaria covers 30 utilities, data for Moldova covers 40 utilities, data for Romania covers 3 utilities, data for Slovakia covers 10 utilities.

Source: Data from the "Veolia Dju" CJSC Financial Statements for 2021 and authors' analysis based on data provided by the consultants providing references to official sources.

Figure 1.10. Debt Service Ratio far from reaching recommended levels



Note: The line dots represent the recommendations for debt service ratio. A debt service coverage ratio of 1.0 means that the system has exactly enough money from its operating revenues to pay off its annual debt service once it has paid all of its operating expenses. But lenders like a little extra security in case revenues unexpectedly go down or costs go up. In fact, most bond covenants or loan term agreements specify exactly what this ratio needs to be every year, and the target is often 1.2 or higher, meaning that the lenders requires the utility to have enough revenues coming in to pay O&M costs and debt service and still have a buffer and security for potentially lean years. In summary, Debt Service Ratio measures the proportion of a water utility's cash income that is used to service its debt. It's expressed as a percentage and is calculated as: $(\text{Cash income} / \text{Debt service}) * 100$. A 100% ratio means cash income matches debt obligations. Above 100% is favourable, below 80% is concerning. Under 50% suggests significant financial challenges, it means do not bring in enough funding through their operating revenues to cover the annual cost of system operations and debt service. It does not mean that the utility is defaulting of its debt. It could be covering the debt service out of the company's reserve funds.

Data for Armenia covers one utility, data for Bulgaria covers 30 utilities, data for Moldova covers 40 utilities, data for Romania covers 3 utilities, data for Slovakia covers 10 utilities.

Source: Data from the "Veolia Djur" CJSC Financial Statements for 2021 and authors' analysis based on data provided by the consultants providing references to official sources.

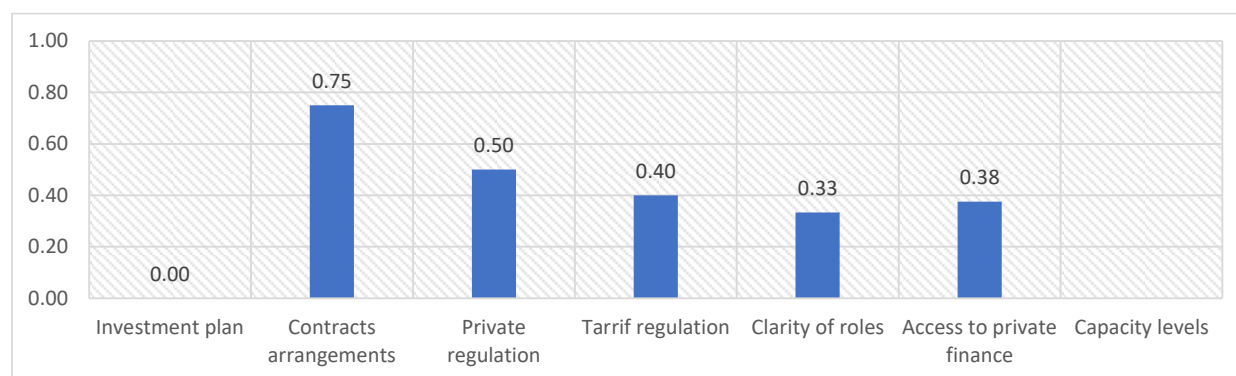
Financial challenges persist in water service provision. The operator's commitment to enhancing services is notably limited, a fact underscored by alarmingly high-water losses (see Figure 1.8). With an Operating Cost Coverage of just above 1, the utility barely covers its operational expenses and may face financial challenges (see Figure 1.9). This financial vulnerability is not unique to Armenia but mirrors a broader regional trend; no neighboring country boasts a robust average of 1.2 or above. The Debt Service Ratio of 4.4 further accentuates the utility's financial pressures, signaling looming default risks, a trend that resonates across the region (see Figure 1.10).

A significant concern is the 70% of non-revenue water, although technical and managerial measures could mitigate this. This is significantly higher than neighboring countries, where the average is closer to 20%. While this too is high, it is still within the upper threshold of what is generally deemed acceptable by regulators.

1.3.3. Weak enabling conditions lacking incentives to attract investment to sanitation

The conditions to foster investment in sanitation are limited. The sector lacks detailed targets and does not have an investment plan. The absence of compulsory standards for wastewater treatment also diminishes incentives for potential investments in water treatment. This results in missed opportunities for additional investments, especially for reusing water in sectors like agriculture or industry.

Figure 1.11. Weak enabling conditions to attract investment in sanitation



Note: The data presented covers rural and urban areas. At national level there is not disaggregation of the data.

Data regarding capacity levels for sanitation was not provided because it shares the same service provider as drinking water. Similarly, access to private finance receives the same score as drinking water, as a single service provider predominantly delivers both water and wastewater services across the country.

The scoring for the sanitation policy framework has been calculated based on the responses provided to the following questions: *Investment plan* refers to the question “Is a strategic investment plan in place including water security?”. *Contracts arrangements* refers to the question “Are contracts arrangement for service providers attractive for investment?”. *Private regulation* refers to the question “Does the regulatory environment support private investment?”. *Tarriff regulation* refers to the question “Are economic policy instruments in place enough to ensure investment?”. *Clarity of roles* refers to the question “Is the legal status of organisations participating in the investment clear? Is it appropriate for the size, scale, and operating parameters of different investors?”. *Access to private finance* refers to the question “Can water service providers access affordable finance?”. *Capacity levels* refers to the question “What are service authorities and service providers capacity levels?”. For further details on the question and respective sub-questions, please refer to Annex A of the Enabling Environment report.

Source: Authors’ analysis based on data provided by the consultants providing references to official sources.

The sanitation sector’s lack of dedicated planning or investment plan results in reliance on ad-hoc investments. While draft strategies supported by international organizations such as UNDP and the EU, have been formulated, none have secured official approval. Instead, the wastewater sector receives investments from donors on a case-by-case basis rather than strategic planning that diversifies financing sources, sending a weak signal to potential investors. Notable examples include a €500,000 grant from EU4Sevan to upgrade the Gavar wastewater treatment plant and financing commitments from European Bank for Reconstruction and Development (EBRD), Germany’s KfW Development Bank, and the European Investment Bank (EIB) for the upcoming four years.

The current contract terms favor private service providers, and do not require investments to enhance water quality. They also place the risks on the government for capital investments and addressing water quality deterioration. Service providers are not obligated to undertake wastewater treatment, leading to a score of 0.75 (out of 1) that highlights missed investment opportunities in wastewater treatment nationwide.

Annex 3 of the Lease contract underscores the poor condition of six wastewater treatment plants, with the majority nearing non-operational status. Yerevan’s primary wastewater treatment facility is dysfunctional, while other plants provide only rudimentary mechanical treatment. Contractually, service providers are tasked solely with monitoring water quality – should they detect breaches in standards, they are obligated to inform the government, but there is no requirement for the service provider to initiate remedial measures. According to prevailing contract regulations, the responsibility is on the government to secure investments through international financing institutions and other funding. This arrangement leaves service providers responsible only for system operation and maintenance, with no incentives for major investment initiatives.

The current regulatory framework for the private sector creates an uneven playing field for attracting investment, offering no incentives for capital investment or wastewater treatment, as evidenced by the contract terms. The Public Service Regulatory Commission, an autonomous entity, oversees tariff

methodology, licensing procedures, monitoring, and evaluation for water and wastewater. The absence of standards and obligations for wastewater treatment results in a score of 0.50.

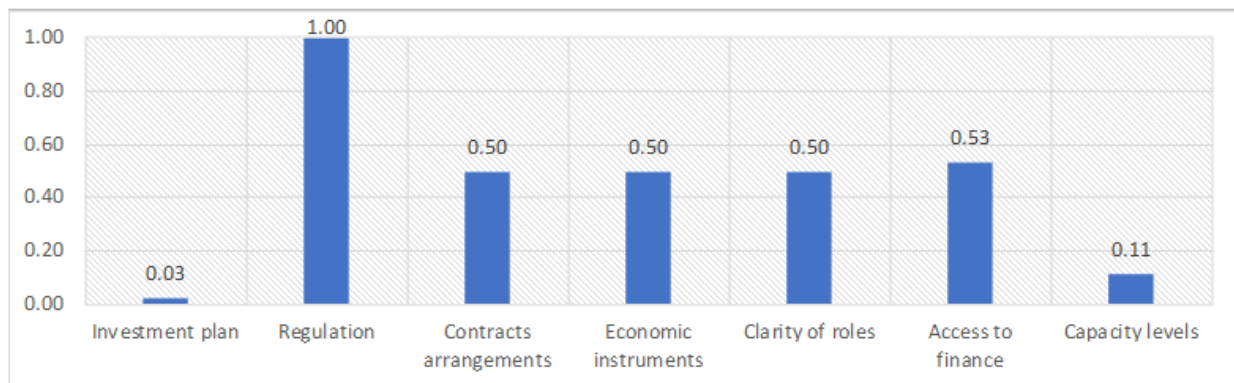
Tariffs for wastewater cover only collection and transportation costs in areas with existing systems, given the lack of comprehensive wastewater treatment beyond basic mechanical processes. As a result, tariffs have been adjusted to cover merely two-thirds of the wastewater services needed to achieve Sustainable Development Goal 6, omitting the treatment part. However, to ensure affordability for all users, the government has instituted a subsidy for low-income households outside of the water bill. This approach lays the groundwork for cost recovery tariffs.

1.3.4. A weak enabling environment mainly focusing on public investment for irrigation

Armenia does not have a dedicated investment plan for irrigation; however, the Government's 2016 resolution outlines targets and provisions for improving irrigation water supply services. The absence of comprehensive irrigation infrastructure inventory hinders investment planning. Although the Public Services Regulatory Commission provides transparent oversight of irrigation schemes, publishing regular reports, and establishing tariff methodologies, current contract arrangements for service providers are not sufficiently investment friendly. Economic instruments also lack attractiveness, with tariffs unrevised since 2007, leading to significant subsidies.

The Tax Code of Armenia regulates water abstraction fees and water pollution taxes, but discrepancies exist in their application, especially concerning the largest water users. The legal status of organizations involved in investment is ambiguous, with "Jrar" being the sole bulk irrigation water service provider, operating under state ownership. While service providers can theoretically access affordable finance, they rely heavily on government funding and grants. The capacity levels of service providers and service authorities are limited, with staffing shortages and an overwhelming number of daily tasks hindering efficient operation and project implementation.

Figure 1.12. Bulk water investment framework faces barriers despite improvements



Note: The scoring for the irrigation policy framework has been calculated based on the responses provided to the following questions: Investment plan refers to the question: "Is a strategic investment plan in place for irrigation schemes including water security?", Regulation refers to the question: "Is there independent and transparent oversight of the irrigation schemes? ". Economic instruments refer to the question: "Does economic regulation support investment?" Contract arrangement refers to the question: "Are contracts arrangement for service providers attractive for investment? ", no presented here due to the lack of responses, Clarity of roles refers to the question: Is the legal status of organisations participating in the investment clear? Is it appropriate for the size, scale, and operating parameters of different investors? Access to finance refers to the question: Can water service providers access affordable finance? Capacity levels refers to the questions: What are service authorities capacity levels? and What are service providers capacity levels? For further details on the question and respective sub-questions, please refer to Annex A of the Enabling Environment report.

Source: Authors' analysis based on data provided by the consultants providing references to official sources.

There is no sector-specific investment plan for irrigation. However, the Government of Armenia's Protocol Session Resolution No 33, dated August 25, 2016 (titled "Strategy for Improvement of Financial Sustainability of the Irrigation Sector"), includes targets and provisions for enhanced access, efficiency, and quality of irrigation water supply services. This encompasses priority investment needs for enhancements, rehabilitation, and modernization of irrigation systems, as well as reservoir construction. Notably, the targets of this resolution do not address food security. In contrast, the Republic of Armenia's Strategy for Economic Development of the Agricultural Sector for 2020-2030 does incorporate specific targets related to food security. In addition, the absence of comprehensive irrigation infrastructure hinders investment planning.

Independent and transparent oversight of irrigation schemes exists. The Public Services Regulatory Commission supervises service delivery for bulk irrigation water supply and releases quarterly and annual reports on irrigation water balance, delivery, and payments. These reports are accessible on the Public Services Regulatory Commission website. Furthermore, the Commission's Resolution from 2016 outlines the methodology for determining tariffs for irrigation water supply up to the boundaries of Water Users' Associations. This methodology establishes differentiated tariffs for gravity water supply and mechanical water supply.

Contract arrangements for service providers are not yet sufficiently attractive for investment. There are no performance-based contracts that include environmental targets. To date, no contract or license has been issued in Armenia for the bulk irrigation water supply to Water Users' Associations. As a result, the Regulatory Commission only approves tariffs and does not consider other performance-based indicators. The 2019 amendment to the Water Code revised the transitional provisions (Article 121). Point 8 of this amendment states: "Until January 1, 2020, irrigation water supply services are regulated solely by tariffs, and the Regulatory Commission does not issue licenses. However, starting from January 1, 2020, irrigation water supply services must be provided under a license issued by the Regulatory Commission." Despite this provision, "Jrar" Closed Joint-Stock Company (CJSC), responsible for the bulk irrigation water supply up to the boundaries of Water User Associations in Armenia, has yet to receive a contract or license from the Public Services Regulatory Commission (PSRC). Nonetheless, contract results are publicly reported.

Economic instruments for investment are not yet sufficiently attractive, though positive conditions exist, such as the resolution from November 2, 2016, which clearly defines the methodology for setting tariffs and reviewing them based on the change in operation and maintenance costs. Tariffs are differentiated for mechanical water supply and gravity water supply. The process for setting water rights is clearly defined and can be reviewed. According to the resolution from 2016, the dominant infrastructure operator presents a detailed breakdown of costs associated with mechanical water supply and gravity water supply, including a reasonable profit calculation, which forms the basis for setting the tariff. However, due to political reasons, tariffs for bulk irrigation water supply have not been revised since 2007, and the gap in operation and maintenance costs is partially covered by subsidies, despite significant increases in electricity costs, inflation, and other expenses over the past 15 years.

In 2022, tariffs covered only 60% of bulk irrigation water supply costs, while 40% of the operation and maintenance costs were subsidized. Bulk irrigation water supply is separate from what farmers pay; it refers to the tariff for water supply up to the boundaries of Water Users Associations. Farmers pay an irrigation service fee to these associations, which is subsidized by the government for all farmers, not just low-income farmers.

The rates for water abstraction fees and the procedures for calculating these fees are regulated by the Tax Code of the Republic of Armenia, specifically Articles 204 and 205. Water abstraction for irrigation, the largest consumptive water use sector in the country, is not charged if water is sourced from surface bodies, except for Lake Sevan. Charges for irrigation from Lake Sevan are significantly lower compared to other sectors. This contradicts the Water Code, which states that the primary principle of economic regulation of water resource use, restoration, and protection is chargeable water use.

Water pollution taxes exist, and their calculation procedures are regulated by the Tax Code of the Republic of Armenia. According to Article 169 of the Tax Code, charges per ton are applied for discharging pollutants into water basins. However, according to the "Environment and Natural Resources in the Republic of Armenia for 2021" report, over 90% of water pollution taxes come from Yerevan city, primarily from the sanitation sector. The list of pollutants should be revised to include impacts from the mining sector and diffuse sources of agricultural pollution, which, according to River Basin Management Plans, put all river basins in Armenia at risk.

The legal status of organizations participating in investment remains ambiguous, which hinders investment. In Armenia, there is only one bulk irrigation water service provider, "Jrar." This entity is a closed joint-stock company, with 100% of its shares owned by the state. It operates under the Ministry of Territorial Administration and Infrastructures. Water rights for agriculture are designed with environmental objectives in mind. The Government of Armenia's Resolution No 218-N, dated March 7, 2003, titled "On Approving the Sample Form of Water Use Permit and Water User Permit Forms, Procedures for Issuing Water Use Permit, Extended Water Use Permit, and Approving the Forms for Springs, Technical Passports of Wells, and Design Documents for Hydrogeological Wells," considers environmental objectives but overlooks agricultural ones. The government holds the authority to invest in bulk water. The Government of Armenia's Resolution No 1902-L, dated November 18, 2021, titled "On Approving the Program of Measures for 2021-2026," outlines the construction of 15 priority reservoirs for irrigation purposes across the country to enhance water security.

Service providers have the potential to access affordable finance and can obtain grants, but do not have access to concessional loans, equity stakes, guarantees, or insurance. The bulk irrigation water supply company, whose shares are entirely owned by the state, is responsible solely for the operation and maintenance of the irrigation infrastructure. In theory, it can access commercial banks, but in practice, when it comes to investments, the Government of Armenia directly mobilizes finances through state budget funding, International Financial Institutions (IFIs), and loans.

State subsidies to the bulk irrigation water supply company "Jrar" are provided in the form of grants from the Government. No financial rules constrain investment flows to water service providers. Technical assistance grants are available to support irrigation service providers and Water User Associations. However, these grants do not cater to banks, as capital investment costs are managed by the Government.

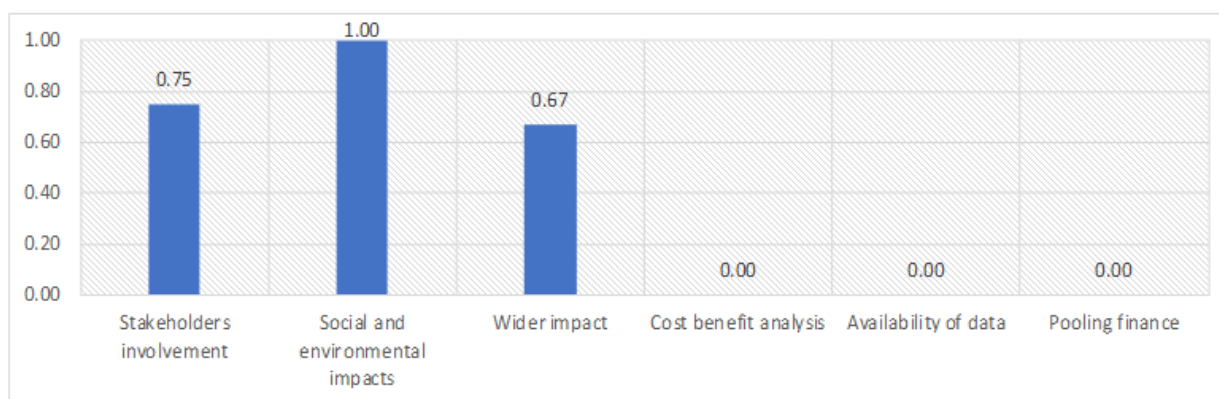
The capacity levels of service providers and service authorities are significantly limited. Currently, only 5 out of 7 staff positions are filled in the Irrigation and Collector-Drainage Department of the Water Committee. This department is responsible not only for the operation and maintenance of irrigation but also for drainage, mud, flood, and river shore erosion control. The Water Committee lacks adequate human resources for design and construction tasks. Typically, such tasks are executed with the support of a specific irrigation Project Implementation Unit established for projects financed by International Financial Institutions (IFIs), or these services are outsourced to design institutes. The Monitoring and Analysis Department of the Water Committee is understaffed with only four employees, which is insufficient for performing monitoring and evaluation functions. Additionally, they are tasked with detecting offenses countrywide and conducting administrative proceedings as per Article 12 of the Water Code.

While the Water Committee possesses the capability to prepare or identify bankable projects, it often requires the assistance of the irrigation Project Implementation Unit for project preparation, cost-benefit analysis, and financial statements. This is due to staffing shortages and the overwhelming number of daily tasks. The Department of Irrigation and Collector-Drainage Systems, Asset Management and Investments Implementation Department, and Department of Monitoring and Analysis can offer support, but their capacity is limited. Because of the lack of adequate absorption capacity, financial services are typically delegated to specific PIUs. Service providers lack the capacity for investments, and even operation and maintenance costs are not fully covered (only 60%). The cash flow is inadequate to meet financial obligations, necessitating state subsidies to bridge the gaps.

1.4. D3: A scarce project pipeline, with sustainable projects with limited financial viability

Armenia has a project framework that emphasizes the environmental and social sustainability of its initiatives. The nation's methodology champions stakeholder participation throughout project cycles, ensuring that users and communities are integrally involved at every stage. Rooted in its 2014 laws and resolutions, Armenia adopts a standardized approach to assess both social and environmental impacts. However, there is a lack of a direct mechanism to measure a water project's broader impact, even though current assessments capture potential risks within project boundaries. The absence of a standardized cost-benefit analysis for water projects further complicates matters, resulting in sparse data collection that poses challenges for future decision-making by investors and policymakers. Furthermore, without clarity on the unit in charge of project preparation and project pooling mechanism, Armenia risks alienating significant investors in water security.

Figure 1.13. A framework ensuring sustainable projects with limited financial viability



Note: The scoring for the projects frameworks has been calculated based on the responses provided to the following questions: *Stakeholders involvement* refers to the question “To what extent are the community, stakeholders, third parties, engaged in projects?”. *Social and environmental impacts* refer to the question “Is there a standard methodology for assessing the social and environmental value and impact of investment?”. *Wider impact*. *Cost benefit analysis* refers to the question “How are cost benefits methodology carried out to ensure impartiality?”. *Availability of data* refers to the question “Is data, process and methods for projects collected and published? How is the data used for future decisions-making?”. *Pooling finance* refers to the question “Can projects be grouped to overcome high credit risks and transaction costs?”. For further details on the question and respective sub-questions, please refer to Annex A of the Enabling Environment report.

Source: Authors' analysis based on data provided by the consultants providing references to official sources.

A comprehensive methodology ensures stakeholder participation throughout the project cycle. Users and communities are actively involved from project initiation to completion. The process includes four public hearings at various project stages, applicable to a range of projects such as water and sanitation, irrigation, and hydropower. To address social impacts, projects incorporate accessible complaint and grievance redress mechanisms, enabling the public to voice their concerns and feedback.

The assessment of social and environmental impacts follows a standardized methodology, as outlined in the 2014 Law on Environmental Impact Assessment and the Government of Armenia's 2014 Resolution. Additionally, all International Financial Institutions, donors, and banks financing water projects in Armenia mandate a thorough Environmental and Social Impact Assessment. This assessment, which includes an Environmental Management Plan, ensures projects are environmentally sustainable and identifies potential risks. The methodology covers water security and related risks, including a deep dive into hydrology, water use, and environmental flow requirements. While the law categorizes projects into A, B, and C, only those outside these categories might bypass the assessment. However, projects funded by

International Financial Institutions and other donors still require an Environmental and Social Impact Assessment, which later becomes a part of the project's tender documents.

While there's no explicit mechanism to assess a water project's impact beyond its boundaries, assessments do include potential environmental and social risks during all project phases. This ensures that measures are in place to mitigate any negative environmental impacts and adhere to national environmental laws.

The absence of a standardized cost-benefit analysis methodology does not incentivize data collection for water projects. Although costs and benefits are computed for most projects, the lack of an official approach means reliance on methodologies provided by International Financial Institutions and banks. The absence of a centralized oversight body for data collection results in inconsistent data gathering, affecting future decision-making and investor appeal.

Armenia lacks a well-established national unit for project management and implementation specialised in water related projects. The lack of a specialised unit focused on water-related project management and implementation has major impacts on the absorption capacity of the country for investment. In addition, the lack of clarity on the implementing unit seems a weak message for potential investors. Considering the number of potential projects under discussion (World Bank, KfW, AFD, ADB), this may be a significant barrier for investment in water security in the country.

There is no project pooling mechanism, deterring significant investors in water security. Pooling platforms are driven by the understanding that individual investors might lack the resources or risk appetite for direct infrastructure investments. Given the political intricacies of water infrastructure investments, the Armenian government can play a crucial role in channeling capital into infrastructure. Pooling can mitigate risks, reduce transaction costs, and achieve investment scale, especially beneficial for smaller service providers and municipalities (OECD, 2022^[6]).

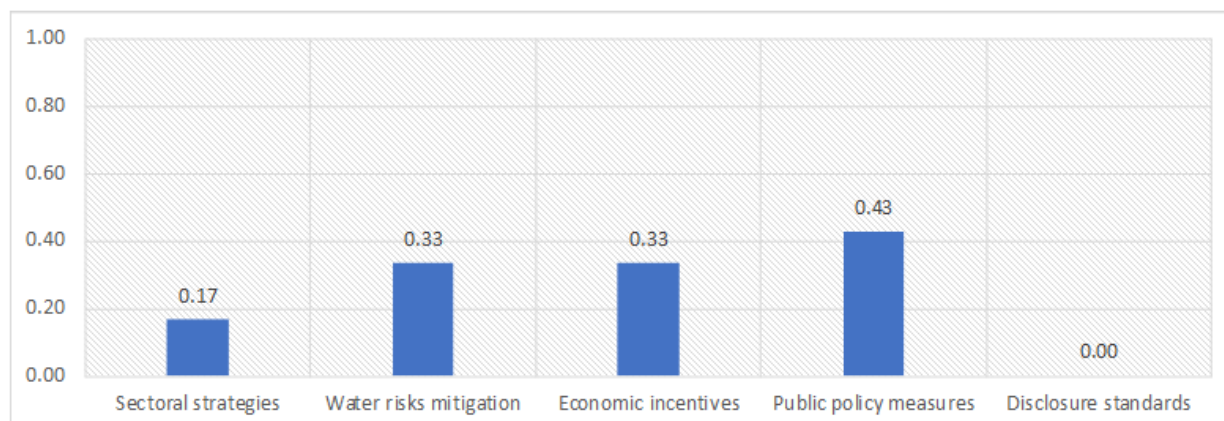
For example, for irrigation, the Water Committee has produced several assessment reports and has set priorities for investments in irrigation infrastructure rehabilitation. However, these efforts remain ad-hoc and are not systematically categorized. Based on negotiations with respective International Financial Institutions (IFIs), these priorities can undergo significant changes. In many instances, the IFIs themselves conduct assessments to determine investment priorities. On a broader scale, Armenia lacks a comprehensive inventory of its irrigation infrastructure and its priority investment needs.

1.5. D4: Economic sectors have limited contribution to water security in Armenia

Most economic sector strategies in Armenia often neglect the significance of water resources and their associated risks. An exception is the "Republic of Armenia Perspective Development Strategy for 2014-2025," which thoroughly addresses water-related concerns, spanning from quantity and quality to irrigation and the challenges faced by self-supplied communities. However, sectors such as tourism, urban development, and agriculture frequently give scant attention to water resources. The agriculture sector benefits from government subsidies damaging water ecosystems.

While the country has implemented water risk mitigation strategies, including specific insurance schemes, notable gaps persist, especially within the national fund for catastrophic disasters and the approach of the Disaster Risk Reduction National Platform to water risks. Although economic incentives and public policies, like the Republic of Armenia Water Code promoting secondary water use, are in place, their practical application and emphasis on water security often fall short. This shortfall is exacerbated by poorly designed economic instruments that fail to incentivize water protection, such as inadequate water abstraction charges.

Figure 1.14. Economic sectors have a limited contribution to water security



Note: The scoring for economic sectors contribution to water security has been calculated based on the responses provided to the following questions: *Sectoral strategies* refers to the question "Do national strategies for climate change mitigation, adaptation, agriculture, economy, development, and energy transition address water security?". *Water risks mitigation* refers to the question "Is a water risks mitigation strategy in place?". *Economic incentives* refer to the question "Are economic incentives designed to support water security?". *Public policy measures* cover the question "Is water security embedded in public policy measures?". *Disclosure standards* refers to the question "Do mandatory and voluntary disclosure standards consider water?". For further details on the question and respective sub-questions, please refer to Annex A of the Enabling Environment report.

Source: Authors' analysis based on data provided by the consultants providing references to official sources.

Most sectoral strategies for economic sectors do not consider water resources, in terms of both quantity and quality, when formulating economic plans. Additionally, they often overlook water-related risks. An exception is the "Republic of Armenia Perspective Development Strategy for 2014-2025," approved in 2014. This strategy encompasses provisions on water resources, addressing both quantity and quality. It establishes target indicators for drinking water supply up to 2025 and outlines the expected duration of water supply until then.

The strategy also delves into irrigation, advocating for the transition from pump to gravity irrigation, boosting irrigation efficiency through drip irrigation and new technologies, and aiming to curtail water loss in both drinking water supply and irrigation sectors. Urban wastewater treatment measures are included to address water quality. The strategy also highlights challenges faced by self-supplied communities and considers the strategy's impact on water resources, such as over-abstraction of groundwater. It proposes measures to augment water reserves, develop a water monitoring system, and prevent water pollution.

However, several economic sectors, like tourism, transport, and urban development, allocate minimal attention to water resources. For example, urban development primarily concentrates on potential water level rises in lakes. The long-term development strategy of Armenia's energy sector, ratified in 2015, emphasizes water quantity, especially in relation to the construction of three major hydropower plants. Another instance is the "Agriculture Development Strategy for 2020-2030," sanctioned by the Government of Armenia in 2019. While it doesn't directly focus on water resources, it sets a goal to expand irrigated areas to 182,000 ha by 2029.

The agriculture sector receives subsidies that adversely impact water resources. The irrigation service fee, which farmers pay to Water Users Associations, is subsidized by about 50-55% by the Government. Additionally, the bulk-irrigation water supply tariff to Water Users Associations receives partial government subsidies. This results in irrigation inefficiencies, a lack of incentive to minimize water losses, and overuse of water resources. Some agricultural support projects, such as those promoting livestock breeding, also contribute to water pollution.

Water risk mitigation approaches are established in the country. Insurance schemes that cover flooding, drought, and pollution are available. Since 2019, the Government has been subsidizing a portion of the insurance costs against droughts for the primary productions in the country. However, the national fund for catastrophic disasters does not encompass water risks. The Disaster Risk Reduction National Platform was established in 2010, but there are no known instances of the platform addressing water risks in cases of floods, drought, or pollution. Furthermore, the management of this fund was previously under the jurisdiction of the Ministry of Emergency Situations, which was dissolved in 2023.

Economic incentives are not specifically tailored to bolster water security. There are not any fiscal incentives designed to reduce water risk exposure by companies or to mitigate the impact of companies on water security. However, water re-use is encouraged. In 2018, the Republic of Armenia Water Code (originally from 2002) was amended, adding Article 25.1 on the secondary use (re-use) of water resources. This article provides special privileges for water abstraction if water users build the necessary infrastructure for the secondary use of water resources by others. Those who use water secondarily are fully exempted from water abstraction fees. In practice, however, this mechanism is ineffective. The water abstraction fee rate is minimal, offering no real incentive for water users to invest in infrastructure for the re-use of water resources.

Public policy measures often overlook water security. Certain areas have been designated as off-limits for land development. The Government of Armenia's Resolution No 64-N, dated January 20, 2005, titled "Approving the Criteria for Sanitary Protection of Water Ecosystems, Flow Formation, Protection of Groundwater Resources, Water Protection, Ecotone, and Inalienable Zones," sets out these limitations to bolster water security and safeguard water ecosystems.

Furthermore, due to plans to raise the level of Lake Sevan, there are restrictions on land and urban development below a specified threshold level. The water intensity of production processes is not mandated, but the Statistical Committee of Armenia periodically reports on this through its water accounts. As for public procurement guidelines, the Government of Armenia's Resolution No 175-N, dated February 9, 2023, titled "On Approving the Procedures for Identification, Development, Evaluation, and Prioritization of Public Investment Programs," includes a general provision regarding anticipated environmental and social impacts. However, it lacks clear distinctions between water, pollution, soil protection, and flood protection issues.

There is no voluntary or mandatory disclosure standards considering water.

2. Recommendations to overcome selected barriers and strengthen the enabling environment for investment

The Scorecard identified several barriers for investment in water security in Armenia. At the analytical workshop in July and the October 2023 workshop on Financing Water Security in Armenia, participants, including the Deputy Minister of the Ministry of Environment, representatives from the Ministries of Finance and Statistics, and international donors, identified three key priorities:

- Develop a comprehensive national water strategy that guides government, donor, and private investments in water security.
- Develop and adopt detailed investment plans for drinking water, sanitation, and irrigation sectors.
- Incorporate into the existing legal and regulatory frameworks the 20% of the population that currently lack water and sanitation service delivery.

These three priorities will be discussed below. Experiences from OECD member countries and partners can inspire discussions and inform decisions regarding policy and investment reforms required to improve water security in Armenia.

2.1. Develop a comprehensive national water strategy that guides government, donor, and private investments in water security

The Armenian government could adopt a strategy formalising its shared vision: a water-secure Armenia that achieves resilient socio-economic development through efficient, equitable, and optimal use of water resources among all users within the country. As it stands, water insecurity poses a significant threat to Armenia's national socio-economic stability. It jeopardises public health, hampers economic growth, exacerbates inequalities, and increases the likelihood of internal conflicts (Russ et al., 2022^[7]). A water strategy involves a comprehensive assessment of the current situation to ensure the availability, sustainability, and quality of water resources to meet the needs of a population now and in the future. It also safeguards ecosystems during both normal and emergency conditions. It encompasses various aspects, including water supply, quality, sanitation, and resilience to water-related risks such as droughts, floods, and pollution.

The government has started the discussions on developing a comprehensive water strategy, as well as sectoral strategies for irrigation and sanitation. However, there is still not enough clarity on the process, and the responsible authority who will be coordinating the development of the overall water strategy.

There is an urgent need to develop a water strategy for Armenia to address the numerous challenges, which include but are not limited to the following:

- Armenia is categorised as a country with high baseline water stress by the Water Resource Institute, and is ranked as the 34th most water-stressed country among the 164 UN member countries.
- There is significant seasonal and temporal variability in water availability, with over 55% of the total annual runoff occurring in spring, and half of the river flow subject to annual fluctuations.
- Over 20% of the population is outside of the service area of the unified operator for water supply and sanitation, and the water supply services are provided by non-specialised operators.
- Over 30% of all delineated surface water bodies are considered “at risk” due to water quality, which means that many sectors, including irrigation, are using significantly polluted water, which might create human health risks.
- Armenia shows high exposure, high sensitivity and limited adaptive capacity to climate change. Future climate projections indicate continued increase in temperature and decreases in precipitation. The impacts of climate change will be particularly severe for Lake Sevan and the Ararat valley, the main agricultural region of Armenia, where crop yields are predicted to decline and irrigation demand to increase with the climate change. In order to maintain crop yields, substantially more irrigation will be needed, while with overall water resources availability expected to decline, these demands may be difficult to satisfy in the future.
- There are discrepancies in the assessment of usable water resources in Armenia, including in the respective laws, government resolutions, River Basin Management Plans, independent studies and assessment reports. For example, there is no clarity on the overall water balance, usable water resources, and recoverable groundwater resources both at the national and river basin level. Therefore, there is an urgent need to perform a detailed re-evaluation of usable water resources in Armenia, which should inform the water strategy.

The water strategy could be designed following a simple structure: vision, background and state of play, objectives, guiding principles, strategic pillars, activities, and targets. The content should be designed and approved by all stakeholders to ensure alignment and support of common goals, as well as effective implementation over the years. The National Policy Dialogue, facilitated by the EU4Environment Water & Data programme, would be a suitable platform for progressing these consultations.

The water strategy could aim to achieve short, medium, and long-term objectives.

The water strategy should establish the core principles that will guide the development of any new laws, resolutions, or decrees, and prompt a reconsideration of existing laws. These guiding principles could include:

- Recognising surface and groundwater resources as finite resource, therefore legal, economic, and regulatory instruments across all sectors should reflect the inherent value of these resources.
- Phasing out environmentally harmful activities and subsidies, by identifying and gradually eliminating practices and financial supports that negatively impact the environment, particularly those affecting water resources quality and availability.
- Prioritising protection and conservation, the safeguarding and preservation of water resources should take precedence over their use. This could be done by anchoring the development to natural resources to process and designs, circular economy for water where water is reused and recycled as much as possible, and waste is minimised.
- Addressing the water crisis and its interconnected crises, such as climate and biodiversity, at a higher system level. This involves recognising and maximising the synergies and interdependencies between water, energy, trade, consumption, and food systems to create comprehensive, effective solutions.

The water strategy should detail the activities required to support a whole of government approach to water management. Activities could be as follows:

- Define water's value for society, development, and ambition of the country across users and sectors. This includes all user groups, sectors, and the public, spanning multiple generations. This strategic reassessment is crucial to guarantee enduring water security for all, aligning with the country's long-term objectives. To the extent possible it should be linked to water accounts, developed by the Statistics Committee of the Republic of Armenia, thus providing a basis for decisions on allocation of water quantities to economic sectors.
- Strengthen water management at the national level by enhancing the planning and implementation capacities of all relevant ministries including Economy, Energy, Financing, and water-related bodies, such as the Water Committee.
- Develop a plan for the operationalisation and implementation of river basin management at various water scheme levels across Armenia including identifying technical capacity gaps, training programs and implementation obstacles, including financing. This is particularly important, given that most of the actions, including in the programme of measures of the first cycles of the RBMPs have not been implemented, and the objectives outlined in the respective RBMPs have not been achieved.

The water strategy would benefit from setting specific targets to track and report progress on implementation. Specific governmental bodies, stakeholders and users could be made responsible and accountable for the ownership and delivery of each target and indicator.

The German approach to tracking climate action could be used as source of inspiration for monitoring progress towards water security goals. For example, Germany's *Energiewende* is a nationally recognised strategy aiming to shift from fossil fuels towards renewable energy. Launched in 2010, it has been acknowledged globally for its comprehensive approach and detailed tracking mechanisms in moving towards a more sustainable energy framework. The Federal Ministry for Economic Affairs and Energy, along with other government and non-government groups, systematically monitors progress in several key areas. Annual reports share the progress of renewable energy use and capacity, giving clear insights into the growth of different renewable energy sources like wind and solar. Similarly, the German Environment Agency (UBA) closely tracks and shares detailed data about greenhouse gas emissions from various sectors, ensuring that policy changes can be made based on solid evidence and clear trends. Additionally, initiatives like the National Energy Efficiency Action Plan and reports from the Federal Motor Transport Authority provide detailed updates on improvements in energy efficiency and electric vehicle use, respectively.

The development of the water strategy could be accompanied by a supra-ministerial platform group addressing water security in the country. Several countries have established multi-ministerial or inter-agency groups to address water security. These groups typically include representatives from various government departments or ministries, such as those responsible for environment, agriculture, health, infrastructure, and finance. The aim of these groups varies depending on the country and the adoption of a water (security strategy). The specific structure and mandate of such groups can vary widely depending on the country's specific water security challenges and governance structures. In general, they ensure a coordinated and holistic approach to water management, recognising that water security affects and is affected by a wide range of sectors.

For example, in the United States, the Water Subcabinet was established in 2020 to facilitate coordinated federal response to water policy challenges. This group includes representatives from the Department of the Interior, the Environmental Protection Agency, the Department of Agriculture, and other federal agencies. In Australia, the National Water Grid Authority is a statutory authority that works across government to plan and invest in water infrastructure. In South Africa, the Inter-Ministerial Committee on Water and Sanitation was established to oversee the intervention in the water and sanitation sector.

The Inter-ministerial Committee for Water Management (Comitetul Interministerial pentru Gestionarea Apelor) in Romania is a multi-ministerial committee responsible for coordinating and implementing water management policies and strategies in the country. The committee comprises representatives from key ministries and government agencies involved in water management and related sectors. These include the Ministry of Environment, Waters, and Forests; the Ministry of Agriculture and Rural Development; the Ministry of Regional Development, Public Administration, and European Funds; and other pertinent ministries and agencies.

The committee serves as a central coordinating body, fostering collaboration and communication among different ministries and agencies engaged in water management. By facilitating cooperation, it helps streamline efforts and optimize resource allocation. An essential responsibility of the committee is to actively contribute to the development and implementation of national water management policies, strategies, and plans. The committee engages in deliberations and consultations to make informed decisions and provide recommendations on various water-related matters. Recognising the importance of stakeholder involvement, the committee actively engages with relevant parties, including water authorities, local authorities, non-governmental organizations, and academic institutions. The committee assumes the responsibility of overseeing the monitoring and evaluation of water management activities and policies. Sectoral investment plans for drinking water, sanitation including wastewater and irrigation.

It is recognised that Armenia's existing National Policy Dialogue on Water Management has strong political support and cross-ministerial participation and could contribute towards this objective.

2.2. Develop and adopt detailed investment plans for drinking water, sanitation, and irrigation sectors

While a water strategy is critical for providing overall guidance and direction to achieve water security, strategic sectoral investment plans are a key enabling condition for articulating investment and guiding investors over time. While financiers typically focus on the availability of a pipeline of bankable projects, government authorities and project developers should also situate these pipelines within broader strategic investment plans to ensure they are resilient and contribute to water security and sustainable growth over the long term and preferably at the least cost. A long-term strategic approach can ensure that assets deliver anticipated benefits over their operational lifetime and avoid premature obsolescence or costly retrofitting in the future (OECD, 2022^[6]).

In Armenia, elements of the sectoral investment plans exist, but consolidation of the information and additional analysis are required to assess the funding requirements and establishing the needs for each sector. The Armenian government started the process of establishing sectoral investment plans by adopting the Law on National Water Program of the Republic of Armenia in 2006, which provides much of the foundational information for establishing investment plans. This law regulates the definition and implementation of the National Water Program of the Republic of Armenia and includes the assessments of the national water reserve, useable resource, demand and supply as well as the main objectives.

As noted in the section above, the government is planning to develop a comprehensive water strategy to guide the sector over the next 15-20 years, as well as develop sectoral strategies, including for irrigation and drinking water supply and sanitation. For example, in 2023, the Water Committee drafted the Concept Paper for Sustainable Development of Irrigation System of the Republic of Armenia. The draft is currently undergoing internal discussions among the Government agencies. After adoption of the Concept Paper the next step would be development of an Irrigation Strategy in the next 2 years, which is envisaged within the World Bank-funded Water System and Irrigation Enhancement Project. These strategies need to be coordinated with each other, and need to be associated with sustainable investment plans to come to realisation.

The drinking water supply and sanitation sector is in a similar situation, where the Concept Paper for development of the sector has been developed and is currently being circulated for comment by the Government. Once adopted, actual works on development of the Water Supply and Sanitation Strategy will commence.

Detailed sectoral investment plans will provide a clear roadmap for development in a specific area related to water security. They provide an opportunity to align the goals and objectives of various stakeholders, including government agencies, private investors, and development organizations, leading to increased confidence and investment. By outlining clear strategies, goals, and timelines, a sectoral investment plan helps to reduce uncertainties and risks associated with investments. This can make the sector more attractive to private investors who might otherwise be hesitant. In addition, it can promote coordination among various government agencies and donors, reducing duplication of efforts and creating synergies. Finally, sectoral plans can also be used to attract international loan and grants, by demonstrating a clear commitment to specific water sectors in Armenia.

The combination of a sectoral investment plan with other enabling conditions can catalyse investment. A sectoral investment plan can also be embedded in larger public sector investment plans. Beyond monitoring public spending, a well-organized investment plan ensures the coherence of long-term infrastructure development plans and helps delineate the respective roles of public procurement and private participation in this regard.

For example, Colombia's National Development Plan (NDP) includes a multi-year Investment Plan, the main tool for determining the country's investment needs in infrastructure. To monitor the NDP's objectives, a dedicated information system keeps track of the life cycle of the country's public investment projects, from their formulation to budget programming, execution and monitoring (OECD, 2015^[8]).

In the context of uncertain future climate conditions, sectoral investment plans need to incorporate strategic investment planning. Strategic planning entails more systematic consideration of long-term trends, notably climate change, and explores options for designing more robust and flexible investments amidst uncertainty. Governments can signal their intentions and financial capacity to tender water projects over a multi-year span. Project-level analyses should be complemented by the design, review, and assessment of investment pathways. New analytical methods are being developed to support and inform the transition from focusing on resilient projects to enhancing the resilience of the entire system at the relevant spatial scale.

Additionally, strategic sectoral investment planning requires the development of a conceptual framework and a review of tools and methods to inform strategic investment planning and the assessment of options for distinct pathways and investment scenarios. Furthermore, other enabling conditions and stakeholders within this framework need to be considered in the strategic planning and should have the capacity to adapt.

For instance, when SABESP in São Paulo, Brazil, one of the leading water and sewage service providers in Latin America, encountered a water shortage crisis during the historic drought of 2014-15, it had to drastically readjust its investment planning to bolster the system's resilience. The regulator's role in allowing the inclusion of these investments to enhance resilience in the regulated asset base was crucial to ensure service delivery under uncertainty (OECD, 2022^[6]).

2.3. Formalising service access and regulating service delivery to the 20% of the population lacking formal services

The lease contract³ includes the service area, which encompasses 355 settlements (composing up to 80% of the total population) in Armenia, while the 579 other settlements (composing about 20% of the total population of the country) remained outside of the service area of the service provider.

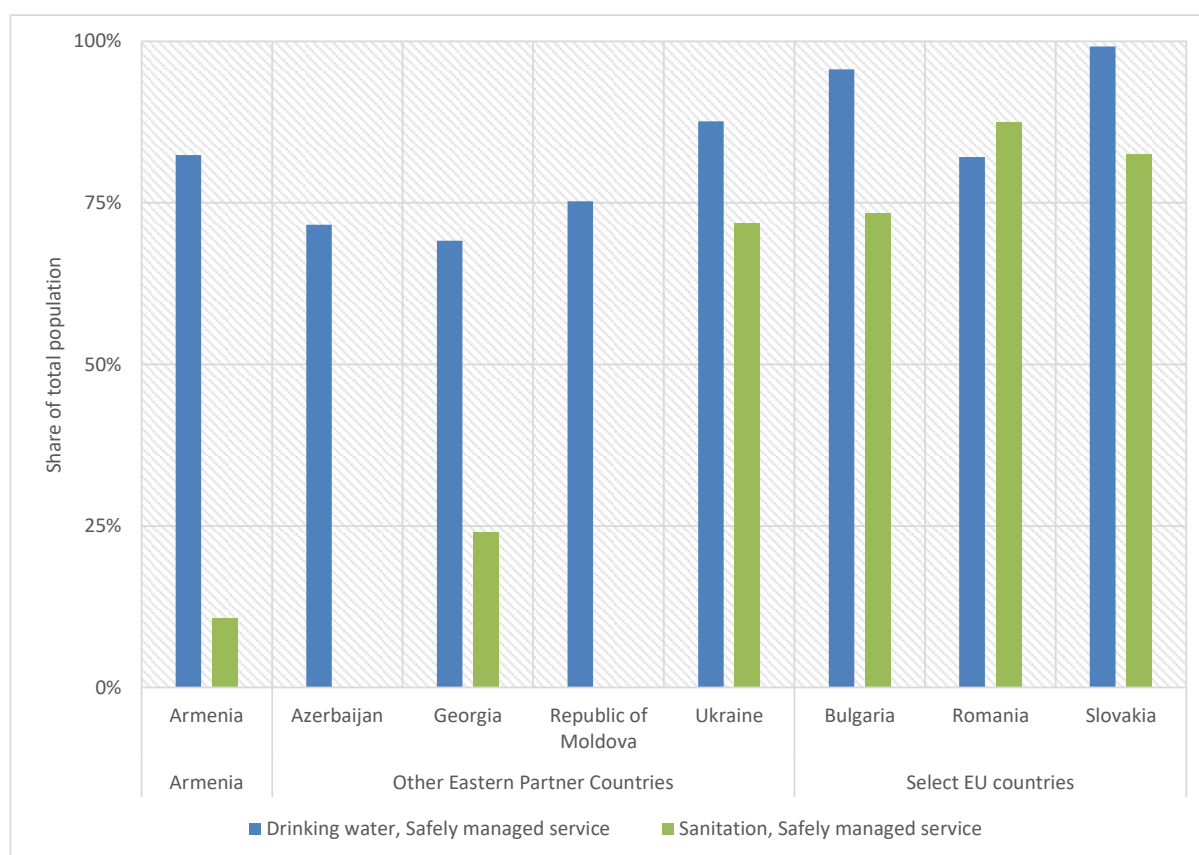
These 579 settlements rely on self-supply services delivery, without specialized professional organization, as required by the legal framework. While the legal framework of Armenia envisages that the regulatory body (PSRC) should issue license for all water supply service providers in Armenia, this is not the case for the above-mentioned 579 self-supplied settlements. Therefore, the service delivery indicators and requirements, as well as associated data, are largely absent.

Armenia demonstrates positive results in comparison to its neighbouring countries regarding safely managed water service levels, yet exhibits notably poor sanitation levels, see Figure 2.1. Armenia boasts high safety-managed service levels for water, covering over 80% of the population, and surpassing its immediate neighbours, although it falls short of Eastern European countries, where over 90% of the population is covered. However, in terms of safely managed sanitation services, Armenia presents lower results compared to neighbouring countries, covering only 10.8% of the population. The region showcases contrasted results; for instance, Georgia only covers 24% of the population.

Key barriers exist in the enabling environment for sanitation, as presented in the Scorecard analysis. This limits opportunities to attract investments that are currently available in the country for other sectors.

³ On November 21, 2016 the Government of Armenia signed a lease contract with “Véolia Eau Compagnie Générale des Eaux” to assume the responsibility of unified operator in water supply and sanitation in Armenia. Following that, on December 9, 2016 the Public Services Regulatory Commission issued a license to “Veolia Djur” CJSC for provision of water supply and sanitation services in Armenia in the period of 2017-2031.

Figure 2.1. Good access to safely managed drinking water services but significant challenges related to safely managed sanitation services in Armenia



Note: Armenia's value for safely managed drinking water service is 82.4% and for safely managed sanitation service is 10.8%. Azerbaijan does not have data for safely managed sanitation service for the year 2022 at the national level, it was 69% in 2019. Moldova does not have any data for safely managed sanitation service at the national level, but it was 85% in 2022 in urban areas. Drinking water services refers to the accessibility, availability and quality of the main source used by households for drinking, cooking, personal hygiene and other domestic uses. Sanitation services refer to the management of excreta from the facilities used by individuals, through emptying and transport of excreta for treatment and eventual discharge or reuse.

Source: UN Water, 2022.

The "Water Economy" section is part of the Republic of Armenia's five-year program (2021-2026), approved by decision N1363-N on 18.08.2021. This section stipulates that the government's water economy policy aims for reliable drinking water supply, sustainable, safe, and affordable services, along with field reforms. The programs of the Government of the Republic of Armenia also envisage complex measures aimed at solving the existing problems in the field of water supply and wastewater treatment and improving the current situation.

However, reaching these non-serviced settlements can be particularly challenging. Given the dispersion of housing and the low population density, the unified water supply and sanitation operator in Armenia shows no interest in including these settlements into its service area.

In addition, the construction of centralized wastewater systems in these settlements may not be possible and individual solutions may be required in such settlements. Taking into consideration these challenges, within the World Bank's upcoming Water and Irrigation Services Enhancement Project, one specific

component will deal with the rural water supply and sanitation enhancement for the self-supplied communities (KfW, 2023^[9]).

Discussions have started to identify the best approach to provide formalised water and sanitation services to the self-supplied communities in Armenia, which will be further elaborated within the World Bank-funded Water and Irrigation Enhancement Services project. The options explored include establishment of specialised organisations covering self-supplied settlements, establishment of inter-community unions, establishment of large regional water supply and sanitation operators, or including all self-supplied communities in the service area of the unified operator once a new contract is established beyond 2031.

During the workshop in July 2023, many participants also emphasized the importance of establishing a regional operator (e.g., through the creation of intercommunity unions) for water supply and sanitation services for self-supplied communities.

Based on OECD Member Countries experience, several options exist:

- formalisation and consolidation of service providers on geographical basis,
- formalisation and coordination or mutualisation of a range of functions, which can translate into flexible governance arrangements for utilities,
- formalisation and absorption by the main service provider.

The first step involves formalising service provisions through the issuance of adapted licenses to one or several service providers. Additional actions to incentivise the formalisation of service providers should also be considered.

A common approach among OECD members is providing financial incentives to utilities, in combination with benchmarking. Benchmarking can play an important role in setting performance objectives and reviewing and comparing the performance of utilities. A benchmarking process which goes beyond the comparison of costs and includes the comparison of levels of service provision and the ambition of development plans in terms of efficiency gains can support the process. More broadly, transparency of performance can support a potential consolidation process, while contributing to stakeholder engagement.

In the Estonian context, this was done in two ways: i) accelerated depreciation of assets under conditions to be agreed upon by the economic regulator and the Ministry of Environment; and ii) rewarding utilities that explore ambitious options to enhance the efficacy of development plans, including through some form of consolidation. Stakeholder consultations explored practical options, including through the Estonian Environmental Investment Centre (OECD, 2022^[10]).

The experience of OECD Member Countries proves that consolidation can contribute to addressing enduring challenges, and help to (OECD, 2022^[10]):

- Increase the number of inhabitants connected to the water supply and wastewater treatment networks.
- Make better (efficient) investment decisions which lead to economies of scale.
- Decrease operation costs.
- Improve water supply efficiency and decrease leakage.

2.3.1. Roadmap for identifying the best solution(s) for unserved areas.

Building on the lessons learned from Lithuania and Estonia water utilities consolidation, the following methodological steps are suggested as a roadmap for the pilot test and the consecutive scaling up to other areas.

The detailed methodology, tools and data used for each country can be found in the respective countries report ((OECD, 2022^[10]) and (OECD, 2022^[10])).

It is important when designing the pilot test to consider a range of options adapted to local contexts. Following Lithuania's example, several pilot regions – one with a strong urban centre and one more rural – could be selected, with regional stakeholders engaged to find practical approaches to formalising service provision.

The roadmap for Armenia could be as follows:

1. Collect and group data on the state of play for informal water supply and sanitation service delivery in the country. The data collected could include water resources, service levels, water consumption and wastewater production, the physical state of assets including component status, life expenditure of the systems and components and ownership, service delivery costs, organisation of service delivery and attached municipalities, including economic and fiscal conditions and forecasts for population change in these areas.
2. Develop a centralised asset inventory, with robust and comparable data between the areas.
3. Identify the pending issues to be addressed before starting the pilot test. The background information will provide a common basis on which to identify pending issues and areas for further work. This can include gaps and limits of the legislation and regulatory framework to carry out the pilot test and the consecutive reform.
4. Clarify and address other regulatory and legal issues related to asset ownership. Explore options to transfer ownership to entities operating at larger geographical scales, or to combine local ownership with operation at larger geographical scale.
5. Define accountability among the different stakeholders involved in the pilot, aiming to reflect potential future arrangements for service delivery.
6. Define the performance indicators to be used during the pilot to assess the success or not of the test. Also, the exact time of the period test should be defined in advance.
7. Define the strategic policy making and financing required for the pilot, aiming to reflect potential future arrangements for service delivery.
8. Calculate the investment needs required.
9. Define service delivery pricing. Tariffs for services can support different models, if properly set and if tariff reviews are adequately convened.
10. Address the socioeconomic impacts of changes to water and sanitation tariffs.
11. Identify financial and governance incentives to accelerate the consolidation of services delivery in Armenia.
12. Make the case for change to the local authorities, users and the general public by identifying individual motivations and fears, and build the momentum for change.
13. Assess the economic regulator's needs in relation to its role and capacities to scale up the pilot test. This would cover water and sanitation tariff setting as a policy instrument to drive investment and utilities' performance; benchmarking the performance of utilities on multiple relevant dimensions. The assessment could also explore options regarding the status, skills and governance of the economic regulator.
14. Identify water and sanitation services sector reforms.

2.3.2. Potential options based on the experiences of OECD Member Countries

The following section presents the potential options that the Armenian government could consider. Based on the Lithuania and Estonia Policy Dialogues, capacities to consolidate or mutualise vary across a country.

Larger cities have a higher capacity to mutualise⁴ multiple services at municipal level, or to lead mutualisation of some functions at district or regional level, than smaller or rural districts. Usually, there is already a track record in mutualising functions of services in cities, at municipal level or in other sectors.

In more remote regions, water utilities and municipalities may not have the same capacity as a large city, as Yerevan. Lack of financial capacity to share functions can be particularly challenging for utilities in smaller municipalities. In Lithuania and Estonia, the financial capacity of utilities often can barely cover operation and maintenance of infrastructure in rural or remote areas (OECD, 2022^[10]) and (OECD, 2022^[11]).

This facilitation support is essential for territories/regions with small (rural) water utilities that are fully occupied with responding to operational issues, with limited capacity and resources for anticipating and setting the right conditions for efficient management over the longer term.

Formalisation and consolidation of service providers

Consolidation of service providers can contribute to addressing enduring challenges, and help to:

- Increase the number of inhabitants connected to the water supply and wastewater treatment networks,
- Make better (efficient) investment decisions which leads to economies of scale,
- Decrease operational costs,
- Improve water supply efficiency and decrease leakage.

In practice, when consolidation is implemented, concerns can emerge from smaller municipalities who may fear not being properly represented in consolidated utilities, and from well-managed utilities, whose customers will have to pay higher water bills to absorb less cost-effective ones.

Several measures should accompany consolidation. One set of measures relates to tariff policy for water supply and sanitation services, including depreciation in the tariff setting methodology. This technical issue can serve different policy objectives. For example, a portion of the revenue from tariffs is earmarked for the future replacement or maintenance of infrastructure, allowing cost recovery. Moreover, international experience suggests that consolidation does not need to necessarily lead towards harmonisation of tariffs across municipalities, at least in the short term: decoupling both processes can actually help address some political concerns.

Another consideration suggests that there are limits to how much water bills can finance environmental policies that benefit large communities (beyond water users) and the need to design a comprehensive strategy that considers other economic instruments such as effective pollution and abstraction charges, as well as fiscal incentives and phasing out harmful subsidies for water resources.

Regardless of the option or options selected by the government of Armenia, it is recommended that the government choose several pilot regions where it would be beneficial to explore and test the feasibility of the potential choices and the accompanying measures that may be required to ensure its success. For example, suspending or revoking licences of service providers which fail to achieve a set level of performance by an agreed-upon deadline is a relevant tool. This measure had successful results in the Lithuanian context of water utilities consolidation, with the threat taken seriously by municipalities and utilities (OECD, 2022^[11]).

Many OECD Member countries have aggregated (or are considering aggregating) small utilities to generate economies of scale and scope, and make the best use of central, piped infrastructures. Heavy

⁴ Mutualisation refers to the practice of sharing or pooling resources, assets, or functions among multiple service providers.

investment costs and the phasing out of government subsidies have prompted local utilities to concentrate part or all the tasks related to the provision and delivery of water supply and sanitation services at upper levels of government (OECD, 2022^[11]).

In New Zealand, the amalgamation of several councils gave the Auckland Council the necessary scale to tackle issues that were previously beyond the capacity of individual councils. Since amalgamation, the Council has been able to accelerate the modernisation of the region's antiquated wastewater treatment systems, substantially upgrade its two key wastewater treatment plants and progress the NZL 950 million (New Zealand dollar) "central interceptor" project that will reduce overflows from the combined waste and stormwater system of the Auckland isthmus. France's Ile-de-France region has a three-tier management system: street sewers are municipal, interceptors and storm sewers are run by the counties (four departments) and sewage treatment is operated by a joint-county (almost regional-level) board.

Several national and sub-national governments have separated water or treated wastewater production and the delivery of the service to customers:

- In Greater Boston, the metropolitan authority consolidates water production and sewage treatment, leaving member municipalities in charge of system management.
- In Portugal, the government created a national water company in 1994. Municipalities in the same area were offered the opportunity to manage treatment plants jointly, while communes kept responsibility for operating water and sewer mains.

Rural sanitation presents a range of options. For instance, localised wastewater management systems can serve individual or small groups of properties. They can recover nutrients and energy, and can also be connected to local water supply and reuse technologies. They require less upfront investment than larger scale, centrally piped infrastructures and are more effective at coping with the need to expand services. Localised water supply and sanitation can be used to serve populations not connected to public systems. In Europe, the proportion of households not connected to sewers is higher in low-density or low-revenue countries or regions – e.g., Portugal and Spain, southern Italy and Greece, eastern European and Nordic countries, Ireland and some German Länder. In these areas, populations are not yet fully connected to public water systems (OECD, 2022^[11]).

Ireland has officially kept many grouped water schemes, providing water to 8% of the population at small community scales. Localised sanitation systems are not merely a remedy to the limited number of centrally piped systems. They are increasingly used in countries such as the United States, where on-site sanitation now comprises some 40% of all new developments. The performance of localised systems can compare with that of centrally piped infrastructures. For instance, an evaluation of localised systems in Ireland shows that despite difficulties in meeting the standards now imposed at the European level, such schemes sometimes operate better than public water systems, and the population they serve is largely committed to keeping them. Indeed, the collective management of decentralised technologies creates business opportunities for (public and private) utilities (OECD, 2022^[11]).

In Lithuania, water utility consolidation was introduced in the legal framework for water supply and sanitation in 2006, and reflected in the Implementation Plan of the Government Programme, with a view to ensure higher operational efficiency, to reduce the disparity in prices for water supply and sanitation services and compliance with the EU acquis. To explore the potential consolidation of utilities, two pilot regions - Kaunas and Marijampole were selected by the Ministry of Environment. One of the benefits of the pilot was to realise that preferred outcome for consolidation may differ, reflecting regional specificities, such as the existence of a strong urban centre that can provide resources and capacities to manage select functions (OECD, 2022^[11]).

In Lithuania, consolidation at higher geographical scales was one option; but others could be considered as well:

- Using different scales for different functions of WSS services (water supply, wastewater collection and treatment; investment planning, operation and maintenance of services),
- Managing localised services (including individual sanitation) at a larger level.

Several options could be considered, from merging, to coordinating local service provision through a public service; such a public service can cover a wide and diverse territory, focusing on localised sanitation only.

The different options can be assessed on multiple criteria, including:

- Opportunities to minimise cost (investment needs in infrastructure; operation and maintenance costs) and enhance financial sustainability of water supply and sanitation,
- Opportunities to mutualise skills (technical skills to operate and maintain assets; commercial skills to interact with users, including through billing),
- Opportunities to optimise performance (quality of service to users), now and in the future (sustainable service provision),
- Opportunities to strengthen monitoring and supervision (assessing development plans and expenditure programmes; monitoring performance of service providers).

Detailed lessons learned from international experience with consolidation of water supply and sanitation can be found in Annex 3.B of Lithuania's Policy Dialogue (OECD, 2022^[11]).

Formalisation and mutualisation of a range of functions

In theory consolidation improves service provision, but international experience shows that a range of different structures can be used to seek to secure consolidation benefits and therefore supports a broader and more open trajectory. Opportunities to mutualise skills can range from technical skills to operate and maintain assets to commercial skills to interact with users, including through billing (OECD, 2022^[11]).

Common examples are employee training that can achieve a reduction in training costs per employee if trainings are jointly organized by utilities at the regional level; similarly, better unitary prices can be obtained if the procurement of goods and services (e.g., laboratory products) is done by all utilities together – and thus larger quantities are purchased at one time.

The number and types of functions that are shared among utilities can vary, from a “lighter” mutualisation level to a “stronger” level, as some functions can be more easily shared than others in terms of transaction costs, administrative and organizational changes, and financial resources required. This also means that some functions could be easily shared in the short term, whereas other functions might need more time to be accepted and implemented – and, bringing this reasoning to the extreme, some functions might not eventually be shared even in the longer term. Functions that could be shared are listed in the Table 2.1, following an increasing level of complexity (from the easiest ones to the more challenging ones to be shared).

Table 2.1. Sharing functions among water and sanitation utilities, from the least to the most complex one

| Functions |
|--------------------------------------|
| Training of staff |
| Public relations and communication |
| Customer care |
| Procurement of products and services |
| IT tools and systems |
| Laboratory analysis |
| Research and innovation |
| Monitoring |
| Technical expertise |
| Application for funding |
| Administrative management |
| Financial management |
| Application for funding |
| Strategic investment planning |
| Wastewater treatment |
| Bulk water production |

Note: List identified during the Lithuania Policy Dialogue by national stakeholders. Participants to the workshops were presented with the full list of functions that could be shared, and they were asked to identify those functions that could be more easily shared – or, in other words, which functions could be shared in the short term, and which ones could be feasible but would require more time for implementing them.

Source: (OECD, 2022^[11]).

As illustrated in the Estonian Policy Dialogue, not all functions need to be operated at the same scale: water supply could be operated at a different scale than sanitation; investment planning and procurement could be managed at a different scale than consumer relations and billing. Some competences could be available in regional centres, to support smaller utilities. Specific trajectories could be considered for rural areas, which differ from urban ones. As regards managing localised services (including individual sanitation), several options could be considered, from merging, to coordinating local service provision through a public service; such a public service can cover a wide and diverse territory, and could in some circumstances focus on localised sanitation only (OECD, 2022^[10]).

This is the case, for example, in France where local Service Public d'Assainissement Non Collectif (SPANC) operate and service septic tanks in rural areas. SPANC is a public service company with responsibilities related to equipment, maintenance and functioning of non-connected wastewater treatment systems: sanitation facilities ensuring the collection, transport, treatment and disposal of all domestic wastewater (except rainwater) from buildings not connected to a public wastewater collection network. SPANC provides an example of how the development of a non-fixed network of responsibilities and collection arrangements can provide an effective alternative to costly wastewater network provision in relatively sparsely populated areas, while providing for appropriate environmental protection.

Also in France, Syndicat des Eaux et de l'Assainissement Alsace-Moselle (SDEA) provides an example of how local control over tariff decisions can be retained, while a broad spectrum of WSS activities could be effectively contracted out through a partnership arrangement to secure benefits associated with available economies of scale. Forms of consolidation within this broad approach can differ in a range of ways, including in terms of the scope and depth of service provision activities that are covered: e.g. joint provision of various operational activities vs the pooling of investment planning, the awarding of works contracts, and of financial capacities (OECD, 2022^[10]).

As illustrated in the Lithuania Policy Dialogue, Procurement Law is a common challenge and an opportunity at the same time for mutualisation of functions. While demands can differ across utilities, there are opportunities to join forces and seek economies of scale for some substances and services. The procurement law is currently going through changes in Lithuania, so it could be an occasion to explore mechanisms to be put in place to make joint procurement possible. According to the current law on procurement, joint procurement, as well as the mutualisation of laboratory analysis and monitoring, could be put in place through a somewhat burdensome procurement procedure: it was suggested that this aspect of the law is amended to make mutualisation possible through a simple agreement between water utilities (OECD, 2022^[11]).

Armenia could make the most of EU member states with similar post-Soviet heritage such as Estonia, Latvia, Lithuania as well as Romania and Bulgaria, which have gone through similar process of regionalisation. Understanding the challenges they faced and how they overcame barriers will be critical, especially in improving service delivery in rural areas and wastewater treatment.

Armenia could focus on developing the investment plan to enhance service levels in rural areas, focusing on the necessary goals and conditions for success, rather than exclusively on the mechanisms employed. For instance, attracting private investment or ensuring the management of services by private operators should not be the end goal, nor should the consolidation of service providers. Experience from OECD member countries that have undergone similar reforms shows that the conditions of the process are more crucial for its success than the model selected. For example, achieving full-service coverage in rural areas to meet EU Directives standards will be costly and complex (OECD, 2020^[12]); therefore, considering scenarios with different service delivery models and technology types, tailored to specific geographic needs, is essential. Additionally, while consolidation has been effective in urban areas, its application in rural settings presents more challenges. Therefore, strategies should consider consolidating service providers through various models and scales, as well as combining this with the formalization of unlicensed service providers to create a more cohesive and integrated approach.

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Annex A. Armenia's scoring for dimension 1

| Indicator N°. | 1 Are macro-economic indicators conducive to a sound investment? | | | | | | Overall scoring |
|---------------------|--|---------------------------------|---------------------------------------|------------------------------------|--|-------------------------|-----------------|
| Sub-Indicator N° | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | |
| Data Source Website | World Bank | World Bank | World Bank | World Bank | World Bank | Fitch | |
| Description | Gross Domestic Product (GDP) Growth Rate | Inflation Rate, Consumer Prices | Unemployment Rate (National Estimate) | Current Account Balance (% of GDP) | Central Government Debt (total) to GDP Ratio | Credit Rating | |
| Unit | Annual % | Annual % | % of total labor force | % of GDP | % of GDP | Fitch credit rating | |
| Description of Data | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2022)</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | <i>Most recent year</i> | |
| Armenia's value | 3.17 | 3.04 | 14.45 | -3.91 | 57.86 | 2 | |
| Scoring | 5.0 | 3.0 | 2.0 | 2.0 | 2.0 | 2.0 | |

| Indicator N°. | 2 What is the strength of domestic financial sector? | | | | | | | Overall scoring | |
|----------------------------|--|-----------------------------|-----------------------------|---|--|---|--|-----------------|------|
| Sub-Indicator N° | 2.1 | 2.2 | 2.3 | 2.4 | 2.6 | 2.7 | 2.8 | | |
| Data Source Website | International Monetary Fund | International Monetary Fund | International Monetary Fund | World Bank | International Monetary Fund | International Monetary Fund | International Monetary Fund | | |
| Description | Tier 1 capital to risk-weighted assets | Tier 1 capital to assets | Return on assets | Bank nonperforming loans to total gross loans | Net open position in foreign exchange to capital | OFCs' assets to total financial system assets: total OFCs | OFCs' assets to gross domestic product: OFCs | | |
| Unit | % | % | % | % | % | % | % | | |
| <i>Description of Data</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | | |
| Armenia's value | 15.1 | 12.2 | 1.0 | 6.15 | -1.6 | 13.6 | 13.6 | | |
| Scoring | 3 | 5 | 4 | 3 | 0 | 1 | 1 | | 2.43 |

| Indicator N°. | 3 Is domestic finance available? | | | Overall scoring | |
|----------------------------|--|--------------------------|--------------------------|-----------------|------|
| Sub-Indicator N° | 3.1 | 3.2 | 3.3 | | |
| Data Source Website | World Bank | World Bank | World Bank | | |
| Description | Domestic Credit Provided by Financial Sector | Lending interest rate | Broad money | | |
| Unit | % of GDP | % | % of GDP | | |
| <i>Description of Data</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | <i>Avg (2015 - 2021)</i> | | |
| Armenia's value | 63.82 | 13.7 | 46.9 | | |
| Scoring | 3 | 2 | 2 | | 2.33 |

| Indicator N°. | 4 How strong are public governance mechanisms? | | | | | Overall scoring |
|---------------------|--|--|---|---|---|-----------------|
| Sub-Indicator N° | 4.1 | 4.2 | 4.3 | 4.4 | 4.5 | |
| Data Source Website | World Bank | World Bank | World Bank | World Bank | World Bank | |
| Description | Worldwide Governance Indicators - Voice and Accountability | Worldwide Governance Indicators - Government Effectiveness | Worldwide Governance Indicators - Regulatory Quality | Worldwide Governance Indicators - Rule of Law | Worldwide Governance Indicators - Control of Corruption | |
| Unit | standard normal distribution (i.e. approx. -2.5 to 2.5) | standard normal distribution (i.e. approx. -2.5 to 2.5) | standard normal distribution (i.e. approx. -2.5 to 2.5) | standard normal distribution (i.e. approx. -2.5 to 2.5) | standard normal distribution (i.e. approx. -2.5 to 2.5) | |
| Description of Data | Avg (2015 - 2021) | Avg (2015 - 2021) | Avg (2015 - 2021) | Avg (2015 - 2021) | Avg (2015 - 2021) | |
| Armenia's value | -0.24 | -0.23 | 0.24 | -0.19 | -0.33 | |
| Scoring | 2 | 2 | 3 | 2 | 2 | |

| Indicator N°. | 5 How strong are corporate governance mechanisms? | | Overall scoring |
|---------------------|---|---|-----------------|
| Sub-Indicator N° | 5.1 | 5.2 | |
| Data Source Website | World Bank | World Economic Forum | |
| Description | Doing Business Index - Protecting Minority Investors | Global Competitiveness Index - Corporate Governance | |
| Unit | Scale from 0 (lowest performance) to 100 (best performance) | Score 0 (worst) - 100 (best) | |
| Description of Data | DB 2020 | SCORE | |
| Armenia's value | 42 | 62.7 | |
| Scoring | 2 | 3 | |

| Indicator N°. | 6 What level of regulatory permits and approvals are required for investment and are they streamlined? | | | | Overall scoring | |
|---------------------|--|---|---|---|-----------------|-----|
| Sub-Indicator N° | 6.1 | 6.2 | 6.3 | 6.4 | | |
| Data Source Website | World Bank | World Bank | World Bank | World Bank | | |
| Description | Doing Business Index - Starting a Business | Doing Business Index - Dealing with Construction Permits | Doing Business Index - Getting Electricity | Doing Business Index - Registering Property | | |
| Unit | Scale from 0 (lowest performance) to 100 (best performance) | Scale from 0 (lowest performance) to 100 (best performance) | Scale from 0 (lowest performance) to 100 (best performance) | Scale from 0 (lowest performance) to 100 (best performance) | | |
| Description of Data | <i>only one score, May 2019</i> | <i>only one score, May 2019</i> | <i>only one score, May 2019</i> | <i>only one score, May 2019</i> | | |
| Armenia's value | 96.10 | 73.10 | 90.80 | 88.60 | | |
| Scoring | 5 | 4 | 5 | 5 | | 4.8 |

| Indicator N°. | 7 What accountability mechanisms are in place to ensure responsible business conduct? | | Overall scoring | |
|---------------------|---|---|-----------------|---|
| Sub-Indicator N° | 7.1 | 7.2 | | |
| Data Source Website | World Justice Project | Transparency International | | |
| Description | Rule of Law Index - Regulatory Enforcement | Corruption Perceptions Index | | |
| Unit | Index 0 (weakest adherence to the rule of law) and 1 (strongest adherence to the rule of law) | Scale from 0 (highly corrupt) to 100 (very clean) | | |
| Description of Data | <i>Score, 2022</i> | <i>Score, 2022</i> | | |
| Armenia's value | <i>ND</i> | 46 | | |
| Scoring | <i>N/A</i> | 2 | | 2 |

| Indicator N°. | 8 What is the level of non-commercial risks for investors? | Overall scoring |
|----------------------------|---|-----------------|
| Sub-Indicator N° | 8.1 | |
| Data Source Website | World Bank | |
| Description | Worldwide Governance Indicators - Political Stability and Absence of Violence/Terrorism | |
| Unit | standard normal distribution (i.e. approx. -2.5 to 2.5) | |
| <i>Description of Data</i> | <i>Avg (2015 - 2021)</i> | |
| Armenia's value | -0.57 | |
| Scoring | 2 | 2 |

| Indicator N°. | 9 How effective and practical decentralization is for policy and investment? | | | Overall scoring |
|----------------------------|--|--|---|-----------------|
| Sub-Indicator N° | 9.1 | 9.2 | 9.3 | |
| Data Source Website | OECD-UCLG | OECD-UCLG | OECD-UCLG | |
| Description | Subnational government expenditure – total expenditure by economic classification (% of GDP) | Subnational government revenue – total revenue (% GDP) | Subnational government debt – debt (%GPD) | |
| Unit | % of GDP | % of GDP | % of GDP | |
| <i>Description of Data</i> | <i>Latest available year</i> | <i>Latest available year</i> | <i>Latest available year</i> | |
| Armenia's value | 2.24 | 2.52 | 0.00 | |
| Scoring | 0 | 0 | 1 | 0.3 |

| Indicator N°. | 10 Are infrastructures attractive for investments? | | | | | | | Overall scoring |
|---------------------|--|---------------------------------------|-------------------------------|--------------------------------|-------------------------------|--|-------------------------|-----------------|
| Sub-Indicator N° | 10.1 | 10.2 | 10.3 | 10.4 | 10.5 | 10.6 | 10.7 | |
| Data Source Website | World Bank | World Bank | World Bank | World Bank | World Bank | World Bank | World Bank | |
| Description | Access to electricity | Renewable energy consumption | Fixed broadband subscriptions | Individuals using the Internet | Mobile cellular subscriptions | Educational attainment, at least Bachelor's or equivalent, population 25+, total | Hospital beds | |
| Unit | (% of population) | (% of total final energy consumption) | (per 100 people) | (% of population) | (per 100 people) | (%) (cumulative) | (per 1,000 people) | |
| Description of Data | <i>Most Recent Year</i> | <i>Most Recent Year</i> | <i>Most Recent Year</i> | <i>Most Recent Year</i> | <i>Most Recent Year</i> | <i>Most Recent Year</i> | <i>Most Recent Year</i> | |
| Armenia's value | 100.00 | 10.34 | 16.72 | 78.61 | 128.96 | 24.21 | 4.20 | |
| Scoring | 5 | 0 | 1 | 4 | 5 | 2 | 0 | 2.4 |

Annex B. Armenia's scoring for dimension 2, 3 and 4

Methodology

The score card is a tool designed to be used within a policy dialogue aiming to support policy reforms to attract and sustain investment in water security. The government or relevant donor should lead the process and several meetings and workshops are required to ensure the quality, validity, and impact of the analysis.

Data collection

For each of the questions in the four dimensions, the tool collects data using publicly existing databases, and an online survey to be filled in by the government or relevant country experts appointed by the government or donors, when data is not available. The databases used are from accredited international organizations (OECD, WB, IMF, UN).

The tool has been designed to group questions based on government structures and relevant agencies, to reduce data collection time. A focal point, within the champion agency oversees data collection across Ministries and agencies.

This survey has been designed to address a broad range of contexts, encompassing policy and institutional arrangements and service delivery arrangements. It is important to note that various service provision arrangements exist both across and within countries, such as fully public, fully private, and public-private partnerships and diverse types of arrangements in between.

Data sources

The usage of the data sources varies⁵ by dimension. D1 relies entirely on automated data sources, whereas the other dimensions also rely on data reported by government representatives or country experts. The World Bank is the primary source of data used for D1, which evaluates a country's overall investment climate through economic, financial, and governance indicators, among others. Other data sources extensively used are the IMF's Financial Soundness Indicators; OECD-UCLG World Observatory on Subnational Government Finance and Investment; the World Economic Forum's Global Competitiveness Index; the World Justice Project's Rule of Law Index; and Transparency International's Corruption Perceptions Index.

D2 uses the World Bank's IBNET and the UN-Water Global Analysis and Assessment of Sanitation and Drinking-water (GLAAS) databases. For both water supply and wastewater services, several IBNET indicators are used, from technical information about the capacity of the service (e.g., collection ratio and

⁵ Indicators are extracted from these data sources: the OECD-UCLG World Observatory on Subnational Government Finance and Investment, the Global Competitiveness Index, Financial development Index, Country Policy and Institutional Assessment, IbNet, SDG, GLAAS and Fitchratings.

non-revenue water) to financial information such as operating cost coverage and debt service ratio. D3 uses data from GLAAS as proxies for both urban and rural water and sanitation.

Data analysis and scoring

Indicators are divided into sub-indicators, covering major risks and financial, environmental,⁶ and social returns for both public and private investors.

Each indicator is assigned an equal weight in a dimension. Also, each dimension has been assigned equal weight, at this stage of the tool's development. As discussed in the previous section, the complexity of the linkages between dimensions in a country presents an argument against weighting the dimensions or the indicators during this phase of the tool's pilot testing.

Each dimension and question are scored on a scale of 0-5, where 0-1 signifies '*nascent*', 1-2 is '*engaged*', 2-3 is '*capable*', 3-4 stands for '*effective*', and 4-5 represents '*model*', as illustrated in Figure A B.1. For the cumulative scoring, based on a maximum of 20, the classifications are as follows: 0-5 as '*Nascent*', 5-10 as '*Engaged*', 10-15 as '*Capable*', 15-17.5 as '*Effective*', and 17.5-20 as '*Model*'.

This scoring is automated based on the results. Within the survey, all sub-questions are either binary (yes/no) or multiple-choice, with each leading to one point. For multiple-choice questions, an average score is calculated, ranging between zero and one point, depending on the results.

Neither 'no responses' nor 'not applicable' responses are counted as zero; therefore, the average is not impacted by missing values. For multiple-choice questions, if over half of the categories lack a 'yes' or 'no' response, the answer is deemed 'no response'. For a detailed breakdown of the scoring for each indicator, please refer to the full methodology report.

Figure A B.1. Scoring's banding system: covering the developmental stages of an economy



Each dimension's score will be a result of the sum of the sub-questions score, on a basis of 5. These will not be rounded. Every round result is always allocated to the next higher level; for example, a score of 1 corresponds to the "Engaged" stage. Responses are only considered if a proof of official document or report is attached to the response. The scoring is automatically calculated based on the results from indicators in the databases and the sum of positive binary/multiple choices questions. This makes the results more robust, limiting the "expert subjective assessment", but adds a layer of complexity for the assessment.

The analyses reported here were carried out by the authors in collaboration with the government or international donor, through a designated focal point.

The indicators, questions and dimensions are not weighted. The tool aims to assess the enabling environment for all type of investors. Consequently, depending on their mandate and objectives, some conditions may be more important than others.

⁶ Environmental returns refer to the outcomes or benefits that investments or projects generate in terms of environmental improvement or sustainability. Financial returns alone are insufficient for considering water security.

| | | Base of 5 |
|---|------|--------------|
| Dimension 2: Channeling investment to water: Authority(ies) in charge of water resources | | 1.7 2.1 |
| Is data on current and future water resources availability, demand and supply forecast and water risk available? | 0.54 | |
| Do water resource allocation mechanism support water security investment? | 0.67 | |
| Are economic instruments coherent between sectors? | 0.15 | |
| Are mechanism to solve conflicts between water users effective? | 0.33 | |
| Dimension 2: Water supply and domestic: urban and rural | | 5.0 3.2 |
| Is a strategic investment plan in place including water security? | 0.48 | |
| Is there independent and transparent oversight of the water supply sector? | 0.60 | |
| Are contracts arrangement for service providers attractive for investment? | 1.00 | |
| Does the regulatory environment support private investment? | 1.00 | |
| Are economic policy instruments in place enough to ensure investment? | 0.67 | |
| Is the legal status of stakeholders participating in the investment clear? | 0.50 | |
| Are water service providers allowed and able to access private finance? | 0.58 | |
| What are service authorities and service providers capacity levels? | 0.22 | |
| 3) Dimension 2: Sanitation services: urban and rural | | 2.8 1.8 |
| Is a strategic investment plan in place including water security? | 0.00 | |
| Is there independent and transparent oversight of the sanitation sector? | 0.46 | |
| Are contracts arrangement for service providers attractive for investment? | 0.75 | |
| Does the regulatory environment support private investment? | 0.50 | |
| Are economic policy instruments in place enough to ensure investment? | 0.40 | |
| Is the legal status of organisations participating in the investment clear? Is it appropriate for the size, scale, and operating parameters of different investors? | 0.33 | |
| Can water service providers access affordable finance? | 0.38 | |
| What are service authorities and service providers capacity levels? | 0.00 | |
| 4) Dimension 2: Hydropower | | 4.8 3.0 |
| Is a strategic investment plan in place including water security? | 0.00 | |
| Is there clear mapping of hydropower potential? | 0.33 | |
| Is there long-term goal setting and policy coherence to promote hydro power investments? | 0.40 | |
| Is there independent and transparent Institutional framework for the hydropower sector? | 0.60 | |
| Is there a competitive electricity market open to new market entrants? | 0.40 | |
| Is there a level playing field with state owned enterprises? | 0.33 | |
| Do foreign and domestic investors benefit from equal treatment? | 0.00 | |
| Are contractual arrangements attractive for investment? | 1.00 | |
| Are economic policy instruments in place enough to ensure investment? | 1.00 | |
| Can hydro power developers access affordable finance? | 0.57 | |
| What are service authorities and service providers capacity levels? | 0.20 | |
| 5) Dimension 2: Irrigation: Big schemes | | 2.6 1.9 |
| Is a strategic investment plan in place for irrigation schemes including water security? | 0.03 | |
| Is there independent and transparent oversight of the irrigation schemes? | 1.00 | |
| Are contracts arrangement for service providers attractive for investment? | 0.50 | |
| Are economic policy instruments in place enough to ensure investment? | 0.50 | |
| Is the legal status of organisations participating in the investment clear? Is it appropriate for the size, scale, and operating parameters of different investors? | 0.50 | |
| Can water service providers access affordable finance? | 0.53 | |
| What are service authorities and service providers capacity levels? | 0.11 | |
| 6) Dimension 3: Project sustainability (water, sanitation, hydropower and irrigation) | | 4.03 2.5 |

| | | |
|--|-------------|------------|
| To what extent are the community, stakeholders, third parties, engaged in projects? | 0.75 | |
| Is there a standard methodology for assessing the social and environmental value and impact of investment? | 1.00 | |
| How are wider impacts of projects measured? | 0.67 | |
| How are cost benefits methodology carried out to ensure impartiality? | 0.00 | |
| Is data, process and methods for projects collected and published? How is the data used for future decisions-making? | 0.00 | |
| Can projects be grouped to overcome high credit risks and transaction costs? | 0.00 | |
| (only for hydropower) Do hydropower projects and operations apply a sustainability assessment protocol? | 0.61 | |
| Does this include assessment of sustainability risks and opportunities across the four stages of: | 1.00 | |
| 7) Dimension 4: Investing in a water secure future | 1.43 | 0.8 |
| Do national strategies for climate change mitigation, adaptation, agriculture, economy, development, and energy transition address water security? | 0.17 | |
| Are impacts on water-resources (quality and quantity) considered when doing economic plans, at national and sub-national levels for: | 0.17 | |
| Are water-related risks (drought, flood and pollution) considered in economic plans, at national and sub-national levels for Please indicate the targets | 0.00 | |
| Are existing subsidies for consumption or production leading to negative externalities on water resources, notably by supporting or reducing the cost of activities contributing to over-exploitation or pollution of water resources in : (For example, do subsidies support use of pollutants such as pesticides and herbicides, plastics, or other endocrine disruptors? Or else, do subsidies support overuse of water resources, for example through free energy for water pumping?) Please indicate the subsidy in place | 0.00 | |
| Is the quality and availability of water resources declining? | 0.00 | |
| Is a water risks mitigation strategy in place? | 0.33 | |
| Are economic incentives designed to support water security? | 0.33 | |
| Is water security embedded in public policy measures? | 0.43 | |
| Do mandatory and voluntary disclosure standards consider water? | 0.00 | |
| Does the country invest in water innovation? | NR | |