

COMPARATIVE ANALYSIS OF THE PERFORMANCE OF APA NOVA BUCHAREST AGAINST ROMANIAN SIMILAR MAJOR OPERATORS

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ABSTRACT

This paper presents the position of Apa Nova Bucharest from the perspective of comparative analysis studies conducted by various organisations. National Regulatory Authority for Public Services – ANRSC, published in 2012 a Report on the condition of water supply and sewerage services, aimed at achieving an overall assessment on the condition of the water supply and sewerage system in Romania between 2009 and 2010. The assessment conducted by National Regulatory Authority for Public Services – ANRSC experts targeted a series of elements specific to the current activity of water supply and sewerage service operators, as well as their technical, economic and financial performance, as follows: the condition of water supply services; the condition of sewerage services; the performance of regional operators assessed against the following parameters: the number of operating locations and the state of preparation and implementation of investment projects within the POS Environment; the financial performance of regional operators in terms of: total income, expenses, financial result, number of employees and tariff. In our opinion, the comparative analysis of the technical, economic and financial performance of Apa Nova București S.A. against other similar major operators across Romania must start from a series of assumptions related to ensuring comparability conditions.

KEYWORDS: *performance, water supply, sewerage.*

JEL CLASSIFICATION: *M29 , P52*

1. INTRODUCTION

Obtaining economic performance is a prerequisite for achieving social and environmental performances. However, sustainable development is leverage for improving organizational performance. This long-term approach enables it to better control risks due to the extended approach to the overall strategy in managing relationships with stakeholders. In fact, it is the driving force of economic growth by stimulating innovation which always generates competitive advantages. Sustainable development is ultimately the source of progress and value for the undertaking.

The comparative analysis of the technical, economic and financial performance of Apa Nova București against other similar major operators across Romania must start from a series of assumptions related to ensuring comparability conditions.

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As regards *the extent of provision of the water supply and sewerage services*, Apa Nova Bucharest operates in the most crowded and extended urban area, having provided in 2010, water supply services to a population of 1,730,009 inhabitants and sewerage services for 1,710,764 inhabitants. Out of the 2,092,003 total inhabitants reported in the ANRSC survey for 2010 (Table no.1). This extent of services exceeds by far the extent of the services provided by other operators with similar activity across Romania, even if they are already regional operators.

Table no. 1 Classification of operators depending on the population served, year 2010

Operator	Existing population in the area of operation	Population served – water supply -	Population served - sewerage	Population served/km of total water supply network	Population served per km of sewerage network	Water metering percentage	N° of operating locations		
							Total	Urban	Rural
APA NOVA BUCUREȘTI S.A.	2.092.003	1.730.009	1.710.764	644	805	99	1	1	-
COMPANIA DE APA ARAD S.A.	339.935	249.163	137.038	145	259	100	48	8	40
COMPANIA REGIONALĂ DE APA S.A. BACĂU	352.406	341.356	137.038	382	596	89	19	5	14
APA-CANAL 2000 S.A. PITEȘTI	233.275	217.271	180.514	312	652	94	9	4	5
APA-C.T.T.A. S.A. ALBA IULIA	261.100	189.610	136.970	161	335	97	36	11	25
COMPANIA APA S.A. BRAȘOV	363.283	344.404	291.632	321	596	83	12	4	8
COMPANIA DE UTILITĂȚI PUBLICE DUNĂREA S.A. BRĂILA	332.402	300.111	185.789	175	604	76	84	4	80
COMPANIA DE APA SOMEȘ S.A. CLUJ-NAPOCA	610.959	528.544	382.361	270	386	97	47	8	39
RAJA CONSTANȚA	710.085	645.629	415.933	213	309	88	93	15	78
COMPANIA. DE APĂ OLTENIA S.A.CRAIOVA	810.000	330.000	300.000	388	596	80	9	7	2
APA CANAL S.A. GALAȚI	394.910	306.813	291.734	334	466	84	9	3	6
APA VITAL S.A. IAȘI	825.773	345.667	280.085	164	488	100	163	4	159
AQUATIM S.A. TIMIȘOARA	451.455	398.664	336.097	265	528	86	40	9	31
VITAL S.A. BAIA MARE	256.589	209.969	156.882	318	488	93	10	10	0
COMPANIA AQUASERV S.A.TG.MUREȘ	339.973	291.732	239.726	271	390	99	21	9	12
COMPANIA JUD. APĂ SERV PIATRA NEAMȚ	330.570	246.916	168.937	350	669	96	26	5	21
APA-NOVA S.R.L. PLOIEȘTI	232.452	232.452	171.676	560	-	100	-	-	-
APA-CANAL S.A. SIBIU	298.752	241.265	207.554	290	403	84	10	5	5
COMPANIA DE UTILITĂȚI PUBLICE FOCSANI S.A.	140.002	119.443	101.998	394	849	76	5	5	-

Source: Data processed by the authors, adapted from ANRSC (2011)

In Romania, in 2011 there were approximately 300 water companies. At that time it was expected (Ciomoș, 2011) that the regionalization program would create approximately 40 regional operators following the consolidation of smaller operators into a single regional operator. As a process, regionalisation takes place at county level and is conducted by the largest water operator in the region, which absorbs smaller companies within its structure.

In 2008, the condition and performance of many water infrastructures were relatively poor. The major problems faced by operators were:

- Inappropriate maintenance and operation services;
- High volume of non-revenue water caused by leaks in the network (water failing to generate income) and a low level of invoice collection (collection efficiency) from consumers;
- Lack of investment for the rehabilitation/extension of water/sewerage infrastructure;

- Lack of experienced personnel for the promotion, management and implementation of large-scale investment;
- Inefficient management of operating, maintenance and staff-related costs;
- Unclear roles and responsibilities of the institutions/authorities involved in the management of public utilities;
- Inadequate institutional framework.

The solution proposed to address these deficiencies was the organisation and operation of services at regional level to ensure sustainable development and economies of scale. The results achieved in the operation of water supply and sewerage services at regional level were the following:

- The provision of services at regional level by means of integrated systems and a more professional management leads in time to a reduction of water wasting, fostering the conservation of resources, minimizing investment and the protection of water sources.
- Improving the preparation and implementation of investment projects, as well as the ability to negotiate financing.
- An increase in the quality of services, the improvement of customer relations and of their perception of operators.
- Achieving economies of scale leading to an increase in the efficiency of certain types of costs: the centralisation of billing and financial management, project implementation unit at central level, centralised laboratory management, etc.

However, the regionalization process has a number of significant risks (Ciomoş, 2011) because many of the smaller water operators are not managed on a commercial basis and there are operational losses. Small operators still face high levels of non-revenue water due to leaks in the network, poor collection systems and inadequate maintenance, as well as a lack of financial resources. In this context, in 2011 at national level, there were 42 large regional operators with high technical and economic performance, able to attract European funds and implement large investment projects financed from such European funds.

Therefore, the comparative analysis is aimed at positioning Apa Nova Bucharest from a technical and economic perspective in relation to major regional operators with water supply and sewerage service supply parameters similar to those of Apa Nova Bucharest.

2. COMPARATIVE ANALYSIS

a. In terms of the *served population* indicator, in 2010, Apa Nova Bucharest recorded the highest level of this indicator in relation to other national operators, due to the fact that it serves the largest and the densest urban agglomeration in Romania. In 2010, in terms of the water network length, the company ranking first is RAJA Constanța with a total length of 3,025 km, followed by Apa Nova Bucharest S.A. with 2,686 km and APA VITAL Iași with 2,110 km. The remaining operators have total length values below 2,000 kilometres (ANRSC, 2011).

In terms of the sewerage service, the same operators, Apa Nova Bucharest and RAJA Constanța, had in 2010 the longest sewerage networks in the country, with a length of 2,124 kilometres, and, respectively, 1,345 kilometres (ANRSC, 2011). Based on the two items taken into account – population and network length – Apa Nova Bucharest has the highest value for the indicator served population/1 km of total network, 644 inhabitants/1 km of water supply network and respectively 805 inhabitants/1 km of sewerage network (Table no. 2).

Table no. 2 Served population /1 km of water supply and sewerage network, 2010

Operator	Served pop. / km of total water supply network	Served pop. per km of sewerage network
APA NOVA BUCUREȘTI S.A.	644	805
APA-NOVA S.R.L. PLOIEȘTI	560	-
COMPANIA DE UTILITĂȚI PUBLICE FOCȘANI S.A.	394	849
COMPANIA DE APĂ OLTENIA S.A.CRAIOVA	388	596
COMPANIA REGIONALĂ DE APĂ S.A. BACĂU	382	596
COMPANIA JUDEȚEANĂ APĂ SERV PIATRA NEAMȚ	350	669
APA CANAL S.A. GALAȚI	334	466
COMPANIA APA S.A. BRAȘOV	321	596
VITAL S.A. BAIA MARE	318	488
APA-CANAL 2000 S.A. PITEȘTI	312	652
APA-CANAL S.A. SIBIU	290	403
COMPANIA AQUASERV S.A.TG.MUREȘ	271	390
COMPANIA DE APA SOMEȘ S.A. CLUJ NAPOCA	270	386
AQUATIM S.A. TIMIȘOARA	265	528
RAJA CONSTANȚA S.A.	213	309
COMPANIA DE UTILITATI PUBLICE DUNĂREA S.A. BRĂILA	175	604
APA VITAL S.A. IAȘI	164	488
APA-CTTA S.A. ALBA IULIA	161	335
COMPANA DE APA ARAD S.A.	145	259

Source: Data processed by the authors, adapted from ANRSC (2011)

Although it ranks first in terms of served population/1 km of total water supply network (2010), Apa Nova Bucharest ranks third in terms of the same indicator for the sewerage service, after COMPANIA DE UTILITĂȚI PUBLICE FOCȘANI (849 inhabitants/1 km of sewerage network), AQUASERV S.A. TULCEA (839 inhabitants/1 km of sewerage network).

However, we must note the low value in absolute size for the parameters considered: the length of the sewerage network and the population provided with sewerage services for these two operators (Table no. 3).

Table no. 3 Small operators

Operator	Number of inhabitants/1 km of sewerage network	Population provided with sewerage services	Length of the sewerage network – km -
COMPANIA DE UTILITĂȚI PUBLICE FOCȘANI	849	101,998	120
AQUASERV S.A. TULCEA	839	97,414	116
APA NOVA BUCUREȘTI S.A.	805	1,710,764	2,124

Source: Data processed by the authors, adapted from ANRSC (2011)

b. The amount of water produced and wastewater collected in the sewerage system

The water volume produced in 2010 by all operators was 1,179,333 cubic meters, 1% less compared to 2009, while the served population increased in 2010 by 6.1 % compared to 2009. In 2010, Apa Nova Bucharest ranks first in terms of the amount of water produced and wastewater collected in the sewerage system (Table no.). From the same perspective, as regards the average coverage of water supply services, in 2010, Apa Nova Bucharest is middle ranking among the operators, with **82.70%**. In 2010, APA NOVA S.R.L. Ploiești ranks first with 100% coverage of water services. It should be noted that the operators serving only the urban areas have the highest coverage of water supply services.

According to the ANRSC survey (2011), regional operators *treated* in 2010 approx. 80% of collected water, 3% more than the value recorded in 2009. Table no. 4 illustrates the collected wastewater volume, respectively the treated water volume for the main regional operators (ANRSC,

2011). Apa Nova Bucharest ranks first in terms of volume of activity in 2010, as shown in Table no. 4, with a produced water volume and an amount of wastewater collected in the sewerage system two times higher than the second largest operator RAJA Constanța S.A.

In Bucharest, in 2012, the sewerage system must meet the needs of a population of more than 2,000,000 inhabitants, for the collection and discharge of industrial wastewater, as well as for the collection of storm water from an area exceeding 23,000 ha. The existing and anticipated urban development of neighbouring communities brings an amount of domestic wastewater from at least 200,000 inhabitants, as well as significant amounts of industrial wastewater and storm water collected from an additional area of approx. 50,000 ha (ANB, 2012).

Table no. 4 The amount of produced water and wastewater collected in the sewerage system (2010)

Operator	Produced water (thousand m ³)	Amount of wastewater collected in the sewerage system	
		Collected water (thousand m ³)	Treated water (thousand m ³)
APA NOVA BUCURESTI S.A.	244,891	182,431	
RAJA CONSTANȚA S.A.	110,152	68,618	67,531
COMPANIA DE APA SOMEȘ S.A. CLUJ-NAPOCA	54,786	31,641	31,758
COMPANIA DE APĂ OLTEŢIA S.A. CRAIOVA	48,600	21,195	532
AQUATIM S.A. TIMIȘOARA	42,327	61,753	61,753
COMPANIA APA BRAȘOV S.A.	40,991	27,435	27,435
APA VITAL S.A. IAȘI	40,462	23,713	78,755
COMPANIA REGIONALA DE APĂ BACĂU S.A.	37,696	10,979	24,342
AQUASERV S.A. TULCEA	34,076	3,303	-
APA-CANAL S.A. SIBIU	31,373	17,417	22,205
APA CANAL .SA. GALAȚI	29,612	18,197	15,380
COMPANIA DE UTILITATI PUBLICE DUNĂREA BRĂILA S.A.	26,085	13,667	239
COMPANIA AQUASERV S.A.TG.MUREȘ	26,013	27,460	27,181
ACET S.A. SUCEAVA	25,439	12,321	12,321
APA-CANAL 2000 S.A. PITEȘTI	24,479	12,674	12,851
COMPANIA DE APĂ ORADEA S.A.	23,986	18,738	34,007
COMPANIA JUDEȚEANĂ APA SERV S.A. PIATRA NEAMȚ	23,734	7,842	11,523
HIDRO PRAHOVA S.A.PLOIEȘTI	20,797	6,253	6,253
APA - PROD S.A. DEVA	20,567	11,195	4,478
COMPANIA DE APĂ ARAD S.A.	20,375	8,629	8,629
APA-NOVA S.R.L. PLOIEȘTI	18,481	16,053	21,410
VITAL S.A. BAIA MARE	18,121	10,630	10,630

Source: Data processed by the authors, adapted from ANRSC (2011)

The implementation of the Directive 91/271 EEC concerning urban wastewater treatment is a complex and very costly issue assessed according to the Directive Implementation Plan (2004) to 9.5 billion Euros for investment, of which 5.7 billion Euros for treatment plants and 3.8 billion Euros for sewerage systems (National Administration "Apele Române", 2012).

According to the country report on Romania regarding the Strategic Evaluation on Environment and Risk Prevention, prepared by ECOLAS&GHK for the European Commission (ECOLAS&GHK, 2006), in terms of water supply/wastewater treatment and investment needs for the period 2007–2013, Romania ranks second after Poland. In 2011, the wastewater discharge activity, as well as wastewater treatment in treatment plants, was conducted in 309 cities and towns and 552 communes. At the end of 2011, the total length of the sewerage network in Romania was 23,137.2 km, of which 19,088.4 km in cities and towns.

Compared to the previous year, in 2012, the length of the sewerage network was extended by 1,159.7 km, more in rural areas than in urban areas. In 2012, 43.5% of the population of Romania had their homes connected to sewerage systems. Until the commissioning in October 2011 of Glina Wastewater Treatment Plant, Bucharest used to discharge wastewater directly into Dâmbovița, generating major risks to the environment and human health, positioning Apa Nova Bucharest, as

the Concessionaire, first among national operators in terms of wastewater volume collected in the sewerage system and treated.

In 2011, there were 511 treatment plants (National Administration "Apele Române", 2012). Only 16 treatment plants comply with the requirements of the Directive 91/271/EEC, for the secondary stage of treatment. The secondary (biological) treatment stage is a component of the wastewater treatment plant, mainly aimed at removing a significant part of the biodegradable organic matter. The condition for defining the secondary stage is the efficiency in removing pollutants, namely: $BOD_5 > 70\%$ and chemical oxygen consumption $COD > 75\%$.

The most significant clusters in terms of the impact of wastewater on the environment are considered the 22 human clusters with more than 150,000 inhabitants, many of them covering some of the administrative adjacent communes. For all these human clusters, were approved infrastructure improvement projects in the field of wastewater collection and treatment, financed from ISPA funds that are continued from the Cohesion Fund.

c. Water losses

In 2010, the amount of lost water was a loss of 53%, compared to the loss of 45% recorded in 2009.

Table no. 5 Percentage of non-revenue water from the total volume of produced water

Operator	% of non-revenue water from the total volume of produced water
COMPANIA REGIONALA DE APA BACAU S.A.	24.64
COMPANA DE APA ARAD S.A.	36.41
COMPANIA AQUASERV S.A.TG.MURES	39.49
APA VITAL S.A. IASI	41.00
APA CANAL S.A. GALATI	41.74
COMPANIA DE APA SOMES S.A. CLUJ-NAPOCA	41.77
APA NOVA BUCUREȘTI S.A.	41.93
APA-CANAL 2000 S.A. PITESTI	43.20
APA -PROD S.A. DEVA	44.36
AQUATIM S.A. TIMISOARA	44.57
COMPANIA DE APA ORADEA S.A.	46.59
HIDRO PRAHOVA S.A. PLOIESTI	50.65
COMPANIA DE UTILITATI PUBLICE DUNAREA BRAILA S.A.	51.92
ACET S.A. SUCEAVA	53.70
COMPANIA DE APA OLTENIA S.A. CRAIOVA	55.01
APA-CANAL S.A. SIBIU	55.40
COMPANIA JUDETEANA APA SERV S.A. PIATRA NEAMT	55.42
COMPANIA APA BRASOV S.A.	57.36
RAJA CONSTANTA S.A.	61.66
AQUASERV S.A. TULCEA	85.50

Source: Data processed by the authors, adapted from ANRSC (2011)

Water losses (Table no. 5) and produced water which is non-revenue water represent one of the most serious problems faced by all operators in the sector. It is estimated that more than 30% of the world drinking water is lost in the urban water supply systems before reaching the users (Moshkovitz, 2012).

Non-revenue water usually involves three major components: a physical (or real) component, commercial losses and non-revenue authorised consumption.

- Physical losses are caused by poor maintenance and repair operations, the lack of adequate operational control and poor quality of groundwater.

- Commercial losses are caused by water theft committed by customers, in various forms, as well as poor management of data and information.
- Non-revenue authorised consumption includes water consumption for utilitarian purposes, such as water used for fire fighting and water provided free of charge to certain disadvantaged groups.

Non-revenue water leads the operator to a vicious circle. Physical losses create problems in meeting the customers' demand, requiring the production of a larger quantity of water, which obviously leads to a permanent increase in operating costs. Hence, the need for additional investment efforts needed to increase network capacity. Moreover, commercial losses caused by inaccuracies in the measurement made by customers, poor data management and illegal connections lead to a deterioration in income levels and the impossibility of obtaining financial resources.

The average value of non-revenue water for water supply systems is approximately 22%. A best managed system and service will keep this percentage below 10%, while a service based on old infrastructure, without leak detection systems and meter testing software, can reach 40% or more (Mijares, 2012).

In Bucharest, Apa Nova managed to reduce the level of non-revenue water by almost half, from 350 m³ per kilometre of network/day in 2000, to 176 m³ per kilometre of network/day in 2007. While 10 other operators across the country have reduced water losses by an average of 6 % per year, Apa Nova Bucharest achieved a percentage of 10% per year (Earhardt et al., 2011). In the first nine years of the concession, Apa Nova Bucharest has invested 66 million dollars in the replacement of networks and other measures to reduce water losses. On the short term, this has led to an increase in the cost of water supply services. But on the long term, these investments will allow the maintenance of costs and tariffs at a low level.

As regards the year 2010, the comparative analysis of the percentage of water losses for major operators in Romania shows that Apa Nova Bucharest is in the top tier, with a value of 41.93 % non-revenue water from the total water produced (

Table no.).

The average water losses reported by Romania for the IB-NET in 2010 is 51%, as shown in Table no. .

Table no. 6 National average percentage

Country	Non-revenue water (%)
Poland - 2010	15
Albania - 2011	64
Bulgaria - 2008	54
Romania - 2010	51
Czech Republic - 2010	20
Macedonia - 2011	60
Hungary - 2007	32
Slovakia - 2007	31
Lithuania - 2010	24
Belarus - 2011	26
Moldova - 2011	44

Source: http://www.ib-net.org/en/country_map.php

As a remark, it should be noted that the level of water losses typically increases with the size or density of services in the area of supply. Therefore, it cannot be interpreted as representing a measure of the absolute poor performance of the service, especially in densely populated areas.

d. Tariff policy

Table no. shows the tariffs in force on 08.03.2013 for most national operators, as published on their official websites.

Table no. 7 Applicable tariff for water-sewerage - March 2013

<i>OPERATOR</i>	<i>Effective date</i>	<i>DRINKING WATER to population Lei/m³ without VAT</i>	<i>SEWERAGE – TREATMENT Lei/m³ without VAT</i>	<i>Combined tariff Drinking water+sewerage-treatment</i>	<i>Comments</i>
APA NOVA S.R.L. PLOIEȘTI	29.01.2013	1.26	1.12	2.38	The tariffs of Apa Nova Ploiești rank the company in descending order, 40 th of the 43 county capitals in Romania, namely, by 36.4% lower than the highest tariff in the country in this category
COMPANIA DE APĂ BACĂU	Valid 2013	2.23	0.96	3.19	Average tariff calculated for water in the 18 municipalities and for sewerage in 6 municipalities. There is no unique tariff. http://www.apabacau.ro/index.php/tarife-apa-canal
APA CANAL S.A. GALAȚI	01.07.2012	3.1	0.21	3.31	http://www.apa-canal.ro/servicii-de-apa-potabila-apa-de-profunzime-si-canalizare/ Average tariff calculated for water in 10 municipalities and for sewerage in 7 municipalities.
APA-CANAL S.A. SIBIU	1.08. 2012	2.59	1.35	3.94	http://www.apacansb.ro/p.php?pag=tarife
VITAL S.A. BAIA MARE	1.07.2012	2.66	1.47	4.13	http://www.vitalmm.ro/index.php?option=com_content&view=article&id=177:sigpret&catid=44:pret&Itemid=123
COMPANIA DE APĂ OLT S.A.	01.12.2012	2.43	1.75	4.18	Average tariff calculated for water in the 6 municipalities and for sewerage in 5 municipalities There is no unique tariff. http://www.caolt.ro/ro/page.php?id=26
APA PROD S.A. DEVA	01.09.2012	2.93	1.27	4.2	http://www.apaprod.ro/info_cons.htm
COMPANIA DE APĂ ORADEA	31.12.2012	2.99	1.28	4.27	http://www.apaterm.ro/
AQUATIM S.A. TIMISOARA	1.09. 2012	2.28	2.08	4.36	http://www.aquatim.ro/ro/97/tarife-si-servicii.htm
COMPANIA DE APĂ OLTENIA S.A.	01.01.2013	2.75	1.65	4.4	http://www.apaoltenia.ro/informatii-utile/tarife/tarifele-apa-canal-facturate-de-companie/ Sewerage tariff for Craiova. The sewerage tariff is not unique. 5 of the 8 municipalities are connected to sewerage systems.
AQUABIS S.A. BISTRIȚA	01.07.2012	2.75	1.65	4.4	http://www.aquabis.ro/tarife/
COMPANIA DE APĂ SOMEȘ	1.07 2011	2.39	2.05	4.44	http://www.casomes.ro/index.php?pid=4
COMPANIA DE UTILITĂȚI PUBLICE DUNĂREA BRĂILA	01.05.2012	3.24	1.81	5.05	Average tariff calculated for the 37 municipalities. There is no unique tariff.
COMPANIA DE APA BRASOV	01.12.2012	3.00	2.07	5.07	http://www.apabrasov.ro/ro/clienti/tarife/
APAVITAL S.A. IASI	01.07.2012	3.02	2.20	5.22	http://www.apavital.ro/preturi_servicii-1605-ro.html
APA NOVA BUCUREȘTI	1.03. 2013	4.36	0.97	5.33	www.apanovabucuresti.ro
COMPANIA DE APĂ ARAD	26.01.2013	2.84	2.77	5.61	http://www.caarad.ro/

<i>OPERATOR</i>	<i>Effective date</i>	<i>DRINKING WATER to population Lei/m³ without VAT</i>	<i>SEWERAGE – TREATMENT Lei/m³ without VAT</i>	<i>Combined tariff Drinking water+sewerage-treatment</i>	<i>Comments</i>
APA NOVA S.R.L. PLOIEȘTI	29.01.2013	1.26	1.12	2.38	The tariffs of Apa Nova Ploiești rank the company in descending order, 40 th of the 43 county capitals in Romania, namely, by 36.4% lower than the highest tariff in the country in this category
COMPANIA DE APĂ BACĂU	Valid 2013	2.23	0.96	3.19	Average tariff calculated for water in the 18 municipalities and for sewerage in 6 municipalities. There is no unique tariff. http://www.apabacau.ro/index.php/tarife-apa-canal
RAJA CONSTANȚA	10.04.2012	3.00	2.67	5.67	No information about prices and tariffs on the company's official website. http://joienegru.blogspot.ro/2012/04/tarife-rama-constanta-2012.html
APA CTTA S.A. ALBA	2013	2.93	2.79	5.72	http://www.apaalba.ro/clienti-tarife.html
ACVASERV S.A. TULCEA	1.09.2012	3.56	2.25	5.81	http://www.aquaservtulcea.ro/facturare/?subpage=tarife-si-taxe
COMPANIA DE APĂ BUZĂU	01.07.2012	3.61	2.24	5.85	http://www.cabuzau.ro/
APA CANAL 2000 S.A. PITEȘTI	01.01.2013	3.23	3.03	6.26	https://www.apacanal2000.ro/tarife.aspx?key=JQwfpSYzKudRh7pt3aa4eA%3D%3D
APAVIL S.A. VÂLCEA	01.01.2013	3.55	2.72	6.27	In Rm. Valcea. There is no unique tariff. http://www.apavil.ro/images/NoileTarife01012013.pdf

Source: Authors

In terms of tariffs, according to Table no. , among the 23 selected operators, Apa Nova Bucharest ranks 16th. Apa Nova Bucharest is also the operator with the most recent tariffs applicable as of 1st of March 2013. The increase of tariffs is justified by the fact that Bucharest City Hall needs to ensure the financial resources for two investment programmes: the investment in the main wastewater collector and the extension of water and sewerage networks by means of Bucur programme.

The project aimed at cleaning and using at full capacity the main wastewater collector of the city, located under Dâmbovița River is estimated at approximately € 40 million and, upon its completion in 2014, will significantly decrease the flooding risk for the Capital city. The second programme funded by consumers is "Bucur", which provides for the extension of water and sewerage networks on several dozens of streets in the city which are deficient in this respect. Moreover, the increase of tariffs was also determined by the increase in inflation rate and exchange rate unfavourable to the national currency (ANB Press Office, 2013).

e. Economic perspective

In 2010, according to the data taken from the NARCS survey, Apa Nova Bucharest ranks second among the most representative similar operators in the country in terms of the number of employees (1,898 in total, of which 951 operational employees), after Raja Constanța with a total number of 2,486 employees, of which 1,823 employees in operational activity.

However, in the same year, the income obtained by Apa Nova Bucharest ranks the company first, even if in terms of applicable tariffs, it ranks third among the 44 operators reviewed (ANRSC, 2011). This places Apa Nova Bucharest first in terms of labour productivity, calculated as a ratio between the total income obtained by the operator and the total number of employees.

In 2010, Apa Nova Bucharest obtained a total income per employee amounting to 249.5 thousand lei, about twice higher than the third ranking operator, APA-CANAL 2000 S.A. PITEȘTI with 110.87 thousand lei. After Apa Nova Bucharest, APA-NOVA S.R.L. Ploiești ranks second with 211.91 thousand lei.

This justifies the excellent positioning of Apa Nova Bucharest in terms of income return, exceeding by far the minimum level of 5% of this indicator (Table no. 8). It should be noted, in this regard, the performance achieved by the APA-NOVA S.R.L. Ploiești whose income return of 21.60% exceeds Apa Nova Bucharest (with an income return of 21.23%). RAJA Constanța, considered the second largest operator in terms of the number of employees ranks only 15th, with an income return of 7.12% (Table no. 8). Table no. 8 shows that generally, all major operators with large numbers of employees achieve a level of income return between 2% and 8%, which is considered low and insufficient in terms of economic and financial performance.

Table no. 8 Economic indicators

Operator	Total	Of which:		Income <i>thousand Lei</i>	Expendit ure <i>thousand Lei</i>	Income retur (Gross profit x 100/Total income)	Productivity (Total income/n° of employees)
		TESA	OPERATIONAL				
APA NOVA BUCUREȘTI S.A.	1,898	947	951	473,543	372,993	21.23	249.50
APA-NOVA S.R.L. PLOIESTI	256	58	198	54,249	42,530	21.60	211.91
APA-CANAL 2000 S.A. PITEȘTI	619	245	374	68,628	57,966	15.54	110.87
APA VITAL S.A. IASI	1,043	169	874	109,699	101,921	7.09	105.18
COMPANIA APA BRASOV S.A.	766	247	519	80,311	66,520	17.17	104.84
COMPANIA DE APA ORADEA S.A.	523	152	371	54,569	48,840	10.50	104.34
AQUATIM S.A. TIMIȘOARA	913	227	686	90,193	83,236	7.71	98.79
AQUASERV S.A. TULCEA	269	70	199	24,503	24,423	0.33	91.09
COMPANIA JUDETEANA APA SERV S.A. PIATRA NEAMȚ	580	157	423	50,000	46,000	8.00	86.21
COMPANA DE APĂ ARAD S.A.	735	90	645	60,944	46,758	23.28	82.92
RAJA CONSTANȚA	2,486	663	1,823	198,998	184,836	7.12	80.05
COMPANIA DE APĂ S.A. BUZAU	521	164	357	40,772	36,613	10.20	78.26
APA-CANAL S.A. SIBIU	711	161	550	54,003	48,491	10.21	75.95
COMPANIA DE APĂ SOMEȘ S.A. CLUJ NAPOCA	1,751	402	1,349	127,955	124,621	2.61	73.08
COMPANIA AQUASERV S.A. TG. MUREȘ	868	320	548	62,714	63,808	-1.74	72.25
COMPANIA DE APĂ OLT S.A.	270	68	202	18,757	13,614	27.42	69.47
VITAL S.A. BAIA MARE	513	100	413	34,607	33,271	3.86	67.46
ACET S.A. SUCEAVA	673	233	440	44,744	40,746	8.94	66.48
COMPANIA DE APĂ TARGOVIȘTE DÂMBOVIȚA S.A.	525	118	407	32,080	31,398	2.13	61.10
COMPANIA REGIONALĂ DE APĂ BACAU	839	137	702	49,813	46,618	6.41	59.37
APĂ CANAL S.A. GALAȚI	1,081	243	838	62,286	59,062	5.18	57.62
AQUABIS S.A. BISTRIȚA NĂȘAUD	536	123	413	29,803	29,946	-0.48	55.60
APA-CTTA S.A. ALBA IULIA	820	223	597	44,493	40,372	9.26	54.26
COMPANIA DE APĂ OLTENIA S.A. CRAIOVA	1,227	162	1,065	61,724	59,732	3.23	50.30
AQUAVAS S.A. VASLUI	529	169	360	25,750	25,430	1.24	48.68
COMP. DE UTILITATI PUBLICE DUNĂREA BRĂILA S.A.	715	215	500	34,768	31,761	8.65	48.63
AQUACARAS S.A. REȘIȚA	703	196	507	28,072	27,491	2.07	39.93
APA-PROD S.A. DEVA	833	231	602	32,212	30,100	6.56	38.67
APAVIL S.A. RM. VĂLCEA	692	267	425	19,240	18,912	1.70	27.80

Source: Data processed by the authors, adapted from ANRSC (2011)

On the other hand, if labour productivity is measured as the ratio between the number of employees and 1,000 connections, Romania does not make a very good impression. In the world, in 2008, labour productivity was 1.9 in Eastern Europe and Central Asia, 0.8 in Latin America, 0.6 in Africa, compared to 0.2 in developed countries.

The differences between these rates and those recorded by national operators are determined partly by the connection practices used by customers/consumers. In Eastern Europe and Central Asia, many apartment buildings are still fitted with a single connection, therefore staff productivity per 1,000 connections is very low. In 2008, the average staff productivity was about 12 employees per 1,000 connections.

Table no. 9 Labour productivity indicator

Operator	Total employees	N° of connections	N° of employees/1,000 connections
NOVA APA SERV S.A.BOTOȘANI	478	62,347	7.67
VITAL S.A. BAIA MARE	513	63,739	8.05
AQUASERV S.A. TULCEA	269	26,165	10.28
APA-NOVA S.R.L. PLOIEȘTI	256	23,776	10.77
COMPANIA DE APĂ TÂRGOVIȘTE	525	44,020	11.93
COMPANA DE APĂ ARAD S.A.	735	60,204	12.21
APASERV SATU MARE S.A.	400	32,679	12.24
COMP. DE UTILITATI PUBLICE DUNĂREA BRĂILA S.A.*	715	54,732	13.06
APA NOVA BUCUREȘTI S.A.	1,898	112,590	16.86
COMPANIA DE APĂ S.A. BUZAU	521	30,804	16.91
APA-CTTA S.A. ALBA IULIA	820	48,289	16.98
COMPANIA DE APĂ ORADEA S.A.	523	30,458	17.17
AQUABIS S.A. BISTRIȚA NĂSĂUD	536	29,734	18.03
COMPANIA JUDETEANA APA SERV S.A. PIATRA NEAMȚ	580	31,986	18.13
AQUATIM S.A. TIMIȘOARA	913	49,768	18.35
COMPANIA AQUASERV S.A. TG.MUREȘ	868	43,477	19.96
APĂ-CANAL S.A. SIBIU	711	34,125	20.84
APĂ-CANAL 2000 S.A. PITEȘTI	619	29,538	20.96
RAJA CONSTANȚA	2,486	117,972	21.07
APA VITAL S.A. IAȘI	1,043	45,346	23.00
COMPANIA REGIONALĂ DE APĂ BACĂU	839	35,826	23.42
APAVIL S.A. RM. VÂLCEA	692	28,925	23.92
COMPANIA DE APĂ OLT S.A.	270	11,168	24.18
COMPANIA DE APĂ SOMEȘ S.A. CLUJ NAPOCA	1,751	71,795	24.39
COMPANIA APĂ BRAȘOV S.A.	766	30,492	25.12
APA - PROD S.A. DEVA	833	28,273	29.46
COMPANIA DE APĂ OLTENIA S.A.CRAIOVA	1,227	41,497	29.57
ACET S.A. SUCEAVA	673	21,636	31.11
APA CANAL S.A. GALAȚI	1,081	33,737	32.04
AQUACARAS S.A. REȘIȚA	703	19,327	36.37
AQUAVAS S.A. VASLUI	529	14,019	37.73

Source: Data processed by the authors, adapted from ANRSC (2011)

From this perspective, the performance of Apa Nova București SA with a rate of 16.86 employees/1,000 connections, compared to the values of this indicator achieved by other companies in the field (Table no. 9), can be considered good.

f. Power consumption

The increasingly visible concern of water supply and sewerage companies for the implementation of sustainable development and environmental protection measures, is proved by the ongoing effort to reduce the consumption of natural resources by reducing the consumption of raw water and power.

The intensive use of energy is a serious problem for the environment, the health of the population and living organisms in general. Burning fuel releases into the atmosphere large amounts of gas and other harmful substances that pollute the air at local, national and regional level, also contributing to the pollution of ecosystems. CO₂ greenhouse gases contribute to climate change, and a number of other pollutants are conveyed in the atmosphere over long distances, causing injury to human health, land, water and forest resources.

On the other hand, reducing this consumption has beneficial effects for water and sewerage operators also by reducing costs and increasing profit. In 2010, the average power consumption to produce one m³ of drinking water was 0.38 kWh/m³. Apa Nova Bucharest recorded in 2010 a power consumption of 0.22 kWh/m³ of drinking water, a significantly lower consumption than that of other major operators: RAJA CONSTANȚA S.A, 0.57 kWh/m³ of drinking water, APA VITAL S.A. IAȘI 0.83 kWh/m³ of drinking water, AQUATIM S.A. TIMIȘOARA, 0.28 kWh/m³ of drinking water.

In 2010, Apa Nova Bucharest has completed a project with a value over four million Euros for the implementation of automatic dosing and monitoring systems in production plants and secondary pumping plants (e.g. Roșu and Grozăvești) to streamline the collection, treatment and distribution of water to consumers. The new water management systems supplied by Schneider Electric reduce power consumption by up to 17%, saving more than 600,000 Euros.

However, the large differences in this indicator are determined by the actual conditions of the water caption, transportation and distribution system. A number of operators do not use power for pumping because water is conveyed and distributed through free fall, which leads to very low values of power consumption.

Reducing power consumption and hence the decrease of this cost and of the price of water by making significant investment is a permanent objective of the operators recording high values of energy consumption/m³ of produced water.

For the sewerage activity, in 2010, power consumption had an average value of 0.17 kWh/m³ of wastewater. The operators recording the highest values are those operating treatment plants with three steps: mechanical, chemical and biological.

The activities of Apa Nova Bucharest use increasingly less natural resources and energy, so that in 2012, the amount of purchased raw water had decreased by 50% since 2002, while power consumption had decreased by 70% since 2000.

One should also note that Glina Wastewater Treatment Plant (WWTP) has a degree of energy autonomy which increased from approx. 50 % (July 2011) to approx. 70 % (July 2012), which locates Apa Nova Bucharest on an upward trend in terms of increasing the energy efficiency of activities.

4. CONCLUSIONS

The way in which public utility services are provided in order to meet their beneficiaries' requirements reflects the level and performance of the economic activity and, therefore, the overall development of a nation. Most economic sectors cannot operate without enjoying general public services (health, power and gas supply, telecommunications, public utility services, etc.), which is why providing/rendering them effectively, efficiently and economically is a fundamental requirement in the context of economic development and public welfare enhancement. Thus, the World Bank's Report (1994) showed that the development of the infrastructure capacity "could bring major benefits to economic development, poverty eradication and environmental protection, but only if it provided services to meet the requirements effectively".

In order to ensure sustainable development and guarantee the achievement of objectives such as improving the health of the population and the quality of the environment, a key prerequisite that must be met by a company is providing wide access to drinking water, the sewerage network and

other basic public services. The poor condition of these services in Bucharest before 2000 was largely due to the public nature of the suppliers of these services, which led to the development of monopoly markets and, therefore, the disappearance of competition and competitiveness.

As a feature of the last decade, in Romania there is a growing interest for the development of partnerships between the public and the private sector for projects capable of providing a steady and continuous growth of the quality of the water supply and sewerage services and its improved perception among consumers. This trend has been determined both by the willingness of the private sector to take over some of the responsibilities and risks posed by the increasing demands of consumers, and the willingness of the public sector to delegate the management of this service given the existence of limited financial resources, unable to meet the investment requirements of the water supply and sewerage services.

The importance of the water supply and sewerage services for ensuring satisfactory quality for human life is given by its five features, highlighted in numerous documents promoted at EU level: universality, continuity, quality and price accessibility of the service, and protection of users and consumers. Undoubtedly, consumer perception is significantly influenced by the degree to which an operator manages to ensure the simultaneous fulfilment of the characteristics mentioned above.

The transfer of the water supply and sewerage services from the public to the private sector through the concession has marked a turning point in the policy of the General Council of Bucharest to quickly solve the service issues and to ensure the conditions for implementing corporate management practices capable of aligning the performances of this service provided in Bucharest with the EU standards in optimum time.

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