



## Beyond Utility Reach? How to Close the Urban - Rural Access Gap

# A REVIEW OF RURAL WATER AND SANITATION SERVICES IN SEVEN COUNTRIES OF THE DANUBE REGION

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# Table of Contents

Table of Contents .....	i	4.2.3. Customer Satisfaction .....	43
Boxes .....	ii	4.3. Water Quality Management .....	45
Tables .....	ii	4.3.1. Customer Perceptions of Water Quality .....	45
Figures .....	iii	4.3.2. Disinfection and Water Quality Monitoring Practices .....	48
Abbreviations .....	vi	4.4. Performance and Capacities for Service Delivery .....	50
<b>ACKNOWLEDGMENTS</b> .....	<b>vii</b>	4.4.1. Business Practices .....	50
<b>EXECUTIVE SUMMARY</b> .....	<b>viii</b>	4.4.2. Commercial and Financial Performance .....	52
<b>1. INTRODUCTION</b> .....	<b>1</b>	4.5. Sanitation services .....	57
1.1. Objectives and Audience .....	2	<b>5. Recommendations for Sustainable Services for All</b> .....	<b>62</b>
1.2. Country Selection .....	3	5.1. Developing a National Enabling Environment for Universal Access .....	62
1.3. Conceptual Framework and Structure .....	4	5.1.1. Realizing the SDGs by Adopting Multiple Service Delivery Models .....	62
1.4. Methodology .....	6	5.1.2. Developing an Enabling Environment for Rural Water Services .....	64
<b>2. REGIONAL CONTEXT DRIVING URBAN–RURAL ACCESS</b> .....	<b>10</b>	5.1.3. Reaching Poor Households with Rural Water Services .....	65
2.1. The Urban–Rural Divide .....	10	5.2. Improving Delivery Models at Service Provision Level .....	66
2.2. Political and Socioeconomic Context .....	12	5.2.1. Regional Utility Model: Lessons and Recommendations .....	66
2.3. Administrative Context and Decentralization .....	13	5.2.2. Local Operator Model: Lessons and Recommendations .....	69
2.4. EU Accession and Legislation .....	15	5.2.3. Supported Self-Supply: Lessons and Recommendations .....	72
2.5. Water Resources .....	17	5.3. Addressing Rural Sanitation .....	75
2.6. Rural Access and Prevalence of Management Models .....	18	<b>References</b> .....	<b>77</b>
<b>3. Country Sector Reforms and the Enabling Environment</b> .....	<b>21</b>	<b>Annex A. Methodology</b> .....	<b>79</b>
3.1. Country-level Sector Reforms .....	21	<b>Annex B. Basic Data on Service Authorities and Operators</b> .....	<b>84</b>
3.2. Assessment of Enabling Environment Conditions .....	26	<b>Annex C. Overview of Administrative Tiers</b> .....	<b>85</b>
3.2.1. Institutional Capacity and Support .....	26	<b>Annex D. Additional Data Analysis</b> .....	<b>86</b>
3.2.2. Financing and Affordability .....	30	<b>Annex E Country Overviews</b> .....	<b>89</b>
3.2.3. Asset Management .....	32	E.1 Albania .....	89
3.2.4. Water Resource Management .....	33	E.2 Bosnia and Herzegovina .....	94
3.2.5. Monitoring and Regulatory Oversight .....	34	E.3 Croatia .....	99
<b>4. Analysis of Rural Water Supply and Sanitation Service Provision</b> .....	<b>37</b>	E.4 Kosovo .....	104
4.1. Understanding Self-Supply .....	37	E.5 Moldova .....	109
4.1.1. Service Levels and Satisfaction for Self-Suppliers .....	37	E.6 Romania .....	114
4.1.2. Barriers to Connect to Piped Water Systems .....	40	E.7 Ukraine .....	120
4.2. Those within Reach: Service Levels and Customer Satisfaction .....	41		
4.2.1. Accessibility .....	41		
4.2.2. Reliability and Continuity .....	42		

## Boxes

Box 2.1: European Citizens' Initiative on "Right2Water" .....	16
Box 3.1: Summary findings on the enabling environment for rural water provision .....	26
Box 3.2: Key findings on affordability and pro-poor measures .....	31
Box 4.1: Key findings with respect to self-supply ..	39
Box 4.2: Key findings for service levels and satisfaction of connected households.....	42
Box 4.3: Key findings and insights on water quality management and satisfaction.....	46
Box 4.4: Key findings and insights on service provider business practices and performance.....	50
Box 4.5: Summary of key findings and insights on rural sanitation services .....	58
Box 5.1 Lessons from Austria: a successful service delivery model .....	63
Box 5.2 Lessons from Kosovo: creating an enabling environment for rural water supply services.....	64
Box 5.3: Lessons from Croatia: expanding access and integrating rural systems under a multicity utility model .....	67
Box 5.4: Understanding Romania's rural water outcomes under a regionalization model .....	67
Box 5.5: Example of aggregation model for rural service provision (SISAR), Brazil .....	69
Box 5.6: Example of the Water Supply and Sanitation Monitoring Systems – SIASAR – for rural water service providers in Latin America.....	70
Box 5.7: Example of the development of tariff guidelines tailored to rural communal service providers in Colombia .....	71
Box 5.8: Example of self-supply provision in Scotland, U.K. ....	74
Box 5.9: Leveraging self-investments through sanitation marketing and behaviour change in Vietnam .....	76

## Tables

Table 1.1: Size of rural localities sampled in the seven countries .....	6
Table 1.2: Size of rural localities sampled in the seven countries .....	8
Table 1.3: Summary and sample size as per of regional classification of management models .....	8
Table 2.1: Share of rural population in the studied countries .....	10
Table 2.2: Socioeconomic overview of the study countries .....	12
Table 2.3: Lowest administrative divisions of self-governance, by country .....	14
Table 2.4: Status of EU accession and integration into the EU .....	15
Table 2.5: Annual renewable fresh water resources by country .....	17
Table 2.6: Access indicators for rural services by country .....	18
Table 2.7: Rural sector structure and indicative estimates of provision of piped rural services .....	20
Table 5.1: Recommendations to improve the enabling environment for rural water services at the national level.....	65
Table A.1: Data collection instruments.....	79
Table A.2: Primary data collection summary – service authorities .....	81
Table A.3: Primary data collection summary: operators and households .....	81
Table B.1: Basic data on service authorities and operators .....	84
Table C.1: Overview of administrative tiers in seven countries .....	85



## Figures

Figure 1.1: Map of the seven countries selected for the study. ....	3	Figure 3.9: Share of local authorities reporting water use-related conflicts by country. ....	34
Figure 1.2: Guiding framework for rural water supply analysis (World Bank, 2017b). ....	5	Figure 3.10: Share of operators issued with water extraction permit, by management model and by country. ....	34
Figure 2.1: Access to piped water and flush toilets in urban and rural areas for the studied countries, 2012–16. ....	11	Figure 3.11: Share of operators reporting at least annually to service authorities by management model and by country. ....	35
Figure 2.2: Relationship between access in rural areas and access among the poorest 20 percent of the total population. ....	12	Figure 4.1: Share of self-supply households and their service level characteristics by management model and by country. ....	38
Figure 2.3: Relation between WSS access levels and country's GNI per capita. ....	13	Figure 4.2: Share of self-supply households indicating various reasons for not connecting to the local piped water systems, by country. ....	40
Figure 2.4: Rural access to piped water supply in relation to average population of the lowest level of self-government. ....	14	Figure 4.3: Willingness to pay for piped water tariffs (panel a) and connection fees/costs (panel b) among self-supply households, by country. ....	41
Figure 2.5: Rural household WSS coverage, trends from 1990 onward. ....	19	Figure 4.4: Service levels for accessibility, reliability, and satisfaction of connected households by management model and country	
Figure 2.6: Estimated structure of services delivery for piped access in rural areas. ....	20	A. Share of connected households with access to piped water into home. ....	43
Figure 3.1: Enabling environment conditions in each country for Institutional Capacity, Financing, Asset Management, Water Resources Management, and Monitoring and Regulation. ....	27	B. Share of connected households with continuous water service in past year. ....	44
Figure 3.2: Share of operators with agreement with local government or with license from relevant authority by management model and by country. ....	28	C. Share of connected households that typically receive 24-hour supply. ....	44
Figure 3.3: Share of operators receiving support in the past two years (2015-2016) by management model and by country. ....	29	D. Share of connected households fully satisfied with service provided. ....	44
Figure 3.4: Share of service authorities that conduct planning, have received support related to their WSS mandate, or have supported service providers in their jurisdiction, by country. ....	29	Figure 4.5: Relationship between household satisfaction and incidence of service outages, by management model and country. ....	45
Figure 3.5: Average local government (service authority) annual per capita expenditure (in €) over the past year (2016) on WSS and perception of adequacy of fund availability, by country. ....	30	Figure 4.6: Water quality related customer perceptions and operator water quality practices, by management model and country	
Figure 3.7: Percentage of monthly per capita expenditure as of monthly per capita income/ consumption defined at national poverty line (in 2016 prices) by management model and by country. ....	32	A. Share of connected households satisfied with water quality. ....	47
Figure 3.6: Share of service authorities that implement pro-poor programs for water and sanitation. ....	32	B. Share of connected households satisfied with information sharing on water quality. ....	47
Figure 3.8: Share with Share of operators that could demonstrate their asset inventory, by management model and country. ....	33	C. Share of service providers that report practicing disinfection. ....	47
		D. Share of service providers that report conducting water testing at least weekly. ....	48
		Figure 4.7: Relationship between household satisfaction with water quality and satisfaction with service provider information sharing on water quality, by management model and country. ....	48

Figure 4.8: Relationship between household satisfaction with water quality and disinfection and testing practiced by service providers	
A. Household satisfaction on water quality and operator disinfection practice . . . . .	49
B. Household satisfaction on water quality and operator water quality testing . . . . .	49
Figure 4.9: Payment, invoicing, and metering among connected households by management model and country	
A. Share of connected households that report paying for water . . . . .	51
B. Share of connected households that report receiving an invoice . . . . .	51
C. Share of connected households that report having a water meter. . . . .	52
Figure 4.10: Average volumetric water tariff reportedly charged by service providers by management model and country. . . . .	53
Figure 4.11: Billing and collection practices and performance among service providers, by management model and country	
A. Share of operators billing customers based on a volumetric tariff. . . . .	54
B. Share of operators reporting billed and actual revenue. . . . .	54
C. Share of operators reporting billed and actual revenue and demonstrating a collection ratio greater than 90 percent. . . . .	54
Figure 4.12: Relationship between invoicing and ability of service providers to report billed and actual income, by management model . . . . .	55
Figure 4.13: Operator performance on cost recovery and capacity for NRW monitoring, by management model and country	
A. Share of operators reporting actual income and operational expenses for past fiscal year . . . . .	56
B. Share of operators reporting actual income and operational expenses, and demonstrating a cost recovery greater than 100 percent in past fiscal year . . . . .	56
C. Share of operators reporting water volumes produced and sold over past fiscal year . . . . .	56
Figure 4.14: Rural flush toilet access in relation to indoor piped water access, by country. . . . .	57
Figure 4.15: Level of sanitation services, accessibility, and pit or tank emptying practices, by country	
A. Share of flush-toilet users with indoor toilet, and share of households using flush toilet . . . . .	59
B. Emptying practices of households and share of households connected to sewer network. . . . .	59
C. Pit and tank emptying methods of households. . . . .	59
Figure 4.17: Satisfaction of flush versus pit latrine users, and affordability barriers for pit latrines users to upgrade, by country. . . . .	60
Figure 4.16: Willingness to pay for flush toilets and sewerage connection among households without such access, by country . . . . .	60
Figure A.1: Typical methodology for country-level primary data collection activities. . . . .	80
Figure D.1: Share of connected households with connection delivered into their yard, by country and management model. . . . .	86
Figure D.2: Median number of days in the past year when connected households did not receive water service, by country and management model . . . . .	86
Figure D.3: Share of service providers reporting that water quality testing is performed at least annually by government agency, by country and management model . . . . .	86
Figure D.4: Share of connected households that regarded their tariffs as fair, by country and management model. . . . .	87
Figure D.5: Share of connected households that were not satisfied with the billing practices of their service provider, by country and management model . . . . .	87
Figure D.6: Share of connected households that were not satisfied with payment arrangements, by country and management model. . . . .	87
Figure D.7: Share of connected households that were dissatisfied with their operator's ability to share information, by country and management model . . . . .	88
Figure D.8: Share of connected households dissatisfied with system maintenance, by country and management model. . . . .	88
Figure D.9: Share of connected households dissatisfied with complaint handling, by country and management model. . . . .	88
Figure E.1.1: Albania as one of the seven countries in the study. . . . .	89
Figure E.1.2: Structure of service delivery in rural areas: Albania . . . . .	90
Figure E.1.3: Inequalities in access in rural water and sanitation Albania. . . . .	90
Figure E.1.4: Enabling Environment Assessment Rural Water Albania . . . . .	91



Figure E.1.5: Water service levels and perceptions Albania .....	91	Figure E.5.4: Enabling Environment Assessment Rural Water Moldova .....	111
Figure E.1.6: Operator business practices Albania .....	92	Figure E.5.5: Water service levels and perceptions Moldova .....	111
Figure E.2.1: Bosnia and Herzegovina as one of the seven countries in the study .....	94	Figure E.5.6: Operator business practices Moldova .....	112
Figure E.2.2: Structure of service delivery in rural areas: Bosnia and Herzegovina .....	95	Figure E.6.1: Romania as one of the seven countries in the study .....	114
Figure E.2.3: Inequalities in access in rural water and sanitation Bosnia and Herzegovina .....	95	Figure E.6.2: Structure of service delivery in rural areas: Romania .....	115
Figure E.2.4: Enabling Environment Assessment Rural Water Bosnia and Herzegovina .....	96	Figure E.6.3: Inequalities in access in rural water and sanitation Romania .....	115
Figure E.2.5: Water service levels and perceptions Bosnia and Herzegovina .....	96	Figure E.6.4: Enabling Environment Assessment Rural Water Romania .....	116
Figure E.2.6: Operator business practices Bosnia and Herzegovina .....	97	Figure E.6.5: Water service levels and perceptions Romania .....	116
Figure E.3.1: Croatia as one of the seven countries in the study .....	99	Figure E.6.6: Operator business practices Romania .....	117
Figure E.3.2: Structure of service delivery in rural areas: Croatia .....	100	Figure E.7.1: Ukraine as one of the seven countries in the study .....	120
Figure E.3.3: Inequalities in access in rural water and sanitation Croatia .....	100	Figure E.7.2: Structure of service delivery in rural areas: Ukraine .....	121
Figure E.3.4: Enabling Environment Assessment Rural Water Croatia .....	101	Figure E.7.3: Inequalities in access in rural water and sanitation Ukraine .....	121
Figure E.3.5: Water service levels and perceptions Croatia .....	101	Figure E.7.4: Enabling Environment Assessment Rural Water Ukraine .....	122
Figure E.3.6: Operator business practices Croatia .....	102	Figure E.7.5: Water service levels and perceptions Ukraine .....	122
Figure E.4.1: Kosovo as one of the seven countries in the study .....	104	Figure E.7.6: Operator business practices Ukraine .....	123
Figure E.4.2: Structure of service delivery in rural areas: Kosovo .....	105		
Figure E.4.3: Inequalities in access in rural water and sanitation Kosovo .....	105		
Figure E.4.4 Enabling Environment Assessment Rural Water Kosovo .....	106		
Figure E.4.5: Water service levels and perceptions Kosovo .....	106		
Figure E.4.6: Operator business practices Kosovo .....	107		
Figure E.5.1: Moldova as one of the seven countries in the study .....	109		
Figure E.5.2: Structure of service delivery in rural areas: Moldova .....	110		
Figure E.5.3: Inequalities in access in rural water and sanitation Moldova .....	110		

## Abbreviations

AKUK	National Drinking Water Supply and Wastewater Authority, Kosovo	IPA	Instruments for Pre-Accession Assistance
ANRE	National Agency for Energy Regulation, Moldova	JMP	joint monitoring program
ANRSC	National Regulator for Public Services, Romania	LSMS	Living Standards Measurement Survey
Apasan	Swiss-Austrian rural water supply and sanitation project in Moldova	MDPI	Municipal Development and Planning Initiative
BiH	Bosnia and Herzegovina	MICS	Multiple Cluster Indicator Survey
CALM	Association of Local Governments in Moldova	ND	nitrites directive
CDI	Community Development Initiative	NRW	nonrevenue water
DESPRO	Swiss decentralization support project in Ukraine	OCR	operational cost recovery
DWD	drinking water directive	PE	population equivalent
DWP	Danube Water Program	PNDL	national program for local development in Romania
DWQR	Drinking Water Quality Regulator of Scotland	PNDR	national program for regional development in Romania
EC	European Commission	PPP	public-private partnership
ECI	European citizen initiative	PWS	piped water system
EESC	European Economic and Social Committee	ROC	regional operating company
EU	European Union	RWC	regional water companies
FAO	Food and Agricultural Organization	SDG	sustainable development goals
GNI	gross national income	SIASAR	Rural Water and Sanitation Information System
HBS	Household Budget Survey	SRL	limited liability company
Hh	household	SWSZ	small water supply zone
IAS	individual appropriate systems	UN	United Nations
IAWD	International Association of Water Supply Companies in the Danube River Catchment Area	UWWD	urban waste water directive
IDA	Intercommunal development association, Romania	WB	World Bank
IFI	International Financial Institution	WHO	World Health Organization
		WFD	water framework directive
		WRA	Water regulatory Authority, Albania
		WSS	water supply and sanitation



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The regional report is complemented by individual country reports, describing greater details of the results for each of the seven countries.<sup>2</sup> The authors welcome comments and can be contacted through [ssmets@worldbank.org](mailto:ssmets@worldbank.org).

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1 See DWP's website, [www.danube-water-program.org](http://www.danube-water-program.org).

2 See the country reports, available at [www.danube-water-program.org](http://www.danube-water-program.org).

# EXECUTIVE SUMMARY

## A. Background and Rationale

**Governments of countries of the Danube region face the double challenge of meeting their citizens' demand for quality and sustainable water services, while catching up with the environmental requirements of the European Union (EU).** In general, the bulk of public investments have targeted urban areas, resulting in the improvement of drinking water systems and the development of wastewater collection and treatment infrastructure. This process is largely driven by EU accession and compliance targets and in several countries involves the regionalization of service providers. However, rural areas are lagging and significant service access gaps exist in comparison with urban areas. Approximately 28.5 million people remain without access to piped water supply and 22 million remain without flush toilet access in the region (World Bank 2015), of which at least eight out of 10 reside in rural areas.<sup>3</sup> Goal 6 of the Sustainable Development Goals (SDGs) underlines the countries' commitment to achieving universal access to safe and affordable drinking water and safe sanitation and hygiene for all by 2030 (WHO/UNICEF 2017).<sup>4</sup> Understanding how to effectively reach the rural population with "safely managed services" is paramount from the social inclusion as well as the human rights perspective.<sup>5</sup>

## B. Objectives, Scope, and Analytical Framework

Given that the significant access gaps are a major barrier to fulfilling the SDGs, this study was launched to increase awareness and knowledge on how rural service provision is organized, to understand whether and how the aggregation through regional water utilities has effectively reached rural areas, and to present lessons and recommendations for expanding and improving the provision of services for rural populations. Seven countries—Albania, Bosnia and Herzegovina, Croatia, Kosovo, Moldova, Romania, and Ukraine—were selected because they represent a wide range of rural water outcomes, different challenges, and sector reform contexts.

**The analytical framework has assessed each country context and the sector-enabling environment, which shapes the conditions for service provision at different levels.** It has examined the national level, the service authority level—typically, local governments—and the service provider level. The enabling environment analysis has centered on critical conditions for achieving service outcomes: institutional capacity, financing, asset management, water resources, and monitoring and regulation. The study has also sought to understand customer perceptions and service levels for different management models, operator performance, and local government capacities.

**While utilities are the typical service provider in urban areas, a much more diverse range of management models is found in rural areas.** These are broadly categorized as either local service providers, or as urban and regional utilities that have expanded their networks to rural areas and, in some cases, manage stand-alone rural systems. A third distinct service delivery model is individual self-supply, i.e., households using point sources such as private wells and springs.

**The analysis is based on secondary data sources, documents, and existing datasets, combined with primary data collection in selected rural localities in the seven countries.** Over 4,100 connected households and over 1,200 self-supply households were interviewed, 178 interviews were conducted with service providers, and 162 interviews were conducted with members of local governments.

## C. The Urban–Rural Access Gap and Service Delivery Landscape

**On average, roughly half of the population in the seven study countries, or 30 million people, live in rural areas, all with shrinking rural populations. Some are served by regional and urban utilities, some by local**

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- 3 Under the DWP, a comprehensive State of the Sector report was published, which is expected to be updated in 2018. See the website <http://sos.danubis.org/>.
  - 4 To meet the standard for safely managed drinking water, a household must use an improved source that is (a) accessible on the premises, (b) available when needed, and (c) free from contamination.
  - 5 On July 28, 2010, through Resolution 64/292, the United Nations General Assembly explicitly recognized the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realization of all human rights.



**operators, and over 14 million (estimated) through self-supply, either piped to one's dwelling or further from home.** While access to piped supply ranges from around 90 percent to nearly 100 percent in urban areas in all countries, the highly dispersed rural population is sharply disadvantaged. In Ukraine, rural piped access is on the decline (34 percent in 2012). In Romania, access to public piped water services in rural areas has slowly increased to 40 percent in 2016. Moldova, starting from low coverage in the early 2000s, has seen progress to 46 percent in rural piped water supply access in 2015. Croatia and Kosovo have seen an impressive change with almost 70 percent of the rural population now served through piped access delivered by public utilities. In Albania and Bosnia and Herzegovina, rural access to piped water is high (greater than 80 percent), but access to public service delivery in rural areas is not exactly known in Albania, and is just 36 percent in Bosnia and Herzegovina. Rural access to flush toilets lags behind urban areas and follows similar country trends, with Ukraine, Moldova, and Romania among the lowest (ranging from 13 percent to 48 percent) and Albania, Bosnia and Herzegovina, Croatia and Kosovo significantly higher (ranging from 85 percent to 97 percent).

**TABLE ES.1: RURAL SECTOR STRUCTURE AND INDICATIVE ESTIMATES OF PROVISION OF PIPED RURAL SERVICES**

Country	rural population (millions)	% rural piped access on premises	% rural piped access by utilities	% of rural piped access by local operators	% of rural piped access by self-supply	% of rural non-piped access by self-supply	No. of urban regional utilities	No. of local service providers
Albania	1,2	81	24	57 - split not known		19	61	unknown
Bosnia and Herzegovina	2,1	88	20	16	52	12	142	unknown
Croatia	1,7	98	67	8	23	2	156	455
Kosovo	1,1	70	55	15	10	20	8	240
Moldova	1,9	46	1	30	15	54	38	1,044
Romania	8,9	60	17	23	20	40	43	1,020
Ukraine	13,5	34	0	34 – split not known		66	150	1,605

**In all countries except Kosovo, decentralization reforms have assigned the responsibility for water service provision to rural local governments, which often have poor capacities and financial resources.** Table ES.1 illustrates the landscape of rural service provision and the structure of rural piped access delivery.<sup>6</sup> While urban and regional utilities in Croatia and Kosovo serve large rural population shares, local operator models continue to play an important role in Bosnia and Herzegovina, Moldova, Ukraine, and Romania. The reliance on self-supply in rural areas is over two-thirds in these four countries, with Bosnia and Herzegovina having a large share of indoor piped self-supply.

## D. Summary of Key Findings

### D.1. Enabling Environment Assessment

**The assessment shows that Croatia, Romania, Albania, and Kosovo have a better enabling environment for rural water provision compared to Bosnia and Herzegovina, Moldova, and Ukraine.** This finding is consistent with low rural access to publicly managed piped water supply in the latter group of countries, Romania being an outlier. Romania's rural population size and the country's weak prioritization of social services in rural areas are important overriding factors. Parallel service delivery models through either urban-focused regional utilities or much weaker municipal operators have slowed progress in rural areas. The following are key findings for the different elements of the enabling environment.

<sup>6</sup> Those without piped self-supply (piped into dwelling) rely on wells (mostly private but not piped) and springs. There is low coverage of public standpipes.

## Institutional capacity

- ▶ Several countries lack explicit strategies for addressing urban–rural service gaps and none (except Moldova) has dedicated support programs for local operators and self-suppliers.
- ▶ Only larger urban and regional utilities can access external support, while local operators have limited opportunities.

## Financing and affordability

- ▶ The absence of at-scale investment programs targeted to rural areas explains large urban–rural access gaps, especially in Moldova, Romania, and Ukraine.
- ▶ Lack of sufficient funds is a key barrier to improving services for local governments, which fund operating subsidies and stop-gap measures; funding levels are low and access to national funds is limited.
- ▶ Tariff levels in rural areas are within affordability limits for poor households and—when combined with service improvements—show room for increases to allow for higher cost recovery.
- ▶ Connection barriers exist for the poorest households, especially in Moldova, Romania and Ukraine.

## Asset management

- ▶ Most countries have defined policies and legislation on asset ownership.
- ▶ Not all asset ownership arrangements are fully understood by stakeholders (Bosnia and Herzegovina), or due to on-going aggregation processes and weak capacity, are not yet fully implemented (Kosovo, Albania, and Bosnia and Herzegovina).

## Monitoring and regulatory oversight

- ▶ National performance monitoring systems for regional and urban utilities exist (except for Bosnia and Herzegovina); performance monitoring systems for local operators are absent in all countries.
- ▶ Tariffs under local operator models are neither regulated by national regulators, nor are tariff methodologies tailored to local operators; a low willingness to charge local governments may put cost recovery at risk.
- ▶ Surveillance of water quality by public health institutes is well-executed for utilities, but more limited for some local operators.

## D.2. Assessment on Service Levels, Satisfaction, and Operator Practices

While the enabling environment shapes the conditions for sustainable service provision, key findings with respect to service levels, customer perceptions, and operator practices are as follows:

### For households with self-supply

- ▶ Accessibility of self-supply through indoor piping varies by country, while reliability of self-supply is generally high. Satisfaction with water quality was moderate.
- ▶ Self-supply households typically are not connected due to the distance from local water supply mains; although some opted out due to poor public service.
- ▶ In Moldova, Romania, and Ukraine, around one in four households report affordability constraints for connecting; tariffs are not seen as a barrier.
- ▶ Self-suppliers have significantly self-invested and a large share is satisfied; convincing self-suppliers of the benefits, specifically of the superior water quality, of a service connection is necessary.

### For households served by regional and urban utility and local operators

- ▶ Accessibility among connected households is high; reliability shows room for improvement; reliability and continuity of supply is the poorest in Albania and Kosovo.
- ▶ Safe water remains a top concern. Reasons for low satisfaction with water quality need further research and water quality sampling.
- ▶ Satisfaction with water quality is higher when households are satisfied with information sharing on water quality, but is not linked to disinfection and water quality monitoring practices of service providers.



- ▶ Most customers are not fully satisfied with the service received, reasons include poor water quality, low reliability, perceived high tariffs, or dissatisfaction with other customer-facing services.

### For service provider practices and performance

- ▶ Compared to regional and urban utilities, local operators, especially community operators, generally have weaker business practices, such as weak invoicing and metering.
- ▶ Consistent meter reading and volumetric billing are not consistently carried out for stand-alone schemes under regional utility management; this leads to unauthorized use.
- ▶ Local operators, except those in Croatia and Romania, do not commonly practice disinfection; however, disinfection is common among utility-managed systems.
- ▶ Utility-managed rural systems have better water quality monitoring than systems managed by local operators.
- ▶ Average tariffs are similar across local operators, typically ranging between €0.40 and €0.50 per cubic meter. Tariffs for urban and regional utilities are higher for Romania and Croatia.
- ▶ Commercial, financial, and technical performance monitoring by local operators is weak and a barrier for achieving operational cost recovery.
- ▶ Performance monitoring is much better for urban and regional utilities, although indicators are typically not monitored for stand-alone schemes.

## E. Recommendations for Sustainable Services for All

Rural water and sanitation services are at the center of the inclusive SDG agenda. Despite well-known demographic and economic challenges of declining rural populations, governments must provide such services in rural areas. This duty extends to all citizens, ensuring that poor and other disadvantaged groups are not excluded from accessing services.

### E.1. Developing a National Enabling Environment for Universal Access

#### Realizing the SDGs by Adopting Multiple Service Delivery Models

**To achieve the SDGs, most countries will need a portfolio approach that adopts different service delivery models for reaching different rural population groups.** It is recommended that countries analyze their service provision structure to determine the service delivery models that can most effectively achieve universal access. While regional and urban utilities may be able to reach a substantial share of the rural population, in some countries, parallel local operator models might continue to bring services to villagers. Regional and urban utilities may not be able to reach these segments in the medium or long term because conflicting interests and misaligned incentives may hinder progress. In addition, for dispersed and remote populations, although shrinking in size, a piped networked system may not be feasible and self-supply is the only viable alternative. Hence, the trajectory for reaching universal access is shaped by country realities in terms of access levels, the existing provider landscape and demographics, and sector evolution.

**The enabling policies, legislative framework, and financing measures need to recognize the different service delivery models required to address all rural water supply needs.** This can be achieved through a regionalization approach, a local operator model, or a deliberate hybrid, combined with supporting self-supply to ensure all segments of the rural population are reached. For example, Austria has developed excellent drinking water services through a highly decentralized model, while the more common trend in the Danube region is regionalization. While there are many lessons to be learned from the regionalization process,<sup>7</sup> successful examples of local operator models are scarce, since this model, and self-supply, have received little attention.

**To address rural and small-town sanitation, it is critical to understand the contexts that may—like water supply—require multiple service delivery solutions.** Such strategies will need to be guided by defining criteria for on-site and off-site solutions. Service delivery models can range from supporting and catalyzing self-investments to local and utility management models.

<sup>7</sup> See also the recent study on aggregation processes (World Bank 2017a).

## Developing an Enabling Environment for Rural Water Services

The assessment finds that national governments need to recognize rural services as part of a broader development agenda and direct more efforts to creating a conducive enabling environment for the service delivery models. The national government must tailor policies, legislation, institutional arrangements, and program measures for each service delivery model to the needs and realities of actors in rural areas, service providers, local governments, and citizens.

The five elements of the enabling environment need to be put in place: institutional capacity, financing and affordability, asset management, water resource management, and monitoring and regulation. This leads to the following recommendations for national agencies:

- ▶ Develop sector strategies, legislation, planning, and financing frameworks that recognize all relevant rural service delivery models.
- ▶ Set up targeted investment programs for rural areas as part of a national investment framework aligned with the intended service delivery models.
- ▶ Clarify ownership of assets under different management models; fund and implement an inventory of rural water assets with service authorities.
- ▶ Develop regulatory instruments, such as tariff and licensing policies, suitable for local operators in rural areas, and ensure that water permitting is implemented by relevant water management entities to minimize conflicts around water use.
- ▶ Establish performance monitoring systems and oversight arrangements for rural service providers with increased attention to water quality.

## Reaching Poor Households with Rural Water Services

**Exclusion of poor households does not seem to be driven by their inability to pay regular water fees, but rather by not guaranteeing their access to public systems.** Monthly expenditures on water service fees in rural areas are well within affordability limits for poor households, but connection costs and fees are barriers for households to connect in Moldova, Romania, and Ukraine.<sup>8</sup> The following recommendations are made to ensure inclusive services:

- ▶ Implement targeted social support initiatives to address connection barriers for poor and disadvantaged populations, potentially also for self-supply support.
- ▶ Combine social subsidies with targeted outreach and communication on complementary financing options, such as microloans or saving products.
- ▶ Ensure that tariffs remain within affordability limits for poor households and, when necessary, apply social tariffs targeted to vulnerable groups.

While social tariffs and connection subsidies are important when systems already exist or will be build, inclusions starts with ensuring that prioritization criteria of national investment programs reflect poverty rates and marginalization to increase access in such disadvantaged localities.

## E.2. Improving Delivery Models at Service Provision Level

The following recommendations are based on the understanding that different models may be required consecutively or in parallel during a particular phase of a country's sector evolution. How countries decide on the intended mix of service delivery models will depend on several factors.

**Existing service provider landscape.** Regionalization is a complex and time-consuming process. Hence, in countries with large numbers of local operators, phasing out local operators will take time and will require a hybrid approach. Local operators should continue to be adequately supported and not left to their own devices.

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<sup>8</sup> Water expenditure is lower than 3.5 percent of the monthly income for households at the national poverty line. This is the case not only for people served by local operators but also for those served by regional and urban utilities, who typically pay a higher percentage than those served by local operators.



In Moldova, Ukraine, and, perhaps, Romania, local operators may require a prolonged support period until further aggregation takes place.

**Strength of urban and regional utilities within the context of sector reform.** When sectors have well-capacitated urban and regional utilities, well-established regionalization reforms, and strong incentives for rural service provision, hybrid approaches may not be necessary or desirable, such as in Kosovo and Croatia. However, reform support programs can help utilities cope quickly with expanded service obligations, as in Albania.

**Administrative structure and support for decentralization.** Highly decentralized countries, such as Moldova and Ukraine, may naturally opt for a hybrid approach of combining regional and urban utilities and the local operator model. Regionalization in this context requires strong incentives for collaboration among local governments.

**Dispersion and demographics of the rural population.** Self-supply models are suitable for remote and dispersed settlements and have relevance for virtually all countries. For countries with declining rural populations and limited fiscal space to invest, supported self-supply will remain extremely relevant. Low-density rural areas may also require local operator models (Ukraine, Moldova).

### E.3. Recommendations for Regional Utility Model

**Regionalization of service provision has resulted in several positive outcomes for rural service provision, although the process has not been equally successful in all countries.** Based on experiences in Albania, Croatia, Kosovo, and Romania, the following recommendations are provided for designing and implementing the regional and urban utility model for rural areas:

- ▶ Ensure that expanding access is an explicit objective of regionalization with time-bound accountability.
- ▶ Create strong financial incentives for service providers and local governments to collaborate and dedicate investments and technical assistance to the integration of rural systems.
- ▶ Establish an inclusive governance mechanism to give voice to weaker local governments under a regional service provider model.
- ▶ Increase customer support and communication to understand and improve satisfaction.
- ▶ Address rural customer concerns, specifically over water quality, and improve business practices for rural customers (which are worse than for those of urban customers).
- ▶ Adopt management information systems to diagnose and steer performance of rural stand-alone systems under utilities' management.
- ▶ Consider alternative collaborative arrangements for support between regional utilities and local operators.

### E.4. Recommendations for Local Operator Model

**In countries where local operators are part of the solution to reach universal access, challenges arise to make a decentralized model work well.** In Bosnia and Herzegovina, Moldova, Romania, and Ukraine hundreds or sometimes thousands of local service providers are the main vehicle for rural service provision, at least in the medium to perhaps even long term, yet this model has not received much public support. The following recommendations are provided for strengthening provision through the local operator model:

- ▶ Institutionalize and fund support functions and capacity building programs for local operators and local governments, using mechanisms based on the local context.
- ▶ Improve asset management and inventories, linked to a national performance monitoring system for rural providers.
- ▶ Improve service levels by addressing reliability and water safety through investments, technical training on water safety planning, and follow-up support.
- ▶ Develop licensing schemes and implement tariff guidelines tailored to the needs of local operators to increase cost recovery.
- ▶ Consider public-private partnerships (PPPs) to professionalize the local operator model.

## E.5. Recommendations for Supported Self-Supply

**If universal access to piped water supply is to be achieved, a supported self-supply model will be a part of the solution, as is the case in many Western countries with dispersed rural populations.** This is likely the most cost-effective service delivery approach in very dispersed areas, and it may be an interim solution for a larger rural population share if investments in a centralized piped system are not feasible in the medium to long term. Moreover, with rapidly declining rural populations, supported self-supply can be a viable alternative to locking in costly investments in centralized water systems, especially in the face of uncertain population trends.

**Supported by national and local initiatives and policies, a supported self-supply model can mitigate public health risks by improving the quality and quantity of water delivery.** The following recommendations are made for introducing a supported self-supply model:

- ▶ Advocate for a supported self-supply as a complementary model under a national strategy to reach universal access and mitigate public health risks.
- ▶ Register self-suppliers, carry out sanitary and water quality inspections, and analyze results to inform policy and advocacy.
- ▶ Launch communication campaigns and mobile water quality testing services.
- ▶ Design, implement, evaluate, and scale-up a pilot subsidy scheme for self-supply improvements.

## E.6. Addressing Rural Sanitation

**The rural sanitation situation in Moldova, Ukraine, and Romania is dire since only one in eight, one in four, and one in two households, respectively, use a flush toilet.** Others use outdoor pit latrines of doubtful hygienic status with limited comfort and often lacking nearby handwashing facilities. Access to public sewer systems is also very low (the highest is in Kosovo, with one in two households connected to a sewer). The following recommendations address rural sanitation challenges.

- ▶ Develop a rural sanitation strategy based on guiding criteria for individual and appropriate systems as opposed to sewerage solutions for agglomerations with a population below 10,000 people.
- ▶ Based on the situation analysis and enabling environment assessment, identify relevant service delivery models across the service chain<sup>9</sup> for different segments of the rural population.
- ▶ Decouple technology aspects from service levels to facilitate the identification of sanitation solutions beyond centralized wastewater collection and treatment.
- ▶ Accelerate self-investments to move up the sanitation ladder through a comprehensive rural sanitation program with a critical role for the local government, addressing the following:
  - The enabling environment in terms of strategy, financing, regulation, and capacity support
  - A demand creation campaign using sanitation marketing and behavior change communications
  - The development of local markets for affordable and aspirational sanitation products
  - Ways to access to financing options (microloans) and targeted incentives for the poorest

## E.7. Lessons from and beyond the Danube Region

Regionalization is the most common trend in the Danube region, and its positive and negative experiences shape the following noteworthy lessons. A careful examination of the existing rural situation, sector structure, and incentives is needed to determine whether regionalization will help close the urban–rural service gaps or whether alternative models will require support during a transition period. To ensure that increased rural access is

<sup>9</sup> The service chain is as follows: user interface, containment, transport and conveyance, treatment, disposal, and reuse. For on-site solutions that include second pits, the service chain is shortened to containment and on-site disposal.



achieved, regionalization requires a strategy for rural water access, a clear equity objective, clear legal mandate, and accompanying measures to support the integration of rural systems. Regionalization processes spanning many local governments with high disparities in access require the following:

- ▶ Strong financial incentives and subsidies to prioritize equity objectives of aggregation, with slices of national investments directed to rural areas
- ▶ Accountability mechanisms with time-bound targets for closing the gap
- ▶ Mechanisms to represent the interest of economically weaker local governments in regional structures

Unlike expansion of urban networks to adjacent rural areas, the integration of sometimes remote, rural stand-alone water systems comes with new challenges, such as guaranteeing service levels, increasing customer satisfaction, as well as internal management processes and systems, to monitor and steer performance at the scheme level.



# 1. INTRODUCTION

**Policies and financing frameworks for the 19 countries that form the Danube region are largely driven by political processes to integrate or progress toward accession to the European Union (EU).** This means that governments, depending on their status as pre-accession, candidate member, or member state, have paid and continue to pay close attention to the water supply and sanitation (WSS) sector. Investments in the WSS sector and reforms are thus oriented toward achieving the EU's *acquis communautaire*, underpinned by the Drinking Water Directive (DWD), the Urban Waste Water Directive (UWWWD), and the EU Water Framework Directive (WFD).

**Since investments have focused on improving drinking water systems and rehabilitating and building wastewater collection and treatment infrastructure in urban areas, rural areas still have fundamental service gaps.** In 2015, with funding from the Danube Water Program (DWP), the World Bank completed a review of the state of the sector for WSS services in the region and established that approximately 28.5 million people remain without access to piped water supply and 22 million remain without flush toilet access (World Bank 2015), among whom at least eight out of 10 reside in rural areas.<sup>10</sup> The magnitude of these figures is driven by countries with large rural populations and low access, such as Ukraine and Romania, but also Moldova, a small country, with poor rural water and sanitation access. In most of the Danube region, poor households disproportionately reside in rural areas, and service provision is increasingly challenging due to the depopulation in rural areas caused by declining fertility rates and migration to urban areas and other Western countries. Thus, governments of the Danube region face the double challenge of meeting their citizens' demand for sustainable services, especially in rural areas, while catching up with the environmental requirements of the EU.

**With the endorsement of the Sustainable Development Goals (SDGs) by governments in the Danube region, understanding how to effectively reach rural population segments with safely managed services becomes paramount.**<sup>11</sup> Goal 6.1 aspires to achieve universal and equitable access to safe and affordable drinking water for all by 2030, and goal 6.2 requires adequate and equitable sanitation and hygiene for all by 2030.<sup>12</sup> To meet the standard for safely managed drinking water, a household must use an improved source that meets three criteria: (a) accessible on the premises, (b) available when needed, and (c) free from contamination<sup>13</sup> (WHO/UNICEF 2017). The SDG goals, although different from the compliance requirements under the EU Drinking Water Directive, pose a challenge for countries of the Danube region that have access gaps in rural areas.

**The state of the sector report highlights the lack of data and information with respect to WSS service delivery in rural areas: there is a poor understanding of services by informal<sup>14</sup> and local<sup>15</sup> service providers and for households relying on self-supply.**<sup>16</sup> Globally, service delivery data in rural areas are less comprehensive than in urban areas, given that monitoring systems for urban utilities are generally better developed. This study was launched in seven

10 A regional technical assistance program focused on water and wastewater services around the Danube region, supported by the World Bank and the International Association of Water Utilities in the Danube River Catchment Area (IAWD). In 2015 a comprehensive state of the sector was published, which is expected to be updated in 2018. See <http://sos.danubis.org/>.

11 While goals 6.1 and 6.2 strive to achieve safely managed drinking water and sanitation services, goal 4.1 aims to achieve universal access to basic water, sanitation, and hygiene services by 2030. Goal 6 raises the bar by including aspects of accessibility, availability, and quality for drinking water, and for sanitation, addressing safe, in situ treatment and disposal; excreta emptying and off-site treatment; and off-site wastewater treatment and disposal. Definitions of basic have lower standards. For water supply, drinking water should be supplied from an improved source, with collection time not more than 30 minutes for a round trip, including queuing; an improved source is piped water from a network, borehole, or tube well, protected dug well, protected spring, or packaged or delivered water. For sanitation, this means the use of an improved sanitation facility (without sharing); an improved facility is one that separates human excreta from human contact, such as pit latrines with slabs and seals, flush toilets to pits, septic tanks, or sewers.

12 "Safely managed sanitation" means that people are using an improved sanitation facility that is not shared with other households, and where excreta are safely disposed of in situ or transported and treated off-site

13 Meaning (a) located within the dwelling or yard; (b) sufficient water available in the last week or for at least 12 hours per day; and (c) compliant with standards for fecal and priority chemical contamination (country-specific, can include nitrate, fluoride, or arsenic).

14 Referring to those that are not formalized through legislation, are unlicensed, and may not even have a formal management structure.

15 Referring to both formal and informal service providers that operate on a local or small scale, usually a municipality with less than 3,000 inhabitants, or a cluster of villages or hamlets within the boundaries of a municipalities. In many cases, multiple local water service providers are in one rural municipality.

16 Referring to households that are not connected to an externally managed piped water supply network, and instead rely on their own water supplies (in the regional context, typically dug wells and boreholes). Within self-supply households, some may have organized piping of the source into their homes and enjoy running tap water, while others continue to rely on fetching water from nearby public or private sources.

countries of the Danube region: Albania, Bosnia and Herzegovina, Croatia, Kosovo, Moldova, Romania, and Ukraine (figure 1.1). The countries present different rural water outcomes and policy approaches toward rural service delivery.

**Many countries have adopted a regional vision for service delivery, embarking on sector reforms to address the financial and technical barriers in achieving the EU acquis, and create economies of scale and absorption capacity for large investments.** At the same time, they expect such aggregation processes to address needs in rural areas, although a recent global study on aggregation has shown that this outcome is not always realized (World Bank 2017a). Other countries have multiple local service providers in rural areas or are characterized by hybrid approaches.

## 1.1. Objectives and Audience

Against the backdrop of utility aggregation processes in some of the countries<sup>17</sup> and the prevailing urban–rural service disparities at the national level explored in chapter 2, this study has the following objectives:

- ▶ **To increase awareness and knowledge on how rural service provision is organized and to what extent rural populations are reached** in a select number of countries in the Danube region. The study contributes to the scarce evidence base on rural services by characterizing the institutional service delivery arrangements for rural areas, analyzing service levels and satisfaction for rural households, and assessing performance of local service providers and the role of local governments.
- ▶ **To understand how and to what extent the regionalization of utility service provision has been able to reach rural households** with water supply services. This aspect captures the perspectives of service providers and local governments on the challenges and benefits derived from regionalization and identifies practices and policies critical for an inclusive approach.
- ▶ **To present lessons and recommendations on how to expand or improve services for rural populations** based on country contexts. Examples from other countries are highlighted to illustrate approaches that may help to enhance rural WSS service provision.

**The regional report does not intend to present detailed policy recommendations for individual countries, instead it presents overall directions with country-specific highlights.** The regional report comprises country overviews, presented in appendix E.<sup>18</sup>

**The primary audience of this regional report—and related country notes—are policy makers in the national institutions responsible for WSS and other stakeholders,** such as regulators (environmental or economic) and ministries and their subordinate agencies, especially those responsible for financing rural investments. Utilities and their associations and local governments and their national platform organizations will benefit from the study's insights to enhance their rural service provision, such as through operational and planning processes, capacity building programs, advocacy, and policy dialogue. Lessons and recommendations can inform the strategic engagement of external partners supporting country governments to achieve their goals for service delivery, such as bilateral donors, international financial institutions, and the European Commission (EC) (as a legislator for EU members and as a financier of WSS investments and technical assistance).

**The findings, lessons, and recommendations may be relevant beyond the Danube region.** This study expands the global knowledge of sustainable rural water services to better inform country policies in pursuit of a range of service delivery models, such as aggregated utility models, local service provider arrangements, and self-supply arrangements. Global insights are highlighted in chapter 5.

17 This is also referred to as "regionalization" in many countries, reflecting the notion that service providers and utilities follow aggregation so that they will cover several territorial administrations.

18 Individual country notes with the full analysis of the country results are publicly available for comprehensiveness and transparency at [www.danube-water-program.org](http://www.danube-water-program.org)



**FIGURE 1.1:** MAP OF THE SEVEN COUNTRIES SELECTED FOR THE STUDY.



## 1.2. Country Selection

The report is based on a review of the national sector development, reforms, and service delivery situation in rural areas of seven countries of the Danube region, combining secondary literature and data with primary data collection. Reforms have typically either (a) focused on the aggregation<sup>19</sup> of service providers into larger regional (or multimunicipal) water companies under a voluntary or mandated delegation arrangement, (b) or followed territorial reforms with service providers merged and mandated to expand services across the enlarged territory. Such reforms have been initiated to create economies of scale and scope, improve service levels, expand service provision to unserved areas, increase capacity for large-scale investment programs (such as to absorb pre-accession or cohesion funds from the EU), and modernize and improve efficiency of utilities (World Bank 2017a).

**The countries represent a wide range of rural water outcomes, challenges, and sector reform contexts.** Further background data and analysis of the development of sector reforms and current sector status is provided in chapters 2 and 3.

- ▶ **Moldova, Romania, and Ukraine** have large urban–rural service gaps and the highest number of rural people without piped services. Many local service providers operate in rural areas and regionalization of service providers has hardly reached rural areas in Moldova and Ukraine. In Romania, despite a long-standing regionalization process, the rationalization of local service providers has not taken place, since many continue to serve rural areas due to local government preference.
- ▶ **Croatia** has managed to largely close the urban–rural service gap, with some aggregation of its multimunicipal utilities, although further regionalization has stalled.
- ▶ **Kosovo** has accelerated access for the rural population through the top-down establishment of regional water companies (RWCs), with a mandatory responsibility to gradually absorb existing local service providers.
- ▶ In **Albania**, rural piped services are still lagging, but territorial and recent sector reforms have provided a new impetus to municipal utilities to expand services in rural areas, including areas without any service, or previously served by local providers.

<sup>19</sup> Aggregation is the process by which one or two or more WSS service providers consolidate some or all of their activities under a shared organizational structure (World Bank 2017a).

- ▶ In **Bosnia and Herzegovina**, no sector reform program explicitly addresses service provision in rural areas, and rural services have many management models.

### 1.3. Conceptual Framework and Structure

**While utilities—in different sizes, functional forms, ownership, and governance—operate predominantly within urban contexts, in rural areas, a much more diverse range of management models exists.** Rural service delivery is examined at different institutional levels, aligned with a conceptual framework for rural water service recently developed as part of a global study by the World Bank, and depicted in figure 1.2:

- ▶ **National**—entities concerned with enabling policies, institutional and legal arrangements, funding, and regulatory and monitoring functions
- ▶ **Service authority**—the role of “duty bearer” to whom functions for water service provisions are assigned; often the lowest level of self-government (e.g., municipalities, communes)
- ▶ **Service provider**—operator of the water system and facilities; management models take many shapes and hybrid forms:
  - community-based providers
  - private operators
  - direct local government provision, typically a unit in the local administration
  - municipal or regional utility companies, or parastatals
  - individual self-supply

The methodology section provides a clear description of the management models assessed as part of this study, broadly corresponding to the preceding service provider categories.

**The conceptual framework recognizes that any given management model operates within a country-specific context and a sector enabling environment, which shape political, institutional, and other conditions for sustainable rural service provision** (World Bank 2017b). The following five key elements<sup>20</sup> guide the analysis of the enabling environment and institutional context that, in turn, will have a bearing on the service level outcomes and performance of service providers:

- ▶ **Institutional arrangements and capacity**—sector reform leadership, clarity of roles and mandates, institutional and contractual arrangements, capacity for planning and implementation, support to service providers and service authorities
- ▶ **Financing and affordability**—funding arrangements for the rural sector (tariffs, taxes, transfers, including national and subnational resource allocation) and service affordability
- ▶ **Asset management arrangements**—clarity on asset ownership and mechanisms (including funding) for asset replacement and maintenance
- ▶ **Water resource management**—adequacy of resource availability, water permit regulation, management of conflicts concerning local water use
- ▶ **Monitoring and regulatory oversight**—presence and use of performance monitoring systems, oversight and tariff regulations, and water quality monitoring and safety

**The assessment of enabling environment conditions<sup>21</sup> is complemented with an analysis of service outcomes as experienced by rural households** that includes access, quantity, quality, and reliability. This analysis includes service level satisfaction and aspirations with respect to improving service levels and willingness to pay. While the focus of the analysis is drinking water supply, an analysis of sanitation service levels—mostly from a household’s perspective—has been included in the study.<sup>22</sup>

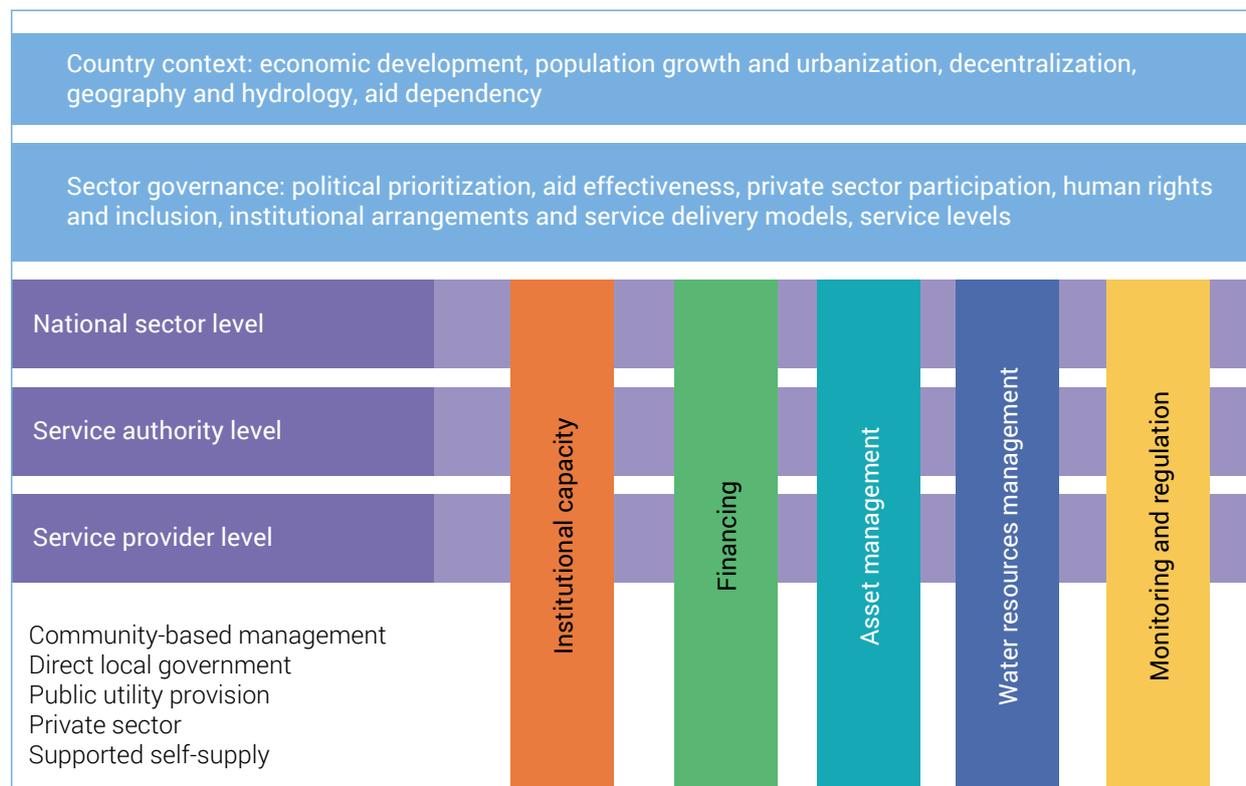
20 These enabling conditions are derived from a review of previous frameworks documented in World Bank (2017b).

21 A comprehensive qualitative scoring method (World Bank 2017b) based on desk review and expert judgment is available. For the present review, it was decided not to adopt the entire scoring framework, but rather to focus on a select number of enabling environment indicators, combined with an analysis of secondary and primary data sources, such as interviews with service providers and local governments.

22 The scope of the study does not include an enabling environment analysis for sanitation in rural areas, although some questions have been included to understand the engagement of service providers and local governments.



**FIGURE 1.2:** GUIDING FRAMEWORK FOR RURAL WATER SUPPLY ANALYSIS (WORLD BANK, 2017B)



Finally, the conceptual framework also includes the performance of service providers by analyzing their business practices; operational, technical, and commercial capacities; and performance outcomes.<sup>23</sup> The study does not assess the impact of the aggregation of rural schemes and the expansion of networks into rural areas on the financial position of regional and urban utilities, which to some extent has been covered in a parallel study on utility aggregation (World Bank 2017a).

The next section describes the study's methodology, which follows the guiding framework and the countries' management models. The rest of the report has the following structure:

- ▶ Chapter 2 provides a further background on the seven countries, their WSS situation, and the institutional arrangements for the sector, including service provider arrangements in rural areas.
- ▶ Chapter 3 presents country-specific evolution of the sector and on-going reforms, including those aimed at aggregating utilities to integrate rural areas. It then assesses the enabling environment—based on the above five elements in figure 1.2—and highlights the challenges for service provision in rural areas in individual countries. This chapter combines secondary and primary data, including perspectives from local governments on the reforms.
- ▶ Chapter 4 analyzes service-level outcomes, service provider performance, and capacities, as well as the sanitation situation, as follows:
  - Section 4.1 delves into the service levels experienced by a large share of rural households that depend on self-supply, as well as the barriers to and interest in connecting to better services.
  - Section 4.2 analyzes service levels of those connected to piped networks under the different management models, reviewing aspects of accessibility, reliability, and overall customer satisfaction.
  - Section 4.3 looks in detail at water quality; it examines the customer's perspective and the capacities and practices of water quality management by operators.

<sup>23</sup> Performance data of local rural service providers was sought at the primary data collection stage, but often could not be obtained. Analysis of performance of larger urban and regional utility was not included in the study.

- Section 4.4. connects these results with broader aspects of performance, business practices, and capacities of service providers and service authorities.
- Section 4.5 analyzes sanitation services, household practices, satisfaction and aspirations.
- ▶ Chapter 5 draws key lessons, illustrated with international examples where relevant, and provides a set of policy recommendations, centered around the national enabling environment, for different service delivery models, and for rural sanitation.
- ▶ Appendix A details methodology and limitations of the study; appendix B, basic data across the sampled locations; appendix C, description of administrative setups of countries; appendix D, further data analysis; and appendix E, country overviews.

## 1.4. Methodology

**This study combines the use of secondary data sources and primary data collection in selected rural localities in seven countries.** Country contexts and the evolution of rural WSS provision, reforms, institutional arrangements, and status were studied through the review of legislation, policy documents, rural operator licensing, or monitoring datasets (when available), and nationally representative statistical datasets—such as censuses and household budget and living conditions surveys. Primary data collection helped to understand enabling environment conditions, service level outcomes, and service provider performance through surveys of water service providers, the authorities (or local governments) responsible for WSS services, and individual households residing in the service area of the operators.

**The approach followed random sampling of localities with a rural character, with populations of around 2,750 (mostly below 10,000),<sup>24</sup>** as illustrated in table 1.1 and further explained in appendix A. Households are either customers of water operators or rely on self-supply (wells, boreholes). Self-supply as such is considered as a distinct service delivery model although no service provider is in place and the household is the “manager” of the supplies. Self-supply service levels comprise piped and nonpiped access in the home. The data from operators and household surveys are further disaggregated by management model, based on a regional grouping of service providers.

**TABLE 1.1: SIZE OF RURAL LOCALITIES SAMPLED IN THE SEVEN COUNTRIES**

Country	Unit sampled	Average population size	Minimum population size	Maximum population size
Albania	Administrative unit <sup>a</sup>	3,795	392	8,101
Bosnia and Herzegovina	Village <sup>b</sup>	2,004	319	7,578
Croatia	Settlement <sup>c</sup>	1,288	51	5,464
Kosovo	Settlement <sup>c</sup>	1,598	493	5,133
Moldova	Local public administration	3,402	318	12,068
Romania	Commune	3,497	785	9,739
Ukraine	Commune	3,794	476	15,000
Total	n.a.	2,768	405	9,012

Note: n.a. = not applicable.

a. Subunit of the municipality (previously defined as commune).

b. Subunit for a larger municipality that historically has a level of local representation.

c. Rural settlements or villages that are part of a larger municipal unit.

<sup>24</sup> National definitions of what constitutes “rural” vary, and in some countries such definitions do not exist, or different definitions are used by different entities (e.g., rural units as identified for national surveys may be different from the definitions of local government structures that are identified as rural communes, as opposed to cities, towns, and suburbs). See individual country reports for details.



Each country's management models are grouped into the following regional management typologies (see table 1.3):

- ▶ **Regional and urban public utilities**—typically larger utilities that tend to have professional capabilities, tend to be regulated and monitored, and typically have access to national investment programs; two subcategories are examined from a household perspective:
  - households in areas that are **physically connected to urban systems**
  - households in areas with a **stand-alone rural system** managed by the regional or urban utility
- ▶ **Local service providers**—refer to all other management models and are subdivided as follows:
  - **small municipal enterprises**, typically serving populations below 5,000 people (distinct from larger urban-based municipal utilities)
  - **local private operators**, managing and sometimes co-invested in the systems
  - **direct management by local governments**, typically through communal service units of local governments
  - **various forms of community management**, ranging from registered citizen groups and associations to loosely formed groups of individuals; informal management arrangements not endorsed by government or with an ambivalent legal framework are common

Self-supply is considered an alternative seventh management model, analyzed separately in section 4.1.

**The sample size for the primary data collection captures at least 15 localities per country.** Where possible, the sample size was expanded.<sup>25</sup> For each randomly selected operator,<sup>26</sup> 30 corresponding households were randomly selected within their service area, typically connected and nonconnected, or self-supply, households. For each country, all self-supply households were grouped and analyzed, adding up to 1,200 households. Data pertaining to more than 4,100 connected households were disaggregated by the respective management model of their service provider. Each management model was characterized by an average of 29 rural water systems (ranging from six to 53) and 669 households (ranging from 167 to 1160). Table 1.2 presents sample sizes for service authorities and self-supply households. Furthermore, 162 interviews with service authorities and 178 with service providers were conducted. Service authority interviews were not disaggregated since multiple management models could typically exist within their jurisdiction.

**Estimates and results derived from the household survey data generally have a reasonable margin of error when disaggregated by management model or self-supply groups.** However, there are some exceptions in countries with subsets of data with a small number of data points. Estimates and results derived from the service provider and local government surveys typically demonstrate higher margins of error and therefore must be interpreted with greater caution.<sup>27</sup> When presenting averages of select indicators for each management model, country-specific estimates have been given an equal weighting in the calculation of the overall average. Country-level averages for indicators across several management models cannot be calculated, since the representative weighting for the management models is unknown.

**Study limitations relate to the nonrepresentative sample sizes for rural conditions from a national perspective, respondent bias, and the ability of respondents to provide sufficiently detailed answers,** especially in operator and local government interviews. The study team included several quality assurance measures to mitigate some of these risks, such as testing and revising all survey instruments and ensuring that operators and local governments were informed in advance of the visit. Further study limitations are elaborated in appendix A. The typical size of local governments in the sample and other basic data pertaining to the service providers is in appendix B.

25 A much larger sample was studied in Moldova (financed by ApaSan, a Swiss- and Austrian-funded Water and Sanitation Project in Moldova). In Kosovo a larger sample was funded through CDI (Community Development Initiative) the implementing partner of a Kosovar-Swiss Rural WSS project, and in Bosnia and Herzegovina, through an EU-funded project on the Right to Water, implemented through MDPI (Municipal Development and Planning Initiative).

26 Or locality with a known functional water system and local operator.

27 The calculation of confidence intervals for the given estimates was beyond the intended scope of the study.

**TABLE 1.2: SIZE OF RURAL LOCALITIES SAMPLED IN THE SEVEN COUNTRIES**

Country	Service authority level	Service authorities	Self-supply households
Albania	Municipalities	15	90
Bosnia and Herzegovina	Municipalities	20	89
Croatia	Municipalities	12	36
Kosovo	Municipalities/state <sup>a</sup>	15	244
Moldova	Local public administrations	50	304
Romania	Communes	30	175
Ukraine	Communes	20	274
Total	n.a.	162	1,212

Note: n.a. = not applicable.

a. In Kosovo, WSS service provision is a combined mandate of the central and local governments. Assets created under the RWCs belong to the state, and RWCs are overseen by a board of directors. Local government representatives serve as rotating board members. Hence, for Kosovo, interviews with representatives of municipal departments and with board members were conducted.

**TABLE 1.3: SUMMARY AND SAMPLE SIZE AS PER OF REGIONAL CLASSIFICATION OF MANAGEMENT MODELS**

Regional management models	Total operators	Connections per household	Country	Management typology	Operators	Connections per household
Regional/urban utilities with connecting network to rural locality	10	318	Croatia	Public utility that has expanded urban-based network into rural settlements	4	110
			Kosovo	Regional water company that has expanded urban-based network into rural settlements	5	157
			Moldova	Chisinau City Water Utility that has expanded urban-based network into rural settlements	1	51
Regional/urban utilities managing a stand-alone rural water system	37	948	Albania	Public municipal utility that has integrated and begun managing a stand-alone rural system	5	122
			Bosnia and Herzegovina	Public municipal utility that has integrated and manages a stand-alone rural system	3	133
			Croatia	Public utility that has integrated and manages a stand-alone rural system	5	169
			Kosovo	Regional water company that has integrated and begun managing a stand-alone rural system	10	260
			Romania	Regional operating company that manages a stand-alone rural system	14	264
Small municipal utilities	53	1,160	Moldova	Municipal enterprise operating a stand-alone rural system (not licensed by national authority)	28	635
			Romania	Municipal enterprise (licensed) that manages a stand-alone rural system	9	184
			Ukraine	Municipal enterprise (licensed) that manages a stand-alone rural system	16	341



Regional management models	Total operators	Connections per household	Country	Management typology	Operators	Connections per household
Local private operators	6	167	Bosnia and Herzegovina	Private company that manages and operates a stand-alone rural system	2	37
			Moldova	Private company that owns, manages, and operates a stand-alone rural system	4	130
Direct local government management	24	480	Albania	Administrative unit (formerly communa) that still operates a stand-alone rural system, although authority now rests with municipal utility	5	91
			Bosnia and Herzegovina	Public/village institution (entities under the municipal self-government)	2	24
			Moldova	Local government that directly manages and operates a stand-alone rural system (by "mayorality")	3	101
			Romania	Local authorities that directly manage and operate a stand-alone rural system with license	14	264
Community based management	44	941	Albania	Community group that continues to operate a stand-alone rural system (specifically located in the north) and has not been integrated into municipal utility	5	133
			Bosnia and Herzegovina	Community-based groups (informal) that manage and operate a stand-alone rural system	4	163
				Citizen groups (registered) that manage and operate a stand-alone rural system	9	166
			Croatia	Community group that manages and operates a stand-alone rural system	5	125

## 2. REGIONAL CONTEXT DRIVING URBAN–RURAL ACCESS

Multiple factors shape a country's ability and motivation to provide adequate levels of water and sanitation services (WSS) in rural areas. This chapter presents the current urban–rural divide in terms of water and sanitation provision in the region. It explores the socioeconomic, administrative, political, and water resource contexts that may help drive service levels in rural areas. It then introduces the current trends in rural WSS access and finishes with a discussion of the reach of utilities in rural areas and other existing management models.<sup>28</sup>

### 2.1. The Urban–Rural Divide

**On average, roughly half of the population in the seven study countries, or 30 million people, live in rural areas.**

There is no homogenous definition of what constitutes urban and rural populations at the regional level, and data presented in table 2.1 are based on national definitions. These are usually based on population density indicators, although in some countries urban–rural separations follow administrative decisions that classify their settlements as either rural or urban.<sup>29</sup> Ukraine represents the most urbanized of the studied countries (30 percent share of rural population) and Kosovo the least urbanized (61 percent, rural population). However, Ukraine has the largest rural population at 13.5 million people (44 percent of those in the study population) followed by Romania with almost 9 million (29 percent). The remaining five countries have rural populations ranging from 1 million to 2 million and make up the remaining 27 percent of the rural population in the seven countries.

**TABLE 2.1:** SHARE OF RURAL POPULATION IN THE STUDIED COUNTRIES

Country	Population that is rural (%)	Rural population (total)
Albania	41.6 (2016)	1,197,148 (2016)
Bosnia and Herzegovina	60.1 (2016)	2,112,200 (2016)
Croatia	40.7 (2016)	1,698,101 (2016)
Kosovo	61 (2011)	1,087,954 (2011)
Moldova	54.9 (2016)	1,950,439 (2016)
Romania	45.3 (2016)	8,916,846 (2016)
Ukraine	30.1 (2016)	13,539,647 (2016)
Average	47.7	4,357,476

SOURCE: WORLD BANK 2017D.

**Inadequate services, conflict, and better opportunities in urban centers and other countries have led to widespread outmigration from rural to urban areas and to other Western countries.** All countries, except Kosovo, have an absolute decline in their total population, and all countries are witnessing a decreasing share of its population living in rural areas over the past decade.<sup>30</sup> The impact of this outmigration is decreasing birth rates and an aging population—mostly dependent on agricultural production—left behind. In addition, low-intensity farming, lack of commuting

<sup>28</sup> Details are included in country notes, available at [www.danube-water-program.org](http://www.danube-water-program.org)

<sup>29</sup> For example, in Kosovo, according to administrative decisions by municipalities at the level of settlements, 61 percent of the population is rural. However, when applying a newly developed methodology by the EU using a grid-based approach, the rural population is reduced to 45 percent. In the latter case, urban areas are defined as adjacent 1 square kilometer grid with a total population above 5,000 people, and a minimum density of 300 people per square kilometer (<https://www.efgs2016.eu>). In Ukraine, areas are classified as "predominantly rural" if over 50 percent of the population lives in an area with a density below 150 person per square kilometer.

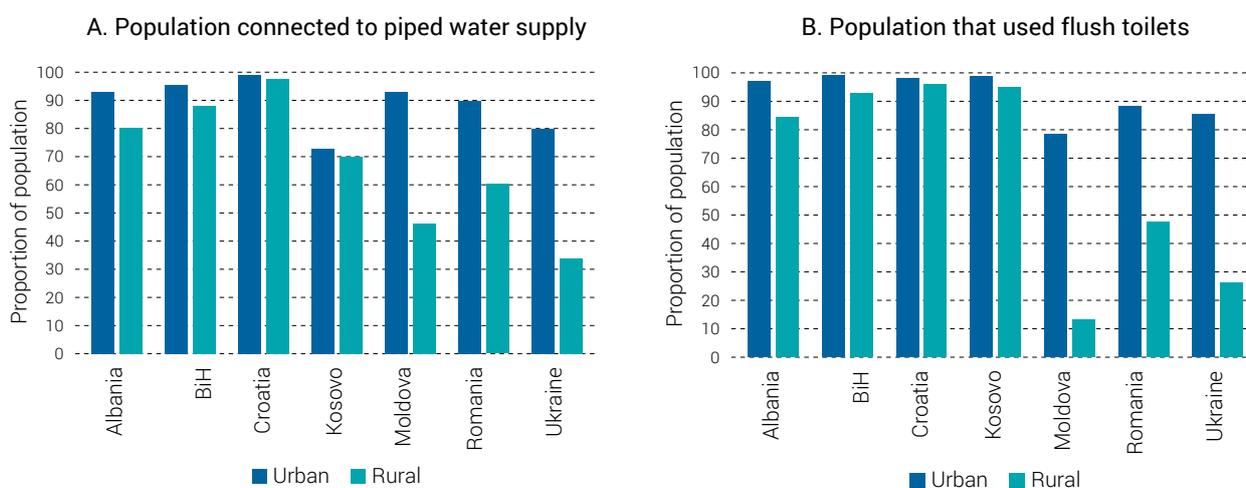
<sup>30</sup> See World Bank Indicator database, <https://data.worldbank.org/indicator>.



opportunities to urban centers, and limited alternative economic activities—such as tourism—leave rural areas with few opportunities for living standard increases. Declining shares of rural population influence investment decisions on where to allocate scarce financial resources, although Bosnia and Herzegovina, Albania, and other countries have developed rural development plans to boost rural productivity.

**Access to piped water and flush toilets is markedly higher in urban areas compared to rural areas, especially in Moldova, Romania, and Ukraine, and to a lesser extent in Albania, Bosnia and Herzegovina, and Kosovo.** Although national averages show relatively high levels of piped water and flush toilet access when compared to averages in other regions of the world, these mask important differences between urban and rural areas, especially in Moldova, Romania, and Ukraine. In these three countries, access to piped water ranges from 82 percent to 100 percent in urban areas and from 34 percent to 60 percent in rural areas, as shown in figure 2.1, panels a and b. A similar trend is observed in access to flush toilets.

**FIGURE 2.1: ACCESS TO PIPED WATER AND FLUSH TOILETS IN URBAN AND RURAL AREAS FOR THE STUDIED COUNTRIES, 2012–16**



SOURCES: (JMP, 2017), USING INDIVIDUAL DATA POINTS FROM THE COUNTRY DATA-FILES; LIVING STANDARDS MEASUREMENT SURVEY (2012), MULTIPLE INDICATOR CLUSTER SURVEY (2012), EUROPEAN UNION STATISTICS ON INCOME AND LIVING CONDITIONS (2012), HOUSEHOLD BUDGET SURVEY (2014), LIVING CONDITIONS SURVEY (2014), HOUSEHOLD BUDGET SURVEY (2015) FOR MOLDOVA, HOUSEHOLD BUDGET SURVEY (2016) FOR ROMANIA.

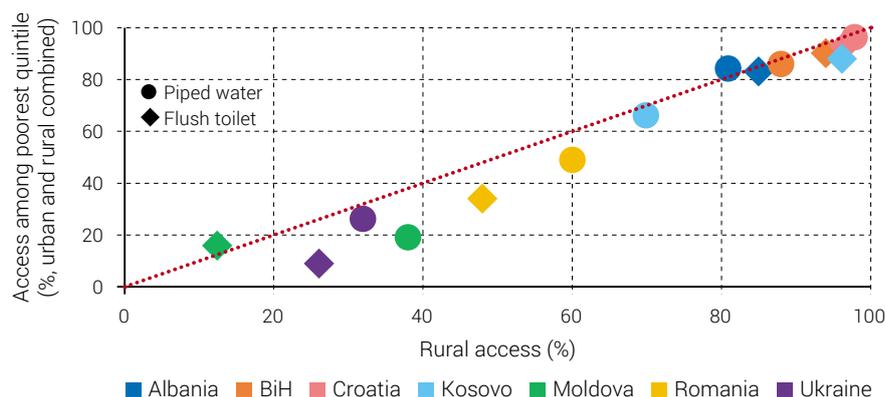
Note: Piped access is inclusive of all forms of piped water access including networks and piped supply from individual sources.

Although access statistics in Croatia, Bosnia and Herzegovina, Albania, and Kosovo show less sharp inequalities between urban and rural areas, these figures mask lower quality and weaker regulation of service provision in rural areas, where local operators and piped self-supply are predominant delivery models (except for Croatia and Kosovo). Institutional arrangements for service provision tend to be better developed in urban areas than in rural areas. In most countries, the urban population is primarily served by licensed urban or regional utilities, as compared to local or less formal service providers mostly found in rural areas (see section 2.6).

**Moreover, in most countries there are no adequate monitoring systems, and not even a complete registry of the different service providers in rural areas,** which would be a first step to ensure the quality and efficiency of the services provided. While this study looks at the extent to which urban and regional utilities are serving rural areas, it does not analyze their overall performance, but rather assesses the situation of local service provider models (section 4.4). The state of the sector report comprehensively describes the various challenges faced by urban and regional utilities (World Bank 2015).

**Access for the poorest quintile of a country's population matches the low levels of access in rural areas driven by rural poverty.** In all countries, most of the poor can be found in rural areas, especially in Ukraine, Moldova, and Romania.<sup>31</sup> Figure 2.2 illustrates that income levels—in addition to rural locality—are another critical barrier for households to realize piped access, especially in Moldova, Romania, and Ukraine.

<sup>31</sup> In these countries, over 75 % of those living in absolute poverty (below US\$2.50 per day, purchasing power parity) were in rural areas (World Bank 2015).



**FIGURE 2.2: RELATIONSHIP BETWEEN ACCESS IN RURAL AREAS AND ACCESS AMONG THE POOREST 20 PERCENT OF THE TOTAL POPULATION**

SOURCE: WORLD BANK ELABORATION BASED ON NATIONAL SURVEY DATA.

## 2.2. Political and Socioeconomic Context

The level of access and quality of WSS services in the study countries have been influenced by political and economic changes over the past three decades after the collapse of communism in the early 1990s. While changing from central planning to free markets, transition economies have faced short-term difficulties and longer-term constraints on development, such as rising unemployment, inflation, lack of entrepreneurship and skills, incomplete justice systems, and deteriorating infrastructure due to neglect and underinvestment. These factors have often relegated rural water service provision to the back of the priority list and compounded the challenge of addressing service gaps in these areas.

**TABLE 2.2: SOCIOECONOMIC OVERVIEW OF THE STUDY COUNTRIES**

Country	GNI per capita (current international US\$, PPP)	Population below national poverty line (%)	Poverty headcount ratio at US\$5.50 per day (2011 PPP) (% of population)	Rural population using piped water as their primary water supply (%)	Rural population using flush toilets (%)
Albania	11,880 (2016)	14.3 (2012)	39.1 (2012)	81 (2012)	85 (2012)
Bosnia and Herzegovina	12,140 (2016)	16.9 (2015)	3.8 (2011)	88 (2012)	94 (2012)
Croatia	22,880 (2016)	19.4 (2013)	6.3 (2014)	98 (2012)	97 (2015)
Kosovo	10,200 (2011)	17.6 (2015)	23.9 (2013)	70 (2012)	96 (2012)
Moldova	5,670 (2016)	11.4 (2014)	16.3 (2015)	46 (2015)	13 (2015)
Romania	22,950 (2016)	25.4 (2014)	24.2 (2013)	60 (2016)	48 (2016)
Ukraine	8,190 (2016)	8.6 (2014)	7.8 (2015)	34 (2016)	26 (2012)
Average	13,416 (2016)	16.2	17.3	68	65

SOURCES: ALBANIA: HBS 2015; BOSNIA AND HERZEGOVINA: MICS 2012; CROATIA: EU STATISTICS ON INCOME AND LIVING CONDITIONS 2012; GNI AND POVERTY INDICATORS: KOSOVO AGENCY OF STATISTICS 2017; WORLD BANK 2017D; KOSOVO: MICS 2014; MOLDOVA: HBS 2015; ROMANIA: HBS 2016; UKRAINE: MICS 2012; STATE STATISTICAL OFFICE 2016; WSS FIGURES: JMP 2017.

Note: GNI = gross national income; HBS = Household Budget Survey; MICS = Multiple Indicator Cluster Survey.

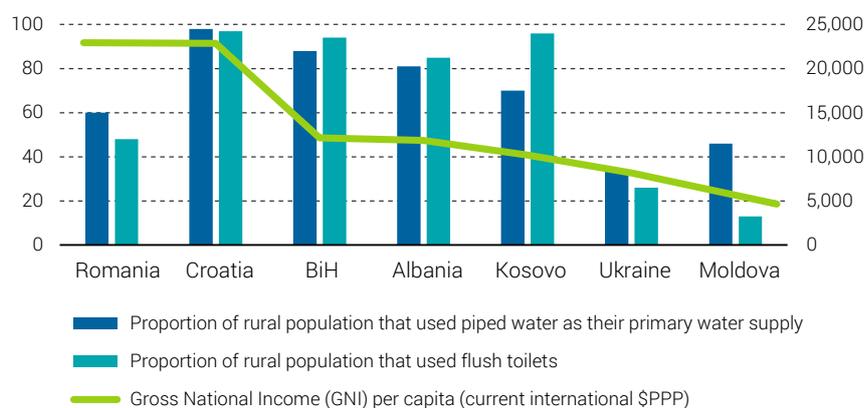
There are noticeable differences in terms of socio-economic conditions among the seven countries, and richer countries seem to present higher WSS access levels except for Romania (see table 2.2). Differences in gross national income (GNI) per capita<sup>32</sup> are significant, with Moldova's GNI per capita (US\$5,000) at around just one quarter of that of Croatia and Romania (US\$22,000 to US\$23,000), and around half of the GNI per capita of Ukraine, Kosovo, Albania, and Bosnia and Herzegovina (US\$8,000 to US\$12,000). In general, wealthier countries, such as Croatia,

32 Measured in current international US\$ prices based on purchasing power parity (PPP).



Bosnia and Herzegovina, and Albania, present higher rural access levels to piped water supply and to flush toilets than the lower-income Moldova and Ukraine, as shown in figure 2.3. Romania is an exception, with low access levels despite one of the highest GNIs per capita. This exceptional situation is driven by a complex set of factors, which are further explored in chapter 3 and in a recent diagnostic of the Romanian water sector (World Bank 2018b).

**The share of people living below an international comparable poverty line of US\$5.50 per day<sup>33</sup> is highest in Albania, Kosovo, and Romania, followed by Moldova and Ukraine.** National poverty lines are set based on national measures of poverty and thus do vary considerably among countries, with richer nations generally employing more generous standards of poverty than lower-income nations. Hence, Moldova and Ukraine, countries with the lowest GNI per capita also have the lowest percentage of population living below their national poverty lines,<sup>34</sup> 11.4 percent and 8.6 percent, respectively. In contrast, Romania, with the highest GNI per capita, has a quarter of its population living below its national poverty line, which is based on an at-risk of poverty threshold.<sup>35</sup>



**FIGURE 2.3: RELATION BETWEEN WSS ACCESS LEVELS AND COUNTRY'S GNI PER CAPITA**

SOURCES: ALBANIA: HBS 2015; BOSNIA AND HERZEGOVINA: MICS 2012; CROATIA: EU STATISTICS ON INCOME AND LIVING CONDITIONS 2012; GNI AND POVERTY INDICATORS: KOSOVO AGENCY OF STATISTICS 2017; WORLD BANK 2017D; KOSOVO: MICS 2014; MOLDOVA: HBS 2015; ROMANIA: HBS 2016; UKRAINE: MICS 2012; STATE STATISTICAL OFFICE 2016; WSS FIGURES: JMP 2017.

Note: GNI = gross national income; HBS = Household Budget Survey; MICS = Multiple Indicator Cluster Survey; PPP = purchasing power parity.

## 2.3. Administrative Context and Decentralization

**Each country's political, geographic, and historical administrative context and development have contributed to the arrangement of its administrative territorial divisions and the degree of decentralized governance, including fiscal decentralization.** Larger countries, such as Romania and Ukraine, have three tiers of governance, with the lowest tiers comprising at least several thousands of units. Croatia has two tiers, but due to its size has 550 units of local government (towns and municipalities). Smaller countries, such as Albania, Bosnia and Herzegovina, and Kosovo, have far fewer units at the lowest administrative level of governance. In Albania and Kosovo, territorial reforms were enacted to achieve this consolidation into a smaller number of larger units of local self-government.<sup>36</sup> In Ukraine, a process of voluntary communal amalgamation has only just commenced. Moldova is a special case, since this small country has over 800 local governments (the "atomization" of local government). Table 2.3 presents the population characteristics of the lowest administrative divisions of self-governance (see appendix C for a description of administrative divisions and levels of self-governance among the studied countries).

Albania and Kosovo's lowest levels of self-government comprise rural and urban areas under the same local government authority resulting in larger populations of 30,000 to 40,000. Croatia, Moldova, Romania, and Ukraine have delineations between urban and rural administrative tiers and a much higher number of self-government units with a rural delineation, resulting in smaller populations typically of 2,000 to 3,000. Bosnia and Herzegovina takes a middle ground with medium local government units well above 15,000, but with large variations among its municipalities.

<sup>33</sup> Measured in 2011 international US\$ price based on PPP.

<sup>34</sup> Based on measure of absolute poverty, defined in terms of the minimal requirements necessary to afford minimal standards of food, clothing, health care, and shelter.

<sup>35</sup> Based on the Eurostat at-risk-of-poverty-threshold (equal to €1469 per capita per year in 2016, provisional).

<sup>36</sup> In some countries, there may still be a lower administrative level, –but without any self-governance responsibility. For example, in Albania, the previous level of communes has after the territorial reform been transformed into administrative unit under the local municipal government.

**TABLE 2.3: LOWEST ADMINISTRATIVE DIVISIONS OF SELF-GOVERNANCE, BY COUNTRY**

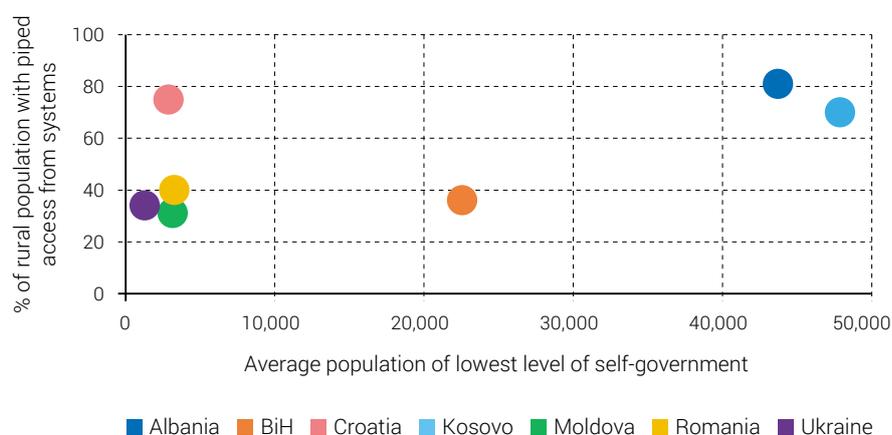
Country	Lowest level of self-governance (rural)	Population for lowest level administrative tier (rural)		
		Average	Median	Total number
Albania	Municipality	43,702	25,511	61
Bosnia and Herzegovina	Municipality	22,531	16,308	131
Croatia	Municipality	2,841	2,279	428
Kosovo	Municipality	47,860	37,048	38
Moldova	Local public administrations	3,127	1,830	896
Romania	Communes	3,218	n.a.	2,861
Ukraine	Communes	1,240	n.a.	10,889

SOURCES: ALBANIA: CENSUS 2011; BOSNIA AND HERZEGOVINA: AGENCY FOR STATISTICS, 2013 CENSUS; CROATIA: CROATIAN BUREAU OF STATISTICS (2015 POP ESTIMATES); KOSOVO: CENSUS 2012; MOLDOVA: NATIONAL BUREAU OF STATISTICS 2014.

Note: Romania data were calculated based on 46 percent rural population with 2,861 rural communes. Ukraine data were calculated based on 30 percent rural population with 10889 rural communes. n.a. = not applicable.

**Many of the rural populations are highly dispersed in small settlements, villages, and hamlets, regardless of whether consolidation of local government took place through territorial reform.** For example, 52 percent of Bosnia and Herzegovina's population and 39 percent of Croatia's population reside in settlements of fewer than 2,000 people. In Moldova, over half of all local public administrations are below 2,500 people, and in Romania, 95 percent of over 12,000 villages have fewer than 2,000 inhabitants. The extent to which settlements are dispersed and their density characteristics have implications for how countries define agglomerations as required for the European Union (EU) Urban Waste Water Directive (UWWDD).<sup>37</sup>

**Although there are many other influencing factors, lower access levels for rural areas are in countries with a more "atomized" local government structure, except for Croatia.** Figure 2.4 relates the level of piped access in rural areas—based on piped water delivered through networked systems—to the average population size of the lowest tier (rural) self-government. Despite Romania's higher GNI, and the country's effort to regionalize service provision, it remains in the same corner as Ukraine and Moldova, all three characterized by small local rural governments and hundreds of local



**FIGURE 2.4: RURAL ACCESS TO PIPED WATER SUPPLY IN RELATION TO AVERAGE POPULATION OF THE LOWEST LEVEL OF SELF-GOVERNMENT**

SOURCES: ALBANIA: HBS 2015; BOSNIA AND HERZEGOVINA: MICS 2012; CROATIA: EU STATISTICS ON INCOME AND LIVING CONDITIONS 2012; KOSOVO: MICS 2014; MOLDOVA: HBS 2015; ROMANIA: HBS 2016; UKRAINE: STATE STATISTICAL OFFICE 2016.

Note: No reasonable estimate for piped self-supply could be compiled for Albania and Ukraine. Kosovo and Albania population estimates for local governments are combined for mixed urban-rural areas. HBS = Household Budget Survey; MICS = Multiple Indicator Cluster Survey.

<sup>37</sup> Agglomerations are defined as areas where the population or economic activities are sufficiently concentrated for urban wastewater to be collected and conducted to an urban wastewater treatment plant or to a final discharge point. Hence, they are not supposed to follow administrative divisions.



municipal service providers. Croatia, an EU member like Romania, and with a similar GNI, has managed to dramatically increase access in rural areas. Section 2.6 will further unpack how rural piped access is organized in terms of provision by regional and urban utilities, local providers, and self-supply, and explore historic trends.

## 2.4. EU Accession and Legislation

**EU accession processes have triggered the transposition of EU water and wastewater directives into national legal frameworks and have opened opportunities for governments to access financial instruments in support of complying with the EU *acquis communautaire*.** All seven countries have either been recently granted EU membership, or have taken steps toward candidacy and integration (see table 2.4). EU legislation, through the overarching Water Framework Directive (WFD) (2000/60/EG) and its subdirectives, governs the WSS sector in member countries. It is used to set directions, with time-bound targets, to accomplish full compliance. Candidates and potential candidates, as part of their pre-accession stage and Association Agreements, commit to harmonizing their national legislation and prioritizing sector investments and policies toward compliance with the EU *acquis*, and are expected to step up their capacity for monitoring. Official candidate status opens opportunities for governments to access financial Instruments for Pre-Accession Assistance (IPA), and for member states to access Cohesion funds, both directed at compliance.

**TABLE 2.4:** STATUS OF EU ACCESSION AND INTEGRATION INTO THE EU

Country	Year	Status
Albania	2014	Candidate status awarded
Bosnia and Herzegovina	2016	Application for candidate status submitted (potential candidate)
Croatia	2013	Member state
Kosovo	2016	Association Agreement ratified (potential candidate)
Moldova	2016	Association Agreement ratified
Romania	2007	Member state
Ukraine	2017	Association Agreement ratified

**The transposition of the European Drinking Water Directive into national legislation has resulted in minimum quality standards that regulate service provision, except for very small systems supplying drinking water.** The Drinking Water Directive (DWD) (98/83/EC)<sup>38</sup> defines the safety of water intended for human consumption and aims to protect the health of citizens through compliance of minimum water quality standards. The directive applies to distribution systems serving more than 50 people or that supply more than 10 cubic meters per day for use of human consumption. However, the level of de facto compliance varies among countries.<sup>39</sup> The directive also stipulates that monitoring must be regularly performed, information must be regularly shared with consumers, and subsequently compiled and reported by a central authority—typically, the Ministry of Public Health—to the European Commission (EC) every three years. Member states are also obliged to establish water supply protection zones and respective monitoring programmes to support water resource protection and manage risks to water safety.

**Under the DWD, rural people relying on individual (or shared) self-supply, such as wells or local springs, are not regulated.** The DWD was initiated when access to piped water networks was no longer a pressing issue in many EU countries. However, this situation does not apply to recently joined or future member states, where rural residents using their own sources may still face health risks due to poor sanitary conditions and poor water quality. In the context of water quality protection, Nitrates Directive (ND) (91/676/EEC) has relevance for the rural water sector, since

38 Commission Directive 98/15/EC of February 27, 1998, amending Council Directive 91/271/EEC, 1998, the Council of the European Union: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31998L0015>.

39 The directive is inclusive of drinking water from tankers, bottles or containers, and water used by the food industry. The directive outlines the minimum water quality standards that must be met, inclusive of 48 physical, chemical, and microbiological parameters. These minimum EU-level standards are then assessed by member states, revised as needed, and national legislation is harmonized with the directives.

it specifies the nitrate level (less than 50 milligrams per liter) for groundwater in a country's nitrate vulnerable zones; hence, if complied with, it protects people that directly use groundwater for human consumption.

**The DWD is under revision and the consultation process for the amendment has started. Increased focus on access for vulnerable and marginalized groups, a water safety planning approach, and increased customer information are key new elements.** Revisions of the DWD were initiated through a European citizens' initiative (ECI) "Right2Water," highlighted in box 2.1, and are an important contribution to support the SDGs. While the proposed amendment does not address the right to universal access, a complicated matter from a legal point of view since it touches upon countries' constitutions, it does propose revisions to improve access for all and to ensure access for vulnerable and marginalized groups –to be defined by the member states individually. In addition, it adopts a more holistic approach to water safety management across the entire service chain, departing from the "at-tap" compliance approach in the current directive. This requires service providers to carry out risk assessments for the resource, system, and distribution perspective and will empower authorities to better deal with risks to water supply and engage with polluters. The proposed revision will empower consumers by giving them much more information and oversight over the efficiency and effectiveness of water suppliers (EC 2018).<sup>40</sup>

#### **Box 2.1: European Citizens' Initiative on "Right2Water"**

The issue of access to water and sanitation and the organization of services have been much debated in the civil society in Europe. In 2012 this led to the first European Citizens' Initiative (ECI), which focused on water and sanitation as a human right. The initiative advocated to propose legislation implementing the human right to water and sanitation as recognized by the United Nations (UN), and promoting the provision of water and sanitation as essential public services for all.

The European Economic and Social Committee (EESC) issued an opinion in response to the commission's communication on this ECI affirming the importance of the human right to water and sanitation (EESC 2014). The EESC urges to propose legislation that establishes access to water and sanitation as a human right and advises that the review of the WFD and the DWD should be an opportunity to integrate the principle of universal access.<sup>a</sup>

a. See also EU website <http://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/water-and-sanitation-are-human-right>.

**Compliance with the UWWD (91/271/EEC)<sup>41</sup> requires large wastewater collection and treatment investments in urban areas, which in turn may lead to governments giving lower investment priority to tackling sanitation challenges in rural areas.** Amended in 1998, the UWWD aims to protect the environment from hazardous domestic and industrial discharges and mandates that wastewater collection and treatment works, or individual appropriate systems (IAS),<sup>42</sup> are required in all agglomerations<sup>43</sup> with a population equivalent of 2,000 and above.<sup>44</sup> Agglomerations with a population equivalent of more than 10,000 require secondary or more stringent treatment in case of discharge into sensitive areas.<sup>45</sup> Hence, large share of sector investment funds, either from domestic sources, EU funds, or international financial institutions (IFIs), are thus directed to urban wastewater to achieve targets negotiated under the *acquis communautaire*. This may lead to a lack of incentives for governments to tackle water supply and sanitation challenges in rural areas.

**Within the context of achieving the *acquis communautaire*, regionalization of utilities and formation of independent economic regulatory agencies have been the sector governance model promoted in the region.**

Contrary to that of other sectors such as electricity, the European legislation does not prescribe specific governance models for the WSS sector. However weak technical and financial capacity at the service provider level

40 See proposal in the EU website <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1519210589057&uri=CELEX:52017PC0753>.

41 Commission Directive (98/15/EC) of February 27, 1998, amending Council Directive (91/271/EEC), 1998, the Council of the EU; see the EU website <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31998L0015>.

42 Individual systems or other appropriate systems that achieve the same level of environmental protection as collection and treatment.

43 Term applied to an area in which the population or its economic activities are sufficiently concentrated to justify urban waste water collection, transport to a wastewater treatment plant, and eventual discharge into the environment.

44 A measure of the strength of the organic material in a wastewater stream, whereby 1 population equivalent (PE) represents the oxygen demand equivalent to that generated by one person over a 24-hour period (often assumed to be 60 grams of oxygen per day).

45 Sensitive areas are designated by member states.



have widely been recognized as a key barrier to rapid absorption of EU funds to achieve the *acquis communautaire*. As a result, many countries have pursued similar sector reforms involving the creation of a stronger regulatory framework to ensure sustainable financing, and the regionalization of utility companies to professionalize management and operations. Given the EU directives' own priorities, decision makers were primarily focused on addressing urban water and wastewater challenges in their effort to achieve the *acquis*. They have often acted under the implicit assumption that those reforms, and in particular the regionalization processes, would help increase access to better services in rural areas as well.

## 2.5. Water Resources

**None of the assessed countries are considered water stressed,<sup>46</sup> although Kosovo, Moldova, and Ukraine have significantly lower levels of per capita renewable water resources compared to the other countries.**

There are great differences in the water resources situation of the individual countries, as summarized in table 2.5, indicating the annual renewable freshwater resources per capita by country.<sup>47</sup> Measured in per capita water availability, Kosovo, Moldova, and Ukraine have a relatively lower water availability compared with the other countries that are relatively abundant in available water resources. Water availability may shape a country's ability to provide WSS services.

**TABLE 2.5:** ANNUAL RENEWABLE FRESH WATER RESOURCES BY COUNTRY<sup>48</sup>

Country	Annual renewable freshwater resources (billion m <sup>3</sup> /yr)	Annual renewable water resources per capita (m <sup>3</sup> /cap/yr)
Albania	30.2	10,425
Bosnia and Herzegovina	37.5	9,843
Croatia	105.5	24,882
Kosovo	2.8	1,600
Moldova	12.3	3,015
Romania	212.0	10,886
Ukraine	175.3	3,911

SOURCES: FAO AQUASTAT.

Note: Kosovo data based on estimation from Kosovo Water Strategy 2015 Report.

**Despite generally high levels of water availability, local water scarcity affecting WSS service provision may occur. Water contamination, either geogenic or anthropogenic, such as in Moldova,<sup>49</sup> can pose a direct threat to the population relying on shallow wells.**

Adequate water quality cannot be ensured when wells are susceptible to pollution risks from lack of sanitation and agricultural pollution, especially because of microbiological and nitrate pollution. Cases of blue baby syndrome—caused by high nitrate levels in drinking water—have been reported in rural areas of Moldova and Romania relying on shallow wells. Whether water resources of sufficient quantity and quality can be secured for the rural population's drinking water needs will depend on how water is allocated and used, how water abstraction is managed, how water bodies are protected from pollution, and whether water bodies' ecological status is preserved or improved. The river basin management planning process is used as an obligatory instrument to achieve the environmental objectives of the EU WFD.

<sup>46</sup> Absolute water scarcity level as defined by FAO is 500 cubic meters per capita per year.

<sup>47</sup> Following the definition of the Food and Agriculture Organization (FAO) AQUASTAT, renewable fresh water resources corresponds to the maximum theoretical annual amount of water available for a country for different uses (domestic, industrial, agriculture, etc.) at a given moment.

<sup>48</sup> Total annual renewable freshwater resources are calculated as the sum of annual renewable ground water resources and annual renewable surface water resources less the overlap between these two sources.

<sup>49</sup> See for details World Bank (2016a).

## 2.6. Rural Access and Prevalence of Management Models

Ukraine, Romania, and Moldova have low access to piped water (34 percent to 60 percent) and a high reliance on shallow wells and boreholes for drinking (65 percent to 81 percent). In the other countries, 10 percent to 20 percent of the rural population still rely on fetching water from wells that are not piped into their homes (table 2.6), while others may use such sources too and have invested in piping and in-door plumbing.

Access to flush toilets follows similar country trends, with Ukraine, Moldova, and Romania having the lowest access rates (13 percent to 48 percent) and Albania, Bosnia and Herzegovina, and Croatia with significantly higher rates (85 percent to 97 percent). In Ukraine, Moldova, and Romania, as expected, the prevalence of sewer networks (no treatment) is also very low in rural areas, below 10 percent, since lack of piped water in the house and lack of adequate sanitation often go hand in hand for rural populations. Sewer access is reportedly higher for Kosovo<sup>50</sup> and Bosnia and Herzegovina, with no reliable data for Croatia and Albania.

**TABLE 2.6:** ACCESS INDICATORS FOR RURAL SERVICES BY COUNTRY

Country	Rural population using piped water as primary water supply (%)	Rural population using wells as primary water supply (%)	Rural population using flush toilets (%)	Rural population connected to public sewer (%)
Albania	81 (2012)	15 (2012)	85 (2012)	n.a.
Bosnia and Herzegovina	88 (2012)	11 (2012)	94 (2012)	30 (2012)
Croatia	98 (2012)	18 (2003)	97 (2015)	n.a.
Kosovo	70 (2014)	19 (2014)	96 (2014)	54 (2014)
Moldova	46 (2015)	36 (2015)	13 (2015)	1 (2015)
Romania	60 (2016)	39 (2016)	48 (2016)	17 (2016)
Ukraine	34 (2016)	66 (2014)	26 (2012)	8 (2012)
Average	68	29	66	22

SOURCES: ALBANIA: LSMS 2012; BOSNIA AND HERZEGOVINA: MICS 2012; CROATIA: EU STATISTICS ON INCOME AND LIVING CONDITIONS 2012; WHS 2003; KOSOVO: MICS 2014; MOLDOVA: HBS 2015; ROMANIA: HBS 2016; UKRAINE: LIVING CONDITION SURVEY 2014; MICS 2012; STATE STATISTICAL OFFICE 2016.

Note: For Romania, recent HBS (2016) data suggest that piped access (excluding self-supply) has increased to 40 percent. Sewerage figures for rural areas are not included for Albania and Croatia, since survey data show high values that may be associated with incorrect definitions of sewerage used during the survey (and are much out of line with the primary data collected during this study. HBS = Household Budget Survey; LSMS = Living Standards Measurement Survey; MICS = Multiple Indicator Cluster Survey; WHS = World Health Survey; n.a. = not available.

While many of the seven countries have seen improvements in rural water service provision over the past decades, some faster than others, Ukraine sees a decline<sup>51</sup> (see figure 2.5, panels a and b). For Ukraine, the use of groundwater wells is near a historical high, while piped water supply and sewer access in rural areas are near their historical lows. This indicates an increasing reliance on self-supply with the collapse of public provision following the fall of the socialist system. Lack of access to services not only compromises drinking water quality, but also makes adequate hygiene behaviours challenging.<sup>52</sup>

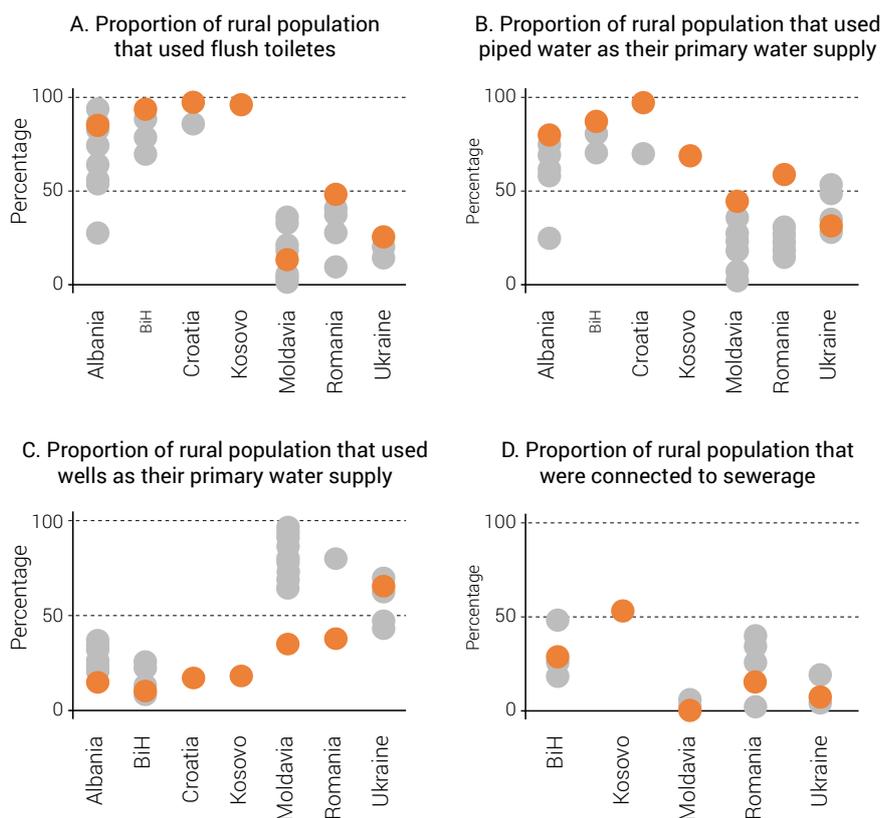
**To achieve the *acquis communautaire*, countries have taken steps to aggregate service provision and organize it across jurisdictions, or—after territorial and administrative reform—under a single aggregated municipal utility**

50 The high sewer access rates in rural areas in national surveys corresponds to the high sewer access rates in the primary data sample of this study. Anecdotal evidence reveals that local governments have invested in such services after the conflict.

51 Several countries have a decline in percentage of the rural population with access to sewerage. This may be due to more accurate definitions, since in the past “access to sewerage” combined access to public and private sewerage, the latter most likely being simple on-site discharge facilities for wastewater.

52 Handwashing behavior is compromised if outdoor pit latrines are used without handwashing sinks close to the toilet. Lower water use is associated with the lack of piped water into the house (kitchen, bathrooms) and makes adequate hygiene behavior a challenge (LSHTM 2018).





**FIGURE 2.5: RURAL HOUSEHOLD WSS COVERAGE, TRENDS FROM 1990 ONWARD**

SOURCE: EU STATISTICS ON INCOME AND LIVING CONDITIONS 2012; HBS 2014, 2016; JMP COUNTRY DATA, [HTTPS://WASHDATA.ORG/DATA](https://washdata.org/data); LIVING CONDITIONS SURVEY 2014; LSMS 2012; MICS 2012.

Note: An indication of progress and improvement of WSS coverage is represented by the most recent data point in orange at the top of the historical range; the gray dots, for use of piped water, access to flush toilets and sewer, are at the bottom of the range for wells, indicating less reliance on self-supply and a switch to piped public services. EU = European Union; HBS = Household Budget Survey; LSMS = Living Standards Measurement Survey; MICS = Multiple Indicator Cluster Survey.

**covering both urban and rural areas.** Albania, Croatia, Kosovo, and Romania have all taken significant steps to aggregate service delivery and have consequently organized—either by merger or delegation—service provision through larger urban municipal or regional utility companies. Aggregation reforms and national policies were accompanied with incentives through EU funds. While scale economies, utility professionalization, and investment capacity were the primary objectives of aggregation, equity objectives were often not explicitly stated. Hence, rural service provision issues have not necessarily been resolved through aggregation, as the case of Romania clearly indicates.

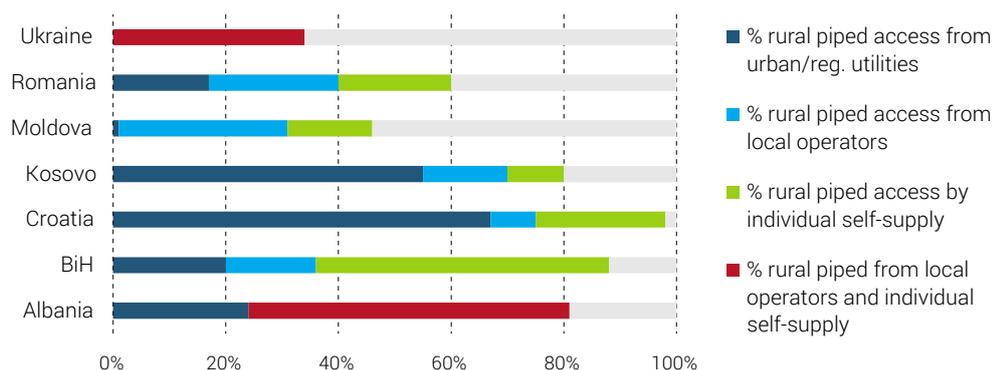
**Data for rural areas in most countries are sparse, and not more than a rough estimate could be made to understand how much different management models contribute to rural piped access.** Understanding the split between self-supply and local service providers proved especially difficult, and no reasonable estimate in this respect could be made for Ukraine and Albania. It seems reasonable to expect that piped individual self-supply in Ukraine and Albania would be at least 10 percent to 15 percent of the rural population (see figure 2.6 and table 2.7).

**Local service provider models continue to play an important role in rural water supply in many countries, especially in Bosnia and Herzegovina, Moldova, Ukraine, and Romania. The reach of larger urban or regional utilities into rural areas has been most successful in Croatia, followed by Kosovo.** Regionalization in Moldova has not yet reached many rural communities, and a multitude of local management model exists (see table 1.3). For Moldova it is estimated that two-thirds of its rural systems are managed by municipal enterprises.<sup>53</sup> Consumer water associations and other community groups were founded, followed by systems managed directly by the local public administration. Today only a few systems are managed by a local private operator. In Romania, about half of those with piped access from a network are served by regional operating companies, and the other half, either by a municipal enterprise or directly by the local government.<sup>54</sup> In Ukraine, rural service provision is the domain of more than 1,000 small municipal enterprises receiving licenses from regional administrations.<sup>55</sup> Without a strategy to develop its sector, Bosnia and Herzegovina's municipal

53 These are not licensed by the national regulator.

54 They receive a license but are not subject to economic regulation by the regulator.

55 It is assumed that nationally licensed larger urban utilities (vodokanals) are mostly serving cities and towns and tend not to be present in rural areas. However, data were not available to check this assumption.



**FIGURE 2.6:**  
ESTIMATED  
STRUCTURE OF  
SERVICES DELIVERY  
FOR PIPED ACCESS  
IN RURAL AREAS

SOURCE: WORLD BANK  
ELABORATIONS ON  
ESTIMATES BASED ON  
NATIONAL REPORTS FROM  
WATER AGENCIES AND  
REGULATORS, NATIONAL  
SURVEY DATA; WORLD BANK  
(2018).

utilities have not been very effective in reaching rural areas, with an estimated 20 percent access; others are served by an unknown number of local operators and through piped self-supply. Models include systems operated by a village entity (a subunit of the municipality), community or citizen groups, and local private operators. In Albania, the number of local systems is unknown, and these systems, typically operated by former *communas* or by community groups, are now being transferred to larger municipal utilities. In Kosovo, inventory of local systems is almost complete, and 15 percent of the rural population is served by systems managed by community groups. Their rehabilitation and integration with the regional water companies is planned, which will result in 70 percent coverage and is expected to further increase to 90 percent in the medium term. In Croatia, the reach of public utilities—mostly multimunicipal—in rural areas is the most effective (67 percent), followed by individual piped self-supply.

**TABLE 2.7:** RURAL SECTOR STRUCTURE AND INDICATIVE ESTIMATES OF PROVISION OF PIPED RURAL SERVICES

Country	Rural population (millions)	Rural piped access on premises (%)	Rural piped access by utilities (%)	Rural piped access by local operators (%)	Rural piped access by self-supply (%)	Rural nonpiped access by self-supply (%)	No. of urban regional utilities	No. of local service providers
Albania	1.2	81	24	57, split not known		19	61	unknown
Bosnia and Herzegovina	2.1	88	20	16	52	12	142	unknown
Croatia	1.7	98	67	8	23	2	156	455
Kosovo	1.1	70	55	15	10	20	8	240
Moldova	1.9	46	1	30	15	54	38	1,044
Romania	8.9	60	17	23	20	40	43	1,020
Ukraine	13.5	34	0	34, split not known		66	150	1,605

SOURCE: ESTIMATES BASED ON NATIONAL REPORTS FROM WATER AGENCIES AND REGULATORS, AS PER WORLD BANK 2018 AND SURVEY DATA.

Notes: Individual self-supply is divided into piped self-supply, in which households have invested in piping the source into the home; and nonpiped self-supply, in which households need to bring water from sources nearby (these can be either public or private sources and can be within their yards or outside their yards).



## 3. COUNTRY SECTOR REFORMS AND THE ENABLING ENVIRONMENT

The enabling environment in which rural water supply and sanitation (WSS) are provided has a direct effect on the coverage, quality, and efficiency of service delivery. This chapter provides a country-by-country overview of the institutional context of service delivery. Albania, Croatia, Kosovo, and Romania have initiated aggregation processes that reach rural areas and perceptions of service authorities and service providers on these reforms have been captured. This chapter also presents findings from the assessment of the five elements of the enabling environment for rural services. Together with the analysis in chapter 4, this chapter forms the basis for policy recommendations articulated in chapter 5 and at country level in appendix E.

### 3.1. Country-level Sector Reforms

#### Albania

**Albania has been undergoing a reform process since 2011 following the territorial and administrative reform. Over 60 municipal utilities are now expected to expand coverage in rural areas and improve the quality of the service.**

The reform mandates the integration of stand-alone WSS schemes previously operated by informal community groups or commune units under utility management. Albania started its WSS service reform in 2011 following the publication of the National Strategy for Water Supply and Sewerage 2011–2017. In 2013, the territorial administrative reforms formed 61 municipalities and corresponding joint stock WSS utilities. The WSS reform process stipulates that municipalities organize their services through municipal utilities (with municipal shareholding), which are obliged to expand their services to previously unserved areas, as well as to integrate stand-alone rural systems previously operated by either community groups or former commune governments (communas). At the same time, the Ministry of Infrastructure and Energy is contemplating a further aggregation of existing utilities into 21 regional water utilities to address capacity gaps at the municipal utility level.

**Municipalities now have a series of responsibilities that have raised concerns regarding capacity gaps at the municipal level, the potential burden placed on municipality mayors, the need to recruit qualified personnel with specialized skill sets, and the transfer of old debts to the municipalities' books.** Municipalities, which have been given more fiscal and administrative freedom to perform WSS-related responsibilities, need to make an inventory of all the water assets in their new jurisdiction and, in cooperation with the municipal utilities, develop a process and business plan to expand services and transfer assets, including those of rural local operators, to the municipal utility. In addition, the traditional practice of central government subsidy for operational budget shortfalls is to be phased out. Performance contracts are established between the National Drinking Water Supply and Wastewater Authority (AKUK) and municipalities, and a performance agreement between municipalities and water supply utilities. Although guidance has been provided by the Ministry of Infrastructure and Energy, authorities need to consider legal, administrative, procedural, and operational issues that require high capacities for a successful transition.

**The aggregation process is on-going, and utilities are still in the process of integrating small locally managed systems into their operations.** It is estimated that the 61 newly established utilities serve approximately 80 percent of the total population, and an unknown proportion of these services is delivered through stand-alone rural systems that may or may not have been integrated under utilities' management. The remaining 20 percent of the population reside outside of the previous service area and are served by local operators or by self-supply. As such, the transition is now in different stages for different utilities. Several partners are providing assistance to utilities in this transition, and dedicated investment funds are available to support the upgrade and integration of rural systems, such as the Albanian Development Fund.

**All 15 municipalities interviewed in the study have begun absorbing independent schemes and most report at least moderate satisfaction with the reform process, citing improvement in their service levels and increases in utility revenues.** While currently operational expenses are not being recovered by most utilities, cost recovery and quality of service are expected to be improved through the aggregation process, stronger institutional framework,

and performance monitoring system by the Water Regulatory Authority (WRA). The majority of the municipalities and utilities are at least somewhat satisfied with the reform process. Most municipalities and utilities report that they have benefited from the aggregation approach, especially on improvement of service levels and increases in revenue. Although, only two out of the 15 municipalities interviewed in 2017 have absorbed all independent systems into the utilities, most of the remaining municipalities and utilities are motivated to continue the process and have developed a plan for infrastructure investment required for the systems already under their management.

**Utilities' concerns center around tariff adjustments, the poor state of stand-alone rural systems, and challenges to implement the reform given their limited financial and human resources.** The most frequently reported challenges associated with the reform are tariff adjustments (specifically for population groups previously served by local operators) and ensuring quality of staff (since, typically, existing staff of local operators were taken on board). Moreover, there is strong concern over water quality for the systems being taken on by the utility and coordination with previous operators. Around 70 percent of the municipalities and 46 percent of the utilities report an increase in customer complaints and interruptions in the water services, indicating a key risk to managing this transition and retaining customer support. For example, in some cases disagreements between administrative units and utilities have led to services being disrupted for a long time, as reflected in Albania's poor record on some of the service level indicators, which are discussed in section 4.2. Municipalities and utilities are also concerned over the limited financial and human resources to support the reform process. A comprehensive inventory and condition assessment of all water supply assets in their new jurisdiction, followed by a legal transfer of assets, remain some of the key issues that confront many utilities. On the positive side, five utilities have completed comprehensive asset inventories, including a third-party valuation of the assets. Some utilities, such as Tirana, have started to develop additional customer service points to better respond to the needs of the newly integrated rural customer base.

## Bosnia and Herzegovina

**There currently is no WSS policy or targeted program to support the integration of local rural service providers with the municipal utilities, neither is there a sector strategy in place to aggregate municipal utilities into regional entities. Thus, various models of local operators remain important in rural areas.** There is no specific WSS strategy in Bosnia and Herzegovina, and there are no clearly defined roles or leadership for rural water service delivery. The complexity of the institutional and legal structure—two entities (Federation of Bosnia and Herzegovina and the Republika Srpska), various governance levels and laws, and fragmented responsibilities across various institutions—hinders adequate sector oversight and regulation. Municipalities, often covering urban centers and multiple villages, are responsible for WSS provision, with services organized through their municipal utilities of widely varying size and capacity. By law, these are responsible for provision in the entire municipal jurisdiction, but in reality, they are mostly serving urban areas. Some municipal utilities have expanded networks to neighboring rural areas; some have occasionally integrated stand-alone systems when agreements were reached with their local operators and village councils, mostly at the latter's request and initiative. Municipal or public utilities are estimated to serve only 20 percent of the population in rural areas in the Federation of Bosnia and Herzegovina and only 13 percent in the Republika Srpska. Hence, local informal and formal operators, such as registered community organizations, remain important, and a clearer support strategy and formalization process could improve ability to provide WSS services effectively.

## Croatia

**Croatia's WSS aggregation process, although slower than originally planned, has resulted in an increase of population connected to public water utilities. However, around a third of the rural population still rely on locally managed systems operating outside of the legal framework or on self-supply.** In Croatia, local governments—428 municipalities and 127 towns—are responsible for WSS service provision. As a result of the WSS reform that followed the 2010 Water Act and Water Financing Act, service provision is now organized through 156 public WSS utility companies serving both rural and urban areas, and most cover more than one jurisdiction (multiple municipalities or towns). A second phase was intended to follow the first phase of the reform, in which further aggregation would take place and utilities would be merged into 20 regional water companies. The objective was to deliver economies of scale and support the absorption of EU funds for large-scale urban wastewater investments. However, due to lack of continued political support and buy-in from local stakeholders, this process has stalled. Nevertheless, the process of integrating locally managed rural water



systems within the service areas of public utility companies continues and has seen remarkable achievements. Over the past decade independently managed water supply systems have decreased their population share, and there is a much higher connection rate to public water utilities due to network expansions. Croatian Water estimates that 4 percent of the total population remains connected to locally managed systems (a total of 455), and 12 percent of the total population continues to use self-supply, almost entirely among rural populations.

**Strong legal requirements at the national level and the availability of EU and domestic funds have facilitated the absorption of local water supply systems by public utilities in Croatia.** Most of the municipalities and utility operators interviewed report that they are mostly satisfied with the process and have successfully absorbed assets and now operate previously independent local water supply systems within their service areas. The motivations for doing so are rooted in a clear national policy and legal directive: Croatian Water's and utilities' objectives to expand and improve service provision in rural areas. Some operators state commercial objectives to increase the utility's revenue base. Croatia's expansion in rural areas has been facilitated by availability of EU and domestic funds, targeted to low-access areas. Three-quarters of utilities state that they have a clear plan for infrastructure investments to upgrade and integrate other local water systems. At the same time, around half of the local water operators report a strong motivation to transfer the ownership and operations to public utilities, the most frequently cited benefit being access to financing.

**Utilities report well-known challenges associated with aggregation, such as the poor status and performance of locally operated systems and resistance from local populations due to potential tariff increase.** Utility staff mention difficulties in controlling staffing numbers after the takeover of the new water system, tariff adjustments for newly served populations, coordination with the previous incumbent local operator (especially relevant if part of the initial investments was done privately), and difficulties to guarantee the water quality. In Croatia, some utilities have successfully negotiated gradual tariff increases with the newly incorporated service areas over a defined period to allow a smooth transition and overcome popular resistance. Also, some utilities levy dedicated "development fees" voluntarily approved by local governments in areas where new investments are concentrated, so customers can see clear linkages between these temporary contributions and the upgrading of infrastructure and services.

## Kosovo

**Kosovo's reform process has been supported for over a decade through domestic and development partner investments to improve performance and expansion into rural areas. This has successfully closed the urban–rural service gap and improved service outcomes.** Since 2005, seven regional water companies (RWCs) have been established to consolidate small and fragmented municipal utilities into self-sustaining and professional business organizations that could better achieve the country's socioeconomic goals. Six of the RWCs are owned by the state, represented by the Ministry of Economic Development serving as the shareholder, while one is owned by several municipalities. The service areas and operations of RWCs are defined through the license agreements issued by the Water Services Regulatory Authority. Municipalities are no longer directly responsible for WSS service delivery nor oversight, but maintain responsibility for general planning, monitoring, enforcement, and conflict resolution, as well as reporting and public consultation. The RWCs are overseen by a board of directors, which as of 2016 also include representatives—by turns—of the municipalities in the service areas. The regionalization was accompanied by a targeted, 10-year, investment program to help improve performance and expand services to rural areas supported with a long-term partnership with the Swiss government.

**Although a proportion of the rural population is still served by local systems, RWCs are expected to cover 90 percent of the total population by 2020.** The Inter-Ministerial Water Council, the national coordination body for water-related issues, put forward a strategy for the management of rural water systems to integrate independently operated water schemes into respective RWCs in 2014. Since then, about 240 systems have been upgraded and absorbed under the management of the RWCs. Based on a national inventory—excluding the four Serbian municipalities in the north, where the asset inventory started in 2017 and is now close to completion—it is estimated that 55 percent of the rural population are served by RWCs. Around one-third of those are served through stand-alone rural systems and around two-thirds through extending urban networks to rural areas. Around 15 percent of the rural population are served by rural water systems that are still operated by local operators, typically community-based groups planned for transfer to utilities. The remaining 30 percent rely on self-supply, although one in five resides in settlements with a piped system that is dysfunctional and requires rehabilitation. Given the planned investments and ongoing integration of local systems,

it is expected that 90 percent of the total population will receive water supply services of the RWCs by 2020. Due to remoteness, a small fraction will continue to use self-supply. RWCs apply uniform tariffs to all household customers in their jurisdiction, meaning rural households pay the same tariffs as their urban counterparts. However, tariff levels at each of the seven RWCs are differentiated based on local affordability and operational conditions.

**Despite a relatively successful aggregation process with several reported benefits and improved service outcomes, addressing the challenges with the takeover of deteriorated local systems and addressing poor customer service satisfaction remain priorities (see also section 4.2).**

From the interviews with 30 municipalities, it appears that only 11 percent of previously locally operated stand-alone water supplies have yet to be incorporated into respective RWCs. The rest are either already incorporated (66 percent) or in the process of being incorporated (23 percent). Most municipalities are at least somewhat satisfied with the regionalization experience and would like to complete the aggregation of all local water supply systems under RWCs. The most commonly reported benefits include improved service delivery and increased access to finance, such as through domestic- and donor-funded programs. Other benefits are more sustainable operations and additional revenue streams for utilities. Main challenges refer to ensuring that water quality for local systems is improved, coordination issues with the original local operator, and handling tariff adjustment. The most noticeable negative consequences of regionalization are increased customer complaints, interruption in billing processes, and service outages (all reflected in low customer satisfaction levels and service levels in the household surveys; see chapter 4). However, a quarter of the municipalities are not satisfied with the effectiveness of the RWC on service delivery, mainly due to lack of supervision over illegal connections, no control over misuse of the water, lack of cooperation between the municipality and the RWC, and lack of 24-hour supply.

**The effectiveness of the RWC governance and the role of municipalities to contribute to improved service provision, such as through the customer consultation committees, show room for improvement.**

Municipalities with a serving board of director report to be at least somewhat satisfied with the effectiveness of their board. However, areas of improvement for the board of directors include (a) more information sharing on the part of RWCs; (b) increasing the scope for joint investment projects as part of RWC business planning; and (c) the need to set aside political interests. Customer consultation committees have been established in each municipality to help resolve customer disputes and address illegal connections. However, less than half of the board members interviewed are aware of these committees and the concrete results they have achieved.

## Moldova

**Since 2009, Moldova has begun a regionalization process to create regional WSS companies, but the process remains limited and is currently centered on urban areas. The rural sector is largely fragmented with over 1,000 locally managed rural water systems, most managed through small municipal enterprises.**

In Moldova, WSS service provision is the responsibility of local governments, and the national strategy foresees three to six large regional water utilities to improve services and expand services to rural areas. Thus far, with support of several donors including EU funds, nine regional companies with joint stock company status have been created. However, only one has multiple local governments as shareholders, and only a handful of local governments have delegated services to these companies. This recent process is understandably focused on urban areas and service improvements, and the integration of rural areas has therefore received limited attention. Also, the regionalization path has not been unequivocally successful, since an attempt to merge six service providers into one utility company (Apa Nord) has stalled.

## Romania

**In Romania, the regionalization of service provision has improved service performance, created economies of scale, and allowed absorption of large EU funds. It was intended to expand services to rural areas; however, investments by regional utilities have focused on improving wastewater services in cities and towns.**

WSS service provision is a responsibility of the local government, and as part of Romania's WSS reform process, local governments could join intercommunal development associations (IDAs) the shareholders of regional operating companies (ROCs) established at county level. ROCs, in turn, sign a delegation contract with the IDA to provide services in a particular jurisdiction. ROCs are commercial companies with assets owned by respective IDA members. From a commercial standpoint, their investments have been focused on upgrading urban water systems and improving wastewater



services in more commercially attractive denser areas. They have also delivered service expansion to rural areas, albeit slower than expected and not always to the satisfaction of local governments.

**This cherry picking has resulted in local governments' hesitation to join IDAs and delegate services to ROCs.<sup>56</sup> Instead, they have chosen their own local service provider models. Now around half of the rural households served by piped networks receive services from local operators.** While the decision to join an IDA is not mandatory, the regulator ANRSC (National Regulator for Public Services) estimates that 57 percent of rural communes joined IDAs in 2015, but only some have signed delegation contracts. Local authorities can choose to deliver services through local operators either through (a) a department under their local administration, referred to as communa operators, or (b) a corporatized enterprise under limited liability structure, or SRL operators. Since the regionalization model has not always aligned with local government interests concerned with tariff increases introduced by ROCs or loss of control, there remain over 1,000 licensed local operators. In 2012, only a third of the rural population was connected to public piped water services: of that third, half were served by local operators, and the other half by ROCs. Recent data from HBS (2016) and estimates from the ANRSC illustrate that rural piped access to systems has increased to 40 percent, in which the share of local provisions has increased slightly, indicating that both ROCs and local operators have contributed to this positive change.

**Only a third of rural communes benefits from access to investment and professionalized services by ROCs in 2017. Past negative experiences with regionalization have stalled or in some cases even reversed the process. This calls for a changed approach to address rural service expansion.** Based on a 2017 survey under this study, around 65 percent of communes have joined an IDA; however, service delegation has taken place only in 35 percent of rural communes, and in 6 percent, the delegation is in progress. This means that only around half of the communes that joined an IDA over the past decade are benefitting from the professionalized services of ROCs and their access to large-scale investment funds. Most communes have joined IDAs to attract additional funding or to improve services offered in the areas. However, several dozen of rural communes have withdrawn from an IDA due to lack of service improvements and investments after several years. Among those communes that have not joined an IDA, 60 percent indicate that they do not intend to join an IDA or ROC, since they are satisfied with existing service level or do not want the potential negative consequences from regionalization. In January 2017 the Romanian government issued instructions that refer to the procedure to be followed if a commune wants to pull out of an IDA. Among other conditions, the commune must thoroughly justify its request and pay back all the investments with interest, as well as cover all damages caused by its withdrawal from the IDA. The observed cherry-picking behavior of ROCs in terms of investments in more commercially attractive communes, combined with vested interests of local actors, call for a changed approach toward rural service expansion. This could be through stronger incentives for communes to join IDAs and for ROCs to guarantee and be accountable for rural WS expansion toward their shareholders, including its rural municipalities. Other arrangements may also need to be explored.

## Ukraine

**The lack of a national sector strategy that also addresses rural WSS service provision has left the rural sector in a vacuum with decreasing rural access and fragmented service provision.** Since 2014, Ukraine has embarked upon a comprehensive decentralization program to bring authority, resources, and decision-making closer to its citizens. Subnational administrative government entities have been established at regional and district levels, and amalgamated local administrative units comprising settlements and villages are being restructured.<sup>57</sup> These units are beginning to elect village heads and progress is also being made—although the process is in its early stages—toward generating local revenues to support service delivery. However, the so-called amalgamation process of municipalities to create larger jurisdictions is happening only on a small scale. Although legal and institutional arrangements are clear, at the central level there is no dedicated entity that monitors or provides support to rural water service provision. There is no funded national rural water program in place. Therefore, service provision remains the responsibility of local governments, and in rural areas it is mostly organized through more than 1,600 small municipal enterprises and nearly 1,300 local institutions (e.g., schools, military bases). Self-supply is predominant for many rural households.

<sup>56</sup> See also World Bank (2017a) for a case study on aggregation in Romania.

<sup>57</sup> In 2015 a law on the voluntary consolidation of hromadas was passed, which allows for the amalgamation of existing communities into bigger units. So far, 367 new hromadas have been formed, 25 percent of the planned total. See the Carnegie Endowment website, <http://carnegieendowment.org/2017/03/08/ukraine-s-slow-struggle-for-decentralization-pub-68219>.

## 3.2. Assessment of Enabling Environment Conditions

This section presents an assessment of the enabling environments in which rural water services are delivered, at the national as well as local levels.<sup>58</sup> Box 3.1 summarizes key findings from the enabling environment assessment. Figure 3.1 illustrates the extent to which enabling conditions have been put in place in five building blocks: institutional capacity, financing arrangements, asset management, water resource management, and monitoring and regulation.

### 3.2.1. Institutional Capacity and Support

#### Box 3.1: Summary findings on the enabling environment for rural water provision

##### Overall

- ▶ Croatia, Romania, Albania, and Kosovo seem to have better enabling environments for rural water provision compared to Bosnia and Herzegovina, Moldova, and Ukraine. This is consistent with the low rural access to publicly managed piped water supply in the latter countries, Romania being an outlier.
- ▶ Romania's rural population size and the country's overall weak prioritization of social services in rural areas are important overriding factors shaping its slow progress.

##### Institutional capacity

- ▶ Several countries lack explicit strategies to address urban–rural service gaps.
- ▶ Local rural governments do what is possible to support local service providers; however, they receive little external support themselves. Only larger urban or regional utilities are able to access external support.
- ▶ None of the countries have a dedicated support program to rural service providers and their local governments, except for small-scale pilots in Moldova and Ukraine.

##### Financing and affordability

- ▶ Lack of targeted, at-scale investment programs in rural areas is a major explanation for large urban–rural access gaps, especially in Moldova, Romania, and Ukraine.
- ▶ Local governments typically use their own sources to finance rural water services, yet funding levels are low and vary depending on the ability to access national investment programs.
- ▶ Lack of funds is the most important barrier to improve services for local governments, which continue to fund operating subsidies and stop-gap measures.
- ▶ Tariff levels in rural areas are within affordability limits; when combined with service improvements they may increase to allow for higher cost recovery.
- ▶ Connection barriers exist for the poorest households, despite pro-poor support measures of local governments.

##### Asset management

- ▶ Most countries have well-defined policies on asset ownership, but not all are fully understood by service authorities and providers (Bosnia and Herzegovina), or are not properly implemented due to on-going

aggregation processes or weak capacity (Kosovo, Albania, Bosnia and Herzegovina).

- ▶ A lack of clarity on ownership and limited capacity of local operators, especially community-based providers, translates into a weak ability to maintain asset inventories; regional and urban utilities are generally able to keep such inventories, except for those in Bosnia and Herzegovina.

##### Water resource management

- ▶ Water abstraction permitting is well developed in all countries, but not consistently applied for rural areas, especially when local operators operate outside the legal framework (Bosnia and Herzegovina, Moldova).
- ▶ Local conflicts around water allocation and competing uses are frequent, except for Croatia. Illegal connections, often associated with irrigation water use, exacerbate local water conflicts.
- ▶ Local operators, especially community-based ones, often do not have water abstraction permits. Legalization of their status and permits is essential to securing resource use and minimizing conflicts.

##### Monitoring and regulatory oversight

- ▶ National performance monitoring systems for regional and urban utilities exist (not Bosnia and Herzegovina), although some in incipient stage; such systems for local operators are absent in Bosnia and Herzegovina, Moldova, Romania, and Ukraine, although the latter two have central records of licensed local service providers.
- ▶ Tariffs under local operator models are not regulated by national regulators and are usually approved by local governments.
- ▶ Without simpler tariff guidelines and some form of external oversight or advice, a low willingness-to-charge of local governments may put cost recovery in rural systems at risk.
- ▶ All countries have standards for drinking water quality, sometimes specific to small systems, under surveillance by public health agencies. Water quality for utilities are well monitored but local operators, especially community systems in Albania, Kosovo, and Bosnia and Herzegovina, water quality surveillance is limited.

58 The assessment is based on relevant policy, legal and regulatory documents, and primary data.



**FIGURE 3.1: ENABLING ENVIRONMENT CONDITIONS IN EACH COUNTRY FOR INSTITUTIONAL CAPACITY, FINANCING, ASSET MANAGEMENT, WATER RESOURCES MANAGEMENT, AND MONITORING AND REGULATION**

Building Block	Indicator	Albania	BiH	Croatia	Kosovo	Moldova	Romania	Ukraine
Institutional Capacity	Clear allocation and implementation of roles and responsibilities under a broader strategy that addresses rural water service provision	Green	Red	Green	Green	Yellow	Yellow	Yellow
	National sector documents provide description of RWS operator management models and their legal form	Green	Red	Yellow	Green	Red	Green	Green
Financing	Dedicated funding streams exist for WSS capital investments that prioritize rural areas	Green	Yellow	Green	Green	Red	Yellow	Red
	Policy documents prescribe tariff setting rules relevant also for rural water service provision	Green	Red	Green	Green	Red	Green	Red
Asset Management	Asset ownership is clearly defined and implemented as per the legal framework and understood by service providers	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green
Water Resources Management	Water abstraction permitting processes are in place and applied to rural water services	Green	Yellow	Yellow	Yellow	Red	Green	Green
	Low prevalence of conflicts related to water use management as reported by municipal authorities	Yellow	Red	Green	Yellow	Yellow	Green	Red
Monitoring and Regulation	Existence of a national performance monitoring system for rural water operators	Yellow	Red	Green	Green	Red	Yellow	Red
	Water quality standards are defined that govern service provision in rural areas	Green	Green	Green	Green	Green	Green	Green

SOURCES: COUNTRY NOTES AND LOCAL AUTHORITIES SURVEY

Note: A green block indicates that the country has achieved or is in a good shape toward achieving that indicator. A yellow block indicates that the country has put in place measures toward achieving or has partially achieved the indicator. A red block indicates that the country still needs to put in place important provisions for achieving the indicator.

**At the national level, all countries have a line ministry or agency in charge of water services policy making, all countries except Bosnia and Herzegovina have a water regulatory agency, and the responsibility for service provision rests at the municipal level, except in Kosovo.** The national level defines and adopts the sector legal framework and manages the national budget and resources, usually implemented through several designated line ministries. Most countries have a line ministry or agency in charge of overseeing water resource management, and in most countries different line ministries are in charge of WSS provision. Unlike some countries in other regions of the world, none have a special agency charged with rural water and sanitation provision. All countries except Bosnia and Herzegovina have established regulatory agencies at different levels of maturity, which play a role in tariff setting and, in some cases, in the licensing of service providers. The responsibility of service provision falls on the municipalities in all countries except Kosovo, where the responsibility has been delegated to regional water companies.

**The regionalization processes in Albania, Croatia, Kosovo, and Romania have led to a clear allocation of roles and responsibilities in the sector, while Moldova and Ukraine still lack a clear strategy for service provision that explicitly addresses rural–urban service gaps; Bosnia and Herzegovina is characterized by an overly complex institutional and legal framework.** In Albania, Kosovo, and Romania regionalization has led to clearly defined roles and responsibilities for key actors in the sector, although the co-existence of regional and local service providers in Romania has hindered faster progress. In Croatia, clear sector strategies exist that delineate different roles and responsibilities and are applicable to both urban and rural areas. In Moldova, after a public administration reform, a new ministry in charge of WSS provision has been formed; although roles and responsibilities are clear, the sector still lacks a coherent vision. There is no time-bound national plan that outlines the future service areas of regional service providers and addresses urban–rural service gaps. There are no arrangements outlined for a transitional period in which local water providers will continue to play a critical role. In Ukraine, the WSS legal framework contains clear provisions that overarch the rural sector, but it is missing a national strategy to turn around the declining access trend in rural areas. In Bosnia and Herzegovina, a multiplicity of laws and regulations, with often overlapping or conflicting provisions, and its complex governance structure create confusion on roles and responsibilities. In addition, Bosnia and Herzegovina lacks a specific WSS strategy, even more so for rural areas, which hinders a clear vision and targets for service improvement.

**Rural water supply management models and their legal form are well described in most countries, but Bosnia and Herzegovina and Moldova, and to a lesser extent, Croatia, still face challenges.** In Albania, Kosovo, Romania,

and Ukraine, national sector documents provide a description of rural water supply operator models, as well as the process for their formalization and licensing. In Croatia, the licensing arrangements for public water operators are well established, and they are tasked with expanding provision in rural areas. However, a gap exists concerning independent local operators, which operate outside the legal framework. In Moldova, the law requires the licensing of all service providers operating under a delegated service contract with local public administrations. However, de facto licensing is not extended to municipal enterprises in rural areas (or small rural private sector providers), and registered water consumer associations are not recognized in the water law. In Bosnia and Herzegovina, although the water law and law on communal services provide for different operator management models, they are neither specific to realities in rural areas nor are they described in detail.

**Survey results confirm the conditions mentioned previously. Regional and urban utilities typically have some form of contract, agreement, or license providing a formal basis for their authority to deliver water services. Local operators more often lack such basis** (figure 3.2). Data from Kosovo indicate that while RWCs have been adding rural areas to their territory, in some cases they do not yet have a formal service delegation agreement with that local government. In Albania, all sampled utilities are formally licensed, and 87 percent have signed a performance agreement with their municipalities at the time of survey (transition in progress). All private operators have a legal basis for service delivery along with most local municipal utilities, except for some situations in Moldova<sup>59</sup> and among Bosnia and Herzegovina's village-level institutions. Formal service provision agreements are rare among community-managed schemes. There are no legal instruments tailored to the rural context that license local operators, except in Romania and Ukraine.

**FIGURE 3.2:** SHARE OF OPERATORS WITH AGREEMENT WITH LOCAL GOVERNMENT OR WITH LICENSE FROM RELEVANT AUTHORITY BY MANAGEMENT MODEL AND BY COUNTRY.

Country	Community based management	Direct local government	Municipal utility (small)	Private	Regional/urban utility (standalone)
BiH	17	50	0	100	100
Croatia	0	0	0	0	100
Kosovo	0	0	0	0	90
Moldova	54	67	54	100	0
Romania	0	93	100	0	100
Ukraine	0	0	95	0	0
Average	18	70	83	100	98

SOURCES: COUNTRY-SPECIFIC OPERATOR SURVEYS.

Note: For regional and urban utilities data refer to contracts that include or govern the stand-alone rural systems. For Albania, municipal utilities have legal basis for service delivery in the municipal territory.

**Global experiences show that external support mechanisms are essential for increasing capacities of rural service providers.<sup>60</sup> Survey results indicate that regional and urban utilities are best connected to external support mechanisms, whether financial, technical, or institutional. Local operators typically suffer from lack of such support.** Figure 3.3 presents the share of operators that report receiving external support over the past two years<sup>61</sup>. Community-managed and private schemes appear to be largely disconnected from such support mechanisms and are largely excluded from financial support or capacity development opportunities, although the situation is slightly better for Bosnia and Herzegovina and Croatia.

59 The current legal framework allows for the registration of municipal enterprises and water consumer associations under general law, although the Law on Water Service provision (Law 303) requires water providers to be licensed by the national regulatory authority. The licensing entity in Moldova does not consider local operators part of its mandate. Hence, amendments to Law 303 are required to ensure that if licensing instruments are introduced for rural providers, the entity responsible has tailored tools and the capacity to execute this process.

60 See World Bank 2017b.

61 Surveys were carried in the period October 2016 till June 2017 for the seven countries



**FIGURE 3.3:** SHARE OF OPERATORS RECEIVING SUPPORT IN THE PAST TWO YEARS (2015-2016) BY MANAGEMENT MODEL AND BY COUNTRY.

Country	Community based management	Direct local government	Municipal utility (small)	Private	Regional/urban utility (standalone)
BiH	76	100	0	0	77
Croatia	50	0	0	0	80
Kosovo	9	0	0	0	100
Moldova	16	67	68	25	0
Romania	0	57	89	0	71
Ukraine	0	0	70	0	0
Average	38	75	76	13	82

SOURCES: COUNTRY-SPECIFIC OPERATOR SURVEYS.

Note: The data relate to support received by the regional and urban utilities with respect to the stand-alone schemes. Data for Albania were not collected.

**Local governments often prioritize support to WSS services among other needs under their jurisdiction. However, they receive little support to implement their water services mandate.** They typically engage in planning processes to strengthen existing services or initiate rehabilitation or expansion of services within their resource means or through mobilizing external resources. Local governments in rural areas, as duty bearers of services, must support local service providers in their jurisdiction and may equally need support themselves to deliver on their mandate, but only about half of them has received any external support over the past two years (see figure 3.4).

**FIGURE 3.4:** SHARE OF SERVICE AUTHORITIES THAT CONDUCT PLANNING, HAVE RECEIVED SUPPORT RELATED TO THEIR WSS MANDATE, OR HAVE SUPPORTED SERVICE PROVIDERS IN THEIR JURISDICTION, BY COUNTRY.

Country	Service authorities that have developed a planning document including WSS services	Service authorities that have received support in delivering their mandate	Service authorities that provide any kind of support to water operators
Albania	100	47	77
BiH	89	90	95
Croatia	92	38	75
Moldova	84	57	69
Romania	93	40	83
Ukraine	90	42	95
Average	91	52	82

SOURCES: COUNTRY-SPECIFIC LOCAL GOVERNMENT SURVEYS.

Note: No data presented for Kosovo, since municipalities do not play a direct role in WSS services, other than through their participation on the board of regional water companies.

**Nearly all service authorities have prepared development plans that address water supply service delivery. While this represents a good first step, their ability to act on these plans through financing and support represents the logical progression toward better service delivery.** As indicated in section 3.2.2, the ability of local governments to contribute financing is generally constrained and depends on the degree of fiscal decentralization and local revenue generation. Typically, financing is used to cover gaps in recurrent costs as well as for capital maintenance, rehabilitation, and repairs.

**Many low-capacity rural municipalities are burdened with a de jure mandate of water service provision that is impossible to implement unless targeted and dedicated support is made available.** For example, they may need help to establish the right service delegation arrangements, to ensure that tariffs are adequately set, or to prepare proposals for new investments or rehabilitation under specific investment programs. In this context, none of the

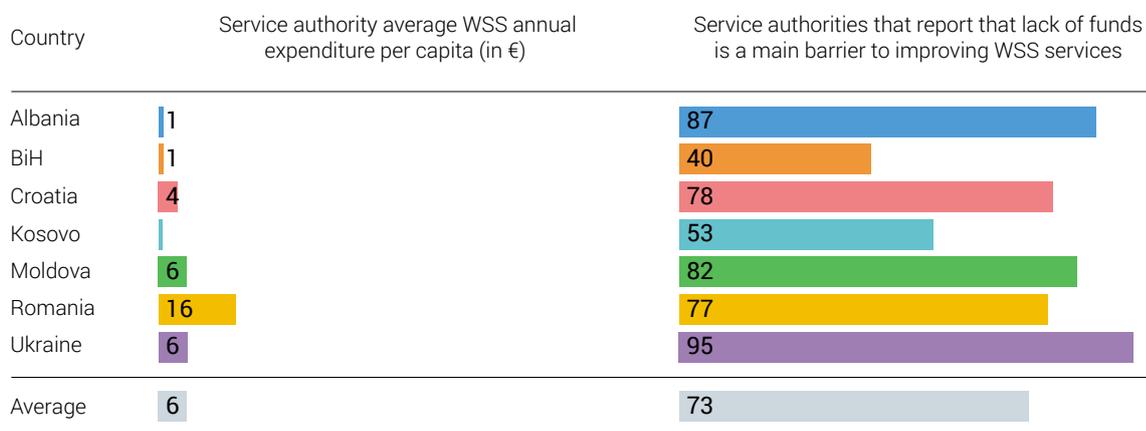
countries have a dedicated support program to rural service providers and their local governments,<sup>62</sup> except for a pilot initiative in Moldova, where the Association of Local Governments (CALM), with the support of a Swiss–Austrian rural water program, is providing such services, as well as a program in Ukraine that supports amalgamation and decentralization in Ukraine and builds capacity of local governments.<sup>63</sup>

### 3.2.2. Financing and Affordability

**Lack of at-scale rural targeted investment programs is a major explanation for large urban–rural access gaps, especially in Moldova, Romania, and Ukraine. Investment programs supported through EU funds focus on urban areas and absorb much of a country’s fiscal space.** Kosovo and Croatia, and to a lesser extent Albania and Moldova, have funding streams that target improvements in water supply services in rural areas. However, the usual scenario is to find at-scale national investment programs or funding windows supported by EU funds and other donors without explicit rural targeting. Aligned with the *acquis*, these result in investment biases toward urban areas and wastewater infrastructure. Dedicated water supply expansion programs exclusively targeting rural areas are present in Moldova and Kosovo, and to some extent in Albania, mostly facilitated through contributions by bilateral donors.<sup>64</sup>

**Most local governments have made financial contributions from their own sources, yet funding levels have been low and have varied considerably among the seven countries, depending on their ability to access national investment programs, including pre-accession and cohesion funds.** Figure 3.5 presents the average expenditure on WSS by local governments (per capita in their jurisdiction) based on the sample of local governments in each country, as well as their perception of the adequacy of the available funds. This includes both resources from local budget as well as resources mobilized by the local government from national programs or regional administrations, under the control of local governments. Due to the focus on compliance and not access, national WSS investment programs, funded through EU pre-accession and cohesion funds, are mostly directed and delivered through larger urban and regional utilities and rarely reach local governments in rural areas.<sup>65</sup>

**FIGURE 3.5:** AVERAGE LOCAL GOVERNMENT (SERVICE AUTHORITY) ANNUAL PER CAPITA EXPENDITURE (IN €) OVER THE PAST YEAR (2016) ON WSS AND PERCEPTION OF ADEQUACY OF FUND AVAILABILITY, BY COUNTRY.



SOURCES: COUNTRY-SPECIFIC LOCAL GOVERNMENT SURVEYS.

Note: Data refer to both water supply and wastewater investments in the past fiscal year (2016). No data presented for Kosovo (no data in questionnaire); data submitted by the regulator for Kosovo estimate that per capita expenditure for rural water to be around euro 5.7 per capita (rural population), combined local and central allocations. Average is calculated by dividing total expenditure on WSS by the total population in the territory of the sampled local government. WSS = water supply and sanitation.

62 Local governments in Bosnia and Herzegovina are frequently supported by higher tiers of administrations.

63 This is done through the DESPRO (Decentralization Support for Ukraine) program (financed by the Swiss Development Cooperation). The Ukraine country study includes several municipalities that benefited from the DESPRO program. These municipalities are doing better on several aspects of service delivery.

64 Notably by Austrian, Swiss, and German governments.

65 This refers to the National Program for Regional Development (PNDR), the most important financing instrument for urban WSS (see country note available at the Danube Water Program website [www.danube-water-program.org](http://www.danube-water-program.org))



**Service authority expenditures vary considerably, with Romanian local governments reporting the highest expenditures on WSS as compared to other countries.** In Romania, local governments can directly access financial resources under national funding window,<sup>66</sup> although a large share of such funds is directed toward wastewater in larger rural agglomerations (greater than 10,000 people). In Albania and Bosnia and Herzegovina, municipalities included in the sample have particularly low expenditures on WSS, reflecting the realities of remote rural municipalities and their difficulties in accessing national investment funds if not targeted to rural areas. While these expenditures need to be seen in conjunction with other funds, such as those disbursed through donor projects and investments managed by regional and urban utilities, they illustrate the weak financing capacity of local governments for rural water.

**Municipalities often can not indicate the split between capital and operational expenditures, although estimated ratios typically reveal that in most cases local government funds are partially spent on operating subsidies and critical major repairs to ensure functionality of the systems.** For example, in Ukraine, almost three-quarters of funds are estimated to be spent on operational subsidies to municipal enterprises. Kosovo's experience illustrates how dedicated long-term investment programs can make a difference for rural water service expansion. National data for 2015 indicate that on average €1.7 per capita was spent by local governments on WSS investments, while central government resources are estimated to be over €4 per capita.<sup>67</sup> In addition, a dedicated rural water program has been in place—funded by the Swiss and Kosovar governments—to support the expansion of services in rural areas over 2005–20, aiming to bring public service delivery by RWC in rural areas to 90 percent in 2020<sup>68</sup> (average expenditure of around €1.3 per capita).<sup>69</sup>

**Most service authorities indicate that the lack of funds is among the main barriers preventing improvement of WSS services in their communities.** This is overwhelmingly the case among Ukrainian, Albanian, and Moldovan local governments: Ukraine, with no dedicated national funds for water supply in rural areas, a case in point. As seen for Kosovo, due to its dedicated investment program, local governments are more positive about the financing situation for WSS service improvements. Local governments in Bosnia and Herzegovina are also without a targeted rural water supply program; interestingly, they state that the ambiguous institutional and legal framework is the main barrier for WSS improvements, rather than lack of access to funds.

**Affordability aspects are assessed through the presence of pro-poor support mechanisms and levels of water expenditures as a percentage of poor household incomes.** Key findings are summarized in box 3.2. Most municipalities have initiatives to support water services for socioeconomically disadvantaged households, although further study is required to understand the targeting, delivery, and effectiveness of these programs (see figure 3.6). Such initiatives are common in Ukraine (from a national state subsidy and social assistance program for the poor), but not yet implemented in Albania.<sup>70</sup>

### Box 3.2: Key findings on affordability and pro-poor measures

#### Affordability and pro-poor measures

- ▶ Slightly more than half of local authorities report having programs to support socioeconomically disadvantaged households with access to WSS services, with significant variation by country. The scale and effectiveness of these programmes need further assessment.
- ▶ Affordability assessment on water expenditures reveals that tariffs appear to be affordable even for the poorest groups. Monthly water expenditure was in the range of 2 percent to 3.5 percent of the income of a household living at the national poverty line.

#### Future directions

- ▶ There remains scope to increase rural tariff levels to reduce reliance on local government operational subsidies and support, to increase operational cost recovery, and to allow better financial and technical business practices and small system improvements.
- ▶ Specific measures to address connection barriers for poor and vulnerable groups are required since 20 percent to 30 percent of households report that connection costs are a main barrier to connect to existing networks (Moldova, Ukraine, Romania).

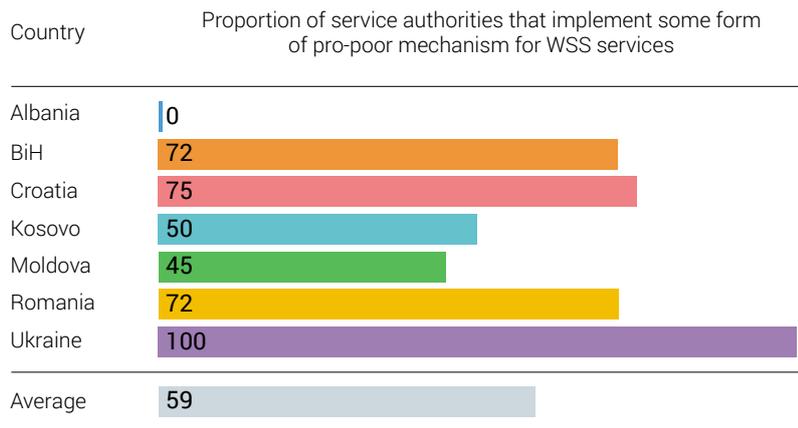
66 This refers to the National Program for Local Development (PNDL) in Romania.

67 For water and wastewater as well as urban and rural areas.

68 Estimated at a total of €36 million (Swiss and Kosovo governments' contribution) over 2005–20.

69 The median expenditure across the sampled local governments is often lower. In several countries, such as Romania and Moldova, a few local governments in the sample receive high-value allocations through regional or national funding windows.

70 In Albania, the Water Code stipulates that 10 liters per capita per day are to be provided free of charge to social assistance households. However, utilities report to be in the process of updating these lists and sampled utilities have not reported actual implementation of this provision.

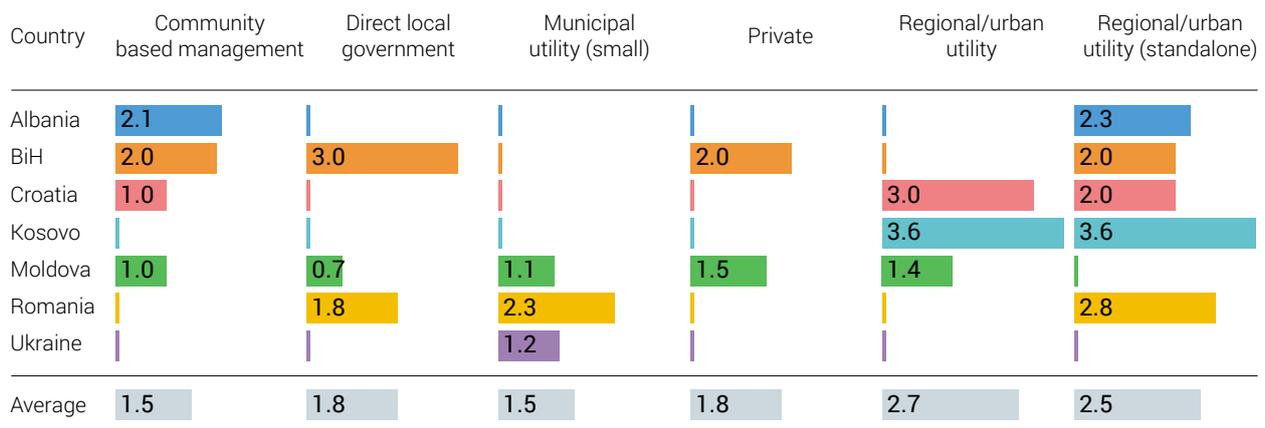


**FIGURE 3.6:** SHARE OF SERVICE AUTHORITIES THAT IMPLEMENT PRO-POOR PROGRAMS FOR WATER AND SANITATION.

SOURCES: COUNTRY-SPECIFIC LOCAL GOVERNMENT SURVEYS.

**Across all seven countries, water expenditures were found to be below 3.5 percent of national poverty line household income, indicating that the services are generally affordable.** Figure 3.7 presents the percentage of total per capita income at the national poverty line associated with rural household expenditures on water bills (based on actual invoices inspected). Expenditures on sanitation are not included in this assessment, but are expected to be modest as in many countries rural residents use simple on-site facilities (see section 4.5).

**FIGURE 3.7:** PERCENTAGE OF MONTHLY PER CAPITA EXPENDITURE AS OF MONTHLY PER CAPITA INCOME/CONSUMPTION DEFINED AT NATIONAL POVERTY LINE (IN 2016 PRICES) BY MANAGEMENT MODEL AND BY COUNTRY.



SOURCES: COUNTRY-SPECIFIC HOUSEHOLD SURVEYS (USING WATER BILLS OF RESPONDENTS) AND NATIONAL POVERTY LINE DATA (SEE ALSO COUNTRY NOTES).

**The affordability of water services in rural areas thus does not seem to be a limiting factor for the expansion of services, even not for households served by regional or urban utilities.** These typically pay a higher percentage, with Kosovo having the highest value of 3.6 percent. Section 4.1.2 shows that tariffs are not a major barrier to connect to piped water services, although 20 percent to 30 percent of self-supply households mention connection costs as a major barrier. Given substantial levels of willingness to pay and low rural tariffs, there remains some scope for increasing tariffs to reduce reliance on local government operational subsidies and support (see section 4.1.2). Nevertheless, tariff rises should be accompanied with service improvements and affordability for the poor closely watched.

### 3.2.3. Asset Management

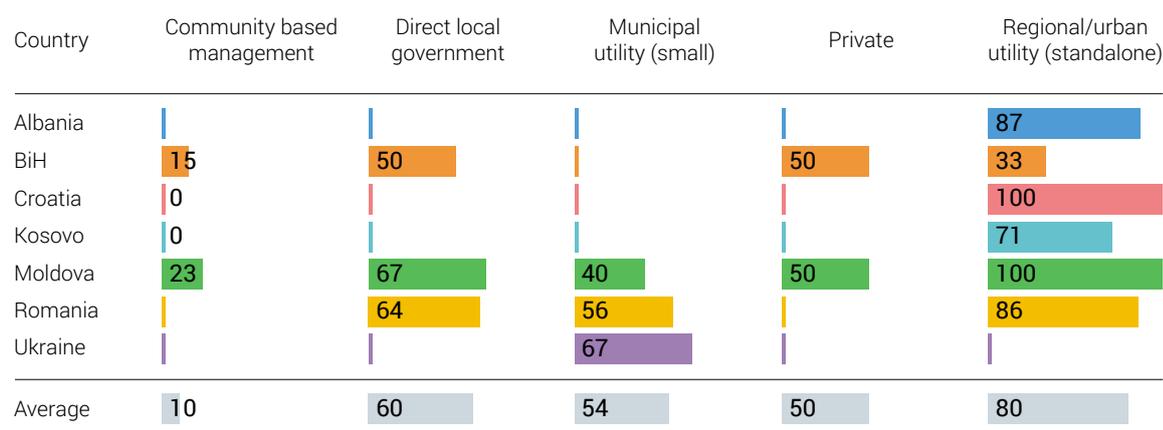
**Clarity on asset ownership and well-defined responsibilities for capital maintenance and major repairs are essential for adequate asset management. Most countries have well-defined policies on asset ownership but not all have been properly implemented or are fully understood by service providers.** In Albania, water and sanitation assets legally belong to municipalities, but for systems that have not yet been transferred, ownership does not yet



follow the legal framework. In Kosovo the situation is similar, with RWCs being asset owners, although the legal transfer of rehabilitated schemes has not yet officially happened. In Bosnia and Herzegovina, local self-governments are given autonomy to, among other things, define asset ownership for the facilities within their jurisdiction. However, in cases where management of local systems is transferred from community-based operators to municipal utilities, there is often confusion or disputes about asset ownership. In Croatia, lack of clarity on asset management arises for systems that are locally or independently managed, and hence fall outside of the legal framework. In Moldova, asset ownership is clearly described in sector policy, and generally there is no ambivalence about ownership, except for some gaps identified for informally managed systems, and sometimes for privately managed schemes.

**The lack of clarity on ownership and limited capacity of local operators translate into a weak ability of local providers to keep up asset inventories. Asset inventories are common among utility-managed water systems (except in Bosnia and Herzegovina), moderately common among private and local government operators and small municipal utilities, and rare for community-managed schemes.** All regional and urban utilities are expected to have some form of asset inventory, and over three-quarters demonstrate them during the interviews (figure 3.8).<sup>71</sup> However, the medium-sized utilities in Bosnia and Herzegovina rarely could show such records. The completeness of the asset inventories and the transfer of rural stand-alone system assets was not assessed but is understood to be work in progress for Albania and Kosovo.<sup>72</sup> Roughly half of the local service providers could show the asset inventories, while only a few community-managed operators can do so. Strong asset management practices typically require a higher level of technical capacity. The limited capacities of local operators are further discussed in section 4.4. Supporting local operators and their service authorities with simple asset management tools will thus be a priority.

**FIGURE 3.8: SHARE WITH SHARE OF OPERATORS THAT COULD DEMONSTRATE THEIR ASSET INVENTORY, BY MANAGEMENT MODEL AND COUNTRY**



SOURCES: COUNTRY-SPECIFIC OPERATOR SURVEYS

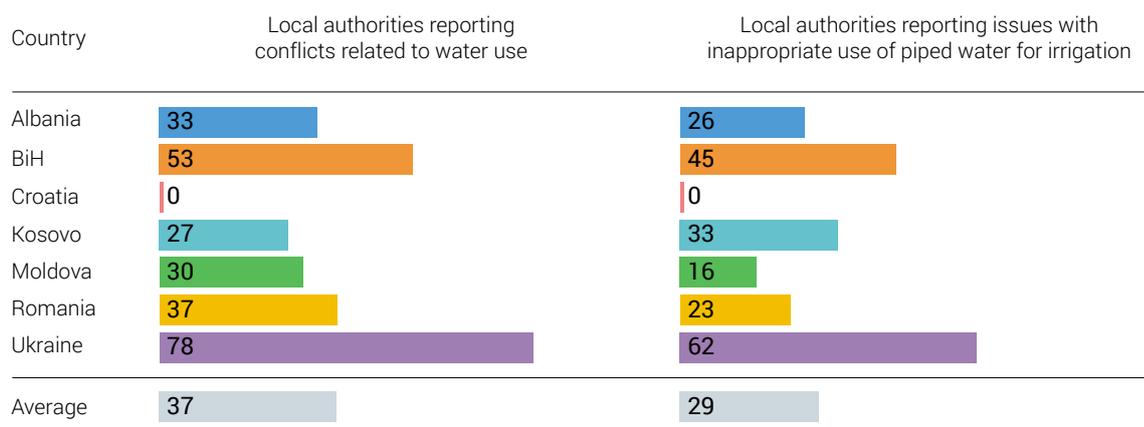
Note: For regional and urban utilities the response refers to a utility-level asset inventory (both urban and rural areas).

### 3.2.4. Water Resource Management

**Survey results reveal the need for adequate water permitting and allocative management to ensure drinking water needs are secured, and conflicts minimized.** Local governments and service providers face issues with illegal connections often associated with irrigation water use. Local authorities in most countries, especially Ukraine and Bosnia and Herzegovina, typically report conflicts with respect to competing water uses (figure 3.9). In Bosnia and Herzegovina, Kosovo, Romania, and Ukraine, local governments frequently report disputes associated with inappropriate or illegal use of piped water for irrigation purposes.

71 The respondent was not always able to answer all questions and locate and show the requested information (despite being informed in advance).  
 72 In Kosovo, this transfer is often not yet legally formalized, and in Albania, utilities are in different stages of the process of asset valuation and transfer in close coordination with municipalities.

**FIGURE 3.9:** SHARE OF LOCAL AUTHORITIES REPORTING WATER USE–RELATED CONFLICTS BY COUNTRY.

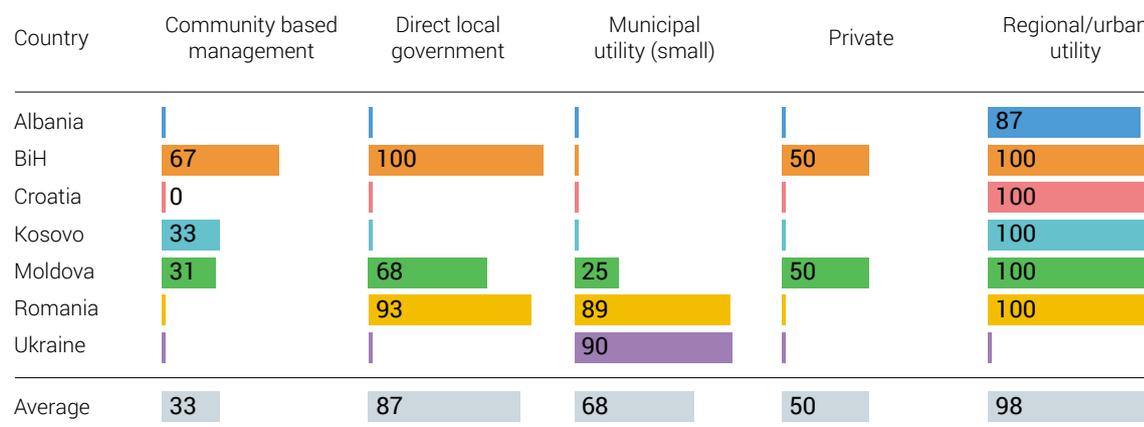


SOURCES: COUNTRY-SPECIFIC LOCAL GOVERNMENT SURVEYS.

**Systems operated by local government and small municipal enterprises have seen lower compliance with abstraction permits,<sup>73</sup> and permitting is least common among private and community operators** (figure 3.10).

The registration of water permits is critical for water resource management regulators and authorities responsible for water allocation so rural drinking water needs are secured. Hence, legalization and support to local operators to ensure permits are obtained is essential to secure resource use and minimize conflicts.

**FIGURE 3.10:** SHARE OF OPERATORS ISSUED WITH WATER EXTRACTION PERMIT, BY MANAGEMENT MODEL AND BY COUNTRY.



SOURCES: COUNTRY-SPECIFIC OPERATOR SURVEYS.

Note: For regional and urban utilities, the question is interpreted at the utility level, which does not guarantee that all stand-alone rural water systems managed by utilities will have a water abstraction permit.

### 3.2.5. Monitoring and Regulatory Oversight

**National performance monitoring systems for local operators serving rural areas are lacking in Bosnia and Herzegovina, Moldova,<sup>74</sup> Romania, and Ukraine, although the latter two countries keep basic records for all licensed local service providers in a central database.** Monitoring service levels, conditions of rural water infrastructure, and key performance indicators for local service providers are critical for effective investment planning,

73 Since abstraction permits are not licensed, they may be seen as operating outside of the legal framework and, thus, permits are denied in some cases.

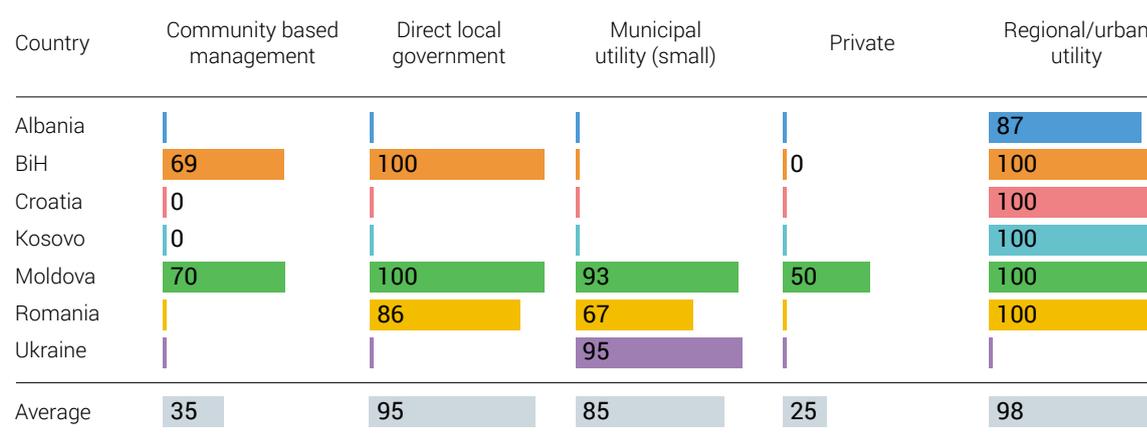
74 Bosnia and Herzegovina and Moldova have national systems to monitor performance of regional and urban utilities. Moldova has a list of local systems.



accountability to citizens, ensuring that timely support is provided to avoid system collapse, and ensuring the sustainability of service delivery. In countries where local management models will continue to exist over the next decades, the development of such monitoring systems deserves priority.

**Despite the lack of central monitoring systems, local service providers, except for community-based and private operators, usually prepare regular reports for their local governments as a minimum accountability measure** (figure 3.11). As expected, reporting by regional and urban utilities to their local governments and shareholders is well established and all countries have national performance monitoring systems for regional and urban utilities, mostly hosted by regulators or utility associations.

**FIGURE 3.11: SHARE OF OPERATORS REPORTING AT LEAST ANNUALLY TO SERVICE AUTHORITIES BY MANAGEMENT MODEL AND BY COUNTRY.**



SOURCE: COUNTRY-SPECIFIC OPERATOR SURVEYS.

**In terms of economic regulation, most countries have issued tariff policies, with supporting guidelines and rules, that are applicable to all service provider management models. However, due to their complexity and heavy data requirements, these are not suitable for the range of local service providers in Bosnia and Herzegovina, Moldova, Romania, and Ukraine.** Tariff guidelines tend not to differentiate between nationally licensed and regulated utilities and locally overseen—and sometimes formally licensed—operators, such as in Romania and Ukraine. This means that their complex methodology and heavy data requirements are not tailored to the situation of local operators. In Albania, Croatia, and Kosovo, regional and urban utilities are—or are expected to be—the sole service providers, including for rural areas. Thus, tariffs are subject to oversight and approval by national regulators, as well as endorsement by local authorities or shareholders.<sup>75</sup>

**Tariffs applied to rural systems under local operator models are not regulated by national regulators and are usually approved by local governments. Without simpler tariff guidelines and some form of external oversight or advice, a low willingness to charge by local governments may put cost recovery in rural systems at risk.** In Bosnia and Herzegovina and Moldova, no tariff guidance exists for the multitude of local management models, which is in part due to the ambiguous legal frameworks for these local service providers. In Moldova, where local operators will continue to play a role in the medium to long term, legislation and rural tariff guidelines are required, combined with advice and mechanisms to check that guidelines are followed. In Bosnia and Herzegovina, as part of an overall sector strategy, tariff setting policies for rural areas need to be addressed. Romania and Ukraine are confronted with local governments setting tariffs without advice or checking that levels can sustain future operations. Therefore, the local governments may be forced to prop up operational subsidies and emergency repairs.

**With respect to water quality regulation, all countries have standards for drinking water, sometimes specific for small systems. Public health agencies are tasked with drinking water quality monitoring and surveillance. In practice, surveillance is not optimal for local operators, specifically community-managed and informal ones in**

<sup>75</sup> Challenges pertaining to the regulation of regional and urban utilities are further discussed in World Bank (2015).

**Albania, Bosnia, and Herzegovina and Kosovo.** The reported level of surveillance against the standards is high. Many service providers indicate that institutes of public health and their local or regional branches at least annually monitored the water quality (see appendix D). Inadequate water quality surveillance is found for Albania (only for 50 percent to 60 percent of systems), community-managed systems in Kosovo (17 percent monitored), and systems run by village institutions in Bosnia and Herzegovina, due to their informal status. Community-managed systems are least monitored by external public health authorities, although Croatia and Moldova show that if efforts are directed at monitoring these providers, adequate monitoring can be organized. Section 4.3 further illustrates the shortcomings of locally operated systems with respect to water treatment and their capacities for water quality testing.



## 4. ANALYSIS OF RURAL WATER SUPPLY AND SANITATION SERVICE PROVISION

This chapter presents an analysis of primary data on rural water supply and sanitation (WSS) service provision situation across the seven countries, disaggregated for all self-supplying households, and households served through piped networks under different management models. This chapter focuses on service level and satisfaction of rural households, water quality management, performance and capacities of service providers, affordability and measures to reach the poor, and sanitation provision in rural areas. Results are not representative at national level, as explained in section 1.5. The chapter starts by looking at the households under the self-supply model, which represents 14.2 million people in rural areas and herewith 47 percent of the rural population across the seven countries.

### 4.1. Understanding Self-Supply

This section details water supply service level and conditions for households without a connection to a service provider; this is otherwise referred to as individual self-supply, which includes those with individual piped self-supply (tapped in the home), and nonpiped self-supply, in which people need to fetch from wells (or springs) in their yards or nearby locations.

Box 4.1 includes a summary of the key-findings with respect to the self-supply situation in the sampled locations in the seven countries in the region. Self-supply remains particularly prevalent and important to the rural WSS contexts of Bosnia and Herzegovina, Moldova, Romania, and Ukraine, where access to centralized water supply services remains low, and two-thirds or more of the rural population is primarily dependent on self-supply, mostly shallow wells and boreholes, and to a lesser extent springs.<sup>76</sup> In rural Croatia, self-supply is estimated at around 25 percent; in Kosovo, in the range of 30 percent; and in Albania, not exactly known (section 2.6).

#### 4.1.1. Service Levels and Satisfaction for Self-Suppliers

Self-supply service levels related to accessibility, reliability, water quality and household water treatment were assessed, and are summarized in figure 4.1.

##### Accessibility

**Across the seven countries, around 60 percent of all self-supply households have high levels of accessibility through indoor piped taps, which is an important determinant of better hygiene practices.** Most self-supply households in Albania, Bosnia and Herzegovina, Croatia, and Kosovo have self-invested in a piped conveyance and storage system so that pressured water is delivered into their homes. However, a large proportion (40 percent to 70 percent) of self-supply households in Moldova, Romania, and Ukraine do not have a piped water conveyance system, and only 25 percent to 40 percent have in-door plumbing for piped water. Most wells are privately owned, 91 percent in Moldova, 86 percent in Romania, and 71 percent in Ukraine, although some sharing among households takes place.<sup>77</sup> In Moldova, only one in four have been able to invest in electric pumps, while in Romania and Ukraine this is around 60 percent.

**In Moldova two-thirds, and in Romania and Ukraine around one-third, of self-suppliers use manual water collection (buckets), increasing the risk of pathogen exposure** from the external environment, while also augmenting the amount of time and energy spent on water collection. Low levels of piped self-supply in Moldova, Romania, and Ukraine are indicative of a weaker ability and willingness to pay for more convenient water supply and related in-house equipment (such as electric pumps, water storage, and in-door plumbing).

<sup>76</sup> It should be noted that the characterisation of self-supply households is based on localities with a functional piped water network and thus conditions may not be representative for nation-wide self-supply.

<sup>77</sup> Nearly all wells used are also privately funded; the exception is Ukraine with 18 percent of households stating that the well they used is funded by the local or national government.

## Reliability

**Water supply reliability is high among self-supply households in the region**, with, on average, around one in four households reportedly experiencing a service outage over the past year. Self-supply households in Albania and Kosovo experience more often reliability issues—approximately half reported an outage in the past year—typically due to low water tables. However, self-supply is not very prevalent in these two countries. Although self-supply reliability can be fragile, particularly due to seasonal scarcity or potentially overexploited shallow groundwater resources,<sup>78</sup> satisfaction with reliability conditions is high across all seven countries. **Despite occasional service outages, this demonstrates that households can cope, either by using alternative sources or taking measures to repair their own supplies.**

**FIGURE 4.1:** SHARE OF SELF-SUPPLY HOUSEHOLDS AND THEIR SERVICE LEVEL CHARACTERISTICS BY MANAGEMENT MODEL AND BY COUNTRY.

	Albania	BiH	Croatia	Kosovo	Moldova	Romania	Ukraine	Average
No piping to premises	19	0	11	25	69	61	40	32
Piped into home	72	97	83	72	27	26	48	61
No water outages over the past 1 year	53	69	92	49	71	90	73	71
Households with wells report that they have gone dry in past year	32	7	8	20	25	6	10	15
Households satisfied with reliability of water service	97	99	100	95	99	98	96	98
Households satisfied with water quality	51	98	86	60	85	91	79	79
Households practicing household water treatment	11	15	97	15	28	30	43	34
Households report that water testing has been conducted in the past 2-years	23	71	6	31	31	22	23	30

SOURCES: COUNTRY-SPECIFIC HOUSEHOLD SURVEYS.

## Water Quality

**In most countries, satisfaction with the water quality of self-supply is generally high, although households are neither testing their water quality frequently, nor treating the water at home before consumption.** Almost 80 percent of self-supply households are satisfied with the quality of their water, which include both perceived safety and aesthetic acceptability. As the study does not actually take water quality samples, differences in satisfaction with water quality are largely unexplained. They could be the result of actual water quality deficiencies, respondent bias, varying household expectations, and access to water quality information. When asked about the frequency of testing the water quality of their wells, only around 30 percent of households report to have done so in the past two years.

**With rural households using their own, often untested sources for drinking, household water treatment becomes a potentially important protective measure to ensure the safety, particularly regarding microbiological contamination.**

Interestingly, household water treatment is very commonly practiced among rural self-supply households in Croatia, where most households use a water filter or chlorine tablets. This may relate to access to information, social norms, and the availability and affordability of treatment products for rural households. The reasons behind the popularity of water treatment could be further explored to encourage similar practices in other countries.

**In most countries, the public accessibility, availability, quality, and coverage of groundwater data are poor, and public health risks for self-suppliers in Moldova, Romania, and Ukraine are not well understood.** Adverse

<sup>78</sup> The nature of this study does not allow for a direct linkage with overall water availability at the national level. For example, Albania, although abundant in water resources, shows poor reliability for self-suppliers, while more water scarce Kosovo shows similar levels of self-supply reliability.



#### Box 4.1: Key findings with respect to self-supply

##### On self-supply access

- ▶ Self-supply is the predominant form of service delivery in rural parts of Bosnia and Herzegovina, Ukraine, Romania, and Moldova, where two-thirds or more rely on wells for drinking water. In rural Croatia, individual self-supply is estimated at around 12 percent; in Kosovo, around 30 percent; and in Albania, exact levels are not known but likely in a similar range (national estimates).

##### On self-supply services (sampled locations)

- ▶ In Albania, Bosnia and Herzegovina, Croatia, and Kosovo, accessibility level of those using self-supply is high, with nearly all households having water piped into their homes, enjoying the associated hygiene and comfort benefits.
- ▶ In Ukraine, Moldova, and Romania, the accessibility of piped self-supply in the home is low (25 percent to 40 percent), indicative of low ability to pay for more convenient supplies (in-door plumbing, electric pumps). Manual fetching (30 percent to 67 percent) exposes self-suppliers to additional pathogen risks.
- ▶ Reliability of self-supply is generally high, and 98 percent of users are satisfied with reliability, indicating their ability to switch to other sources or resolve service outages.
- ▶ Although satisfaction with water quality is generally high (79 percent), households are neither testing their wells regularly (30 percent), nor treating water before consumption (34 percent).
- ▶ Potential health risks associated with anthropogenic and geogenic contamination for self-suppliers in Moldova, Romania, and Ukraine need to be better understood.

##### On future directions

- ▶ For countries where self-supply is likely to be an important part of the solution to universal access, a systematic “supported self-supply model” that addresses water safety concerns and improves water accessibility in the home may be considered. This would require an increased role for national and local governments.

##### On moving self-suppliers to piped water connections

- ▶ Self-supply households have not been able to connect typically due to the distance from local water supply mains, indicating that rural systems tend to have low coverage at village level.
- ▶ In Moldova, Romania, and Ukraine, 20 percent to 30 percent of households report affordability constraints for connecting and may require targeted support; tariffs are not a barrier.
- ▶ Self-suppliers have significantly self-invested, and a large share are satisfied with their water supply arrangements; addressing customer perceptions around the benefits of a service connection is necessary, and water quality is an important aspect households care about.

groundwater quality conditions may be due to geogenic contamination of aquifers—high levels of iron or hardness being most common—that may negatively influence palatability. Such conditions are commonly reported in the secondary literature for shallow aquifers in some parts of Albania, Moldova, and Ukraine. Anthropogenic factors mostly relate to nitrate pollution (fertilizers, manure, untreated wastewater) and microbiological contamination by pathogens, which may also result from poor sanitary construction of the wells. Thus, risks of blue baby syndrome due to nitrate pollution are reported for Romania and Moldova. Further investigation of groundwater quality may be warranted in some settings to better understand water quality risks for households relying on self-supply.

**For countries where self-supply is likely to be an important part of the solution to universal access, a systematic “supported self-supply model” that addresses water safety concerns and improves water accessibility in the home may be considered.** As national and European Union (EU) legislation do not require the monitoring of water quality for self-suppliers, countries have not been promoting water quality surveillance programs inclusive of self-supplies. The survey finds that local government involvement in self-supply is mostly limited to providing information about drilling companies and pump suppliers to households. Awareness campaigns have been implemented by public health agencies in some countries, although at the local level such campaigns are not reported.<sup>79</sup> In Moldova, Romania, and Ukraine, continued high reliance on self-supply is expected and some evidence of noncompliance with chemical, nitrate, and microbiological standards exists. Therefore, a program to support self-suppliers could be initiated; it could consist of several complementary measures, such as water quality surveillance, water safety assessment, and measures to encourage household water treatment and in-house improvements. Chapter 5 presents an illustrative case from Scotland, U.K., as an example how Western countries manage self-supply for remote populations.<sup>80</sup>

79 Mostly in reaction to cases of blue baby syndrome. Public health agencies in several countries also anecdotally report an increasing number of requests for individual well testing, illustrating a higher demand for water quality information of the public.

80 Self-supply management has also advanced beyond Europe to Australia and United States.

## 4.1.2. Barriers to Connect to Piped Water Systems

**The most common reason for self-supply households not connecting is physical limitations, such as distance or position of the existing water mains.** This points to nonconnected households residing in dispersed or low-density settings, where water mains were too far away, as well as the limited coverage of rural systems, mostly covering the center of a rural settlement.<sup>81</sup> Self-supply households were asked to highlight their reasons for not establishing a connection to their local water service provider; their responses are presented in figure 4.2.

**FIGURE 4.2:** SHARE OF SELF-SUPPLY HOUSEHOLDS INDICATING VARIOUS REASONS FOR NOT CONNECTING TO THE LOCAL PIPED WATER SYSTEMS, BY COUNTRY

Barrier	Albania	BiH	Croatia	Kosovo	Moldova	Romania	Ukraine	Average
Already satisfied with existing water source	18	22	11	35	19	39	32	25
Cannot afford connection fee	3	12	6	3	30	22	20	14
Cannot afford tariff	1	1	0	0	5	5	9	3
Connection currently in progress	5	0	3	14	17	9	3	7
Not possible to connect	45	35	78	35	23	13	22	36
Not satisfied with some aspects of services	23	20	3	5	4	8	13	11

SOURCES: COUNTRY-SPECIFIC HOUSEHOLD SURVEYS.

**The second most common reason for not connecting is because households are satisfied with their current water supply situation.** Given the particularly high levels of reliability, access, and satisfaction associated with self-supply, this finding is not entirely surprising. Households also have made considerable investments in their self-supply facilities and may be reluctant to make new investments in connection-related fees and associated costs. Some households may also be reluctant to connect because they do not fully understand the benefits associated with having a piped water system connection, or may be skeptical of its reliability or water quality.

**Addressing customer perceptions around the benefits of a service connection is necessary, and water quality may be an important lever that households care about.** For self-supply households to make the switch to piped systems, the quality of service they expect to receive needs to be an attractive proposition compared with their current self-supply service levels. A moderate share of households in Albania and Bosnia and Herzegovina chose not to connect because of the poor aesthetic quality of the water provided by the piped water system. This points to the importance households attach to water quality and the need to provide information on water quality, both for existing and future service.

**Affordability of the connection fee and associated costs<sup>82</sup> is a limitation for a small but not insignificant proportion of self-supply households in Moldova, Romania, and Ukraine (20 percent to 30 percent).** Initiatives to raise water supply coverage could include targeted connection subsidies or financing options for households to establish a connection and associated indoor plumbing. Tariffs are not a major barrier for connecting.<sup>83</sup> A significant share of households indicate that their connection is in the process of being established at the time of the survey, particularly in Moldova, Kosovo, and Romania (9 percent to 17 percent). This situation reflects the dynamic water supply conditions with investments and system expansions on-going in rural areas.

81 To illustrate this point, less than a quarter of local governments in Moldova, Romania, and Ukraine report that their rural water system covers more than 80 percent of the residents.

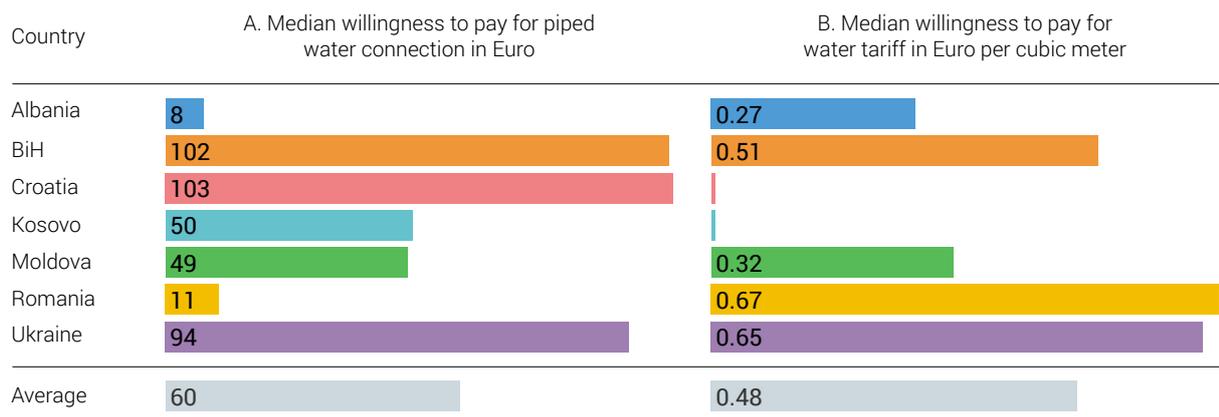
82 These responses should be interpreted as connection fee (charged by operator) as well as other costs that the household needs to cover to bring a connection to the yard (or home).

83 This aligns with the willingness to pay data for water tariffs, since for most countries this was in the range, or sometimes above, tariffs charged by local service providers in rural areas.



**In several countries, willingness to pay by self-suppliers for water tariffs is in a similar range or even higher than existing tariff levels of urban and regional utilities, although lower than existing tariffs in Romania and Moldova.** In Ukraine, the stated willingness to pay is even considerably higher than the actual tariffs levied by municipal enterprises (see section 4.4). The willingness to pay for connecting to a network is substantial, except for self-suppliers in Albania, where dissatisfaction with services offered may influence this low value. In Romania, a low willingness to pay corresponds to the stated affordability constraints as well as high satisfaction with existing sources. Figure 4.3 presents an overview of willingness to pay responses, which are of an indicative nature due to respondent bias (see figure 4.3, panels a and b).

**FIGURE 4.3:** WILLINGNESS TO PAY FOR PIPED WATER TARIFFS (PANEL A) AND CONNECTION FEES/COSTS (PANEL B) AMONG SELF-SUPPLY HOUSEHOLDS, BY COUNTRY



SOURCES: COUNTRY-SPECIFIC HOUSEHOLD SURVEYS.

Note: Data sample too small for Croatia and Kosovo.

## 4.2. Those within Reach: Service Levels and Customer Satisfaction

This section analyzes service level aspects for households reached by service providers and are thus not (solely) dependent on self-supply.<sup>84</sup> Accessibility, reliability, and overall satisfaction with the service as key indicators are presented in figure 4.4, panels a–d. Full data with respect to customer satisfaction are included for reference in appendix D. Box 4.2 summarizes the key findings of service levels and satisfaction of those served by service providers with self-suppliers, as discussed in section 4.1.

### 4.2.1. Accessibility

**Most connected households have a connection into their home. Connected households are much more likely than self-supply households to have their water source piped into their homes (92 percent versus 61 percent, on average).** Water supply accessibility has been assessed as the distance between a household and the point where the primary water supply is accessed. The highest service level of accessibility is represented by water supply taps inside the home.

**Accessibility is a function of the ability and willingness to invest in in-door plumbing and other facilities and tends to be lower in rural areas served by local water service providers.** Households connected to regional- and urban-managed utilities are more likely to have their connections piped into the home compared to those connected to local water operators, particularly those in Moldova and Ukraine. Lower levels of accessibility among customers of local water supply systems may be attributable to lower disposable rural incomes and lower housing standards, with in-

<sup>84</sup> Those served by service providers may continue to complement that service with self-supply through private wells.

house connections being less affordable. Public standposts are not very common.<sup>85</sup> It is expected that with household incomes increasing over time, more people will invest in indoor taps as part of broader home improvements.

#### **Box 4.2: Key findings for service levels and satisfaction of connected households**

##### **Comparing self-suppliers and connected households**

- ▶ Accessibility levels are much higher for connected households: 92 percent of connected households have access to piped water in the home, compared to 60 percent of self-suppliers.
- ▶ Self-supply households are more satisfied with reliability than connected households; only 29 percent of self-suppliers have experienced water outages in the past year compared to 52 percent of those connected.

##### **For those reached by service providers**

- ▶ Accessibility among connected households is high across all countries with over 90 percent having piped water in the home.
- ▶ Accessibility is shaped by ability to pay for in-door plumbing facilities, which is lower in rural areas served by local operators than in areas that can be connected to urban or regional utilities.
- ▶ Reliability shows room for improvement with 52 percent of connected rural households having experienced at least one service outage in the past year.
- ▶ Reliability, continuity of supply, and duration of outages are the poorest in Albania and Kosovo.
- ▶ Service outages tend to last longer for local operators than for regional and urban utilities.
- ▶ Aging and poorly maintained infrastructure, lack of cost recovery, and poor management are underlying factors for poor reliability.

##### **On customer satisfaction**

- ▶ Most customers are not fully satisfied with the service. Reliability of service is a strong driver for satisfaction.
- ▶ Somewhat surprisingly, satisfaction levels are typically higher for local operators than for regional and urban utilities and may reflect higher expectations of professionalized service providers.
- ▶ The reported reasons are diverse, including perceptions of poor water quality, low reliability, perceived high tariffs, or other aspects of customer-facing services.

##### **Future directions**

- ▶ Investments to improve reliability of services should be prioritized to address rural customer concerns and improve service levels. This can be done as part of the aggregation of rural systems under regional and urban utilities, or under local management, ensuring that with adequate external support financial and technical operation can be sustained by local service providers.

## 4.2.2. Reliability and Continuity

**Overall, reliability has significant room for improvement across the countries, with on average 52 percent of all connected households experiencing at least one service outage in the past year, while only 30 percent of self-suppliers experiencing a water outage.** Those served by urban and regional utilities see on average an equally high incidence of service outages as households served by local operators, such as community-managed systems and small municipal enterprises.

**However, the duration of service outages tend to be higher for local operators than for regional or urban utilities, and is especially high for Albania and Kosovo, and to a lesser extent for Moldova.** In Albania and Kosovo, the median number of days without water in the past year for customers of community-managed systems is 25 and 20 days, respectively, and was also high for utilities at five to 10 days.<sup>86</sup> In Moldova for all management models cumulative downtime was between two and four days (see further data in appendix D).

<sup>85</sup> The country-by-country proportion of rural households that access their drinking water supply from standposts or public taps is as follows: Albania (5 percent); Bosnia and Herzegovina (2 percent); Croatia (no data); Kosovo (2 percent); Moldova (0.2 percent); Romania (no data); Ukraine (2 percent). Source: Latest nationally representative household survey, as described in country notes (World Bank 2018).

<sup>86</sup> The type of local water systems may also play a role in reliability, for example pumped systems versus gravity-fed systems, the latter showing higher reliability.



**Aging and poorly maintained infrastructure, lack of operational cost recovery, and poor management response to leakages and outages are underlying factors of poor reliability.** This is revealed by the commonly reported causes of reliability issues, including leaking and old distribution networks, system breakdowns (especially in pumped systems), lack of funds for repairs, and dried-up water sources. Therefore, rehabilitation of distribution networks, diversification and development of water sources, and repair and replacement of pumping equipment will be required to raise reliability levels.

**Despite reported service outages, most customers experience continuous supply, but continuity of service is poor for Albania and Kosovo.** Rural water supplies managed by regional or urban utilities provide the most continuous service to rural customers, especially in Croatia, Romania, and to some extent in Bosnia and Herzegovina and Moldova. Households in Albania served by municipal utilities are least able to enjoy 24-hour service, reflecting the challenges of integrating rural systems with poor status. Community-managed systems, typically gravity-fed, and supported through recent investments of the Albanian Development Fund, are doing better. In Kosovo, the positive impact of regionalization can be observed when comparing service level outcomes for reliability between RWCs and local operators, although there is room for improvement.

**FIGURE 4.4: SERVICE LEVELS FOR ACCESSIBILITY, RELIABILITY, AND SATISFACTION OF CONNECTED HOUSEHOLDS BY MANAGEMENT MODEL AND COUNTRY**

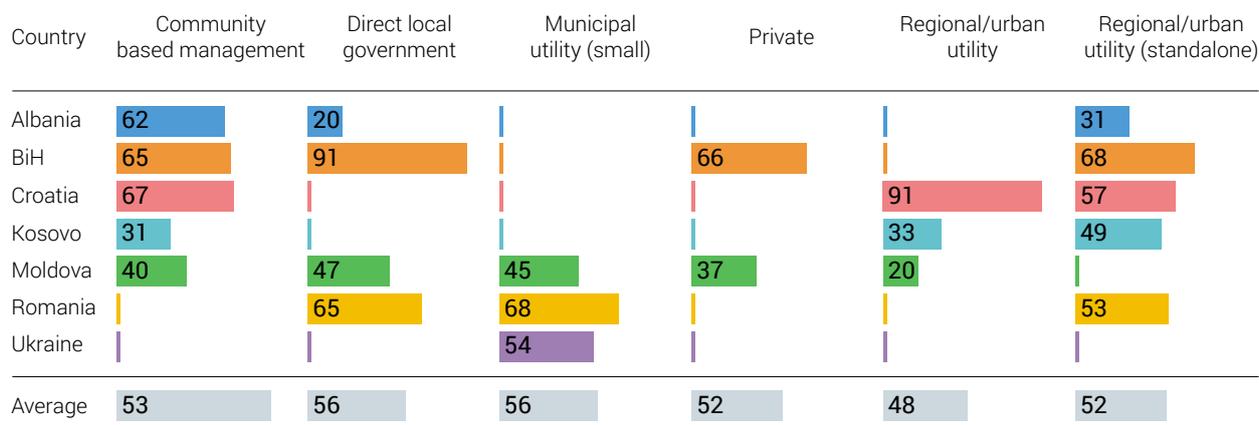
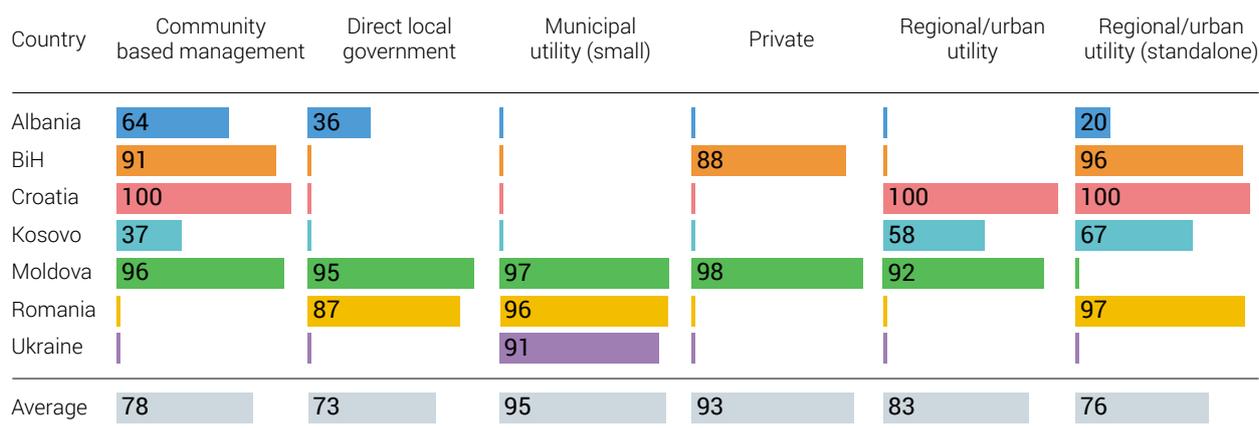
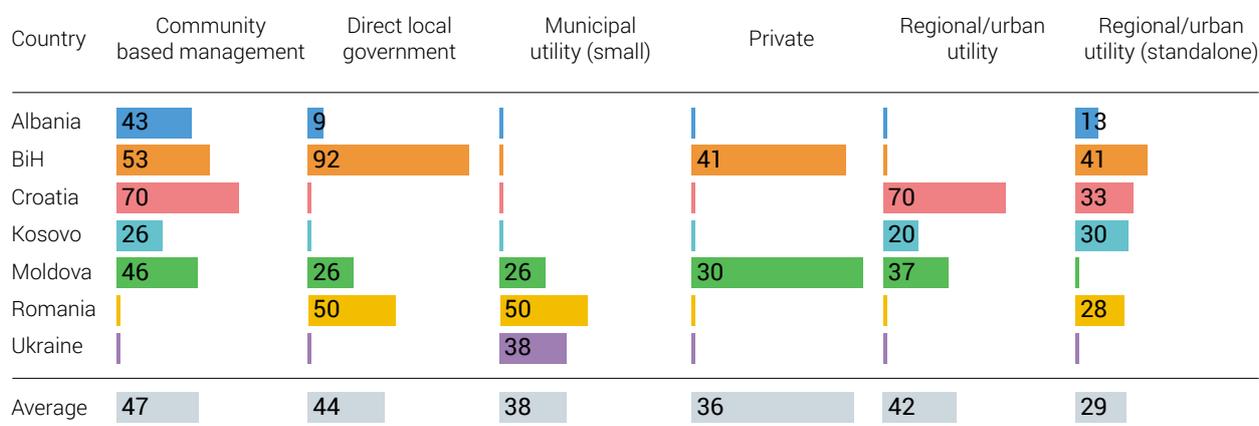
**A. SHARE OF CONNECTED HOUSEHOLDS WITH ACCESS TO PIPED WATER INTO HOME**

Country	Community based management	Direct local government	Municipal utility (small)	Private	Regional/urban utility	Regional/urban utility (standalone)
Albania	71	93				89
BiH	98	100		100		88
Croatia	100				100	100
Kosovo	100				100	100
Moldova	69	62	76	81	98	
Romania		72	84			84
Ukraine			75			
Average	88	82	78	91	99	92

**Systems managed by local operators are more likely to experience water shortages than regional and urban utility managed systems.** Urban utilities are generally better able to accommodate demand in dry seasons due to storage capacities and their ability to upgrade, augment, and diversify their water sources and production capacity. Stand-alone rural systems under regional companies face similar issues as systems managed by local operators.

### 4.2.3. Customer Satisfaction

**Most customers are not fully satisfied with the service they received, including service levels, customer-facing services, and provider performance. Somewhat surprisingly, satisfaction levels are typically higher for local operators than for regional and urban utilities.** Satisfaction levels reflect customers' perception of the overall value for money for the service, and customers may have higher expectations from professional utilities than from local service providers, such as community-based organizations. The proportion of households fully satisfied is slightly higher among those served by local operators than among households connected to urban utility networks and is the lowest for households connected to stand-alone systems managed by regional utilities. Overall satisfaction is particularly low in Albania and Kosovo, including for services provided by urban and regional utilities. Moldova, Ukraine, and Romania also demonstrate low levels of satisfaction among rural consumers.

**B. SHARE OF CONNECTED HOUSEHOLDS WITH CONTINUOUS WATER SERVICE IN PAST YEAR**

**C. SHARE OF CONNECTED HOUSEHOLDS THAT TYPICALLY RECEIVE 24-HOUR SUPPLY**

**D. SHARE OF CONNECTED HOUSEHOLDS FULLY SATISFIED WITH SERVICE PROVIDED**


SOURCES: COUNTRY-SPECIFIC HOUSEHOLD SURVEYS.





Rural connected households are overall satisfied with the quality of the water provided to them and satisfaction levels are similar as for self-suppliers. Yet satisfaction is particularly low in some settings, notably among customers of community-managed systems in Kosovo; urban and regional utilities in Kosovo and Albania, and for the stand-alone schemes managed by Croatian utilities.

#### **Box 4.3: Key findings and insights on water quality management and satisfaction**

##### **Water quality satisfaction comparing self-suppliers with connected households**

- ▶ Self-suppliers have similar satisfaction levels with water quality (79 percent) as households reached by service providers (77 percent to 84 percent), except for those served by stand-alone systems under regional utility management (64 percent).
- ▶ Perceptions may not match actual water quality; public health risks may be highest for self-suppliers and those served by local operators due to weak water quality treatment.

##### **On water quality satisfaction**

- ▶ Water quality remains a top concern for rural households.
- ▶ Reasons for low satisfaction with water quality are poorly understood, but may be driven by the low satisfaction with water quality information sharing by operators.
- ▶ Addressing low water quality satisfaction levels, especially in Albania and Kosovo, requires further investigation into actual water quality and calls for a more pro-active communication with rural customers with respect to water quality information.

##### **On water quality practices and monitoring**

- ▶ Local operators do not commonly practice disinfection, except for those in Croatia and Romania. Disinfection is common among urban and regional utility-managed systems (networks and stand-alone), except for Albania, reflecting a recent takeover of such systems.
- ▶ Regional and urban utilities have capacities for routine water quality testing; local operators, especially community and informal ones, do not and, thus, fail to routinely test water quality.
- ▶ Utility-managed stand-alone systems demonstrate better water quality monitoring conditions than systems managed by local operators.
- ▶ Although urban and regional utilities demonstrate better disinfection and water quality testing practices, this has not resulted in higher levels of customer satisfaction with water quality (Albania, Kosovo, Romania); other factors may be at play.

##### **Future directions**

- ▶ In countries where local management models continue to exist, water safety approaches and water quality monitoring need to be introduced.
- ▶ Affordable and robust disinfection systems should be introduced for locally managed systems. This should be combined with tailored guidelines for small systems accompanied by training and follow-up support for service providers for adequate operation and risk-based monitoring.

In Albania, Kosovo, and Romania, households connected to locally managed systems express higher satisfaction with water quality than those receiving services from stand-alone schemes managed by regional and urban utilities. When data on water sources for the different management models are examined, no consistent patterns are found that could explain why households served by local operators have greater satisfaction with their water quality. Water quality satisfaction seems to be inconsistent with the actual water quality management practices of water operators. Thus, perceptions of water quality may indeed depend on differentiated customer expectations and information on the topic.

**Lower water quality satisfaction levels are associated with lower satisfaction with operator's communication on water quality** (see figure 4.7).

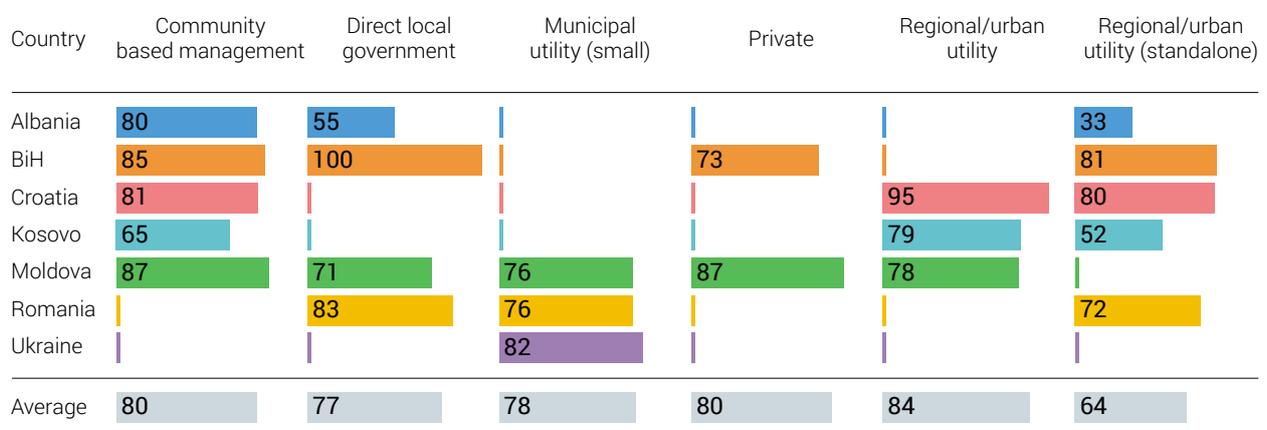
**Addressing low water quality satisfaction levels requires further investigation into the actual water quality and calls for a more pro-active communication with rural customer with respect to water quality information.**

Rural customers' water quality awareness and need for information may increase under the transition from local management to regional or urban utility management. While national legislation in most countries requires water operators and their service authorities to provide information on the quality of water intended for human consumption

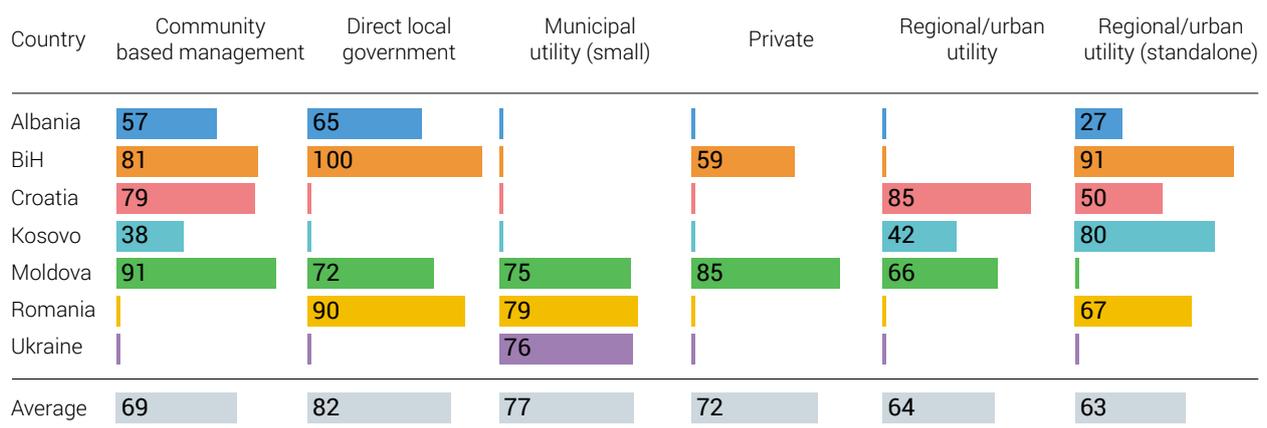


**FIGURE 4.6: WATER QUALITY RELATED CUSTOMER PERCEPTIONS AND OPERATOR WATER QUALITY PRACTICES, BY MANAGEMENT MODEL AND COUNTRY**

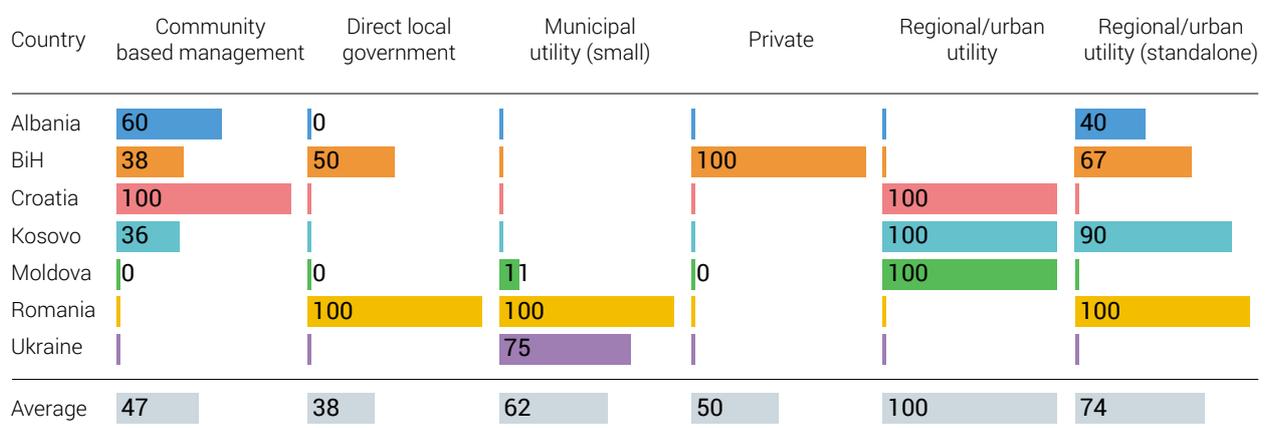
**A. SHARE OF CONNECTED HOUSEHOLDS SATISFIED WITH WATER QUALITY**



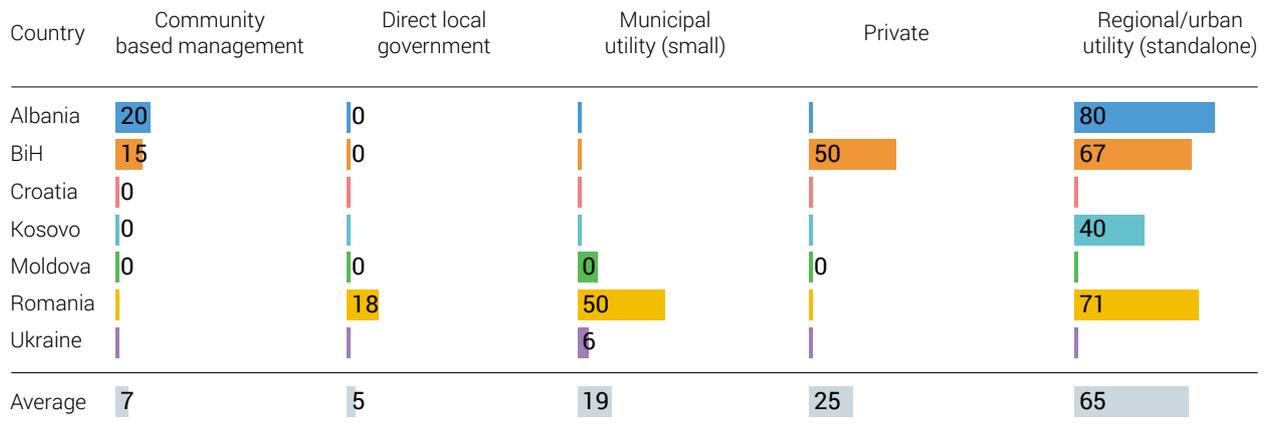
**B. SHARE OF CONNECTED HOUSEHOLDS SATISFIED WITH INFORMATION SHARING ON WATER QUALITY**



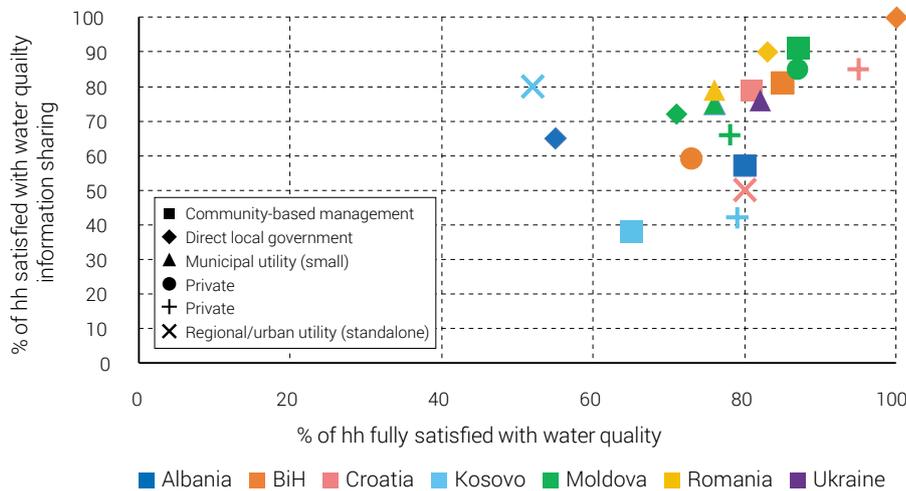
**C. SHARE OF SERVICE PROVIDERS THAT REPORT PRACTICING DISINFECTION**



**D. SHARE OF SERVICE PROVIDERS THAT REPORT CONDUCTING WATER TESTING AT LEAST WEEKLY**



SOURCE: COUNTRY-SPECIFIC HOUSEHOLD AND OPERATOR SURVEYS.



to citizens,<sup>91</sup> practice seems to fall behind theory.<sup>92</sup> National reporting under the EU Drinking Water Directive (DWD) is not mandatory for small water supply zones (SWSZs), supplying less than 1,000 cubic meters per day or less than 5,000 people. Without clear guidance how to make water quality information available to citizens (Article 13 of DWD), the lack of mandatory reporting for SWSZs may further discourage monitoring and transparent information provision on water quality to citizens in rural areas. Improving the public accessibility of water quality information is one of the aspects included in the proposed revisions of the EU DWD.

### 4.3.2. Disinfection and Water Quality Monitoring Practices

**Water supply disinfection is not widely practiced in locally managed water supply systems, except for those in Croatia and Romania. As expected, disinfection is common among urban and regional utility managed systems** (except for Albania, reflecting the recent takeover of rural systems under utility management). Overall, disinfection practices are uncommon among community-managed systems and those managed directly by local governments.

91 Or to indicate whether water is unfit for human consumptions, such as the so-called “technical water.”

92 As per Article 13 of the DWD, EU member states are required to take the measures necessary to ensure that adequate and up-to-date information on the quality of water intended for human consumption is available to consumers. Although countries may have transposed this correctly into national legislation, there is currently no EU guidance to members, which has led to different practices among members and among service providers within a country (European Court of Auditors 2017).





**Based on a holistic water safety risk assessment, affordable and robust disinfection systems should be introduced for locally managed systems. This should be combined with tailored guidelines for small systems accompanied by training and follow-up support for operators, and risk-based water quality monitoring.** A certification may be introduced for water operators with respect to their capacity for adequate water safety management, combined with regular inspection visits by relevant authorities. Proposed revisions of the EU DWD require service providers to carry out water safety planning measures and—when risks are low—they may reduce water quality monitoring efforts. At-scale support programs will be needed for countries where local service providers will continue to play an important role in rural provision. Guidelines should be adopted, such as for Moldova, where the World Health Organization (WHO) has supported the government in developing guidelines for water quality management for small water supply systems.<sup>94</sup>

## 4.4. Performance and Capacities for Service Delivery

This section presents findings and insights with respect to the performance and capacities of service providers derived from household and operator surveys. Their performance is examined in terms of basic business practices; their commercial, financial, and technical capacities are assessed. The assessment focuses on local service providers and does not aim to analyze capacity challenges of regional and urban utilities, other than in relation to their management of stand-alone rural systems (data permitting). Summary findings are reflected in box 4.4.

### 4.4.1. Business Practices

**Critical business practices relate to payment and metering conditions for services. Nearly all connected households report paying for water, with some notable exceptions in Albania and Kosovo** (figure 4.9, panels a–c). Cases with irregular payment typically reflect situations in which households have established unauthorized connections or outright refuse to pay, households have not yet been included in billing cycles, possibly because of a transition between management models, or when operators charge only in case of breakdowns (gravity schemes). Albania and Kosovo appear to have systemic issues with consumers not paying across all types of management models, including regional and urban utilities and especially among stand-alone schemes.

#### Box 4.4: Key findings and insights on service provider business practices and performance

##### Business practices

- ▶ Local service providers, such as small municipal enterprises, local government units, and private operators, have well-established payment practices, just like regional and urban utilities. Community-based operators are less likely to collect payments from users.
- ▶ While urban and regional utilities typically issue invoices, this is suboptimal for stand-alone systems managed by RWCs in Kosovo and utilities in Albania. Local operators, especially community operators, have weak invoicing practices.
- ▶ Consistent meter reading and volumetric billing (not flat rates) are issues to be addressed for rural schemes under regional and urban utility management; this may help curb illegal connections.

##### Operational performance and capacities

- ▶ Average tariffs were similar across local operators, typically ranging between €0.40 and €0.50 per cubic meter. Tariff levels for urban and regional utilities are similar for Albania, Kosovo, Bosnia and Herzegovina, and Moldova, but significantly higher for Romania and Croatia.
- ▶ Commercial and financial performance monitoring are weakly implemented by local rural water supply operators, especially community-managed operators; capacities are better for urban and regional utilities and private operators.
- ▶ Bill collection ratios for stand-alone schemes under urban and regional utility management require improvement. Rural customer centres may help to organize billing and address low satisfaction.

<sup>94</sup> See the WHO website, available at <http://www.euro.who.int/en/countries/republic-of-moldova/news/news/2017/12/group-of-experts-revise-who-guidelines-on-small-drinking-water-supplies>.

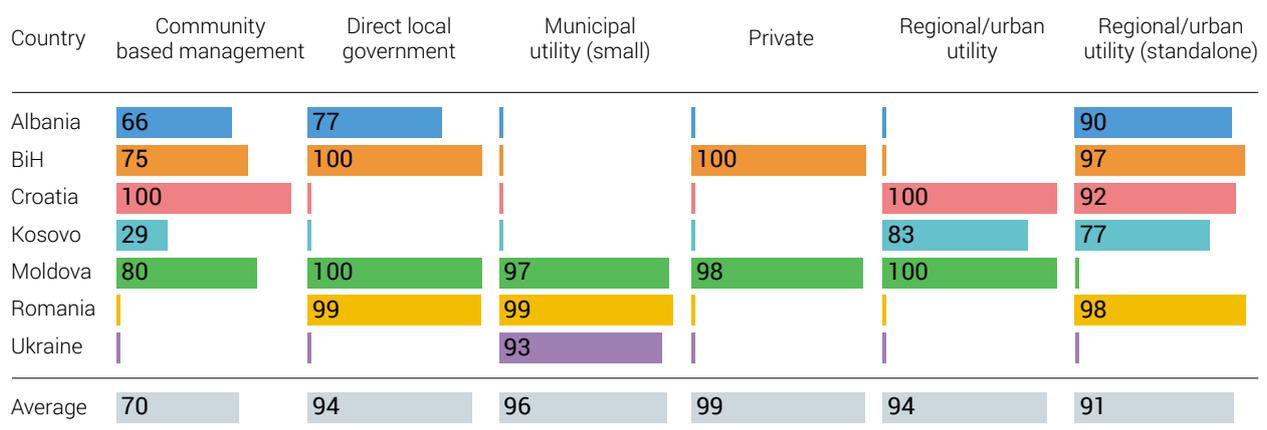


- ▶ Weak capacities in recording, monitoring, and achieving operational cost recovery among local service providers are key barriers toward achieving more sustainable service delivery.
- ▶ Financial and technical performance indicators (operational cost recovery [OCR], nonrevenue water [NRW]) are typically not recorded for individual stand-alone schemes under regional and urban utility management (but aggregated at company level).

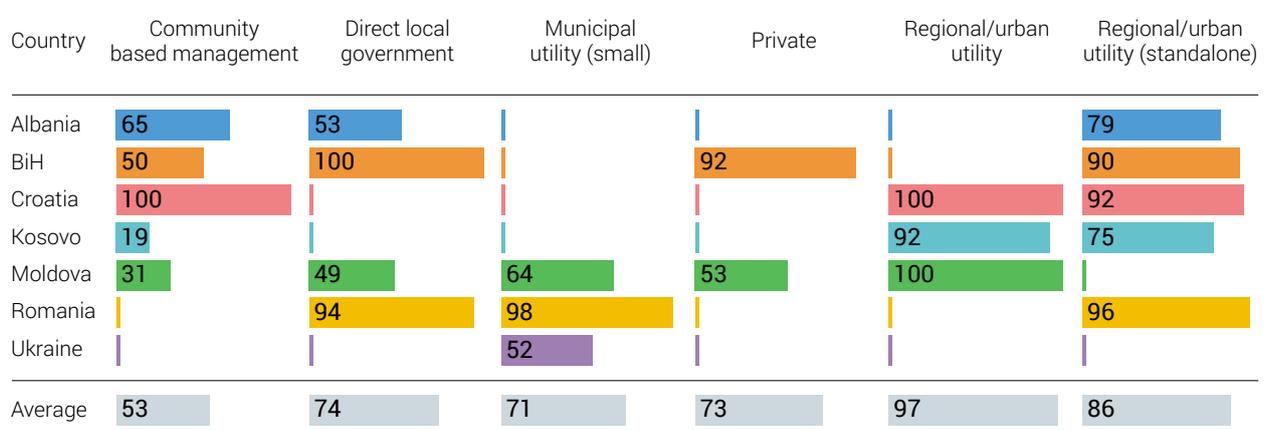
**Future directions**

- ▶ At-scale support programs, oversight, and incentives will be needed to facilitate professionalization of local providers. Improved business practices—combined with suitable tools and equipment for recording commercial, financial, and technical performance—need to be instituted with local operators serving rural areas.
- ▶ Regional and urban utilities need to consider increased customer support and outreach in rural areas to improve business practices, customer satisfaction, and collection rates.
- ▶ Due to the higher capacities of regional and urban utilities, they will need to develop more granular management information systems to understand system-level performance to identify underperforming systems and plan investments accordingly.
- ▶ Increasing revenues, such as through tariffs, is critical for local operators. Complemented with external funds, these could be allocated to performance improvement. These plans can include the installation of bulk and household water meters, installation of simple disinfection equipment and field water quality test kits, more professional staff to manage technical and commercial aspects of operations, or use of software packages for billing and accounting.

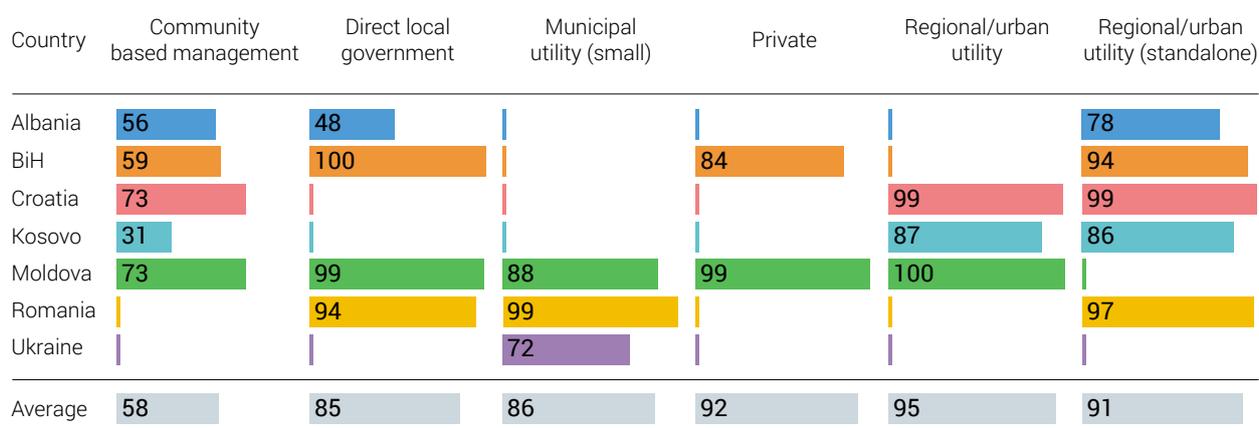
**FIGURE 4.9: PAYMENT, INVOICING, AND METERING AMONG CONNECTED HOUSEHOLDS BY MANAGEMENT MODEL AND COUNTRY**  
**A. SHARE OF CONNECTED HOUSEHOLDS THAT REPORT PAYING FOR WATER**



**B. SHARE OF CONNECTED HOUSEHOLDS THAT REPORT RECEIVING AN INVOICE**



### C. SHARE OF CONNECTED HOUSEHOLDS THAT REPORT HAVING A WATER METER



SOURCES: COUNTRY-SPECIFIC HOUSEHOLD SURVEYS.

**Local operators (such as small municipal enterprises, direct local government provisions, and the private sector) have well-established payment practices, at par with regional and urban utilities. However, on average, community-based operators are less likely to collect payments from users** (figure 4.9, panel a). This may be because many schemes are small-scale, gravity-fed systems with limited infrastructure and maintenance needs, and because of the informal nature of some management arrangements. However, all piped water systems will eventually require maintenance, repairs and replacement, and lack of regular payment practices jeopardizes sustainability.

**While urban and regional utilities typically issue invoices, this practice is less frequent among stand-alone systems managed by the utilities in Kosovo and Albania (75 percent to 79 percent). Also, local operators, especially community operators, require improvements in invoicing across all countries** (figure 4.9, panel b). Invoicing reflects the level of professional record-keeping practices required for commercial management and accounting. Stand-alone schemes managed by regional utilities typically invoice their customers, although less so for ones in Kosovo and Albania. This is consistent with perceptions of service providers who report interruptions in billing resulting from the aggregation reform. Despite lower invoicing rates among community-managed schemes, Croatia has demonstrated that such practices can be maintained. Further, high variability in this practice is observed across countries and management models.

**Most connected households report that they have a water meter (with some gaps among regional and urban utilities in Albania and Kosovo); there is low metering by municipal enterprises in Ukraine, and generally low water metering in community-managed schemes, except for Moldova and Croatia** (figure 4.9, panel c). Metering levels are reportedly poor among community-managed systems, especially in Albania, Bosnia and Herzegovina, and Kosovo, but with better performance in Moldova and Croatia. In Moldova, where municipal utilities and direct provision by local government are common, metering is the norm. Given the relatively high levels of metering, regular payment and invoicing practices are lagging. This may be explained by low levels of meter reading, low functionality of meters, or the relatively common practice of collecting flat rates from households in rural areas regardless of the presence of meters.

**Despite legal requirements, in some cases, customers connect to stand-alone systems that charge flat fees, possibly due to the lack of meters or regular readings.** Having water meters is thus necessary but not sufficient: it needs to be accompanied by consistent reading and volumetric billing to help address illegal connections, an issue in many countries, including Albania, Bosnia and Herzegovina, Kosovo, and Romania.

## 4.4.2. Commercial and Financial Performance

Commercial and financial performance of operators is assessed through the examination of tariffs,<sup>95</sup> the ability of local operators to manage records on billed and collected income and operational expenses, and through assessing

<sup>95</sup> Affordability aspects of tariffs and fees are covered separately in section 4.5.



collection ratios<sup>96</sup> and operational cost recovery.<sup>97</sup> The extent of full cost recovery<sup>98</sup> cannot be assessed due to overall weak accounting practices and is not yet a reality in rural areas, especially for local operators (see also section 3.2.2).

**Performance data are difficult to collect for individual stand-alone schemes under urban and regional utility management. It will be increasingly important for regional utilities to address underperforming stand-alone systems.**

For regional and urban utilities, performance metrics are typically compiled for their entire service area, combining urban and rural areas.<sup>99</sup> For stand-alone rural systems managed by regional or urban utilities, the operator survey attempts to understand the performance of those single stand-alone schemes. However, this has proved difficult, and data for stand-alone systems could be collected only for Bosnia and Herzegovina, Romania, and, for some parameters, Kosovo.<sup>100</sup>

**Average volumetric tariff levels, converted to € 2016 prices, are similar across local operator management models, typically ranging between €0.40 and €0.50 per cubic meter.** Figure 4.10 presents the average volumetric tariffs reportedly charged by operators across the region. For small municipal enterprises, tariffs are slightly higher, except for Ukraine where tariffs are extremely low. Tariffs for regional and urban utilities are higher in Romania and Croatia.

**FIGURE 4.10: AVERAGE VOLUMETRIC WATER TARIFF REPORTEDLY CHARGED BY SERVICE PROVIDERS BY MANAGEMENT MODEL AND COUNTRY.**

Country	Community based management (€/m <sup>3</sup> )	Direct local government (€/m <sup>3</sup> )	Municipal utility (small) (€/m <sup>3</sup> )	Private (€/m <sup>3</sup> )	Regional/urban utility (standalone) (€/m <sup>3</sup> )
Albania					0.34
BiH	0.39			0.43	0.44
Croatia	0.53				0.71
Kosovo					0.36
Moldova	0.36	0.47	0.55	0.51	0.45
Romania		0.46	0.54		0.82
Ukraine			0.26		
Average	0.43	0.47	0.45	0.47	0.52

SOURCES: COUNTRY-SPECIFIC OPERATOR SURVEYS.

Note: Tariffs under regional and urban utilities relate to the entire service area and the average of all regional and urban utilities in the country samples.

**There is a significant variability in tariff levels across the larger urban and regional utilities, with Albania, Kosovo, Bosnia and Herzegovina, and Moldova at the lower end and Romania and Croatia at the higher end.** These figures most likely reflect higher levels of cost recovery through tariffs for capital investments that have been achieved as part of the EU accession process. In Romania and Croatia, where regional water companies have operated the longest, tariff levels for water supply are significantly higher than for local management models in these countries.

**Most service providers report billed and collected annual revenues. However, this is common for municipal and urban and regional utilities and private operators and least likely for community providers and for local governments** (figure 4.11, panels a–c). Interestingly, in Romania and Moldova, municipal enterprises and local government departments are able to report on billed and collected amounts, although not those in Bosnia and Herzegovina, which may be due to the lack of ring-fencing of water revenues. For larger urban and regional utilities managing stand-alone schemes, recording billed and collected amounts at scheme level is common, except for

96 Collection ratio is defined as the quotient of collected income over billed income over the past fiscal year.

97 Operational cost coverage ratio is defined as the quotient of operational expenses over collected revenues from water sales in the past fiscal year.

98 Sufficient revenue generation to cover all life cycle costs of all system assets, including capital maintenance and replacement and cost of capital to ensure ability to rehabilitate or replace asset components when needed.

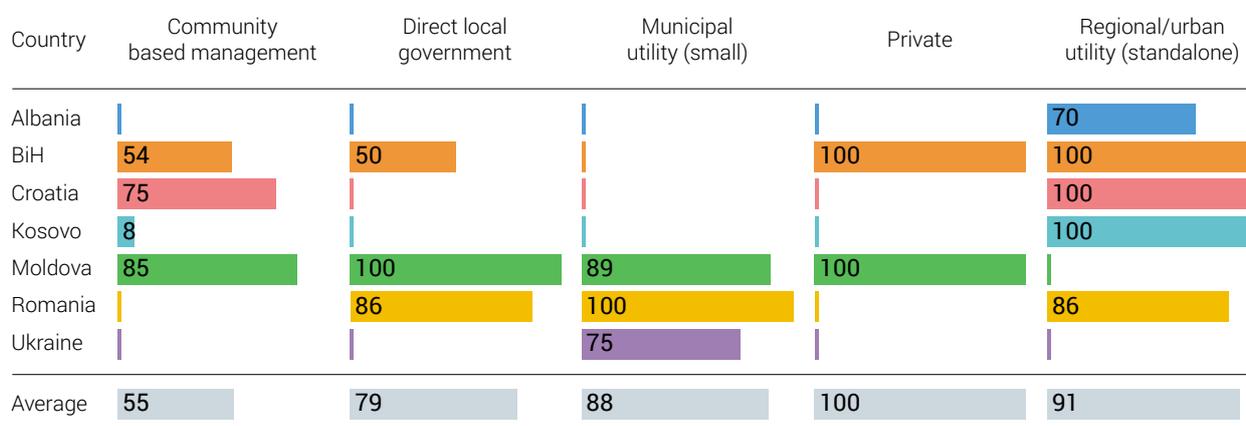
99 Hence graphs in this section that pertain to performance data do not include regional or urban utility.

100 For Albania and Croatia, data could not be collected for individual stand-alone systems. For Albania, data for 15 municipal utilities were collected concerning their overall operations (entire service area), without reference to any specific rural systems in the process of aggregation or already under utility management.

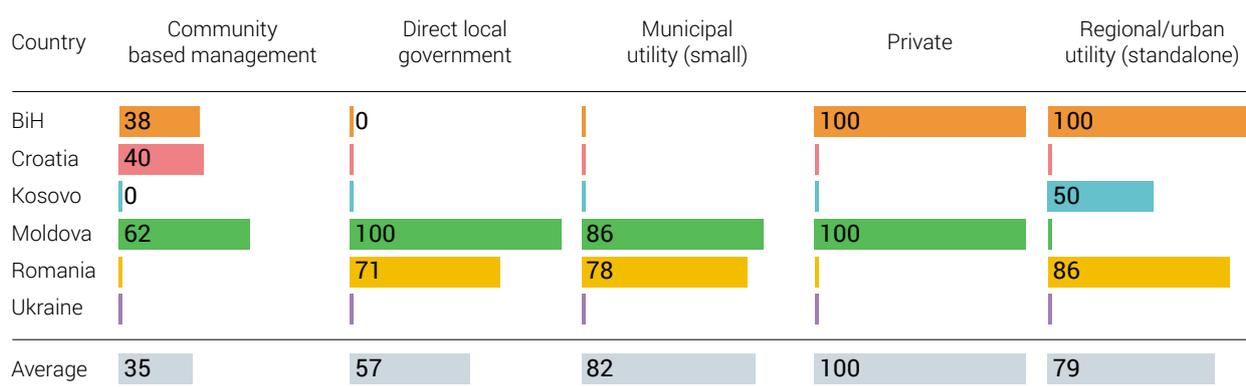
those in Kosovo. As seen in figure 4.12, regular invoicing of customers is weakly associated with better operator performance in monitoring billed and actual income.

**FIGURE 4.11: BILLING AND COLLECTION PRACTICES AND PERFORMANCE AMONG SERVICE PROVIDERS, BY MANAGEMENT MODEL AND COUNTRY**

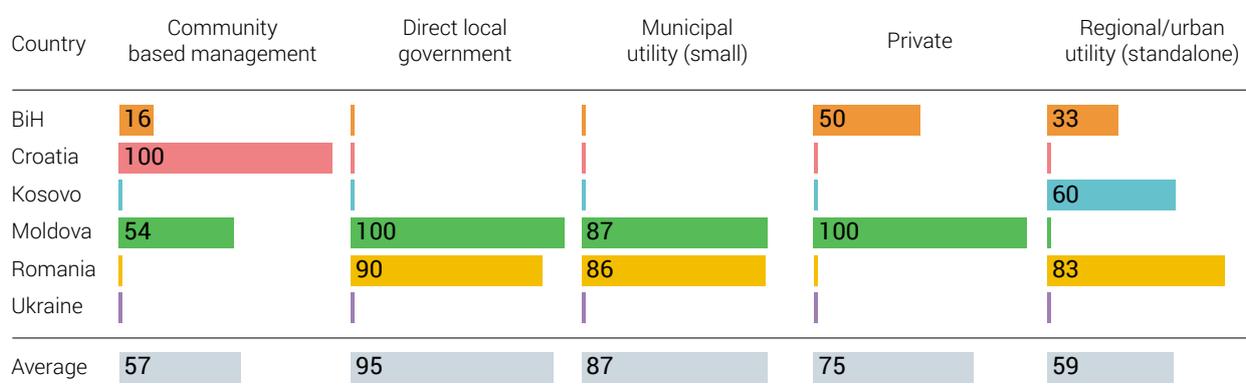
**A. SHARE OF OPERATORS BILLING CUSTOMERS BASED ON A VOLUMETRIC TARIFF**



**B. SHARE OF OPERATORS REPORTING BILLED AND ACTUAL REVENUE**



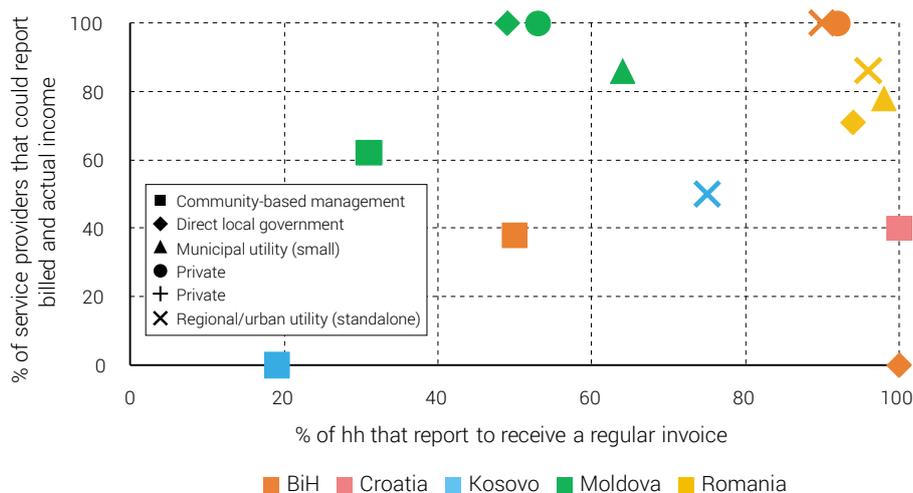
**C. SHARE OF OPERATORS REPORTING BILLED AND ACTUAL REVENUE AND DEMONSTRATING A COLLECTION RATIO GREATER THAN 90 PERCENT**



SOURCES: COUNTRY-SPECIFIC OPERATOR SURVEYS.

Note: Regional and urban utility-managed stand-alone systems refer to the ability to report billed and collected revenues for the selected stand-alone schemes under utility management. Data for Albania (87 percent) and Croatia (100 percent) were not included since figures were collected at the level of entire utility. In Ukraine, data were not correctly collected and were omitted.





**FIGURE 4.12: RELATIONSHIP BETWEEN INVOICING AND ABILITY OF SERVICE PROVIDERS TO REPORT BILLED AND ACTUAL INCOME, BY MANAGEMENT MODEL**

SOURCES: COUNTRY-SPECIFIC HOUSEHOLD AND OPERATOR SURVEYS.

**Low collection rates, such as in Kosovo, Bosnia and Herzegovina, and Moldova, point to suboptimal invoicing, bill collection, and follow-up with nonpaying customers** (figure 4.11 and figure 4.13). Community-based operators have performed particularly poorly in this regard, except those in Croatia, while local government and small municipal enterprises have performed better.

**Collection ratios for stand-alone schemes under urban and regional utility management require improvement, which confirms evidence regarding difficulties in collecting payments from rural customers as well as poor satisfaction on billing arrangements** (see appendix D). In Albania, among 15 municipal utilities surveyed, only 54 percent report billed and collected income.<sup>101</sup> High customer dissatisfaction in rural schemes that are being transferred underscores the challenges of Albanian utilities to smoothly expand their commercial processes to these areas, while capacities of utilities are constrained.

**There is a lot of variation in the capacity of local service providers to monitor operational cost recovery, but overall capacities are poor, except for municipal enterprises in Moldova and Romania** (figure 4.13, panels a–c).<sup>102</sup> Community-based operators across all countries demonstrate a poor ability to assess their operational cost recovery, while private operators perform substantially better. Local government and municipal enterprises in Moldova and Romania are better able to provide operational cost recovery estimates, but those in Ukraine and Bosnia and Herzegovina show a weak capacity to record revenues and expenditures. Regional and urban companies report operational cost recovery at company level (not at system level).<sup>103</sup>

**The difficulties in recording, monitoring, and achieving operational cost recovery among local service providers present a key barrier to achieving more sustainable service delivery conditions for the future.** For local operators that could present data on expenditure and income, their operational cost recovery is poor. Three-thirds of community-based operators cannot cover operational costs,<sup>104</sup> while municipal enterprises and local governments have performed only slightly better (figure 4.13, panel b). These results point to weak business practices. This poor financial situation leads to high reliance on operational subsidies from local government budgets combined with one-off financial contributions of other entities, and potentially from customers in case of major repairs (see also section 3.2.2).

101 This relates to the data that could be presented for the entire service area.

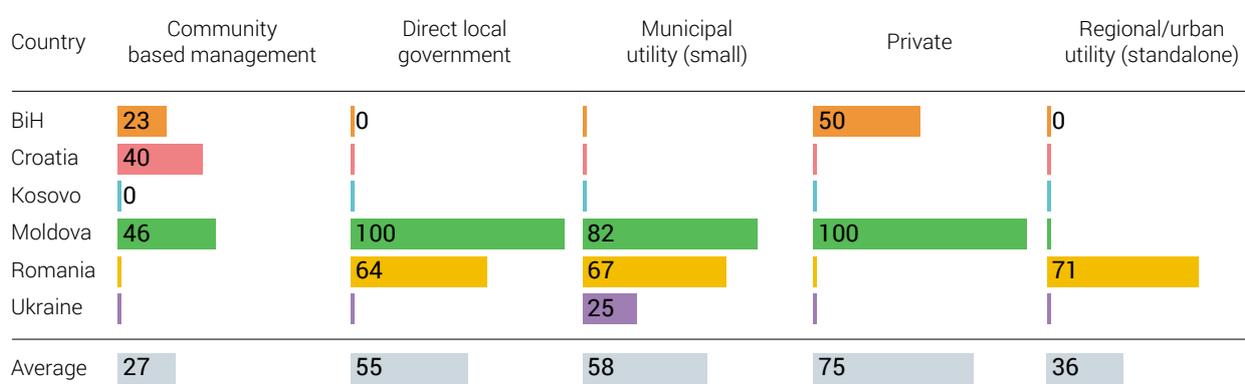
102 The ability to generate a surplus between received (actual) income from tariffs and fees compared to expenditures related to operations (repair, maintenance, staff, and consumables). Due to poor recording of local operators no information was available on depreciation charges (or capital recovery expense) debt service or cost of capital.

103 The assessment of the financial performance of larger regional and urban utilities at the organizational level is outside the scope of this study, but they continue to face their own challenges. See World Bank (2015).

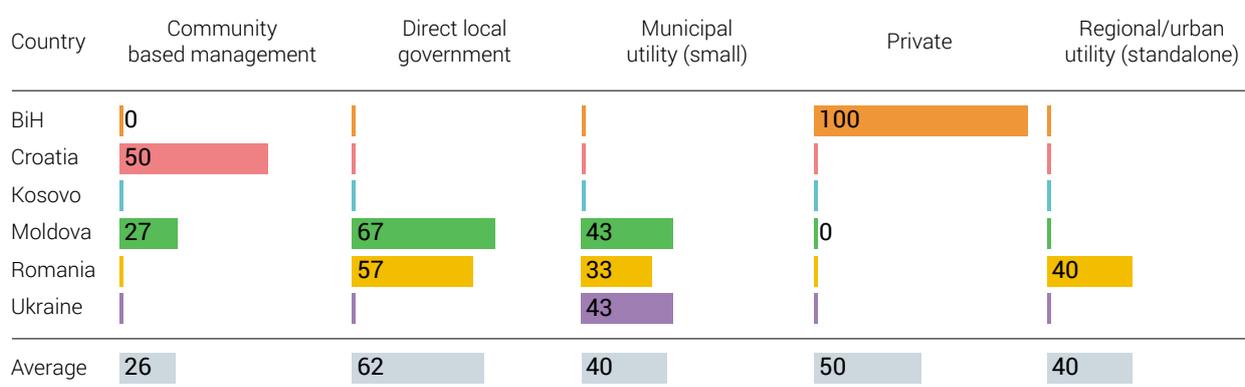
104 Survey data show that repairs are mostly funded through local government contributions and community funds collected on a one-off basis to cover any gaps in funding in community-managed systems.

**FIGURE 4.13: OPERATOR PERFORMANCE ON COST RECOVERY AND CAPACITY FOR NRW MONITORING, BY MANAGEMENT MODEL AND COUNTRY**

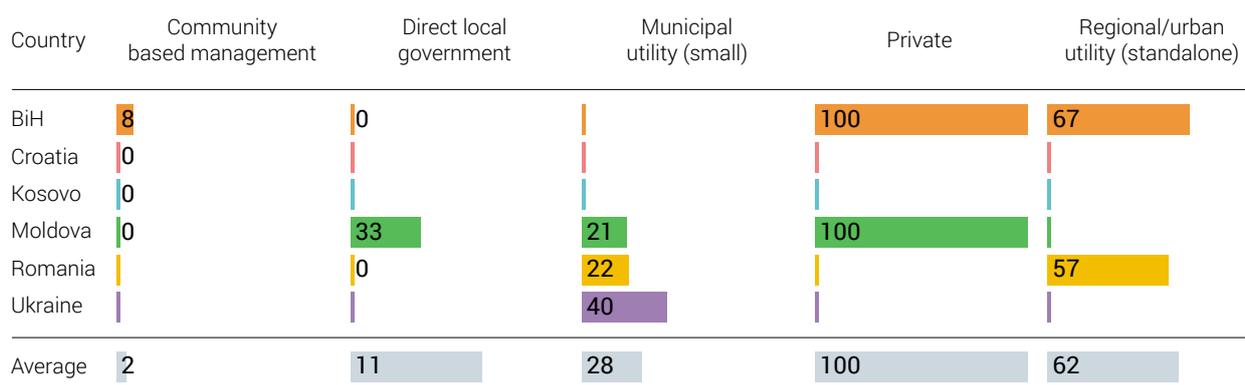
**A. SHARE OF OPERATORS REPORTING ACTUAL INCOME AND OPERATIONAL EXPENSES FOR PAST FISCAL YEAR**



**B. SHARE OF OPERATORS REPORTING ACTUAL INCOME AND OPERATIONAL EXPENSES, AND DEMONSTRATING A COST RECOVERY GREATER THAN 100 PERCENT IN PAST FISCAL YEAR**



**C. SHARE OF OPERATORS REPORTING WATER VOLUMES PRODUCED AND SOLD OVER PAST FISCAL YEAR**



SOURCES: COUNTRY-SPECIFIC OPERATOR SURVEYS.

Note: Data for Romania and Bosnia and Herzegovina refer to the ability to track expenses and income for a specific rural stand-alone system managed by the utility. For other countries, regional and urban utilities data refer to the entire service area. NRW = nonrevenue water.

**Significant room exists for improving basic technical capacities of local operators, such as through installing bulk meters, consistently recording water sold based on regular water meter readings, and analyzing such data to determine and address water losses.** Community-based providers are not able record and therefore better understand water losses. Only around a third of municipal enterprises (in Moldova, also the departments under the



mayorality) record water volumes; private operators do so in all cases (figure 4.13, panel c).<sup>105</sup> Only around half of regional and urban utilities in Romania and Bosnia and Herzegovina estimate water losses for stand-alone systems under their management.<sup>106</sup> Given the age of rural systems, frequent service outages indicative of poor infrastructure, and weak operator capacities, water losses are likely considerable.

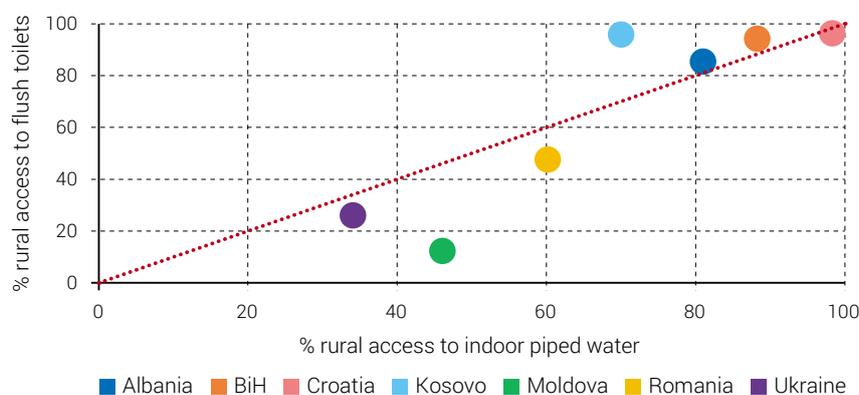
**At-scale support programs, oversight, and incentives will be needed to facilitate professionalization of local providers.** Local operators serving rural areas need to institute improved business practices; suitable tools; and equipment for recording commercial, financial, and technical performance.

**Regional and urban utilities need to consider increased customer support and outreach in rural areas to improve business practices, customer satisfaction, and collection rates.** Appreciating the higher capacities of regional and urban utilities, it will be increasingly important for those utilities integrating many stand-alone systems to understand system-level performance. System-level performance data will be necessary to identify underperforming systems and plan investments accordingly.

## 4.5. Sanitation services

**Sanitation services in the form of flush toilets are often driven by access to piped water on the premises, particularly in the home,** as illustrated in (figure 4.14). Nevertheless, there are other factors at play, such as affordability constraints of rural households, social norms, and expectations of an “acceptable” toilet, which may be different for the elderly and for the younger generation.

**The sanitation assessment looks at satisfaction with facilities, pit or tank emptying behaviors, affordability, and aspirations to upgrade and improve sanitation conditions.** It does not include an enabling environment analysis. The following analysis is based on the primary data stemming from household surveys and therefore likely biased towards denser, better-off rural settlements, since the survey was administered in localities with existing functional piped water systems. Results must therefore be interpreted with some caution. Box 4.5 summarizes the key findings.



**FIGURE 4.14: RURAL FLUSH TOILET ACCESS IN RELATION TO INDOOR PIPED WATER ACCESS, BY COUNTRY**

SOURCES: ALBANIA: HBS 2015; BOSNIA AND HERZEGOVINA: MICS 2012; CROATIA: EU STATISTICS ON INCOME AND LIVING CONDITIONS 2012; KOSOVO: MICS 2014; MOLDOVA: HBS 2015; ROMANIA: HBS 2016; UKRAINE: MICS 2012; STATE STATISTICAL OFFICE 2016.

Note: EU = European Union; HBS = Household Budget Survey; MICS = Multiple Indicator Cluster Survey.

**In the sampled locations, access to flush toilets was very high in Albania, Bosnia and Herzegovina, Croatia, and Kosovo, much lower in Ukraine and Romania (52 percent to 67 percent), and the lowest in Moldova (20 percent); this broad pattern is mostly consistent with national representative data** (see section 2.6).<sup>107</sup> Figure 4.15, panel a, illustrates access to sanitation facilities in terms of flush toilet usage and whether the facility was situated inside or outside the home. Large population shares rely on dry pit latrines of varying hygienic condition in Moldova, Romania, and Ukraine, reflecting lower incomes in rural areas. Flush toilet users, with nearly all such facilities inside the home, benefit from

<sup>105</sup> Given the difficulties of local operators to provide data on water produced and sold, further analysis of estimates of NRW was not pursued.

<sup>106</sup> Such data were not collected in Albania, Kosovo, and Croatia for specific stand-alone schemes managed by utilities.

<sup>107</sup> National survey data show 13 percent access to flush toilet in Moldova, 26 percent in Ukraine, and 41 percent Bosnia and Herzegovina in Romania (see section 2.2). The primary data show a more positive picture due to its biased sampling in areas with piped water supply.

increased comfort and dignity, especially for the elderly, women, and girls. By contrast, dry latrines, typically outside, are usually less accessible, comfortable, and private. Open defecation practices are very rarely reported.

**Most households that use flush toilets or pit latrines have on-site facilities, such as septic tanks or soak pits, for the containment and management of fecal sludge.<sup>108</sup> Most users in Kosovo and Albania have never emptied their tanks or pits, while those in Romania, Moldova, Ukraine, Croatia, and Bosnia and Herzegovina have.** Typically, on-site facilities require periodic emptying once full to ensure their prolonged functionality, unless a second pit is constructed and the first one covered. Among those households with on-site sludge management facilities, the proportion that have never emptied their pit or tank is given in figure 4.15, panel b.

**Overall, an average of 36 percent of all households with an on-site containment facility have *never* emptied their pit or tank** (in sampled locations). Infrequent emptying practices may point to high levels of dry pit usage, such as in Moldova, Romania, and Ukraine. The results also indicate common emptying practices among flush toilet users, such as in Bosnia and Herzegovina and Croatia, where flush toilet usage is almost 100 percent.<sup>109</sup> Low levels of emptying among flush toilet users correspond to a high level of sewer connections in Kosovo.

**Pit emptying has been commonly performed mechanically, rather than manually, and local—often private sector—actors are typical providers** (figure 4.15, panel c). A moderate share of households reportedly does the emptying

#### Box 4.5: Summary of key findings and insights on rural sanitation services

##### Access, aspirations and satisfaction

- ▶ Piped water in the home is an important driver for flush toilet access, but not the only one.
- ▶ Access to flush toilets is generally high, with Romania, Ukraine, and especially Moldova being a notable exception. Accessibility, convenience, and privacy are higher for flush toilets due to the in-door location.
- ▶ Most households using flush toilets are satisfied with their sanitation facilities and conditions, while most pit latrine using households are not.
- ▶ Affordability is a main barrier preventing households using pit latrines from upgrading to flush toilets; households' willingness to pay is fairly high, indicating a latent demand.
- ▶ Sewerage coverage is low, except in Kosovo, and most households have on-site fecal sludge containment facilities; households' willingness to pay is substantially lower for sewer connection than for flush toilets.

##### Emptying practices and role of service authorities and providers

- ▶ In Kosovo and Albania, most households have never emptied their tanks or pits, while the majority in Romania, Moldova, Ukraine, Croatia, and Bosnia and Herzegovina have.
- ▶ Most households that have emptied their pit or tank have done this mechanically, mostly using a local private service provider; except in Albania where most emptying is done manually.
- ▶ Local governments have little involvement in rural sanitation; nor do they actively promote and supervise flush toilet or septic tank construction; nor are they able to offer emptying services. Only in Ukraine do municipal utilities offer emptying.

##### Future directions

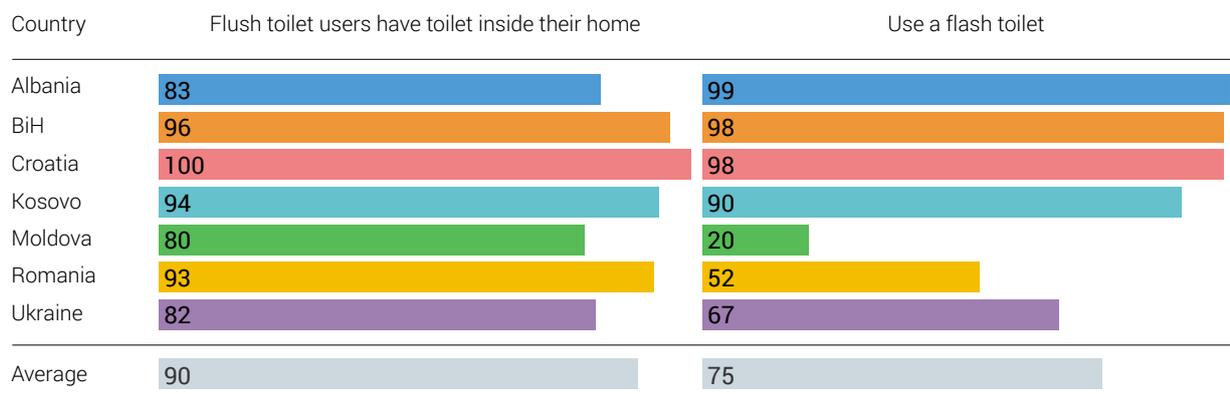
- ▶ Through social marketing, behavior change communications, and financial incentives for home improvements, households' willingness to pay for upgrades to indoor flush toilets or other convenient indoor hygienic toilets can be addressed.
- ▶ As the expansion of sewer systems in all rural areas is not economically feasible, the transition from pit latrines to in-door (flush) toilets needs to be well-managed, with an increased role for local government.
- ▶ Due to increasing use of flush toilets and septic tanks, more attention is needed for the management of the sanitation service chain in rural areas; it should be part of comprehensive rural sanitation strategies for appropriate individual sanitation systems in small agglomerations.

108 Households that are connected to sewer systems may not have such containment facilities. They may be disposing directly into the sewer. In some cases, flush-toilet users may also directly dispose into ditches and drains, without having any containment facility, such as a septic tank.

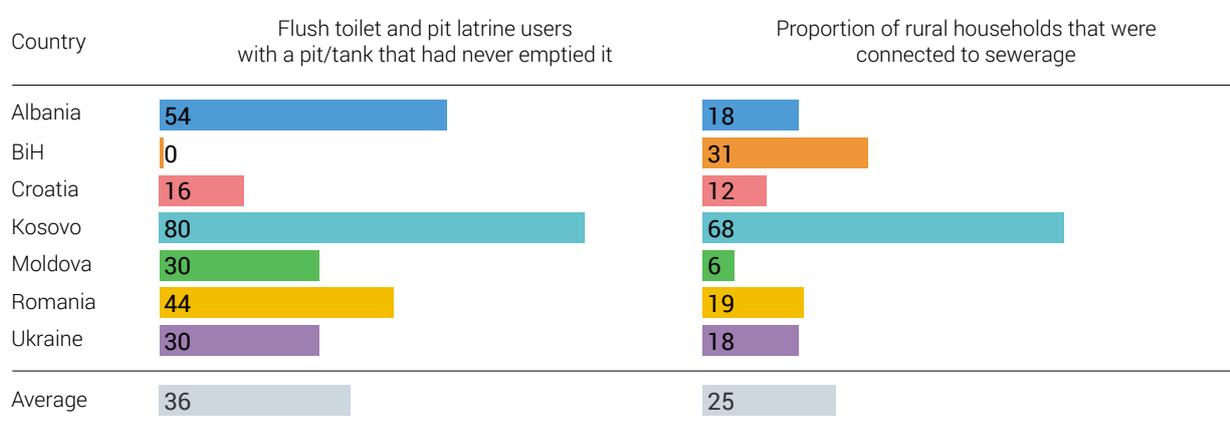
109 The need for pit or tank emptying depends on many factors, such as the number of residents using the facilities, technical design, sizing, or year the pit or tank was built.



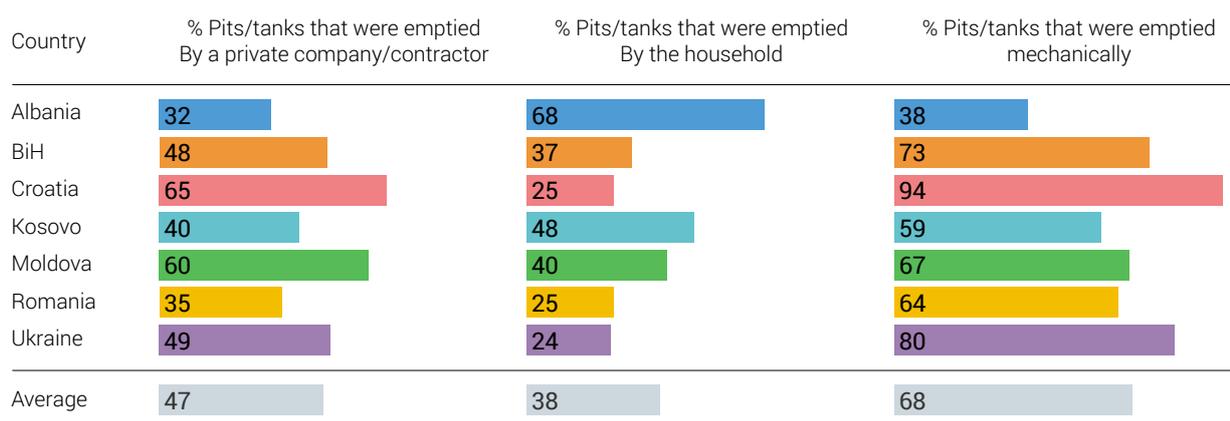
**FIGURE 4.15: LEVEL OF SANITATION SERVICES, ACCESSIBILITY, AND PIT OR TANK EMPTYING PRACTICES, BY COUNTRY**  
**A. SHARE OF FLUSH-TOILET USERS WITH INDOOR TOILET, AND SHARE OF HOUSEHOLDS USING FLUSH TOILET**



**B. EMPTYING PRACTICES OF HOUSEHOLDS AND SHARE OF HOUSEHOLDS CONNECTED TO SEWER NETWORK.**



**C. PIT AND TANK EMPTYING METHODS OF HOUSEHOLDS**



SOURCES: COUNTRY-SPECIFIC HOUSEHOLD SURVEYS.

themselves, particularly in Albania and Kosovo. Farmers in rural areas may have the required equipment (tractors and pumps) and may empty their tank and dispose of it on their lands. Interviews with local governments indicate that disposal of sludge and operations of private companies are typically unregulated. Private suppliers are least common in Albania and Kosovo, and could partially explain why most households in these two countries have never emptied their pits. Pit emptying is most likely to be performed manually in Albania (62 percent).

**Many households using outdoor pit latrines across all sampled locations indicate a desire to upgrade their toilet, but affordability is a common barrier, although high willingness to pay indicates a latent demand.**

Some households also report being satisfied with their pit latrines, and not desiring to upgrade. At the same time, stated willingness to pay for upgrading to flush toilets is high, even in countries with low access, such as Romania and Moldova, as indicated in figure 4.16. This indicates a latent demand that could be catalyzed if adequate technical solutions are promoted, incentives for installation offered, and financing options made available to rural households.

Country	Median willingness to pay for typical flush toilet (€)	Median willingness to pay for sewerage connection (€)
Albania		31
BiH		51
Croatia		107
Kosovo	200	100
Moldova	98	49
Romania	450	22
Ukraine	68	17
Average	204	54

**FIGURE 4.16:** WILLINGNESS TO PAY FOR FLUSH TOILETS AND SEWERAGE CONNECTION AMONG HOUSEHOLDS WITHOUT SUCH ACCESS, BY COUNTRY

SOURCES: COUNTRY-SPECIFIC HOUSEHOLD SURVEYS.

Note: No data for households' willingness to pay for flush toilets in Albania, Bosnia and Herzegovina, Croatia due to small sample size.

**Despite high stated willingness to pay, households face affordability constraints that seem to prevent them from making upgrades,** as presented in figure 4.17. Further investigation is required for understanding disposable rural incomes and the costs of indoor flush facilities to determine whether affordability is truly the most limiting barrier.

Based on a wider enabling environment assessment for rural sanitation, household willingness to pay for flush toilets can be increased by adopting a holistic programmatic approach to increase access, such as by combining sanitation marketing, behavior change communications, and financing options.

**FIGURE 4.17:** SATISFACTION OF FLUSH VERSUS PIT LATRINE USERS, AND AFFORDABILITY BARRIERS FOR PIT LATRINES USERS TO UPGRADE, BY COUNTRY

Country	Flush toilet users that did <b>not</b> desire to change anything about their sanitation situation (%)	Pit latrine users that did <b>not</b> desire to change anything about their sanitation situation (%)	Pit latrine users that reportedly could <b>not</b> afford a flush toilet (%)
Albania	66		
BiH	88		
Croatia	79		
Kosovo	64	29	55
Moldova	52	22	65
Romania	89	18	46
Ukraine	69	39	51
Average	72	27	54

SOURCES: COUNTRY-SPECIFIC HOUSEHOLD SURVEYS.

Note: No data was reported on pit latrine characteristics for Albania, Bosnia and Herzegovina, and Croatia because very few households use pit latrines and the sample size was extremely small.

**Most flush toilet users are fully satisfied with their sanitation situation; the lowest levels of satisfaction are in Moldova, Kosovo, Albania, and Ukraine (50 percent to 70 percent). Most pit latrine users (roughly 60 percent to 80 percent) are clearly not satisfied with their sanitation situation and aspire to the same living standards as flush**



**toilet users.** Figure 4.17 presents the share of households that state they are fully satisfied with their sanitation situation (do not desire to change anything) among flush toilet and pit latrine users, respectively. Flush toilet households that were not satisfied reportedly desired to connect to sewerage services and some were dissatisfied with the on-site disposal of faecal sludge, that caused smells or other nuisances.

**Since the expansion of sewer systems in rural areas may not be economically feasible or justifiable in the medium to long term, it is important to ensure that the transition from pit latrines to flush toilets is accelerated and well-managed.** The role of local governments in ensuring that adequate on-site facilities are constructed is essential; however, interviews with local governments indicate that they are not much involved in the promotion and supervision of construction of on-site facilities. Most local governments do not have equipment to support emptying practices, and such services are not offered by utilities (except for Ukraine). While local governments indicate interest in developing sewer systems for their localities, willingness to pay for such services in countries with low access illustrates other priorities for households now using pit latrines. Willingness to pay for sewer connections is higher in Kosovo and Croatia, where public piped water and sewer access was also higher (figure 4.16).

**With increasing use of flush toilets and septic tanks, more attention is needed for the management of the sanitation service chain in rural areas.** The articulation of comprehensive rural sanitation strategies that cover both rural and urban areas not omitting agglomerations below 2,000 people is needed. Such strategies should also promote appropriate individual systems (AIS) for agglomerations below 10,000 population equivalent. Such strategy should consist of decentralized low-cost solutions, as well as on-site solutions with adequate desludging. Smaller settlements of 2,000 or fewer inhabitants must be part of such strategies, even if they are not included in compliance targets. Rural and small-town sanitation strategies are important for countries in pre-accession stage, as well for member states such as Romania, where rural sanitation is in a poor state and compliance for smaller settlements is behind targets. Roles and responsibilities of local governments, rural service providers, and private sector will need to be well articulated and capacities built accordingly.

## 5. RECOMMENDATIONS FOR SUSTAINABLE SERVICES FOR ALL

This chapter discusses policy recommendations to expand, improve, and sustain rural water and sanitation services. It draws on examples from other countries that have addressed specific challenges of rural service provision. It is recognized that country factors, institutional context, ongoing reforms, and the existing landscape of service providers have a great bearing on individual country directions. The recommendations are structured as follows:

- ▶ Section 5.1 includes **recommendations at the national level** for developing a conducive, enabling environment for rural water services. It argues for a portfolio approach supporting different service delivery models appropriate for each country context.
- ▶ Section 5.2 focusses on **recommendations at the service provision level** for improving access and quality of services. It emphasizes the need for specific requirements to support different service delivery models in different circumstances:
  - Regional and urban utilities, when regionalization is pursued as a vehicle to address urban-rural inequalities;
  - Local operator model, when local operators continue to play a dominant role in reaching rural areas;
  - Supported self-supply, which will be a critical part of the solution for universal safe access.
- ▶ Section 5.3 discusses recommendations for how to tackle the **rural sanitation** challenge.
- ▶ Appendix E includes country-specific recommendations in the **country overviews**<sup>110</sup>.

### 5.1. Developing a National Enabling Environment for Universal Access

#### 5.1.1. Realizing the SDGs by Adopting Multiple Service Delivery Models

**Rural water and sanitation services are at the heart of the inclusive development agenda promoted by the Sustainable Development Goals (SDG).** As signatories to the SDGs, national governments of the region should step up their engagement and support the realization of the human right to water and sanitation. In the international arena the water and sanitation access agenda is increasingly visible, yet it often remains absent from national policy dialogues and public debates because rural citizens are poorly represented and have a weak voice.<sup>111</sup> The proposed revisions to the European Union (EU) Drinking Water Directive (DWD) signal the increasing importance of inclusive services to member states and accession countries and thereby contribute to meeting the SDGs.

**For Moldova, Romania, and Ukraine, the picture of rural services is alarming, and a drastic acceleration of the rate of change in rural areas is required. If not deliberately addressed through national policies and programs, universal access will not be achieved until 2040 or beyond.** Despite the well-known demographic and economic challenges of declining rural populations, governments are the duty bearers for social services in rural areas and are responsible for basic dignified living conditions for their citizens. Especially in countries with small units of local self-government, state responsibilities for essential services cannot be simply discharged to rural citizens, communities, and weakly funded, low-capacity local governments.

**It is recommended that countries carefully analyze their current situation and structure of service provision to determine the portfolio of service delivery models that can most effectively achieve universal access.** With the

<sup>110</sup> Country notes (World Bank, 2018b) will be available at the website of the Danube Water Program [www.danube-water-program.org](http://www.danube-water-program.org)

<sup>111</sup> At the global level, effective engagement of civil society organizations and global partnerships have helped to raise the visibility of the water and sanitation access gap (<http://sanitationandwaterforall.org/>).



endorsement of the SDGs, country governments are committed to strive for universal access to affordable and safe drinking water services by 2030. This means that services are accessible on premises, available when needed, and free of contamination—a commitment that goes beyond the requirements of the EU DWD.

**In most countries, to achieve the SDGs, a portfolio approach will be needed that adopts different service delivery models to reach different rural population segments.** Rural access challenges cannot be addressed through a one-size-fits-all approach to service delivery. Although regional service providers may be able to reach a substantial share of the rural population, parallel local operator models may continue to play a crucial role in bringing services to villagers, especially in those countries where regional and urban utilities are not able to reach these segments in the medium or long term. At the same time, there will be populations, although shrinking in size, located in dispersed and small settlements, for which a piped networked system may not be a feasible option and, therefore, self-supply through individual sources is the only viable alternative. Hence, the trajectory for reaching universal access is shaped by country realities in terms of access levels, the existing service provider landscape, and demographics. The combination of service delivery approaches will also change over time, as the sector structure will evolve.

**The enabling policies, legislative framework, and financing measures must explicitly recognize the different service delivery models required to address all rural needs.** This can be achieved through a utility regionalization approach, a local operator model, or a deliberate hybrid of these two models, combined with supporting self-supply to ensure that all segments of the rural population are reached. Illustrative here is how Austria has developed excellent drinking water services by recognizing and supporting urban utilities, a range of decentralized management models, as well as services for households reliant on self-supply (see box 5.1).

#### **Box 5.1 Lessons from Austria: a successful service delivery model**

Austria is characterized by a highly scattered population, with about 56 percent of the Austrian population living in towns with less than 10,000 inhabitants. Municipalities are the dominant service providers, with large and small municipal utilities serving nearly 70 percent of the population, regional utilities 11 percent, water supply cooperatives (more than 3,400 in total) serving 11 percent and the remaining 8 percent relying on piped self-provision. About a quarter of Austrians are served by small utilities, supplying fewer than 5,000 inhabitants. With an average population of 1,427 inhabitants per utility, the water sector is extremely fragmented. It should be noted that Austria's legal framework has recognized several legal management models for rural service provision, including cooperative management of systems owned by community members—licensed as a form of public water supply under the Water Act. There are several umbrella associations—typically, one in each state—that provide professional services and function as communication and advocacy platforms. To ensure the accessibility, quality, and safety of water service provision, Austria has put in place subsidy schemes and capacity building measures to incentivize adequate service provision.

#### **Financing**

The financing of the infrastructure investment is based on three pillars: (i) contribution of the owner of the scheme; (ii) subsidies at the regional level managed by the individual “Bundesland” (or federal state); and (iii) subsidy at the national level managed by Kommunalkredit Public Consulting. The owner's contribution is provided by municipalities or cooperatives through self-financing or commercial loans. Specific procedures exist for small and very small systems—for example, water cooperatives in rural areas—to keep the contribution for the owners at an affordable level and maximize the use of public funds. First, the scheme owner or cooperative acquires a license in accordance with the Water Act and submits a project application at the state level, including technical, environmental, legal, and economic assessments. States usually provide support to applicants in the preparation of this project application. To qualify for a national subsidy, a minimum water service tariff of €1 per m<sup>3</sup> for water and €2 per m<sup>3</sup> for wastewater is required to guarantee the sustainability of the scheme and recovery of all assets. The level of subsidy depends on the socioeconomic and topographical conditions of each municipality. In this way social aspects of affordability and unfavorable conditions are factored in (remoteness, mountainous area). Maximum national subsidy rates are 25 percent for water supply and 40 percent for wastewater. Usually they are matched by similar levels of state-level subsidies.

#### **Capacity Building**

Austrian law requires that personnel who operate drinking water utilities have special education and training in the technical management of water supply and sanitation in order to safeguard proper management and safe drinking water quality. The Austrian water associations (ÖVGW and ÖWAV) are

key providers of education and training in the sector. ÖVGW has introduced a certification process for service providers linked to the educational requirements for local system operators at different levels of expertise. Several umbrella associations, such as the Association for Upper Austria (OÖ Wasser) with 1700 members, and the Salzburger Water Cooperative Association, have adopted these curricula and provide education and training for cooperatives and small utilities on a regular basis at the local level. These practical curricula are tailored for different professional positions that are critical for the management of small water and sanitation facilities. Umbrella associations organize meetings for professional networking that are key to sustaining the motivation, awareness, and operational competence of cooperative management and their staff. The umbrella organizations also provide support on technical, legal, financial, and organizational issues to its members. For example, some cooperatives provide operational and maintenance services (technical assistance, emergency supply, mobile technical equipment), bulk purchase programs (for water meter purchase and water analyses, for example), and measurement services (such as leak detection, pipe and valve location, flow rates and pressure, and aquifer tests). Umbrella associations, in collaboration with state-level ministries, such as in Upper Austria, are tasked with organizing technical audits every five years for rural water systems to ensure they function optimally and remain in top condition. They also offer services to self-supply households, such as mobile water quality testing, and make information packages available to households.

For more information, see [www.oewasser.at](http://www.oewasser.at), [www.wasserversorger.at](http://www.wasserversorger.at), <https://www.bmnt.gv.at/wasser/wasser-oesterreich/foerderungen>, and <https://www.ovgw.at/wasser/fortbildung/>.

## 5.1.2. Developing an Enabling Environment for Rural Water Services

**To achieve universal access, governments need to deliberately create an enabling environment for rural water services, with policies and program measures tailored to rural areas.** While vastly different from Austria's decentralized approach, several lessons can be learned from Kosovo's experience, and box 5.2 illustrates how the national government has prioritized and addressed the urban-rural water gap.<sup>112</sup>

### Box 5.2 Lessons from Kosovo: creating an enabling environment for rural water supply services

#### Rural service provision in Kosovo is characterized by the following enabling conditions:

- ▶ A clear legal framework, strategy, and targets for rural public piped water access linked to the establishment of seven regional water companies (RWCs) overseen by boards of directors representing state and local interests.
- ▶ A long-term dedicated and phased investment program to support improvement and expansion of services to rural areas, financed through government and external funds; investments were used for expansions of the urban network into nearby villages, the construction of new rural standalone systems, and the rehabilitation and integration of existing standalone systems under RWC management.
- ▶ A nationwide inventory to determine different categories of water systems, identify assets of all functional and dysfunctional systems not managed by RWCs, and prioritize investment.
- ▶ A dedicated technical assistance program that supports RWCs and municipalities during the integration of local water systems, such as community outreach and facilitation of discussions with local operators to address hesitation to join RWCs and popular resistance, for example, relating to tariff increases.

**The five elements of the enabling environment need to be put in place: institutional capacity, financing and affordability, asset management, water resource management, and monitoring and regulation.** This leads to the following recommendations for national agencies (see table 5.1 for more details):

- ▶ Develop sector strategies, legislation, planning, and financing frameworks that recognize all relevant rural service delivery models.

<sup>112</sup> It is recognized that Kosovo's territory and population size are relatively small and its specific post-conflict situation has perhaps allowed a more top-down approach to reforms than may be possible in other settings.



- ▶ Set up targeted investment programs for rural areas as part of a national investment framework aligned with the intended service delivery models.
- ▶ Clarify ownership of assets under different management models; fund and implement an inventory of rural water assets with service authorities.
- ▶ Develop regulatory instruments, such as tariff and licensing policies, suitable for local operators in rural areas, and ensure that water permitting is implemented by relevant water management entities to minimize conflicts around water use.
- ▶ Establish performance monitoring systems and oversight arrangements for rural service providers with increased attention to water quality.

**TABLE 5.1: RECOMMENDATIONS TO IMPROVE THE ENABLING ENVIRONMENT FOR RURAL WATER SERVICES AT THE NATIONAL LEVEL**

<b>Institutional capacity</b>	<ul style="list-style-type: none"> <li>– Recognize rural services as part of a broader development agenda, balancing the tendency of urban-biased programs and policies.</li> <li>– Develop an overarching sector strategy, legislation, and planning framework that explicitly addresses urban-rural inequalities through phased targets.</li> <li>– Ensure that the portfolio of service delivery models is reflected in policies and programming measures.</li> <li>– Develop training programs and build capacity of service providers, including local ones, and local governments to implement their mandates; this may require programs or institutional solutions to overcome fragmentation.</li> <li>– Create decision-maker support for a supported self-supply model; implement and evaluate a pilot program.</li> </ul>
<b>Financing and affordability</b>	<ul style="list-style-type: none"> <li>– Develop dedicated funding windows or earmark national funds to ensure that a slice of national sector programs are directed to investments in rural areas.</li> <li>– Develop transparent guidelines for prioritization (e.g., based on safety risks, low access, willingness of co-investment from local level).</li> <li>– Introduce stronger incentives, conditionality, and accountability to finance rural expansion as part of investment funds for regional and urban utilities.</li> <li>– Develop and implement pro-poor measures to address connection barriers for the poor and vulnerable (e.g., minorities).</li> <li>– Ensure that tariffs remain affordable, when needed, through social tariffs, while optimizing cost recovery.</li> </ul>
<b>Asset management</b>	<ul style="list-style-type: none"> <li>– Clarify asset ownership for all management models and adapt legal framework to formalize all management models in line with realities and vision on service delivery; ensure that legal framework is widely understood.</li> <li>– Support at-scale asset inventories in rural areas to identify investment needs and support asset transfers under aggregation of service delivery models.</li> </ul>
<b>Water resources management</b>	<ul style="list-style-type: none"> <li>– Support local governments and all service providers in ensuring that water abstraction permits are secured and that local conflicts are addressed.</li> <li>– Carry out campaigns to ensure that misuse and unauthorized use of drinking water for agriculture is minimized.</li> </ul>
<b>Monitoring and regulatory oversight</b>	<ul style="list-style-type: none"> <li>– Develop simple licensing for all operators, link licensing to performance monitoring systems for all water service providers, including simplified indicators to measure performance of local water operators.</li> <li>– Develop oversight for adequate tariff setting by means of guidelines and external checks that are suitable for the conditions of local water operators.</li> <li>– Increase transparency on water quality information for rural water services through dedicated water safety programs.</li> <li>– Develop relevant instruments for regulating self-supply supported with behavioral, communication, and economic instruments.</li> </ul>

### 5.1.3. Reaching Poor Households with Rural Water Services

**Exclusion of poor households does not seem to be driven by their inability to pay regular water fees, but rather by not guaranteeing their access to public systems.** Monthly expenditures on water service fees in rural areas are well within affordability limits for poor households, but connection costs and fees are problematic in Moldova, Romania,

and Ukraine.<sup>113</sup> The following recommendations are made to ensure inclusive services:

- ▶ Implement targeted social support initiatives to address connection barriers for poor and disadvantaged populations, potentially also for self-supply support.
- ▶ Combine social subsidies with targeted outreach and communication on complementary financing options. Such financing options can be organized through installment payments as well as microloans, or microsavings products as is being done in several countries around the globe.<sup>114</sup> Financing options may also be offered to households that intend to improve their self-supply arrangements.
- ▶ Ensure that tariffs remain within affordability limits for poor households and, when necessary, apply social tariffs targeted to vulnerable groups.

**The geographic distribution of subsidies for capital investments will have the largest impact on reaching socially disadvantaged groups in rural areas.** While social tariffs and connection subsidies are important when systems already exist or will be build, inclusion starts with ensuring that prioritization criteria of national investment programs reflect poverty rates and marginalization to increase access in such disadvantaged localities. As explained in box 5.1, the allocation of national and state-level subsidies to support capital investments in water and sanitation in Austria is based on many criteria, an important one being the socioeconomic conditions of the municipality and the geographic conditions that ultimately shape the subsidy rate for a given project.

## 5.2. Improving Delivery Models at Service Provision Level

The recommendations that follow are based on the understanding that different models may be required in parallel in a given phase of a country's sector evolution (see section 5.1.1).

### 5.2.1. Regional Utility Model: Lessons and Recommendations

**Regionalization of service provision has resulted in several positive outcomes for rural service provision, although the process has not been equally successful in all countries** (see section 3.2 and chapter 4). Several factors contributing to Kosovo's experiences have been mentioned (see box 5.2); the evidence from Croatia and Romania presents valuable complementary lessons (boxes 5.3 and 5.4).

#### Ensure that expanding access is an explicit objective of regionalization

**Croatia's experience shows that medium-sized multicity utilities have been successful in reaching rural areas aided by a legal mandate to expand services across the entire service boundary.**<sup>115</sup> Although the connection rate remains the highest in cities (97 percent), slightly lower in municipal towns and suburbs (77 percent), and the lowest in rural areas at 67 percent, this situation represents a significant improvement over the past ten years, with a reduced reliance on local water suppliers.<sup>116</sup>

<sup>113</sup> Water expenditure is lower than 3.5 percent of the monthly income for households at the national poverty line. This is the case not only for people served by local operators but also for those served by regional and urban utilities, who typically pay a higher percentage than those served by local operators.

<sup>114</sup> See for example the website of Water.Org [www.water.org/about-us/our-work/watercredit/watercredit-toolkits](http://www.water.org/about-us/our-work/watercredit/watercredit-toolkits)

<sup>115</sup> This expansion was achieved without having undergone a further consolidation into 20 larger consolidated regional utilities. The originally planned regionalization process into around 20 large utilities was stalled in 2015 due to a change of government and lack of political buy-in (World Bank 2017a).

<sup>116</sup> In 2014 serving 8 percent of the rural population, down from 16 percent in 2008. In 2014, the remaining rural households used self-supply, with a high proportion reporting household water treatment practices and indoor accessibility.



### **Box 5.3: Lessons from Croatia: expanding access and integrating rural systems under a multicity utility model**

#### **Success factors contributing to rural service expansion**

- ▶ The 2010 formation of over 150 multicity utilities proved an effective vehicle for delivering public water services. Their legal mandate was to provide services within the entire administrative territory of the municipalities they covered, typically 3 to 4, often clustered around the 127 towns. Incumbent local providers were inventoried and gradually integrated under multiyear investment plans.
- ▶ Public funds, delivered through a multiyear investment program of Croatian Waters, were prioritized to areas with connection ratios below 80 percent (for settlements above 50 people); hence, many rural areas were reached.
- ▶ National leadership to support the reform was key for the motivation of the rural expansion, as suggested by interviews.
- ▶ Support to the integration of local water systems is high, both from municipalities and utilities, and benefits of improved and expanded services are clearly recognized.
- ▶ Resistance to tariff increases has been overcome through active municipal involvement and negotiated gradual fee increases in joining municipalities. Local governments also approve temporary development fees to pay for investments to improve services.

## **Create strong financial incentives for service providers and local governments to collaborate**

**Although Romania's aggregation process over the past decade has focused on improving sector performance through better management, professionalization, and creation of economies of scale and scope, it has been less successful in addressing rural-urban service gaps.** Aggregation was achieved through the delegation of services to county-level regional operating companies (ROC), answerable to local government shareholders joined in intercommunal development associations. There are several excellent examples of how ROCs have expanded coverage in rural areas,<sup>117</sup> and approximately 40 percent of all those served with public piped access enjoy professional services from ROCs. At the same time, the aggregation process has failed to reach larger shares of the rural population. As the aggregation has not delivered the expected benefits, many local governments continue to operate their own water systems. More than 1,000 licensed municipal service providers exist, serving the other 60 percent of the connected rural population. Overall, the reform has seen slow progress for rural water service expansion, estimating 40 percent rural coverage with public piped access in 2016.

**Experiences in Kosovo, Croatia, and Romania indicate that strong financial incentives and subsidies are required to prioritize equity objectives of aggregation, combined with slices of national investments directed to rural areas.**

### **Box 5.4: Understanding Romania's rural water outcomes under a regionalization model**

#### **Limiting factors for progress on rural water access in the context of regionalization:**

- ▶ Investment programs that focused on city and town wastewater collection and treatment infrastructure. Driven by EU compliance and pending infringement procedures (World Bank 2018b) wastewater priorities diverted attention from basic rural water services.
- ▶ Cherry-picking behavior (expansion in more commercially attractive areas) slowing down progress in rural areas; limited influence of rural communes on IDA and ROC investment decisions leading to several cases of communes' withdrawal from IDAs and ROCs.
- ▶ Widespread negative perceptions among local governments that expected benefits of joining IDAs and delegating services to ROCs do not outweigh the negative consequences, such as tariff increases, loss of autonomy, and delayed investments.
- ▶ The voluntary nature of regionalization, combined with local interests, allowed the pursuit of parallel service delivery models, slowing down momentum for reform.
- ▶ Access to national funds for water supply investments at the municipal level was limited; limited capacities of local governments did not facilitate fast expansion by local service providers.

117 A detailed case study on aggregation in Raja Constanta and Brasov utilities can be found at <http://www.worldbank.org/en/topic/water/publication/water-aggregation-toolkit#4>.

## Establish inclusive governance mechanism to give voice to weaker local governments

**Under a regionalization approach spanning multiple local governments, an inclusive governance model is needed to represent the interest of economically weaker rural local governments.** This is especially important when starting with high inequalities in access among local governments. The governance structure should be complemented by transparent accountability mechanisms and time-bound targets for closing the urban-rural access gap. As explained in box 5.4 for Romania, the decisions of the intercommunal development association (IDA) may be dominated by the interest of the county's urban seat, while each IDA typically has several dozen communal shareholders (up to 100). Moreover, there was no agreed upon and monitored timeline for the expansion of services when local governments joined IDAs and ROCs. This ultimately led some local governments to withdraw from regionalization because no improvements had been realized after almost a decade.

## Increase customer support and communications to understand and improve satisfaction

**Utilities need to consider increased customer support and communication outreach in rural areas to improve customer satisfaction, especially when integrating standalone systems.** For example, in Croatia, household satisfaction with customer-facing services was lower for those served through standalone systems than it was for those connected to the urban networks. Integration of rural standalone systems under regional utilities requires additional efforts for customer outreach with easily accessibility contact points for rural customers. In Romania, customer satisfaction for ROCs was not more favorable than for municipal operators, even though the former deployed more professional business practices and service outcomes were better. This points to the need for better communication with and support for newly acquired customers.

## Address customer concerns, specifically on water quality, and improve business practices

**Understanding and addressing customer concerns and specifically addressing water quality information is important for addressing concerns and articulating the benefits of a service connection.** For Kosovo and Albania, the integration of rural water systems requires noticeable improvements of service levels to drive customer satisfaction, including proactive sharing of information on water quality and improving basic business practices, especially to address illegal connections. In Romania, the data also revealed that customers were least satisfied with utilities' information sharing on water quality.

## Adopt management information systems to diagnose and steer performance of rural systems

**Utilities that are integrating many standalone systems need to understand system-level performance to identify underperforming systems and plan investments accordingly.** Information systems need to be able to carry out such system-level analysis. It was found that granular management systems that could deliver key performance data at system level were not in place in most regional utilities. This is especially relevant for utilities with large customer bases served through rural standalone systems. Clearly, the starting capacity of the utility will be an important determinant for the success of the integration of rural systems.<sup>118</sup>

**To sum up, the integration of rural water systems comes with new challenges that regional utilities should tackle proactively.** These include guaranteeing service levels, increasing customer satisfaction, as well as internal management processes to better manage performance at scheme level.

## Consider alternative collaborative arrangements between local operators and regional utilities

**Countries that are embarking on aggregation may also consider alternative options to mergers or delegation, such as collaborative arrangements.**<sup>119</sup> In a context where local service providers remain autonomous and performance is weak, professional larger utilities could provide technical support in specific functions, such as implementation of investment and rehabilitation needs, or technical backstopping. Such support arrangements could be financed through public funds with contributions from local service providers, as per contractual arrangements. Such

118 As also concluded and discussed further in World Bank (2017a).

119 Or sometimes special purpose vehicles, such as the SISAR model in Brazil; see World Bank (2017b).



collaboration may pave the way to building trust, developing capacities of local operators, and potentially facilitating the aggregation process at a later stage.

**Experiences from Ceará, Brazil, illustrate how a state-level utility is supporting federated rural service providers in complex tasks required for the expansion and improvement of service levels** (see box 5.5). These federations comprise all community-based service providers at the village level, operating within a watershed.

#### **Box 5.5: Example of aggregation model for rural service provision (SISAR), Brazil**

In Ceará, Brazil, the SISAR model (Integrated Rural Water Supply and Sanitation System) builds on the strengths of community management, complemented by the possibility to professionalize operators through a federation and the technical assistance from the state water supply company (CAGECE), resulting in performance improvements. The model engages three entities with different, but clearly defined, tasks in service delivery:

- ▶ The member associations of SISAR are responsible for daily operations such as switching on pumps, minor local maintenance (e.g., small leakage repairs), water meter readings, and handing out water bills, as well as raising user awareness raising and promoting hygiene;
- ▶ The SISAR federation is responsible for major maintenance, water quality testing, billing and tariff collection, and small expansion works. It is split into eight regional units, derived from watershed boundaries, typically serving around 75,000 people. They are responsible for monitoring, planning, and organizing maintenance work; SISAR federation owns assets such as office space, maintenance equipment, and tools.
- ▶ CAGECE, the state utility, is responsible for supervising the implementation of new rural water systems or major rehabilitation works, thereby ensuring the technical quality of construction. In addition, CAGECE carries out performance monitoring of SISAR and delegates staff and equipment to SISAR units and, finally, it provides laboratory facilities—but all of these services are paid for by SISAR. CAGECE also remains the owner of the operating assets.

A critical aspect of this model is the way in which in the financing of the costs is aggregated. The tariff structure includes clearly established guidelines to define which part of the tariff remains at member association level, and which part goes to the federation level. Moreover, there is predictable public finance for the replacement of major infrastructure components. State level public funds are delivered through CAGECE for new investments in rural areas.

See also <https://openknowledge.worldbank.org/bitstream/handle/10986/28382/119890-WP-PUBLIC-6p-P159188-21-9-2017-10-39-35-W.pdf?sequence=1&isAllowed=y>.

## 5.2.2. Local Operator Model: Lessons and Recommendations

**In countries where local operators are part of the solution to reach universal access, challenges arise to make such a decentralized model work well.** In Bosnia and Herzegovina, Moldova, Romania, and Ukraine, hundreds or sometimes thousands of local service providers continue to be the main vehicle for rural service provision, at least in the medium to long term, while at the same time this model has not received much public support.

### Develop sector legislation and licensing schemes for local operator models

**To better manage fragmented rural services, local management models need to be recognized in the legal framework, requiring the use of simple licensing and service agreements.** In Moldova, rural services are delivered through hundreds of municipal enterprises, consumer associations,<sup>120</sup> and informal community groups that operate outside the water law and are not licensed. Bosnia and Herzegovina does not yet have a comprehensive national strategy, and rural service provision is fragmented with hundreds of local operators often outside the legal framework. As can be seen in table 5.1, the enabling conditions for rural water providers are critical. This starts by removing ambiguity in the legal framework regarding their status and ensuring that all operators are adequately registered and receive an operating license. Service agreements with local governments must also be put in place.

<sup>120</sup> They are recognized in sector strategies and under general law, but not under the Law on Water.

## Improve asset management and performance monitoring for rural providers

**Asset inventories should be fielded to support local governments in this complex task of asset management. Such inventories should be linked to user-friendly performance monitoring systems that are specifically designed for local operators and service authorities.** Following the motto “you don’t manage what you don’t measure,” establishing a national monitoring system for local operators is critical to understanding how the rural populations are served, the status and functionality of rural water system infrastructure, and key operator performance indicators. The use of such data can contribute to better asset management and inform national and subnational investment plans. Ideally, such a system also monitors whether local operators have access to professional technical support services to increase the sustainability of operations. Box 5.6 explains a successful rural water performance monitoring system that was developed and implemented in more than 10 countries in Latin America.

### **Box 5.6: Example of the Water Supply and Sanitation Monitoring Systems – SIASAR – for rural water service providers in Latin America.**

SIASAR (Rural Water and Sanitation Information System) is a mapping and monitoring system for rural water and sanitation originally developed and applied in 2011 by the governments of Honduras, Panamá, as well as Nicaragua with support from the World Bank and other development partners. It was developed to assist water sector policy makers, practitioners, and national planners to monitor the development and performance of rural water supply and sanitation services, which were often delivered through hundreds or thousands of local service providers. SIASAR consists of a series of predefined parameters, which are used to calculate performance indicators of four elements:

1. The community—describing the water and sanitation coverage, including households, schools, and health clinics in the community;
2. The water supply system—describing the functioning of the system, the individual infrastructure elements, and the service levels provided;
3. The service provider—describing the performance of the provider in its tasks of operation and maintenance using technical, financial, and administrative measures;
4. The technical assistance providers—describing the performance in providing technical assistance to service providers;

For each of these four elements, a score from A (good) to D (out of order or inadequate) is calculated based on the defined indicators. This serves to understand if local communities can address issues themselves or require external support or investments and helps to understand the risks to sustainability. The data from SIASAR can be uploaded via phone or tablet to a central database, after which a desktop validation by the system administrator takes place. The data—both the individual indicator values and the overall scores—are publicly available via the SIASAR website, in the form of a map and underlying databases. SIASAR is operational in eight Latin American countries, including the State of Ceará (Brazil), and covers more than 11 million rural water users.

More information can be found at [www.siasar.org](http://www.siasar.org) and (World Bank 2017d)

<http://www.worldbank.org/en/results/2017/04/04/improving-rural-water-sanitation-information-systems-latinamerica>.

## Improve service levels by addressing reliability and water safety

**Service level outcomes for local operators were somewhat lower than for regional and urban utilities, especially for reliability of services.** Investments to improve reliability should be prioritized because they are critical for customer satisfaction. If done under local operator management, external support and technical assistance are needed to ensure that financial and technical operation of infrastructure can be sustained.

**Local operators show ample scope for improving their water quality management. In Bosnia and Herzegovina, Moldova, Romania, and Ukraine this could be done through local water safety plans, water quality monitoring and investments in treatment or disinfection systems.** Local operators typically have no disinfection facilities—except those in Croatia and Romania—whereas systems managed by urban and regional utilities usually have such systems in place. Similarly, local operators do not have capacities for routine water quality monitoring and therefore fail to perform regular water quality tests, relying on public health inspections only. Informed by water safety guidelines for small systems, as for example developed in Moldova, a national rural water safety program needs to be launched,



including safety and risk assessments, dedicated investment funds for improvements in treatment works and disinfection stations, as well as training and follow-up support for local operators for water quality monitoring and adequate operation of treatment facilities.

## Implement tariff guidelines tailored to the needs of local operators to raise cost recovery

### Due to low tariffs and cost recovery, local governments often provide operational subsidies and emergency repairs.

Without adequate tariff oversight, local tariffs are unlikely to be covering the full costs.<sup>121</sup> Scarce local government resources are at least partially used for operational subsidies and capital repairs even though such expenses should typically be funded through tariffs.

### Better oversight and use of tariff guidelines for local operators is required to overcome low willingness to charge of local governments.

To facilitate their adoption, tariff guidelines should be tailored to the abilities and information situation of local operators. Box 5.7 presents an example of Colombia, where local service providers initiated the development of a tailored tariff methodology suitable for rural situations to avoid low willingness to charge of local governments. In the Philippines, tailored regulatory framework and simple tariff setting regulations have been developed in combination with technical assistance to facilitate their implementation.<sup>122</sup> The implementation of tariff guidelines can help to increase revenues and performance and protect local operators against low willingness to charge of local governments. Increased revenues combined with external funds could then be used to move from “emergency repair mode” to a “deliberate performance improvement approach.”

#### Box 5.7: Example of the development of tariff guidelines tailored to rural communal service providers in Colombia

In Colombia, while 11 large utilities serve around 70 percent of the country's population, over a thousand small local operators serve the remaining 30 percent in rural areas and small towns. The national Water Regulatory Commission (CRA) is responsible for setting the regulations, guidelines, and methodologies for water service providers throughout the country.

Tariff regulating frameworks have been divided between large service providers and small providers serving up to 5,000 connections in small towns and rural areas. As in many countries, policies and regulations have been urban focused and the regulatory approach has been developed with urban areas in mind. Thus, tariff-setting methods were found to be too complex and not suitable for rural service providers. As part of a revision of the regulatory framework in 2014, CRA agreed to carry out a participatory review of the regulatory framework for small service providers, involving several communal water service providers.

Based on this consultation, communal service providers expressed a clear preference for a regulatory framework that would not rely on local self-regulation, as this was thought to lead to conflicts and tariffs that were too low in many circumstances. Instead, communal service providers preferred a tariff policy and methodology approved by the regulator, which was simple to apply and adapt to the rural context. For example, the policy stipulates that operational and maintenance costs need to be fully covered, while investment costs for expansion and replacement of capital assets are to be financed through public funds based on investment plans. The regulation also sets service delivery goals and quality standards that must be met by communal water providers.

After public consultations in 2015 and 2016, a new tariff regulation for communal service providers was approved in December 2017. While the national Water Regulatory Commission defines the regulations, it is the national Control and Monitoring Agency that is responsible for supervision, support and monitoring to ensure that communal service providers operate in compliance with the new standard.

See also <http://www.cra.gov.co/seccion/inicio.html> and

[https://rwsnforum7.files.wordpress.com/2016/11/full\\_paper\\_0248\\_submitter\\_0308\\_vargas\\_ramirez\\_miguel.pdf](https://rwsnforum7.files.wordpress.com/2016/11/full_paper_0248_submitter_0308_vargas_ramirez_miguel.pdf).

121 Tariffs for local operators typically ranged between €0.40 and €0.50 per m<sup>3</sup>. They were in the same range as those of regional and urban utilities in Moldova and Bosnia and Herzegovina, although substantially lower than ROC tariffs in Romania. In Ukraine tariffs of municipal enterprises were extremely low.

122 See, for example, <http://blogs.worldbank.org/eastasiapacific/water-access-philippines-fixing-institutions-fix-pipes>.

## Institutionalize and fund support functions and capacity building programs for local operators and local governments

**National technical assistance programs need to be established to support the much-needed performance improvements of local service providers as well as their local governments.** Small and low-capacity local governments in rural areas are often left ill-equipped and under-resourced to fulfil their mandate and adequately support the service providers in their territory. Data showed that business practices and operational performance of local operators is weaker than that of regional and urban utilities. This is no surprise given the absence of systematic technical assistance programs for local operators. Such programs should help local operators and their service authorities to comply with regulatory and administrative requirements. They should also focus on improving business practices, and simple performance improvement plans could be developed with the help of technical assistance providers. Such plans could cover improved metering and loss recording, installation of simple disinfection, use of water quality testing equipment, application of software for billing and accounting, and measures to upgrade staff skills in technical and commercial operations.

**Global experiences underscore that support functions should be clearly assigned, institutionalized, and funded to address capacity gaps of local operators; delivery mechanisms should be adapted to the local context.** For sustainability reasons, systematic post-construction support programs for local operators are needed and require public resources. Technical support programs can be delivered in a multitude of ways, such as through a large public utility or a state-level entity, through a program with certified training providers, or through federations or umbrella association so that members can receive adequate support (see box 5.1 and box 5.5).<sup>123</sup> Currently, utility associations in countries such as Bosnia and Herzegovina, Moldova, Ukraine, and Romania typically have urban and regional utilities as members and no platforms for supporting local operators exist. A notable positive exception is Moldova, where the association of local governments (CALM) offers consultant and support services on a pilot basis, funded with development partner support.

### Consider public-private partnerships to professionalize the local operator model

**Finally, another way to bring in professional capacities into rural areas is through public – private partnerships (PPP) with the local private sector.** Although the presence of local private sector in rural areas in the study countries was very limited, it is recommended to further explore such arrangements through pilots, where appropriate. Such partnerships may require the clustering of systems across several local governments to make the proposition commercially interesting. Experiences with innovative domestic public-private-partnerships for small towns in other countries, notably in West Africa, have shown promising results (Water and Sanitation Program 2015; Ndaw 2015).

## 5.2.3. Supported Self-Supply: Lessons and Recommendations

### Advocate for supported self-supply as a complementary model to reach universal access

**If universal access to piped water supply is to be achieved, a supported self-supply model will be a part of the solution, as is the case in some Western countries with dispersed rural populations.** It can be the most cost-effective service delivery approach in very dispersed areas. It may also be an interim solution for a larger rural population share if investments in a centralized piped system are not feasible in the medium to long term. Moreover, with rapidly declining rural populations, supported self-supply can be a viable alternative to long-term lumpy investments in centralized water systems, especially in the face of uncertain population trends.

**Supported by national and local initiatives and policies, a supported self-supply model can mitigate public health risks by improving the quality and quantity of water delivery.** Although satisfaction with water quality from self-supply sources in the studied countries is generally high (79 percent), households are neither testing their wells regularly (30 percent), nor treating water before consumption (34 percent). In Ukraine, Moldova, and Romania, a low share of self-suppliers (25 to 40 percent) have been able to afford investment in in-house access, which usually

<sup>123</sup> There are also experiences of umbrella associations in other Latin American countries, as well as in Africa and Asia. In the Philippines, the regulator provides technical assistances to small utilities through certified training providers, as documented in World Bank (2017b).



facilitates better hygiene practices due to increased water usage. In addition, manual fetching (30 to 67 percent) exposes self-suppliers to additional pathogen risks.

## Register self-suppliers and analyse results of sanitary and water quality inspections to inform policy

**Starting with high priority areas, where self-supply is prevalent and public health risks are documented, all self-supply sources should be registered by local or subnational governments.** All studied countries lacked an inventory of existing individual self-suppliers at the national, regional, or local level. This may limit policy makers' awareness of the relevance and prevalence of this model. Although implementing a comprehensive register may not be feasible in all countries, first steps could be taken by compiling such an inventory in areas where self-supply is prevalent and where groundwater quality risks are known to be present.

**Registration should be accompanied by sanitary and water quality inspection so that the analysis of results can inform follow-up actions.** Such initiatives can help to increase policy attention and support for targeted improvement initiatives, and they can be complemented by regulations that go beyond requirements of the EU DWD.

## Launch communication campaigns and on-demand mobile water quality testing services

**Communication campaigns combined with mobile water quality testing programs are an essential element of a supported self-supply approach.** Mobile monitoring programs could help incentivize self-monitoring due to higher awareness and access to such services. Such a program was carried out in Austria, where households were offered testing services close to their home for a modest fee. Water quality results were at the same time contributing to a better understanding of the quality of aquifers and springs and potential pollution spots. Local and other subnational authorities through their public health departments would play an important role and would need to receive targeted capacity building from relevant national drinking water quality regulators as well as sufficient funds to carry out these campaigns.

## Design, implement, evaluate, and scale-up a pilot subsidy scheme for self-supply improvements

**Governments could consider the creation of a subsidy scheme implemented in collaboration with local authorities.** In such a scheme, self-suppliers meeting certain qualifying criteria can access a matching grant contribution for improving supply access, safety, and hygiene. Eligible costs could include indoor plumbing, water treatment technologies when source quality is insufficient, and internal water storage to avoid contamination.

**While in many middle-income countries the use of subsidies for indoor facilities in urban slums is an acceptable approach, rural households are often expected to be solely responsible for in-house improvements.** Hence, evidence generation is needed to make a convincing case to decision makers that supported self-supply programs in rural areas contribute to public health outcomes and support the SDG achievements. A rigorous design and evaluation of such a pilot scheme is, therefore, a must.

Box 5.8 provides a summary of a private self-supply program in Scotland, where the national drinking water quality regulator implements several of the above measures in collaboration with the local authorities, including a grant scheme. In some of Scotland's local administrations, self-supply rates can be as high as 30 percent, and, given the public health risks, the regulator is considering updating its regulation to incorporate more stringent monitoring requirements applicable to self-suppliers, thus going beyond the EU DWD requirements.

**Finally, self-suppliers within the serviced areas of public providers should be given incentives to connect to the centralized piped system to improve water safety and accessibility. This may require a combination of behavioral and economic instruments.** Self-suppliers have significantly invested in their supply arrangements, and a large share is satisfied with these arrangements, as reliability is often high. Addressing customer perceptions around the benefits of a public service connection is necessary, leveraging their existing concerns over safe water quality. In Moldova, Romania, and Ukraine, 20 to 30 percent of households reported affordability constraints for connecting and as such may require targeted financial support to connect to systems (see also 5.1.2).

### **Box 5.8: Example of self-supply provision in Scotland, U.K.**

#### **Self-Supply in Scotland**

Around 150,000 people in Scotland (around 3 percent) rely solely on private water supplies through over 22,000 registered systems. The Drinking Water Quality Regulator for Scotland (DWQR) sets specific regulations applicable to private water supplies. These include all those households that are not supplied by Scottish Water, the national water supply company, and may range from private supplies serving only one household to those serving several hundred people. In addition to regulations, the Government of Scotland developed a Private Water Supply Strategy, and in 2016, as part of this strategy, it examined current regulations to identify both procedural improvements—that is, what could be done better under current regulations—and substantive improvements requiring changes in the regulations themselves.

#### **The role of the regulator and local government in self-supply**

The DWQR has the role of supervising and providing guidance and advice to local authorities for ensuring that clean, safe drinking water is delivered to those using private water supplies. Private supplies thus fall under local government regulation. The DWQR also reports on compliance with the Regulations to the European Commission. The local authorities are ultimately responsible for regulating and enforcing any relevant regulations. These regulations consider the use of risk assessments from “source to tap” as part of an effective drinking water surveillance program for ensuring water quality and safety. This “source-to-tap” approach is now also included in the proposed EU DWD revisions, although they do not cover supplies below 50 households. The DWQR provides guidance and information to local authorities on technical aspects, such as information on water quality issues that may occur, manuals on how to deal with microbiological, chemical and radiochemical contaminants, as well as physical properties of water sources. It also provides technical guidance documents on treatment processes and a technical manual specific to private water supplies. As part of their communication strategy, the DWQR develops awareness-raising materials, information posters, and stakeholder newsletters, and it regularly carries out private water supply workshops with local authorities.

Local authorities, through their environmental health departments, are required to maintain a register of every private water supply in their areas. This includes information as to the type of supply, the relevant persons, the source, the average volume, and whether there is any treatment. Local authorities recognize two types of local supplies: those serving more than 50 people or commercial or public activities (“regulated” supplies), and those serving only domestic premises (“exempt” supplies, serving fewer than 50 people including individual self-supply). Risk assessments are necessary and water quality needs to be regularly tested for regulated supplies (sometimes as often as three times per month). Risk assessments are not required for individual self-supply, but local authorities do have a duty to act if any private supplies pose an immediate risk to public health. For individual self-supply, the regulation enables local authorities to take samples that it considers necessary, but there is no mandatory sampling. Testing of exempt supplies only occurs at the request of the private water supply owner.

#### **Changes for self-supply regulation forthcoming**

The lower frequency and non-mandatory character of monitoring of exempt supplies, as well as the low uptake of risk assessment, may pose a threat to public health for a small share of the population. Recognizing these challenges, the Scottish Government plans to update the 2006 regulations applicable to exempt suppliers by a separate set of regulations. In October 2017, new regulations were already put into place for the regulated supplies, while regulations for individual self-supplies (now exempt) are under deliberation.

#### **Financial support**

As well as the strengthened regulations, the Scottish government has introduced a grant scheme to assist users in improving their private supplies. Grants of up to £700 are available from local authorities for those who meet certain qualifying conditions. Thus far, more than £8 million has been spent to help with the costs of improving private water supplies through applying appropriate treatment.

*SOURCES: (MISSELBROOK, 2017), (ICF INTERNATIONAL, 2016), (TEEDON ET AL., 2017).*



## 5.3. Addressing Rural Sanitation

**The rural sanitation situation in Moldova, Ukraine, and Romania is dire, with only 13, 26, and 48 percent, respectively, of the rural population having access to a flush toilet.** Others use outdoor pit latrines of doubtful hygienic status with limited comfort and often lacking nearby handwashing facilities. Access to public sewer systems is even lower (less than 10 percent) in these countries. While access to flush toilets is high in Albania, Bosnia and Herzegovina, Kosovo, Croatia (greater than 90 percent), access to public sewers is moderate to low, the highest being in rural areas, with 50 percent in Kosovo.<sup>124</sup>

**To address rural and small-town sanitation, it is critical to understand the different contexts that may—just as for water supply—require multiple service delivery solutions.** Rural and small-town sanitation strategies will need to be guided by defining criteria for on-site and off-site solutions, while recognizing that different service delivery models can be employed, ranging from supporting and catalyzing self-investments, to local and utility management of solutions. The following recommendations are put forward to address rural sanitation challenges:

### Develop a rural sanitation strategy based on guiding criteria for the use of individual appropriate systems and sewerage.

**Countries should develop rural and small-town sanitation strategies for agglomerations below 10,000 people, with guiding criteria for the use of individual appropriate systems in addition to sewerage solutions. These strategies should identify relevant service delivery models across the service chain<sup>125</sup> for different segments of the rural population.** Such strategies should explicitly include provisions for settlements with fewer than 2,000 people not to ignore the access agenda at the expense of achieving urban wastewater targets, set out in the *acquis communautaire*. Rural sanitation strategies will require a clear understanding of the different roles and responsibilities of actors along the sanitation service chain, the institutional and legal frameworks that should be (further) elaborated, as well as capacity building programs to address implementation gaps.<sup>126</sup> Further work beyond the scope of this study is needed to compile the most relevant experiences for sanitation solutions in small settlements for countries of the Danube region.

### Decouple technologies from service levels to identify solutions beyond centralized wastewater collection and treatment

**For agglomerations smaller than 10,000, the decoupling of wastewater technologies with required service levels opens a range of alternative sanitation solutions to be considered in the strategy.** With an increasingly higher use of piped water, flush toilets, and septic tanks, adequate fecal sludge management becomes critical, including regulated emptying, transport, treatment, disposal, and reuse of sludge. For denser rural settlements, alternative low-cost decentralized treatment solutions should be included—based on diligent assessments—under a wider menu of solutions, going beyond traditional centralized wastewater collection and treatment. Further work is needed to provide recommendations with respect to suitable service delivery models in the studied countries.<sup>127</sup>

### Accelerate self-investments to help households move up the sanitation ladder through a comprehensive rural sanitation program

**The transition from simple outdoor pit latrines to more hygienic indoor toilets in countries as Moldova, Romania, and Ukraine can be accelerated through leveraging self-investments. This will require a national rural sanitation program with a critical role for local government.** Key elements of a rural sanitation programs include the following: (a) an enabling environment in terms of strategy, financing, regulation, and capacity support; (b) a demand creation campaign using sanitation marketing and behavior change communications; (c) the development of local markets for affordable and aspirational sanitation products; and (d) access to financing options (microloans) and targeted

124 Primary data showed higher values of 68 percent due to the sampling bias in rural areas with presence of piped water systems.

125 The service chain is as follows: user interface – containment – transport and conveyance – treatment – disposal – reuse. For on-site solutions that include second pits, the service chain is shortened to containment and on-site disposal.

126 Such strategies could build on rich experiences in Western Europe. South Africa, a middle income country, also offers examples of utilities providing sanitation services across their entire urban and rural service. See also <http://www.worldbank.org/en/news/video/2017/08/21/citywide-inclusive-sanitation>.

127 This study did not assess in detail the various service delivery models for rural and small-town sanitation.

incentives for the poorest.<sup>128</sup> It is recommended that programs should be implemented with a close involvement and oversight of local governments and directed by national policy and regulatory frameworks. Combining demand creation with access to financing options, such as from micro-finance institutions, or targeted subsidies for poor and vulnerable groups, can help to accelerate the rate of progress. Lessons from experiences in middle-income countries in East Asia and Latin America show that national leadership, combined with consistent local implementation, can deliver transformative results.<sup>129</sup> Box 5.9 illustrates that a conducive enabling environment, behavior change communications, sanitation marketing, and financing options and incentives can catalyze self-investment and accelerate access to sanitation as illustrated for Vietnam.

**Box 5.9: Leveraging self-investments through sanitation marketing and behaviour change in Vietnam**  
**Components of Vietnam's Rural Sanitation Program**

**Enabling environment**

The Government of Vietnam has executed a series of national target programs for rural sanitation, articulated in national policy circulars. Dedicated investments for lagging regions have been mobilized from domestic and development partner sources, including World Bank loans in support of the government's rural sanitation program in multiple regions of the country. The enabling environment is supported through a clear delineation of responsibilities at different levels, regulations on what solutions are considered as hygienic sanitation, a monitoring system including third-party verification, and guidelines on the program implementation approach. Moreover, provinces are incentivized to achieve the so-called commune-wide sanitation status.

**Behavior Change Communication**

A national campaign for rural sanitation has been developed based on insights from consumer research. The national campaign tailored to local circumstances focusses on strong emotional drivers for households to adopt hygienic sanitation, including the desire to be a good neighbor and community member; disgust toward unhygienic facilities; and aspirational drivers such as comfort, status, and pride of taking care of family members and guests. The campaigns are implemented through interpersonal communications, community meetings and events, and mass media support.

**Sanitation Marketing**

Under Vietnam's national program, local private suppliers and contractors are trained in the correct instruction and installation of several on-site sanitation solutions. Marketing activities by local grassroots organizations (e.g., women's union volunteers) are supported through easy-to-understand product catalogues that assist households in choosing a product that fits their budget and physical environment. Business model innovations are piloted to simplify the purchasing process for households using one-stop sanitation shops.

**Financing options and incentives**

Vietnam has a long history of offering micro-loans for sanitation to rural households through its Vietnam Bank for Social Policy. Offered on concessional and attractive terms, these loans help households to front the costs for home improvements. In addition, there have been successful experiences with an output-based financial incentive for the poorest population segments. Each household is rewarded with a rebate once the construction and use of its hygienic toilet has been checked by an independent verification agent.

Resulting from these efforts, self-investment in rural sanitation has been a major driving force behind increases in rural sanitation access. As per the latest Joint Monitoring Programme (JMP) data, sanitation access has increased from 46 percent in 2000 to 76 percent in 2015, of which two-thirds are enjoying on-site facilities connected to septic tanks.

See World Bank (2014), World Bank (2016b), JMP (2017), and <http://thrivenetworks.org/wash-research/>.

128 See also <https://www.wsp.org/sites/wsp.org/files/publications/WSP-What-does-it-take-to-scale-up-rural-sanitation.pdf>.

129 See for East Asia, Northover (2015), for Vietnam, World Bank (2016b) and, for Latin America, Water and Sanitation Program (2016).



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# ANNEX A. METHODOLOGY

This appendix outlines the detailed methodology that was employed in the study, particularly as it relates to the primary data collection activities.

## Data Collection Methods

Data and information were collected and compiled through several survey tools as summarised in table A.1

**TABLE A.1: DATA COLLECTION INSTRUMENTS**

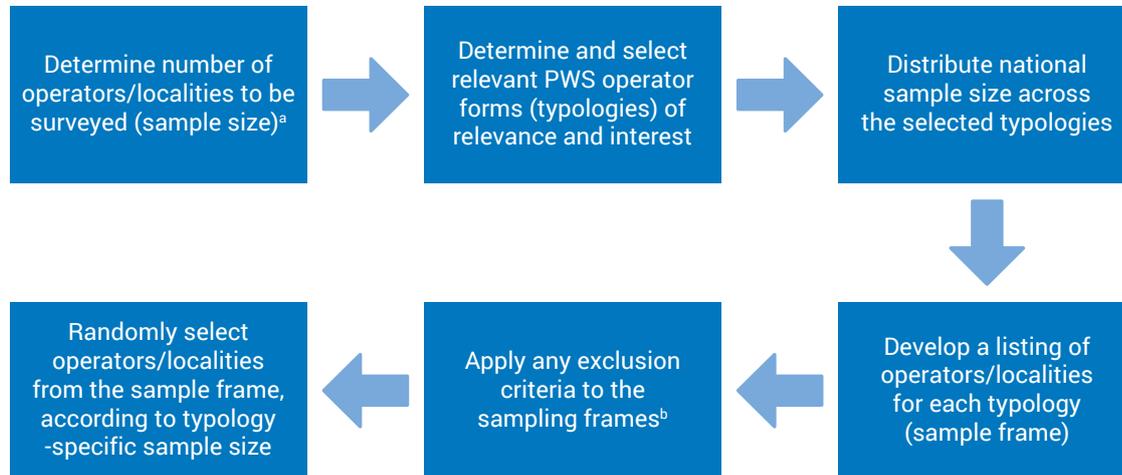
Instrument	Respondent and/or contributors	Information collected
Desk review and secondary data (Institutional questionnaire)	Administered by local WSS experts (self-administered, with support from World Bank), government counterparts, and sector stakeholders.	<ul style="list-style-type: none"> <li>- Institutional arrangements and responsibilities;</li> <li>- Legislation and policies;</li> <li>- WSS financing;</li> <li>- Listings of WSS operators;</li> <li>- WSS coverage and performance data;</li> <li>- Nationally-representative household WSS statistics.</li> </ul>
Household questionnaire	<p>Respondent was the adult member of the household most knowledgeable about daily water practices.</p> <p>Households were randomly selected from localities that received piped water services from one of the operator forms of interest.</p> <p>Surveys were administered by polling companies or partner organisations.</p>	<ul style="list-style-type: none"> <li>- Main drinking water supply characteristics and perceptions;</li> <li>- Main water supply characteristics, service levels, and perceptions;</li> <li>- PWS connection characteristics and satisfaction;</li> <li>- Groundwater well characteristics;</li> <li>- Sanitation facility and sewerage characteristics.</li> </ul>
Water supply operator questionnaire	<p>Administered by local WSS experts and/or partner in-country collaborating organisation.</p> <p>Respondents were representatives of operators servicing the randomly selected localities.</p>	<ul style="list-style-type: none"> <li>- Operational characteristics;</li> <li>- Technical characteristics;</li> <li>- Financial performance and support;</li> <li>- Monitoring and reporting characteristics;</li> <li>- Planning and priorities.</li> </ul>
Service authority / local government questionnaire	<p>Administered by local WSS experts and/or partner in-country collaborating organisation.</p> <p>Respondents were representatives of local authorities governing the randomly selected localities.</p>	<ul style="list-style-type: none"> <li>- Responsibilities and accountabilities;</li> <li>- Financing of WSS;</li> <li>- Tariff, monitoring and reporting conditions;</li> <li>- WSS planning and priorities;</li> <li>- Perceptions on regionalisation (as relevant).</li> </ul>

The institutional questionnaire was standardised by the World Bank study team and completed by locally-recruited WSS experts. WSS experts in each country filled in the questionnaire template using information from a desk review and comprising reports, datasets, studies, while supported by communications with relevant government and non-government authorities. Sources were referenced and publicly accessible datasets on operators and WSS coverage were compiled for further internal analysis. Some countries maintained listings of existing rural WSS service providers, and these were obtained and utilised to, first, identify relevant operational forms, and, subsequently, to support the random selection of localities within their respective service areas. The typical study design process for each country is summarised in figure A.1, to which there were several notable exceptions.<sup>130</sup>

<sup>130</sup> The methodologies in Ukraine and Moldova differed to some extent from that described above. In Moldova, the study collaborator had an interest in administering the survey across a nationally-representative sample of localities with functional PWS service providers and regardless of the operational model. Similarly, in Ukraine, it was not possible to generate a sample frame for multiple operational models of interest, and therefore the entire sample size was drawn from a list of licensed rural operators, regardless of management type. The findings from the study in Moldova and Ukraine are therefore representative of operators as they exist in rural areas and as represented by their respective sample frames.

For each randomly selected locality, 30 households were subsequently randomly selected, at which interviewers administered the household survey with an adult household member – regardless of whether the household was connected to the operator that serviced the locality. The surveyed households that did not report having a connection

**FIGURE A.1:** TYPICAL METHODOLOGY FOR COUNTRY-LEVEL PRIMARY DATA COLLECTION ACTIVITIES.



- a Determined by budget availability, and in some cases increased through the combining of resources with collaborative partners (i.e. for the studies in Moldova, BiH, and Kosovo)
- b Criteria typically included presence of a functional piped water system within the locality, minimum proportion of households that have a connection, minimum population size per locality (depending on country context and data availability).

to the local operator were grouped under ‘self-supply’. Household data was subsequently disaggregated and analysed across each of the country-specific typology of operators and for self-supply households. Service authority data was not connected to any particular operator because local governments typically have various water systems within their administrative territory, and sometimes these are operated through different management models. Therefore, service authority data was analysed without any disaggregation. Full methodological details and descriptions for each individual country are provided in their respective country reports.

For performing the regional data analysis, the country-specific operator management models were categorised into broader regional-level management models. All regional typologies were supported by data from multiple countries. Type-specific averages were produced for generating regional estimates. These regional averages were calculated by giving the corresponding country-specific averages equal weights.

Household satisfaction levels were measured on a 5-point Likert scale: not at all satisfied, hardly satisfied, somewhat satisfied, satisfied, and extremely satisfied. For analysis and presentation of such findings, dissatisfaction was defined when a respondent indicated they were either not at all satisfied or hardly satisfied.

Actual sample sizes for each of the 7 countries and their respective survey instruments are presented in table A.2 for service authorities, and table A.3 for operators and households.

**TABLE A.2: PRIMARY DATA COLLECTION SUMMARY – SERVICE AUTHORITIES**

Country	Service Authority Level	Service Authorities
Albania	Municipalities	15
Bosnia and Herzegovina	Municipalities	20
Croatia	Municipalities	12
Kosovo	Municipalities	15
Moldova	Local public administrations	50
Romania	Communes	30
Ukraine	Village administrations	20
<b>Total</b>	-	<b>162</b>

In total, over 162 service authorities, 171 operators, and 4,107 connected households, and 1,212 self-supply households were interviewed across 6 regionally defined management models.

**TABLE A.3: PRIMARY DATA COLLECTION SUMMARY: OPERATORS AND HOUSEHOLDS**

Country	Total Operators	Total Households <sup>a</sup>	Self-Supply Households	Connected Households	Typology Description	No. of Operators	No. of Connected Households
Albania	15	450	90	346	Public municipal utility that has integrated and begun managing and operating a standalone rural system	5	122
					Local authority that continues to manage and operate a standalone rural system, although legally the mandate has been transferred to the public municipal utilities	5	91
					Community group that continues to manage and operate a standalone rural system	5	133
Bosnia and Herzegovina	20	600	89	511	Public utility company	3	121
					Local community	4	163
					Private company	2	37
					Group of citizens	9	166
					Public institution under local government	2	24
Croatia	14	450	36	404	Public utility that has expanded urban-based network into rural settlements	4	110
					Public utility that has integrated and begun managing and operating a standalone rural system	5	169
					Community group that continues to manage and operate a standalone rural system	5	125
Kosovo	30	99	244	656	Regional water company that has expanded urban-based network into rural settlements	5	157
					Regional water company that has integrated and begun managing and operating a standalone rural system	10	260
					Community group that continues to manage and operate a standalone rural system	15	239

Country	Total Operators	Total Households <sup>a</sup>	Self-Supply Households	Connected Households	Typology Description	No. of Operators	No. of Connected Households
Moldova <sup>b</sup>	49	1500	304	1196	Chisinau City Water Utility that has expanded urban-based network into rural settlements	1	51
					Municipal enterprise that has been delegated the management and operation of a standalone rural system	28	635
					Private company that owns, manages, and operates a standalone rural system	4	130
					Local authorities that directly manage and operate a standalone rural system	3	101
					Community group or informal operator that manages and operates a standalone rural system	3	73
					No operator of the standalone rural system	3	42
Romania	30	750	175	575	Regional public utility that manages and operates a standalone rural system	7	127
					Local authority that directly manage and operate a standalone rural system	14	264
					Limited liability company that has been delegated the management and operation of a standalone rural system	9	184
Ukraine <sup>b</sup>	20	695	274	419	Municipal enterprise that has been delegated the management and operation of a standalone rural system	16	341
					Other operational forms that have been delegated the management and operation of a standalone rural system	2	49
					Newly established water operator	2	29
<b>Total</b>	<b>178</b>	<b>4,544</b>	<b>1,212</b>	<b>4,107</b>	<b>26 country-specific operator typologies</b>	<b>171</b>	<b>3,943</b>

a Typically equals the sum of self-supply and connected households, but for some countries, any difference that remains represents households that could not be correctly assigned to a type;

b Countries where the sample was drawn randomly across a list of operator-served settlements where the operator form was not known, and where typologies were classified after data collection was completed.

## Limitations

This section highlights and discusses the limitations associated with the research methodology and the findings of the study – namely the sample size, statistical power, and representativeness of the data.

## Sample Size

The sample size allocated to each country was constrained by the overall budget for data collection. Efforts were made to increase resources and sample sizes for the study by collaborating with local organisations with similar research interests. Budget estimations typically permitted the sampling and surveying of 15 to 20 operators per country, 450 to 600 households in their service area (30 households per operator), and their respective service authorities. However, sample sizes were larger for countries in which partnerships were established.

Estimates derived from the household survey data (and disaggregated by national operator management forms) typically demonstrated high levels of statistical power and reasonable margins of error. However, the calculation of confidence intervals for the estimates was beyond the intended scope of the study. There were also notable



exceptions with lower statistical power among data sub-sets with small sample sizes.<sup>131</sup> To aid in the interpretation of the data for the reader, it should be noted that proportional estimates<sup>132</sup> for which the sample size was 100 units or more would typically produce an estimate with a 10 percent margin of error – regardless of the size of the target population.<sup>133</sup>

For small populations – such as those with a with less than 100 units (i.e. piped water supply operators) – nearly all units in the population would have to be sampled and surveyed to achieve low margins of error. Such high sampling rates were not financially and logistically viable, and therefore the margins of error for estimates derived from service authorities and operators were significantly higher than those of the household survey estimates – particularly for those that were quantitative in nature.<sup>134</sup> Therefore estimates from service authorities, operators, and small household sample sizes (< 100) should be interpreted with caution.

## Representativeness

While efforts were made to ensure that the sample frames<sup>135</sup> comprising the lists of country-specific operators and their coverage areas were as accurate as possible, they were not likely to have been comprehensive, fully up-to-date, and entirely accurate – and this may have affected the representativeness of the findings. As rural water supply often receives less attention from central authorities, monitoring activities and records on existing water supply operators – especially in those cases where licensing does not extend to rural supplies – were often found to be weak, incomplete, or not up-to-date. Local and community-managed systems may be particularly underrepresented overall. For some countries, exclusion criteria were also applied to the sample frame – such as minimum connection and population sizes – and this also would affect the generalisability of the results.

While the development of the sample frames and the random selection of operators and serviced localities was largely driven by the presence of existing and functional piped water supply systems, the household survey also sought to elicit data on households practicing self-supply as well as sanitation conditions. It should be recognised that the findings on such themes may not be generalizable to all rural areas, as localities with access to functional piped water systems may have socio-economic, demographic, or political advantages over those without such access. Therefore, the findings on self-supply and sanitation may be biased towards higher socio-economic status compared to the overall rural contexts in each country.

## Survey quality and accuracy

The overall quality and completeness of the data obtained from the operators and service authorities – and to a lesser extent the household respondents – was subject to the willingness of the respondents to support the quality of the survey and its results, and to locate and provide financial and operational data. In most cases, operators and service authorities were informed in advance of the types of data that would be requested on the day of the interview. Efforts were also made to arrange interviews with the most knowledgeable and appropriate individuals relevant to the survey topics. Considering these points and that of the statistical power limitations, the results originating from the operator and service authority surveys should be interpreted cautiously.

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131 For example, some countries demonstrated small sample sizes for households connected to less common types, such as those with self-supply and those using a pit latrine.

132 i.e. the percentage of connected households with a particular attribute.

133 The total population size from which the sample was drawn or to which the results are inferred.

134 Such as financial and billing information, which has a higher likelihood to demonstrate wider standard deviations than proportional estimates.

135 Listing of operators, the localities which they served and, in most cases, their respective management models – from which the random samples were drawn.

# ANNEX B. BASIC DATA ON SERVICE AUTHORITIES AND OPERATORS

TABLE B.1: BASIC DATA ON SERVICE AUTHORITIES AND OPERATORS

Country	Unit / Typology	Operators / service authorities interviewed	Population in the service authority	Average number of water conn. per system	Average age of system	Percentage of service authorities with sewer system	System Water source		
							Deep ground water > 25 m	Shallow ground water < 25 m	Surface water (river/spring)
Albania	Total (municipal utility)	15	130,184*	13,842*	31	73%	53%	20%	53%
Bosnia and Herzegovina	Regional/urban utilities standalone	3		467	34		67%	0%	67%
	Community-based management (local community)	4		422	30		0%	0%	100%
	Local private operators	2		448	34		50%	0%	50%
	Community-based management (group of citizens)	9		608	28		11%	11%	89%
	Local government	2		690	35		50%	0%	50%
	Total	20	49,757	542	30	77%	25%	5%	80%
Croatia	Regional/urban utilities connecting rural areas	4		11,951	40		100%	25%	25%
	Regional/urban utilities standalone	5		11,966	37		80%	0%	20%
	Community-based management	5		352	45		40%	40%	40%
	Total	14	2,841	7797	40		89%	11%	22%
Kosovo	Regional/urban utilities connecting rural areas	7		11,809	41		0%	0%	100%
	Regional/urban utilities standalone	10		278	22		30%	60%	40%
	Community-based management	13		245	26		23%	8%	87%
	Total	30	1,598	2,633	28	100%	20%	23%	73%
Moldova	Total (all types)	50	3,402	731	27	88%	90%	8%	7%
Romania	Regional/urban utilities standalone	7		1,155	26		86%	0%	20%
	Local government	14		792	17		86%	21%	14%
	Small municipal enterprises	9		896	29		78%	0%	22%
	Total	30	4,060	947	22	50%	83%	10%	20%
Ukraine	Total (small municipal enterprises)	20	3,794	1,250	41	50%	75%	15%	5%

\* Excluding the primarily urban municipality of Tirana.



# ANNEX C. OVERVIEW OF ADMINISTRATIVE TIERS

TABLE C.1: OVERVIEW OF ADMINISTRATIVE TIERS IN SEVEN COUNTRIES

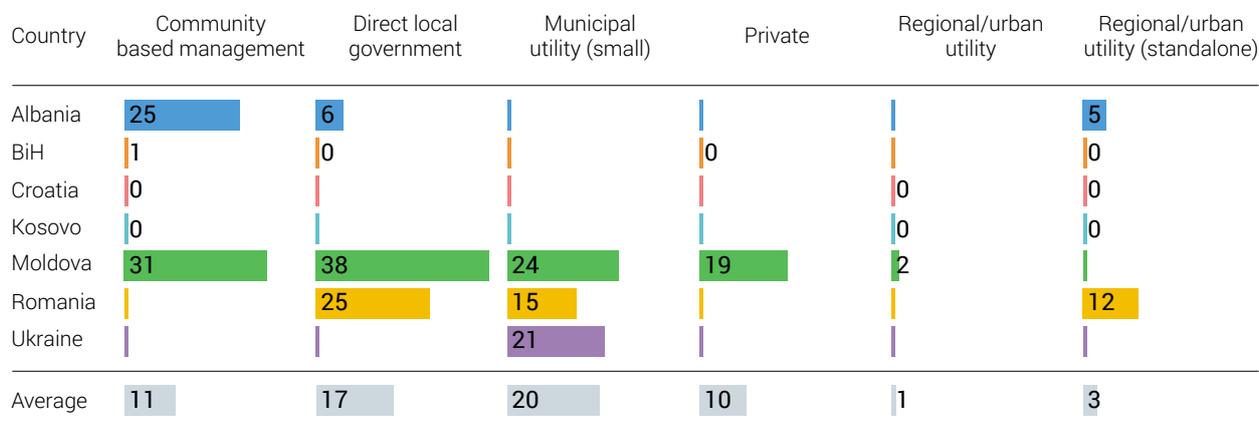
Administrative division - tier	Albania		Bosnia and Herzegovina		Croatia		Kosovo		Moldova		Romania		Ukraine	
	Name	#	Name	#	Name	#	Name	#	Name	#	Name	#	Name	#
National level	national		national	1	national		national		national		national		national	
Tier 1	Counties	12	Entities FBiH and RS- District Brcko	2+1	Counties	21	Districts <sup>b</sup>	7	Districts/ Rayons and Municipalities	35	Counties & Cities	42	Oblasts or Regions	27
Tier 2	Municipalities	61	Cantons <sup>a</sup>	10	Towns and Municipalities	555	Municipalities	38	Local Public Administrations (or mayoralty)	896	Municipalities & Small Cities	320	Districts / Rayons	490
Tier 3			Municipalities	141							Communes (communas)	2861	Communes (or Village Councils)	10,889

a Federation of Bosnia and Herzegovina (FBiH) only has cantons and municipalities, and Republika Srpska (RS) only has municipalities.

b Mainly used for planning and administrative purposes.

# ANNEX D. ADDITIONAL DATA ANALYSIS

**FIGURE D.1:** SHARE OF CONNECTED HOUSEHOLDS WITH CONNECTION DELIVERED INTO THEIR YARD, BY COUNTRY AND MANAGEMENT MODEL



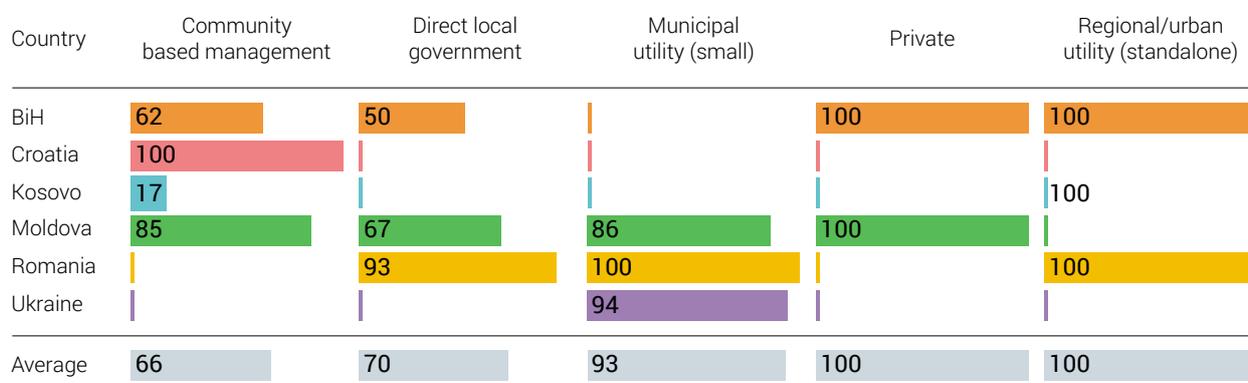
SOURCE: COUNTRY HOUSEHOLD SURVEY.

**FIGURE D.2:** MEDIAN NUMBER OF DAYS IN THE PAST YEAR WHEN CONNECTED HOUSEHOLDS DID NOT RECEIVE WATER SERVICE, BY COUNTRY AND MANAGEMENT MODEL



SOURCE: COUNTRY HOUSEHOLD SURVEY.

**FIGURE D.3:** SHARE OF SERVICE PROVIDERS REPORTING THAT WATER QUALITY TESTING IS PERFORMED AT LEAST ANNUALLY BY GOVERNMENT AGENCY, BY COUNTRY AND MANAGEMENT MODEL

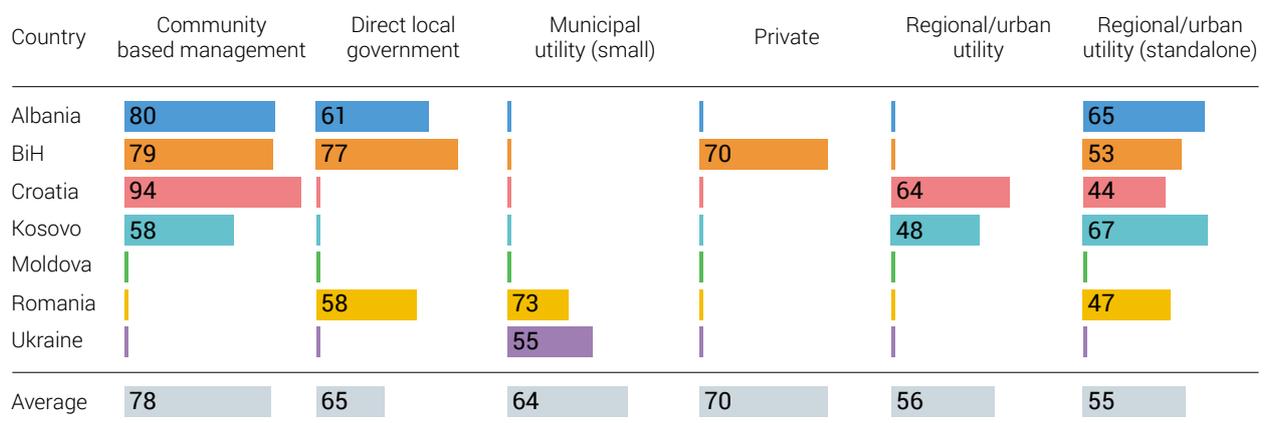


SOURCES: COUNTRY OPERATOR SURVEY.

Note: For Albania, external water quality testing data not available with respect to specific standalone rural schemes but reported 100% annual surveillance at utility level.

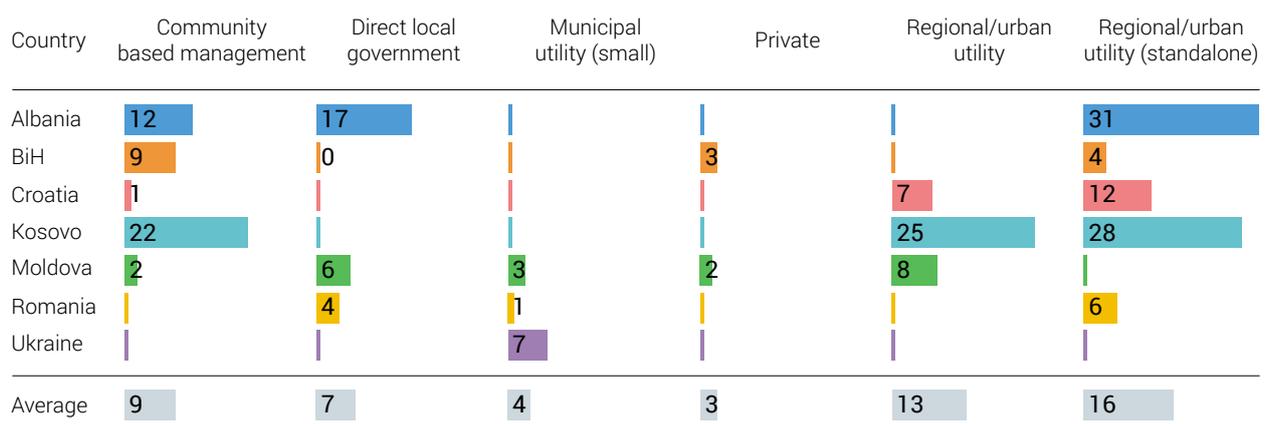


**FIGURE D.4:** SHARE OF CONNECTED HOUSEHOLDS THAT REGARDED THEIR TARIFFS AS FAIR, BY COUNTRY AND MANAGEMENT MODEL



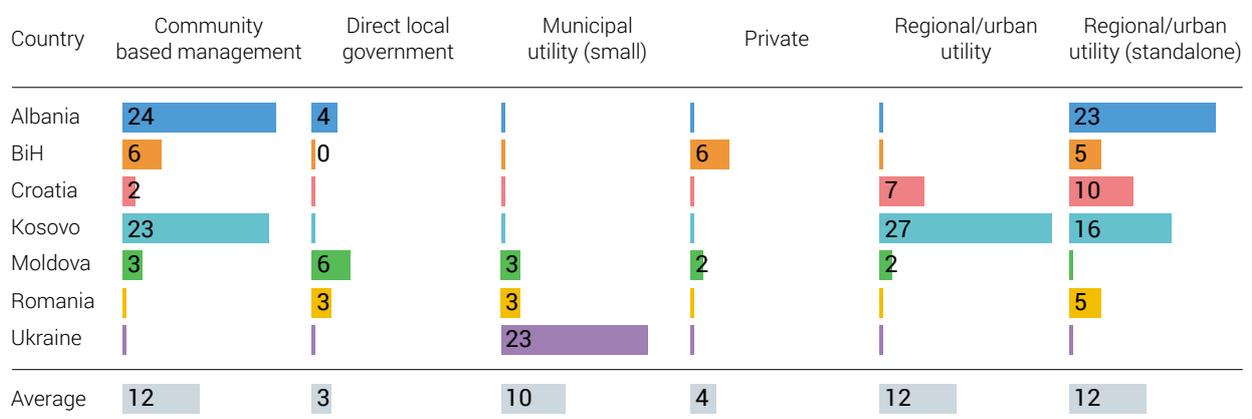
SOURCE: COUNTRY HOUSEHOLD SURVEY.

**FIGURE D.5:** SHARE OF CONNECTED HOUSEHOLDS THAT WERE NOT SATISFIED WITH THE BILLING PRACTICES OF THEIR SERVICE PROVIDER, BY COUNTRY AND MANAGEMENT MODEL



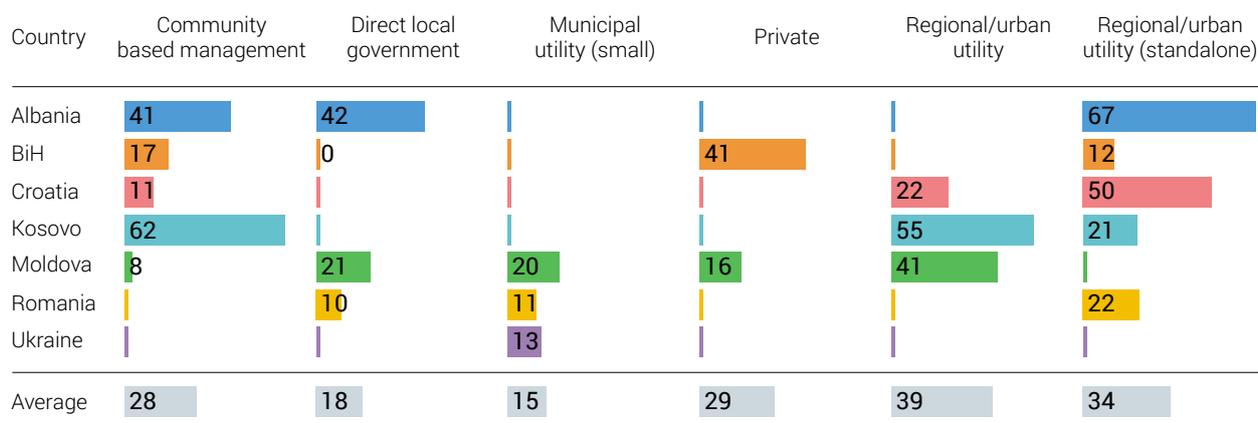
SOURCE: COUNTRY HOUSEHOLD SURVEY.

**FIGURE D.6:** SHARE OF CONNECTED HOUSEHOLDS THAT WERE NOT SATISFIED WITH PAYMENT ARRANGEMENTS, BY COUNTRY AND MANAGEMENT MODEL



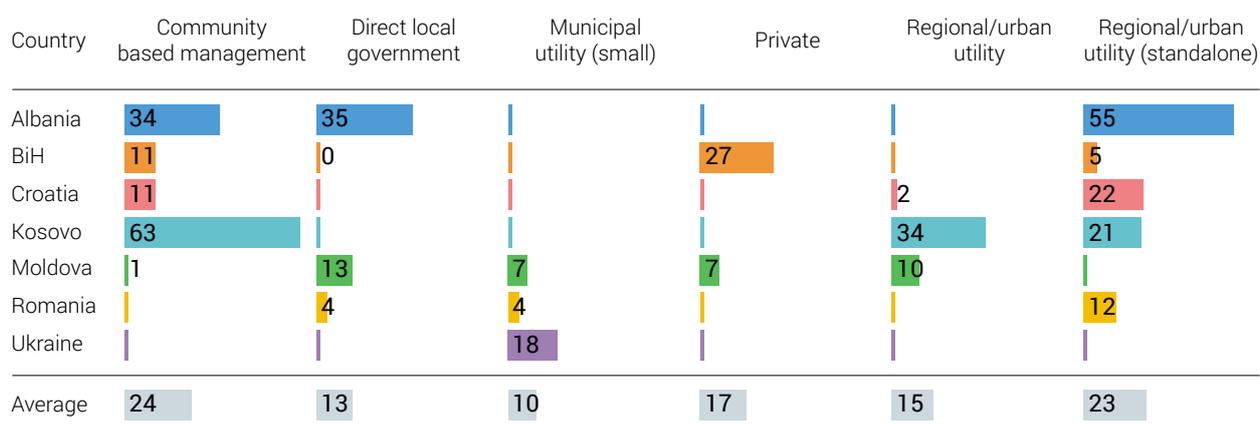
SOURCE: COUNTRY HOUSEHOLD SURVEY.

**FIGURE D.7:** SHARE OF CONNECTED HOUSEHOLDS THAT WERE DISSATISFIED WITH THEIR OPERATOR'S ABILITY TO SHARE INFORMATION, BY COUNTRY AND MANAGEMENT MODEL



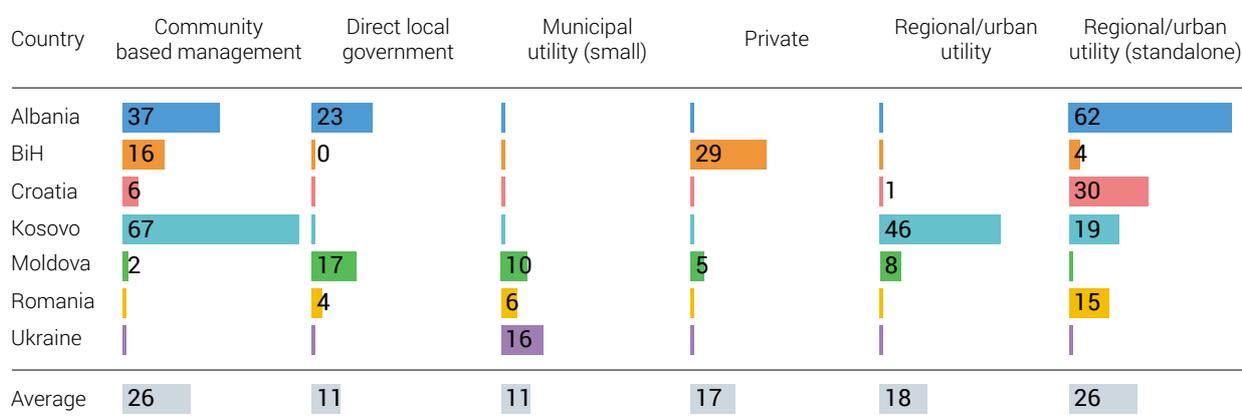
SOURCE: COUNTRY HOUSEHOLD SURVEY.

**FIGURE D.8:** SHARE OF CONNECTED HOUSEHOLDS DISSATISFIED WITH SYSTEM MAINTENANCE, BY COUNTRY AND MANAGEMENT MODEL



SOURCE: COUNTRY HOUSEHOLD SURVEY.

**FIGURE D.9:** SHARE OF CONNECTED HOUSEHOLDS DISSATISFIED WITH COMPLAINT HANDLING, BY COUNTRY AND MANAGEMENT MODEL



SOURCES: COUNTRY HOUSEHOLD SURVEY.



# ANNEX E COUNTRY OVERVIEWS

## E.1 Albania

### E.1.1 Country and Institutional Context



- ▶ Albania is a middle-income country with a GNI of US\$11,880 per capita (2016).
- ▶ Albania has experienced strong economic growth and decreasing poverty since the 1990s – with 14 percent living below the national poverty line (2012).
- ▶ Albania's population is 2.9 million (2017) – 42 percent of which reside in rural areas.
- ▶ Its policies are geared towards EU accession; Albania was awarded candidate status in 2014.

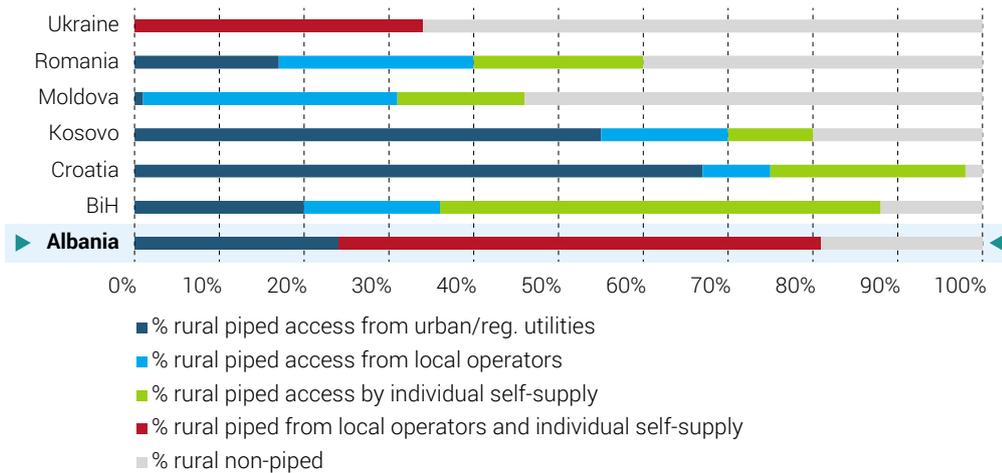
**FIGURE E.1.1:** ALBANIA AS ONE OF THE SEVEN COUNTRIES IN THE STUDY

Following its territorial reform and the creation of 61 municipalities, Albania has embarked on a comprehensive water and sanitation sector reform since 2011. Central to these reforms is the establishment of 61 municipal utilities, that on behalf of its municipal shareholders, are delegated the responsibility for service provision in the entire jurisdiction of the municipality. Municipalities have service agreements with the National Drinking Water and Wastewater Authority. Since 2016, utilities are obliged to integrate numerous standalone rural water supply systems under their operations. These systems were managed - or still are if transfer has not yet happened - by community groups or by the former communal administration. Utilities are also tasked with service provision in previously unserved areas. Utilities are in the process of identifying all rural water assets and transferring these to their books, while tackling the challenge of service expansion and overall efficiency improvements (such as for non-revenue water). The Ministry of Infrastructure and Energy is considering a further aggregation of utilities into 21 regional utilities as part of the ongoing reform. The Water Regulatory Authority (WRA) licenses and regulates the municipal utilities – with sector performance assessments and reporting conducted annually.

### E.1.2 Water and Sanitation Access in Rural Areas

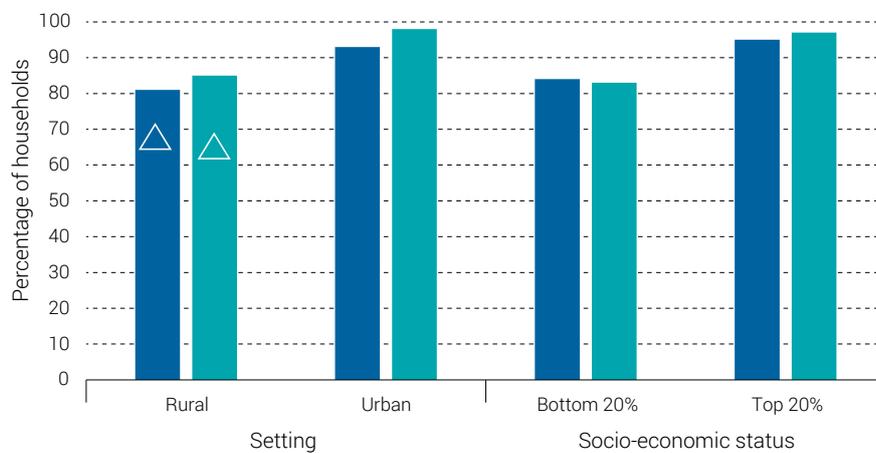
Among the 1.2 million rural dwellers in Albania, 81 percent already have access to in-house piped water, of which 24 percent receive the service from municipal utilities<sup>136</sup> (see figure E.1.2). In the absence of recent data on the status of local systems under utility management, it is not possible to estimate how many rural households receive a service from local water system or through a form of piped self-supply. Over half of all rural Albanians (57 percent) are estimated to have access to piped water, either through a piped self-supply or a local water system. Only 19 percent of rural Albanians access water from non-piped self-supplies – among the lowest levels in the seven countries of the region. As illustrated in figure E.1.3 rural water and sanitation access levels for piped water and flush toilets are higher than regional averages. Inequalities in access between urban and rural areas for piped water in the home are 13 percent, and 12 percent respectively. Inequalities in access by socio-economic status among the poorest and richest quintile continue to exist (HBS, 2015).

<sup>136</sup> Based on authors estimates derived from (Water Regulatory Authority, 2015).



**FIGURE E.1.2:** STRUCTURE OF SERVICE DELIVERY IN RURAL AREAS: ALBANIA

SOURCE: AUTHORS ELABORATION



**FIGURE E.1.3:** INEQUALITIES IN ACCESS IN RURAL WATER AND SANITATION ALBANIA

SOURCE: JMP (2017) HBS (2015)

△ Regional average  
 ■ Access to any piped water in the home  
 ■ Access to a flush toilet

### E.1.3 Enabling Environment Assessment and Challenges for Rural Water

Figure E.1.4 illustrates the assessment of the enabling environment for rural water services in Albania which overall is positive. However, institutional challenges remain as follows:

- ▶ Municipalities are inadequately supported in their WSS mandate. Almost three quarters (71 percent) are not satisfied with the available financing for WSS in their jurisdiction, and 47 percent indicate that capital investments for new water systems is a top concern; reducing non-revenue water and improving connection metering are also common priorities.
- ▶ Dedicated central funding for rural water supply exists – originally focused on Northern Albania for the period 2008-2019. This forms part of an annual Euro 60-70 million envelope for the sector funded through both domestic and external sources. Needs are larger than available funding, especially to support rehabilitation and water quality improvements.
- ▶ Most utilities and municipalities are satisfied with the benefits of the integration of local water supply systems under utility management. Most state this improved services to customers, increased revenues, augmented financing opportunities, and resulted in more sustainable operations. However, one third of municipalities interviewed does not yet experience any benefits. Tariff adjustments, staffing, and guaranteeing water quality are key concerns of the integration of rural systems.



Building Block	Indicator	Albania
Institutional Capacity	Clear allocation and implementation of roles and responsibilities under a broader strategy that addresses rural water service provision	Green
	National sector documents provide description of RWS operator management models and their legal form	Green
Financing	Dedicated funding streams exist for WSS capital investments that prioritize rural areas	Green
	Policy documents prescribe tariff setting rules relevant also for rural water service provision	Green
Asset Management	Asset ownership is clearly defined and implemented as per the legal framework and understood by service providers	Yellow
Water Resources Management	Water abstraction permitting processes are in place and apply it to rural water services	Green
	Low prevalence of conflicts related to water use management as reported by municipal authorities	Yellow
Monitoring and Regulation	Existence of a national performance monitoring system for rural water operators	Yellow
	Water quality standards are defined that govern service provision in rural areas	Green

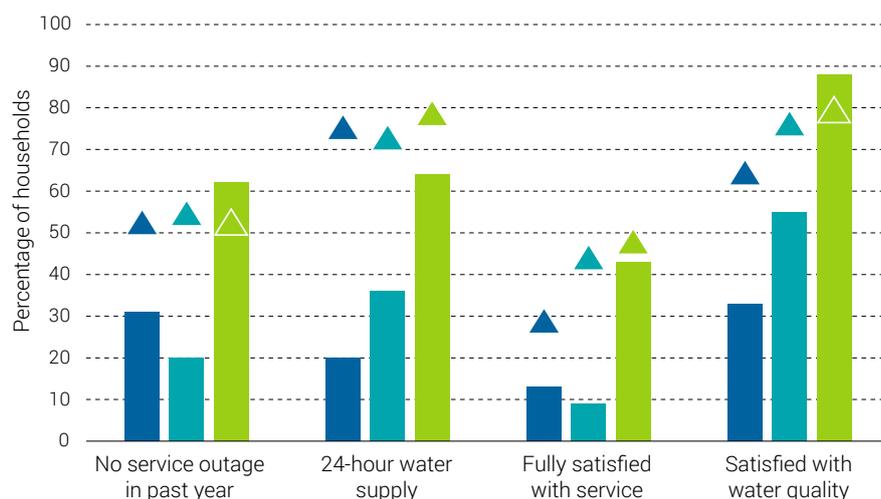
**FIGURE E.1.4:** ENABLING ENVIRONMENT ASSESSMENT RURAL WATER ALBANIA

SOURCE: AUTHORS ELABORATION

## E.1.4 Service Levels and Perceptions

Household interviews provided various insights (See figure E.1.5):

- ▶ Connected households typically have water piped into the home (99 percent), while for self-supply households this is lower (72 percent).
- ▶ Water collection time of more than 30 minutes was found for only 7 percent of self-supply households.
- ▶ A moderate proportion of connected households experienced at least one service outage in the past year (62 percent) – more common than for self-supply households (47 percent).
- ▶ Households served by rural systems under utility management experience lower service continuity and are less satisfied than those served by systems managed by community groups or comunas (in transfer).
- ▶ Continuity of service (24-hour supply) is problematic and below regional averages.



**FIGURE E.1.5:** WATER SERVICE LEVELS AND PERCEPTIONS ALBANIA

SOURCE: COUNTRY-SPECIFIC HOUSEHOLD SURVEY

- △ Regional average
- Utility managed
- Communa management
- Community group

## E.1.5 Business Practices and Capacities

Payment for water, water metering, and invoicing is a common business practice for utilities, although shows room for improvement for rural customers (see figure E.1.6). Business practices of local operators are suboptimal and well

below regional averages. Tariffs for utility managed systems were Euro 0.34 per cubic meter on average – well below the regional average of Euro 0.52 per cubic meter. More than half of rural customers think tariffs are fair although this is lowest for utility managed systems - hence the importance to create support for tariff adjustments during the integration. Most utilities were not able to produce performance data for standalone rural systems and most were in the process of inventorying rural assets. Utility managed rural schemes often lacked disinfection systems.



## E.1.6 Reaching the Poor and Unserved

Access to piped water is most lagging in Northern Albania, where the proportion of self-supply is the highest. Self-supply households state that they do not connect because of the distance to or absence of centralized systems (44 percent). Some are satisfied with their water supply (18 percent) and dissatisfied with the quality of services offered of existing systems (16 percent). Affordability of tariffs and connection fees do not appear to be limiting connectivity in rural areas. Rural households served by utilities spend on average 2.3 percent of the monthly per capita consumption at the national poverty line, indicating expenditure is well within affordability limits. Municipalities have no measures or schemes in place to support poor households with water expenditure.

## E.1.7 Sanitation Services

Access to flush toilets in rural areas is near universal, while access to sewer systems in rural areas is not known; 65 percent of the urban and rural population outside of Tirana has access to a sewer (HBS, 2015). More than half of households interviewed wish to improve their sanitation facility – mostly related to upgrading the toilet and bathroom fixtures. Approximately half of flush toilet users never emptied their pit or tank. Of those that had emptied, most did so manually (62 percent) – well above the regional average of 32 percent - indicating a need for improved faecal sludge management services in rural services. Municipalities and utilities are not engaged in faecal sludge management. Only 18 percent of households interviewed are connected to a sewer; most connected households (66 percent) were satisfied with the service; overflows, smells, and leakages are the main concerns.

## E.1.8 Recommendations

At national level for an enabling environment for rural water

- ▶ Targeted financing has helped expand access in rural areas. Further technical, human resources and financial support to successfully integrate rural systems is needed.
- ▶ Municipalities and utilities need to be further supported to lead the integration process (and future aggregation under the reform).



- ▶ Complementary to utility services, enabling environment and support for self-supply model is needed, consisting of awareness and communication, mobile water quality testing, risk assessments and grant schemes to improve quality of service.

At service provider level to improve quality and access

- ▶ Integration of rural systems has not immediately led to better services as investments to improve water quality and service reliability are needed.
- ▶ Proactive measures to increase willingness-to-pay and address unauthorized use are needed, combined with communication and responsive customer services for newly acquired rural customers.
- ▶ Utilities should further customize their management information systems to understand and address performance in rural systems.

For addressing sanitation

- ▶ A comprehensive sanitation strategy needs to be developed with decentralized solutions on-site solutions and fecal sludge management to ensure proper management along the entire service chain.
- ▶ Institutional framework and local implementation capacities for rural sanitation need to be addressed.

## E.2 Bosnia and Herzegovina

### E.2.1 Country and Institutional Context



**FIGURE E.2.1:** BOSNIA AND HERZEGOVINA AS ONE OF THE SEVEN COUNTRIES IN THE STUDY

- ▶ Bosnia and Herzegovina is a middle-income country, with a GNI of US\$12,140 per capita and a population of nearly 3.5 million people.
- ▶ Approximately 60 percent of its population reside in rural areas, and about 17 percent live below the national poverty line (2015).
- ▶ In 2016, Bosnia and Herzegovina applied for EU membership and remains a potential candidate.
- ▶ The governance structure is complex: state level, district level (Brčko district), entity level with Federation of Bosnia and Herzegovina (FBiH) and Republika Srpska (RS) and ten cantonal governments in FBiH.

Bosnia and Herzegovina's complex water and sanitation governance structure and the country's political and economic transition process do not provide for a conducive ground for effective sector reform. Fragmented responsibilities across various institutions hinders adequate sector oversight and regulation. There are no concrete reforms planned yet for the water and sanitation (WSS) sector. Municipalities, often covering urban centres and multiple villages, are responsible for WSS provision, with services organized through their municipal utilities, of widely varying size and capacity. By law they are responsible for provision in the entire municipal jurisdiction, however they are mostly serving urban areas. Some municipal utilities have expanded networks to neighbouring rural areas, and have occasionally integrated standalone systems. Local informal and formal operators, such as registered community organizations or citizen groups, remain important for rural service provision.

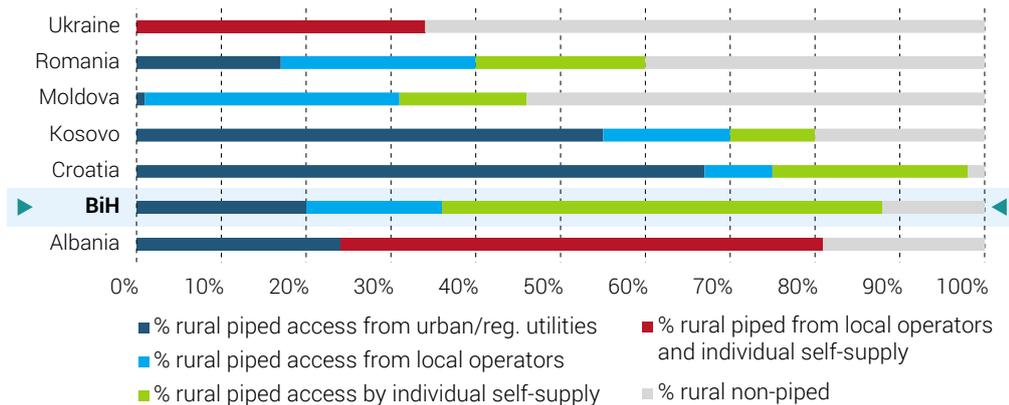
### E.2.2 Water and Sanitation Access in Rural Areas

Among the 2.1 million rural population an estimated 0.43 million receive a service from urban municipal utilities (20 percent), while 0.34 million are served by local formal and informal operators (16 percent)<sup>137</sup>. Around 1.1 million rural dwellers have invested in self-supply with piping into the home (52 percent), and the remaining 12 percent are dependent on self-supply without a piped connection into the home (see figure E.2.2).

Inequalities in access between urban and rural areas remain, with 88 percent piped water access (including self-supply) and 94 percent flush toilet access in rural areas compared to 96 percent and 99 percent in urban areas, respectively. Inequalities are stark in terms of connection to sewer system, with 30 percent in rural areas compared to 83 percent in urban areas. Service levels between the poorest and richest population groups are less pronounced. Inequalities are mostly observed with respect to how a service is provided: 92 percent of the population in urban areas receives a drinking water service from municipal utilities, compared to only 20 percent in rural areas (see figure E.2.2 and figure E.2.3).

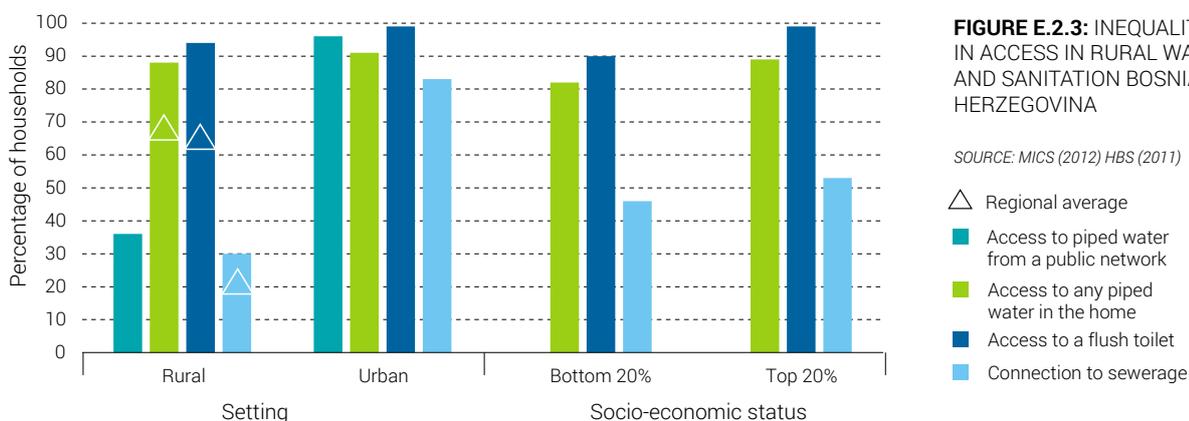
<sup>137</sup> Based on estimates combining MICS (2012) and reports Government of FBiH (2012) and Government of RS (2015)





**FIGURE E.2.2:** STRUCTURE OF SERVICE DELIVERY IN RURAL AREAS: BOSNIA AND HERZEGOVINA

SOURCE: AUTHORS ELABORATION



**FIGURE E.2.3:** INEQUALITIES IN ACCESS IN RURAL WATER AND SANITATION BOSNIA AND HERZEGOVINA

SOURCE: MICS (2012) HBS (2011)

### E.2.3 Enabling Environment Assessment and Challenges for Rural Water

Figure E.2.4 illustrates the assessment of the enabling environment for rural water services in Bosnia and Herzegovina which is severely constrained and characterized by several challenges:

- ▶ A multiplicity of laws and regulations with often overlapping or conflicting provisions, compounded by a complex governance structure, creates confusion on roles and responsibilities in the sector. Local governments state that the existing legal framework is the main barrier for improving services, even more so than financial resources.
- ▶ The lack of a national water supply and sanitation strategy, which would also pay special attention to rural service provision, hinders a clear vision and targets for service improvement in rural areas.
- ▶ The water law and law on communal services describe different service provider management models, however these are neither tailored to the realities in rural areas, nor are they sufficiently specific.
- ▶ Although all water service providers should operate under a legal decision (contract or service agreement) with the municipal authority, only 42 percent of operators interviewed reported a service agreement or license to operate, highest among municipal utilities (100 percent) and lowest for local community or citizen groups managing systems (below 25 percent)
- ▶ Municipal utilities mostly serve urban areas despite a mandate for service provision in the entire municipal jurisdiction, and integration of standalone rural systems happens ad-hoc when agreements are reached with local operators and village councils at their request and initiative.
- ▶ There are no dedicated funding windows for rural water services; water and sanitation expenditures of local governments interviewed are low, estimated Euro 1.2 per capita per year. This reflects the reality of remote rural municipalities and their difficulties in accessing national investment funds if not targeted to rural areas.
- ▶ Asset management responsibilities have been defined under the law, but are not always fully understood by service providers. Less than half of service providers interviewed has an updated asset inventory and municipalities lack inventories of the systems in their jurisdiction.

Building Block	Indicator	BiH
Institutional Capacity	Clear allocation and implementation of roles and responsibilities under a broader strategy that addresses rural water service provision	Red
	National sector documents provide description of RWS operator management models and their legal form	Red
Financing	Dedicated funding streams exist for WSS capital investments that prioritize rural areas	Yellow
	Policy documents prescribe tariff setting rules relevant also for rural water service provision	Red
Asset Management	Asset ownership is clearly defined and implemented as per the legal framework and understood by service providers	Yellow
Water Resources Management	Water abstraction permitting processes are in place and apply it to rural water services	Yellow
	Low prevalence of conflicts related to water use management as reported by municipal authorities	Red
Monitoring and Regulation	Existence of a national performance monitoring system for rural water operators	Red
	Water quality standards are defined that govern service provision in rural areas	Green

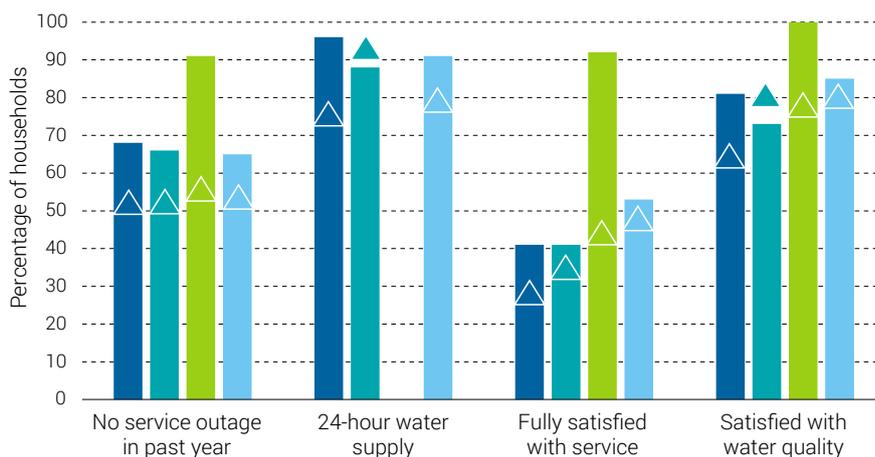
**FIGURE E.2.4:** ENABLING ENVIRONMENT ASSESSMENT RURAL WATER BOSNIA AND HERZEGOVINA

SOURCE: AUTHORS ELABORATION

## E.2.4 Service Levels and Perceptions

Household interviews provided various insights (see figure E.2.5):

- ▶ Household have considerably invested in increasing accessibility of service by in-door piping; this holds for both connected and self-supply households (96 percent)
- ▶ Most households receive 24-hour water supply - also due to in-house storage – although a third of both connected and self-supply households (32 percent) experience at least one service outage in the past year
- ▶ Less than half of rural customers are fully satisfied with the service, except for those served directly by village authorities. Around three quarters were satisfied with water quality.
- ▶ Among connected households water quality and tariffs are main concerns while among self-supply households water having sufficient water quantity and pressure are key issues.



**FIGURE E.2.5:** WATER SERVICE LEVELS AND PERCEPTIONS BOSNIA AND HERZEGOVINA

SOURCE: COUNTRY-SPECIFIC HOUSEHOLD SURVEY

- △ Regional average
- Public utility
- Private
- Direct by local authorities
- Community-based

## E.2.5 Business Practices and Capacities

Payment for water, water metering, and invoicing are common business practices for public municipal utilities, local village authorities and private operators, while these practices were markedly lower for community-based



service providers and citizen groups (figure E.2.6). Tariffs for municipal utilities and private operators interviewed are on Euro 0.44 per cubic meter on average –below the regional average of Euro 0.52 per cubic meter - while tariffs levied by community operators are slightly lower at Euro 0.39 per cubic meter. Around half of rural customers of municipal utilities think tariffs are fair. While tariffs of community-managed systems are not that different, rural customers perceive these tariffs to be more acceptable. Hence the importance to create support for tariff adjustments and increase willingness to pay to communication and service improvement measures during the integration. Only 40 percent of the operators interviewed report disinfection systems at their facility. Around three quarters of community operators as well as utilities interviewed have received any form of support in the past year from other entities, such as local or canton governments.



## E.2.6 Reaching the Poor and Unserved

Self-supply is a predominant form of service delivery in rural parts of Bosnia and Herzegovina (52 percent). The main reasons self-supply households are not connected are i) because it is not possible to physically connect to the network (35 percent), ii) households are satisfied with their existing water supply situation (22 percent) and iii) households cannot afford the connection fee (12 percent). On average, monthly household water bills (combination of fixed flat fees and volumetric charges) range from Euro 7.1 to 12.8, with with no major differences across management models. Rural households served by municipal utilities, private sector and community operators spend on average 2 percent of the monthly per capita consumption at the national poverty line. This indicates expenditure is well within affordability limits and tariffs in rural areas could rise to support cost recovery. Three quarters of municipalities indicate they have some measure of support in place for poor households to access services.

## E.2.7 Sanitation Services

Access to in-house flush toilets in rural areas is almost universal (94 percent) and household satisfaction with these facilities is high. For those households without a flush toilet, the primary reason for not having one is due to affordability and high perceived costs. Approximately 32 percent of the households interviewed report their flush toilets to be connected to a sewer system, 36 percent connect to a sealed cesspit (could not be verified), 22 percent to an unsealed cesspit and 10 percent is flushing directly into a drain, ditch or other place. There is frequent emptying of tanks, with three quarters of households with an on-site containment having at least once emptied their tank. Pits or tanks were typically emptied mechanically (73 percent) – and most often by a private company (48 percent) or household member (37 percent). Municipalities and utilities are not engaged in faecal sludge management. Among the rural households connected to sewerage, most were fully satisfied with the service (78 percent) but only half paid for the service.

## E.2.8 Recommendations

At national level for an enabling environment for rural water

- ▶ A national water supply and sanitation strategy needs to be developed, which defines clearly the roles and leadership for water service delivery, and that describes the intended management arrangements for rural areas (regional utility, local operator, self-supply).
- ▶ Harmonization of water, communal and public services laws is needed to create a more conducive legal framework for service provision, including legal provisions for local operator models.
- ▶ Targeted programs to fund expansion and rehabilitation of systems in rural areas are needed as well as a planned approach for integrating rural systems under municipal or regional utilities.
- ▶ A national data management platform for all service providers needs to be developed as a corner stone for improving rural services and for identifying priorities for investments.
- ▶ Complementary to utility services, an enabling environment and support for self-supply model is needed, consisting of awareness and communication, mobile water quality testing, risk assessments and grant schemes to improve quality of service.

At service provider level to improve quality and access

- ▶ Formal agreements for service provision should be established between municipalities and local service providers to clarify roles and responsibilities, and increase accountability and transparency.
- ▶ Asset inventories in rural areas need to be launched by municipalities and utilities to understand investment needs and inform business plans.
- ▶ Support needs to be provided to municipalities and utilities to integrate standalone systems in neighboring rural areas, based on a time-bound business plan and with financial incentives.
- ▶ If local operator model is recognized as a (transitory) service model, functions to provide support to local operators and municipalities need to be assigned and institutionalized. A capacity development and support program needs to be established to increase performance.

For addressing sanitation

- ▶ A comprehensive sanitation strategy (for appropriate individual systems) needs to be developed with decentralized solutions on-site solutions and fecal sludge management to ensure proper management and treatment.
- ▶ Institutional and legal framework along the entire service chain should be enhanced and local implementation capacities for fecal sludge management put in place.



## E.3 Croatia

### E.3.1 Country and Institutional Context



- ▶ Croatia is an upper-middle income country with a GNI of US\$22,880 per capita (2016).
- ▶ However, 19 percent of its people live below the national poverty line (2013).
- ▶ Croatia's population is 4.3 million (2011) - 41 percent of which reside in rural settlements (2016).
- ▶ Approximately 40 percent of the country's population resides in settlements of less than 2,000 people.
- ▶ Croatia became an EU member state in 2013.

**FIGURE E.3.1:** CROATIA AS ONE OF THE SEVEN COUNTRIES IN THE STUDY

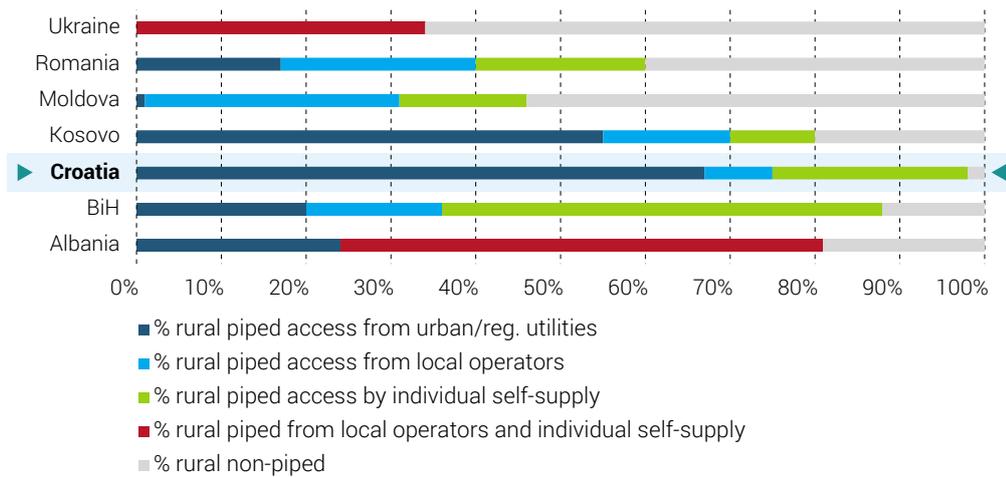
In Croatia, local governments—428 municipalities and 127 towns—are responsible for water and sanitation service provision. After the reform that followed the 2010 Water Act and Water Financing Act, service provision is organized through 156 public WSS utility companies serving both rural and urban areas, most covering more than one jurisdiction (multiple municipalities or towns). A second phase with further aggregation was originally foreseen, however this process has stalled. The Ministry of Environmental Protection and Energy (MEPE) is the lead entity responsible for the implementation of WSS policies including regulation and oversight of regional and local government authorities. MEPE is responsible for supervision of Croatian Waters - the entity charged with the implementation of water management issues. The process of integrating locally managed rural water systems within the service areas of public utility companies continues and has seen positive achievements.

### E.3.2 Water and Sanitation Access in Rural Areas

Of the 1.7 million rural dwellers in Croatia, 67 percent are served by public utilities. The integration process of standalone systems is nearly complete – with only 8 percent of the rural population served by 455 systems (see figure E.3.2)<sup>138</sup>. This leaves a quarter of the rural population reliant on individual self-supply, 23 percent having piped their water sources into the homes, and 2 percent without indoor piped access. The integration of local systems has perhaps been slower than expected, as challenges remain with potential tariff increases and technical and capacity issues at the standalone operated systems. This means that nearly all rural households have piped indoor water access (98 percent).

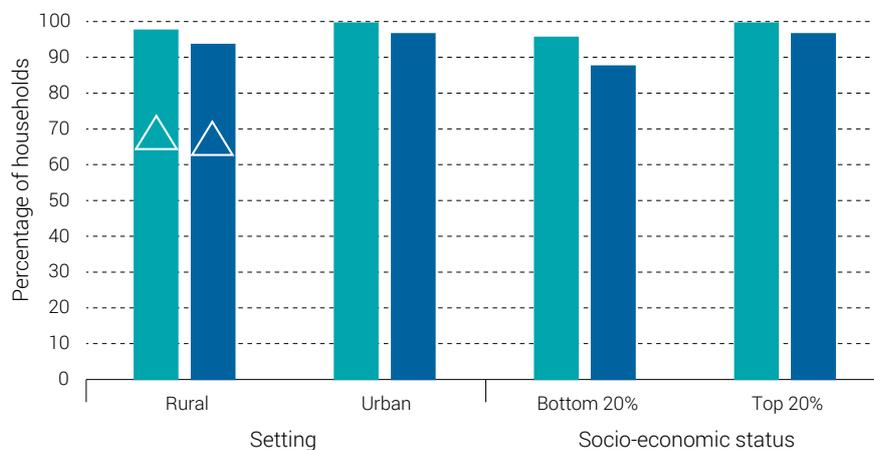
Rural access levels for water and sanitation in Croatia are significantly higher than the regional average for both piped water and flush toilets. Inequalities in access between urban and rural areas are small for piped water in the home (2 percent difference) and flush toilets (3 percent difference). Inequalities by socio-economic status are slightly more pronounced especially for access to flush toilets, 97 percent for the richest quintile and only 88 percent for the poorest quintile. (see figure E.3.3). Inequalities are mostly observed with respect to how a service is provided: while the entire urban population receives drinking water from municipal and regional utilities, only 67 percent in rural areas does.

<sup>138</sup> As per Croatian Waters (2014) and based EU Statistics on Income and Living Conditions (2012)



**FIGURE E.3.2:**  
STRUCTURE OF SERVICE DELIVERY IN RURAL AREAS: CROATIA

SOURCE: AUTHORS ELABORATION



**FIGURE E.3.3:** INEQUALITIES IN ACCESS IN RURAL WATER AND SANITATION CROATIA

SOURCE: EU SILC (2012)

△ Regional average  
 ■ Access to any piped water in the home  
 ■ Access to a flush toilet

### E.3.3 Enabling Environment Assessment and Challenges for Rural Water

Figure E.3.4 illustrates the assessment of the enabling environment for rural water services Croatia, which is overall well developed, although some challenges remain:

- ▶ Institutional arrangements for the sector and the role of local authorities (municipalities and towns) is clearly defined in legislation – along with the licensing arrangements for the operators themselves. However, independent local operators continue to function outside of this legal framework.
- ▶ While coverage levels are high in Croatia, expansion and improvement of systems is impeded by lack of funding at municipal level and in some cases the resistance of households to get connected.
- ▶ Of the utilities interviewed, only 20 percent indicated that they were not satisfied with the integration process of previous locally operated water systems. Controlling staffing, coordination with the local operator, especially in private investments were made, and tariff adjustments are reported as most challenging issues associated with the process.
- ▶ Water permitting for standalone rural systems is not systematically implemented.

### E.3.4 Service Levels and Perceptions

Household interviews provided various insights (see figure E.3.5):

- ▶ Connected households are more likely to have water piped into the home than self-supply households (100 percent compared to 83 percent, respectively).

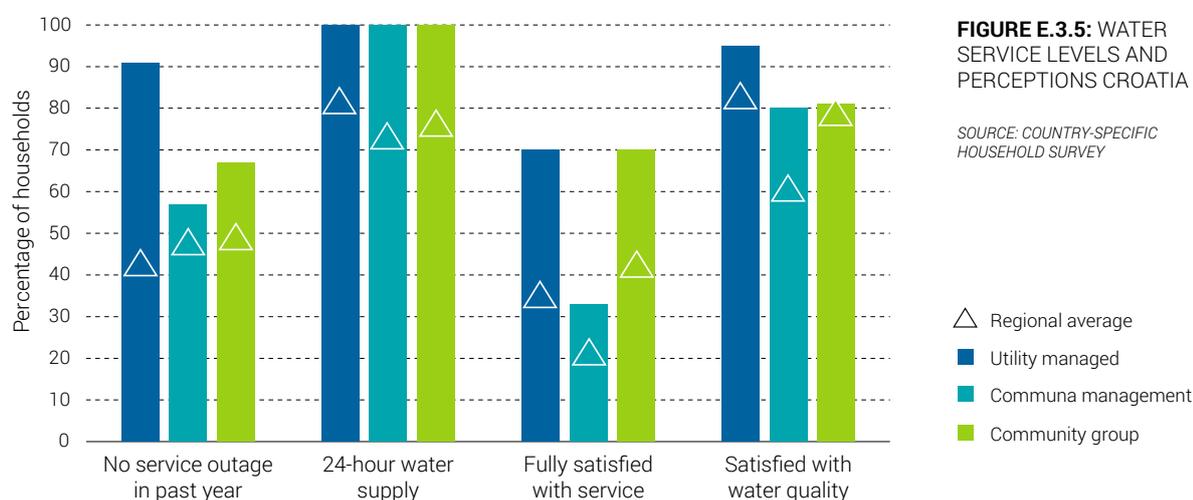


Building Block	Indicator	Croatia
Institutional Capacity	Clear allocation and implementation of roles and responsibilities under a broader strategy that addresses rural water service provision	Green
	National sector documents provide description of RWS operator management models and their legal form	Yellow
Financing	Dedicated funding streams exist for WSS capital investments that prioritize rural areas	Green
	Policy documents prescribe tariff setting rules relevant also for rural water service provision	Green
Asset Management	Asset ownership is clearly defined and implemented as per the legal framework and understood by service providers	Yellow
Water Resources Management	Water abstraction permitting processes are in place and apply it to rural water services	Yellow
	Low prevalence of conflicts related to water use management as reported by municipal authorities	Green
Monitoring and Regulation	Existence of a national performance monitoring system for rural water operators	Green
	Water quality standards are defined that govern service provision in rural areas	Green

**FIGURE E.3.4: ENABLING ENVIRONMENT ASSESSMENT RURAL WATER CROATIA**

SOURCE: AUTHORS ELABORATION

- ▶ Service outages over the past 1 year are experienced by 29 percent of connected households, mostly those served through standalone rural systems; service outage is lower at 8 percent for self-supply households.
- ▶ All connected households report to typically receive 24-hour water supply.
- ▶ Full satisfaction with service provision among connected households is moderate, and lowest (30 percent) for customers of utilities that are connected to standalone rural systems.
- ▶ Customer concerns relate to costs of service provision and water quality and those connected to regional utilities regard tariffs as the biggest issue (see also figure E.3.6).



**FIGURE E.3.5: WATER SERVICE LEVELS AND PERCEPTIONS CROATIA**

SOURCE: COUNTRY-SPECIFIC HOUSEHOLD SURVEY

### E.3.5 Business Practices and Capacities

Payment for water, water metering, and invoicing are widely implemented business practices across utilities in Croatia – except for metering of customers of locally managed operated systems (73 percent). Business practices of local operators were generally well above regional averages, which may reflect the training provided to them at start-up and the support they receive from better capacitated municipalities as compared to other countries in the study (figure E.3.6). Utilities interviewed applied an average tariff of Euro 0.71 per cubic meter, above the regional average, while local operators applied a tariff of Euro 0.53 per cubic meter on average. Customers of locally

managed systems generally perceived tariffs as fair (94 percent), while this was lower for those served by urban utilities (64 percent), and especially low for those served by rural standalone systems under utility management (44 percent). This underscores the importance to create support for tariff adjustments and increase willingness to pay through communication and service improvement measures during the integration. In contrast to other countries in the study, 100 percent of service providers, also local operators report disinfection systems at their facility. Most municipalities (75 percent) provide support to municipal and local water supply operators – often related to tariff setting, technical support for feasibility/design and for rehabilitation. However, rural municipalities are not commonly supported in their mandate (38 percent).



### E.3.6 Reaching the Poor and Unserved

Overall, inequalities in access to services are narrow in Croatia, however those households interviewed without piped water access and flush toilets are all in the poorest wealth quintile. Self-supply remains important for 25 percent of the rural population. The main reasons self-supply households are not connected is because it is not possible to physically connect to the network (78 percent). Affordability of tariffs and connection fees do not appear to be limiting connectivity in rural areas, despite complaints of households connecting to rural standalone systems under utility management. Rural households served by urban utilities physically connecting rural areas spend on average 3 percent of the monthly per capita consumption at the national poverty line. For rural standalone systems this is 2 percent if managed by utilities, and 1 percent if managed by local operators, all categories within affordability limits for the poorest. In addition, three quarters of municipalities indicate they have some measure of support in place for poor households.

### E.3.7 Sanitation Services

Access to flush toilets in rural areas is almost universal (94 percent) and nearly all have their flush toilet inside the home. Most flush toilet users interviewed are fully satisfied with their sanitation situation (79 percent), with desires to improve the toilet and bathroom fixtures. For those households without a flush toilet, the primary reason for not having one is due to affordability and high perceived costs. Approximately 93 percent of flush toilet users have on-site faecal sludge containment facilities and most (84 percent) have emptied their pit/tank at least once (71 percent in the last year). Pits or tanks were typically emptied mechanically (94 percent) – and most often by a private company (65 percent). Access to sewerage is low – only 12 percent of interviewed households were connected (no national data available for rural areas). Most connected households (78 percent) were satisfied with the quality of the sewer service, although high tariffs and offensive smells were reported by one in five.



## E.3.8 Lessons and Recommendations

At national level for an enabling environment for rural water

- ▶ The aggregation process has increased rural population access to services by municipal or multi-city utilities. Incumbent local providers were inventoried and gradually integrated under multiyear investment plans of utilities.
- ▶ Public funds, delivered through a multiyear investment program of Croatian Waters, supported with EU funds, were prioritized to areas with connection ratios below 80 percent (for settlements above 50 people); hence, many rural areas have been reached.
- ▶ National leadership to support the reform was key for the motivation of the rural expansion, as suggested by interviews.

At service provider level to improve quality and access

- ▶ Support to the integration of local water systems is high, both from municipalities and utilities, and benefits of improved and expanded services are clearly recognized. Continued coordination, intensive outreach and customer communication is necessary to facilitate smooth integration processes.
- ▶ Gradual tariff increase agreements and the use of “development fees” are already in place in some municipalities. It is recommended to incentivize the use of these tools to contribute to rehabilitation and expansion costs and ease the transfer of local managed systems to municipal utilities.
- ▶ Legal measures may need to be put in place to improve the control and regulation of remaining local community-operated and private self-supply systems (even if they serve a small percentage of the population, like for example in Austria and Scotland).
- ▶ Focused programs to support self-supply need to be put in place, given that a portion of the rural population will continue to rely on this service model. This consists of communication and outreach, combined with registration and water quality testing programs in collaboration with municipalities. National grant schemes to improve quality and quantity of service for self-supply households should be piloted, evaluated and scaled up.

For addressing sanitation

- ▶ A comprehensive sanitation strategy (for appropriate individual systems) needs to be developed with decentralized solutions such as on-site solutions and fecal sludge management to ensure proper management and treatment.
- ▶ Institutional and legal framework along the entire service chain should be enhanced and local implementation capacities for fecal sludge management put in place.

## E.4 Kosovo

### E.4.1 Country and Institutional Context



- ▶ Kosovo is a middle-income country with a GNI of US\$10,200 per capita (2011) – and has experienced strong economic growth in recent years.
- ▶ However, 18 percent of its population still live below the national poverty line (2015).
- ▶ Kosovo's population is 1.8 million (2017) – of which 62 percent reside in rural settlements.
- ▶ Kosovo signed an Association Agreement with the EU in 2016.
- ▶ Kosovo has 38 municipalities

**FIGURE E.4.1:** KOSOVO AS ONE OF THE SEVEN COUNTRIES IN THE STUDY

The Kosovar government initiated water sector reforms a decade ago and established seven Regional Water Companies (RWCs). RWCs were delegated the responsibility for water and sanitation service provision with the aim to consolidate small and fragmented municipal utilities into self-sustaining and professional business organizations. The jurisdiction of the seven RWCs is delineated along basin boundaries, with the aim to support environmental and resource management. Six of the RWCs are owned by the state, represented by the Ministry of Economic Development serving as the shareholder, while one is owned by several municipalities. The service areas and operations of RWCs are defined through license agreements issued by the Water Services Regulatory Authority. Municipalities are no longer directly responsible for WSS service delivery nor oversight, but maintain responsibility for general planning, monitoring, enforcement, and conflict resolution, as well as reporting and public consultation. The RWCs are overseen by a board of directors, which as of 2016 include representatives of the municipalities in the service areas

### E.4.2 Water and Sanitation Access in Rural Areas

Among the 1.1 million rural dwellers in Kosovo, 80 percent has access to in-house piped water (2015 data). Approximately 70 percent of the rural population have water delivered through piped water supply networks: 55 percent served by systems under RWCs management and 15 percent served by rural standalone systems that are in the process of transfer or will be transferred to RWC management in the medium term<sup>139</sup>. This leaves an estimated 30 percent reliant on individual self-supply, of which 10 percent has already piped water into the home, and 20 percent are dependent on self-supply water in the yard (see figure E.4.2). Based on ongoing and planned investments in rural areas, it is expected that by 2020 around 90 percent of the rural population will have access to piped public networks, while remote and dispersed populations will continue to rely on self-supply.

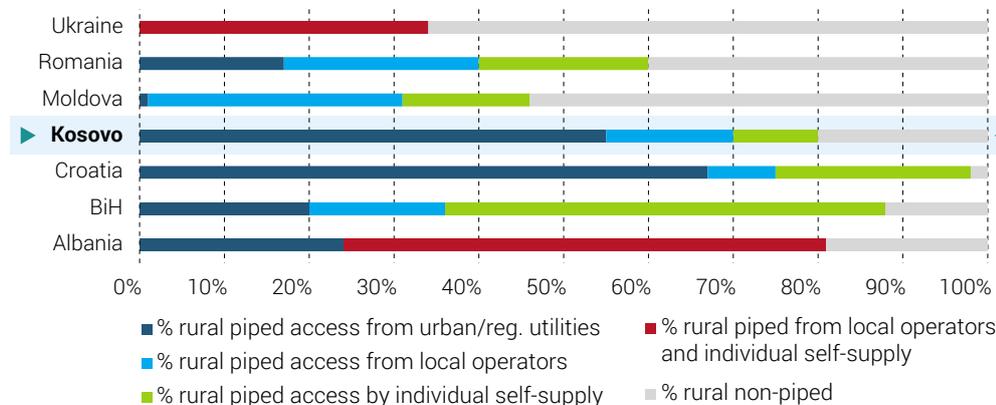
Inequalities in access between urban and rural areas remain, with 70 percent access to piped water access into the dwelling and 96 percent flush toilet access in rural areas compared to 91 percent and 100 percent in urban areas, respectively<sup>140</sup>. Inequalities are stark in terms of connection to sewer systems, with 54 percent in rural areas

<sup>139</sup> Estimates based on HBS (2015) and CDI (2016).

<sup>140</sup> It should be noted that while 91 percent has access to piped water into the dwelling in urban areas, only 73 percent uses this as their main source of drinking due to a high use of bottled water in urban areas of Kosovo. For rural areas use of piped water as a main source is 68 percent.

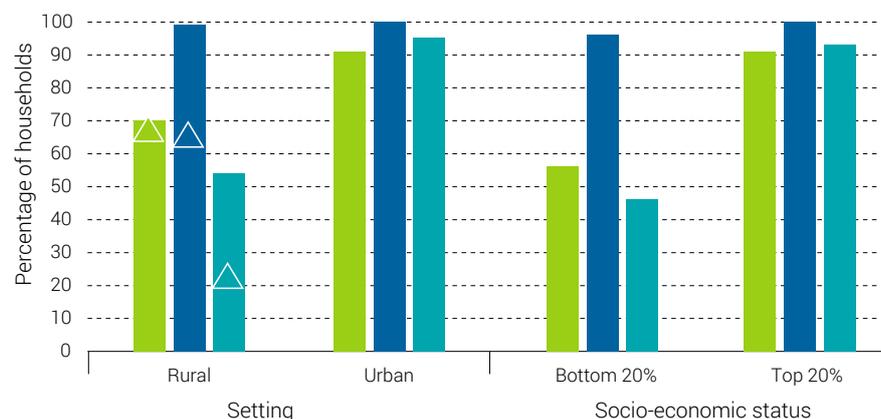


compared to 95 percent in urban areas. Equally, inequalities between the poorest and richest quintile of the population are pronounced for piped water access into the dwelling, and access to sewer, while flush toilet access is high among all income groups.



**FIGURE E.4.2:**  
STRUCTURE OF SERVICE DELIVERY IN RURAL AREAS: KOSOVO

SOURCE: AUTHORS ELABORATION



**FIGURE E.4.3:** INEQUALITIES IN ACCESS IN RURAL WATER AND SANITATION KOSOVO

SOURCE: MICS (2014)

△ Regional average  
■ Access to piped water into dwelling  
■ Access to a flush toilet  
■ Access to flush to sewer

### E.4.3 Enabling Environment Assessment and Challenges for Rural Water

Figure E.4.4 illustrates the assessment of the enabling environment for rural water services in Kosovo which shows a positive picture in line with the substantial achievement and trend in rural water access. The following key insights can be gleaned from this assessment:

- ▶ Kosovo has a clear legal framework, strategy, and targets for rural public piped water access linked to the establishment of seven regional water companies (RWCs) overseen by boards of directors representing state and local interests.
- ▶ The regionalization is accompanied by a long-term dedicated and phased investment program to support improvement and expansion of services to rural areas, financed through government and external funds; investments were used for expansions of the urban network into nearby villages, the construction of new rural standalone systems, and the rehabilitation and integration of existing standalone systems under RWC management.
- ▶ To facilitate the integration of rural systems, a nationwide inventory is carried out to identify assets of all functional and dysfunctional systems not managed by RWCs, and prioritize investments.
- ▶ Despite asset inventories, the formal asset transfer to the books of RWC is not completed yet.
- ▶ The regionalization is accompanied by a dedicated technical assistance program that supports RWCs and municipalities during the integration of local water systems.
- ▶ Nearly all municipalities signed a service agreement with their respective RWCs.

- ▶ Municipalities and board of directors of RWCs were generally satisfied with the regionalization. However, some challenges remain:
  - Performance of RWC in terms of addressing water conflicts and illegal water use by consumers.
  - Insufficient cooperation and communication between board and municipalities and ineffective customer consultation committees.
  - Guaranteeing water quality and service standards, coordinating with the previous local operator, tariff adjustments, and staffing during the transition.

Building Block	Indicator	Kosovo
Institutional Capacity	Clear allocation and implementation of roles and responsibilities under a broader strategy that addresses rural water service provision	Green
	National sector documents provide description of RWS operator management models and their legal form	Green
Financing	Dedicated funding streams exist for WSS capital investments that prioritize rural areas	Green
	Policy documents prescribe tariff setting rules relevant also for rural water service provision	Green
Asset Management	Asset ownership is clearly defined and implemented as per the legal framework and understood by service providers	Yellow
Water Resources Management	Water abstraction permitting processes are in place and apply it to rural water services	Yellow
	Low prevalence of conflicts related to water use management as reported by municipal authorities	Yellow
Monitoring and Regulation	Existence of a national performance monitoring system for rural water operators	Green
	Water quality standards are defined that govern service provision in rural areas	Green

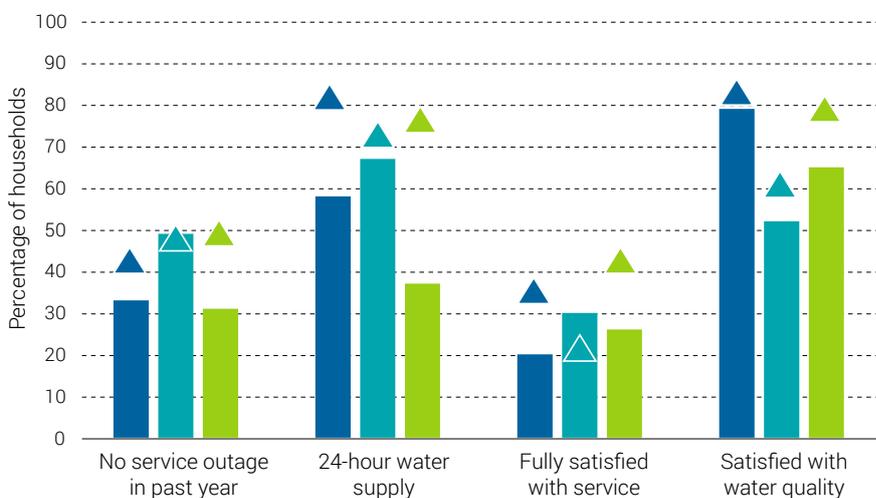
**FIGURE E.4.4** ENABLING ENVIRONMENT ASSESSMENT RURAL WATER KOSOVO

SOURCE: AUTHORS ELABORATION

### E.4.4 Service Levels and Perceptions

Household interviews provided various insights (see figure E.4.5):

- ▶ Households have considerably invested in increasing accessibility of service by in-door piping; all connected households have indoor taps, while only 72 percent of self-supply households have piped water indoors.
- ▶ One in ten self-supply households spend more than 30 minutes to get water.
- ▶ Reliability of water services shows room for improvement: 60 percent of connected households experienced at least one service outage in the past year, slightly more common than for self-supply households (51 percent).



**FIGURE E.4.5:** WATER SERVICE LEVELS AND PERCEPTIONS KOSOVO

SOURCE: COUNTRY-SPECIFIC HOUSEHOLD SURVEY

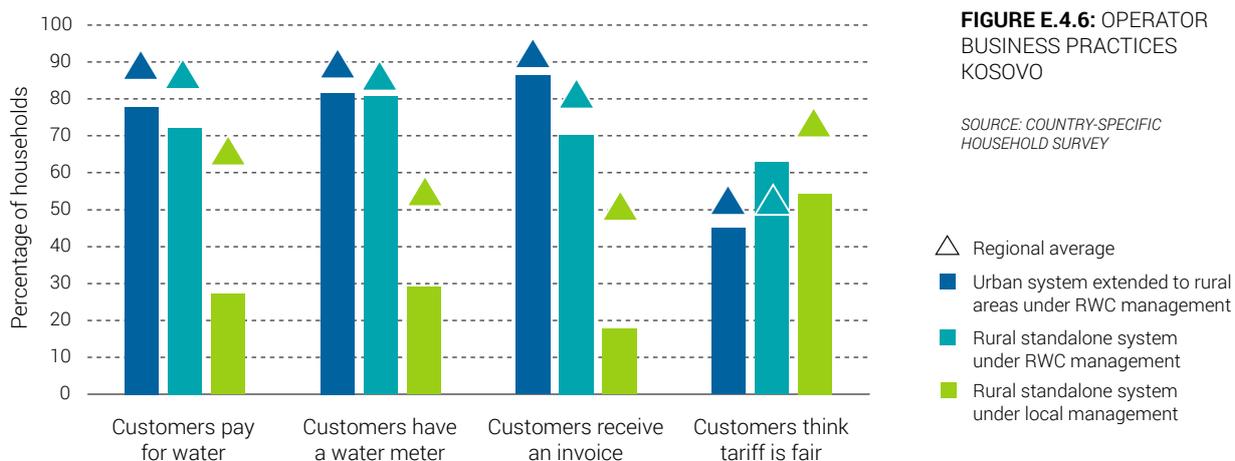
- △ Regional average
- Urban system extended to rural areas under RWC management
- Rural standalone system under RWC management
- Rural standalone system under local management



- ▶ Water supply service levels in Kosovo are generally below regional averages for similar management types: only half of customers interviewed receive 24-hr supply (53 percent) indicating the need to improve continuity of service and the performance gaps still present among RWCs.
- ▶ Few households were fully satisfied with their service (less than a third); those connected to urban systems under RWC management were least satisfied with the tariffs; customers of RWC managed rural standalone systems water quality and quantity are reasons for dissatisfaction, similar as for locally managed systems.

## E.4.5 Business Practices and Capacities

Payment for water, water metering, and invoicing are regular business practices for RWCs with respect to their urban systems, although they show a suboptimal situation (for example, 10 percent of urban customers are not receiving regular invoices). Under WRC management, such basic practices are less frequently implemented for rural standalone systems, with regular payment and invoicing dropping to three quarters of customers and water meters only present for 86 percent. This points to the discrepancies between legal requirements and the reality in rural areas and the need to improve the billing and collection process in rural areas (figure E.4.6). Tariffs for RWCs interviewed are Euro 0.34 per cubic meter on average –below the regional average of Euro 0.52 per cubic meter. Around half of rural customers of RWCs think tariffs are fair, revealing the need for intensive and continuous customer engagement to create and sustain willingness to pay. Customers of rural standalone schemes managed by RWCs have a more positive view of tariffs, likely because they are benefiting from a professionalized service as compared to local systems or no service in the past. While only a third of locally managed systems has a disinfection system, nearly all of the systems under RWCs management have such facilities, showing the benefits of the regionalization in terms of service levels. All RWCs interviewed have received support in the past year from other entities, which underscores the national reach of the technical assistance program.



## E.4.6 Reaching the Poor and Unserved

Due to the advancements of RWCs, self-supply is and will be an increasingly less important service delivery model in rural Kosovo and is expected to decline from the estimated 30 percent in 2014 to 10 percent in 2020. The main reasons self-supply households are not connected are i) because it is not possible to physically connect to the network (35 percent), ii) households are satisfied with their existing water supply situation (31 percent), and iii) households are in the process of getting a connection (14 percent).

Rural households served by RWCs spend on average 3.6 percent of the monthly per capita consumption at the national poverty line, and 5 percent of the income at the extreme poverty line. This indicates that tariff levels are well within affordability limits for middle class and better off households. However, for the Kosovo's poor (17 percent of the population in 2015) and extreme poor (5 percent of the population in 2015), water expenditure is reaching the limits of affordability. Special measures, such as targeted social tariffs to such groups, may be needed. Half of municipalities interviewed have some sort of pro-poor support measures in place for drinking water supply.

## E.4.7 Sanitation Services

Access to flush toilets among interviewed households was high at 90 percent (below the national average of 96 percent), almost all located indoors (94 percent). Household satisfaction with flush toilets was double (62 percent) as for households using pit latrines (29 percent). In general, pit latrines users wish to upgrade to flush toilets, and flush toilet users wish to improve their bathroom and toilet fixtures and taps. Around half of flush toilet users has an on-site containment at their dwelling, and pit emptying is not a regular practice, as 83 percent had never emptied their pit or tank. If done, households do so mechanically (61 percent) through a local private company. Municipalities and RWCs are not engaged in emptying or faecal sludge management. Access to sewerage was very high with 67 percent of households interviewed connected (higher than national average of 54 percent and well above the regional average), explaining why few households report to have on-site containment. However, two thirds of connected households (68 percent) were not satisfied with the quality of their service indicating reasons such as smells (23 percent), dysfunctionality (14 percent), and overflow after heavy rains (13 percent).

## E.4.8 Lessons and Recommendations

At national level for an enabling environment for rural water

- ▶ The deliberately designed long-term process of regionalization has helped to close urban-rural service gap, as it is backed-up with substantial funds, has focused on expansion of urban networks and new rural schemes, and at a later stage addressed the inventorying and integration of local systems.
- ▶ It is recommended to solidify the partnership with municipalities, strengthening communication and cooperation with board of directors and consumer consultation committees and to continue to leverage partnership of RWCs and municipalities as investment partners.
- ▶ As affordability limits for the poor and extreme poor for water tariffs are within sight, targeting of social assistance for water charges requires further attention, such as through social tariffs.
- ▶ Complementary to the RWCs model, the enabling environment for self-supply needs to be developed, even if less than 10 percent will depend on this service in the future. This can consist of awareness and communication activities, mobile water quality testing, risk assessments and grant schemes.

At service provider level to improve quality and access

- ▶ Regionalization delivered its intended outcome; RWCs managed standalone schemes perform better on all aspects of service outcomes and performance, compared to locally managed systems.
- ▶ Critical gaps still need to be addressed for RWCs performance improvement, specifically for water reliability, loss reduction, use of metering, misuse of water.
- ▶ To sustain support for integration and tariff adjustments, better commercial management and customer focus and outreach activities are needed.
- ▶ To complete integration, the formal transfer of assets to RWC's books is needed.

For addressing sanitation

- ▶ A comprehensive sanitation strategy (for appropriate individual systems) needs to be developed with decentralized solutions as well as on-site solutions and faecal sludge management to ensure proper management and treatment.
- ▶ Institutional and legal framework along the entire service chain should be enhanced and local implementation capacities for faecal sludge management put in place.

## E.5 Moldova

### E.5.1 Country and Institutional Context



**FIGURE E.5.1:** MOLDOVA AS ONE OF THE SEVEN COUNTRIES IN THE STUDY

- ▶ Moldova is the poorest country in Europe with a GNI of US\$5,670 per capita (2016), although it has experienced economic growth and decreasing poverty over the past decade with 11 percent living in poverty (2014).
- ▶ Moldova's population is 3.5 million, of which 55 percent reside in rural areas (2016).
- ▶ Its policies centre around its ambitions for EU accession and an association agreement was ratified in 2016.
- ▶ Moldova has almost 900 local self-governments, with a median population size of just 1,830 people

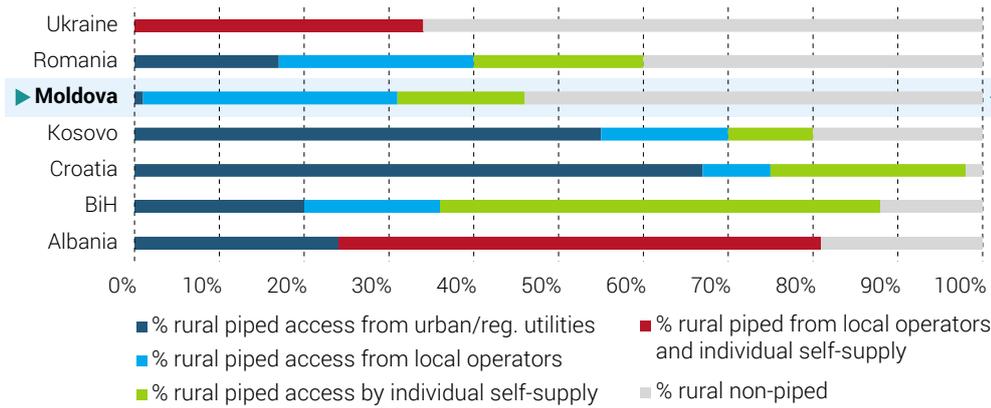
The Moldovan government has endorsed a water and sanitation strategy for 2014-2028 with the aim of providing safe drinking water to 65 percent of population by 2020, and connecting 65 percent to sewerage by 2025. The strategy highlights decentralisation, a clarified regulatory framework, expansion of service delivery through regionalization of service providers as mechanisms to improve sector performance. Regionalization of service providers has been slow and mostly focussed on urban towns and rayon centers. Moldova has recently undergone administrative public reforms, with the creation of a ministry for Agriculture Regional Development and Environment, responsible for the water and sanitation sector. Reform and rationalization of its subordinate agencies is taking place, including the national water agency, Moldova Waters. There are 38 water utilities licensed and regulated by the National Agency for Energy Regulation (ANRE). ANRE does license and regulate the over 1,000 local service providers that mostly exist in rural areas. This study showed that over half of service providers are municipal enterprises (53 percent), followed by water consumer associations (14 percent), private operators (11 percent), direct service provision by the mayoralty (8 percent), and informal (6 percent) or no operators (4 percent).

### E.5.2 Water and Sanitation Access in Rural Areas

Among the almost 2 million rural dwellers, only 46 percent have access to in-door piped water, one of the lowest levels of coverage in the region alongside Ukraine and Romania. However, rural access has increased with an estimated 4 percent annually, since the decentralization of water supply services to local governments in 2007. Approximately 600,000 rural dwellers receive services from service providers operating networks (31 percent), nearly all through local operators (30 percent) and a small share through urban utilities (1 percent). Approximately 300,000 rely on individual self-supply (15 percent), with piped water in the home<sup>141</sup>. This leaves an estimated 54 percent reliant on individual self-supply that is not piped into people's home. These rural households have their own supplies with piping in the yard (3 percent) or are dependent on fetching water from nearby sources (see figure E.5.2).

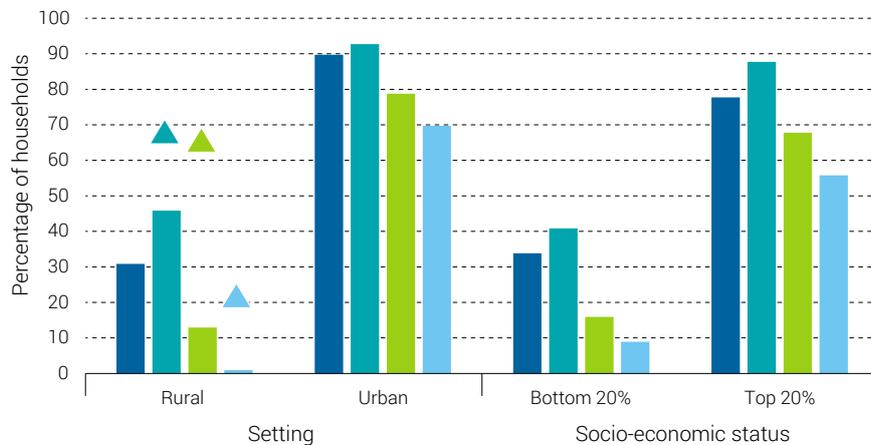
Inequalities between urban and rural areas are stark in terms of piped public water access, flush toilet access and sewer connections, with 31 percent, 13 percent and just 1 percent in rural areas compared to 90 percent, 79 percent and 70 percent respectively in urban areas. Inequalities between the poorest and richest quintile of the population – largely driven by rural poverty - are equally pronounced for water supply and even more so for sanitation access (see figure E.5.3).

<sup>141</sup> Estimates based on HBS (2015).



**FIGURE E.5.2:**  
STRUCTURE OF SERVICE DELIVERY IN RURAL AREAS: MOLDOVA

SOURCE: AUTHORS ELABORATION



**FIGURE E.5.3:** INEQUALITIES IN ACCESS IN RURAL WATER AND SANITATION MOLDOVA

SOURCE: HBS (2015)

- △ Regional average
- Access to piped water from a public network
- Access to any piped water in the home
- Access to a flush toilet
- Connection to sewerage

### E.5.3 Enabling Environment Assessment and Challenges for Rural Water

Figure E.5.4 illustrates the assessment of the enabling environment for rural water services in Moldova, which shows a challenging picture with the following key insights:

- ▶ The legal framework for WSS service delivery in Moldova remains ambiguous as responsibilities and accountabilities are not yet fully articulated (as the current administrative reforms progresses).
- ▶ The strategy does not explicitly address measures to close the urban-rural gap, although an update of the strategy is foreseen to correct this.
- ▶ Several local operator models are not recognized within the law on public water supply and thus remain to function informally. Efforts are needed to reform, clarify, and formalise water supply operations in rural areas – particularly considering the transition period required until regionalization reforms will likely impact rural areas. Informal operators are unlikely to have legal agreements with their local governments.
- ▶ Financing windows reaching rural areas are limited and remain fragmented through various funds. A consolidation of these funding windows is expected as part of the ongoing administrative reform.
- ▶ There are not systematic instruments such as for performance monitoring and oversight of rural water operators, neither are there tariff guidelines suitable for the needs and competencies of local operators and local governments.
- ▶ Local governments have an important role in WSS service delivery – including financing, asset ownership, and sometimes even the direct management and operation of assets. However, they lack resources and support particularly regarding the rehabilitation and expansion of piped water systems, and tariff setting and regulation. Only half (57 percent) of local governments surveyed reported receiving some support to implement their mandate. They indicated the need for training on regulation, financial and technical issues.
- ▶ Water permitting in rural water context is not systematically implemented. Although water quality standards are well defined, more than half of rural Moldavians are relying on wells that go unregulated and may have high risks for bacteriological and nitrate pollution.
- ▶ Despite its prevalence, there is no strategy in place to support self-supply households to access acceptable drinking water.



Building Block	Indicator	Moldova
Institutional Capacity	Clear allocation and implementation of roles and responsibilities under a broader strategy that addresses rural water service provision	Yellow
	National sector documents provide description of RWS operator management models and their legal form	Red
Financing	Dedicated funding streams exist for WSS capital investments that prioritize rural areas	Red
	Policy documents prescribe tariff setting rules relevant also for rural water service provision	Red
Asset Management	Asset ownership is clearly defined and implemented as per the legal framework and understood by service providers	Yellow
Water Resources Management	Water abstraction permitting processes are in place and apply it to rural water services	Red
	Low prevalence of conflicts related to water use management as reported by municipal authorities	Yellow
Monitoring and Regulation	Existence of a national performance monitoring system for rural water operators	Red
	Water quality standards are defined that govern service provision in rural areas	Green

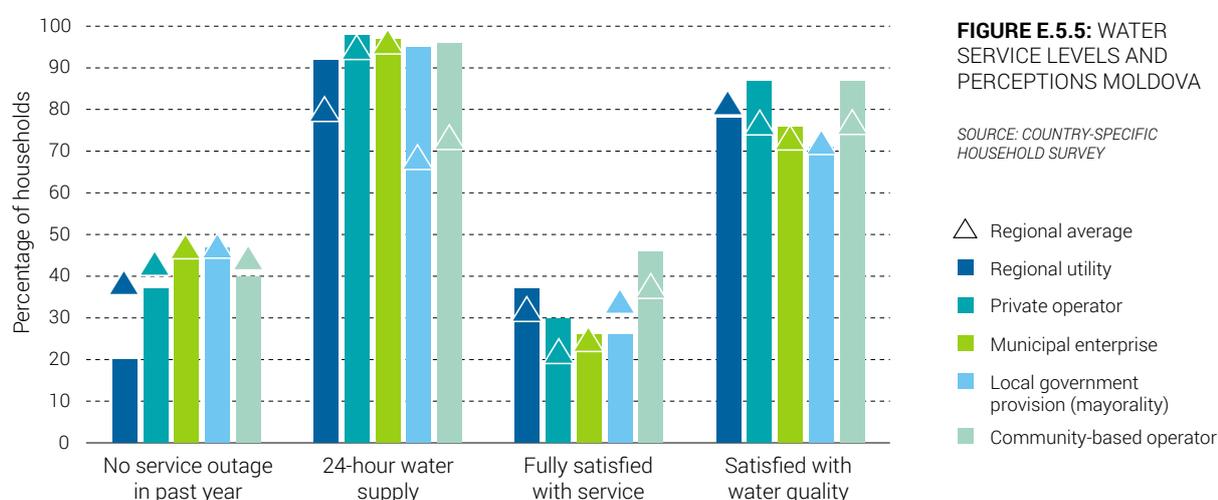
**FIGURE E.5.4:** ENABLING ENVIRONMENT ASSESSMENT RURAL WATER MOLDOVA

SOURCE: AUTHORS ELABORATION

## E.5.4 Service Levels and Perceptions

Household interviews provided various insights (see figure E.5.5)

- ▶ Households have invested within their abilities to increase the accessibility of service by in-door piping; three quarters of connected households have indoor taps, while only a quarter of self-supply households have piped water indoors.
- ▶ One in five self-supply households spend more than 30 minutes to get water.
- ▶ Reliability of public water services shows room for improvement: 62 percent of connected households experienced at least one service outage in the past year; reliability for self-supply households was better as only 29 percent experienced an outage in the past year.
- ▶ Only a third of households were fully satisfied with their service (31 percent), while this was higher for self-supply households (46 percent). For connected households, water quality and costs are the most common issues raised; self-supply households equally raise concerns with water quality.
- ▶ Satisfaction with water quality surprisingly is fairly high (around 70 to 80 percent), which may indicate low expectations and lack of awareness.



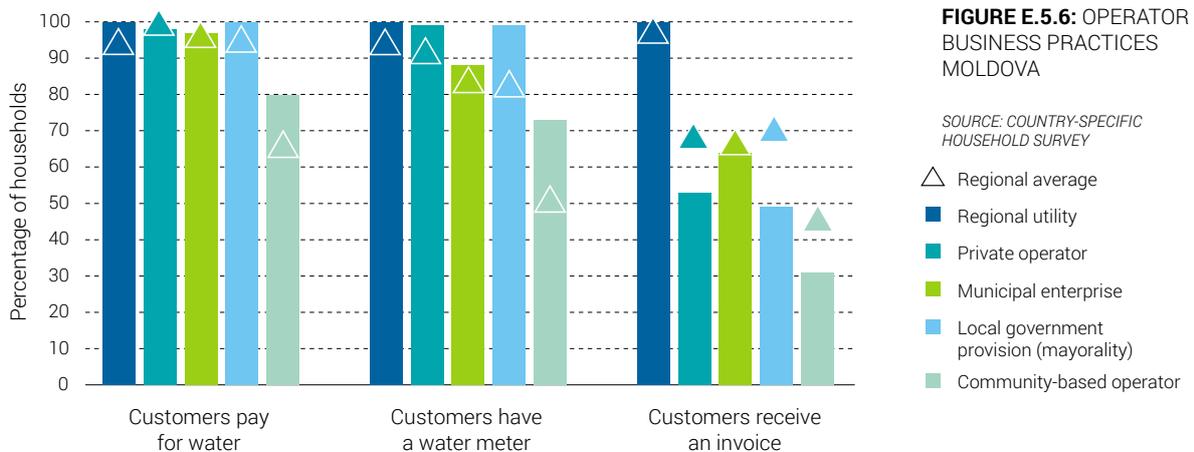
**FIGURE E.5.5:** WATER SERVICE LEVELS AND PERCEPTIONS MOLDOVA

SOURCE: COUNTRY-SPECIFIC HOUSEHOLD SURVEY

- △ Regional average
- Regional utility
- Private operator
- Municipal enterprise
- Local government provision (mayorality)
- Community-based operator

## E.5.5 Business Practices and Capacities

Payment for water and water metering are regular business practices for service providers, although less so for community-based operators (both water consumer associations and informal community arrangements) (figure E.5.6). Regular invoicing was only a well-established practice for utilities and was weak – and below regional to averages - for local service providers, especially for community-based operators. Tariffs ranged from Euro 0.36 per cubic meter for community-based operators, to Euro 0.45 per cubic meter for regional utilities (Chisinau) and Euro 0.55 per cubic meter for municipal enterprises, indicating that local operators – except for the community operators – charge similar levels as licensed utilities. Local operators typically have no disinfection facilities in place, while licensed utilities do. A third of service providers is supplying “technical water”, not intended for human consumption. However, households may not have access to other sources for drinking, other than private shallow wells.



## E.5.6 Reaching the Poor and Unserved

Self-supply is the predominant form of service delivery in rural parts of Moldova (69 percent), with 15 percent having piped access into the home. Due to its dispersed and declining rural population and lack of financial resources, it is likely that a significant share of the rural population will continue to rely on self-supply. The main reasons self-supply households are not connected are i) because households could not afford the connection fees/costs (30 percent), ii) it is not possible to physically connect to the network (23 percent), and iii) households are satisfied with their existing water supply situation (19 percent). In addition to observed inequalities at national level, affordability constraints are revealed through the household survey: 87 percent of the richest people are connected, while this is the case for only 68 percent of the poorest quintile. Water expenses - based on a low average water consumption of 1.75 cubic meter - is on average Euro 0.78 per capita per month. This represents slightly over 1 percent of the per capita consumption at the national poverty line, indicating that water tariffs are within affordability limits for the poor. Affordability issues are predominantly driven by high connection fees and costs. Half of municipalities interviewed (45 percent) have some sort of pro-poor support measures in place for drinking water supply. Attention is required to ensure willingness to pay for tariffs as non-connected households stated Euro 0.32 per cubic meter - below average tariff levels.

## E.5.7 Sanitation Services

Access to flush toilets among interviewed households was 20 percent (above national average of 13 percent), almost all located indoors (80 percent), and 6 percent with access to sewer (above the national average of 1 percent). Only half of flush toilet users was satisfied with their sanitation situation, with 40 percent wishing to add water taps to their toilets. Most pit latrine using households (80 percent) were not satisfied, desiring to upgrade to indoor flush toilets. Affordability is the main barrier preventing pit latrine users from upgrading to flush toilets – and willingness to pay for a latrine was Euro 98 on average, well below the actual costs. Pit emptying is already



a widespread practice, with only 30 percent that had never emptied their pit or tank. If done, households do so mechanically (67 percent), mostly through a local private company (60 percent). Municipalities and utilities are not engaged in emptying or other faecal sludge management activities, neither do they play an active role in the oversights of on-site facility construction.

## E.5.8 Lessons and Recommendations

At national level for an enabling environment for rural water

- ▶ A long-term national WSS planning framework needs to be developed, based on a revised strategy that recognizes various service delivery models (regional, local service providers and supported self-supply), and underpinned by sound financing strategy.
- ▶ There is a critical need to mobilize increased sector funding and develop a coherent financing window with dedicated “slice” for rural areas.
- ▶ A phased implementation plan needs to be developed for service provider regionalization with strong incentives for collaboration and time-bound equity goals for delineated service boundaries.
- ▶ The legal framework for local operators needs to be completed, combined with the set-up a simple licensing system for local operators, tailored regulatory instruments, such as tariff guidelines, and a performance monitoring system for local service providers.
- ▶ Support functions need to be assigned institutionalized and resourced for local governments and local operators to increase performance (administrative, institutional, technical support), building on pilot with CALM.
- ▶ To address needs of remote rural populations, a supported self-supply program should be designed, piloted and evaluated starting in high risk areas.

At service provider level to improve quality and access

- ▶ As part of a national support program for local operators, a dedicated rural water safety initiative should be launched, that incentivizes primary water treatment and disinfection for local service providers, combining investment and technical support for operation and risk assessments.
- ▶ Existing pro-poor measures should be further investigated and inform measures and policies to provide targeted support to address affordability for the poorest to connect to existing systems.
- ▶ A technical assistance program to complement regionalization is required to engage and support local authorities with asset inventories, help overcome legal barriers, and deliver intensive communication campaigns to create broad political and popular support for regional service providers and tariffs.

For addressing sanitation

- ▶ A comprehensive sanitation strategy needs to be developed with decentralized solutions such as on-site solutions and fecal sludge management to ensure proper management and treatment.
- ▶ A sanitation marketing program to support upgrading from pit-latrines to in-door flush toilets needs to be launched, that combines communication and marketing efforts, with local implementation support, and financial incentives for rural households.
- ▶ Institutional and legal framework along the entire service chain should be enhanced and local implementation capacities for fecal sludge management put in place

## E.6 Romania

### E.6.1 Country and Institutional Context



**FIGURE E.6.1:** ROMANIA AS ONE OF THE SEVEN COUNTRIES IN THE STUDY

- ▶ Romania is a middle-income country; GNI of nearly US\$23,000 per capita (2016).
- ▶ Romania has 25 percent of the population living below the national poverty line (2014).
- ▶ Romania has a population of nearly 20 million people – with 46 percent residing in rural areas and a declining rural population share.
- ▶ Romania became an EU member state in 2007.
- ▶ Romania has 2,861 local governments (communes), with an average population size of 3,200 people.

Water supply and sanitation service provision is a responsibility of the local government. Starting in 2000, Romania has undergone an aggregation process with delegation of service provision to Regional Operating Companies (ROCs), answerable to local governments as shareholders joined in Intercommunal Development Associations (IDAs). ROCs sign a delegation contract with the IDAs to provide services in a particular jurisdiction. ROCs are commercial companies with assets owned by respective IDAs members. Service provision is thus organized by 43 regional utilities, at county level, and two large private operators. There are several excellent examples of how ROCs have expanded coverage in rural areas. Since the regionalization model has not always aligned with local government interest concerned with tariff increases introduced by ROCs and loss of control, there remain over 1,000 licensed local operators. These include departments for “communal services” within the local government administrations (communa-operators) and municipal enterprises (SRL or limited liability operators). The national regulatory agency - ANRSC- regulates both tariff setting and licensing for ROCs, and only the licensing of municipal service providers, leaving tariff setting at the discretion of local governments. It is estimated that 65 percent of local governments have joined an IDA, and only 35 percent of local governments have delegated the service to a regional utility.

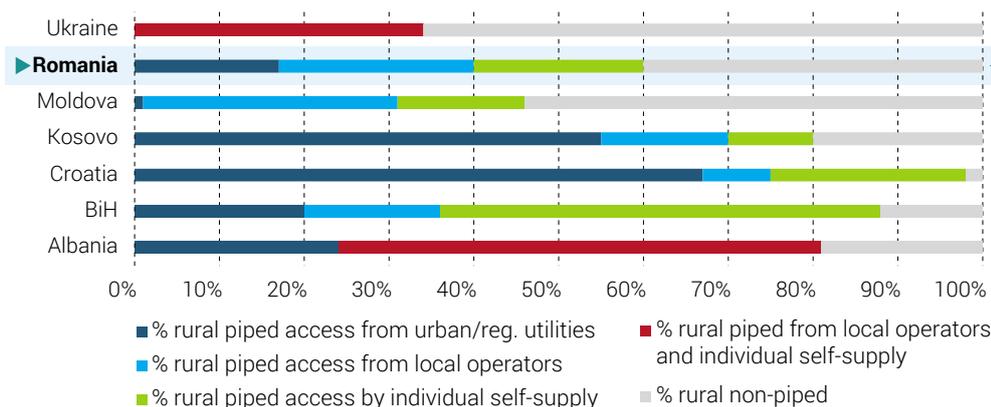
### E.6.2 Water and Sanitation Access in Rural Areas

Among the almost 9 million rural dwellers, around 5.4 million have access to piped water supply in the home, either provided by regional utility companies, local municipal service providers or by individual self-supply piped into the home (60 percent) (see figure E.6.2). Around 1.5 million receive drinking water services through the ROCs (17 percent), 2 million from local service providers, both communa-departments and SRL operators (23 percent), and an estimated 1.8 million rural dwellers have invested in piping their own supplies into the home (20 percent). The remaining 40 percent is reliant on self-supply not piped to homes (mostly wells)<sup>142</sup>.

Inequalities between urban and rural areas are stark in terms of piped public water access, flush toilet access and sewer connections, with 41 percent, 48 percent and 17 percent in rural areas compared to 90 percent, 89 percent and 86 percent respectively in urban areas. Inequalities between the poorest and richest quintile of the population are pronounced, and access to public piped water access among the poorest quintile is low with 36 percent and flush toilet access only at 23 percent (see figure E.6.3). Roma population in rural areas only have 22 percent access to public piped water services.

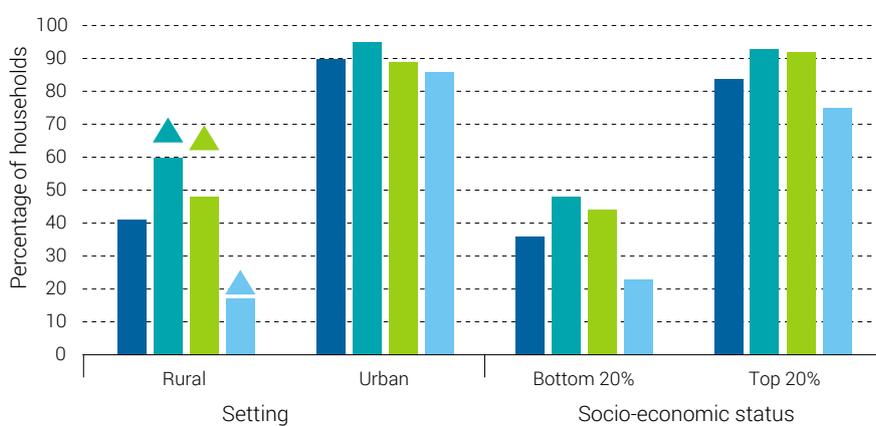
<sup>142</sup> Estimates based on HBS (2016) and ANRSC (2016).





**FIGURE E.6.2:**  
STRUCTURE OF SERVICE DELIVERY IN RURAL AREAS: ROMANIA

SOURCE: AUTHORS ELABORATION



**FIGURE E.6.3:** INEQUALITIES IN ACCESS IN RURAL WATER AND SANITATION ROMANIA

SOURCE: HBS (2016)

△ Regional average  
 ■ Access to piped water from a public network  
 ■ Access to any piped water in the home  
 ■ Access to a flush toilet  
 ■ Connection to sewerage

## E.6.3 Enabling Environment Assessment and Challenges for Rural Water

Figure E.6.4 illustrates the assessment of the enabling environment for rural water services in Romania. Despite considerable achievements in expanding and improving access through the regionalization model, there remain several challenges with respect to service provision in rural areas, informed by interviews conducted with local governments, and summarized below:

- ▶ While there are national investment programs that rural local governments can access (such as the PNDL or National Local Development program), larger investment programs (PNDR, National regional Development Program) backed with EU Cohesion funds, have focused on urban wastewater collection and treatment infrastructure.
- ▶ Incentives due to EU compliance with wastewater targets - and pending infringement - are not aligned with a politically unattractive agenda to expand rural public piped water access.
- ▶ Cherry-picking behaviour was observed in terms of expansion in more commercially attractive areas, slowing down progress in rural areas. Rural communes have limited voice in IDA/ROC investment decisions, leading to cases where communes ultimately withdrew from IDA/ROCs.
- ▶ The voluntary nature of regionalization, combined with local interests, allowed the pursuit of parallel service delivery models, local and regional. Regionalization got stalled due to negative perceptions among local governments that expected benefits may not outweigh perceived negative consequences, such as tariff increases, loss of autonomy, and/or delayed investments.
- ▶ There is no clear strategy articulating how to resolve the situation and deliberately addressing the urban-rural service gap (especially as there are no compliance targets for drinking water access).
- ▶ Beyond a listing of licensed local service providers, there is no management information system for municipal water operators to identify performance issues and target support.
- ▶ Municipal operators are vulnerable to a low willingness to charge of local governments due to absence of regulatory checks on proposed tariffs.

- ▶ As municipal operators are supposed to be phasing out under the aggregation process, there are no systematic efforts directed at increasing their capacities and abilities to improve and expand rural services.
- ▶ Despite its prevalence, there is no strategy in place to support self-supply households to access acceptable drinking water quality and improve in-door accessibility of supply.

Building Block	Indicator	Romania
Institutional Capacity	Clear allocation and implementation of roles and responsibilities under a broader strategy that addresses rural water service provision	Yellow
	National sector documents provide description of RWS operator management models and their legal form	Green
Financing	Dedicated funding streams exist for WSS capital investments that prioritize rural areas	Yellow
	Policy documents prescribe tariff setting rules relevant also for rural water service provision	Green
Asset Management	Asset ownership is clearly defined and implemented as per the legal framework and understood by service providers	Green
Water Resources Management	Water abstraction permitting processes are in place and apply it to rural water services	Green
	Low prevalence of conflicts related to water use management as reported by municipal authorities	Green
Monitoring and Regulation	Existence of a national performance monitoring system for rural water operators	Yellow
	Water quality standards are defined that govern service provision in rural areas	Green

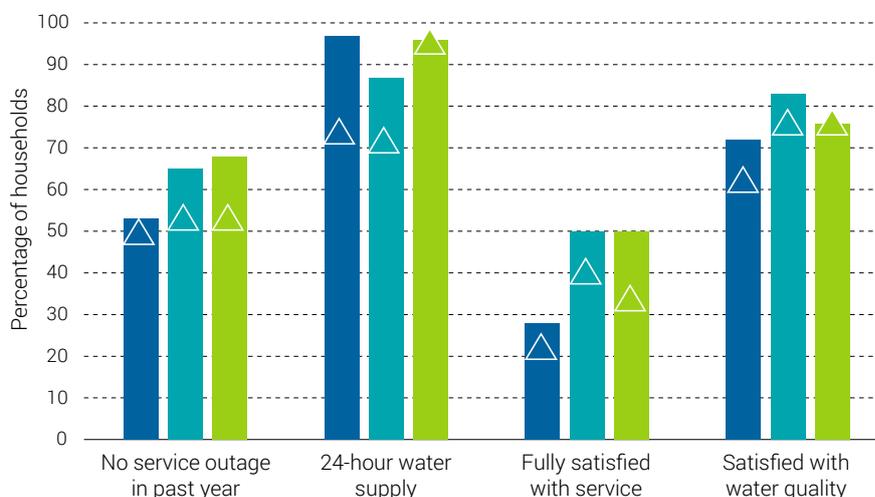
**FIGURE E.6.4:** ENABLING ENVIRONMENT ASSESSMENT RURAL WATER ROMANIA

SOURCE: AUTHORS ELABORATION

## E.6.4 Service Levels and Perceptions

Household interviews provided various insights (see figure E.6.5)

- ▶ Households surveyed have invested within their abilities to increase the accessibility of service by in-door piping; 78 percent of connected households have indoor taps, while only 26 percent households have piped water indoors.
- ▶ Around 7 percent of surveyed self-supply households spend more than 30 minutes to get water.
- ▶ Reliability of public water services shows room for improvement: 36 percent of connected households experienced at least one service outage in the past year; reliability for self-supply households was better as only 10 percent experienced an outage in the past year.
- ▶ Water supply service continuity was high – with over 90 percent typically having access to 24-hour supply, although local government provision has lower continuity of service.



**FIGURE E.6.5:** WATER SERVICE LEVELS AND PERCEPTIONS ROMANIA

SOURCE: COUNTRY-SPECIFIC HOUSEHOLD SURVEY

- △ Regional average
- Regional Operating Companies
- Municipal company managed systems (SRL)
- Local government managed system (communa)



- ▶ 63 percent of self-supply and 45 percent of connected households were fully satisfied with their water service; satisfaction was lowest for ROC customers (less than a third).
- ▶ Among dissatisfied connected households, water quality, water quantities/pressure, and costs were the most common issues, while among self-supply it was water quality and quantity.
- ▶ Despite low satisfaction with water quality provided by ROCs, they were the operators with better water quality practices and monitoring.

## E.6.5 Business Practices and Capacities

Payment for water, water metering and invoicing are regular business practices for ROCs and municipal service providers and well-above regional averages (figure E.6.6). Tariffs for ROCs interviewed are on average Euro 0.82 per cubic meter, well above regional averages. Tariffs for both communa and municipal companies (SRL) are in the same range from Euro 0.46 to Euro 0.54 per cubic meter, well below ROC tariffs.

Less than half of ROCs customers surveyed consider their tariff to be fair, while this was higher (up to 70 percent) for municipal service providers. This aligns with the higher tariffs charged by ROCs, and it also points to the need to increase support for tariffs, articulating and communicating the benefits of a professional service, including improved water quality monitoring practices of ROCs. Disinfection practices are found among schemes operated under all three management arrangements, however customers of ROCs articulate to be dissatisfied with information provision on water quality.



## E.6.6 Reaching the Poor and Unserved

Self-supply is the predominant form of service delivery in rural parts of Romania (60 percent), with 40 percent continuing to rely on wells and springs without piping into the home, and 20 percent with indoor piped access. Due to its dispersed and declining rural population and lack of financial resources, it is likely that a significant share of the rural population will continue to rely on self-supply. The main reasons self-supply households are not connected are i) because households could not afford the connection fees/costs (22 percent), ii) it is not possible to physically connect to the network (13 percent), and most importantly iii) households are already satisfied with their existing water supply situation (39 percent). In addition to observed inequalities among top and bottom quintiles at national level, constraints to connect are revealed in the household survey: 88 percent of the richest quintile are connected, while only 62 percent of the poorest quintile is (the sample is biased towards localities with functional piped systems). Roma were found to be significantly less likely to be connected to a water supply service provider, have water piped into their home, and have a flush toilet. This is despite three quarters (72 percent) of municipalities claiming to have a sort of pro-poor support mechanism for water supply. Tariffs are ranging from Euro 0.82 to Euro 0.46 per cubic meter. Water expenditure per capita per month is almost 3 percent of the per capita consumption at the national poverty line for customers of ROCs, getting close to the affordability limits for the poor. However, for municipal service providers this is 1.8 to 2.3 percent and thus within affordability limits for the poor and could rise to reduce reliance of operators

on operational subsidies. Given the stark inequalities in rural areas and among ethnicity such as the Roma, social tariffs and connection subsidies are to be further explored as policies to safeguard inclusive services, while allowing tariffs to rise to improve the financial viability of providers.

## E.6.7 Sanitation Services

Access to flush toilets among interviewed households was 52 percent (in line with national average of 48 percent), almost all located indoors (93 percent). Flush toilet users are much more satisfied with their sanitation facilities than pit latrine users – with 89 percent and 11 percent fully satisfied. Pit latrine users desire to upgrade to flush toilets inside their home. Affordability is the main barrier preventing pit latrine users from upgrading to flush toilets: 19 percent of the poorest quintile of households interviewed had a flush toilet, compared to 85 percent of richest quintile of households interviewed. This barrier could be overcome through incentives and communication, as a high stated willingness to pay at Euro 450 clearly indicates latent demand. Pit or tank emptying is quite widespread practice, with 56 percent having ever emptied their pit or tank done in the past. Tanks and pits are typically emptied mechanically (64 percent) and most often by a private company (35 percent), or households themselves (25 percent). Municipalities are not much engaged in faecal sludge management activities, neither do they play an active role in the oversight of on-site facility construction or sludge disposal. Approximately 19 percent of households surveyed has a sewerage connection (same as national average of 17 percent) with nearly all paying for the service (97 percent). Most were fully satisfied with the service (70 percent), while few reported issues related to high tariffs, sewage leakages, poor operation and maintenance. Despite this high satisfaction, stated willingness to pay of those not connected to sewer systems is on average Euro 22, indicating household priorities to upgrade to better in-door flush toilets.

## E.6.8 Lessons and Recommendations

At national level for an enabling environment for rural water

- ▶ A strategy needs to be developed to close the urban-rural access gap that reconsiders the IDA/ROC model as the only delivery model for expanding and improving water services. Municipal service providers may continue to play a role for at least an interim period, and supported self-supply deserves attention to address water quality concerns and accessibility issues in remote and dispersed rural areas.
- ▶ Strong financial incentives and targeted subsidies are required to prioritize equity objectives of progressing aggregation, with dedicated slices of national investments directed to water supply in rural areas; these investments should be coupled with time-bound targets for closing the urban-rural access gap under ROCs business plans.
- ▶ Mechanisms for a more inclusive governance model should be developed to better represent the interest of economically weaker rural communes.
- ▶ A national system for monitoring and benchmarking of municipal service providers is required. This should be coupled with a systematic structure/facility for local operators to access technical assistance and support services for professionalization, implementation of local performance improvement plans, and investments.
- ▶ To address needs of remote and shrinking rural populations, a supported self-supply program should be designed, piloted, and evaluated starting in high risk areas. This could entail water quality testing, a grant scheme to improve quality and accessibility of services, and accompanying communication and information activities.

At service provider level to improve quality and access

- ▶ If above strategy recognizes municipal service providers as a critical management model to reach rural areas in the medium to long-term, capacity development programs should be launched to support professionalization. On demand technical assistance is required to improve commercial, financial and technical performance and communication with customers, combined with better monitoring and oversight of municipal service providers.
- ▶ Measures and policies to provide targeted support should be designed to help the poorest and vulnerable connect to services.
- ▶ For ROCs with tariffs beyond affordability limits of the poor, social tariff mechanisms should be investigated, guided through a national policy to ensure consistent implementation.



For addressing sanitation

- ▶ A comprehensive rural and small-town sanitation strategy needs to be developed (agglomerations below 10,000 PE) including decentralized solutions and fecal sludge management to ensure proper management and treatment.
- ▶ A sanitation marketing program to support upgrading from pit-latrines to in-door flush toilets needs to be launched, that combines communication efforts, with local implementation support and oversight, combined with financial incentives for rural households to unleash self-investments in home and on-site facility improvements.
- ▶ Institutional and legal framework along the entire service chain should be enhanced and local implementation capacities for fecal sludge management put in place.



## E.7 Ukraine

### E.7.1 Country and Institutional Context



**FIGURE E.7.1:** UKRAINE AS ONE OF THE SEVEN COUNTRIES IN THE STUDY

- ▶ Ukraine is a large middle-income country with a GNI of approximately US\$8,190 per capita (2016).
- ▶ Approximately 9 percent of the population lives below the national poverty line (2014) – and this is increasing due to economic challenges.
- ▶ Ukraine's population is 45 million people, with a declining rural population of 30 percent (2016) due to migration and other factors.
- ▶ Ukraine is aiming for EU accession and an Association Agreement was ratified in 2017.
- ▶ Ukraine has over 10,000 local self-governments, with an average rural population size of just 1,240 people.

The Ministry of Regional Development, Housing and Construction is the line ministry developing policies for the WSS sector, monitoring performance, setting standards and norms, and responsible for investment programs, although its attention is focussed on urban areas. Water supply and sanitation service delivery is primarily delegated to state-owned utilities serving urban areas, licensed and regulated by the National Energy and Utilities Regulatory Commission. In rural areas, local governments are responsible for service delivery, delegating this predominantly to municipal enterprises in rural areas. There are more than 1,600 small municipal enterprises and nearly 1,300 local institutions (e.g., schools, military bases) delivering services. Regional (oblast) governments are responsible for executing national WSS programmes, supporting local governments, and licensing local water supply operators that do not fall under NERC's authority. Local self-governments are the asset owners of the WSS infrastructure within their jurisdiction and are responsible for tariff setting for local operators. Many rural households continue to rely on self-supply.

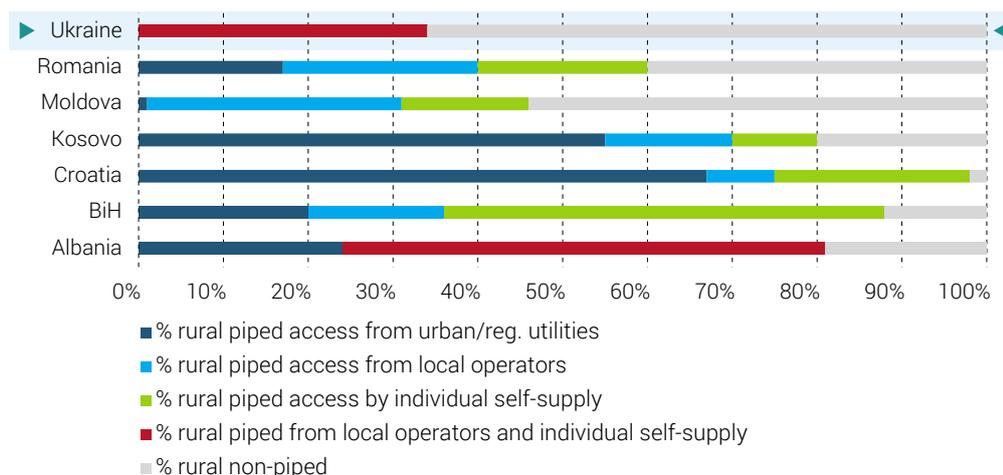
### E.7.2 Water and Sanitation Access in Rural Areas

Among the 13.5 million rural dwellers, around 4.6 million have access to piped water supply for drinking, either provided by communal municipal enterprises or by individual self-supply piped into the home (34 percent)<sup>143</sup>. The remaining 66 percent of the rural population is estimated to rely on non-piped self-supply, mostly shallow wells or tube wells. This marks the highest reliance on non-piped self-supply among the seven study countries, and in Ukraine over the past decade<sup>144</sup> (see figure E.7.2). Inequalities between urban and rural areas are stark in terms of piped public water access, flush toilet access and sewer connections, with 34 percent, 26 percent and just 8 percent in rural areas compared to 80 percent, 86 percent and 75 percent respectively in urban areas. Inequalities between the poorest and richest quintile of the population are even more pronounced, and access among the poorest quintile is extremely low with 9 percent of piped water and flush toilet access (see figure E.7.3).

143 Estimates based on State Statistical Service (2016) and MICS (2012). This refers to any piped access and no distinction between networked systems and individual supply cannot be made.

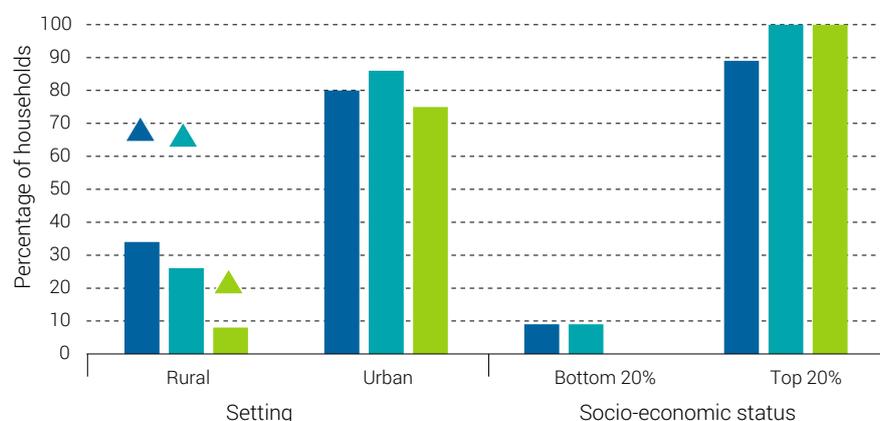
144 MICS 2000 data showed 49 percent of rural households using piped water on premises down to 34 percent in 2012. Unclarity and inconsistency in definitions of makes it difficult to estimate rural piped water access in the home.





**FIGURE E.7.2:**  
STRUCTURE OF SERVICE DELIVERY IN RURAL AREAS: UKRAINE

SOURCE: AUTHORS ELABORATION



**FIGURE E.7.3:** INEQUALITIES IN ACCESS IN RURAL WATER AND SANITATION UKRAINE

SOURCE: STATE STATISTICAL SURVEY (2016) AND MICS (2012)

△ Regional average  
 ■ Access to any piped water into dwelling the home  
 ■ Access to a flush toilet  
 ■ Connection to sewerage

### E.7.3 Enabling Environment Assessment and Challenges for Rural Water

Figure E.7.4 illustrates the assessment of the enabling environment for rural water services in Ukraine, which shows a challenging picture with the following key insights:

- ▶ There is no comprehensive water and sanitation strategy that deliberately set-outs measures to close the urban-rural service gap. However, such long-term strategy is currently under preparation.
- ▶ Municipal water enterprises deliver services based on legal decisions from the local government and as such the legal framework is well established. However, local governments are chronically under-resourced and under-supported to deliver on their mandate.
- ▶ Beyond a listing of service providers there is no management information system for local water operators to identify performance issues, target support, and develop an investment program for rural areas.
- ▶ There are fragmented funding windows for rural water, spread out over several ministries, however, these programs lacked funding over recent years or were geared to urban areas.
- ▶ At central or regional level, there is no assigned agency that provides the much-needed technical, administrative and institutional support for local governments and municipal enterprises; only 42 percent of local governments received any support, mostly from regional administration or international donors.
- ▶ Local service providers and governments highlighted a lack of capacity building, lack of resources for needed rehabilitation works, issues with chronically low tariffs, and issues with resolving licensing requirements as well as water abstraction permits. Conflicts around local water use are frequently reported.
- ▶ There are no tariff guidelines tailored to local operators (only for urban utilities); due to operational cost recovery shortfalls, local authorities commonly subsidize municipal enterprises for continued operation.
- ▶ Despite its prevalence, there is no strategy in place to support self-supply households to access acceptable drinking water quality.

Building Block	Indicator	Ukraine
Institutional Capacity	Clear allocation and implementation of roles and responsibilities under a broader strategy that addresses rural water service provision	Yellow
	National sector documents provide description of RWS operator management models and their legal form	Green
Financing	Dedicated funding streams exist for WSS capital investments that prioritize rural areas	Red
	Policy documents prescribe tariff setting rules relevant also for rural water service provision	Red
Asset Management	Asset ownership is clearly defined and implemented as per the legal framework and understood by service providers	Green
Water Resources Management	Water abstraction permitting processes are in place and apply it to rural water services	Green
	Low prevalence of conflicts related to water use management as reported by municipal authorities	Red
Monitoring and Regulation	Existence of a national performance monitoring system for rural water operators	Red
	Water quality standards are defined that govern service provision in rural areas	Green

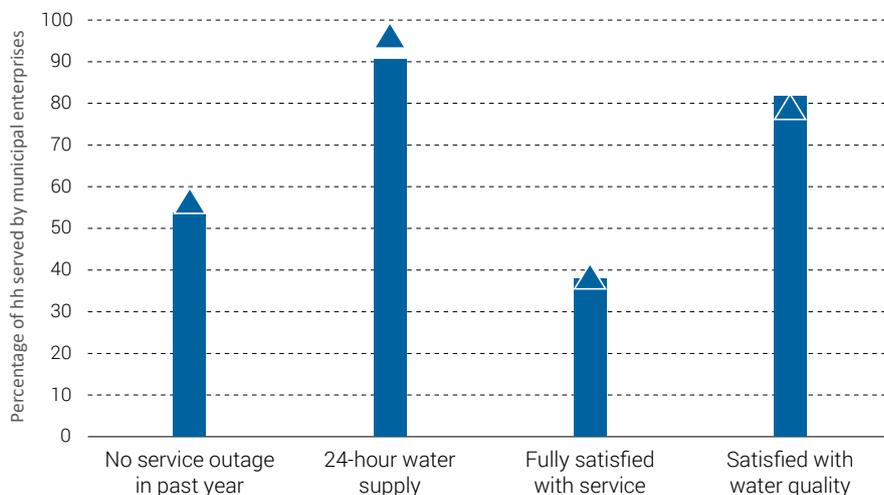
**FIGURE E.7.4:** ENABLING ENVIRONMENT ASSESSMENT RURAL WATER UKRAINE

SOURCE: AUTHORS ELABORATION

### E.7.4 Service Levels and Perceptions

Household interviews provided various insights (see figure E.7.5)

- ▶ Households surveyed have invested within their abilities to increase the accessibility of service by in-door piping; nearly all (98 percent) of connected households have indoor taps, while only three quarters of self-supply households have piped water indoors.
- ▶ Only 6 percent of surveyed self-supply households spend more than 30 minutes to get water; at national level 6 percent needs to fetch water further than 200 meters from their premises.
- ▶ Reliability of public water services shows room for improvement: 46 percent of connected households experienced at least one service outage in the past year; reliability for self-supply households was better as only 27 percent experienced an outage in the past year.
- ▶ Water supply service continuity was high – with nearly all households (91 percent) typically having access to 24-hour supply.
- ▶ Only a third of households were fully satisfied with their service (38 percent). The most common concerns raised relate to water quality information, tariffs, and low water pressure. Despite these concerns, reported satisfaction levels with water quality is high (82 percent).



**FIGURE E.7.5:** WATER SERVICE LEVELS AND PERCEPTIONS UKRAINE

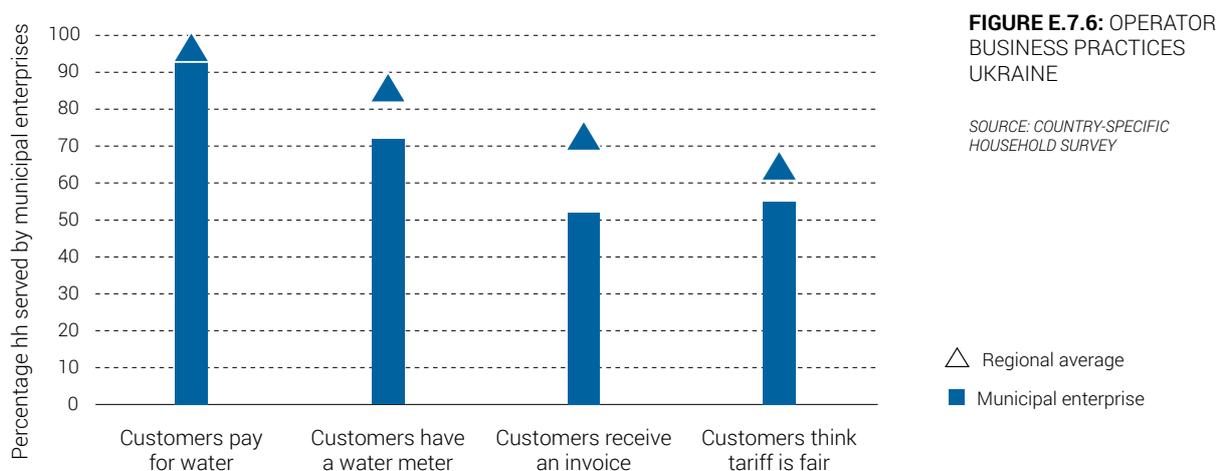
SOURCE: COUNTRY-SPECIFIC HOUSEHOLD SURVEY

△ Regional average  
 ■ Municipal enterprise



## E.7.5 Business Practices and Capacities

Payment for water and water metering are regular business practices for municipal enterprises, at 93 percent and 72 percent respectively. In addition to metering, invoicing has room for improvement as only 52 percent of rural households regularly receive an invoice (figure E.7.6). Both metering and invoicing are below regional averages for small municipal enterprises. Tariffs were on average just Euro 0.26 per cubic meter, well below regional averages. Just over half of municipal enterprise customers surveyed consider their tariff to be fair. This may point to an expectation that public services are to be provided at minimal fees and corresponds with overall low satisfaction levels of customers with the service. Three thirds of operators indicate to have disinfection facilities in place, although no assessment of their functionality and the resulting water quality could be conducted as part of the survey. Municipal enterprises are typically supported by their local authorities (95 percent), which involves technical support for major repairs, financial support, and tariff setting.



**FIGURE E.7.6:** OPERATOR BUSINESS PRACTICES UKRAINE

SOURCE: COUNTRY-SPECIFIC HOUSEHOLD SURVEY

## E.7.6 Reaching the Poor and Unserved

Self-supply is the predominant form of service delivery in rural parts of Ukraine, with 66 percent continuing to rely on wells and springs without piping into the home. Due to its dispersed and declining rural population and lack of financial resources, it is likely that a significant share of the rural population will continue to rely on self-supply. The main reasons self-supply households are not connected are i) because households could not afford the connection fees/costs (20 percent), ii) it is not possible to physically connect to the network (22 percent), and iii) households are already satisfied with their existing water supply situation (32 percent). In addition to observed inequalities at national level, constraints to connect are revealed in the household survey: 90 percent of the richest people are connected, while only 53 percent of the poorest quintile is. This is despite all municipalities claiming to have a pro-poor support mechanism for water supply. Tariffs are low at Euro 0.26 per cubic meter. Water expenditure per capita per month represents slightly over 1 percent of the per capita consumption at the national poverty line. This indicates that water tariffs in rural areas are within affordability limits for the poor and could substantially rise to reduce reliance of operators on operational subsidies.

## E.7.7 Sanitation Services

Access to flush toilets among interviewed households was 67 percent (well above national average of 26 percent), almost all located indoors (82 percent). Many flush toilets were shared among several households (36 percent). Flush toilet users were more satisfied with their sanitation facilities than pit latrine users – with 69 percent and 39 percent fully satisfied. Pit latrine users that were not fully satisfied desire to upgrade to flush toilets inside their home. Affordability is the main barrier preventing pit latrine users from upgrading to flush toilets, with 50 percent indicating they cannot afford this investment and willingness to pay only at Euro 68 on average, well below the actual costs. Pit or tank emptying is a widespread practice, with 76 percent of flush toilet users and 59 percent of pit latrine users having

done so in the past. Tanks and pits are typically emptied mechanically (80 percent) and most often by a private company (49 percent), by a public utility (26 percent), or themselves (24 percent). Municipalities are not much engaged in faecal sludge management activities, neither do they play an active role in the oversights of on-site facility construction or sludge disposal. Approximately 28 percent of households surveyed has a sewerage connection (above national average of 8 percent) with three quarters paying for the service (79 percent). Nearly half were fully satisfied with the service while the remaining reported issues related to high tariffs, sewage leakages, poor operation and maintenance, and smells.

## E.7.8 Recommendations

At national level for an enabling environment for rural water

- ▶ There is a need to develop a national WSS strategy that explicitly addresses the rural sub-sector and the various service delivery models, including local operators and supported self-supply.
- ▶ There is a critical need to mobilize increased sector funding with dedicated resources targeted at rural areas to revert the declining trend.
- ▶ A national or (sub)national agency should be assigned and resourced to provide support for local governments and municipal operators to increase performance (administrative, institutional, technical support).
- ▶ A monitoring system for municipal enterprises performance should be implemented and rolled-out to identify sustainability issues, provide targeted technical assistance support, and inform investment plans for rural areas.
- ▶ Simplified tariff guidelines tailored to the needs and capacities of municipal enterprises could be developed, allowing tariffs to rise within affordability limits and to improve viability of service providers.
- ▶ To address needs of remote and shrinking rural populations, a supported self-supply program should be designed, piloted, and evaluated starting in high risk areas. This could entail water quality testing, a grant scheme to improve quality and accessibility of services, and accompanying communication and information activities.

At service provider level to improve quality and access

- ▶ As part of a national support program for local operators, a dedicated rural water safety initiative should be launched, combining investment and technical support for operation and risk assessments.
- ▶ Existing pro-poor measures should be further investigated and inform measures and policies to provide targeted support to the poorest to connect to public water systems.

For addressing sanitation

- ▶ A comprehensive rural and small-town sanitation strategy needs to be developed, including decentralized solutions and faecal sludge management to ensure proper management and treatment.
- ▶ A sanitation marketing program to support upgrading from pit-latrines to in-door flush toilets needs to be launched, that combines communication efforts, with local implementation support, and financial incentives for rural households to catalyze self-investments.
- ▶ Institutional and legal framework along the entire service chain should be enhanced and local implementation capacities for faecal sludge management put in place.





# A REVIEW OF RURAL WATER AND SANITATION SERVICES

IN SEVEN COUNTRIES  
OF THE DANUBE REGION



The World Bank / IAWD Danube Water Program supports smart policies, strong utilities, and sustainable water and wastewater services in the Danube Region by partnering with regional, national, and local stakeholders, promoting an informed policy dialogue around the sector's challenges and strengthening the technical and managerial capacity of the sector's utilities and institutions.



Smart policies, strong utilities, sustainable services

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