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FINANCIAL SUSTAINABILITY OF PUBLIC UTILITIES IN WESTERN BALKANS

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Abstract: Media in Bosnia and Herzegovina recently published that between 70 and 80 percent of public utilities are hardly able to pay their accounts payable and at least half of them has fulfilled the conditions for the opening of bankruptcy proceedings, according to estimates made by the Association of Bankruptcy Administrators. Similar situation is in other Western Balkan countries; budgets of public utility companies are not able to settle obligations. Why is it becoming convenient, also followed by deterioration of public infrastructure and worsening of public services provision quality, and how can such declining process be reversed? The paper presents research on this topic, focusing specially to water utilities, and offering potential responses to these questions.

Keywords: public utilities, financial sustainability, tariff setting, operational efficiency, investment maintenance

1. INTRODUCTION

Many of the water utilities in the Balkans state that their national regulatory framework does not secure self-sustainability of these services. Directors of these utilities mostly point out the high level of network losses, inadequate tariff levels, staff expertise and number, sometimes also low receivables collection rate, as critical to their operations and hindering quality of provided services. Low tariffs are claimed not to allow for regular investment maintenance what causes network becoming obsolete with increasing leaks. That becomes wicked indefinite circle where lack of funds is reflected in bad maintenance, causing increased water losses, impacting higher costs for pumping and thus even less funds available for maintenance and so on.

Public utility companies are supposed to provide important basic services to the population without making (any or significant) profit. Thus, they should not be in a position to set their own tariffs and can only be involved in negotiations with their founding administration (mostly municipalities/cities, sometimes joining to found one joint public utility). Their request for tariff change needs to be accompanied with National water laws in Balkan countries are already highly harmonized with the EU Water Framework Directive, which prescribes cost recovery principle for water services. Since any level of costs can be recovered by sufficient tariff level, consistently following this principle would enable financial sustainability of water utilities.

As mentioned above, at least half of Bosnia and Herzegovina public utilities already fulfilled the conditions for the opening of bankruptcy proceedings. Inability of utility companies to settle their obligations is always followed by deterioration of public infrastructure and worsening of public services provision quality, and any further delay of reversing this process would become more and more costly.

2. LITERATURE REVIEW

In [1] several conclusions are made about a utility of the future. It is stated that the utility of the future will likely be operationally efficient (which will require motivated and engaged workforce), will be engaged in the community (creating dialog with the community and ensuring alignment between community, its elected leaders and the utility's policies) and "will integrate water management, treatment, environmental sustainability, and public policy decisions in a fashion that leverages regional opportunities and relationships and economies of scale". Management of the infrastructure will be of crucial importance in relation to the development of water utilities. Water infrastructure will require significant investment, while financial constraints will require innovative financing strategies.

In [2] authors emphasise that "water rates have been increasing at rates far exceeding inflation over the past decade" and that use of billing per month for low and fixed income customers may lead to reduction of the collection of the utility's collection costs. To reduce the administrative costs, it is suggested that the company sends bills at a certain frequency i.e. bimonthly or quarterly, but to allow customers to pay monthly.

To determine affordability of the cost of water and wastewater services for local community households [3] reminds on Stratus Consulting publication (2013) and "affordability ratio" of a household average annual cost of water and wastewater services and MHI (median household income). Combined average annual water and wastewater bill less than 4.5% (2.5% for water and 2% for wastewater services) of service area MHI could be considered to be affordable according to EPA Affordability Guidance, while emphasising that the limitation of this model is that MHI is not accurate indicator of the local community well-being.

Increase of the resiliency and sustainability of water utility assets (high value facilities and equipment) is of utmost importance [4] to avoid the risk of the integrity of water structure. The evolution from compliance to resiliency and sustainability can be achieved by focusing on “effective utility management, full-cost pricing of services, efficient use of water, and protection of resources.

Article [5] notes that “field computing and wireless technology will become a critical component of water utilities’ daily operations in the coming years”. Wireless and mobile technologies for water utilities if implemented properly will lead to a 30% improvement of service efficiency on annual level. Savings will be available through improved productivity, improved management of assets and reduced fuel costs and corresponding gas emission.

Paper [6] emphasises management of assets as the key for delivering the sustainability of water utilities. Integral part of the healthy society is regular supply of high-quality drinkable water and removal of wastewater. For drinking water supply and wastewater removal services a wide range of high value assets are used with significant cost to operate and maintain these assets. Sustainability development model consists of five stages: pre-compliance, compliance, beyond compliance, integrated strategy and purpose and passion. Purpose and passion is the last, the fifth stage, which is true sustainability. The challenge is to link asset management and sustainability. Attempt to reduce maintenance budget without justification should be considered as counterproductive in relation to high quality operability of assets and sustainability of outcomes.

Article [7] recognizes that achieving sustainability requires a change in the culture of water utilities, so as in the cultures of other local agencies, utility customers, and utility stakeholders. Cultural change is a lengthy and difficult process. Having this in mind, an approach that requires water utilities to balance the two key issues over time – their capacity for cultural change and their desired water sustainability portfolio - is suggested.

Paper [8] articulates sustainable development goals and Paris climate change agreement (COP 21) delivered in 2015 with challenges of sustainable development and climate change. This paper describes key issues and actions needed relevant for sustainable development. It is noted that there is depletion of fresh water systems. Water stress is one of the key global issues relevant to the present development and the social component of sustainable development. 768 million people do not have access to safe and clean water supply. By 2030 almost half of the world’s population will face high water stress.

Aging water systems infrastructure management and acceptable level of service is becoming more challenging for all utilities [9]. So, utilities move toward “sustainability management approach” with respect to infrastructure and service level. Implementation of asset management is the step to achieve sustainability. Where to begin asset management program is the hot question having in mind limited funds and expectations of elected officials. It is important to address both dynamic and static assets in the system. Risk reduction using innovative approach of CPM (control point management), information management and pipe management is described. Paper [10] describes a case of a country with extensive systems of rivers and lakes with poor management, conflicting water regulative led to a situation where a consumption of water is below average. Another country case describes volume of use progressive tariff for drinking water with higher tiers subsidizing the lowest tiers.

3. RESEARCH METHODOLOGY

— Survey

At the end of 2015 a survey was made on sample of 31 BiH water utilities, aiming to assess their operational and financial performance by evaluating a number of selected performance indicators. Survey was implemented within the framework of the MEG project led by United Nations Development Programme (UNDP) office for BiH, which is financed by Swiss Agency for Development and Cooperation (SDC).

Evaluated performance indicators belonged to different groups like Population coverage, Production and consumption of water, Failures at network, Measurement level, Nonrevenue water, Employee productivity, Invoicing and Billing, Financial Results, Costs, Affordability of services, Management of non-payments, Quality of service.

Table 1. Specific performance indicators

Indicator	Average	Min	Max
Nonrevenue water %	51.07%	22.55%	87.98%
Nonrevenue water m3/km/day	5.05	0.00	21.49
Nonrevenue water m3/connection/day	0.13	0.02	0.70
Real losses (% of water abstraction) %	42.02%	10.21%	71.11%
Real losses (m3 per connection per day) m3/connection/day	0.10	0.02	0.23
Apparent losses (% of water abstraction) %	9.02%	0.00%	58.84%
Apparent losses (m3 per connection per day) m3/connection/day	0.03	0.00	0.47

Each of these groups contains several specific performance indicators – as example very relevant group of operational performance indicators for non-revenue water revealed the following data (Table 1).

Distribution of non-revenue water to real and apparent losses is estimated, but the overall average non-revenue water of 51.07% shows high level of existing deterioration of the water supply networks, what is proving that the existing financial instability affects service quality and long-term sustainability.

— Research Results

Population coverage has shown that on average water supply services are provided for 62.03% of the municipal population, while sewerage services are given to less than half of them, only for 28.85% of the municipal population. Nowadays most of the population's consumption is measured, average of 94.82% of consumers have functioning water meters in place. But this information has to be accompanied with the fact that most of the water meters were not calibrated or replaced after 5 years of usage, as the law prescribes, what is definitely causing high level of apparent losses contributing to already mention non-revenue level. Obsolete water meters record lower consumption than real, increasingly through the time, and some of them were not replaced for 30 or more years. And real and apparent losses are obvious threats to the financial sustainability of the public water utilities, causing inefficient operations with much higher costs than actually necessary.

Another cause of higher and unjustified costs is related to the staff efficiency, and consequently staff costs. Even though lack of specific engineering expertise in the water utilities can be noticed, total number of employees seems to be higher than average in similar utilities in EU. Indicator of number of employees per 1000 users of services (both water supply and sewerage) is collected and it averaged to 1.73, where the maximum was even 3.33 employees per one thousands of population using mentioned services. For comparison average of approx. 1 employee per thousands of users is convenient in efficient water utilities in western countries. Also worth noticing is that the new Law on Local Self-Management of Republika Srpska proposes maximum of 3 employees within the whole municipal administration per thousand of population. Overstaffing in public utilities is actually not exemption, it is characteristic for the whole public sector in Western Balkan countries, this survey just revealed these numbers.

Recovery of operating costs secured by existing tariffs and revenue collection average to 98.61%, while the worst case is as low as 57.30%. These costs are mainly constituted by salaries and energy costs, also include costs of chemicals, office supplies, fuel and similar. This data already shows another reason for deterioration of the infrastructure – no funds available for investment maintenance. With more detailed evaluation it was found that many of the water utilities are reluctant to record the whole infrastructure within the fixed assets book. The reasons are that that they consider depreciation calculation to these assets as undesired "cost", so as they have a kind of excuse that these assets belong to the municipality and not to the utility, and the owner is supposed to calculate depreciation. But with such approach there are not funds collected for the purpose of regular replacements of infrastructure parts, after being used for presumed time period. Infrastructure is slowly aging and performing worse and worse, but no procedure to prevent that exists. This is probably regulatory gap that can be overridden with simple changes in the laws or getting agreement between the municipality and utility on comprehensive infrastructure recording and depreciation calculation, followed by introducing that amount into the tariff model and finally setting aside part of the revenue collected for this purpose. And at present any large pipeline burst still needs to be repaired (or the pipeline needs to be replaced), what is a cost that can not be covered from existing revenues and that is one more cause for the utilities' financial instability.

Long lasting heritage of public utilities in western Balkans is also to have different tariffs for legal bodies and private persons. Once before, in a completely different political system, it was considered that legal bodies are "making money" and are thus rich and can afford to pay more for the same. That system vanished, but many of its relicts are still in place – average ratio of tariffs of legal and private is 2.29, largest one even 3.67 (meaning that the same m³ of water costs 3.67 times more than for the private persons). Public services are supposed to cover costs and not to make profit, so that was the way to collect more money on expense of legal bodies. Not just that is not stimulating for the new businesses to open, but it also is obviously not effective seeing present financial condition of these utilities.

Ten or more years ago many utilities' directors were complaining on low collection rate for issued invoices. Latest survey has shown that average resent collection rate of assessed 31 utilities amounts to 96.07%, from min. of only 52.97% to max. of 137.97%. The later percentage also exposes another gap in utilities practices – unlike most other business transactions where payments are linked to issued invoices, utilities prefer to link payments only to cumulative account of the customer. So if the customer did not pay 2 bills of 15 Euro and 2 other od 20 Euro, that means that the total debt amounts to 70 Euro and payment of 25 Euro (possible in practice) will deduct debt to 45 Euro, but will not relate to any of the four invoices. And thus the only way to

evaluate collection rate is to calculate ratio of received payments and issued invoices in the same period. Since utilities periodically implement measures to increase payments, no surprise that in these periods it is over 100%. But this data needs to be accompanied with the indicator on average payment period (ratio of accounts receivable and revenues), which is on average 316.80 days! That means that the average utility has almost the same amount of unpaid invoices by their customers, as the total revenue in one year. Of course that creates incorrect financial perception, since accounting considers these unpaid debts as cash equivalents, while in reality many of these debts often relate to debts older than one or more years and with low probability to be ever paid. And even worse these receivables are usually practically balancing with the funds for (investment) maintenance, meaning that since it is not collected, no obsolete parts are replaced.

There is another important indicator to be stressed in this analysis – not all costs have the same importance to be paid, there is strict preference within the utilities that salaries' costs are the first priority for payments. That is another consequence of the former political system, probably much more than of real strength of present syndicates (unions). And participation of salaries' costs within the total operating costs on average for the 31 selected utilities amounts to 59.45%, where the maximum is even 87.21%.

Another very relevant indicator is affordability for these services – it relates to population capacity to pay specific level of invoices. It is usually measured with two different approaches – one is to compare (ratio) monthly invoice for a family with their total monthly income from all sources. In practice, most often it is considered that it should not be higher than 4%, or in some cases 5% (so participation of water supply and sewerage costs are limited to 4% of the family income). Other approach is to calculate total income per user served as proportion of Gross National Income per capita (GNI). It is considered that this indicator's value should not be higher than 2%. Since it is not easy to get information on all sources and levels of income for average family, while GNI records are available per municipality, the other option was used. Average for the all selected utility is 1%, what means that existing tariff levels still can be increased without threatening average affordability. The absence of actual, and truly needed research of the payment abilities and particularly identification of population categories in real need of support to pay their utility bills in BiH has been replaced in practice by a general attitude in local communities that the overall population is poor and thereby cannot afford to pay higher bills. Such an attitude can be recognized in frequent non-approval of prices proposed by managers of utility companies. Thus the present practice of keeping tariffs at low levels is justified with concerns to the payment ability of the population, while obviously this affordability indicator shows that such approach should be replaced with direct subventions only for those in real needs.

Present water tariffs significantly differ from one municipality in BiH to another but, in principle, it can be stated that all of them are considerably lower than the ones in the most recent new EU member, Croatia. Given that such prices are not sufficient to cover all related costs, either the local community would settle the difference in the necessary revenue (what very rarely happens), or the network maintenance would be avoided and thus its value reduced (which is a common practice). Of course, it is all users that are subsidized in both cases, which is completely unjustifiable both from the moral and practical point of view, since their needs for support significantly differ.

— Key Tariff Setting Principles

GoalWash project led by UNDP office for BiH, financed by Stockholm International Water Institute and co-financed by UNDP office for BiH, reached the very specific conclusions regarding key principles in establishing the tariff structure, which are not comprehensively applied in the Balkan countries [11]. The issue of financial sustainability of the water supply system is closely related to the principles broadly accepted in the EU – these are the “cost recovery” and “consumer pays” principles.

Principle *cost recovery* is declaratively represented in the practice. It relates to tariff setting of water supply services in a manner to include all the costs associated with this type of service. Its basic intention is to achieve sufficient revenues to enable long-term stability and sustainability of a utility company providing the respective services. However, there is a problem related to practical understanding of the term “all costs”. In practice, this principle is often implemented in a way to include operating costs and only a portion of real depreciation costs, since water supply and sewerage network and infrastructural facilities are rarely completely recorded in the fixed assets accounts. This way, the investment costs of maintenance and capital investments are neglected, which would serve for expansion of the network or service improvements through purchase of new infrastructure, as well as opportunity or indirect costs such as, for instance, costs of resources or possible environmental damage.

Principle *consumer pays* requires that the cost incurred by a specific request of a concrete group of consumers should be borne by this very group. Another principle that can be applied, particularly in terms of sewerage

services, is the “polluter pays” principle, relating to possible environmental damages during the construction or operational use of the water supply system too.

Water is frequently considered both as a social category and as an economic good. On 28th July 2008, through Resolution 64/292, the United Nations General Assembly explicitly recognized the human right to water and sanitation, and acknowledged that clean drinking water and sanitation are essential for the human rights implementation. In November 2002, The Committee for Economic, Social and Cultural Rights adopted General Comment No. 15 on the right to water. Article I.1 states that the human right to water is indispensable for leading a life in human dignity. It is a prerequisite for the realization of other human rights. The same Comment also defined the right to water as the right of everyone to sufficient, safe, acceptable and physically accessible and affordable water for personal or domestic uses. Such a definition leads to another principle applied in water supply, the principle of *equity and equality*, the objective is to assure water under equal conditions for the entire population.

Closely related to this is also the formerly mentioned principle of *affordability*, which is used for assessing the highest possible tariff rate that average families can monthly pay from its income, and the average consumption per person. It has to be noted that there will surely always be a certain number of households that cannot afford to pay their water bill, but those persons, which have to be registered as socially vulnerable categories, should be assisted through subsidies, vouchers or otherwise, and not by reducing the water tariff rate for all consumers. Such an approach will ensure realizing the human right to water as recognized by the UN Convention

One should inevitably state another inconsistently implemented principle in practice within this sector, the principle of *economic efficiency*. It includes, for example, optimization of the use of pumps in the network, optimal fixed assets management and minimizing the network losses, minimum number of staff for implementation of all operational activities, etc. It can be said without hesitation that most utility companies suffer great losses in the network that hinder the realization of the main company’s function, that the number of staff and their qualification structure is inadequate, etc. Still, it has to be stressed that these are partly the consequences of other issues such as high unemployment in local community, sketchy responsibility for fixed assets maintenance expressed in inadequate calculation of depreciation, which, combined with poor collection, inevitably leads to weakening of the infrastructure, etc. These are not recent problems, and their consequences are long lasting, so it is important to identify the path, first to ease them, and subsequently to eliminate them. To this end, it is important to choose useful and applicable performance indicators, as well as their milestones and target values, which will serve as evidence for general application of the stated efficiency principle.

Another principle which should be mentioned, although it is still not implemented to its full meaning, is the principle of conservation of natural resources (*environmental efficiency*). Its application is partly reflected in the existence of the defined water charges (e.g. special water charges on use of ground and surface waters, water conservation, abstraction from watercourses, etc.), but the same principle may also be applied through additional charges whose function would be to decrease the consumption and thereby the water intake from the environment. Another option for applying this principle is to introduce charges that would neutralize possible adverse environmental effects that occurred during the construction or exploitation of the water supply system (internalization of resource costs). In any case, the price should stimulate consumers to use water rationally, and not to threaten the existing capacities by excessive water consumption.

It should be noted that tariff setting, and this happens in the international practice and not only in the Western Balkans, can also be guided by socio-political motives, e.g. low and subsidized water supply tariffs serving as incentive for development of underdeveloped areas of the country. In those cases, the tariff usually recovers the main operating costs (e.g. staff wages, basic maintenance costs), whereas the difference to the full price is covered by responsible administration level from own revenues. This approach leads to irrational water consumption and should be only temporarily applied.

4. CONCLUSIONS

All assessed indicators show that the response to the issue of financial sustainability of public utilities with only simple tariff increase is not the best one. Tariffs need to be established on cost recovery principle, but these costs need to be isolated in the accounting and justified with the most efficient operations available. That means that effects of decades of neglecting the infrastructure maintenance and replacement, causing very high non-revenue water level, cannot be promptly eliminated and need time. The same stands for overemployment, it can’t be expected that employees will be quickly fired. That is both social and operational issue, since fast decrease of number of employees would influence service quality, time is needed for proper transfer of all responsibilities to lesser people. But as soon as the process starts, time needed will be shorter, thus no further delay should happen.

The research was conducted on 31 out of around 140 B&H water utilities and can be considered as representative for the whole country. Reliability of the data is checked through the research (specifically water abstraction, since water utilities rarely have water meters at intake and the amount of water is checked with the utilities' reports and estimated by the pump capacity and work time). Nevertheless some of them (specifically separation of non-revenue water to real and apparent losses, or average family income in the municipality) needed to be estimated since they are not measured. Also, more financial indicators could be assessed, as example Debt Service Coverage Ratio (DSCR) which is highly relevant for assessment of financial sustainability of those water utilities paying back loans for network extensions or constructions of treatment plants. But that is also direction for the future research in this area.

Note

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