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The Romanian experience regarding the water and wastewater systems in rural areas

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- Romania is a medium-sized country, with a population of about **19.4 m inhabitants** (4.3% of EU27) with a continuous decreasing trend over time: over the last 10 years the population declined by 5% (out of which 60,6% is urban) and has a total land area of 230,170 km^2. Situated in the South-Eastern part of Europe, Romania ranks 9th by geographical area and 7th by population among the EU Member States.
- Romania is known for its diverse and balanced natural and landscape heritage, particularly marked by two significant bio-geographical areas, the Danube Delta and the Carpathians. Natural resources represent an essential part of Romania and determine the social and economic development of the country, environmental status and living conditions of the population.

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Romania is a sovereign, independent, unitary, indivisible national state, the form of government being a **Parliamentary Republic with a semi-presidential regime**. The Romanian President is directly elected for a five-year mandate, for maximum two terms. The Romanian Parliament is bicameral and consists of the Chamber of Deputies (*Camera Deputatilor*) composed of 329 directly elected deputies and the Senate (*Senatul*) composed of 136 directly elected senators (after 2016 legislative elections). The Romanian Parliament has a four-year mandate.

According to Article 3(3) of the Constitution, **the territory of Romania is divided into Communes (*comune*), Towns (*oraşe*) and Counties (*judeţe*)**; the big towns (cities) are declared municipalities (*municipii*) through a specific law. Towns having a large number of inhabitants and being of major economic, social, political and scientific importance at national level or meeting the necessary conditions for development in these fields may be classified as municipalities (cities) (Law 351/2001 with subsequent changes).

- The Romanian Counties are the administrative-territorial units at the intermediate level, while Communes, Towns and Municipalities (Cities) form the local administrative level.
- The intermediate administrative level consists of 41 Counties. The Municipality of Bucharest (the Capital of the country) holds both municipality and county competences. A prefect is appointed by the central government as a representative of the government at the county level.
- The management of local public affairs is the responsibility of the self-governing deliberative local administrative authorities, namely the County Council (*Consiliul Judeţean*) and the Local Councils *(Consiliul Local)*.
- The local level comprises 2,861 Communes, 217 Towns and 103 municipalities (cities).

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Romania's macro-economic evolution after year 2000 is associated with its transition to an effective market economy.

Macroeconomic indicators	Annual percentage change						
	1999-2014	2015	2016	2017	2018	2019	2020
GDP growth rate (%,)	3.4	3.9	4.8	7.3	4	3.8	3.6
Unemployment rate (%)	7.1	6.8	5.9	4.9	4.3	4.2	4.1
Inflation (%)	var.	-0.6	-1.5	1.1	4.1	3.3	3.1
General government gross debt (%)	24.2	37.8	37.3	35.1	35.1	35.9	38.2

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Real GDP per capita in 2018 was about **EUR 8,740** (31.6% of the EU27 average) and has grown by 30% over the last 10 years.

Based on the European Commission 'Spring 2020 Economic Forecast', released in May 2020, due to the COVID- 19 outbreak, Romania suffered a recession in 2020 with the gross domestic product **(GDP) expected to contract by 6.0%,** before rebounding and grow by 4.2% in 2021.

The **unemployment rate** increased from 3.9% (2019) to 6.5% (2020) and it is expected to slightly reduce in 2021 (5.4%).

- ***Definition of rural infrastructure***

"All physical assets that support the rural environment, such as roads, bridges, water supply and sewerage systems, waste management facilities, electricity networks, telecommunications, but also public structures such as schools, kindergartens, sports facilities and community centers, these being usually included in the category of social and cultural infrastructure."

As already mentioned, the rural area in Romania currently consists of the administrative area of 2,861 communes existing in the country, which bring together the rural population of the country. Communes consist of one or more villages, with a total of approx. 12,700 villages in rural areas. From an administrative-territorial point of view, there are 42 counties, which represent the basic administrative units.

By joining the EU in 2007, Romania was granted several transition periods to comply with the relevant EU water Directives, with a final deadline for compliance set at 31 December 2018 (that was missed). This legal obligation assumed by Romania as part of the Accession Treaty to the EU implied, among others, huge investment and capacity needs, most likely under-estimated at the time of the EU accession.

It is important to note that Romania started from a low level of water services (e.g. in 2007 only about 50% of the population had access to safe water supply as compared to minimum 90% in most of the EU countries).

In an effort to comply with these commitments, Romania initiated unprecedented **legal and institutional reforms** in the water sector management.

The **regionalization policy,** developed by Romania since 2005 as the primary means to speed-up compliance with the EU water standards, showed remarkable results in the given circumstances; in a relatively short period of three years, hundreds of small and inefficient operators were replaced by **43 regional operators** (in addition to the 2 private concessions in Bucharest and Ploiești (*VEOLIA*)), that were able to implement large investments co-financed by the EU and provide water and sanitation services for about 10 million population, mostly in larger urban agglomerations.

In parallel, other investments were undertaken by smaller municipalities, with support from the state budget.

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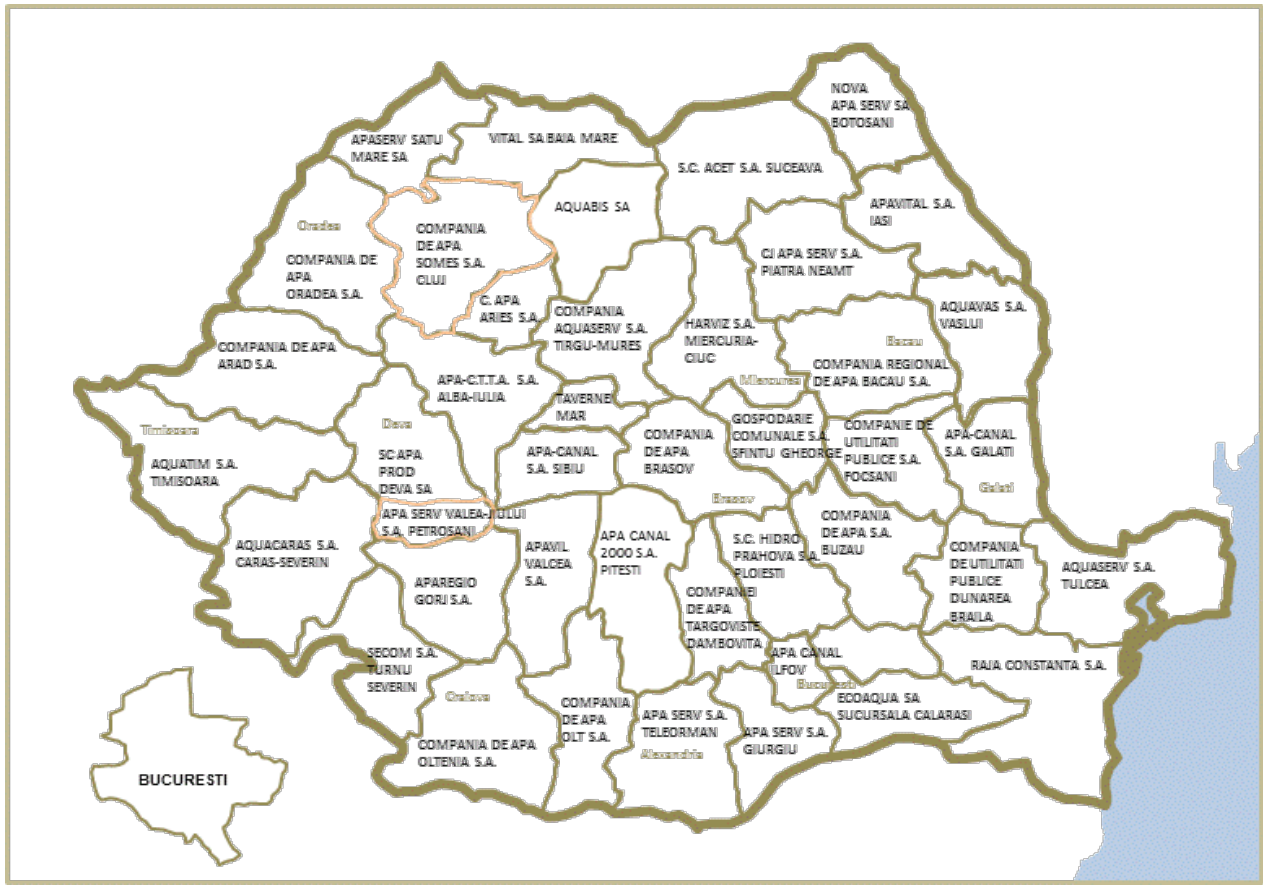

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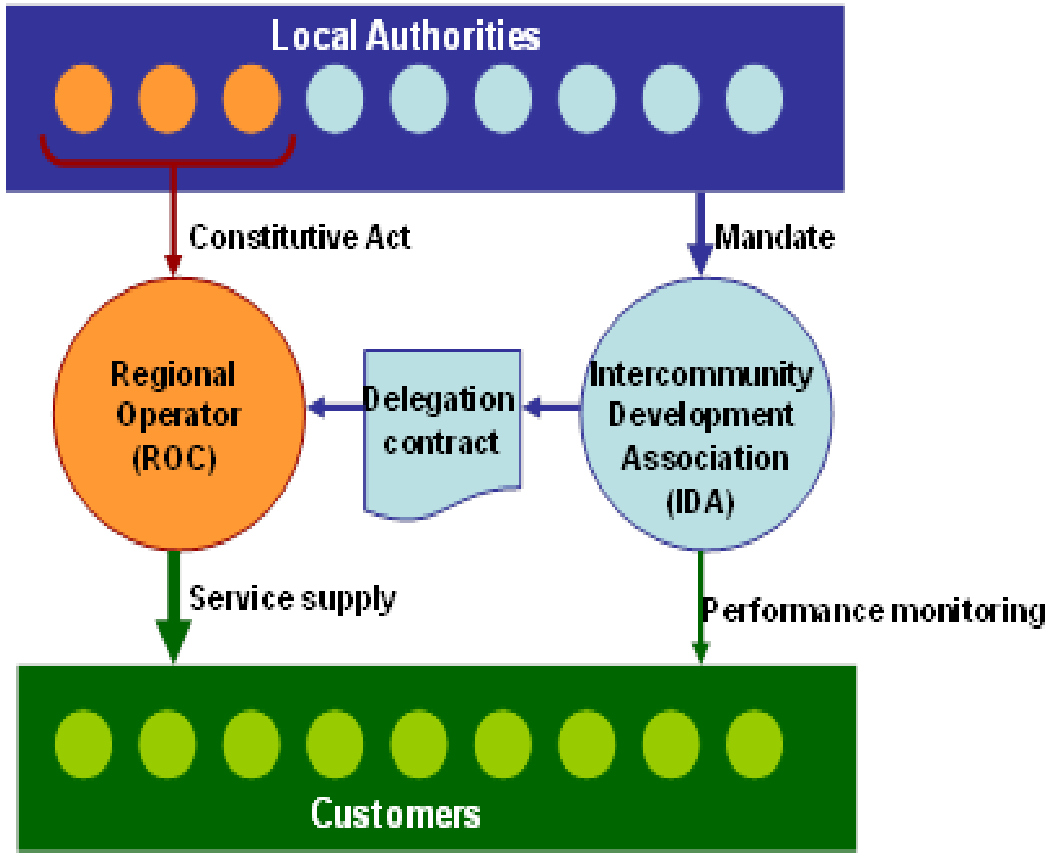

The need for regionalization

- *Reasons for European integration* - compliance with environmental standards within the deadlines set in the Accession Treaty;
- *Economic reasons* - using economies of scale to reduce investment and operating costs
- Reasons for *solidarity*:
  - Small and medium-sized communities do not have the capacity to prepare and implement projects, as well as to operate investments.
  - Large cities have the capacity to support from their own sources the necessary investments (without the association with the smaller localities, they will not benefit from non-reimbursable funds).
- *Reasons for viability* - the viability of the investment (CBA result) - cannot be demonstrated in most small localities (with historical debts and without the necessary experience).

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After early successes, the regionalization process has now been blocked for several years, and the commercialization approach is showing its limits.

- ❑ Most ROCs serve a population of between 100,000 to 300,000 people, which is not enough for sizeable scale-economy. With a few exceptions, most ROCs cover only a portion of their county's territory, as there is still about one-third of municipalities that have not joined IDAs, and only half of those that did have formally joined a ROCs.
- ❑ There is still significant fragmentation of WSS services, with a total of about 900 municipal WSS providers, serving about 1.5 million people.
- ❑ The commercialization approach has generated widespread resistance from ROCs to incorporate poor rural municipalities (as it would affect their financial/operational ratios as well as their commercial loans covenants), while fear of tariff hikes is also creating major resistance from many rural mayors and populations to join ROCs.

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Population supplied with water services, at country level (2009 - 2019)

Indicator \ Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Population supplied with water services, at country level (number of inhabitants)	11,790,494	11,931,011	12,089,562	12,103,555	12,347,231	12,454,909	12,634,419	12,853,110	13,229,699	13,515,626	13,728,144
Coverage with water services, at country level (% from the total country populationi)	54.9	55.7	56.5	56.8	61.9	62.4	63.7	65.2	67.5	69.4	70.9

Source: Romanian National Institute for Statistics

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Indicator	Year	Source	Value	Average EU countries	Average Danube	Max. Danube
Water resources						
Total available water from renewable sources *[m³/cap/year]*	2012	(FAO Aquastat, 2015)	10.510	10.142	7.070	n.a.
	2014	(FAO AquaStat, 2018)	10.773	10.533	9.488	n.a.
Drinking water annual abstracted, at national level *[% from total abstarctiondin total extras]*	2002	(World Bank, 2015)	20	38	26	n.a.
	2013	(World Bank, 2018)	15	31	32	n.a.
The share of surface water as a source of drinking water *[%]*	2014	(ICPDR, 2015)	50	16	31	n.a.
	2017	ANAR*	57	26	28	n.a.
Management of services						
Number of official water suppliers	2014	(ANRSC**, 2015)	226	1.060	661	n.a.
	2019	(ANRSC, 2019)	283[17]	1.136	748	n.a.
The main form of legal organization of service providers	Regional					
Object of activity	Water and/or Sewerage					
Ownership	Municipal and regional					
Geographical coverage area	Municipal and regional					

** ANAR = The National Administration „Romanian Waters"*

*** ANRSC = The National Regulatory Authority for Communal Services*

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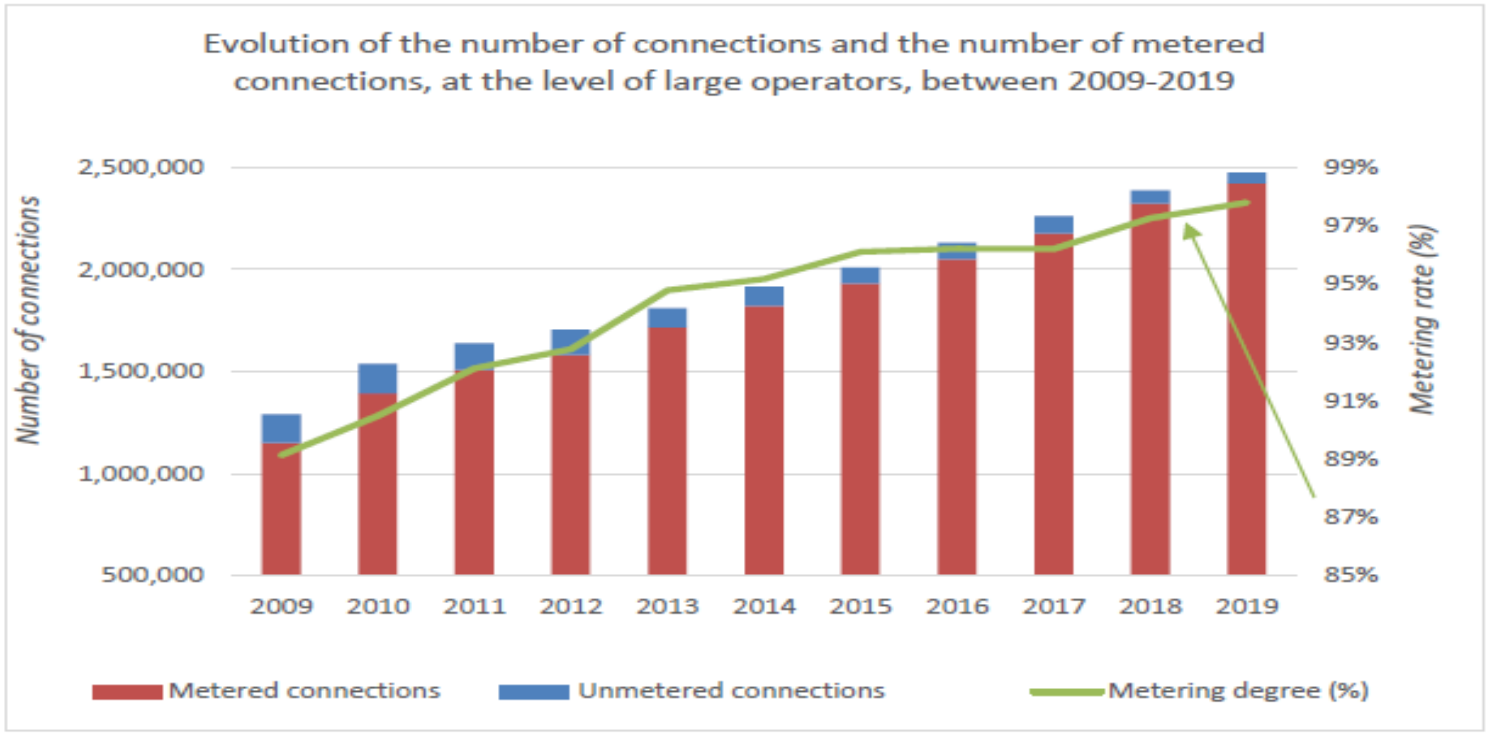

Data source: A.N.R.S.C.

Evolution of the number of connections, at the level of large regional and municipal operators, between 2009-2019

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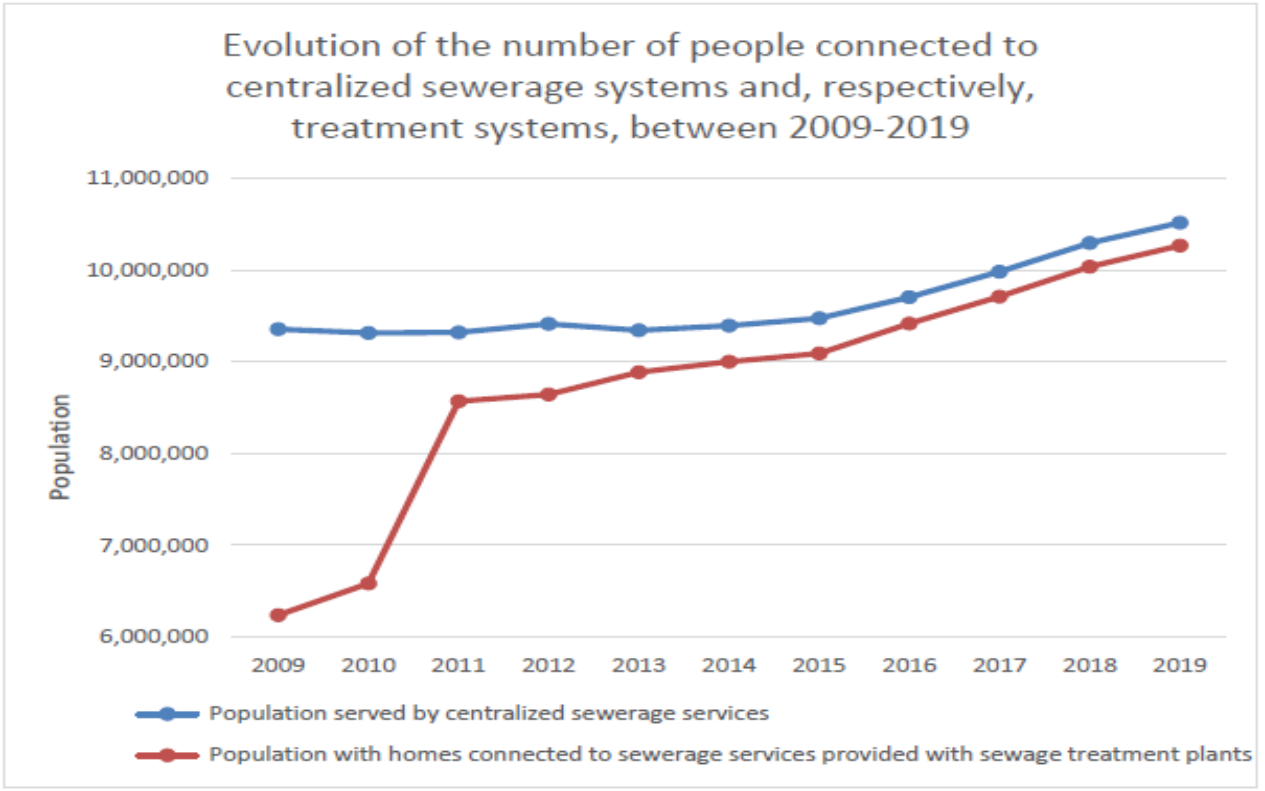

Data source: Romanian National Institute for Statistics

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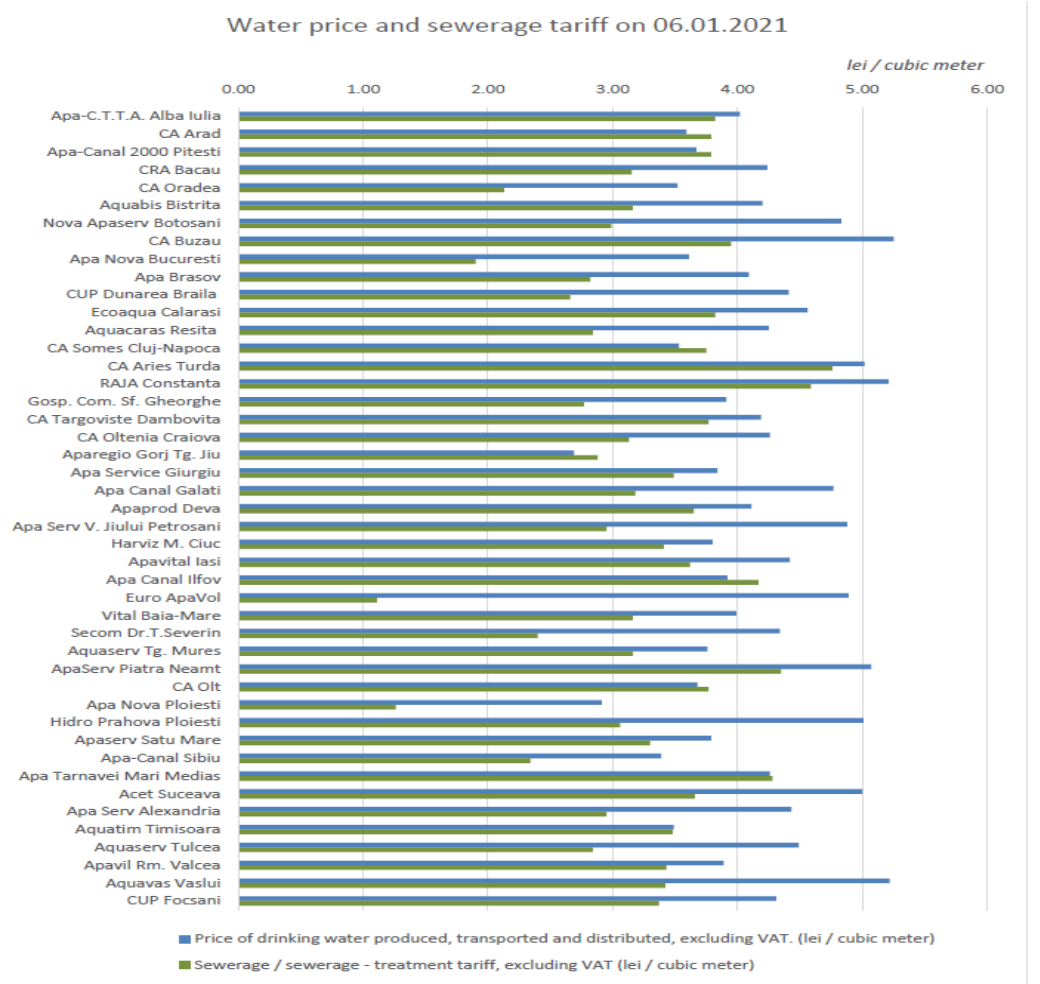

Data source: A.N.R.S.C.

Prices and tariffs practiced at 06.01.2021, without VAT (lei/ cubic meter)

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The large access gap for safe potable water and adequate sanitation – especially in poor rural areas – is an issue of equally urgent priority.

Romania is the only EU country that has a large portion of its population still without access to safe potable water (20% of population, or about 4 million) and adequate sanitation (32% of total population, or about 6 million).

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Romania **is a complete outlier amongst EU countries for having a large number of population without access to piped water**. It also falls behind several non-EU and much poorer countries in the Danube region, as shown in the Figure below.

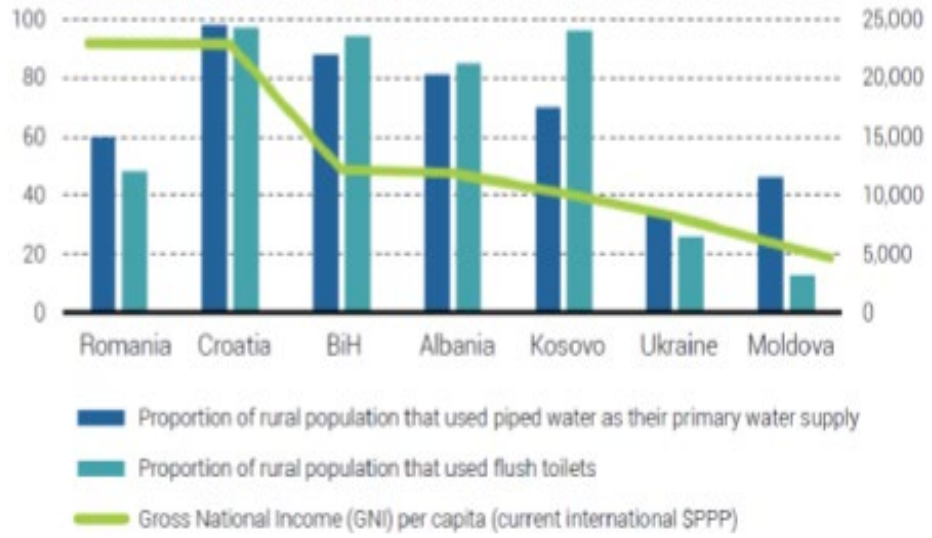

FIGURE 2.3: RELATION BETWEEN WSS ACCESS LEVELS AND COUNTRY'S GNI PER CAPITA

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.

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Comparison of WSS access in 2011 (last national census) and 2018 (ANRSC)

Baseline situation: detailed information collected during ***2011 population census***:

- 79% of population and dwellings (77% if Bucharest is excluded) had access to water supply from either (piped) public or private sources (own wells, small private schemes for condominiums, other arrangements), of which 96% in urban and 59% in rural settlements;
- 59% of dwellings and 58% of population had access to public piped water supply systems, of which 90% in urban and 22% in rural settlements
- 68% of dwellings and 67% of population had access to some form of wastewater collection systems, public or private (65% and 64%, Bucharest excluded), of which comprised 93% of dwellings and population in urban and 39% in rural settlements. The private arrangements included septic tanks, individual/small WWTP, emptied cesspits but excluded pit latrines.
- 49% of dwellings and 48% of population had access to public piped sewerage systems, of which 82% of urban population and 6% of rural population
- 63% of dwellings had in-house bathroom, of which 88% in urban and 32% in rural settlements. To mention that connection to water and sanitation was to either public or private systems (indeed, in rural settlements, private arrangements predominated)

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The **situation in 2018**:

- 80% of dwellings and population (79 % if Bucharest is excluded) had access to water from either (piped) public or private sources (as above)
- 71% of dwellings and population have access to public piped water supply, with an increase of 13% in 7 years, of which 94% in urban and 47% in rural settlements
- The access to wastewater management systems increased to 69% of dwellings and 68% of population, with 93% of urban and 40% of rural population.
- The public piped sewerage systems cover 53 % of dwellings and population, of which 87% in urban and 14% in rural settlements, with relative increase of 5% in urban and 8% in rural settlements.
- The number of dwellings with in-house bathroom increased slightly, by 1% both in urban and rural settlements.
- The access of urban population to treated wastewater facilities predominates, with 81%, while only 5% of rural dwellings/population are connected

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The WSS access data for 2018 stands as follows:

- safe water 80% (including individual wells),
- piped water 71%,
- adequate sanitation 68%, and
- sewerage networks 53%.

The urban-rural divide in Romania is particularly apparent in access to WSS services, raising major inclusion issues.

- By 2018, an estimated 94% of the urban population had access to safe water supply against only 47% in rural settlements.
- The discrepancy is even larger for sanitation. While 87% of the urban population has access to sewerage networks in 2018, this was the case for only 14% of the rural population.

The poorest rural families, who rely on unsafe water sources for their supply and lack adequate sanitation, have been left out over the last decade. About 4.5 million do not have access to piped water. While overall access to safe water has remained mostly stable (79% in 2011), most of the progress came from those connected to piped water networks (58% in 2011, up to 71% in 2018), but these were essentially households who already relied on a safe source for their own supply.

The situation is similar for sanitation, with more than 6 million Romanian not having access to flush toilets. The population with access to adequate sanitation has remained fairly stable (up one percentage point only, from 63% in 2011) and only some progress in access to sewerage networks (48% in 2011, 53% in 2018).

Number of wastewater treatment plants in the country according to the capacity.

	WWTP capacity (PE)					
	<50	50-2,000	2,000-10,000	10,000-100,000	>100,000	Total
Romania	12	354	633	132	66	1,197

Connection to wastewater treatment plants with capacity lower than 2,000 PE. The ratio is calculated according to the total number of inhabitants living in small settlements in each country.

	Total number of inhabitants living is settlements < 2000	**Total number of inhabitants connected to WWTP < 2000 PE**	**Ratio of connected populationin small settlements**
Romania	1,915,072	156,598	8%

Source: Global Water Partnership Central and Eastern Europe, December 2021

In Romania:

- about 3.2% of population are connected to private WWTPs.
- it is also legally supported that the property owner must connect to the existing public water or sewerage system if technical and economic circumstances allow. A significant factor in the connection of the population to sewerage is also the low level of income of the rural population, who often refuse to connect to the nearby network and continue to use "traditional" leaky septic tanks and cesspools.
- monthly monitoring of small WWTPs is required.
- for individual systems, below 50 PE, such WWTPs should be tested 4-times per year.

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Most applied technology for wastewater treatment in small settlements (PE<2,000) is sequencing batch reactor (SBR) (see the Figure below). Other types of activated sludge treatment technology are also applied: membrane bioreactors (MBR) are often used in Romania.

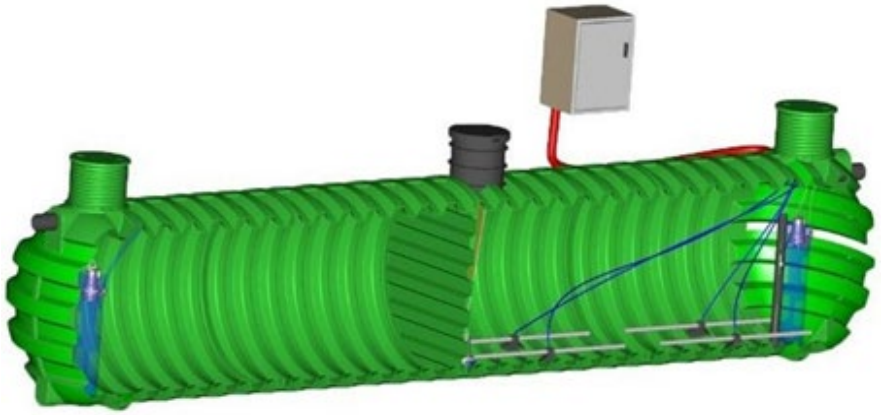

Figure: Scheme of a SBR treatment plant for 150 PE (*source Roto Ltd.).*

In Romania seven different technologies were reported to be in use, among them SBR, MBR and sand filters are often applied for small settlements while sand filters and UASB reactors are often applied for individual systems.

The European Commission defines Nature-Based Solutions (NBS) as "*Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more diversity, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions*."

Unfortunately, in Romania these systems seem to be almost unrecognised, there are information regarding some pilot solutions, like aerated ponds and pilot treatment wetlands. Explanation of this situation could be due to lack of land/available space, as NBS applications are area intensive, and lack of specific legislation.

The resistance of many households to connect to newly installed sewerage networks is one of the issues that will need to be addressed with priority.

- The recently introduced connection subsidy does not work, as it depends on local government's funding and, for the few ROCs which put it in place, there has been limited demand so far suggesting issues of design and customer communication.
- Putting in place proper incentives to correct these resistances should be an integral part of a full-fledged strategy → On December 30, 2021, the Government of Romania approved ***the Government Emergency Ordinance*** for amending and supplementing the Law on water supply and sewerage services no. 241/2006, the normative act approved representing the first reform established in the National Recovery and Resilience Plan (PNRR) for the water and wastewater sector.

The main amendments proposed concern:

• The obligation of the water operators to establish the tariff strategies based on plans for the realization of the public service in conditions of efficiency, for a period of 5 years;

• The obligation of the local public administration authorities to keep track of the natural and legal persons who do not discharge wastewater to the public sewerage network;

• The obligation of users to connect to existing public sewerage systems, if they do not have a proper individual collection and treatment system;

• The exceptional nature of adequate individual systems, in the sense that these systems should be used in situations where centralized systems are not technically and economically feasible;

• Prohibition of direct discharge into the environment of untreated wastewater from appropriate individual systems;

• The obligation to elaborate, by normative act, the criteria for the authorization, construction, registration / registration, operation and maintenance of the appropriate individual systems.

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Intermunicipality cooperation in the water sector of Romanian rural areas mainly exists in the form of associations, through which small municipalities can implement their investment projects jointly, reducing project costs and improving the quality of services.

Financing of such associations comes from membership fees paid by member municipalities; co-funding for specific projects developed and implemented by the Association from the development fund of the county council; and in-kind contributions from member municipalities.

Direct benefits for municipalities are the opportunity to promote their own projects that would otherwise not have been possible due to a lack of financial and human resources; low costs for project management and fundraising services; provision of new (rural areas)/improved (urban areas) services for citizens (water supply and sewage); and increased experience in cooperation.

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CONCLUSIONS

1) There is a significant increase in the coverage of services at the country level. Thus, the coverage with water supply services increased from 54.9% of the country's population in 2009 to 70.9% in 2019, the degree of coverage with sewerage services increased from 40.1% to 54, 2% of the country's population in the same period, and the degree of coverage with sewerage services provided with sewage treatment systems increased from 29% to 52.9% of the country's population. However, efforts to increase service coverage must be continued in order to achieve the goal of “connecting at least 90% of households in towns, communes and compact villages to the drinking water and sewerage network by 2030. ”, Target that is part of Objective 6: "Clean water and sanitation" of the National Strategy for Sustainable Development of Romania 2030.

CONCLUSIONS – cont.

2) With regard to very large regional and municipal operators, progress has been noted significant in the construction process, both of the drinking water networks and of the sewerage networks. Thus, if in 2009, the length of water networks managed by large operators was 33,636 km, in 2019 it was 63,965 km, an increase of 90%, while the length of sewers at the level of regional operators and very large municipal increased from 16,012 km in 2009 to 31,977 km in 2019, ie 99.7%. Thus, the effect of European-funded investment programs is visible, and the implementation of projects will lead to a further increase in access to water supply and sewerage services, especially in rural areas.

CONCLUSIONS – cont.

- Despite significant efforts, Romania is far from meeting the relevant EU water standards; additional EUR 22 billion investments are still deemed necessary for the EU-compliance objective. There is a huge financing gap and the financing of WSS sector needs to start transitioning under the 3T approach (Tariffs – Taxes - Transfers).
- The **regionalization policy shows limitations** in the current set-up, with many rural agglomerations that lack basic infrastructure and services.

CONCLUSIONS – cont.

Key blockages and challenges affecting the WSS sector are:

- **Tariff affordability is becoming a critical issue:** WSS tariffs in Romania are still well below those in other EU countries, but further increases are expected, and affordability is becoming a growing concern for ROCs customers.
- **There is still much room for improving ROCs performance,** many ROCs are still far from the performance of water utilities in other EU countries – with high levels of NRW (about 50%) being the most important operational issue.

- **There is a lack of institutional coordination and clear sector leadership.** The WSS sector in Romania is characterized by a relatively complex environment, and the lack of assumed leadership of the WSS sector calls for urgent designation of an "institutional champion".
- **Water security and resilience to climate change is becoming an important emerging issue in the Romanian WSS sector.** The negative impact of climate change on WSS services in Romania – especially the risks of droughts - has not yet been duly factored-in by ROCs.

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Recommendations

1) Increasing the role of civil society represented by employers, trade unions, professional and consumer associations, together with central and local public authorities, in the process of developing and implementing the strategy for the development of public water supply and sewerage services, as a basis for implementation of the concept of sustainable development.

2) Promoting, in the modernization-development works, some technical solutions correlated with the size of the locality, the realization of some priorities of the ongoing investments, leading to the development of the system, to the increase of the quality of services, taking into account the degree of affordability of consumers and the reflection of the optimal quality-price ratio.

Recommendations – cont.

3) Increasing the degree of professional training of employees, so that regional operators are able to ensure the necessary human resources in accordance with the new technologies implemented, in order to operate properly and maintain adequate investments through the EU funded programmes.

4) With the help of changes in the legislative framework, it may be possible to merge and coagulate water supply and sewerage operators, with positive effects for increasing investment efficiency and institutional capacity to implement investment projects, leading to technical and technological progress and improving infrastructure with focus on rural infrastructure.

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Thank you for your attention!

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