

REGIONALIZATION INCREASING ACCESS TO WATER SUPPLY AND SANITATION IN RURAL ROMANIA

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Abstract

The topic of increasing the access to water supply and sanitation infrastructure is of high importance in political and scientific endeavours dedicated to sustainable development worldwide. For a sustainable rural development and a more effective environmental protection, in Romania there are still problems and efforts of investment to be made in securing the rural population access to public utilities of water supply and sewerage sanitation. This is an issue since the water supply and sanitation networks are not covering all the areas but also due to the low rural acknowledgement and affordability of the public WSS services. However, in the last decade after the access of Romania to the European Union, to implement the Water Framework Directive (2000/60/EC) the water sector has seen important reforms and development. Perhaps the most efficient and pro-active feature was the process of regionalization of WSS utilities, so the paper analyses some of the main outcomes and developments in the recent process of regionalization and consolidation of the water and wastewater networks and services, focusing on the objectives, challenges and outlooks for increasing the connection to WSS in the rural Romania.

Key words: water supply, sewerage, regional operating companies (ROC), rural, connection

INTRODUCTION

There is an increasing concern for improved access to water supply and sanitation infrastructure in rural areas, due to the numerous benefits of this service for all the actors concerned, for the community, the sustainable rural development and, last but not least, for the natural environment.

In many important studies and in own previous research, some of these issues and objectives have been analysed from several and different viewpoints, since the development of water infrastructure and the related problems have many significant features and factors to be considered when designing and analysing the best strategy of sustainable water supply and sanitation development.

For instance, as analysed in the economic and efficiency issues of a Sustainable Water Management [2], for sustainable and effective water management in all the areas and sectors, it is required a mix of theoretical and practical

approaches dealing with the water demand challenges. The welfare theory combined with the sustainable development paradigm has meant increasing awareness on the features of water as a quasi-public good, no longer free since a valuable economic good.

On the other hand, the investment and collateral costs involved for implementing in Romania the Water Framework Directive (60/2000/EC) are quite high but there are direct and indirect benefits of economic growth. Some of the deeper research has revealed, using regression and correlation analysis and other statistical methods that in Romania, at the county level, there is a positive correlation between the rate of access to the public water supply and sanitation and economic development. [6]

Besides, another relevant issue for sustainable rural development is the importance of water infrastructure investments for higher water security in the food and agriculture sector. This has been analysed and emphasized based

on the research outcomes and conclusions of agri-food and sustainable water management experts as well as on computations showing the recent water demand and use trends of the Romanian agriculture. [8]

As a result of these theoretical and practical insights and requirements, in the last decades since 2000, there are many and complex institutional, economic and technological reforms in the Romanian water/wastewater sector. The main objectives of these reforms are: increasing the financial sustainability of the WSS sector, according to the mechanisms of the market economy; providing environmental protection through the national and local development of water and wastewater utilities.

The process of regionalization of WSS utilities may be one of the most important and pro-active reform, so in the paper there is a brief review of key achievements obtained through the recent policy of regionalization and development of the water supply and sanitation companies in Romania. However, the focus is on the determinant role of the larger Regional Operating Companies (ROCs) in the sustainable rural development and access to WSS networks and service.

MATERIALS AND METHODS

The purpose of this research is to identify the evolution of the rural connection to the water supply and sanitation (WSS) in Romania, specifically in the rural localities, since the regionalization reform of the operating companies has occurred.

Theoretical and quantitative research was used to describe the situation of the rural population related to the studied matter, using quantification and statistical methods of analysis, including:

- Relevant literature and previous research outcomes review;
- Definition and theoretical analysis of the operational concepts, such as the economies of scale characteristic to regionalization of utilities;
- The analysis and synthesis of main strategic objectives for sustainable development in the Romanian WSS sector;

- Some chart and graphs figures on the nature and direction of evolution are extracted from relevant national or international reports while others are based on own data computations, in view of a comparative analysis for the trends of selected indicators.

The period analysed in this study was 2007-2017, but there are also references to some older data, as extracted from the World Development Reports of progress towards the MDG. The data, collected mainly from international databases, the National Institute of Statistics (NIS) and from the reports of the Romanian Water Association, have been processed and interpreted, highlighting the main challenges and reasons for the still poor or slow developments and also showing the latest outlooks.

RESULTS AND DISCUSSIONS

Background

Nowadays, the insufficient access to water supply and sanitation is quite a critical issue at global scale, making thus the objective of some important Millennium Development Goals. The Millennium Development Goals (MDG) have called for halving the proportion of the population without access to improved water sources and sanitation by 2015. [12]

Despite some international aid and the local development aspirations, the access to drinking water supply and to wastewater sanitation is still challenging in several countries of the European region, among which in Romania.

In most countries, the access to water supply and sanitation utilities is also inequitable. The insufficient or poor access does not affect randomly human populated settlements but rather the poor and mainly the needy rural people. Villages have consistently lower levels of access than urban areas to water and sanitation services. [3]

As mentioned in an important worldwide report [12], at the global scale:

“[although 2.6 billion people have gained access to an improved drinking water source since 1990, there are still some disparities of concern for a sustainable and equitable

development of water supply and sanitation: 96 per cent of the global urban population uses improved drinking water sources, compared with 84 per cent of the rural population; Eight out of ten people still without improved drinking water sources, live in rural areas; 82 per cent of the global urban population, and 51 per cent of the rural population, uses improved sanitation facilities; Seven out of ten people without improved sanitation facilities, live in rural areas.”

Therefore, the issue of sustainable water management and universal access to WSS is being now tackled by the Sustainable Development Goals (SDG). It is therefore stated that proper water and sanitation is a key foundation for achieving the Sustainable Development Goals, including good health and gender equality. [13]

By managing water sustainably, people should become able to:

- better manage the production of food and energy;
- contribute to decent work and economic growth;
- preserve the water ecosystems, their biodiversity, and take action on climate change.

There was also previously underlined the importance of the water security concept for the sustainable rural and agri-food development [8], since representing the sustainable availability of water quantity and quality acceptable for production, livelihoods and health, coupled with an acceptable level of risk to society related to unpredictable water related impacts.

Another important research outcome of the cited study was that, in Romania, the total amount of water abstracted in agriculture (including forestry and fishing), is quite significant and aggregates nearly 20% of the total water abstraction. This total volume of agricultural water demand is of about 1000 million cubic meters/year, almost equal to the volume of water abstracted in Romania for the activity of public collection, treatment and supply of water. [8]

Last but not least, in the conclusion of [3] the rural-urban disparity of access to WSS was characterized as:

“very striking in Romania and one of the main features of the Romanian water and wastewater infrastructure, a major shortcoming for sustainable economic development, given that rural wastewater is simply discharged into the environment, polluting the soil and water”.

Therefore, the Romanian public authorities recognize that the worst quality of groundwater is in the rural areas, since here the sewerage sanitation infrastructure is low developed or missing. Consequently, the wastewater directly flows into underground and pollutes the groundwater. [9]

The role and importance of the regionalization of the WSS utilities in Romania

This poor and uneven development of the water supply and sanitation networks and utilities in Romania was characteristic at the moment of the accession of Romania to the European Union, about a decade ago, in 2007. At that time, only about 65% of the population benefited from a public supply of drinking water and bathroom indoor. This was the national average rate of access to public water supply utilities, since it involved an average of the 98% urban population ratio and 33% rate of the rural population connection. These figures are relevant since they show the severe urban-rural disparity of access which is not characteristic in the European Union (ratios of 96 - 100% of the population connected to public water supply network in urban areas and 87% in rural areas).

This lagging development state was due mainly to two main factors:

- (i)the long-term under-investments in the water supply and sewage systems;
- (ii)the quite poor economic, financial, environmental and strategical management of the water supply and sanitation utilities.

Consequently, the water pollution was among Romania’s most significant environmental problems.

The low quality of waters was mainly due to:

- insufficient controls over industrial effluents and discharges;
- poor wastewater infrastructure (sewerage and wastewater treatment plants WWTP).

Besides the environmental issues, the pollution of waters has too long affected several activities or resources such as the drinking water sources, fish breeding, irrigation, human health etc.

In figure 1, according to the data from the World Bank it is obvious that in 2007, Romania was lagging way behind most other EU countries, especially as concerning the rural access to sanitation utilities.

Urban sanitation facilities vs. rural sanitation facilities, 2007

The share of the urban population with access to improved sanitation facilities versus the share of rural population with improved sanitation facilities. Improved sanitation facilities are likely to ensure hygienic separation of human excreta from human contact. They include flush/pour flush (to piped sewer system, septic tank, pit latrine), ventilated improved pit (VIP) latrine, pit latrine with slab, and composting toilet.

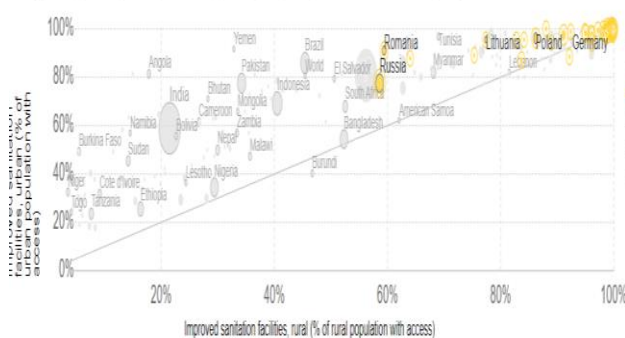


Fig.1. Urban-Rural gap in access to sanitation facilities, in Europe (Romania), 2007

Source: World Bank-WDI.

That development gap of water supply and sewerage utilities hinders Romania from complying with the EU standards of water quality and threatens human and environmental safety, mostly in unserved rural areas. For the economic pillar of a sustainable development, it should be acknowledged that this poor development of the WSS services has prevented the settlement and development of new businesses in the rural localities for a plenary use and recovery of local natural and human resources.

The management water utilities was also inadequate since the water systems had a high degree of fragmentation in small and medium municipalities with too little financial and institutional capacity. Therefore, a conclusion of a study published in 2008 was that “important strategic developments were

needed to increase the efficiency and viability of public services providers and to ensure adequate level of water services delivered to the entire population within affordable limits”. [4]

As member state of the EU, Romania must by 2015 comply with the EU Directive 98/83/EC on drinking water quality and by the end of 2018, with the Directive 91/271/EC on urban waste water treatment.

Romania benefits from EU financing, from the Cohesion Funds, aiming to increase the rate and pace of investments required for EU water quality compliance. In 2007-2014, the EU funding was granted within the Sectoral Operational Programme Environment. The main objective of SOP Environment was to narrow the large quantitative and qualitative gap of environment infrastructure that exists between the European Union and Romania.

Priority Axis 1 of SOP Environment was “Extension and modernization of water and wastewater systems”. The most important objectives of Priority Axis 1 were:

- providing services of water supply and sanitation, at affordable tariffs and with good drinking water quality, in all urban agglomerations;
- improving quality of watercourses and sludge management for WWTP;
- creating more efficient structures of water management. [9]

An outstanding strategic approach to accomplish these objectives for the sustainable development of the Romanian water supply and sanitation was the process of regionalization.

Within a project area, the regionalization implemented an institutional framework related to the regional development, integrating the water supply and wastewater infrastructure in a common operating process of utilities. The process concentrates operation of the WSS services provided to a group of municipalities from a geographical area in a river basin and/or within administrative boundaries (municipalities, county).

As analysed in previous research, the regionalization is a reform meaning to significantly raise the quality and efficiency of

local WSS infrastructure and services. The objective of regionalization are multiple and synergy for water sector and local sustainable development:

- (i) to fulfil environmental targets;
- (ii) to assure sustainability of investments and operations on the long term;
- (iii) to contribute to regional balanced growth.

The regionalization of the water services in Romania was also implemented to prevent the increasing sector fragmentation and to foster economies of scale. [4]

Actually, the regionalization of water services aims to provide that 2,600 localities of more than 2,000 inhabitants meet 2018-performance targets established by the SOP Environment, by concentrating the management of water and wastewater services in around 50 stronger operators, set up and developed by merging the existing local utilities into so called Regional Operating Companies (ROC).

For the Romanian drinking water and wastewater operators, this regionalization meant aggregation of two or more local operators into one regionally working operator. The respective local councils no longer have each an operator working solely for their community, but participate in a regional operating company (ROC) that will serve a number of towns and communities aggregated in an Intercommunal Development Association (IDA).

To this end, individual local authorities form as common shareholders the Regional Operating Companies (ROC) and set up the so-called Inter-Community Development Associations (IDA) to whom they delegate the exercise of their shareholder rights. The collaborative structure will allow the beneficiary local authorities to control the Regional Operating Company and to better monitor and supervise the implementation of the water infrastructure rehabilitation and modernization works. [4]

There are many factors driving the consideration of aggregation (regionalization) which increased the water utility' size in the Regional Operating Companies: increased economic efficiency; better and integrated

water management; richer professional capacity in larger scale; better financing; cost sharing between higher- and lower-cost service communities.

Most of these issues are more or less relevant for the increase of rural access to the public WSS services, provided by the regional operating companies (ROCs), as discussed further. For instance, the basic economic analysis of the water/wastewater sector indicates that WSS utilities involve large infrastructure costs which can be shared by adding more customers so that each one pays a smaller share of these costs. This way, the specific scale economies of water infrastructure may be reached. [7]

However, as approached and stated in some previous papers, there is still in Romania, a significant socio-economic development gap of the rural areas, in comparison with the urban areas, and this still affects the efficient development and services of the water supply and sanitation ROCs.

The issue of access to the public WSS networks and utilities is one of the most important aspects of disparity between the urban and rural communities in Romania.

For instance, as concerning the access to public water supply, the evolution in the last about 10 years, since the EU accession was constant, at the national level, was not very balanced. The number of inhabitants served by centralized water supply system in Romania, according to the National Institute of Statistics [11], was of:

-11,790,494 people in 2009, accounting for 55.2 percent of the Romanian population;

-13,229,699 people in 2017, representing 67.5% of the Romanian population.

However, in 2017 the urban areas have registered 10,191,130 people connected to the public water supply, accounting for 96.9% of the resident population, with 150,738 people more than in the year 2016.

In the rural area there were registered 3,038,569 people served with water supply services, constituting 33.5% of the resident population of the country, with 225,851 more people than in the previous year.

Let us note that only the urban population is almost entirely provided with a service of water supply in centralized system (96.9%).

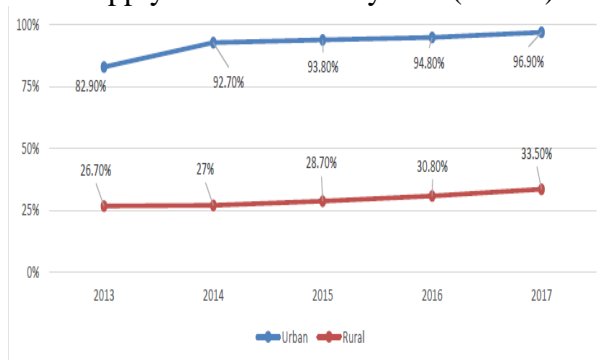


Fig.2. Evolution of the Romanian population served with public water supply services, on average, in 2013-2017, by area of residence

Source: N.I.S., Accessed in October 2018.

As regards the rural population served with water supply services from a centralized system, the share of the population that benefit from these services, grew from 26.7% in the year 2013, to 27% in the year 2014, to 30.8% in 2016 and reaching 33.5% in 2017. So the rate of the rural population connected to public water supply in rural areas is about 60% lower than the urban rate, this being a *very significant gap of sustainable rural development*.

A main reason for the large differences in the coverage of water supply between urban-rural is the poor institutional and managerial capacity of local authorities in the rural areas, who do not receive centralised water supply system, to develop, submit for funding or implement development projects for water supply services. [1]

On the other hand, this water infrastructure and services development gap is not to be neglected any longer in Romania, for a number of reasons and arguments to be analysed and acknowledged better. The need to extend and increase the accessibility of water supply services of centralized system, in rural areas, is dictated not only by the need to increase the standard of living in rural areas, as an important European trend of decreasing the gradual differences in development between rural and urban, but also by the deterioration of groundwater quality.

Last but not least, there are considered the targets for Romania's compliance to the provisions of the Community acquis, assumed by the Treaty of accession to the EU, aimed at securing the services of water supply and sanitation for all citizens.

Therefore, especially after 2000, the water supply system in Romania has benefited from a number of foreign-funded programs, (PHARE, ISPA, SAMTID, and MUDP) and post-accession programmes (SOP Environment 2007-2013 and 2014-2020 POIM). WSS operators' participation in pre-accession programmes has led to the development of their institutional capacity and expanded or replaced their overdue water supply networks. That has supported the development of the water sector, beginning with the urban environment.

Law No. 204/2012 secured the necessary framework for a regionalisation of water supply services in Romania and creating the possibility of using cohesion funds during 2007-2013 and 2014-2020. Subsequently, the regionalization of the area of operation of the services of water supply and sewage-treatment plants contributed to the expansion of networks in rural areas, in the case of regional operators. From an institutional point of view, the regionalization process has already been completed, in 2010 and has led to the establishment of 43 regional operators.

Table 1. Evolution of the number of communities served by regional and municipal water operators, in the period 2010-2015

Number of communities served	Year				
	2010	2012	2013	2014	2015
Cities and towns	246	251	254	275	277
Rural communities	761	982	1162	1238	1292
Total	1007	1233	1416	1513	1569

Source: Own calculation with data from [1]

After 2010, the process of regionalization has meant the takeover by regional operators of new localities within their service area for water and sanitation utilities. [1]

As may be observed from table 1, in 2011, regional operators and municipal operators expanded their area of operation at 1,152 localities, out of which 251 are municipalities and cities and rural areas, 901.

The process of regionalization continued, so that in the year 2015, the total number of localities in the area of large operators was of 1569 municipalities, of which 277 cities and towns and rural localities (communities) a number of 1292.

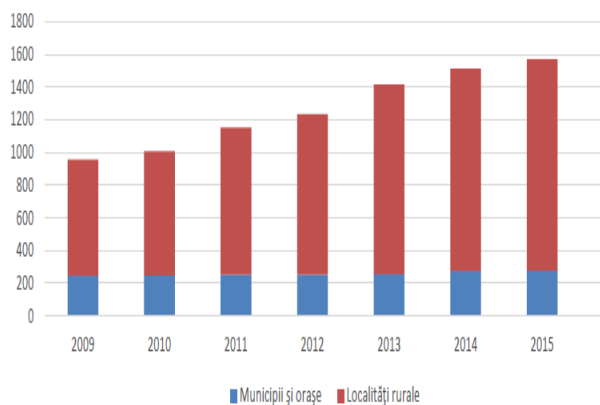


Fig.3. The evolution of the regional water operators, in terms of number of localities served during 2009-2015
 Source: ARA Report, 2018

In table 1 and figure 3 it may be easily noticed that the main evolution of growth regarding the communities served with water supply and sanitation by regional operators is related to the rural communities (represented by the red column areas in figure 3).

For instance, while the total number of communities served in Romania with water supply and sanitation by regional and municipal operators increased by 55.8% in 2010-2015, that increase was even more dramatic for the rural communities (70%) as compared to the cities and towns (12.6%).

Besides, the evolution is more important and challenging in the case of sewerage and sanitation networks and services provided by the ROC (Regional operating companies).

As shown by the “Romanian Waters” National Administration documents water pollution caused by human congestion is mainly due to: the low rate of population connected to wastewater treatment and collection systems; improper operation of the wastewater treatment stations. [1]

Unfortunately, these factors strongly act in Romania, especially the first one, since there is still a shortage of both development of sewer networks, of the capacity of the wastewater treatment plants WWTP but also a

low rate of connection to these systems (see table 2 and figure 4).

Table 2. Residents with dwellings connected to sewer systems, at national level in Romania

	U.M.	2008	2010	2012	2015	2017
Residents with dwellings connected to sewer systems	Million persons	9.23	9.31	9.41	9.47	9.97
Rate of residents with dwellings connected to sewer systems	%	43	43.4	44.2	47.7	50.8

Source: Own computation on N.I.S. data [10, 11]

This is bearing in mind that, in total, in the year 2017, a number of 9 978 886 inhabitants had their homes connected to sewage systems, equivalent to only 50.8% of the resident population. [5]

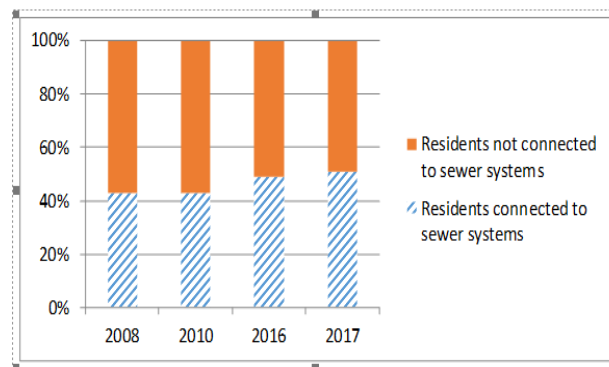


Fig.4. The evolution of the rate of residents with dwellings connected to sewer systems, at the national level in Romania (%)
 Source: [5]

On the other hand, the weakest point was regarding the lack of endowment and access of rural areas to sewerage wastewater sanitation. In 2012, access to sewage was available in only about 13% of the national rural settlements, indicating a more extended state of rural underdevelopment.

This issue had to be addressed urgently by:

- large investments in extending WSS networks;
- improved access for all categories of people to the public WSS utilities. [3]

However, some progress was done since 2013, especially in extending the network of sewage nationally, with the essential

contribution of the ROC. For instance, the length of sewerage network had increased by about 37% nationally, in 2010-2015.

It should not be forgotten that investment in infrastructure also has direct impact on the local or regional economic growth. The construction and operation of infrastructure to provide quality services related to water supply and sanitation requires a great deal of investment and operation, which contributes to the creation of jobs and economic growth, in the water sector and in the served areas. Indeed, based on regression analysis, there is evidence on the positive correlation between the increased access to WSS infrastructure and the regional economic growth, proving the importance and opportunity of implementing the investments in water infrastructure in Romania, with European Structural and Cohesion funding. The regression equation showed that in Romania there is a positive correlation between access to the public water supply/sanitation and economic development at the regional (county) level. [6]

The rate of sewerage access progress seems to accelerate lately. According to latest NIS data regarding sewage systems, in the year 2017 the activity of wastewater collection from households and the economic and social units was held in 314 municipalities and cities and in 937 rural communities.

The total length of sewerage network at the end of last year was 36,344.5 km, of which 24,606.2 km (67.7%) in the municipalities and cities and only 32.2% in the rural communities. [10, 11]

Eventually, compared to the previous year, in the year 2017 the length of sewerage network expanded with 1,991.1 km (472.7 km respectively in urban areas and with 1518.4 km in rural areas), so the expansion was done mostly (76,2%) in the rural areas.

At the regional operators, there are large differences between the average number of inhabitants served by 1 km network of sewage, between urban and rural areas. Thus, in 2016, one kilometre from the sewerage system has served averaging, 403 inhabitants in the urban area or 80 rural inhabitants.

This situation is explained by the fact that the regional operators have increased the rate of access to services in rural areas, where population density but also the actual degree of connection is much lower, yet.

According to recent Eurostat data, out of the 3.98 million rural dwellings, nearly 2.9 million have access to a network of sewerage, but only 2.2 million are connected. So almost 1.8 million homes (sheltering 29.7% of the Romanian population) continue to use the pit latrines in their yard, severely polluting in time the groundwater.

The main issue is the fact that connection to sewerage of housing in rural areas must be done at the expense of each applicant, and the costs (about 500 Euro, at least) are not easily affordable, for many rural households.

CONCLUSIONS

A first conclusion is that regionalization of water and wastewater services is a structural reform which may bring many benefits from the economic but also from the environmental and social point of view, so it may be considered a factor of sustainable development.

The severe underdevelopment of the water supply and sewerage infrastructure in Romania, especially in rural areas, combined with the need to comply as soon as possible with the environmental acquis of the European Union by implementing and managing very costly investments were the driving factors of the regionalization process, which may also face some specific constraints or risks.

Nevertheless, to highlight mainly the economic efficiency issues and risks, we resume some outcomes and conclusions.

Among the main threats faced in a strong, efficient and sustainable development of the WSS sector in Romania, especially in the poor and lagging behind rural areas, is the quite low propensity to pay for water supply and sanitation by the population. This is reflected by the relatively high elasticity of water demand in relation to the price of water,

considering that water is a vital resource for life and production.

This problem of insufficient local acknowledgement and affordability is not to be neglected any more, since it has hindered a faster and more complete connection to WSS in the rural areas where the ROC have provided access to their networks.

But now, due to a new document of the Ministry of Regional Development and Public Administration (January 2019) all the municipalities are required to identify all households which are not connected to the sewage network and the Environmental Guard have to impose their connection for enforcement of the Law of Water Supply and Sanitation Service No. 241/2006, respectively of the Directive 91/271/EEC.

Another aspect of sustainable development impact of investments in the infrastructure of water supply and sanitation, is bound to the opportunity of creating jobs and promoting economic growth, through these investments for water-related services.

The main conclusion of the paper is that, the regionalization of the water supply and sanitation utilities and creation of larger Regional Operating Companies was quite a success and a necessary step in developing and extending the access to WSS services in the rural areas, poorly covered in Romania. The outlooks are quite good, due to the European funding, but there are still many more objectives, challenges and outlooks of increasing the access and connection to WSS in rural Romania to be addressed and fulfilled, especially regarding the affordability of the rural population and the administrative capacity of the local authorities.

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