

Relationship between Water Losses and Financial Elements – Study Case - Romanian Water Sector

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Introduction

Romania is in full process of evaluating the investment needs and preparing long-term strategies in order to assure compliance with the European Directives and sustainable development of municipal services.

Apart from evaluating the investment needs and preparing long-term strategies the Romania water sector record important institutional changes as part of the process of merging the individual water operator in order to create larger regional operators. This process of creating regional operator is part of the national strategy according to the Operational Sectoral Programme (SOP Environment) approved by the Romanian Government and agreed with European Union. The regionalization process is based on the following 3 main items:

- Intercommunity Development Association (ADI) (association of municipalities) allowing the local authorities to associate in order to implemented a common integrated strategy for water and wastewater development. ADI has the overall responsibility to arrange for and control the water and waste water services in the county or region;
- Regional Operating Company (ROC) that is owned by the municipalities in the region and which is responsible for the management and operation of water services delivery in the county or region;
- Management Delegation Contract that is established between the ADI as „granting authority” (on behalf of the municipalities) and the ROC as operator and that specifies the scope and the level of water and waste water services to be provided in the region.

In this context, a more intense attention is set on the financial and operational performance improvement programmes (FOPIP). Currently, almost all the operators from Romania are benefiting or will benefit in the near future of technical assistances in this respect. An important part of the process of improvement of financial and operational performances is the development of a benchmarking strategy. The development of benchmarks started in Romania in late '90 as part of the MUDP programme (Municipal Development Utilities Programmes) and was continued by the Romanian Water Association (ARA) in the last 5 years. Currently a new benchmarking strategy is developed and discussed with all involved stakeholders by FOPIP I Technical Assistance (implemented by Royal Haskoning - Louis Berger – BDO Consortium) and the calculation of ratios, under the testing period, covers with data more than half of the Counties of Romania.

The role of benchmarks will become more and more important in the following years in the context of the regionalization process and direct delegation of services to the regional operator. The delegation contract contains a set of performances indicators and, by having a detailed benchmarking system for the sector, there will be an extra pressure on the management teams of the operators.

From the performance indicators point of view, the level of non-revenues water becomes one of the most sensitive issues for the stakeholders (mainly for the local authorities) and any strategy regarding tariffs, investment planning and business planning will have to consider it.

Considering the context presented above, the present paper analysed the impact of the level of non-revenues water and its evolution from the last years on the decisions regarding the tariff adjustments and investment planning. The link between the water losses and the elements presented above overpasses the direct impact (financial, economical and technical) and is becoming more a political tool that is used by the local authorities to take decision that based on electoral promises and not on efficiency reasons.

Relationship between the investments performed and the non-revenue water in the last 10 years

In the last years the water operators from the main cities of Romania recorded important improvement of their financial and operational performances mainly as result of international financed investment projects. For the purpose of this analysis, we selected 4 water operators (presented in the report by using the name of the cities) that were part of the MUDP II investment programme. Under this programme, the operators implemented important investments (financed from loans, grant and own sources), benefited by technical assistances for improvement their financial and operational performances and recorded important improvement of their financial performances.

However, if we analyze the evolution of the level of losses from the last years we will see that no important achievements were recorded at first sight. The following table presents the evolution of the level of non-revenue water between 1997 and 2006 considering the level of non-revenue water declared by the companies in 1997 (as part of the assessment analysis for EBRD performed by BDO Conti Audit) and 2006 (as part of the benchmarking exercise conducted by the FOPIP I TA in 2007):

Table 1.1: Evolution of non-revenues water (in %) 1997 vs. 2006

City	Non-revenues water	
	1997	2006
Arad	34%	39%
Bacau	55%	40%
Oradea	40%	44%
Bistrita	33%	47%

Source: BDO Conti Audit Internal Data Base

At least at declarative levels, the percentage of non-revenue water did not record any decrease in 3 out of 4 cases. In some cases it even recorded a significant increase (in Bistrita). This is due mainly of poor recording of the level of non-revenues water in 1997 mainly as result of low level of metering (close to 0%). In 1996, the main part of the invoiced water was based on standard norms and was not related to the actual water consumption. However, in the official documents, the level of non-revenue water for 1996 was the one presented above.

It is important to analyze from the quantitative point of view the evolution of the level of non-revenues water recorded in the last 10 years by the above mentioned water companies. This evolution is presented in the following table:

Table 1.2: Evolution of water losses – quantitative approach (in m3/year) 1997 vs. 2006

City	Water production (m3/year)		Water consumption (m3/year)		Water losses (m3/year)	
	1997	2006	1997	2006	1997	2006
Arad	67,928,718	23,125,054	45,078,600	14,175,658	22,850,118	8,949,396
Bacau	66,000,000	19,455,830	29,380,000	11,746,627	36,620,000	7,709,203
Oradea	51,088,333	25,736,470	30,653,000	14,342,653	20,435,333	11,393,817
Bistrita	33,636,000	12,597,984	22,452,000	6,697,323	11,184,000	5,900,661

Source: BDO Conti Audit Internal Data Base

The above table actually shows that the level of non-revenues water in quantitative terms decreases significantly in the last years. However, this decrease is also partially accurate because the accuracy of the figures from 1997 is questionable due to low level of primary and secondary metering.

The level of non-revenues water from 2006 is based on a more accurate recording considering that the level of metering is close to 100%.

Considering the elements presented above, the Water Companies have to be very careful in presenting these evolutions mainly from public relation point of view considering the relationship between the management team and the shareholders (the local authorities represented by politicians). The evolution of the data (even if the data sources from 1997 are questionable) can question the ability of the management team of the water companies in implementing an efficient water loss decrease strategy.

A possible risk from public relation point of view is represented by the tendency to present the level of the non-revenues water as percentage. In our case, even if the level of non-revenues water decreases as quantity, the percentages increased creating a possible impression of lack of efficient management.

A possible risk in questioning the performances of the management team in this respect is the correlation between the evolution of non-revenues water and the investments performed in the last years. The following table presents an estimation of the investments performed by the selected operators in the analyzed period:

Table 1.3: The level of investments 1997 vs. 2006

City	Investment performed during the period (in USD)	Investments under implementation (ISPA) (in USD)
Arad	15,510,032	23,400,000
Bacau	15,087,955	63,940,500
Oradea	47,119,037	34,320,000
Bistrita	15,881,920	29,250,000

Source: BDO Conti Audit Internal Data Base

The politicians are arguing (this is happened to a number of water managers from water companies in Romania) that important amounts of investments were performed in the last 10 years and that no impact on the level of water losses is recorded.

The reason for the limited impact of the investments on the level of non-revenue water is determined by the following reasons:

- The low accuracy of data from 1996;
- The main part of the investment were focused on water quality improvement (water treatment plans refurbishments) and environmental aspects (wastewater treatment plants);
- Only a small part of the investments were focused on water network rehabilitation;

Considering that in the context of development of a benchmarking strategy for the system and that the non-revenue water most probably will be a performance indicator in the delegation contract, the management team of the operators will have to develop the new investment strategies taking into consideration these elements.

Relationship between the level of tariffs and the non-revenue water in the last 10 years

The relationship between the tariffs and the level of non-revenue water can be assessed at two levels:

- The impact of the high level of non revenue water on the operating costs (through additional energy and material costs) leading to higher tariff requirements;
- The political level, the bodies responsible with approving the tariff increases (in the case of Romania being the local authorities) arguing that the high level of water losses should not be covered through tariffs.

The first element is important and should be considered in developing the new investment strategies for the following years in order to increase the efficiency. However, in the following years, as result of Romania's accession to EU, most probably the investment project will focus mainly on the compliance with the EU requirements meaning mainly investment in increasing the water quality, treatment of wastewater and extension of sewerage networks (the last 2 being mainly environmental investments).

The second element is very important mainly from public relations point of view. Most of the members of the local council are looking at the following two elements regarding the water and wastewater activity:

- If the customers are receiving quality water 24 hours per day and are benefiting from sewerage services;
- The level of tariff (to be maintained at low levels);

One of the most used arguments of the members of the local councils in the process of refusing tariff adjustments for the water operators is the high level of the non-revenues water (as percentage) and that the non-revenues water should not be financed through the tariff but through increase of efficiency. However, you can not achieve decrease of non-revenues water without investment and the investment might be channelled to other areas leading to a circular reference.

A comparison between the evolution of non-revenue water and the evolution of tariff increases for the 4 selected water operators from the last 10 years is presented in the following table:

Table 1.4: Tariff adjustment vs. non-revenue water

City	Non-revenue water		Tariff increase in real terms	Affordability ratio evolution	
	1997	2006		1997	2006
Arad	34%	39%	442.7%	1.9%	1.7%
Bacau	55%	40%	617.4%	2.5%	1.9%
Oradea	40%	44%	387.9%	3.0%	1.8%
Bistrita	33%	47%	318.2%	2.4%	1.5%

Source: BDO Conti Audit Internal Data Base

Even if the last 10 years the tariffs increase in real terms by more than 300%, the level of the affordability ratio calculated as percentage of the water and wastewater bill in the average household income decreased. This is the result of the following effects:

- Decrease of individual consumption from level around 250-350 litres per capita per day in 1997 (mainly set according to the consumption norms) to levels around 100-125 litres per capita per day in 2006-2007.
- The increase of household average revenues;

However, during the analyzed interval, for short periods of time, the level of affordability ratio exceeded 4% mainly due to important tariff increases in real terms from the last years of the '90. The tariffs from 1997 were set at the level of just covering the operating costs (in fortunate cases) while the important tariff increases from the last 10 years were performed for assuring the repayment of loans contracted for investments, coverage of all operating costs and assuring investment funds from own sources.

These important tariff increases from the last 10 years had an important indirect effect on the non-revenue water due to the following cascade effects:

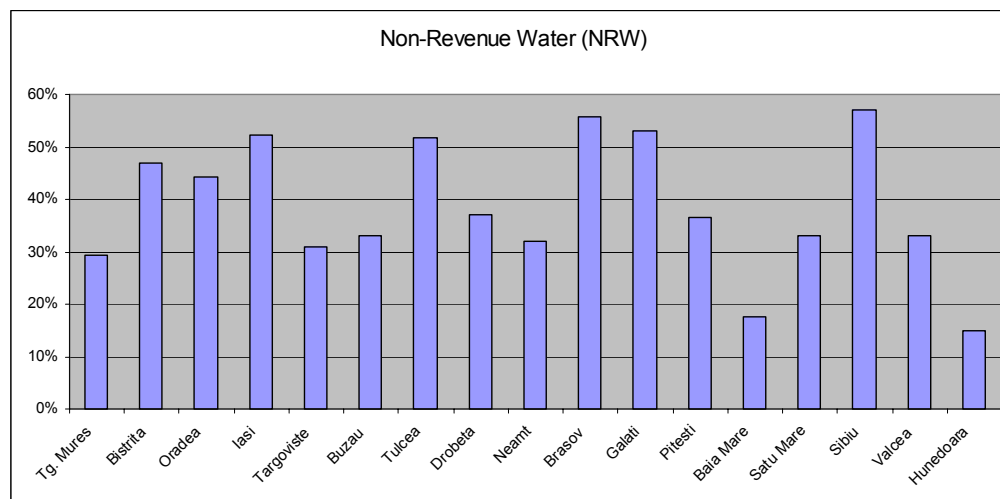
- The operators were able to contract loans for financing investments having as components primary metering of the systems leading to more accurate calculation of the level of non-revenue water;
- The high levels of the tariff increased the level of the monthly water bill (the affordability ratio exceeding 4%) making aware the consumers about the importance of secondary metering and elimination of waste of water. This actually happened, in the last 10 years in the analyzed cities, the level of secondary metering currently being around 90%;

By these effects, even if the percentage of non-revenue water slightly increased in most of the cities, the actual quantity of non-revenue water decrease due to more accurate data recording system and decrease of water waste mainly by domestic customers. This had a direct effect on the decrease of energy consumption and materials related to the water and wastewater treatment activities. This increased the financial performances of the operators allowing them to perform the investments presented in the above chapter.

Present Level of Non-Revenues Water in Romania

The level of Non-Revenues Water presented in this chapter is the result of the first benchmarking exercise conducted by the FOPIP I Technical Assistance (implemented by Royal Haskoning - Louis Berger – BDO Consortium) performed in March 2007. The level of non-revenues water for a number of 17 Water Operators from Romania (presented considering the names of the cities or regions where they operate) is presented in the following Figures:

Figure 1.1: Level of Non-Revenues Water in 2006



Source: FOPIP I Benchmarking Exercise Results, March 2007

From the presented results it can be seen that even today, when the degree of primary and secondary metering in the analyzed cities is high, there are still recorded very low reporting on the level of non-revenues water (below 20% in Baia Mare and Hunedoara) mainly from cost management consideration. This raises an important question on how should be the level of non-revenues water be calculated.

Most of the water operators present the results based on the metered quantity of distributed water into the water system and the level of invoiced water. However, in the case of Baia Mare and Hunedoara, the level of non-revenues water is calculated not based on the level of actual water distributed into the water system but based on the level of raw water actually paid to Romania Waters (the management authority of the water sources) according to the contracts, corrected by the technological losses. The level of raw water considered in this case is not based on metering but on an agreement of the management of the company with Romanian Waters with the intention of cost consideration (to the decrease the costs with raw water).

In the context of setting up regional operators and implementation of benchmarking strategies for the Romanian Water Sector, this approach is very risky for the management team of the companies from Baia Mare and Hunedoara. If they will include in the delegation contract as performance indicators the level of non-revenues water according to the approach presented above considering only the cost decreases motivation on short term, in the future they might face important "performance" problems when these "arrangements" with Romanian Water will not be possible and they will have to record the real levels for non-revenues water.

Conclusions

In the context of regionalization and conclusions of new delegation contract according to the national strategy presented in the Sectoral Operational Programme, the role of performance indicators is becoming more and more important. And one of the most appreciated performance indicator by the local authorities (the shareholders of the water companies and the entities responsible with the service supply) will be the level of non-revenues water.

Even if in the past the water operators from Romania calculated this ratio in different ways and using different set of data (more or less accurate) in order to achieve some short-term reporting objectives, in the near future the attitude has to change significantly.

The implementation of a benchmarking strategy at the level of the water industry will allow the stakeholders to make relevant comparisons between operators and any “anomalies” (as the ones from the charts presenting the level of non-revenues water discussed above) will be immediately identified.

All water operators has to be aware that they should all start to calculate the level of non-revenues water based on real figure and supported by full metering of the systems on order to be sure that in the future their performances will be measured starting from a correct base.

Considering the importance that the local authorities are allocating to the level of non-revenues water, the water companies have to consider this element in designing the development strategies for the following years:

- The investment strategies, even if the main elements will be focus on compliance with EU Directive, should also consider investments in improving the level of non-revenues water;
- The formula of non-revenues water that will be considered as performance indicator has to be carefully explained to the performance monitoring entities in order to do not lead to misleading conclusions in the future;
- Clear explanation presented to all relevant stakeholders on the relationship between the level of non-revenues water, investment programmes, tariff levels and development strategies.

The following 10 years will record major changes in the Romania Water Sector starting from institutional issues (creation of large regional operators), following with technical and operational issue (improve of performances due to large investment for meeting the EU standards) and ending with financial performances (monitoring of performances, increase of efficiency, etc). In this context the non-revenues water will become one of the most important performance indicator and the water companies will have to treat it accordingly.

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