Water Sector Regionalization Review
Republic of Moldova

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ACRONYMS AND ABREVIATIONS

ADA	Austrian Development Agency	MDL	Moldovan Lei
AMAC	Moldova Association of Water Utilities	MRDC	Ministry of Regional Development and Construction
ANRE	National Agency for Energy Regulation	MOE	Ministry of Environment
EBRD	European Bank for Reconstruction and Development	MOH	Ministry of Health
EIB	European Investment Bank	NEF	National Ecological Fund
EU	European Union	NRDF	National Regional Development Fund
FAO	Food and Agriculture Organization	OECD	Organization for Economic Co-operation and Development
IDA	International Develpment Association	SDC	Swiss Development Cooperation
IFI	International Financing Institution	SPSP	Sector Policy Sector Program
JSC	Joint-Stock Company	UNDP	United Nations Development Program
GIZ	German Cooperation Agency	WOP	Water Operators Partnership
IBNet	International Benchmarking Network	WUDP	Water Utilities Development Program
LC	Local Council		

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Acknowledgements

This report was prepared by a team of water and wastewater specialists led by Stephane Dahan and comprising Denis Robert (international consultant) and Vladimir Anufriev (local consultant). Key contributions were made by Manual Marino (ECSUW), Meleesa Naughton (TWIWA). Iuliana Stratan (ECCMD) provided excellent support during its preparation.

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Executive summary

This paper advocates for the regionalization of water and sewerage services in Moldova as a means of improving the performance of the sector. It attempts to address four key questions: (i) what is the regionalization of services; (ii) why is it important for Moldova; (iii) what has already been undertaken in that respect and what are the results to date; and (iv) how could the country reap the full benefits of regionalization. Finally, it proposes a sector regionalization roadmap.

1. **What is the regionalization of services**

Regionalization is the grouping of service providers into a single administrative or physical structure to improve service and efficiency. The regionalization of water and sewerage services can be about interconnection of physical systems, to help correct the imbalances of *water resources* between municipalities. It can also be about organizational cooperation between local governments (or their service providers), to improve services and efficiencies. Such improvements can be achieved through: (i) *economies of scale*; (ii) *pooling of capacities*, means and resources; (iii) increased *equity of access* to services; and (iv) improved *access to funds* and to *private sector* participation

2. **Why is it important for Moldova?**

Many regions lack access to adequate water resources. Moldova is water scarce with only two perennial watercourses. In many regions deep underground water resources have inadequate quality and cannot be treated affordably. Shallow aquifers, commonly relied on in rural areas, often do not meet quality or reliability standards.

The level of services is insufficient in small towns and appalling in rural areas. A third of utilities (particularly the small ones) provide intermittent supply, sometimes less than 12 hours per day. *Quality* of supplied water is substandard in 10 percent of cases. Outside of Chisinau, domestic *consumption* is well below international standards. In more than half of utilities, effluents are discharged without adequate treatment. In rural areas, where 58 percent of Moldova's population lives, a large majority rely on unprotected and frequently contaminated shallow wells for their personal consumption. One in five cases of diarrhea, gastrointestinal illnesses and acute viral hepatitis are water borne.

The sector is fragmented into a myriad of inefficient small-scale service providers. Outside of the two larger cities, 39 water and sewerage utilities supply urban centers of an average of 14,700 inhabitants. Only six exhibit an acceptable level of performance, with room for improvement. Half of utilities are not financially sustainable. Most exhibit excessive non-revenue water, energy inefficiency, overstaffing and low internal capacity. In rural areas, about 500 waterworks are, operated by non-professional service providers with limited capacity.

Other key weaknesses relate to affordability, equity of access to services and sector financing. Large disparities exist across the country, in terms of service affordability. In many towns, the people have to significantly limit water consumption due to high tariffs. Capital spending relies almost exclusively on development grants, and their level is too low to halt the deterioration of infrastructure, let alone to increase its quality. Options to diversify and expand capital financing are limited, particularly outside of a few large utilities.

3. What is Moldova's experience to date in regionalization of water services?

Moldova has experience in services regionalization as an infrastructure solution to a water resources problem. Regionalization is recognized in the 2007 National Water Strategy as a key sector development objective to address water resource quality and reliability. Many intercommunal water supply schemes have been implemented or are in preparation, without high level coordination of a clear institutional model. They take advantage of the overcapacity of surface water production facilities. They are encouraged by the central government and by international financing institutions (IFIs) through the allocation of financial resources specifically dedicated to regionalization projects. The Water Strategy also advocates for a reduction in the number of service providers, an area in which very little progress has been achieved.

4. How could the sector reap the full benefits of regionalization?

Organizational cooperation can yield a range of benefits. Utilities producing less than two million cubic meters per year could achieve significant economies of scale. When small utilities are doubled in size, their operating costs appear to increase on average by only 40 percent. Organizational cooperation could spur professionalization, in particular if: (i) utilities are aggregated around a better-performing one; (ii) regionalization includes both water and sewerage services; and (iii) utilities can rely on the private sector to build their capacity. Cost-sharing could help level tariffs (varying across utilities between US$0.58 and US$2.24 per cubic meter) and improve affordability of services. With regionalization, the sector could increase its access to debt financing.

Adequately sizing regional utilities is key to maximizing benefits. A range of sizing options could be considered, based on the importance assigned to each objective: (i) to fully achieve economies of scale, up to 22 regional utilities could be established; (ii) to improve professionalization of utilities and access to funds, regional utilities would be formed around the better-performing utilities (six according to a preliminary diagnostic). In theory these benefits would be maximized with one national utility, but this may not be a practical option in the local political context.

Strong leadership is required from the central government to achieve regionalization. As shown by international experience, the central government should be the initiator and architect of regionalization. In the current legal framework, local councils (responsible for water and sewerage services) cannot be compelled to join this process and their participation should be voluntary. Despite the obvious benefits of sector regionalization, their reluctance to delegate these prerogatives should not be underestimated. Financial incentives and a clear understanding of the potential benefits of regionalization will be critical to foster their adhesion to the reform.

5. The proposed roadmap recognizes the high complexity of sector regionalization

The proposed roadmap spans over 10 years and acknowledges key challenges, such as raising the interest of local councils and building on utilities with limited capacity. The roadmap includes four phases: two years to define the concept, prepare a national master plan and raise interest among local councils (Phase 1); two more years to strengthen the participating utilities before the reform (Phase 2); another three years to support the establishment and initial operations of the regional utilities (Phase 3); and after three years, regional utilities may be sufficiently stabilized to allow the integration of small rural service providers (Phase 4). If certain local councils immediately express a strong willingness to pilot regionalization projects, Phases 1 and 2 could be carried out in parallel. In any case, to fully achieve regionalization, long-term engagement will be essential.

Several approaches could help avoid disrupt an already fragile sector. A number of pilots could first be conducted at a limited scale, and preferably around a robust service provider. To avoid asphyxiating the leading utilities of the regional scheme, rural localities lacking professional service providers would be integrated at a late stage of the process (Phase 4). In all cases, external technical (and financial) support will be instrumental to successfully navigate the complexity of such reform.

Introduction

Moldova's water and sanitation sector has been facing significant financial and institutional challenges since the collapse of the Soviet Union. A decade into independence, the decentralization of the sector devolved responsibility for service provision to municipalities. As a result, this country of 3.5 million inhabitants has more than 1,000 waterworks, each under the responsibility of a different organization. Over the past ten years, a number of services regionalization initiatives have been taken, often supported by international development partners. Given the acute needs for sector improvement, the relevance of regionalization to address them and the accumulation of experience – both locally and internationally, it is appropriate to undertake a review where the sector stands and explore options to move forward.

In close collaboration with the Government of the Republic of Moldova, the Bank conducted a review of sector performance and of local regionalization initiatives. In the light of sector constraints and challenges, the present report assesses the relevance of current practice and the need for a different approach to regionalization, with would help improve the quality, efficiency and sustainability of water and wastewater services. Its objectives are to inform the government and the community of donors of the potential benefits of sector regionalization and to propose a roadmap for its implementation.

The diagnostic on the present situation emphasized the lack of efficiency of most urban utilities. It showed that the lack of human, operational and financial resources in mid-size and small utilities does not allow them to properly maintain and develop infrastructures, and to provide a valuable service to the population. To fulfill their mission, these utilities should be able to benefit from competencies, both managerial and technical, which they are not in a position to recruit (because their lack of resources and attractiveness), or which cannot be outsourced (because of the lack of relevant local private sector). They should also be able to access substantial funds at reasonable conditions, which their small size and poor management record currently prevent them to do. The review concluded that the regionalization of services would be particularly relevant to address these shortcomings, if envisaged as an organizational cooperation between service providers. The review outlined a roadmap recognizing the complexity of the regionalization process.

The review has been conducted in close consultation with the Ministry of Environment. For the analysis of sector performance, data from the Association of Moldovan Water Utilities (AMAC) and from the International Benchmarking Network (IBNet) have been largely used. A questionnaire-based survey was conducted with nine water and sewerage utilities to verify and confirm the reliability of these data.

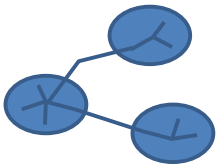
This paper is organized around four questions: (i) what is the regionalization of services; (ii) why is it important for Moldova; (iii) what has already been undertaken in that respect; and (iv) how could the country reap the full benefits of regionalization. It concludes with the presentation of a roadmap to sector regionalization. The review does not aim to be an exhaustive study of the issues at hand or provide answers to all the challenges that reform will present for the sector. Rather, it is a strategic analysis meant to identify the main principles of a regionalization reform relevant to the water and sewerage sector.

1. What is the regionalization of water and sewerage services?

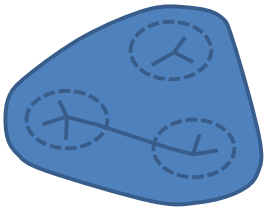
Regionalization of public services is a form of cooperation between water systems to improve service and efficiency (AWWA, 2008[1]). It has been widely practiced in many countries for water and sanitation services, as well as for other services such as the collection and treatment of solid waste. It can be referred to as aggregation or consolidation, which is used interchangeably in this report. Regionalization can also be defined as the grouping of several service providers into a single administrative and/or physical structure. In other words, regionalization can be about interconnection of physical systems. It can also be about organizational cooperation, through agreements between local governments (or their utilities), to share a number of activities.

Figure 1 – Two forms of regionalization

Physical interconnection between distribution systems



Organizational cooperation (even if not fully interconnected)



The regionalization of water services can offer a range of benefits. Specifically: (i) water systems interconnections can help correct the imbalances of *water resources* among municipalities; (ii) organizational cooperation can spur *economies of scale* in operations (and sometimes in investments[2]) and help improve sector efficiency (the most common driver of water sector regionalization reforms); (ii) service providers can *pool their capacity*, means and resources; (iii) differences in tariffs can be leveled thanks to cost-sharing possibilities, improving *equity of access* to services; and (iv) aggregated utilities are more likely to attract *financial support* from donors and eventually the private sector participation.

The size, scope and process of regionalization models vary by country, depending on the legal, administrative and water resources context. The literature on the regionalization of water and sanitation services is considerable, and notably from the World Bank (Kingdom, 2005)[3]. That report defines aggregation as encompassing three potential dimensions, further discussed in the next sections:

- Scale (or size): aggregated structures can group two neighboring municipalities, or several municipalities into a single region or across a broader territory;
- Scope: aggregated structures can provide a single service (for example, bulk water supply) or all services from raw water extraction to sewage treatment; they can also be responsible for several (for example operation and maintenance) or all functions (including investment and financing);
- Process: Municipalities may form aggregated structures on a voluntary basis. Alternatively, a higher level of government, driven by the overall public interest, may impose or incentivize the aggregation process. This aggregation may be temporary or permanent.

[1] AWWA Research Foundation, 2008, Regional Solutions to Water Supply Provision, Second Edition

[2] Clark, Robert M., and Richard G. Stevie. (1981). "A Regional Water Supply Cost Model," Growth and Change 12, no. 3, pp 9-16

[3] Kingdom, W. (2005). "Models of Aggregation for Water and Sanitation Provision", Water Supply and Sanitation Notes, Note No. 1

2. Why is sector regionalization important for Moldova?

The water and sewerage sector features a number of weaknesses that regionalization could address. The following sub-sections provide an overview of these constraints and deficiencies, with an implicit reference to the sector performance and institutional capacity that could be expected from developed European countries, to which Moldova aspires. However, it is important to note that considering the state of its economy (gross domestic product of US$2,038 per capita, average monthly disposable income of US$116 per person[4]), Moldova shares the sector challenges of low-income countries found on other continents.

2.1. Many regions lack access to adequate water resources

Moldova is a water scarce country with only two perennial watercourses. Current water availability in Moldova is estimated at around 500 cubic meters per capita per year. This is well below the 1000 cubic meters per capita threshold under which water scarcity begins to hamper economic development and human health and wellbeing, according to the Food and Agriculture Organization (FAO). Moldova has two main water basins: the Nistru (Dniester) basin at the East, which flows into the Black Sea, and the Prut basin at the West, a tributary of the Danube. Both rivers are perennial watercourses, but during the severe drought in 2012, the river flows dropped to 30-35% and 50-60 percent of their average flow respectively. Both have small tributaries but even the most important of them are not perennial watercourses. According to the United Nations Development Program (UNDP)[5], climate change could cause Moldova's surface water supplies to decrease by 16 to 20 percent.

In many regions deep underground water resources have inadequate quality and cannot be treated affordably. Around 4,800 deep wells (150 to 200 meters deep) have been drilled in Moldova for residential, industrial and irrigation purposes. Deep aquifers are available throughout the country, but are very heterogeneous in terms of yield and quality. Although these aquifers are geologically protected from the surface, water is often contaminated by high contents of hydrogen sulfide, fluorine, iron, etc. and not suitable for drinking purpose without specific treatment. Reducing fluorine contents would imply technologies such as distillation or reverse osmosis, which are not affordable in the local context. According to EHGeoM[6], the water table in deep aquifers is generally stable and has not been affected by recent droughts.

Shallow aquifers, commonly used in rural areas, do not meet quality or reliability standards. Shallow groundwater is available throughout the country, but the yield of shallow wells – 10 to 30 meters deep, widely in use in rural areas – is generally limited to 0.5 cubic meters per hour and a non-negligible number are subject to drought. Due to the lack of sanitary protection zones, shallow aquifers in rural settlements are frequently contaminated by inadequate sanitation facilities, use of fertilizers and presence of animals.

[4] Statistical Yearbook of the Republic of Moldova, 2012

[5] UNDP, 2009/2010, *Climate change in Moldova – Socio-economic impacts and policy options for adaptation*

[6] Hydrogeological Expedition in Moldova –agency under the Ministry of Environment in charge of monitoring underground water resource.

2.2. Sector performance improvement needs are acute, in particular in small towns and rural areas

While urban water service coverage is acceptable, sewerage services remain underdeveloped in small towns. National coverage in urban areas is estimated at 84 percent for water and 72 percent for sewerage, which leaves room for further expansion of water services and more critically of sewerage services. Beyond these country-wide averages, the situation is bleaker in the smaller towns (below 25,000 people): 78 percent have access to water services, 38 to sewerage services.

Service is inadequate in most towns. A third of utilities (more frequently among the smaller ones) offer intermittent water supply, sometimes less than 12 hours per day. Supplied water reportedly fails to meet microbiological *quality* standards in about 10 percent of cases, while in water systems with service interruptions, contaminations are likely more frequent. Outside of Chisinau, residential *consumption* is well below international standards (on average 52 liters per capita per day), likely in response to high tariffs. In more than half of the utilities, *wastewater* is discharged without an adequate level of treatment.

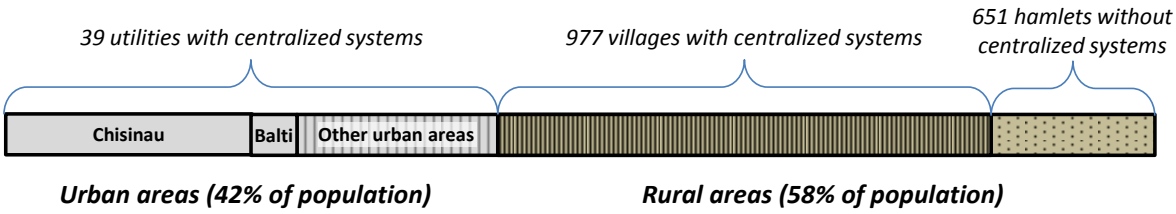
In rural areas, where 58 percent of the population lives, most lack access to safe drinking water. About 26 percent of rural population have reportedly access to piped water services. Households that do not rely on centralized system usually fetch water from shallow wells. Water quality in wells does not comply with the national standard for drinking water: water hardness usually exceeds very significantly the standards and almost 90 per cent of the samples taken from unconfined aquifers exceed the maximum permitted concentration for nitrate[7]. Drinking water is estimated to cause up about one in five of cases of diarrhea, gastrointestinal illnesses and acute viral hepatitis. Sanitation is generally performed through family pit latrines, which likely contributes to the bacteriological contamination of the nearby shallow wells.

2.3. The sector is fragmented into a myriad of inefficient small-scale service providers

The country has more than 1,000 waterworks, each under the responsibility of a different organization. The decentralization of water and sanitation services after 2000 devolved responsibility for service provision to municipalities and their service providers (see Annex 1 for more information on the sector institutional framework). Outside of the cities of Chisinau (750,000 inhabitants) and Balti (144,000 inhabitants), the 37 urban water and sewerage utilities active in Moldova operate in towns of 14,700 inhabitants in average. In rural areas, 977 villages are equipped with some centralized supply system, while 651 hamlets lack any centralized system (see Figure 2).

[7] UNDP, 2009/2010, *Climate change in Moldova – Socio-economic impacts and policy options for adaptation*

Figure 2 – A highly fragmented service provision landscape

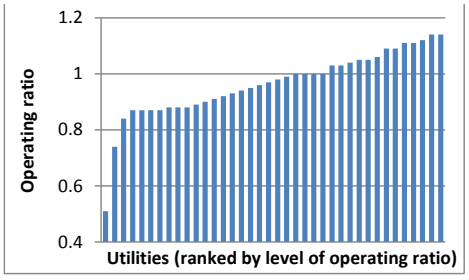


Sources: Bank team's own elaboration

Only six of the 39 urban water and sewerage utilities perform at acceptable level of performance. Based on a composite index combining performance parameters for which data was available (e.g. water services coverage, non-revenue water, operating ratio, metering and staffing ratio). six of the 11 largest utilities (in terms of population served) demonstrate a significantly higher level of performance than their peers (see Annex II): Ceadir-Lunga (in the Autonomous Territorial Unit of Gagauzia), Cahul, Floresti, Causeni, Chisinau and Balti. Even within this group, utilities require significant operational strengthening to reach satisfactory levels of performance per international standards. For example, some exhibit non-revenue water of 45 percent, operating ratio of 0.95 or staffing ratio of 30 staff per 1,000 connections.

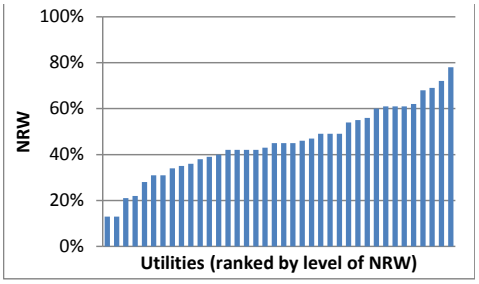
More than half of utilities are not financially sustainable. Operating revenue from water and wastewater services sales does not cover the operating expenses in 21 utilities. The difference is, in some cases, compensated by the revenue from side activities (generally water-related). Most often, utilities are accumulating debts to the social funds and the electricity companies; in extreme case (e.g. in Comrat), salaries are not fully paid for months.

Figure 3 – Operating ratio in urban utilities



Source: AMAC, 2011

Figure 4 – Non-revenue water in urban utilities



Source: AMAC, 2011

Operational efficiency is significantly undermined by high levels of non-revenue water. Total losses are rarely below 40 percent, and sometimes as high as 60 or 70 percent (see Figure 4). This situation reportedly stems both from both the poor condition of the aged water distribution pipes, and from the tampering of meters by customers. Pipe breaks (almost eight per kilometer per year) are more frequent in Moldova than in any other country in the region. Leak detection campaigns are almost non-existent, even though some utilities have the required equipment.

Energy inefficiency affects operational costs, and partly results from a lack of internal capacity. Energy audits conducted among six large utilities as part of the National Water Supply and Sanitation Project[8] have shown that, with immediate actions energy consumption could be reduced by an average 39 percent. The scope of improvement is likely even higher in small utilities with limited operation and maintenance capacity. These audits also showed that current inefficiencies stem not only from the use of obsolete electromechanical equipment, but also from systems' inadequate designs and operation, and importantly from a lack of capacity to diagnose the

[8] Energy audits and investment plans financed by the International Bank for Reconstruction and Development, IBRD

problems. With electricity accounting in average for 40 percent of operating costs, energy inefficiency can strongly impact utilities' financial viability.

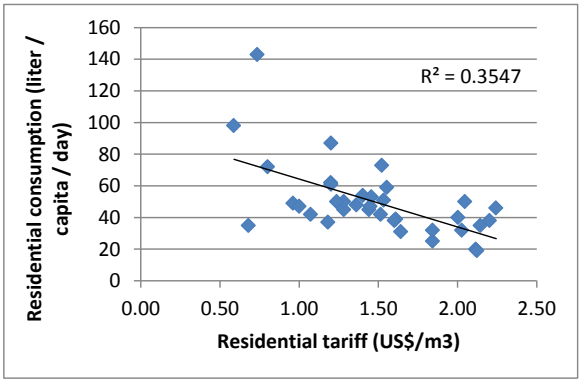
Most urban utilities are overstaffed and internal capacity is insufficient, in particular in small towns. Staff productivity ratios (to the number of customer) considerably exceed those of performing utilities. This situation is only partly the result of the low level of automation of the facilities and the lack of outsourcing opportunities. This quantitative approach of staffing does not resolve the acute problem faced by the quasi-totality of the utilities to recruit and retain talented professionals. Interviews with utility managers and Mayors during the field survey clearly demonstrated that utilities in small towns do not have the capacity to properly maintain, operate and develop their facilities and to improve the operational performance of the utility. Outsourcing or private sector participation are anecdotal, at most.

In rural areas, operational performance and capacity are very low. In many villages a department within the municipality is established to manage water services. Others have created water user associations or communal enterprises. In a few villages, private companies own and operate small water systems. Most organizations simply run the systems inherited from the former Soviet Union, but are unable to invest or to perform professional maintenance. This infrastructure is in a dire state of disrepair, and about half of the waterworks are now out of operation (50 percent in 2002[9], and unlikely to have significantly changed since then). No reliable information could be collected on service performance and on the financial situation of local service providers. This lack of capacity will in the future be amplified by demographic decline in small towns and rural areas.

2.4. Large disparities in affordability

In towns with higher tariffs, water supply services may not be affordable to low-income customers, limiting consumption. According to the Organization for Economic Co-operation and Development, OECD[10], about a third of urban population has to limit water consumption (or to increase illegal consumption) due to affordability constraints. Such response to high water bills seems triggered when tariffs exceed US$1.0 per cubic meter, as suggested on Figure 5. At the current consumption levels (52 liters per capita per day in average) water and sewerage services bills range between US$0.9 and US$3.5 depending on the utility, with an average of US$1.6. Such cost remains within acceptable affordability limits (i.e. below 5% of monthly disposable income) for 98 percent of urban population. At consumption level of 120 liters per capita per day (more representative of urban lifestyles), bills would exceed 5 percent of monthly disposal income for 31 percent of population.

Figure 5 – Impact of tariffs on water consumption



Source: AMAC, 2011

[9] OECD/EUWI (2013), *Viable Business Models for Sanitation in Small Towns and Rural Settlements in Moldova*
[10] *Ibid.*

2.5. Sector financing does not meet current needs

Current capital spending is insufficient to halt the deterioration of infrastructure, let alone increase the quality of services. Except for recently constructed facilities, the water and wastewater infrastructure is ageing, and the majority of the water supply and sewerage facilities is in poor state of repair and requires major rehabilitation or replacement. According a 2008 OECD report, spending needs over 2007-2025 could represent roughly US$40 million per annum. Actual capital investments have represented roughly US$25 million per annum over 2010-2012. Budgeted allocations for capital expenditure in utilities fall short of the estimated funding needs, and actual spending is even lower due to under-execution.

Aside from development grants, capital financing options are limited outside of a few large utilities. The development of water and wastewater infrastructure relies almost exclusively on development grants. Access to loans from international financing institutions (IFIs) has so far been limited to the country's largest cities able to demonstrate creditworthiness. Revenues from water and sewerage tariffs may be used for minor capital expenditure in the few (usually large) utilities generating an operating surplus. In 2012, this surplus was limited to US$0.7 million for all utilities outside of Chisinau. With regard to borrowing options on the private market, commercial lenders are unlikely to be able to provide affordable debt on terms compatible with the economy of the sector, which depreciates its assets over long periods and therefore requires long-term loan maturity, without a guarantee from the central government. In the absence of a municipal development bank, the only source of local debt is IFIs.

3. What is Moldova's experience in regionalization of water services?

The 2007 National Water Strategy[11] recognizes regionalization as a priority to address water resource quality and reliability constraints. The Water Strategy acknowledges the generally poor quality and unreliable potential of groundwater in Moldova. It recommends (i) the development of common supply schemes from the Nistru and Prut rivers; and (ii) the reduction of the number of operators, through a regionalization of the water supply and sewerage services. A draft revised Strategy under finalization at the Ministry of Environment confirms these sector development orientations. The OECD/EUWI Action Plan 2010-2015[12] also recommended that by 2015, preparatory works be conducted towards the establishment of regional operating companies.

Many intercommunal water supply schemes are being implemented across the country. One large inter-district scheme is currently operational and supplies the second largest city in Moldova (Balti), while a second one is planned for the near future (see Box 1). Many intercommunal systems have been implemented at a smaller scale, usually within a same district. They consist in the extension of water (and more rarely sewerage) networks from district capitals to neighboring villages. In a few cases, new

[11] "Strategy of Water Supply and Sewerage in Communities of the Republic of Moldova", 2007

[12] OECD/EUWI, 2011, Action Plan 2010-2015 for the implementation of the WSS Sector Strategy and policies in the water supply and sanitation sector in the Republic of Moldova

production schemes are implemented on the Prut or Nistru rivers and water mains laid inland. The most significant initiatives[13] at district level are presented in Box 2.

These projects often take advantage of the unused capacity of existing surface water production facilities. Because of the unreliability and poor quality of deep aquifers, several large surface water production facilities have been developed in the past decades. Notably: (i) in Chisinau (1958), Soroca and Balti (1984) on the Nistru River; and (ii) in Cahul (1970), Ungeni (1974), Edinet district (1973) from the Prut River. With few exceptions (e.g. Orhei, Floresti, Comrat), all major cities are now supplied with treated surface water. Following a sharp fall in water demand has occurred in the last 15 years: by 30 percent for residential water consumption and by 30 percent for industrial consumption. These drops are mainly due to: (i) the quasi-universal metering of customers; (ii) the decline of industrial activity; and (iii) in some instances (e.g. Chisinau) the development of their own supply system by industries, to escape high industrial water tariffs. As a result, production facilities are used at an average 45 percent of capacity (surface water), and 14 percent (groundwater)[14].

[13] Due to this lack of coordination at central level, no exhaustive inventory of these projects or of the number of beneficiaries is available.
[14] AMAC data, 2011

Box 1 – Regional inter-district schemes

Soroca – Balti: The Soroca-Balti water transmission scheme – including a water intake on the Nistru river, a treatment plant and a transmission line to Balti – was built in 1980 to supply the city of Balti. This system is currently used at 11 percent of its capacity. It is operated by JSC Acva-Nord, a subsidiary of Apele Moldovei, which sells bulk water to the water utility of Balti. Rehabilitation works are currently planned, funded by the National Ecological Fund (NEF). A feasibility study for the expansion of this scheme towards neighboring districts (Singerei, Telenesti, Floresti, Drochia, Riscani) is underway under financing from the European Bank for Reconstruction and Development (EBRD), and will assess the possibility of a public-private partnership approach (concession agreement) for the development and operation of this scheme.

Chisinau – Straseni – Calarasi: a Memorandum of Understanding has recently be signed between the Ministry of Environment, the municipality of Chisinau, and the district local councils of Straseni and Calarasi to support the extension of the Chisinau water system towards the capitals of these two districts (respectively 20 and 45 kilometers North-West of Chisinau). Financing options are being investigated. Chisinau water utility already serves informally (i.e. outside of any contractual framework) villages within or outside the municipal boundary, connected or not to its water and wastewater systems.

Figure 6 – Major inter-district water supply schemes

Source: Bank team's own elaboration

These initiatives are encouraged by funding dedicated to regionalization. The National Fund for Regional Development (NFRD) allocates grants to projects with the condition that they promote the regionalization of economic activities and infrastructure (see Annex 1 for more information on this fund). The improvement of services in small towns and rural areas is a key part of most IFIs' strategy in Moldova, and many have sought to implement such strategy through the financing of regionalization projects, as illustrated in Box 2. Regionalization initiatives currently capture about half of central government and IFIs' financial support to sector infrastructure development.

Box 2 – Examples of regionalization initiatives at district level

NFRD financed projects. This fund will finance over 2013-2015 the extension of 13 regional water and sewerage schemes, mostly at district level. More than 100 kilometers of water mains are planned to expand access to adequate water resource in remote rural areas. Five of them involve the interconnection of sewerage services and the development of centralized wastewater treatment capacity.

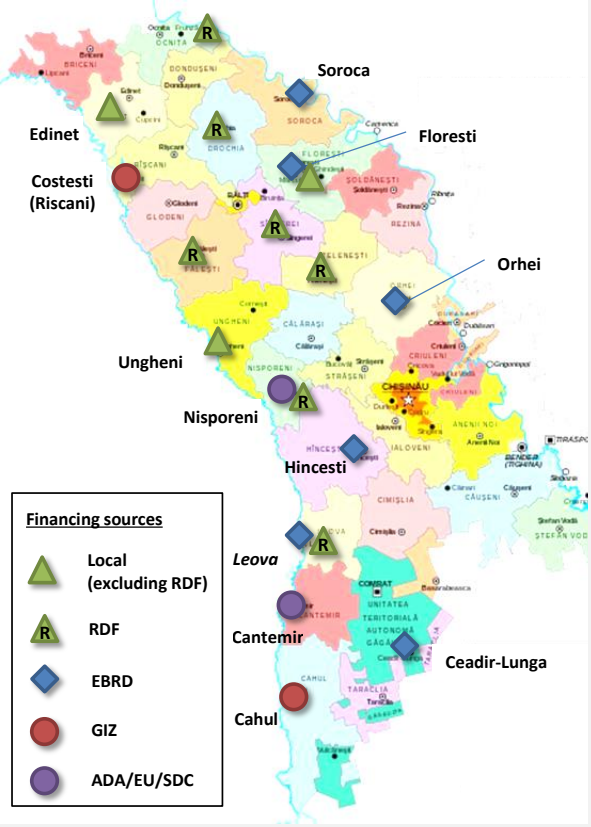
EBRD – WUDP (2013-2016). The Water Utilities Development Program (WUDP) of US$40.5 million is financed jointly by the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB) and the European Union (EU) Neighborhood Investment Facility. It focuses on the

regionalization of water supply and sewerage services and the creation of "regional companies" in six district capitals. The project aims at helping district utilities extend their services into nearby localities and become viable "regional operators". A technical assistance is also provided to these utilities through the development of a "Financial and Operational Performance Improvement Program".

GIZ – Modernization of Local Public Services (MLPS) Project (2010 – 2016). This project, co-financed by the German Cooperation Agency (GIZ), the German Government, the Romanian Government and the Swedish International Development Agency, offers an extensive technical assistance to the Regional Development Agencies. In that framework, GIZ has implemented two pilot regionalization projects consisting in the extension of the urban systems of Cahul and Riscani to neighboring rural communities, and in the strengthening of the existing utilities. GIZ is also supporting the development of a pipeline of investment projects (including for the interconnection of water supply systems, such as in Leova district).

ADA – Rehabilitation of water supply systems in Nisporeni district. The strategy of the Austrian Development agency (ADA) for Moldova in the period 2011-2015 gives the priority to water and sanitation in rural areas, with a dedicated annual budget of around US$2.5 million. ADA is the leading donor, with EU and Swiss Development Cooperation (SDC) support, for a project which will improve the supply of Nisporeni town (from Prut River) and surrounding rural communities. ADA also provides technical assistance for the rehabilitation of Cantemir wastewater treatment plant and sewerage extension to neighboring villages.

Figure 7 – Location of district-based regionalization initiative



Source: Bank team's own elaboration

Floresti district: a dozen of cities and communes have entered into a management contract with a newly established "regional" water and wastewater utility – based on the previous Floresti utility – to provide water and sanitation services. Similar arrangements are being planned in the five other areas of the WUDP. In some cases, this cooperation between utilities does not involve any physical interconnection of systems – a rare example of such type of regionalization in Moldova.

Most regionalization efforts are initiated without central coordination and a clear contractual and institutional model. Unless major inter-district schemes are foreseen, regionalization projects are usually designed and implemented at local level without planning coordination with national authorities. As a result, most schemes are envisioned at district level, which does not necessarily lead to least cost solutions. In addition, many local authorities do not have the capacity to design relevant contractual and institutional models describing the allocation of responsibilities, costs and revenues between

interconnected organizations. In a majority of infrastructure projects reviewed during the preparation of this study, little or no consideration had been given to such institutional or contractual questions.

Regionalization has been envisaged as an infrastructure solution to a water resources problem, but few have unleashed its full potential. In most projects so far, regionalization projects have been designed with the key objective of sharing water resource and installed treatment capacity (water or wastewater). With very few exceptions (such as in Chisinau or Floresti), none of these initiatives has considered the regionalization of services as a reduction of the number of operators, although it was highlighted in the 2007 National Water Strategy as a key sector development objective.

4. How could the sector reap the full benefits of regionalization?

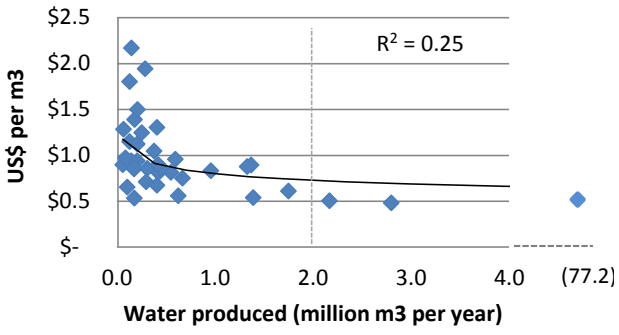
Access to adequate water resources has been so far the main driver for the regionalization of water and wastewater service providers in Moldova. Organizational cooperation between service providers could be very beneficial for the sector, as explained in the present section.

4.1. Organizational cooperation can yield a range of benefits relevant to Moldova

4.1.1. Economies of scale

Consolidating utilities could significantly reduce operating costs. The water and wastewater sector exhibits significant economies of scale, in particular among utilities producing less than two million cubic meters per year. Up to that threshold, the effect tends to tail off.

Figure 8 –Operating costs per cubic meter produced vs. utility size



Source: AMAC, 2011

4.2. The biggest savings would be in Significant economies of scale can and energy costs (which together average for 64 percent of shown by available data from the Association of Water Utilities (AMAC) on

The action plan is illustrated on Table 1. It identifies, for each task, a leading entity. In some cases, technical assistance to the MOE could be considered. Costs are tentative, and do not include physical investments. They apply to a country-wide regionalization process (not a pilot). If a large number of regional utilities is considered, the costs of the TA may be higher due to diseconomies of scale. On the other side, management contracts would not be an option, and WOPs do not entail significant costs.

Table 1 – Regionalization process action plan, time schedule and cost estimates

	Action Plan	Lead responsibilities	Tentat. Cost* (2013)	Phase 1								Phase 2								Phase 3								Phase 4
				Year 1				Year 2				Year 3				Year 4				Year 5				Year 6				Year 7 and beyond
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
	Phase 1																											
1.1	Setting up Regionalization Task Force under the MOE	MOE																										
1.2	Clarification of legal, tariff, planning, etc. implications	MOE Task Force	MDL 5 M																									
1.3	Completion of the water strategy	MOE	MDL 10 M																									
1.4	Preparation of the master plan	MOE Task Force	MDL 50 M																									
1.5	Presentation to LCs of the proposed regionalization process	MOE Task Force																										
1.6	Pre-adherence of Councils to the regionalization process	Local Councils																										
1.7	Preparation of TOR and tender documents for the TA	MOE Task Force	MDL 2 M																									
	Phase 2																											
2.1	Contracts for TA to utilities of participating LCs	Local Councils																										
2.2	TA to Utilities of participating LCs	TA provider	MDL 50 M																									
2.3	Emergency investments	Utilities																										
2.4	Final draft of regionalization documents	MOE Task Force																										
2.5	Confirmation of adherence to the regionalization process	Local Councils																										
	Phase 3																											
3.1	Setting up of the Association s of LCs	Local Councils																										
3.2	Setting up of Regional Utilities	Associations of LCs																										
3.3	Preparation of WOP / management contract TORs	MOE Task Force	MDL 3 M																									
3.4	Selection of management contract operator	Associations of LCs																										
3.5	WOP / Management contract (2-year)	WOP / Mgt Contractor	MDL 75 M																									
3.6	Service contracts with rural LCs	Regional utilities																										
3.7	Implementation of the master plan	Regional utilities																										
	Phase 4																											
4.1	Integration of rural service providers	Regional utilities																										

Annex I – Snapshot of Sector Legal and Institutional Framework

The present annex briefly describes the legal framework of the sector, as well as roles and responsibilities attached to key sector functions: policy formulation, asset ownership and development, financing, regulation, and service provision.

1. Legal Framework

The new Water Law no. 272 of April 26, 2012 aligns Moldova's water-related legal framework with EU water resource management principles. The Water Law repeals the 1993 Water Code, and creates a legal framework which encompasses (i) the management, protection and efficient use of surface and groundwater, by defining two river basins (the Nistru / Black Sea and the Prut/Danube basin); (ii) the creation of river basin district committees, which will represent the various stakeholders and have a consultative role in the development of water basin management plans; and (iii) the protection of water from pollution and setting of environmental quality standards. The wastewater discharges from urban areas and rural areas are regulated separately, and zones vulnerable to agricultural pollution will be designated.

The Law "On drinking water" no. 272 of 10.2.1999 establishes a legal framework and sets requirements for the safe operation of drinking water systems. A new (draft) Law "On public water supply and sewerage services" is under Parliament review; it would repeal Law 272 and supersede the Law on public utilities no. 1402 from 24.10.2002. This draft law on public water supply and sewerage services establishes the responsibilities of central and local public administration authorities and of central public authorities regulating public water supply and sewerage services, as well as the rights and obligations of consumers and of operators providing public water supply and sewerage services in localities, regardless of their size and legal form of organization. More specifically it addresses:

- the regulation of the activities on the provision of public water supply and sewerage services;
- the operation, maintenance and extension of public water supply and sewerage systems;
- the determination and approval of regulated tariffs for public water supply and sewerage services;
- the security and reliability of water supply;
- the protection of rights of consumers;
- the non-discriminatory access to public water supply and sewerage services.

2. Institutional Framework

- *Policy formulation*

Sector policy is defined by the central government. It formulates water supply and wastewater sector policies, such as service standards, institutional arrangements, and financing mechanisms. The main sector policy orientations are defined and implemented primarily by the Ministry of Environment (MOE), as well as the Ministry of Regional Development and Construction (MRDC) and the Ministry of Health (MOH). Within the MOE, the agency "Apele Moldovei" is responsible for the implementation of sector policy. The Ministry of Regional Development and Construction (MRDC) develops and promotes the

national policy for regional development, including in terms of inter-municipal water supply and sanitation infrastructure. The State Chancellery provides methodological and organizational support for public policy planning, development, and implementation by government authorities.

- *Asset ownership*

Water and wastewater infrastructure is owned by LCs. All water and wastewater infrastructure, is city/municipality property. Initially republican property, it has become municipal property, e.g., belonging to the LC of deputies, and cannot be leased or sold without the council's formal consent. Assets are "transferred" to the utility for "economic management," but ownership remains with the local municipality/city council.

- *Service provision*

In urban areas, services are operated by municipal enterprises or joint-stock companies accountable to local authorities, and ultimately responsible for the provision of water and wastewater services. Water and wastewater services are the responsibility of local (municipality, city) authorities. The majority of the water and wastewater utilities, responsible for services in urban areas, are municipal enterprises. They have de jure management independence, but are de facto heavily dependent on the local administration. Some (8 out of 38) utilities – including Chisinau ApaCanal – are Joint Stock Companies (JSCs).

In many villages a department within the municipality is established to manage water services. Others have established water user associations or communal enterprises. In a few villages, private companies own and operate small water systems. No reliable information could be collected on service performance and on the financial situation of local service providers.

The Moldovan Association of Water Utilities provides support to 39 urban water utilities. The AMAC hosts an institute for the professional development and certification of utility managers and staff (in general technical). In addition, it had developed and maintains a database of performance indicators for all water utilities, in collaboration with the International Benchmarking Network (IBNet).

- *Sector financing*

The National Ecological Fund (NEF) is the main source of financing for the sector. It is managed by the Ministry of Environment. It represents an important source of finance for water supply, sanitation and sewerage investments. Its financial resources are formed with the revenue of pollution taxes, penalties, and from taxes on imported polluting materials. The NEF finances investments related to all fields of environment (waste management, forestry, water supply and sanitation, etc.). During the 2010-2012 period, 253 water supply and sewerage projects were financed by the NEF for a total amount of about US$30 million. They accounted for 54 percent of overall NEF resources.

The Regional Development Fund (NFRD) is the major source of domestic funding for regional development. It has been established in 2010 and is managed by the Ministry of Regional Development and Construction (MRDC). Revenues of the NFRD come from state budget allocations, amounting to at least 1% of state budget revenues in a given year (US$15 million in 2013). Water supply and sewerage projects account for 15 to 25 percent of NFRD financing. Some projects are co-financed with bilateral donors, notably GIZ. The NFRD is administered by the Regional Development Agencies (North, Center, South) reporting to the MRDC.

International financial institutions (IFIs) are very active in the sector. Sector development is currently supported by IFIs, notably the EU, IDA, EBRD, GIZ and SDC. IFIs financial contribution for capital investments has represented in the recent years an average US$3 million per annum. IFIs' support revolve around three main themes: overall sector reforms, support to urban and rural service providers and sector regionalization (see Box 5).

Box 5 - International and bilateral financing of the WSS sector.

Overall sector reforms: The EU financed - Sector Policy Support Program (SPSP) in the water sector consists of:

- sector budget support (US$56 million) to the implementation of water sector reforms;
- a technical assistance (US$4 million) to the MOE (interrupted in 2012), to support the implementation of the SPSP along six components: (i) legal and regulatory framework, (ii) institutional reforms at central and local levels, (iii) financial planning and coordination, (iv) sector strategy update and effective monitoring, (v) MIS and support to Steering Committee, and (vi) capacity development;

Improvement of operating performance and capacity in urban utilities: The IDA financed - National Water Supply and Sanitation Project (2008 – 2013), US$14 million, focuses on: (i) rehabilitation and extension of urban water and sewerage systems in five district capitals, and (ii) improvement of the energy efficiency of their utilities. The project also supports capacity building of the MOE.

Development of services in rural areas: With a total budget of US$18 million co-funded with the Austrian Development Agency, the SDC-financed ApaSan program (2009-2015) supports the creation of decentralized water drinking systems and provides technical assistance to the setting up and training of water users associations; it also supports ongoing rural projects from other donors, and pilots local sanitation solutions. The IDA financed National Water Supply and Sanitation Project (2008 – 2013) focuses on the implementation of water supply systems in 10 rural communities.

Regionalization of services: a description of IFI-financed activities is provided in Box 1 and Box 2.

- *Strategy and planning*

A revision of the sector strategy is underway. With the support of an EU-financed technical assistance, the MOE has initiated a revision of the 2007 Water Strategy. The objective of this revision is to seek a better alignment with the National Development Strategy for 2008-2011 and the National Regional Development Strategy 2010-2012, as well as to reflect the conclusions of the Draft Action Plan 2010-2015 formulated by OECD. A first draft of the Strategy has been recently issued. The main objectives of this Strategy include (i) *professionalization* of publics WSS services through *inter alia* an adjustment of the legal and institutional frameworks, and the development of a culture of commercially operated operators; (ii) promotion of *market economy principles* through, in particular, the development of operators' autonomy from local governments and increased transparency in sector administration ; (iii) the *extension* of WSS systems with the development of raion level WSS master plans and the preparation of investments pipeline ; (iv) the promotion of *efficient and cost covering* WSS service providers through the development of a legal and institutional framework for the aggregation of service providers in regional utilities, the establishment of a regulator to license and oversee the operators and the

promotion of benchmarking practices ; and (v) the promotion of social partnership with an increased participation of civil society and consumers.

The development of the water and sanitation sector lacks thorough planning. A Sector Coordination Council was established in 2010 as an official partnership between the government and the donors. It gathers all sector stakeholders and donors in quarterly meetings for exchange of information and follow-up of current sector-related projects and programs. The Sector Coordination Council is chaired by the Ministry of Environment and co-chaired by SDC. Despite this initiative, projects financed by the NEF and the NFRD are usually selected without reference to any national or regional plan.

- *Regulation*

Tariffs are proposed by utility managers and determined by LCs. There is currently no economic regulator for water supply and sewerage services. The National Agency for Energy Regulation (ANRE) regulates the economic and commercial activities in the energy sector. ANRE has developed a methodology for determining, approving, and applying tariffs in the water supply and sanitation sector. It provides for the full coverage of operation expenses by water supply and sewerage services tariffs, and allows the application of different rates for all categories of users. The draft Law on Public Water Supply and Sewerage Services specifies that ANRE's mandate would be extended to the water and wastewater services. For the moment, the application of the methodology by LCs is not mandatory.

Operational monitoring is performed by the Ministries of Environment and Health, but it does not focus on utilities' performance. The MOE allocates the rights for water abstraction and permits for the discharge of effluents and defines wastewater treatment standards. The MOH is responsible for setting potability standards and for controlling and monitoring drinking water quality at national and local levels (through a network of 38 laboratories). Operational information is consolidated by the AMAC, but these data are not currently integrated in a monitoring process at MOE level. More generally, there is no systematic use of benchmarking methods to help utilities understand their operational weaknesses and to positively impact managerial decisions in future.

Annex II – Utility performance data 2011 (AMAC)

Table 2 – Urban water and wastewater utilities performance indicators

Water and Sewerag	Total Staff	Population x1000	Pop.Served (W)x1000	Pop.Served (S)x1000	Connect (W)x1000	Supply (hours)	Connect (S)x1000	Production Mm3/year	Water sold Mm3/year	Total losses%	Sales thru meters Mm3/y	Monthly bill 6m3	Operating revenue x1000 Lei	Revenue Water Lei	Revenue Sewerage x1000 Lei	Operating expenses x1000 Lei	Operating ratio	Labor costs x1000 Lei	Labor / operating costs	Energy costs x1000 Lei	Energy / operating costs
Anenii Noi	90	11.70	11.00	4.50	3.04	24	0.45	0.437	0.266	39.1%	0.223	116.04	5347	3417	2085	6143	0.87	3847	63%	884	14%
Bălti	384	144.30	115.20	92.90	17.80	24	5.80	6.400	3.720	41.9%	3.2	79.80	72200	45634	24705	76178	0.95	21915	29%	13979	18%
Basarabeasca	49	11.20	7.00	3.70	1.70	12	0.35	0.202	0.122	39.6%	0.08	80.70	2184	978	1235	2352	0.93	1340	57%	631	27%
Briceni	40	8.70	6.40	4.80	3.00	24	0.70	0.130	0.072	44.6%	0.068	138.00	2074	1004	1105	2461	0.84	1445	59%	670	27%
Cahul	177	39.80	37.10	28.32	5.91	24	3.80	2.040	0.890	56.4%	0.76	66.72	13651	10841	3556	12501	1.09	6961	56%	3026	24%
Cantemir	26	5.20	4.10	3.25	0.19	24	0.15	0.138	0.085	38.4%	0.067	88.14	1473	1132	396	1472	1.00	888	60%	233	16%
Caralasi	78	14.50	12.50	6.50	3.00	18	0.70	0.550	0.211	61.6%	0.184	108.00	4517	2992	1467	4957	0.91	2996	60%	1428	29%
Causeni	59	17.60	14.80	8.30	2.70	24	2.00	0.359	0.194	46.0%	0.178	123.00	4869	2959	1852	4369	1.11	2088	48%	1010	23%
Chişinău	1889	749.60	668.70	654.90	88.70	24	69.20	77.200	45.000	41.7%	38.7	55.14	532712	371900	135600	466217	1.14	159371	34%	116500	25%
Ceadir-Lunga	85	19.40	18.00	6.20	4.40	24	1.10	0.420	0.270	35.7%	0.26	153.42	6642	4081	2469	5930	1.12	3461	58%	1435	24%
Comrat	98	23.70	17.70	7.59	5.19	11	2.81	1.150	0.371	67.7%	0.32	124.62	7431	46436	2646	8405	0.88	3432	41%	3019	36%
Cricova	34	10.20	7.00	3.40	1.40	18	0.30	0.430	0.249	42.1%	0.23	56.34	3519	2032	1578	3586	0.98	1385	39%	821	23%
Criulni	41	8.30	6.50	3.80	1.40	24	1.40	0.263	0.133	49.4%	0.126	96.00	2503	1541	994	2440	1.03	1593	65%	394	16%
Donduseni	27	9.50	3.70	3.30	0.26	24	0.20	0.176	0.081	54.0%	0.071	89.52	1609	982	654	1605	1.00	758	47%	554	35%
Drochia	65	17.50	12.50	9.01	2.90	9	0.37	0.638	0.248	61.1%	0.206	101.76	5237	3376	1882	5933	0.88	3055	51%	1825	31%
Edineti	118	25.50	19.50	10.50	3.85	24	2.30	1.710	0.374	78.1%	0.302	137.34	10332	5869	4463	11802	0.88	4298	36%	3739	32%
Faleşti	60	14.30	9.20	4.70	1.94	24	1.42	0.456	0.205	55.0%	0.171	108.00	4288	2542	1723	4057	1.06	1755	43%	1307	32%
Floreni	16	4.00	3.90	1.80	0.80	24	0.02	0.121	0.105	13.2%	0.103	55.86	907	573	318	1039	0.87	481	46%	201	19%
Floresti	118	26.70	18.80	10.50	6.95	24	1.60	0.742	0.380	48.8%	0.363	94.74	9382	5132	3903	8589	1.09	4322	50%	1805	21%
Glodeni	44	10.00	8.85	5.91	1.60	12	0.72	0.169	0.086	49.1%	0.073	157.62	3855	1776	1863	3867	1.00	968	25%	102	3%
Hincesti	85	15.20	11.40	6.60	4.70	24	2.30	0.253	0.221	12.6%	0.132	107.28	5464	3222	2362	5800	0.94	3381	58%	1668	29%
Leova	51	10.00	9.30	4.50	2.30	20	0.20	0.285	0.166	41.8%	0.137	104.58	2815	2057	905	2828	1.00	1731	61%	830	29%
Lipcani	22	5.70	2.60	1.90	0.86	8	0.14	0.067	0.019	71.6%	0.008	133.56	392	284	83	530	0.74	374	71%	155	29%
Nisporeni	41	11.80	2.96	2.60	1.54	24	0.25	0.130	0.051	60.8%	0.033	150.78	1535	913	632	1670	0.92	1303	78%	326	20%
Ocnita	19	9.20	4.50	3.20	1.60	20	1.02	0.049	0.034	30.6%	0.016	135.30	985	407	444	887	1.11	660	74%	205	23%
Orhei	180	25.70	24.60	13.80	5.30	24	4.00	1.230	0.672	45.4%	0.58	96.54	15938	8989	6949	18383	0.87	8058	44%	2502	14%
Otaci	8	8.40	4.10	-	1.10	12	-	0.094	0.073	22.3%	0.016	58.80	761	761	0	740	1.03	357	48%	222	30%
Resina	48	13.40	10.10	10.10	1.60	24	1.10	0.537	0.209	61.1%	0.151	83.22	4580	3880	658	4015	1.14	2005	50%	1200	30%
Riscani	39	11.10	5.50	3.70	1.80	24	0.75	0.235	0.163	30.6%	0.149	114.00	3382	1943	1551	3242	1.04	2254	70%	514	16%
Sinjerei	39	12.60	10.00	3.60	3.00	24	0.60	0.390	0.222	43.1%	0.181	119.40	2822	1959	905	2952	0.96	1587	54%	639	22%
Şoldăneşti	13	6.30	3.90	-	0.80	24	-	0.072	0.057	20.8%	0.017	32.34	350	343	0	683	0.51	319	47%	364	53%
Soroca	127	35.20	27.40	18.60	4.00	24	2.95	1.222	0.647	47.1%	0.531	67.26	12299	9704	2426	12710	0.97	5811	46%	156	1%
Stefan-Vodă	51	7.80	6.80	4.80	0.76	24	0.08	0.155	0.112	27.7%	0.107	184.62	3251	2113	1225	2825	1.15	2377	84%	455	16%
Străşeni	51	18.40	9.60	7.60	0.87	24	0.26	0.403	0.124	69.2%	0.11	148.86	3879	1898	1853	4336	0.89	1991	46%	1535	35%
Taraclia	64	13.50	10.30	4.90	3.50	15	0.19	0.264	0.174	34.1%	0.157	118.14	3303	2047	1255	3662	0.90	1919	52%	804	22%
Teleneşti	29	6.70	2.85	1.24	1.06	24	1.09	0.164	0.066	59.8%	0.04	114.36	1727	953	719	1641	1.05	1019	62%	454	28%
Ungheni	160	33.00	28.40	19.40	4.91	24	3.20	2.460	1.360	44.7%	0.83	44.04	12960	9342	6202	14899	0.87	8359	56%	2556	17%
Vulcaneşti	54	15.40	5.60	2.60	1.80	12	0.30	0.164	0.107	34.8%	0.09	118.98	2188	1475	641	2085	1.05	1640	79%	731	35%

Source: AMAC, 2011

Table 3 - Performance assessment composite index

Utility	*Population*	Water coverage		Continuity		Staff / 1000 connect.		Customer Metering		Losses		Operating ratio		Index (sum of ratings)
	Nb	%	Rating	h/24	Rating	*No dimension*	Rating	%	Rating	%	Rating	%	Rating	
Ceadir-Lunga	*19,400*	93%	1	24	1	19	1	100%	1	35%	1	1.12	2	**7**
Causeni	*17,600*	84%	1	24	1	22	1	93%	1	34%	1	1.11	2	**7**
Cahul	*39,800*	93%	1	24	1	30	0	88%	1	28%	2	1.09	2	**7**
Floreşti	*26,700*	70%	0	24	1	17	1	100%	1	45%	1	1.09	2	**6**
Chişinău	*749,600*	89%	1	24	1	21	1	74%	0	36%	1	1.14	2	**6**
Bălti	*144,300*	80%	1	24	1	22	1	65%	0	13%	2	0.95	1	**6**
Stefan-Vodă	*7,800*	87%	1	24	1	67	0	100%	1	62%	0	1.15	2	**5**
Sinjerei	*12,600*	79%	1	24	1	13	1	97%	1	61%	0	0.96	1	**5**
Floreni	*4,000*	98%	1	24	1	20	1	100%	1	45%	1	0.87	0	**5**
Criuleni	*8,300*	78%	1	24	1	29	0	100%	1	42%	1	1.03	1	**5**
Cantemir	*5,200*	79%	1	24	1	137	0	100%	1	31%	1	1	1	**5**
Briceni	*8,700*	74%	0	24	1	13	1	100%	1	22%	2	0.84	0	**5**
Anenii Noi	*11,700*	94%	1	24	1	30	0	97%	1	13%	2	0.87	0	**5**
Soroca	*35,200*	78%	1	24	1	32	0	88%	1	61%	0	0.97	1	**4**
Riscani	*11,100*	50%	0	24	1	22	1	94%	1	60%	0	1.04	1	**4**
Leova	*10,000*	93%	1	20	0	22	1	100%	1	47%	0	1	1	**4**
Faleşti	*14,300*	64%	0	24	1	31	0	59%	0	43%	1	1.06	2	**4**
Edineti	*25,500*	76%	1	24	1	31	0	97%	1	42%	1	0.88	0	**4**
Vulcaneşti	*15,400*	36%	0	12	0	30	0	83%	1	n/a	0	1.05	2	**3**
Ungheni	*33,000*	86%	1	24	1	33	0	100%	1	78%	0	0.87	0	**3**
Teleneşti	*6,700*	43%	0	24	1	27	0	75%	0	72%	0	1.05	2	**3**
Taraclia	*13,500*	76%	1	15	0	18	1	97%	1	69%	0	0.9	0	**3**
Resina	*13,400*	75%	0	24	1	30	0	56%	0	56%	0	1.14	2	**3**
Ocnita	*9,200*	49%	0	8	0	12	1	11%	0	49%	0	1.11	2	**3**
Glodeni	*10,000*	89%	1	12	0	28	0	51%	0	45%	1	1	1	**3**
Drochia	*17,500*	71%	0	24	1	22	1	69%	0	42%	1	0.88	0	**3**
Donduseni	*9,500*	39%	0	24	1	104	0	50%	0	42%	1	1	1	**3**
Cricova	*10,200*	69%	0	18	0	24	1	79%	0	40%	1	0.98	1	**3**
Comrat	*23,700*	75%	0	9	0	19	1	94%	1	39%	1	0.88	0	**3**
Cojusna	*7,000*	n/a		n/a		23	1	n/a		38%	1	0.99	1	**3**
Caralas	*14,500*	86%	1	18	0	26	0	83%	1	31%	1	0.91	0	**3**
Şoldăneşti	*6,300*	62%	0	24	1		1	75%	0	61%	0	0.51	0	**2**
Orhei	*25,700*	96%	1	24	1	34	0	79%	0	54%	0	0.87	0	**2**
Basarabeasca	*11,200*	63%	0	12	0	29	0	51%	0	21%	2	0.93	0	**2**
Otaci	*8,400*	49%	0	12	0	n/a		36%	0	55%	0	1.03	1	**1**
Nisporeni	*11,800*	25%	0	24	1	27	0	79%	0	49%	0	0.92	0	**1**
Hinceşti	*15,200*	75%	0	18	0	18	1	78%	0	46%	0	0.94	0	**1**
Straşeni	*18,400*	52%	0	8	0	59	0	53%	0	68%	0	0.89	0	**-**
Lipcani	*5,700*	46%	0	8	0	26	0	48%	0	49%	0	0.74	0	**-**

Rating rules:													
	<75%	0	24h	0	>25	0	<80%	0	>45%	0	<0.95	0
	>75%	1	<24h	1	<25	1	>80%	1	30%-45%	1	0.95-1.05	1
									<30%	2	>1.05	2

Source: AMAC 2011, Bank team's own elaboration

Annex III – Water and sewerage tariffs

The overall residential tariff (weighted average) across urban areas represents US$1.31 per cubic meter for combined services. The non-residential tariff is on average US$3.61 per cubic meter.

Table 4 – Water and sewerage tariffs applied by urban utilities

Apa Canal	Water (Domestic)	Water (Industry)*	Sewerage (Domestic)	Sewerage (Industry)*	Water + Sewerage (Domestic)	Water + Sewerage (Industry)*	Industry* / Domestic tariff	Medium Tariff (Water)	Medium Tariff (Sewerage)	Medium Tariff (Water + Sewerage)
** VAT 20% not included*										
Ameni Noi	9.7	37.4	9.7	37.4	19.4	74.8	3.9	12.81	17.48	30.29
Balti	11.08	23.64	3.9	17.01	14.98	40.65	2.7	15.05	8.27	23.32
Basarabeasca	8	33.75	8	31.25	16	65	4.1	9.35	8.83	18.18
Briceni	11	35	12	26.6	23	61.6	2.7	12.82	14.34	27.16
Cahul	12	27.97	5.5	6	17.5	33.97	1.9	11.25	4.5	15.75
Calarasi	11	28	7	17	18	45	2.5	16.18	8.53	24.71
Cantemir	9.95	24	4.8	16.5	14.75	40.5	2.7	14.05	6.48	20.53
Causeni	12	38	8.5	23	20.5	61	3.0	14.55	14.6	29.15
Ceadir-Lunga	14	40	13.5	30	27.5	70	2.5	16	18.33	34.33
Chisinau	8.06	12.7	1.13	10.26	9.19	22.96	2.5	8.86	3.31	12.17
Cimisclia	10	10	8.4	8.4	18.4	18.4	1.0	10	8.4	18.4
Ciorescu	4.6	21	3.2	15	7.8	36	4.6	11.05	6	17.05
Comrat	13	33	12.55	30.83	25.55	63.83	2.5	14	19.25	33.25
Cricova	10	34.86	5	22	15	56.86	3.8	12.86	12.49	25.35
Criuleni	9.2	30	6.8	30	16	60	3.8	10.7	9.2	19.9
Donduseni	10	30	5.44	20	15.44	50	3.2	11.87	7.8	19.67
Drochia	10	47	7	23	17	70	4.1	17.81	12.35	30.16
Edinet	12.5	25.05	10.5	21.8	23	46.85	2.0	21.35	17.89	39.24
Falesti	9.14	35.2	9.04	22.16	18.18	57.36	3.2	10.23	10.59	20.82
Floreni	6	12.7	4	14.37	10	27.07	2.7	5.56	5.75	11.31
Floresti	14.49	27.56	4.41	30.24	18.9	57.8	3.1	17.76	17.5	35.26
Glodeni	13.2	54.83	13.2	52.99	26.4	107.82	4.1	23.61	24.28	47.89
Hincesti	11.84	40.79	6.25	22.05	18.09	62.84	3.5	13.95	13.88	27.83
Leova	11.6	28.78	8.5	26.09	20.1	54.87	2.7	8.3	7.42	15.72
Nisporeni	18.77	44	8	14.65	26.77	58.65	2.2	21.89	10.03	31.92
Ocnita	14	30	12.5	26.35	26.5	56.35	2.1	16	14.3	30.3
Orhei	12	21	3	28	15	49	3.3	15.7	16.1	31.8
Rezina	10	43	3.4	5.21	13.4	48.21	3.6	16.57	3.86	20.43
Riscani	10	25	9	18	19	43	2.3	13.27	13.17	26.44
Singerei	7	35.15	5	17.5	12	52.65	4.4	8.15	5.59	13.74
Soldanesti	5.4	12	3.1	3.1	8.5	15.1	1.8	6	3.1	9.1
Soroca	10.9	35.2	1.6	16.6	12.5	51.8	4.1	15.28	4.1	19.38
Stefan Voda	15	48.74	10	24.5	25	73.24	2.9	17.6	13.93	31.53
Straseni	14.6	30	10.7	24	25.3	54	2.1	15	11.2	26.2
Taraclia	10	37.5	10	37.5	20	75	3.8	13.61	19.95	33.56
Telenesti	10	35	9.15	26	19.15	61	3.2	12.39	15.35	27.74
Ungheni	3.88	13	3.46	12.12	7.34	25.12	3.4	6.18	5.72	11.9
Vulcanesti	14	37	14	35	28	72	2.6	15.52	16.67	32.19

Source: AMAC, 2011

Annex IV – Utility survey results

The questionnaire-based surveys have enabled to verify and confirm the reliability of AMAC data (which was further used in all analyses presented in this report).

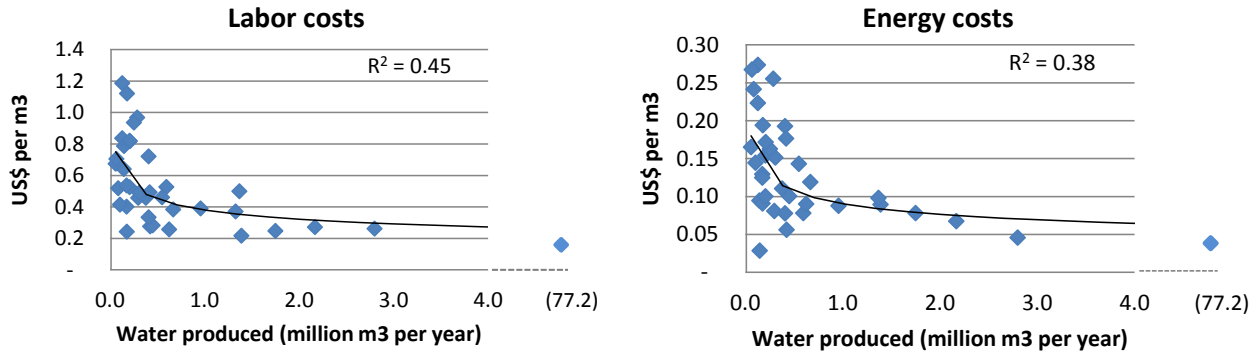
Table 5 – Utility performance data collected through the questionnaire based survey

Indicator	Unit	Balti	Cahul	Calarasi	Causeni	Edinet	Floresti	Leova	Ungheni
Population in service area	nr	149,700	43,500	16,100	17,562	29,564	25,057	10,255	32,000
Population served water	nr	113,500	39,150	11,000	14,700	18,690	17,438	10,255	28,400
Coverage (water)	%	76%	90%	68%	84%	63%	70%	100%	89%
Population served sewerage	nr	96,000	28,709	5,600	8,300	8,795	9,324	4,500	19,400
Coverage (sewerage)	%	64%	66%	35%	47%	30%	37%	44%	61%
Service level : house connections (water)	%	75.9	96	60	83.7	67.7	67.8	93	94.8
Service level : house connections (wastewater)	%	64.1	70	45	47.2	31.8	n/a	40	60.2
Continuity of service (h/d)	h/24	24/365	24/365	24/365	24/365	24/365	24/365	24/365	24/365
Water quality (compliance)	%	100	100	30	5	84	98	100	99.9
Metering (production)	%	100	100	50	100	100	100	100	100
Metering (customer)	%	86.4	89.5	98	100	88	100	83	75
Production capacity	m3/day	49,800	17,600	1,590	n/a	9,000	10,800	7,800	12,700
Average production	m3/day	17,950	5,947	1,493	n/a	4,800	2,628	850	7,700
Usage of water production facilities	%	36%	34%	94%	n/a	53%	24%	11%	61%
Length of water pipes (supply)	km	63.6	n/a	64	93	39.6	16	n/a	17.1
Reservoir capacity	m3	42,300	11,500	4,500	3,400	17,000	6,500	n/a	7,200
Volume billed	m3/year	3,735,169	1,853,014	545,200	208,600	508,710	378,593	180,746	1,427,300
Volume billed according to meters	%	93.6	90.6	39.9	n/a	87.5	100	100	65.7
Length of distribution system	km	200.9	80.2	64	77	91.4	141.3	41.6	68.1
Number of pipe repairs	nr/year	1784	913	148	107	82	612	236	368
Losses (NRW)	%	43.1	50.7	60.1	44.8	70.5	60.5	42	42.4
Length of sewerage system	km	146.4	51.6	36.4	44.9	52.7	33.3	12.6	60.8
Sewer blockages	nr/year	2904	1022	74	218	634	91	95	292
Wastewater treatment plant capacity	m3/day	60,000	13,700	1,400	5,700	5,500	5,300	4,700	15,000
Usage of sewerage treatment. facilities	%	17%	37%	107%	n/a	25%	20%	n/a	26%
Treated wastewater quality (compliance)	%	98.4	100	0	n/a	60	100	100	50
Electric consumption (water)	kwh	6,057,082	1,195,645	995,272	641,840	2,331,100	944,863	564,571	1,497,600
Electric consumption (wastewater)	kwh	3,209,183	372,108	162,823	102,426	176,000	335,133	88,032	350,100
Specific electricity consumption	kwh/m3	1.41	0.72	2.13	n/a	1.43	1.33	2.10	0.66
Connections - Domestic (water)	nr	16143	13262	n/a	5418	n/a	7545	4080	12623
Connections - Institutions (water)	nr	216	47	n/a	23	n/a	27	22	30
Connections - Indust/Business (water)	nr	1474	430	n/a	185	n/a	157	49	485
Connections - Total (water)	nr	17833	13739	n/a	5626	n/a	7729	4151	13138
Connections - Domestic (sewerage)	nr	5400	8390	n/a	3000	n/a	4265	1800	8500
Connections - Institutions (sewerage)	nr	216	36	n/a	23	n/a	11	19	26
Connections - Indust/Business (sewerage)	nr	1,474	374	n/a	161	n/a	82	51	410
Connections - Total (sewerage)	nr	7,090	8,800	n/a	3,184	n/a	4,358	1,870	8,936
Water consumption - Domestic	m3/year	2,610,904	737,400	172,900	183,700	234,905	273,324	144,719	1,086,500
Water consumption - Institutions	m3/year	222,509	45,500	27,200	12,600	10,324	18,700	30,723	126,500
Water consumption - Industries/Businesses	m3/year	901,756	130,600	17,700	12,300	263,481	86,569	5,304	214,300
Water consumption total	m3/year	3,735,169	913,500	217,800	208,600	508,710	378,593	180,746	1,427,300
Individual domestic consumption	lcd	63	52	43	34	34	43	39	105
Billing (water + wastewater)	MDL/year	90,650,796	15,461,925	3,722,300	3,272,100	13,790,600	6,655,760	4,197,415	16,418,005
Collection	MDL/year	88,619,059	15,095,481	3,647,854	1,963,300	14,563,700	n/a	4,135,744	17,469,918
Collection rate	%	98%	98%	98%	98%	106%	n/a	98%	106%
Total staff	nr	384	177	112	54	118	197	62	162
Average monthly salary	MDL	3,904	2,984	2,699	2,604	3,000	2,545	1,930	3,715
Staff / 1000 connections	nr	21.5	12.9	n/a	9.6	n/a	25.5	14.9	12.3
Staff / 1000 population	nr	3.4	4.5	10.2	3.7	6.3	11.3	6.0	5.7
Cost of personnel	MDL	17,606,906	6,983,300	2,721,000	2,095,000	4,085,400	n/a	1,176,440	6,309,500
Cost of electricity	MDL	14,141,407	3,237,300	1,652,200	1,152,500	4,066,800	n/a	993,664	2,822,200
Cost of chemicals	MDL	483,863	1,027,300	56,000	0	45,700	n/a	172,943	764,200
Cost of maintenance	MDL	9,447,155	1,464,800	27,900	1,999,800	4,741,500	n/a	228,819	1,352,200
Operating costs	MDL	41,679,331	12,712,700	4,457,100	5,247,300	12,939,400	n/a	2,571,866	11,248,100
Staff cost / total operating costs	%	42%	55%	61%	40%	32%	n/a	46%	56%
Energy costs / total operating costs	%	34%	25%	37%	22%	31%	n/a	39%	25%
Domestic tariff (water)	MDL/m3	11.08	12	16.5	12	12.5	14.49	11.6	3.88
Domestic tariff (wastewater)	MDL/m3	3.9	5.58	7	8.5	10.5	4.41	8.5	5
Industrial tariff (water)	MDL/m3	23.64	21.97	33.6	38	21.5	27.56	28.78	13
Industrial tariff (wastewater)	MDL/m3	17.01	6	20.4	23	19	30.24	26.09	19
Industrial/Domestic tariff (water/wastewater)	MDL/m3	2.7	1.6	2.3	3.0	1.8	3.1	2.7	3.6
Current assets	MDL	31,623,675	9,653,511	n/a	n/a	2,772,700	n/a	n/a	5,504,546
Current liabilities	MDL	50,916,117	2,751,605	n/a	n/a	5,158,100	n/a	n/a	1,671,127
Current ratio	nr	0.62	3.51	n/a	n/a	0.54	n/a	n/a	3.29

Source: Survey (April-June 2013)

Annex V– Utility questionnaire (Romanian). Several assumptions can be made: (i) larger utilities spread overhead costs across wider customer bases, and may have the know-how to optimize labor inputs in operations; (ii) larger utilities have a higher capacity to properly design, operate and maintain electromechanical equipment; (iii) mechanical efficiencies of hydraulic pumps (which usually account for more than 80 percent of energy consumption in Moldovan water utilities) usually increase with their capacity. Reduced costs are also likely achieved by larger utilities through bulk purchases of material and equipment, although in the absence of related data this assumption could not be tested.

Figure 9 – Operating costs vs. utility size



Source: AMAC, 2011

Economies of scale could be achieved with utilities covering a territory of at least 110,000 inhabitants. Overall, considering an average consumption of 50 liters per capita per day across urban and rural areas, and a target of 20 percent water losses, the two million cubic meters per year threshold would translate into a served population of about 85,000. A regional utility would unlikely serve the entire rural population of a given territory, in particular the hamlets (40 percent of rural localities) which had been left without centralized water system under the Soviet Union. To fully achieve economies of scale, regional utilities would need to service a territory of at least 110,000 inhabitants[15] (the average population of one district is 74,000).

Modeling of various aggregation scenarios should be conducted. Economies of scale are, in general, highly context dependent, as illustrated in Box 3. Utilities may not exhibit the same economies of scale if operating in an urban context (which AMAC data describes) or across a territory including both urban and rural areas. The multitude of small and non-professionalized service providers in rural areas suggests a strong potential for economies of scale. On the other hand, operating costs (notably labor and transportation) may be higher to when it comes to interventions on isolated facilities or to meter reading. Increased automation of equipment, as well as remote information and control systems (including remote meter reading) can, to a certain extent, offset these constraints. The water utility of Floresti has largely relied on such solutions to improve the financial viability of its regionalization projects.

Box 3 – Empirical evidence of economies of scale (and their variability) across countries.

Many studies found evidence that economies of scale can be achieved in small utilities, but the size

[15] This preliminary calculation supposes an identical population in all rural localities.

threshold beyond which economies tend to tail off appears context specific. In low and middle-income countries, Tynan (2003)[16] demonstrated that small providers (under 125,000 people served) had the most to gain from expansion, a similar conclusion as the one reached for Moldova. This study showed in addition that economies of scale gained vary widely between countries. Kim and Clarke (1998)[17] found that, in the United States, the most significant economies of scales are to be found in utilities producing less than 2.3 million cubic meters per year. According to Mizutani and Urakami (2001) [18] the optimal size of a water supply organization in Japan would be one supplying a population of approximately 766,000 people. A comprehensive literature review led by Ferro et al. (2011)[19] to the conclusion that in some cases, economies of scale can be achieved in utilities producing volumes of up 200 million cubic meters per year (1 million inhabitants).

4.2.1. Pooling of capacity

Organizational cooperation could spur the professionalization of service providers, if aggregated around a strong utility. Outside of a very limited pool of large urban utilities, most service providers (in mid-size or small towns and even more critically in rural areas) show a very limited professional capacity, as was evidenced during visits of utilities and throughout implementation of the World Bank water sector program in Moldova. Qualified utility managers at competitive market rates are unaffordable to most small urban municipalities[20]. Based on international experience (and consistently with the approach followed in the EBRD-financed WUDP regionalization project), the aggregation of service providers can enhance its chances of success if it is conducted around a well-performing service provider (which are few in Moldova). Larger entities would also be more attractive to the private sector, and could consider outsourcing certain functions (or more extensive forms of private sector participation) to gain efficiency and build their capacity. Finally, finding and relocating to small towns highly qualified managers may be particularly challenging. The inclusion of at least one large urban center within the perimeter of service of regionalized utilities would offer a significant advantage in that respect.

Within regional entities, utilities would be more protected from political interference from their asset owners. In general, the only service provider shareholder is the local power. Despite the requirements of the Law on Provision of Public Services (Article 20), most local governments have not signed a contract with their water and wastewater service provider. Political interference was reported in all interviews with utilities management. The multiplication of utility shareholders in a regional scheme could dilute and therefore reduce the possible political interference in the development of sector infrastructure and in the management of the services.

[16] Tynan, N. (2003), "Returns to Scale in Water Systems in Developing Countries: Some Econometric Evidence", World Bank

[17] Kim H. Y., and Clark M.R. (1988), "Economies of Scale and Scope in Water Supply," Regional Science and Urban Economics 18, no. 4, p. 479

[18] Mizutani F. and Ukarami T. (2001), "Identifying network density and scale economies for Japanese water supply organizations", Papers Reg. Sci. 80, 211–230 (2001)

[19] Ferro G., Lentini J.and Mercadier A.C. (2011)," Economies of scale in the water sector: a survey of the empirical literature", Journal of Water, Sanitation and Hygiene for Development, Vol 1 No 3 pp 179–193

[20] To staff three key management positions (general, technical and financial directions) with competitive remunerations of about US$1,000 per month per staff, two thirds of the 39 utilities would have to absorb an increase of their operating costs by more than 15 percent.

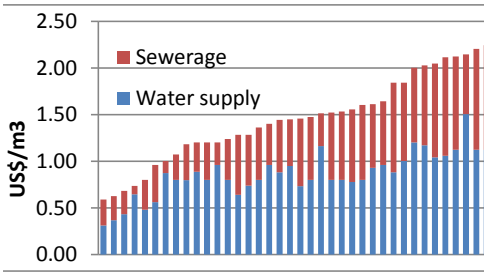
Include both water and wastewater services in the regionalization process. Water supply can be performed through large supply schemes whereas sewerage services will always remain a local matter. The question of regionalizing only water services and leaving sewerage services under the responsibility of local councils (LCs) could therefore be raised. This model, implemented for example in the Netherlands, would hardly be conceivable in Moldova where LCs do not generally have the capacity to professionally operate their sewerage systems and sewage treatment facilities. It would contravene the objective of offering professional support to weaker operators, a key driver of sector regionalization. In addition, local authorities in charge of sewerage services only would likely face major difficulties in collecting the monies from the population.

All utility functions should also be transferred to the regional utility. Water and wastewater utilities in Moldova are currently in charge of operation and maintenance, planning and execution of investments. In order to enhance professional capacity, to maximize economies of scale (on labor costs), as well as to limit disruption of the current arrangement, it would be recommended to include all these functions in the regionalization process.

4.2.2. *Increase equity of access to services*

Cost-sharing among utilities could level tariffs and improve equitable access to services. Tariffs for water and wastewater services are set by local councils following a cost-plus method, and are not subsidized. Therefore they reflect variations of operating costs between utilities[21], and are impacted by to factors such as operating efficiency, availability of water resource, topography, treatment technology, etc. Tariffs currently range between US$0.59 and US$2.24. Sharing operating costs would enable to level these tariffs and mitigate the impact of financially disadvantageous operating conditions on the affordability of services.

Figure 10 – Average tariffs in urban utilities



Source: AMAC, 2011

4.2.3. *Improve access to funds*

Smaller municipalities could expand and diversify their sources of capital financing. In Moldova, the development of services in small towns and rural areas has been for many years a strategic priority for the government and for IFIs. Many LCs have benefited from development grants, but the current level of financing support to the sector falls short of the estimated funding needs. Currently, all investments in rural water supply systems target about 15 percent of the country's rural population. Access to debt financing should therefore be considered. Governments, IFIs or private financiers may however find too risky and be reluctant to lend to small LCs. The Soroca-Balti public private partnership project in preparation illustrates the possibility for larger entities to access private funds (and private operators), to the benefit of all participating LCs. Finally, access to development grants from the NEF or the NFRD requires LCs' capacity to formulate a request that fulfills financiers' appraisal criteria, which can be facilitated with technical support from more experienced municipalities.

4.3. Adequate sizing of regional utilities is key to maximizing benefits

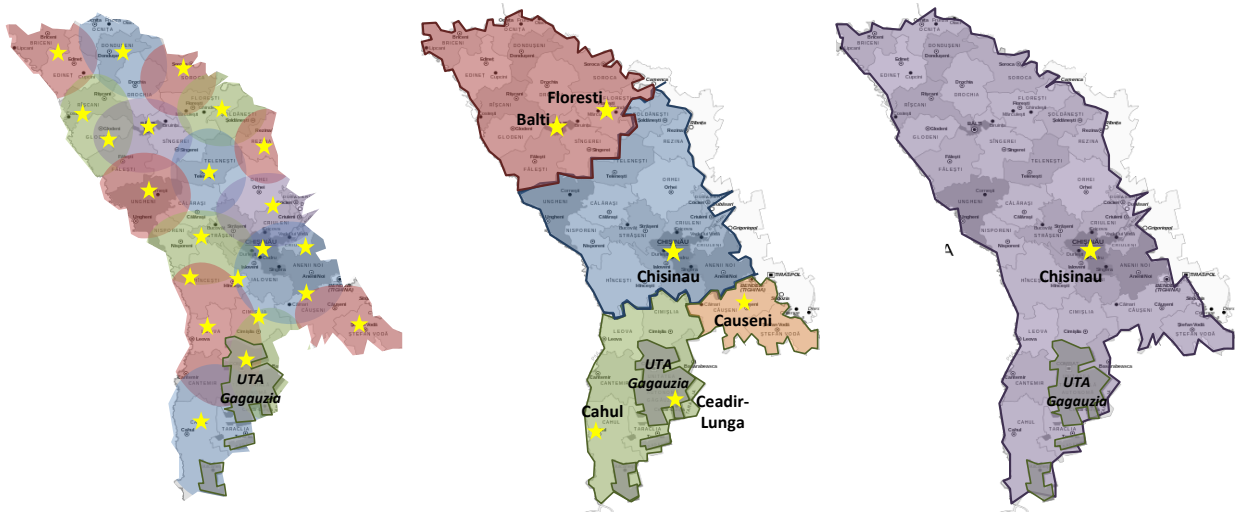
Sizing options should be considered based on the importance assigned to each objective. The most limited level of aggregation (left on Figure 11) would be driven by the need to access water resources, and should be defined by a national water supply master plan identifying systems interconnection needs and opportunities. In addition, it would seek to maximize economies of scale, which could be achieved over a territory of at least 110,000 persons (i.e. one and a half districts in average). Depending on the conclusions of the master plan, up to 22 regional operators could be created. In an intermediate scenario (middle on Figure 11), the professionalization of service providers and access to funds are also taken into consideration as a driving objective. In the example below[22], four regional utilities would ultimately be

[21] Utilities' failure to actually achieve cost recovery can be due to a variety of reasons, such as a recent deterioration of operational efficiency, unexpected variations in the level of consumption of non-residential customers (which can account for a large share of revenues), mistakes in the application of the tariff-setting methodology, etc.

[22] This example considers five utilities as having sufficient capacity to significantly and sustainably extend their perimeter of services. Balti and Floresti will most likely belong to the same Soroca-Balti interconnected scheme, therefore only one regional utility is shown here. The South region could hardly be serviced entirely from Cahul or

created around the most robust utilities. Finally, an aggregation at national level (right) would maximize these same objectives, since Chisinau water utility has the highest internal and financial capacity, and the city concentrates most technical and managerial talents available in the country. On the other hand, in a highly centralized service provision set-up, the periphery can develop a perception that the center does not take sufficiently their needs into account. Overall, the sizing decision will largely reflect political considerations at local level (as explained in Section 4.4), and in that perspective, the aggregation of utilities at national level may not appear realistic.

Figure 11 – Illustration of the range of sizing options for regional utilities

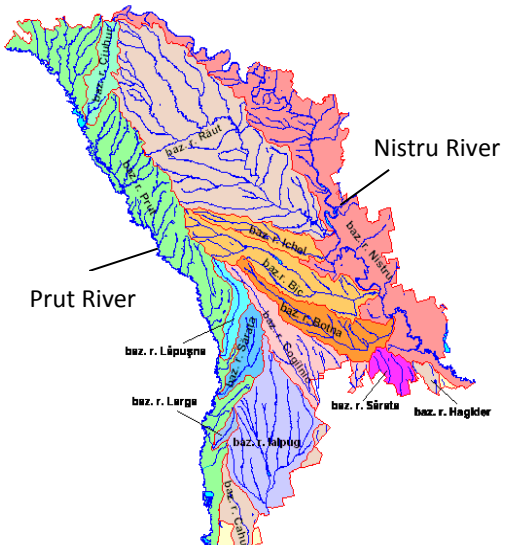


Note: regional utilities layouts for illustrative purpose only

from Causeni, considering communication constraints across the region. The participation to regionalization projects of service providers from the Autonomous Territorial Unit of Gagauzia would also be subject to confirmation.

Regionalization based on river basin boundaries may not be adequate in Moldova, considering their geographic layout. Aggregation may in some cases be pursued when the national (or regional) government seeks to implement integrated water resources management, whether to effectively allocate resources, to address environmental considerations, or to improve the efficiency of water resources management. The "hydrological" approach, i.e. hydraulic regions in accordance with river basins or sub-basins – essentially the Prut and Dniester Rivers – , would be attractive for an aggregation of sewerage services (for an optimal monitoring of discharge of effluents and water quality in the rivers). However, from the water supply perspective, aggregation according to water basins is not practicable, taking into consideration the geographical layout of the river basins in the country (see Figure 12).

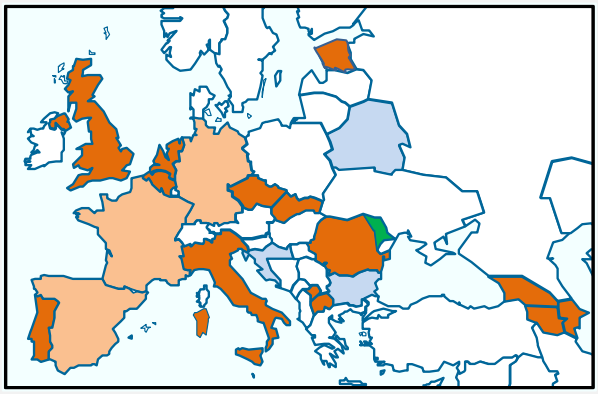
Figure 12 – Hydrographic map of Moldova – Main river catchment basins



Box 4 - Experiences of regionalization of water and sanitation services abound in Europe and its periphery

16 countries across Europe and the Caucasus have undertaken varying degrees of regionalization (see Figure 13). In addition, several countries (notably Spain, France and Germany) have replicated some of the features of utilities aggregation through public-private arrangements. By delegating services to private operators with national or even international experience, local authorities have secured access to a know-how accumulated in partnerships with other utilities; they have gained access to private financing sources, and may as well have achieved economies of scale (reduction of overhead costs, bulk procurement of material, etc.).

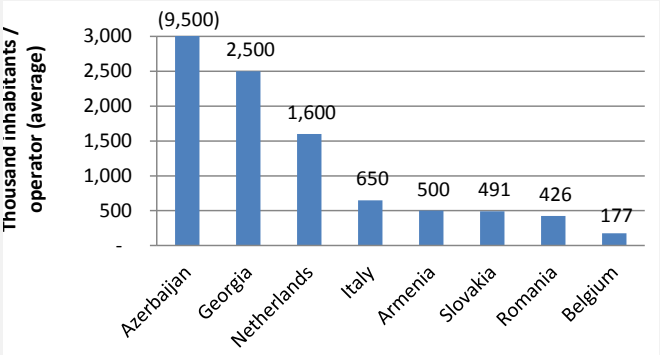
Figure 13 – Aggregation of utilities in Europe and the Caucasus



Source: Bank team's own elaboration

Experience across the region show there is no universal model to aggregation. The aggregation processes illustrate the diversity of approaches, closely linked to the historical, geographical, environmental, sociopolitical and cultural contexts of the countries. The direct replication of a particular model applied in another country is therefore excluded. Figure 14 illustrates, through a simple ratio of the number of water operators to countries population, the variability of aggregation levels achieved across several countries in Europe and in the Caucasus.

Figure 14 – Country population relative to the number of water utilities in several countries



Source: Bank team's own elaboration

4.4. Strong leadership is required from the central government to achieve regionalization

The central government needs to initiate and architect the aggregation process. The central government clarifies the legal framework, defines the institutional and contractual model(s), and spells out a vision of the regionalized sector. It provides guidance about potential forms for aggregated structures, governance structures, tariff-setting arrangements, and entry and exit rules.

In the current legal framework, participation is voluntary. Since the decentralization reform, LCs own the sector assets and bear the legal responsibility for providing water and sewerage services to the population. Under the present Law on Local Public Authorities, the LCs cannot be compelled to delegate their obligations to a regional operator, and they should collectively be the decision makers regarding the strategy and management of their common operator. In countries when the quality of services provided by local governments was no longer acceptable to the citizens, the law has in some cases has been amended to allow the aggregation process to become mandatory (such as for example the case in Italy, in England and Wales or in Georgia). However, the outcomes of such approaches have been mixed and depended to a great extent on the strength of law enforcement powers at national level. In the political context of Moldova, the size and layout of regional utilities will ultimately stem from political decisions reflecting LCs' willingness to aggregate.

The barriers should not be underestimated. In delegating their prerogatives to a regional operator, the LCs will lose direct control over the services to their population (even if they maintain a voice in the regional operator's activities). Municipalities with lower service costs may refuse subsidizing those with higher costs. Non-qualified employees of the existing utilities may fear to lose their jobs in the search of the regional operator for increased productivity, and may lobby the LCs to resist the regionalization process. Large scale aggregation maximizing benefits (i.e. at regional or even national level) may not be achievable in the short term and be postponed for a later phase.

Financial incentives and a clearer articulation of its benefits will be critical to foster LCs' adhesion. To overcome LCs' possible reluctance to the regionalization process, incentives (such as the allocation of development grants for the development of regional infrastructure) will be required. Sustained financial commitments from the government and the donor community, as well as a strong political will would be essential to convince the LCs. If reluctance comes from utility staff members, who fear to lose their jobs in the aggregation process, guarantees would be necessary, e.g. in the shape of re-training, financial incentives for establishing small enterprises (outsourcing perspective), early retirement package, etc. To generate interest from local authorities, the central government could elaborate a framework helping them to evaluate the costs and benefits of a proposed aggregation. Such exercises have been conducted in a number of aggregation processes and have usually proved useful to foster interest[23].

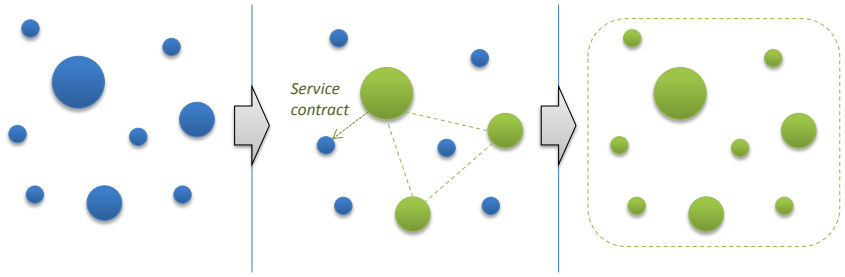
5. The proposed roadmap recognizes the complexity of sector regionalization

The 10-year roadmap recognizes ownership and capacity as key challenges. In Moldova, the implementation of regionalization would be initiated, promoted and managed by the government, whereas decision makers are hundreds of local and municipal Councils. The regionalization process would therefore likely be long and strenuous, as is the case in most foreign regionalization experiences. The proposed roadmap includes four main phases spanning over at least 10 years: two years to define the concept and raise interest among LCs (Phase 1); two more years to strengthen the participating service providers before the reform (Phase 2); another three years to support the establishment and initial operations of the regional utilities (Phase 3); and after three years, regional utilities may be sufficiently stabilized to allow the integration of small rural service providers (Phase 4). This proposed plan should be flexible, and its sequencing and duration could be further adapted depending on the interest and capacity of LCs and of their operators.

[23] Kingdom (2005)

Start at a limited scale and with robust service providers to mitigate risks. The implementation of the proposed roadmap should not be disruptive for an already very fragile sector. In that perspective several principles could be taken into consideration. First, instead of a country-wide regionalization, pilot projects could first be conducted with strongly motivated LCs and involve a limited scale of aggregation. A successful experience could generate interest from other LCs and facilitate replication at larger scale. Second, the integration of rural localities lacking professional service providers (the vast majority) may asphyxiate the leading utility of the regional scheme if it is already weak (the case for most utilities, as explained in section). To mitigate such risk, the aggregation could initially leave aside rural LCs. As soon as the regional utility is able to sustain an acceptable level of performance, it may start incorporating them, as illustrated on Figure 15. During the transition period, the regional utility could decide to provide specific support to rural localities through service contracts.

Figure 15 – Two-step aggregation of service providers



External technical support could be instrumental to successfully navigate the complexity of such reform. The regionalization of services could transform the sector. Moldova could largely benefit from the experience accumulated in neighboring countries throughout the past decade (e.g. Romania, Kosovo). Such support could for example take the form of study tours, participation to knowledge exchange workshops on the topic[24], or technical assistances on specific topics. In addition, since this reform will require major changes in processes, thinking and working habits at local level, it could be beneficial to receive support and advice from organizations specialized in change management. Throughout the reform, the AMAC could also play an important role by providing technical support to utilities, and by extending benchmarking to the newly created entities.

The following sub-sections describe the main objectives of each phase of the reform.

5.1. Phase 1: clarify the concept and build ownership

Lay the foundations of regionalization. The objectives of this phase should be to: (i) clarify the legal, institutional and financial frameworks of the reform; (ii) prepare a master plan narrowing down the range of aggregation options and describing investment needs; and (iii) generate interest of the LCs for the process. This phase would take up to two years. In some cases, extensive assistance to small or medium-size LCs with limited internal capacity may also be needed, to help them understand the concept of regionalization and plan for its implementation. These activities would require a strong mobilization from the MOE, and in that perspective the creation of a Regionalization Task Force within the Ministry would be recommended. This Task Force would be composed of water sector, legal, institutional, financial and communication experts (on full or part-time basis). This Task Force could also

[24] such as the ones organized by the International Association of Water Supply Companies in the Danube River Catchment Area (IAWD)

include representatives from other key sector stakeholders (e.g. central government agencies, regulator, donors) to foster their ownership and commitment to the reform.

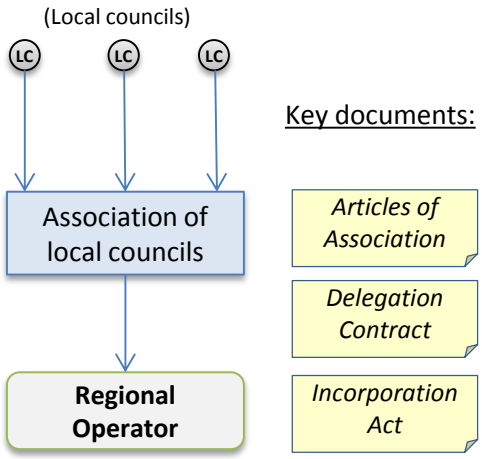
i. Clarify the legal, institutional and financial frameworks

Establish relevant contractual and institutional models. The interconnection of water systems requires that several key questions be addressed, such as: (i) at institutional level: who owns, finances and manages assets; (ii) at financial level: who sets tariffs, and how are profits and losses shared between service providers; (iii) at operational level: can weak service providers cope with an increased scope of responsibilities? Suboptimal answers to these questions (or their absence) could, for example, leave communities highly vulnerable to business decisions taken by the parent service providers, interconnection infrastructure without any maintenance, or urban utilities unable to adequately operate services and generate revenues in an unfamiliar rural context. It will also be important to verify the consistency of the regionalization model with potential decentralization policies in other areas (such as fiscal systems, capital spending, etc.).

Define a model of article of association for LCs. As stated above, according the Law on Local Public Administration, the LCs should be collectively the decision makers regarding the strategy and management of their common operator. Although the Law on Local Public Administration (Article 14) stipulates the right for LCs to associate with the objective of improving the quality of services of common interest, the regulatory framework is not as explicit about the legal forms and patterns of such cooperation[25]. A detailed review of the legal framework should therefore be conducted, to ensure its consistency with the considered institutional model. In this preparatory phase, a model of articles of association should be prepared, with a particular focus on three aspects:

- governance arrangements: how are voting rights allocated among LCs?, how can small or medium size LCs keep a voice as shareholders of the regional operator and be sufficiently represented in the decision-making process?
- conditions required to join and withdraw from the association;
- regime of assets: who owns the assets created under the association?, and in case of disbanding of the association, how are these assets returned to their original owner, and what happens with the assets created under the association?

Figure 16 – General institutional set-up



Source: Bank team's own elaboration

Define the legal status of regional operators and their contractual relationship with the association. A model of incorporation act of the regional operation could also be prepared to clarify its legal status[26], addressing questions such as the entry or exit rights of shareholders, the distribution of shares and

[25] USAID, 2013, *Intercommunal Cooperation and Regionalization of Water Supply and Sanitation in Moldova*

[26] In some cases it may be preferred to increase the capital of the main existing utility through participations from new equity partners.

voting rights between them. The delegation contract would most likely be in the form of a concession[27] contract (the operator is responsible for both operation and investment). It would need to anticipate address key questions that arise under such type of contract, such as: who decides and finances investment?, how are tariffs set and adjusted?, how is the performance of the regional utility monitored and what happens in case of failure to meet its targets?

Reassess tariff policy. The water and sewerage tariff policy within the regionalization context must be clearly stated from the outset, since it could be the stumbling block for a number of LCs. The policy should in particular take into consideration the questions of heterogeneity of levels of service and capacity to pay between urban and rural areas. If, in average, water services are just affordable for a majority of rural (and peri-urban) population, in some places, the most vulnerable persons may have difficulties for settling their water bills. At the average tariff of US$1.0 per cubic meter for water supply only in urban areas, 20 percent of rural population would have difficulties settling their water bills. Such situation is encountered in rural communities connected to the neighboring urban areas, where many households continue to use shallow wells for non-drinking purposes, as long as these wells are not drying up. The tariff policy should therefore clearly state how the tariff will remain affordable to the poorest segment of the population.

Identify financing support and define financial incentives. One of the key drivers for the regionalization would be an easier access to funds. The adherence to the regionalization process will therefore be subject to a strong commitment from the government and the donor community to financially and sustainably support the process. In that spirit, parts of government funds (e.g. the NEF, and the NFRD) might be reserved for utilities willing to join the process. More generally financial commitment to the reform from the central government and from IFIs should be clarified at the onset of this phase.

Update the National Water Strategy. To clarify the overall sector policy framework and ensure its consistency with the regionalization process, the revision of the National Water Strategy, initiated in 2011 with EU financial support, should at the stage be finalized. These preparatory works should also build on the sector strategic recommendations outlined in the OECD/EUWI Action Plan 2010-2015.

ii. Investment planning tool

Prepare of a reliable master plan. As explained in section 4.3, a nation-wide water supply and sanitation master plan would define a framework within which sizing options can be developed. The objective of the proposed national master plan would be, for each LC, to: (i) identify long-term needs and source of water supply; (ii) identify investment needs for rehabilitation, replacement or extension of the water and sewerage facilities and their costs; and (iii) prioritize and assess the costs of investments. Without such planning tool, the regional operators would not be able to accept and fulfill their mandates of concessionaire of the services. Its preparation is therefore urgently needed, under the coordination and supervision of the Ministry of Environment (MOE). This national master plan will integrate the recommendations of local master plans, prepared in accordance with the *Guide for the Preparation of Water and Sanitation Master Plans*, developed by the MOE.

[27] An alternative option would be a lease/affermage contract. In such case the operator is responsible for operation only, and investments are carried-out by the association of LCs which has the status of asset-holding company (AHC). To be successful, this latter model requires a strong capacity at AHC level to plan and execute investments. This approach may be considered if services are delegated to a private operator which would not be eligible for public development grants. Otherwise, it would not be recommended as long as (i) the level of aggregation remains limited; (ii) professional resources in the sector are scarce.

iii. Mobilization of LCs

Assess LCs' buy-in before moving forward with reform. The Task Force would prepare for the LCs a clear argumentation on the costs and benefits of the regionalization process, and the key conclusions of the legal and tariff review described above. A "roadshow" would be organized to consult with LCs. Public information campaigns could also be organized to communicate reform benefits to end water users, which would facilitate buy-in from their LCs. Interested councils would be required to express their pre-adherence to the process, which entails them to benefit from a technical assistance (TA) described in the following section. This would not constitute a final commitment to the regionalization process. Pre-adherence of a significant number of LCs would be required to start up the process. Also, in preparation of the next phase, the terms of reference and bidding documents for the TA would be prepared.

5.2. Phase 2: strengthen service providers before the reform

Prepare service providers for the aggregation process with TA and priority investments. A two-year TA to the participating service providers would be hired to audit their level of performance and to review managerial aspects. Specifically, it would provide support to (i) improve of their organization and internal processes (through training and on-the-job training), (ii) increase of revenues (through improved customer management procedures) and (iii) optimize of their costs. Detailed three-year Corporate Development Plans – including maintenance plans, staffing plans, etc. – would be submitted to and discussed with the LCs for approval. These plans would integrate the recommendations of the master plan, to take into account the possible impact of new investments. Investments identified by the TA provider that would allow immediate improvement in the utility's operations would ideally be considered as priorities by the NEF and the NFRD. The private sector could also be involved in this phase through simple performance-based service contracts aimed at reaching efficiency gains on specific aspects of utilities' operations (such as leakages reduction). If certain local councils immediately express a strong willingness to pilot regionalization projects, Phases 1 and 2 could be carried out in parallel.

Complete the review of the legal and institutional framework. All contractual aspects regarding the regionalization process would need to be finalized (association of LCs, delegation contract, etc.) during this phase. Also, draft terms of reference would be prepared for a performance-based management contract (or water operator partnership, WOPs), which could be implemented under Phase 2 between the forthcoming regional operators and a reputable professional utility.

Local councils should confirm their participation by the end of this phase. In addition to the LCs that expressed interest during the previous phase, any other interested council would be able to join the regionalization process at this stage.

5.3. Phase 3: support the establishment and initial operations of the regional utilities

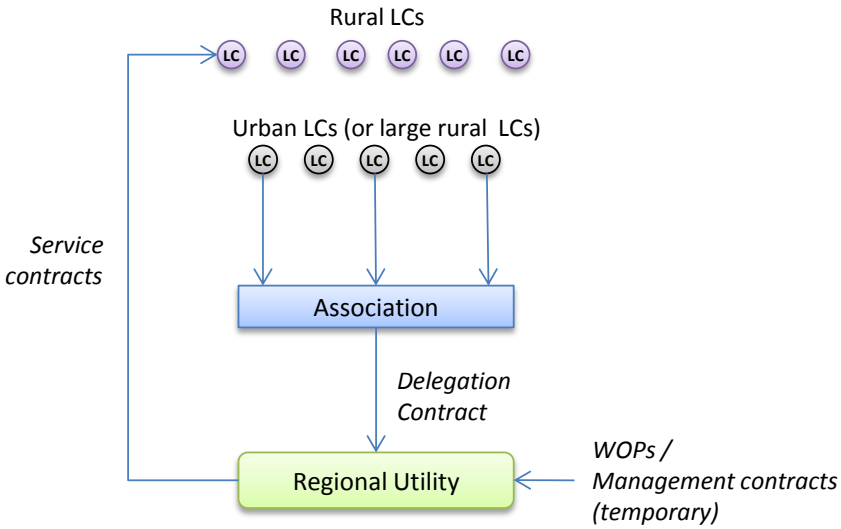
Support the establishment and operations of regional utilities. This implementation phase would take place only if a significant quorum of LCs has officially confirmed their decision to join the regionalization process. It would include the following steps: (i) the associations of LCs and of the regional utilities are created; (ii) the concession contracts between associations and the regional utilities are signed; (ii) WOPs

are established with reputable operators. Alternatively, if regional utilities are large enough, operators could be engaged in performance-based management contracts with the boards of the regional utilities for a two-year term. Under such arrangement, the management of a regional utility would be temporarily delegated to this operator under the association's supervision. A management contract would enable to provide a much more significant support to regional utilities than WOPs, but they would only be feasible is aggregation is operated at a large scale[28]. The institutional set-up established under this phase is illustrated in Figure 17.

Partnering with experienced operators would be critical. The key objectives of the WOPs (or management contracts) would be to: (i) support the organization of regional utilities' headquarters, through the identification, hiring and training of professionals and specialists for the central and support services; (ii) strengthen the regional utilities' operational local branches through the introduction of common procedures, the application of updated business plans with the support from headquarters' resources; (iii) and help regional utilities implement the tariff policy. After two-year support from the "mentoring" operators (or management contractors), the regional utilities would be expected to efficiently manage the company, under the associations' supervision and according to the concession contracts. During that phase, the regional utilities would implement the priority projects identified in the national master plan. After two years, the regional utility would be expected to reach full operational autonomy.

Regional utilities could support rural areas not yet part of the association. Renewable service contracts could, at that stage, be signed between local branches of the regional utility and LCs of rural localities for operational assistance. The "mentoring" operator (or management contractor) would support regional utilities in preparing standard service contracts.

Figure 17 – Institutional set-up under Phase 2 of the reform



[28] Based on international experience, below a customer base of 500,000 people, few operators may be interested by a management contract.

5.4. Phase 4: expand to rural localities

Expand to rural areas as soon as regional utilities are stabilized. After completion of the WOPs (or management contracts), regional utilities may need some additional time to (i) complete the rehabilitation, replacement or development of infrastructure; and (ii) reach and sustain an acceptable level of performance without external support. Rural communities equipped with piped water systems may then join (on a voluntary basis) the associations of LCs. The duration of this last phase would strongly depend on the original capacity of aggregated utilities. The four phases could last up to 10 years.

5.5. Action plan

The action plan is illustrated on Table 1. It identifies, for each task, a leading entity. In some cases, technical assistance to the MOE could be considered. Costs are tentative[29], and do not include physical investments. They apply to a country-wide regionalization process (not a pilot). If a large number of regional utilities is considered, the costs of the TA may be higher due to diseconomies of scale. On the other side, management contracts would not be an option, and WOPs do not entail significant costs.

[29] The proposed cost estimates are based on a preliminary assessment of the required time inputs from international and local consultants (with respective costs of US$15,000 and US$1,500 per month, and an average 25 percent additional costs for reimbursable):
- Item 1.2: five local staff/experts (water utility, legal, institutional, financial) on full-time basis and three international experts for short-term support;
- Item 1.3: assessed based on general financial indicators of the previous EU-funded technical assistance program;
- Item 1.4: twelve local staff/experts (various technical fields, surveyors, financial) on full-time basis and five international experts for short-term support;
- Item 1.7: three local staff/experts (water utility, institutional, procurement) on full-time basis and two international experts for short-term support;
- Item 2.2: based on a blanket cost of US$1 million for each full-time international resident staff (covering local experts, additional international support, reimbursable, etc.). Four such utility experts (technical, commercial, financial and human resources would be considered).
- Item 3.3: four local staff/experts (water utility, institutional, procurement) on full-time basis and three international experts for extensive support;
- Item 3.5: based on a blanket cost of US$1 million for each full-time international resident staff (covering local experts, additional international support, reimbursable, etc.). Four such utility experts (technical, commercial, financial and human resources would be considered) on a 75 percent time involvement basis.

Table 1 – Regionalization process action plan, time schedule and cost estimates

	Action Plan	Lead responsibilities	Tentat. Cost* (2013)	Phase 1								Phase 2								Phase 3								Phase 4
				Year 1				Year 2				Year 3				Year 4				Year 5				Year 6				Year 7 and beyond
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
	Phase 1																											
1.1	Setting up Regionalization Task Force under the MOE	MOE																										
1.2	Clarification of legal, tariff, planning, etc. implications	MOE Task Force	MDL 5 M																									
1.3	Completion of the water strategy	MOE	MDL 10 M																									
1.4	Preparation of the master plan	MOE Task Force	MDL 50 M																									
1.5	Presentation to LCs of the proposed regionalization process	MOE Task Force																										
1.6	Pre-adherence of Councils to the regionalization process	Local Councils																										
1.7	Preparation of TOR and tender documents for the TA	MOE Task Force	MDL 2 M																									
	Phase 2																											
2.1	Contracts for TA to utilities of participating LCs	Local Councils																										
2.2	TA to Utilities of participating LCs	TA provider	MDL 50 M																									
2.3	Emergency investments	Utilities																										
2.4	Final draft of regionalization documents	MOE Task Force																										
2.5	Confirmation of adherence to the regionalization process	Local Councils																										
	Phase 3																											
3.1	Setting up of the Association s of LCs	Local Councils																										
3.2	Setting up of Regional Utilities	Associations of LCs																										
3.3	Preparation of WOP / management contract TORs	MOE Task Force	MDL 3 M																									
3.4	Selection of management contract operator	Associations of LCs																										
3.5	WOP / Management contract (2-year)	WOP / Mgt Contractor	MDL 75 M																									
3.6	Service contracts with rural LCs	Regional utilities																										
3.7	Implementation of the master plan	Regional utilities																										
	Phase 4																											
4.1	Integration of rural service providers	Regional utilities																										

Annex I – Snapshot of Sector Legal and Institutional Framework

The present annex briefly describes the legal framework of the sector, as well as roles and responsibilities attached to key sector functions: policy formulation, asset ownership and development, financing, regulation, and service provision.

3. Legal Framework

The new Water Law no. 272 of April 26, 2012 aligns Moldova's water-related legal framework with EU water resource management principles. The Water Law repeals the 1993 Water Code, and creates a legal framework which encompasses (i) the management, protection and efficient use of surface and groundwater, by defining two river basins (the Nistru / Black Sea and the Prut/Danube basin); (ii) the creation of river basin district committees, which will represent the various stakeholders and have a consultative role in the development of water basin management plans; and (iii) the protection of water from pollution and setting of environmental quality standards. The wastewater discharges from urban areas and rural areas are regulated separately, and zones vulnerable to agricultural pollution will be designated.

The Law "On drinking water" no. 272 of 10.2.1999 establishes a legal framework and sets requirements for the safe operation of drinking water systems. A new (draft) Law "On public water supply and sewerage services" is under Parliament review; it would repeal Law 272 and supersede the Law on public utilities no. 1402 from 24.10.2002. This draft law on public water supply and sewerage services establishes the responsibilities of central and local public administration authorities and of central public authorities regulating public water supply and sewerage services, as well as the rights and obligations of consumers and of operators providing public water supply and sewerage services in localities, regardless of their size and legal form of organization. More specifically it addresses:

- the regulation of the activities on the provision of public water supply and sewerage services;
- the operation, maintenance and extension of public water supply and sewerage systems;
- the determination and approval of regulated tariffs for public water supply and sewerage services;
- the security and reliability of water supply;
- the protection of rights of consumers;
- the non-discriminatory access to public water supply and sewerage services.

4. Institutional Framework

- *Policy formulation*

Sector policy is defined by the central government. It formulates water supply and wastewater sector policies, such as service standards, institutional arrangements, and financing mechanisms. The main sector policy orientations are defined and implemented primarily by the Ministry of Environment (MOE), as well as the Ministry of Regional Development and Construction (MRDC) and the Ministry of Health (MOH). Within the MOE, the agency "Apele Moldovei" is responsible for the implementation of sector policy. The Ministry of Regional Development and Construction (MRDC) develops and promotes the

national policy for regional development, including in terms of inter-municipal water supply and sanitation infrastructure. The State Chancellery provides methodological and organizational support for public policy planning, development, and implementation by government authorities.

- *Asset ownership*

Water and wastewater infrastructure is owned by LCs. All water and wastewater infrastructure, is city/municipality property. Initially republican property, it has become municipal property, e.g., belonging to the LC of deputies, and cannot be leased or sold without the council's formal consent. Assets are "transferred" to the utility for "economic management," but ownership remains with the local municipality/city council.

- *Service provision*

In urban areas, services are operated by municipal enterprises or joint-stock companies accountable to local authorities, and ultimately responsible for the provision of water and wastewater services. Water and wastewater services are the responsibility of local (municipality, city) authorities. The majority of the water and wastewater utilities, responsible for services in urban areas, are municipal enterprises. They have de jure management independence, but are de facto heavily dependent on the local administration. Some (8 out of 38) utilities – including Chisinau ApaCanal – are Joint Stock Companies (JSCs).

In many villages a department within the municipality is established to manage water services. Others have established water user associations or communal enterprises. In a few villages, private companies own and operate small water systems. No reliable information could be collected on service performance and on the financial situation of local service providers.

The Moldovan Association of Water Utilities provides support to 39 urban water utilities. The AMAC hosts an institute for the professional development and certification of utility managers and staff (in general technical). In addition, it had developed and maintains a database of performance indicators for all water utilities, in collaboration with the International Benchmarking Network (IBNet).

- *Sector financing*

The National Ecological Fund (NEF) is the main source of financing for the sector. It is managed by the Ministry of Environment. It represents an important source of finance for water supply, sanitation and sewerage investments. Its financial resources are formed with the revenue of pollution taxes, penalties, and from taxes on imported polluting materials. The NEF finances investments related to all fields of environment (waste management, forestry, water supply and sanitation, etc.). During the 2010-2012 period, 253 water supply and sewerage projects were financed by the NEF for a total amount of about US$30 million. They accounted for 54 percent of overall NEF resources.

The Regional Development Fund (NFRD) is the major source of domestic funding for regional development. It has been established in 2010 and is managed by the Ministry of Regional Development and Construction (MRDC). Revenues of the NFRD come from state budget allocations, amounting to at least 1% of state budget revenues in a given year (US$15 million in 2013). Water supply and sewerage projects account for 15 to 25 percent of NFRD financing. Some projects are co-financed with bilateral donors, notably GIZ. The NFRD is administered by the Regional Development Agencies (North, Center, South) reporting to the MRDC.

International financial institutions (IFIs) are very active in the sector. Sector development is currently supported by IFIs, notably the EU, IDA, EBRD, GIZ and SDC. IFIs financial contribution for capital investments has represented in the recent years an average US$3 million per annum. IFIs' support revolve around three main themes: overall sector reforms, support to urban and rural service providers and sector regionalization (see Box 5).

Box 5 - International and bilateral financing of the WSS sector.

Overall sector reforms: The EU financed - Sector Policy Support Program (SPSP) in the water sector consists of:

- sector budget support (US$56 million) to the implementation of water sector reforms;
- a technical assistance (US$4 million) to the MOE (interrupted in 2012), to support the implementation of the SPSP along six components: (i) legal and regulatory framework, (ii) institutional reforms at central and local levels, (iii) financial planning and coordination, (iv) sector strategy update and effective monitoring, (v) MIS and support to Steering Committee, and (vi) capacity development;

Improvement of operating performance and capacity in urban utilities: The IDA financed - National Water Supply and Sanitation Project (2008 – 2013), US$14 million, focuses on: (i) rehabilitation and extension of urban water and sewerage systems in five district capitals, and (ii) improvement of the energy efficiency of their utilities. The project also supports capacity building of the MOE.

Development of services in rural areas: With a total budget of US$18 million co-funded with the Austrian Development Agency, the SDC-financed ApaSan program (2009-2015) supports the creation of decentralized water drinking systems and provides technical assistance to the setting up and training of water users associations; it also supports ongoing rural projects from other donors, and pilots local sanitation solutions. The IDA financed National Water Supply and Sanitation Project (2008 – 2013) focuses on the implementation of water supply systems in 10 rural communities.

Regionalization of services: a description of IFI-financed activities is provided in Box 1 and Box 2.

- *Strategy and planning*

A revision of the sector strategy is underway. With the support of an EU-financed technical assistance, the MOE has initiated a revision of the 2007 Water Strategy. The objective of this revision is to seek a better alignment with the National Development Strategy for 2008-2011 and the National Regional Development Strategy 2010-2012, as well as to reflect the conclusions of the Draft Action Plan 2010-2015 formulated by OECD. A first draft of the Strategy has been recently issued. The main objectives of this Strategy include (i) *professionalization* of publics WSS services through *inter alia* an adjustment of the legal and institutional frameworks, and the development of a culture of commercially operated operators; (ii) promotion of *market economy principles* through, in particular, the development of operators' autonomy from local governments and increased transparency in sector administration ; (iii) the *extension* of WSS systems with the development of raion level WSS master plans and the preparation of investments pipeline ; (iv) the promotion of *efficient and cost covering* WSS service providers through the development of a legal and institutional framework for the aggregation of service providers in regional utilities, the establishment of a regulator to license and oversee the operators and the

promotion of benchmarking practices ; and (v) the promotion of social partnership with an increased participation of civil society and consumers.

The development of the water and sanitation sector lacks thorough planning. A Sector Coordination Council was established in 2010 as an official partnership between the government and the donors. It gathers all sector stakeholders and donors in quarterly meetings for exchange of information and follow-up of current sector-related projects and programs. The Sector Coordination Council is chaired by the Ministry of Environment and co-chaired by SDC. Despite this initiative, projects financed by the NEF and the NFRD are usually selected without reference to any national or regional plan.

- *Regulation*

Tariffs are proposed by utility managers and determined by LCs. There is currently no economic regulator for water supply and sewerage services. The National Agency for Energy Regulation (ANRE) regulates the economic and commercial activities in the energy sector. ANRE has developed a methodology for determining, approving, and applying tariffs in the water supply and sanitation sector. It provides for the full coverage of operation expenses by water supply and sewerage services tariffs, and allows the application of different rates for all categories of users. The draft Law on Public Water Supply and Sewerage Services specifies that ANRE's mandate would be extended to the water and wastewater services. For the moment, the application of the methodology by LCs is not mandatory.

Operational monitoring is performed by the Ministries of Environment and Health, but it does not focus on utilities' performance. The MOE allocates the rights for water abstraction and permits for the discharge of effluents and defines wastewater treatment standards. The MOH is responsible for setting potability standards and for controlling and monitoring drinking water quality at national and local levels (through a network of 38 laboratories). Operational information is consolidated by the AMAC, but these data are not currently integrated in a monitoring process at MOE level. More generally, there is no systematic use of benchmarking methods to help utilities understand their operational weaknesses and to positively impact managerial decisions in future.

Annex II – Utility performance data 2011 (AMAC)

Table 2 – Urban water and wastewater utilities performance indicators

Water and Sewerag	Total Staff	Population x1000	Pop.Served (W)x1000	Pop.Served (S)x1000	Connect (W)x1000	Supply (hours)	Connect (S)x1000	Production Mm3/year	Water sold Mm3/year	Total losses%	Sales thru meters Mm3/y	Monthly bill 6m3	Operating revenue x1000 Lei	Revenue Water Lei	Revenue Sewerage x1000 Lei	Operating expenses x1000 Lei	Operating ratio	Labor costs x1000 Lei	Labor / operating costs	Energy costs x1000 Lei	Energy / operating costs
Anenii Noi	90	11.70	11.00	4.50	3.04	24	0.45	0.437	0.266	39.1%	0.223	116.04	5347	3417	2085	6143	0.87	3847	63%	884	14%
Bălti	384	144.30	115.20	92.90	17.80	24	5.80	6.400	3.720	41.9%	3.2	79.80	72200	45634	24705	76178	0.95	21915	29%	13979	18%
Basarabeasca	49	11.20	7.00	3.70	1.70	12	0.35	0.202	0.122	39.6%	0.08	80.70	2184	978	1235	2352	0.93	1340	57%	631	27%
Briceni	40	8.70	6.40	4.80	3.00	24	0.70	0.130	0.072	44.6%	0.068	138.00	2074	1004	1105	2461	0.84	1445	59%	670	27%
Cahul	177	39.80	37.10	28.32	5.91	24	3.80	2.040	0.890	56.4%	0.76	66.72	13651	10841	3556	12501	1.09	6961	56%	3026	24%
Cantemir	26	5.20	4.10	3.25	0.19	24	0.15	0.138	0.085	38.4%	0.067	88.14	1473	1132	396	1472	1.00	888	60%	233	16%
Caralasi	78	14.50	12.50	6.50	3.00	18	0.70	0.550	0.211	61.6%	0.184	108.00	4517	2992	1467	4957	0.91	2996	60%	1428	29%
Causeni	59	17.60	14.80	8.30	2.70	24	2.00	0.359	0.194	46.0%	0.178	123.00	4869	2959	1852	4369	1.11	2088	48%	1010	23%
Chişinău	1889	749.60	668.70	654.90	88.70	24	69.20	77.200	45.000	41.7%	38.7	55.14	532712	371900	135600	466217	1.14	159371	34%	116500	25%
Ceadir-Lunga	85	19.40	18.00	6.20	4.40	24	1.10	0.420	0.270	35.7%	0.26	153.42	6642	4081	2469	5930	1.12	3461	58%	1435	24%
Comrat	98	23.70	17.70	7.59	5.19	11	2.81	1.150	0.371	67.7%	0.32	124.62	7431	46436	2646	8405	0.88	3432	41%	3019	36%
Cricova	34	10.20	7.00	3.40	1.40	18	0.30	0.430	0.249	42.1%	0.23	56.34	3519	2032	1578	3586	0.98	1385	39%	821	23%
Criulni	41	8.30	6.50	3.80	1.40	24	1.40	0.263	0.133	49.4%	0.126	96.00	2503	1541	994	2440	1.03	1593	65%	394	16%
Donduseni	27	9.50	3.70	3.30	0.26	24	0.20	0.176	0.081	54.0%	0.071	89.52	1609	982	654	1605	1.00	758	47%	554	35%
Drochia	65	17.50	12.50	9.01	2.90	9	0.37	0.638	0.248	61.1%	0.206	101.76	5237	3376	1882	5933	0.88	3055	51%	1825	31%
Edineti	118	25.50	19.50	10.50	3.85	24	2.30	1.710	0.374	78.1%	0.302	137.34	10332	5869	4463	11802	0.88	4298	36%	3739	32%
Faleşti	60	14.30	9.20	4.70	1.94	24	1.42	0.456	0.205	55.0%	0.171	108.00	4288	2542	1723	4057	1.06	1755	43%	1307	32%
Floreni	16	4.00	3.90	1.80	0.80	24	0.02	0.121	0.105	13.2%	0.103	55.86	907	573	318	1039	0.87	481	46%	201	19%
Floresti	118	26.70	18.80	10.50	6.95	24	1.60	0.742	0.380	48.8%	0.363	94.74	9382	5132	3903	8589	1.09	4322	50%	1805	21%
Glodeni	44	10.00	8.85	5.91	1.60	12	0.72	0.169	0.086	49.1%	0.073	157.62	3855	1776	1863	3867	1.00	968	25%	102	3%
Hincești	85	15.20	11.40	6.60	4.70	24	2.30	0.253	0.221	12.6%	0.132	107.28	5464	3222	2362	5800	0.94	3381	58%	1668	29%
Leova	51	10.00	9.30	4.50	2.30	20	0.20	0.285	0.166	41.8%	0.137	104.58	2815	2057	905	2828	1.00	1731	61%	830	29%
Lipcani	22	5.70	2.60	1.90	0.86	8	0.14	0.067	0.019	71.6%	0.008	133.56	392	284	83	530	0.74	374	71%	155	29%
Nisporeni	41	11.80	2.96	2.60	1.54	24	0.25	0.130	0.051	60.8%	0.033	150.78	1535	913	632	1670	0.92	1303	78%	326	20%
Ocnita	19	9.20	4.50	3.20	1.60	20	1.02	0.049	0.034	30.6%	0.016	135.30	985	407	444	887	1.11	660	74%	205	23%
Orhei	180	25.70	24.60	13.80	5.30	24	4.00	1.230	0.672	45.4%	0.58	96.54	15938	8989	6949	18383	0.87	8058	44%	2502	14%
Otaci	8	8.40	4.10	-	1.10	12	-	0.094	0.073	22.3%	0.016	58.80	761	761	0	740	1.03	357	48%	222	30%
Resina	48	13.40	10.10	10.10	1.60	24	1.10	0.537	0.209	61.1%	0.151	83.22	4580	3880	658	4015	1.14	2005	50%	1200	30%
Riscani	39	11.10	5.50	3.70	1.80	24	0.75	0.235	0.163	30.6%	0.149	114.00	3382	1943	1551	3242	1.04	2254	70%	514	16%
Sinjerei	39	12.60	10.00	3.60	3.00	24	0.60	0.390	0.222	43.1%	0.181	119.40	2822	1959	905	2952	0.96	1587	54%	639	22%
Şoldăneşti	13	6.30	3.90	-	0.80	24	-	0.072	0.057	20.8%	0.017	32.34	350	343	0	683	0.51	319	47%	364	53%
Soroca	127	35.20	27.40	18.60	4.00	24	2.95	1.222	0.647	47.1%	0.531	67.26	12299	9704	2426	12710	0.97	5811	46%	156	1%
Stefan-Vodă	51	7.80	6.80	4.80	0.76	24	0.08	0.155	0.112	27.7%	0.107	184.62	3251	2113	1225	2825	1.15	2377	84%	455	16%
Străşeni	51	18.40	9.60	7.60	0.87	24	0.26	0.403	0.124	69.2%	0.11	148.86	3879	1898	1853	4336	0.89	1991	46%	1535	35%
Taraclia	64	13.50	10.30	4.90	3.50	15	0.19	0.264	0.174	34.1%	0.157	118.14	3303	2047	1255	3662	0.90	1919	52%	804	22%
Teleneşti	29	6.70	2.85	1.24	1.06	24	1.09	0.164	0.066	59.8%	0.04	114.36	1727	953	719	1641	1.05	1019	62%	454	28%
Ungheni	160	33.00	28.40	19.40	4.91	24	3.20	2.460	1.360	44.7%	0.83	44.04	12960	9342	6202	14899	0.87	8359	56%	2556	17%
Vulcaneşti	54	15.40	5.60	2.60	1.80	12	0.30	0.164	0.107	34.8%	0.09	118.98	2188	1475	641	2085	1.05	1640	79%	731	35%

Source: AMAC, 2011

Table 3 - Performance assessment composite index

Utility	*Population*	Water coverage		Continuity		Staff / 1000 connect.		Customer Metering		Losses		Operating ratio		Index (sum of ratings)
	Nb	%	Rating	h/24	Rating	*No dimension*	Rating	%	Rating	%	Rating	%	Rating	
Ceadir-Lunga	***19,400***	93%	1	24	1	19	1	100%	1	35%	1	1.12	2	**7**
Causeni	***17,600***	84%	1	24	1	22	1	93%	1	34%	1	1.11	2	**7**
Cahul	***39,800***	93%	1	24	1	30	0	88%	1	28%	2	1.09	2	**7**
Floreşti	***26,700***	70%	0	24	1	17	1	100%	1	45%	1	1.09	2	**6**
Chişinău	***749,600***	89%	1	24	1	21	1	74%	0	36%	1	1.14	2	**6**
Bălti	***144,300***	80%	1	24	1	22	1	65%	0	13%	2	0.95	1	**6**
Stefan-Vodă	***7,800***	87%	1	24	1	67	0	100%	1	62%	0	1.15	2	**5**
Sinjerei	***12,600***	79%	1	24	1	13	1	97%	1	61%	0	0.96	1	**5**
Floreni	***4,000***	98%	1	24	1	20	1	100%	1	45%	1	0.87	0	**5**
Criuleni	***8,300***	78%	1	24	1	29	0	100%	1	42%	1	1.03	1	**5**
Cantemir	***5,200***	79%	1	24	1	137	0	100%	1	31%	1	1	1	**5**
Briceni	***8,700***	74%	0	24	1	13	1	100%	1	22%	2	0.84	0	**5**
Anenii Noi	***11,700***	94%	1	24	1	30	0	97%	1	13%	2	0.87	0	**5**
Soroca	***35,200***	78%	1	24	1	32	0	88%	1	61%	0	0.97	1	**4**
Riscani	***11,100***	50%	0	24	1	22	1	94%	1	60%	0	1.04	1	**4**
Leova	***10,000***	93%	1	20	0	22	1	100%	1	47%	0	1	1	**4**
Faleşti	***14,300***	64%	0	24	1	31	0	59%	0	43%	1	1.06	2	**4**
Edineti	***25,500***	76%	1	24	1	31	0	97%	1	42%	1	0.88	0	**4**
Vulcaneşti	***15,400***	36%	0	12	0	30	0	83%	1	n/a	0	1.05	2	**3**
Ungheni	***33,000***	86%	1	24	1	33	0	100%	1	78%	0	0.87	0	**3**
Teleneşti	***6,700***	43%	0	24	1	27	0	75%	0	72%	0	1.05	2	**3**
Taraclia	***13,500***	76%	1	15	0	18	1	97%	1	69%	0	0.9	0	**3**
Resina	***13,400***	75%	0	24	1	30	0	56%	0	56%	0	1.14	2	**3**
Ocnita	***9,200***	49%	0	8	0	12	1	11%	0	49%	0	1.11	2	**3**
Glodeni	***10,000***	89%	1	12	0	28	0	51%	0	45%	1	1	1	**3**
Drochia	***17,500***	71%	0	24	1	22	1	69%	0	42%	1	0.88	0	**3**
Donduseni	***9,500***	39%	0	24	1	104	0	50%	0	42%	1	1	1	**3**
Cricova	***10,200***	69%	0	18	0	24	1	79%	0	40%	1	0.98	1	**3**
Comrat	***23,700***	75%	0	9	0	19	1	94%	1	39%	1	0.88	0	**3**
Cojusna	***7,000***	n/a		n/a		23	1	n/a		38%	1	0.99	1	**3**
Caralas	***14,500***	86%	1	18	0	26	0	83%	1	31%	1	0.91	0	**3**
Şoldăneşti	***6,300***	62%	0	24	1		1	75%	0	61%	0	0.51	0	**2**
Orhei	***25,700***	96%	1	24	1	34	0	79%	0	54%	0	0.87	0	**2**
Basarabeasca	***11,200***	63%	0	12	0	29	0	51%	0	21%	2	0.93	0	**2**
Otaci	***8,400***	49%	0	12	0	n/a		36%	0	55%	0	1.03	1	**1**
Nisporeni	***11,800***	25%	0	24	1	27	0	79%	0	49%	0	0.92	0	**1**
Hincesti	***15,200***	75%	0	18	0	18	1	78%	0	46%	0	0.94	0	**1**
Straşeni	***18,400***	52%	0	8	0	59	0	53%	0	68%	0	0.89	0	**-**
Lipcani	***5,700***	46%	0	8	0	26	0	48%	0	49%	0	0.74	0	**-**

Rating rules:													
	<75%	0	24h	0	>25	0	<80%	0	>45%	0	<0.95	0
	>75%	1	<24h	1	<25	1	>80%	1	30%-45%	1	0.95-1.05	1
									<30%	2	>1.05	2

Source: AMAC 2011, Bank team's own elaboration

Annex III – Water and sewerage tariffs

The overall residential tariff (weighted average) across urban areas represents US$1.31 per cubic meter for combined services. The non-residential tariff is on average US$3.61 per cubic meter.

Table 4 – Water and sewerage tariffs applied by urban utilities

Apa Canal	Water (Domestic)	Water (Industry)*	Sewerage (Domestic)	Sewerage (Industry)*	Water + Sewerage (Domestic)	Water + Sewerage (Industry)*	Industry* / Domestic tariff	Medium Tariff (Water)	Medium Tariff (Sewerage)	Medium Tariff (Water + Sewerage)
** VAT 20% not included*										
Ameni Noi	9.7	37.4	9.7	37.4	19.4	74.8	3.9	12.81	17.48	30.29
Balti	11.08	23.64	3.9	17.01	14.98	40.65	2.7	15.05	8.27	23.32
Basarabeasca	8	33.75	8	31.25	16	65	4.1	9.35	8.83	18.18
Briceni	11	35	12	26.6	23	61.6	2.7	12.82	14.34	27.16
Cahul	12	27.97	5.5	6	17.5	33.97	1.9	11.25	4.5	15.75
Calarasi	11	28	7	17	18	45	2.5	16.18	8.53	24.71
Cantemir	9.95	24	4.8	16.5	14.75	40.5	2.7	14.05	6.48	20.53
Causeni	12	38	8.5	23	20.5	61	3.0	14.55	14.6	29.15
Ceadir-Lunga	14	40	13.5	30	27.5	70	2.5	16	18.33	34.33
Chisinau	8.06	12.7	1.13	10.26	9.19	22.96	2.5	8.86	3.31	12.17
Cimisclia	10	10	8.4	8.4	18.4	18.4	1.0	10	8.4	18.4
Ciorescu	4.6	21	3.2	15	7.8	36	4.6	11.05	6	17.05
Comrat	13	33	12.55	30.83	25.55	63.83	2.5	14	19.25	33.25
Cricova	10	34.86	5	22	15	56.86	3.8	12.86	12.49	25.35
Criuleni	9.2	30	6.8	30	16	60	3.8	10.7	9.2	19.9
Donduseni	10	30	5.44	20	15.44	50	3.2	11.87	7.8	19.67
Drochia	10	47	7	23	17	70	4.1	17.81	12.35	30.16
Edinet	12.5	25.05	10.5	21.8	23	46.85	2.0	21.35	17.89	39.24
Falesti	9.14	35.2	9.04	22.16	18.18	57.36	3.2	10.23	10.59	20.82
Floreni	6	12.7	4	14.37	10	27.07	2.7	5.56	5.75	11.31
Floresti	14.49	27.56	4.41	30.24	18.9	57.8	3.1	17.76	17.5	35.26
Glodeni	13.2	54.83	13.2	52.99	26.4	107.82	4.1	23.61	24.28	47.89
Hincesti	11.84	40.79	6.25	22.05	18.09	62.84	3.5	13.95	13.88	27.83
Leova	11.6	28.78	8.5	26.09	20.1	54.87	2.7	8.3	7.42	15.72
Nisporeni	18.77	44	8	14.65	26.77	58.65	2.2	21.89	10.03	31.92
Ocnita	14	30	12.5	26.35	26.5	56.35	2.1	16	14.3	30.3
Orhei	12	21	3	28	15	49	3.3	15.7	16.1	31.8
Rezina	10	43	3.4	5.21	13.4	48.21	3.6	16.57	3.86	20.43
Riscani	10	25	9	18	19	43	2.3	13.27	13.17	26.44
Singerei	7	35.15	5	17.5	12	52.65	4.4	8.15	5.59	13.74
Soldanesti	5.4	12	3.1	3.1	8.5	15.1	1.8	6	3.1	9.1
Soroca	10.9	35.2	1.6	16.6	12.5	51.8	4.1	15.28	4.1	19.38
Stefan Voda	15	48.74	10	24.5	25	73.24	2.9	17.6	13.93	31.53
Straseni	14.6	30	10.7	24	25.3	54	2.1	15	11.2	26.2
Taraclia	10	37.5	10	37.5	20	75	3.8	13.61	19.95	33.56
Telenesti	10	35	9.15	26	19.15	61	3.2	12.39	15.35	27.74
Ungheni	3.88	13	3.46	12.12	7.34	25.12	3.4	6.18	5.72	11.9
Vulcanesti	14	37	14	35	28	72	2.6	15.52	16.67	32.19

Source: AMAC, 2011

Annex IV – Utility survey results

The questionnaire-based surveys have enabled to verify and confirm the reliability of AMAC data (which was further used in all analyses presented in this report).

Table 5 – Utility performance data collected through the questionnaire based survey

Indicator	Unit	Balti	Cahul	Calarasi	Causeni	Edinet	Floresti	Leova	Ungheni
Population in service area	nr	149,700	43,500	16,100	17,562	29,564	25,057	10,255	32,000
Population served water	nr	113,500	39,150	11,000	14,700	18,690	17,438	10,255	28,400
Coverage (water)	%	76%	90%	68%	84%	63%	70%	100%	89%
Population served sewerage	nr	96,000	28,709	5,600	8,300	8,795	9,324	4,500	19,400
Coverage (sewerage)	%	64%	66%	35%	47%	30%	37%	44%	61%
Service level : house connections (water)	%	75.9	96	60	83.7	67.7	67.8	93	94.8
Service level : house connections (wastewater)	%	64.1	70	45	47.2	31.8	n/a	40	60.2
Continuity of service (h/d)	h/24	24/365	24/365	24/365	24/365	24/365	24/365	24/365	24/365
Water quality (compliance)	%	100	100	30	5	84	98	100	99.9
Metering (production)	%	100	100	50	100	100	100	100	100
Metering (customer)	%	86.4	89.5	98	100	88	100	83	75
Production capacity	m3/day	49,800	17,600	1,590	n/a	9,000	10,800	7,800	12,700
Average production	m3/day	17,950	5,947	1,493	n/a	4,800	2,628	850	7,700
Usage of water production facilities	%	36%	34%	94%	n/a	53%	24%	11%	61%
Length of water pipes (supply)	km	63.6	n/a	64	93	39.6	16	n/a	17.1
Reservoir capacity	m3	42,300	11,500	4,500	3,400	17,000	6,500	n/a	7,200
Volume billed	m3/year	3,735,169	1,853,014	545,200	208,600	508,710	378,593	180,746	1,427,300
Volume billed according to meters	%	93.6	90.6	39.9	n/a	87.5	100	100	65.7
Length of distribution system	km	200.9	80.2	64	77	91.4	141.3	41.6	68.1
Number of pipe repairs	nr/year	1784	913	148	107	82	612	236	368
Losses (NRW)	%	43.1	50.7	60.1	44.8	70.5	60.5	42	42.4
Length of sewerage system	km	146.4	51.6	36.4	44.9	52.7	33.3	12.6	60.8
Sewer blockages	nr/year	2904	1022	74	218	634	91	95	292
Wastewater treatment plant capacity	m3/day	60,000	13,700	1,400	5,700	5,500	5,300	4,700	15,000
Usage of sewerage treatment. facilities	%	17%	37%	107%	n/a	25%	20%	n/a	26%
Treated wastewater quality (compliance)	%	98.4	100	0	n/a	60	100	100	50
Electric consumption (water)	kwh	6,057,082	1,195,645	995,272	641,840	2,331,100	944,863	564,571	1,497,600
Electric consumption (wastewater)	kwh	3,209,183	372,108	162,823	102,426	176,000	335,133	88,032	350,100
Specific electricity consumption	kwh/m3	1.41	0.72	2.13	n/a	1.43	1.33	2.10	0.66
Connections - Domestic (water)	nr	16143	13262	n/a	5418	n/a	7545	4080	12623
Connections - Institutions (water)	nr	216	47	n/a	23	n/a	27	22	30
Connections - Indust/Business (water)	nr	1474	430	n/a	185	n/a	157	49	485
Connections - Total (water)	nr	17833	13739	n/a	5626	n/a	7729	4151	13138
Connections - Domestic (sewerage)	nr	5400	8390	n/a	3000	n/a	4265	1800	8500
Connections - Institutions (sewerage)	nr	216	36	n/a	23	n/a	11	19	26
Connections - Indust/Business (sewerage)	nr	1,474	374	n/a	161	n/a	82	51	410
Connections - Total (sewerage)	nr	7,090	8,800	n/a	3,184	n/a	4,358	1,870	8,936
Water consumption - Domestic	m3/year	2,610,904	737,400	172,900	183,700	234,905	273,324	144,719	1,086,500
Water consumption - Institutions	m3/year	222,509	45,500	27,200	12,600	10,324	18,700	30,723	126,500
Water consumption - Industries/Businesses	m3/year	901,756	130,600	17,700	12,300	263,481	86,569	5,304	214,300
Water consumption total	m3/year	3,735,169	913,500	217,800	208,600	508,710	378,593	180,746	1,427,300
Individual domestic consumption	lcd	63	52	43	34	34	43	39	105
Billing (water + wastewater)	MDL/year	90,650,796	15,461,925	3,722,300	3,272,100	13,790,600	6,655,760	4,197,415	16,418,005
Collection	MDL/year	88,619,059	15,095,481	3,647,854	1,963,300	14,563,700	n/a	4,135,744	17,469,918
Collection rate	%	98%	98%	98%	98%	106%	n/a	98%	106%
Total staff	nr	384	177	112	54	118	197	62	162
Average monthly salary	MDL	3,904	2,984	2,699	2,604	3,000	2,545	1,930	3,715
Staff / 1000 connections	nr	21.5	12.9	n/a	9.6	n/a	25.5	14.9	12.3
Staff / 1000 population	nr	3.4	4.5	10.2	3.7	6.3	11.3	6.0	5.7
Cost of personnel	MDL	17,606,906	6,983,300	2,721,000	2,095,000	4,085,400	n/a	1,176,440	6,309,500
Cost of electricity	MDL	14,141,407	3,237,300	1,652,200	1,152,500	4,066,800	n/a	993,664	2,822,200
Cost of chemicals	MDL	483,863	1,027,300	56,000	0	45,700	n/a	172,943	764,200
Cost of maintenance	MDL	9,447,155	1,464,800	27,900	1,999,800	4,741,500	n/a	228,819	1,352,200
Operating costs	MDL	41,679,331	12,712,700	4,457,100	5,247,300	12,939,400	n/a	2,571,866	11,248,100
Staff cost / total operating costs	%	42%	55%	61%	40%	32%	n/a	46%	56%
Energy costs / total operating costs	%	34%	25%	37%	22%	31%	n/a	39%	25%
Domestic tariff (water)	MDL/m3	11.08	12	16.5	12	12.5	14.49	11.6	3.88
Domestic tariff (wastewater)	MDL/m3	3.9	5.58	7	8.5	10.5	4.41	8.5	5
Industrial tariff (water)	MDL/m3	23.64	21.97	33.6	38	21.5	27.56	28.78	13
Industrial tariff (wastewater)	MDL/m3	17.01	6	20.4	23	19	30.24	26.09	19
Industrial/Domestic tariff (water/wastewater)	MDL/m3	2.7	1.6	2.3	3.0	1.8	3.1	2.7	3.6
Current assets	MDL	31,623,675	9,653,511	n/a	n/a	2,772,700	n/a	n/a	5,504,546
Current liabilities	MDL	50,916,117	2,751,605	n/a	n/a	5,158,100	n/a	n/a	1,671,127
Current ratio	nr	0.62	3.51	n/a	n/a	0.54	n/a	n/a	3.29

Source: Survey (April-June 2013)

Annex V– Utility questionnaire (Romanian)

CHESTIONAR PENTRU REGIILE APĂ-CANAL

Denumirea Regiei Apă – Canal:

Data:

Detalii de contact ale funcţionarului responsabil de completarea chestionarului:

- Numele, funcţia:
- Numărul de telefon, adresa e-mail:

A. Prezentare generală

1. **Statutul juridic al entităţii:**
   Vă rugăm să anexaţi copia Statutului (Acord de Asociere)
   - Activitatea de bază:
   - Alte activităţi:

2. Suprafaţa deservită (km²)

3. Populaţia: (conform situaţiei existente la 1 ianuarie)

3.1 populaţia totală pe suprafaţa deservită	2012:	2013:
3.2 populaţia deservită (apă)	2012:	2013:
3.3 populaţia deservită (ape uzate)	2012:	2013: **4. Nivelul**

serviciilor (aprovizionare cu apă) % (ianuarie 2013)

4.1 Din surse proprii (conectat la sistemul de distribuire):

4.3 Alte surse (specificaţi)

4.4 Conducte de refulare – rezervoare:

5. Nivelul serviciilor (apele uzate) % (ianuarie 2013)

5.1. Prin sistemul de canalizare: 5.2. Sanitaţie la faţa locului:

B. Calitatea serviciilor

6. Fiabilitatea serviciului

orele / zilele de disponibilitate a apei (în medie) 2012 2013

7. Calitatea apei: % de mostre în conformitate cu standardele

7.1 Parametrii bacteorologici:	2011	2012
7.2 Parametri chimici:	2011	2012
7.3 Parametri fizici:	2011	2012

7.4 *Specificaţi esenţa problemelor ce ţin de calitate (dacă astfel de probleme sunt)*

C. Aspecte tehnice

8. Contorizare (apa)

8.1 Contorizarea în vrac la nivel de producere: % de apă produsă contorizată:

8.2 Contorizarea la nivel de clienţi: % din clienţi sunt contorizaţi:

9. Sistemul de aprovizionare cu apă

9.1 Schema generală a sistemului de aprovizionare cu apă

(vă rugăm să oferiţi schema pe o pagină separată)

9.2 Capacitate de producere (m^3/zi):

9.3 Volumul mediu de producere (m^3/zi) 2011: 2012:

9.4 Lungimea conductelor de aprovizionare (km) 2011: 2012:

9.5 Materialele de bază din care sunt fabricate ţevile:

9.6 Capacitatea de acumulare (m^3):

10. **Sistemul de distribuire a apei**

10.1 Volumul distribuit (facturat) (m^3/an) 2011: 2012:

10.2 Lungimea conductelor de distribuţie (km) 2011: 2012:

10.3 Numărul de scurgeri reparate 2011: 2012:

10.4 Procentul de pierderi (%) 2011 2012

11. Sistemul de canalizare

11.1 Lungimea canalelor de colectare (km): 2011 2012

11.2 Principalele materiale din care sunt construite canalele de colectare:

11.3 Numărul de blocaje reparate 2011: 2012:

11.4 Staţiile de tratare a apelor uzate:

11.4.1 Data construcţiei/cele mai recente reconstrucţii:

11.4.2 Capacitatea *(m3/zi):*

11.4.3 Tipul tratamentului:

11.4.4 % apelor uzate tratate care se conformă standardelor 2011: 2012

12. **Consumul de electricitate** (kWh)

12.1 Operaţiunile de aprovizionare cu apă 2011 : 2012 :

12.2 Operaţiunile ce ţin de apele uzate 2011 : 2012 :

D. Aspecte comerciale:

13. Conectări (apă/canalizare) numărul mediu (conectări active)

Specificaţi diverse categorii, dacă e necesar

13.1 Gospodării casnice	2011 :	/	2012 :	/
13.2 Instituţii oficiale	2011 :	/	2012 :	/
13.3 Industrii/Companii	2011 :	/	2012:	/
13.4 Alţii	2011 :	/	2012 :	/

14. Consumul de apă (per categorie de consumatori) facturaţi cum/anual

Specificaţi diverse categorii, dacă e necesar

14.1 Gospodării casnice	2011 :	2012 :
14.2 Instituţii oficiale	2011 :	2012 :
14.3 Industrii / Companii	2011 :	2012 :

14.4 Alţii 2011 : 2012 :

15. % volumului facturat conform contoarelor 2011 : 2012 :

16. Facturarea şi colectarea (în MDL)

16.1 totalul facturat 2011 : 2012 :

16.2 totalul colectat 2011 : 2012 :

E. Resurse umane

17. Cadrele

17.1 Numărul total de colaboratori (media anuală)	2011 :	/	2012 :	/
17.2 - % tehnic (O&M)	2011 :	/	2012 :	/
17.3 - % comercial	2011 :	/	2012 :	/
17.5 - % management/administrare	2011 :	/	2012 :	/
17.5 vârsta medie	2011 :	/	2012 :	/
17.6 vechimea medie în muncă	2011 :	/	2012 :	/
17.7 salariu mediu lunar	2011:		2012:	

F. Aspecte financiare

18. Managementul financiar

Vă rugăm să oferiţi o copie a celui mai recent raport financiar: balanţa contabilă, veniturile şi cheltuielile.

19. Costuri operaţionale (operaţiuni ce ţin de apă) în MDL

19.1 Costuri cu privire la personal	2011 :	2012 :
19.2 Costuri pentru energie	2011 :	2012 :
19.3 Substanţe chimice	2011 :	2012 :
19.4 Întreţinere	2011 :	2012 :
19.5 Depreciere	2011:	2012:

19. Costuri operaţionale (operaţiuni ce ţin de apele uzate) în MDL

19.1 Costuri cu privire la personal	2011 :	2012 :
19.2 Costuri pentru energie	2011 :	2012 :
19.3 Substanţe chimice	2011 :	2012 :
19.4 Întreţinere	2011 :	2012 :
19.5 Depreciere	2011:	2012:

20. Subvenţii (MDL)

20.1 pentru operaţiuni *(vă rugăm să specificaţi sursa subvenţiilor)*

20.1.1 pentru operaţiunile ce ţin de apă	2011	2012
20.1.2 pentru operaţiunile ce ţin de capele uzate	2011	2012

20.2 pentru investiţii *(vă rugăm să specificaţi sursa subvenţiilor)*

20.2.1 pentru infrastructura ce ţine de apă	2011:	2012:
20.1.2 pentru infrastructura ce ţine de apele uzate	2011:	2012

21. Tariful (MDL/m^3) pentru apă / servicii de canalizare (1 ianuarie)

21.1 Gospodării casnice	2011:	/	2012:	/	2013	/

21.2 Instituţii oficiale	2011:	/	2012:	/	2013	/
21.3 Industrii/Companii	2011:	/	2012:	/	2013	/
21.4 Alţii	2011:	/	2012:	/	2013	/

22. Rata de depreciere <u>% / an pentru</u>:

22.1 lucrări de construcţii civile

22.2 echipament electric / mecanic

22.3 conducte şi echipament pentru ţevi

23. Creanţe – Datorii (**MDL**, sfârşitul anului)

23.1 Creanţe	2011	2012
23.2 Datorii	2011	2012

24. Activele curente – Pasivele curente (MDL – sfârşitul anului)

24.1 Activele curente	2011	2012
24.2 Pasivele curente	2011	2012

G. Subcontractare externă

<u>Vă rugăm să enumeraţi activităţile ce ţin de apă / canalizare care sunt subcontractate din exterior</u>

H. Monitorizare

25. Indicatori majori de performanţă

<u>Vă rugăm să specificaţi indicatorii de performanţă utilizaţi la moment în cadrul regiei şi prezentaţi valorile acestor indicatori pentru anii 2011 şi 2012</u>

№	Denumirea indicatorului	Unitate de măsurare	valoare 2011	valoare 2012
1.				
2.				
3.				
4.				
5.				