

SEPTEMBER 2015
VOLUME 10 ■ ISSUE 3

water utility management

I N T E R N A T I O N A L

WATER LOSS

São Paulo: a 45-year on-going fight against water losses



TARIFFS



Tariff setting for Albania's Water Regulatory Authority

CORPORATE GOVERNANCE



Improving corporate governance in Albania's water supply and sewerage sector

PLUS ...

Achieving effective social measures in water supply and sanitation provision

Report sets out reform opportunities for Nigeria's State Water Agencies

Recommendations for reforms to improve performance of Nigeria's State Water Agencies have been set out in a report released by the World Bank.

With the country's largest water suppliers struggling to improve service provision in the face of rapid urbanisation, the report, 'State water agencies in Nigeria: a performance assessment,' by Berta Macheve et al, surveyed 35 of the 37 State Water Agencies. It found that many utilities are able to collect and report performance information, but that such reports need to be analysed at the federal level. 'It is necessary to institutionalize a federal performance benchmarking system,' the report states.

According to the report, the 35 State Water Agencies were able to connect some

1 million new customers between 2011 and 2013, but this figure was dwarfed by the approximately 9 million new urban dwellers during this time, meaning urban water coverage dropped by almost 3 percent, to less than 40%. 'At the current rate, within 10 years water coverage may drop below 30% and only 20% of urban residents will have a direct water connection,' the report states.

Around \$6 billion needs to be invested over the next ten years to achieve universal water supply, or some \$2.9 billion to connect all current municipal residents, yet 18 of the State Water Agencies have never had an investment project valued at more than \$10 million. That there is the potential for users to contribute to this investment is supported by the fact that the national cost

of water from alternative water providers is estimated at \$650-700 million a year, which is four times more than the combined revenue of all the 35 State Water Agencies surveyed, notes the report.

The report's other recommendations include: closing the current information gap as a first priority; clarifying the corporate status of State Water Agencies, especially achieving true separation from State Governments; improving national and state tariff policy guidelines and regimes; reviewing tariffs for cost recovery and affordability; institutionalising metering of water production and consumption; preparing for the financing of future projects with input from State Governments; and for the possibility of a national water fund to be explored. ●

European Parliament votes for further Commission action on Right2Water

The European Parliament voted on 8 September in favour of a resolution urging action by the European Commission to take forward measures called for by the Right2Water citizens' initiative.

The European Commission is the body responsible for drafting EU legislation for possible adoption by the European Parliament and Member States. The European Citizens' Initiative is a means by which EU citizens can call directly on the Commission to draft proposed legislation if a minimum of one million signatures can be gathered in support of an issue.

Right2Water had been the first such initiative to gather the number of signatures needed – in fact attracting almost 1,900,000 signatures. The Commission set out its response to the Right2Water proposals in a 13 page communication

issued on March last year. At the time, Right2Water's vice-president Jan Willem Goudriaan comment: 'The reaction of the European Commission lacks any real ambition to respond appropriately to the expectation of 1.9 million people. I regret that there is no proposal for legislation recognising the human right to water.'

The European Parliament's response levels a number of criticisms at the Commission and calls for a range of actions. The European Parliament says the Commission's 'alleged neutrality' regarding water ownership is in contradiction with the privatisations imposed on some Member States by the Commission, European Central Bank and the International Monetary Fund. It says that the Commission 'should remain neutral' and not promote privatisation of water services

in any way. To this end, the European Parliament document adds that production, distribution and treatment of water and sanitation services should remain excluded from the Concessions Directive.

Among the many other proposals in the European Parliament's response, it urges the Commission to ensure quantitative assessments of water affordability become mandatory in any revision of the EU Water Framework Directive.

Private water operator federation AquaFed commented: 'The choice of "technical" operator must be made by the public authority that remains in control... While some intended to exclude the choice of the private sector option from the range of solutions, the Parliament recognised the positive contribution of all operators including the private sector. ●

**water
utility management
INTERNATIONAL**

EDITORIAL

Water Utility Management International focuses on the interests of utility executives, policy makers and advisors around the world engaged with the key management issues faced by water and wastewater utilities. As well as senior utility managers, WUMI will be of interest to regulators, consultants, contractors, academics, and financial, technical and legal professionals.

Utility reform and achieving efficiency are central themes of the publication, encompassing topics such as benchmarking, investment planning, consolidation, public / private sector roles, leadership, IT, and human resources. Other regular themes include financing, regulation, charging policies, procurement, corporate governance and customer issues.

Editorial Advisory Panel

Mr John J Batten, ARCADIS, USA
Dr Enrique Cabrera Jnr, IITA - Universitat Politècnica de Valencia, Spain
Mr Philip D Giantris, Water Supply and Sewerage Association of Albania, Albania
Dr Richard Franceys, Centre for Water Science, Cranfield University, UK
Professor Francesc Hernandez-Sancho, University of Valencia, Spain
Dr David Johnstone, Oxford Centre for Water Research, University of Oxford, UK
Prof Hamanth Kasan, Rand Water, South Africa
Professor Jennifer McKay, University of South Australia, Australia
Mr Alejo Molinari, Buenos Aires ERAS / ADERASA / Public Utilities Center, Argentina
Mr Josses Mugabe, World Bank, USA
Dr Renato Parena, Italy
Mr Eric Rothstein, Galardi Rothstein Group, USA

PUBLISHING

Publisher
Michael Dunn

Water Utility Management International is published four times a year by IWA Publishing. Statements made do not represent the views of the International Water Association or its Governing Board.

**IWA Publishing
Alliance House,
12, Caxton Street,
London SW1H 0QS, UK**
 T: +44 (0)20 7654 5500
 F: +44 (0)20 7654 5555
 E: publications@iwap.co.uk
 W: www.iwapublishing.com

Design & print
 Layout: IPL Print & Design Ltd
 Printed by Hobbs the Printers, UK

SUBSCRIPTIONS

Water Utility Management International is available as either a print or an online subscription.

2015 price (4 issues):
 £272 / €410 / \$542
 (IWA members: £220 / €329 / \$417)

Contact
IWA Publishing (see opposite)

Or visit:
www.iwaponline.com/wumi/default.htm

ISSN (print) 1747-7751
 ISSN (online) 1747-776X
 © IWA Publishing 2015



Suez marks name change with strong half-year results

French group Suez released its half year results towards the end of July, reporting an increase in group revenues to the end of June of €404 million, up by 5.9% to €7295 million compared to the same point last year.

The Water Europe division saw revenues rise by €56 million at constant scope and exchange rate, and the International division saw revenues rise by €91 million. A favourable exchange rate impact accounted for much of the increase in the overall increase in revenue.

CEO Louis Chaussade commented after the release of the results that the board had approved the change of the brand name to Suez, 'a short, strong name and full of history'. 'This agreement completes the launch of our single worldwide brand. Since March, the 40 Group's trademarks are federated under a single brand positioned in the sustainable resource management, which is already bearing fruits,' he said.

Chaussade added: 'The "Water Europe" division reported strong performance, driven by higher volumes, prices and new services. The "International" division benefitted from sustained growth in almost all geographical regions and in all its businesses.'

In early September, Suez also announced that it had successfully completed placement of €500 million in bonds to mature in 2025. According to the company, demand for the bond had been six times greater than the offering, allowing the company to obtain its lowest 10-year coupon, at 1.75%. The company also noted that the placement was in line with its policy to refinance and extend its debt. ●

ADB to support Uzbek city of Djizzak

The Asian Development Bank (ADB) has approved a \$81 million loan to support upgrade of the urban sewage and wastewater system in the city of Djizzak, Uzbekistan, in a move it says will help raise living standards, improve the environment and boost public health.

'Djizzak is a key driver of regional economic growth,' said Hao Zhang, Principal Urban Development Specialist with ADB's Central and West Asia Department. 'This project will give at least 85,000 residents and over 350 businesses access to clean water, and reliable sewage collection and wastewater management services.'

Djizzak is capital of the Djizzak Province and is a former Silk Road junction connecting Samarkand with the Fergana Valley in eastern Uzbekistan. According to ADB, the government recently approved a long-term development plan that will accelerate urbanization, expand some industries and relocate others, and attract foreign investment by establishing a special industrial zone.

To cope with an expected dramatic increase in the city's population, the project will carry out a massive rehabilitation of Djizzak's deteriorated wastewater and sewage system, which according to ADB was constructed in the 1970s and has been barely maintained since. This has resulted in serious environmental damage and public health threats, such as an alarming rise in acute intestinal infections and viral hepatitis.

Along with a new wastewater treatment plant, the project will construct or rehabilitate over 62 kilometres of trunk sewers and four pumping stations and provide support to operate and maintain the new facilities. By the time the project is completed in 2020, the system will be able collect and treat up to 30,000 cubic metres of raw sewage per day, and the pumping capacity will have been increased to more than 15,000 cubic metres per day from around 9000 cubic metres per day in 2013. ●

Rezarta Cenaj Melo,
Executive Director of the
Corporate Governance
Institute of Albania (see
page 4)



FEATURES

4 CORPORATE GOVERNANCE

Improving corporate governance in Albania's water supply and sewerage sector

By **Rezarta Cenaj Melo**

10 TARIFFS

Achieving effective social measures in water supply and sanitation provision

By **Giel Verbeek and Branko Vucijak**

14 PERFORMANCE

Are adjustments needed for water utility Key Performance Indicators and benchmarking values in countries in transition?

By **Branko Vucijak and Giel Verbeek**

19 WATER LOSS

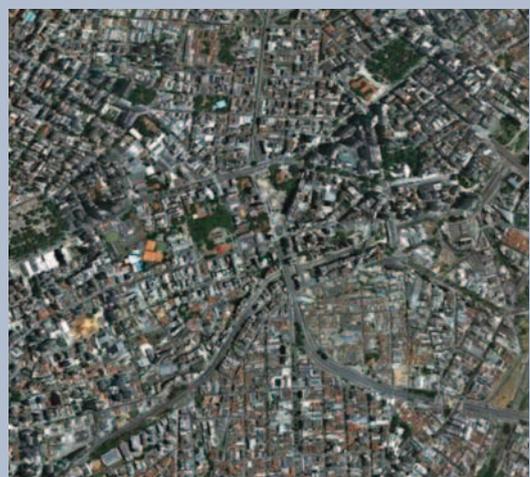
São Paulo: a 45-year on-going fight against water losses

By **Jairo Tardelli Filho, Michel Vermersch and Fátima Carteado**

24 TARIFFS

New tariff setting tool and tariff setting processes as effective instruments for Albania's Water Regulatory Authority

By **Ornela Shapo, Fridtjof Behnsen and Ana Metohu**



Aerial view of São Paulo. See page 19.

Improving corporate governance in Albania's water supply and sewerage sector

Albania's water supply and sewerage sector faces a number of challenges, notably how to improve company performance through corporate governance best practices. **REZARTA CENAJ MELO** outlines the current situation and a framework for improving corporate governance, and also suggests how to improve key elements of corporate governance by diagnosing issues and developing and implementing appropriate policies, reforms, capacity building and technical assistance for companies in the sector.

Since 1996 the Albanian government has designed a number of reforms for water and wastewater services in an effort to improve sector performance, and in an effort to converge national legislation with EU Directives and policies for the water sector. Within these efforts, first the government created the Water Regulatory Authority; second, it organised the utilities as joint stock companies in order to offer the possibility of improved corporate governance; and third, the government entrusted service provision to local government units (LGUs) to better align incentives and improve oversight by the local population.

However, the sector still suffers from poor performance. Albanian water utilities bring piped water to 90% of urban households, but only 58% of rural households. The availability of wastewater collection services is much lower, especially in rural areas. Because this sector provides critical services for consumers (the population) and businesses, these companies play an important role in the country. Their performance impacts on the economy. Under-performance brings high financial and economic costs. The government, because of this underperformance, continues to channel millions of US dollars in investment funding to the sector each year, and further millions in annual subsidies to cover sector operating deficits.

Led by the work of the International Finance Corporation (IFC) and supported by its concepts, methodology and tools, this approach envisages water supply and sewerage companies as corporations driven by incentives that reward efficiency and transparency. All the recommendations in this paper are based on data collected through public resources.

Before taking real steps to improve governance in these companies, there is a strong need to examine the current corporate governance situation directly in all companies. The goal of this paper is to help water supply and sewerage companies to improve their performance through effective corporate governance reform, developing corporate governance benchmarks that allow comparison between companies at country level and regional level, to conduct an assessment of corporate governance practices, measure their level and encourage better governance practices with or without the intrusion of legislation.

Corporate governance in Albania's water supply and sewerage sector

The water supply and sewerage sector in Albania functions through operators that are organised as commercial companies under the country's commercial company law as joint stock companies owned by the local government (authority) of the area where the services are provided.

According to the *Report of performance for water supply and sewerage companies 2013*, published by Water Regulatory Authority in cooperation with Albania's GIZ project, as a result of the transfer of shares to local government units in accordance with the Council of Decisions of Ministers No. 660 (dated 12 September 2007), 47 out of the country's 58 operators have passed to their respective local government units.

This transfer was accompanied by many problems, which led to the extension of this process and proved especially problematic in relation to issues with poor performance, ownership, shareholders, reporting and so on. These companies do not operate in accordance with compliance standards for licensing and services standardisation.

These companies have problems in managing human resources, asset



Rezarta Cenaj Melo, Executive Director of the Corporate Governance Institute of Albania

management, environmental control, control of products from the source of production to the end customer, internal control, their services offering, risk management, decision making and so on. This often creates confusion later in the progress of activities, such as mergers and acquisitions of water and sewerage services. All operators provide a public service, although very importantly in terms of their independence and their failure to cover more than 80% of their costs, the state subsidises them, repaying debts they have accrued, and there are many other issues.

Experience has shown that poor performance in these companies is associated not so much with the specific problems of this sector as to issues relating to governance of these companies, and the lack of corporate governance practices established in the underlying rules, processes and institutions that govern the relationship between managers and their government owners. As a result of differing interests between

the ownership (represented by government – people that act on behalf of the citizens) and control (the management that manage the company), these governance problems may include complications and in some case also controversy of mandates, or lack of identification of ownership, politicised board members and executives, lack of independence in decision making for daily operations, weak financial reporting and practices, insufficient performance monitoring and accountability systems.

Corporate governance challenges

Compared with the private sector, state-owned enterprises (SOEs) face distinct governance challenges that directly affect their performance. One of the differences is the classic distinction between the interest of a firm's owner (its principal) and its managers (its agents). In any principal-agent relationship, the principal confronts two different tasks: to set the goals that the agent is to pursue, and to manage the problems associated with delegating responsibility to an agent whose private interests are likely to differ from those of the principal. This sector faces the same challenges of aligning the incentives of managers and owners. However, these companies may encounter additional governance challenges arising from several issues:

- Multiple principals
- Multiple and often competing goals and objectives
- Politicised boards and management
- Low levels of transparency and accountability.

Multiple principals

The owners or principals in a company play a key role in corporate governance. In water supply companies, being a SOE there is often a lack of a clearly identified principal or owner. The state frequently exercises its ownership responsibilities through multiple actors. As a result, conflicts between the state's ownership functions and its decision-making and regulatory functions can arise, and leave the company vulnerable to being used to achieve short-term political goals to the detriment of its efficiency. This may consist of setting inconsistent goals, or failure to monitor company performance closely.

In the absence of a clear legal framework, the principal assumes functions that should be carried out by the board, such as appointing and dismissing the

chief executive director, and approving budgets and investment plans. This provides scope for political interference and inconsistencies in direction and approach, and can open opportunities for corruption.

Multiple goals

Without clear goals, assessing managerial performance is difficult. Having multiple, ambiguous or conflicting objectives or goals may confuse managers and end up with them achieving none.

Politicized boards and management

The water supply companies often lack a board of directors with the required experience and competencies to perform the classic corporate governance roles. Boards in most cases act purely as a 'rubber stamp' for government decision-making, exercising no oversight over managers (who in practice report directly to government).

Board members are government employees who lack experience of managing companies, and are appointed for political reasons rather than on the

'Experience has shown that poor performance in these companies is associated not so much with the specific problems of this sector as to issues relating to governance of these companies and the lack of corporate governance practices.'

basis of their technical and financial expertise. Board level committees are absent, and board expertise in areas such as risk management and auditing is missing or very weak.

Low level of transparency and accountability

Although publicly owned, these companies have weak internal controls and processes, inadequate accounting and auditing practices and weak compliance procedures, with poor levels of financial and non-financial disclosure. Many of these problems stem from the lack of a clear performance monitoring system to ensure accountability and responsibility for performance, particularly of the board and of the Chief Executive Officer.

The benefits of good corporate governance

A good corporate governance system in general is associated with a number of

benefits for all companies, both private and state-owned. Good corporate governance leads to a number of positive outcomes:

- Better access to external finance by firms, which in return can lead to larger investments, higher growth and greater employment creation
- Lower costs of capital and a higher company valuation, which makes investments more attractive to investors and thus also leads to growth and more employment
- Improved strategy, decision-making and operational performance through better allocation of resources and more efficient management, which create wealth more generally
- Reduced risk of corporate crises and scandals
- Better relationships with stakeholders, which improve social and labour relationships, help address issues such as environmental protection, and can help further reduce poverty and inequality.

Many, if not all, apply to SOEs. While few empirical studies specifically analyse the direct impacts of corporate governance on SOE performance, anecdotal evidence shows that better governance benefits both individual companies and the economy as a whole, as outlined below.

Improved operational performance

A study of 44 SOE companies in the Latin America and Caribbean water and electricity sectors found a positive correlation between six dimensions of corporate governance reform and the operational performance of utilities.

The dimensions include the legal and ownership framework, the composition of the board, the enterprise's performance management system, the degree of transparency and disclosure of financial and nonfinancial information, and staff characteristics (for example education, salary, and benefits). The study shows that the composite index of these dimensions is strongly correlated with labor productivity, tariffs and service coverage.

Increased access to alternative sources of financing

As governments face continued budget constraints, better-governed SOEs can raise financing for infrastructure and other critical services more easily through the capital markets. In turn, SOEs issuances can help develop the capital markets.

Other benefits include:

- Financing for infrastructure development: most public spending on infrastructure passes through SOEs, and by reducing internal inefficiencies SOEs can make that spending go further
- Reduced fiscal risk: better governance reduces the fiscal burden of SOEs and increases their net contribution to the budget through higher dividend payments. Improved governance also improves transparency of the contingent liabilities associating with SOEs, thereby reducing fiscal risk
- Reduced corruption and improved transparency: better-governed companies with integrity and accountability mechanism are likely to be less corrupt and more transparent.

Legal and regulatory framework

Corporatised SOEs in Albania's water sector operate under SOE law and company law. Referring to the organic law providing the underlying governing principles, water supply and wastewater services belong to the category of functions where LGUs have exclusivity: they are the owners of these companies, and have service delivery, administrative and investment authority. According to the organic law, LGUs possess the following rights: self governance, property ownership, fiscal autonomy, economic development and status as a legal entity.

By law, LGUs also have rights to raise funds by borrowing. The implementation of the organic law has demonstrated that LGUs are not able to fulfill the broad range of competences implied by that law for the water and wastewater sector. The government also made some poor provisions in terms of corporate governance to address capacity constraints, in the form of guidelines for shareholders' assembly and supervisory boards and provisions for qualifying criteria for people wanting to manage utilities, which don't appear to have been effective.

The shortcomings in the current legal framework, from the corporate governance point of view, are many. The most problematic are the fact these companies are operating under company law on some issues and on other issues under SOE law, creating confusion in governance of these companies. Having an article of association approved as a model for all SOEs, not tailored for sectors, and approved by a different government institution to the principal,

makes the ownership role unclear.

The same issue relates to the composition and criteria for nomination of board members and executive directors. In this way, some powers are addressed to other government institutions different to the principal (the owner). The entire legal framework referring to the SOEs contains weak corporate governance provisions in areas such as boards, disclosure and so on. It is not clearly stipulated how the state should behave as an owner or as a shareholder; for example, how it should vote with its shares, how it should appoint, recall and remunerate boards and management, and how it should monitor the company.

Maybe the initial intent was to put these companies on a commercial footing and foster their autonomy, but instead there are unintended consequences reflected in their poor performance – for example, in the absence of a clear framework for board nomination, company boards are composed of officials who

'Recent water utility studies emphasised the need for a corporate structure that prevents political interventions, rewards performance and is subject to public scrutiny.'

lack the necessary qualifications, skills, and experience for the job. Meanwhile Albanian company law is a new law that includes many aspects of company corporate governance.

Demand for better performance in this sector will ask firstly for the adoption of modern legislation. Such laws generally aim to recast the state's role as owner to that of policymaker and manager of state assets, and are typically based on several key principles:

- Operation of SOEs on a commercial basis
- Separation of the state's ownership functions from its policymaking and regulatory functions to avoid conflicts of interests, real or perceived
- Introduction of professionalism in corporate governance bodies
- Greater transparency and accountability in the SOE sector.

Experience from a number of countries highlights two important steps in that effort: harmonising SOE frameworks with private sector frameworks, and implementing improving a clearly-

defined state ownership framework.

Laws and regulations are sometimes supplemented by ownership policies and corporate governance codes. While these do not carry the same weight and legitimacy as laws and regulations, such policies and codes can be an alternative means for articulating good corporate governance practices where the development of laws and regulations is not feasible.

State ownership arrangements

Water supply and wastewater companies are organized as joint-stock companies under the commercial law, while company shares are owned by the municipality/communal council and the assets and liabilities of the company are owned by the company itself.

The shareholders are represented in the General Assembly of Shareholders, which is the same as the municipal/communal council if the company serves one local government unit. Where the company provides services to two or more local government units, the ownership is shared with the percentage of ownership of each unit represented by the specific number of members of each local government council.

In this case, the administration of the company becomes more complex. Representatives from a local government unit should vote only on matters that are agreed beforehand in the respective council of local government units. This structure presents many difficulties, because local government units have little or no experience in overseeing such companies, and there is a risk that management will become politicised. Experience shows that there is a tendency for local councils to engage in bargaining in the interests of political and private interests.

The present arrangements generate problems due to a legal framework not clearly identified with the realities that this sector faces. Recent water utility studies emphasised the need for a corporate structure that prevents political interventions, rewards performance and is subject to public scrutiny. Additionally, it focused on the qualifications of company staff. The organisational structure and decision making reflects the interests and the involvement of its shareholders, and hence their strengths and weaknesses. Because these companies are part of the public administration, and thus subject to its schemes and leadership, they can either

benefit or be affected by the performance of its bureaucracy.

The Government Corporation remains a complex and unique organisational mode, caught between the norms of public sector governance and corporate governance (Whincop 2005). Hence, although mimicking private company arrangements in SOEs might cause significant improvements in management, it can also contribute to the consolidation of corruption and the lack of accountability in those companies, with few controls and vested interests among governing stakeholders.

Improving existing ownership arrangements involves several practical steps:

- Develop concrete safeguards against political interference in commercial decision making
- Empower boards to take on greater responsibilities. To achieve this goal, the appointment process for board members and management should be professional and transparent, with an emphasis on technical, financial and corporate governance skills. Clear roles and responsibilities for all parties must be established.
- Strengthen monitoring system/units
- Develop corporate governance tools and guidelines. Such tools help formalise governance structures and help companies to establish clear boundaries and relationships
- Encourage greater public oversight through public disclosure of information
- Develop a system to monitor and benchmark the performance of local government units as owners.

Performance monitoring

A performance monitoring system refers to the institutions, processes and documents that government uses to monitor the financial and non-financial performance of the SOE companies. Performance monitoring involves three key elements:

- Setting mandates, strategies and objectives
- Structuring performance agreements between SOEs and government to monitor how well the SOE performs
- Developing key performance indicators and targets.

It is important in the utility sector to identify existing mechanisms to evaluate the performance of the utility. It is important for a company to have arrangements that allow for its performance-based management. In other words, a manage-

ment that is oriented towards the fulfillment and achievement of objectives and goals. This is one, among many, of the ways of increasing state companies' accountability, particularly because of its orientation towards results.

A performance oriented management, if properly implemented, would facilitate the identification of objectives, and consequently the efficiency of the company. The most important goal in a company should be a mechanism to evaluate:

- the performance of the company
- the performance of the members of the board
- the performance of the CEO
- the performance of the rest of the management.

These mechanisms should be related to the process of setting objectives, the instruments used to set objectives and their enforcement, and the authority that conducts these assessments.

Currently, in terms of public information about utilities in Albania, the only performance monitoring is conducted by the Water Regulatory Authority, and it refers to company performance. There is no public information if companies conduct performance monitoring for board members, CEOs and other management.

Financial and fiscal discipline

Government should provide a framework for strengthening the financial and fiscal discipline of utilities, for reducing preferential access to finance, and for managing the fiscal burden and potential fiscal risks associated with these companies.

Government policies that confer special advantages or benefits on SOEs in the form of direct and indirect support, or that do not impose the discipline of capital markets, result in a risk that is out of proportion to the company's financial returns.

In addition, SOEs may accumulate contingent liabilities through political interference, operational inefficiency, or poor decision-making that remains uncorrected by market forces. A range of fiscal risks can arise and affect the fiscal position of the government. The delivery of public service obligations remains a compelling reason for governments to maintain and support SOEs.

The utility sector benefits from different types of direct and indirect financial or fiscal support that undermine

financial discipline, generating inefficiencies in these companies.

It is now considered good practice to design financial and fiscal policies for SOEs that promote operational efficiency, create value for the state as owner and shareholder, and preserve the revenue stream attached to enterprise ownership, while managing the state's fiscal risk from enterprise operations. Referring to the OECD Guidelines on Corporate Governance on SOE, the broad principles and policies for achieving these goals touch on transparency in budgetary support, commercial relations with banks, flexibility in capital structure, and tax neutrality.

Funding from the budget should be transparent, clearly separating commercial from non-commercial activities, and associating budget support with outputs and outcomes such as citizens served, efficiency gains, service quality, innovation, social progress or economic impact. It is good practice to limit budget support to the costs associated with explicit public service obligations.

Board of directors

According to good practice, the board of directors of any company, including SOEs, plays a central function in the governance of that company. Because the professional board bears ultimate responsibility for the stewardship and performance of the company, its composition and functioning has a significant impact on the governance of the SOE and therefore on its operational and financial performance.

An effective board must consist of highly qualified and competent directors capable of exercising objective, independent judgment to guide strategic development and monitor management. The board and company executives must share a proper understanding of the role and responsibilities of the board to ensure that the board has the appropriate autonomy, authority and accountability in exercising its functions.

Moreover, an effective board follows operating practices such as creating board committees and the provision of specialist training and evaluation for directors that improve board functioning and decision-making. The key steps for improving utilities' boards are:

- Professionalising the board's composition
- Defining and implementing board responsibilities
- Enhancing board professionalism

- Setting board remuneration and evaluation procedures
- Providing training for board directors.

The exact role of the board may differ in state owned enterprises from that of private sector companies. In a one-tier system, a single board of directors provides strategy and oversight of the company. Its board may be composed either entirely of non-executive members, of a combination of non-executive and executive members, or in rare cases, of executive members only. In a two-tier system the CEO has both a supervisory board and a management board. The supervisory board is usually composed entirely of non-executive directors and oversees the management board, which consists of the enterprise's senior management team.

The duties of directors are commonly understood to include a duty of care and a duty of loyalty to the company. These are known as a director's duties. The duty of care is an obligation of due diligence when performing acts that may potentially harm shareholders' interests. The duty of loyalty refers to the obligation of directors to act in the interests of the shareholders and the company.

Implications for board members

These duties can pose particular challenges for board members of SOEs:

- The duty of care requires board members to inform themselves on all issues that could affect the enterprise, and to make fully-informed decisions. One practical implication is that board members need to satisfy themselves that control systems are functioning properly and providing good information. The duty of care also requires that board members act professionally, avoid serving on too many other boards, and receive adequate training and other support.
- The duty of loyalty is generally defined as a duty of allegiance to the enterprise and its interests. A common interpretation is that this duty requires the board member to raise the value of the enterprise for its owners. In addition it requires board members to prevent their personal interests from prevailing over the interests of the enterprise or its shareholders. Nor should board members allow the interests of others, including managers, other board members, and prominent government and political officials, to prevail over

those of enterprise. In the Albanian utility sector, these duties are explicit in company law.

Challenges in implementing these duties

Carrying out these duties can be challenging. Government may require policy or social outcomes contrary to the interests of the enterprise. The board members may be government employees, and therefore have conflicting loyalties. They may lack the skill to fully implement the duty of care. Effective implementation requires part of much that will be discussed below, but also managing and declaring conflicts of interests.

Professionalising board composition

Good practice requires that members who act in the interests of the company face no conflict of interests in such action and have relevant experience and

'Internal audit helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes.'

expertise. In addition, as recommended by good practice, many boards have sought to increase their objectivity by bringing in independent directors and by having a chair separate from the chief executive officer.

Good practice for boards requires taking steps to improve board composition by designing a robust policy framework and clear processes for board nominations and appointments. This aims to depoliticise the process, make it more professional and transparent, and ensure that boards have the competencies and objectivity needed to carry out their duties. Such a framework includes several critical elements:

- The creation of balanced boards
- Adoption of professional criteria for the selection and removal of board members
- Development of a structured nomination process
- Timely appointment and public disclosure of the results.

The creation of balanced boards

A balanced board consists of three different types of directors: executive directors,

who are the CEO and other senior full time executives; directors – non-executive directors who are not part of the executive teams and are not employed by the company; and independent directors who in the purest form are directors that have no material relationship with company. Modern boards are increasingly introducing independent board members to enhance objectivity and independence.

In some countries employees are represented as a way to bring their knowledge to the table and to ensure that their concerns as key stakeholders are represented, for example in Slovenia, one third of the supervisory board members are elected by the work council. In general most countries report that employee representation on the board contributes to improved performance of the enterprise. Special care, however, needs to be exercised to ensure that employee representatives are sufficiently well qualified to play an equal role with other directors and to prevent their 'capture' by stakeholder's interests. Employee representatives should be selected through transparent and democratic processes involving all company employees.

Reducing government representation on boards

Currently the proposal for the supervisory board of utilities is: two thirds nominated by the line ministry, and one third by the Ministry of Economy. In their articles of association, Utilities may decide on the way to nominate and appoint members of the board.

Boards composed mainly of government representatives lack the objectivity and skill vital to the good functioning of the board. Often they are appointed to pursue policy goals, and in some cases to compensate for shortages of appropriately skilled directors from the private sector. Their appointment raises a number of issues. They typically lack the independence and the necessary qualifications and skills to be effective board members.

One important issue is conflicts of interest. When a government representative is appointed directly from the relevant line ministry, the board is more vulnerable to conflicts of interest and may be motivated more by a desire to please its shareholders than the interests of the enterprise. All these factors weaken board autonomy, accountability and so on. Good practice is to ask for the number of government representatives to be restricted, while increasing the share of

private sector members.

Where a government representative is appointed as a board member, good practice suggests that additional safeguards should be put in place:

- The appointment should be made when no conflict of interest arises
- The appointment should be on the basis of relevant skills
- The appointee should be subject to the same performance evaluation as other directors, including removal if deemed necessary
- The appointee should share the same liabilities and reputational risks as other directors
- The appointee should be responsible for maintaining the same skills and governance competences as the other directors
- The appointee should not be made chair or deputy chair.

Bringing in an independent director

The goal is to bring objective viewpoints and better governance skills to boards to expand board willingness and ability to represent other stakeholders' interests, and to bring fresh views to strategic directions and market approaches.

Adopting professional criteria for selection and dismissal of directors

This means identifying the competences, skills and experience needed to exercise independent judgment and lead the enterprise successfully, including industry-specific knowledge, financial, legal, corporate governance and other skills.

Defining and implementing board responsibilities

The board of directors has a specific function in the overall governance structure that includes the state, the board of directors, and management.

- As owner, the state establishes its overall expectations of the enterprise and sets mandates or board objectives for the enterprise that it oversees
- The board of directors sets the strategy for achieving the mandates or objectives, oversees management and monitors performance.
- The management is responsible for implementing the strategy and is accountable to the board.

OECD Guidelines for SOEs calls for the board's role to be clearly defined and founded in legislation, preferably in company law. Clarifying and implement-

ing board responsibilities are therefore the most important and most challenging aspects of professionalising SOE boards. The key to ensuring that an SOE board can function effectively is a clear delineation of the respective roles of the state as an owner, of the board, and of management, including what the board is required to do, and when the state as owner should provide explicit approval or oversight.

These different responsibilities are usually established through laws, corporate governance codes, and the guidelines or articles of association of the companies. Currently, in Albania utilities have a model of articles of association approved by a Decision of the Council of Ministers that plays the role of articles of association of the company; there is no corporate governance code approved for this sector. There is the Corporate Governance Code of Albania approved in 2011, but there has been no recent study on implementation of this code from these enterprises.

Enhancing board professionalism

This is one of the most effective ways to improve SEO governance and in turn its performance. The following are specific steps for raising the level of board professionalism:

- Separate the positions of CEO and chair
- Achieve proper board size
- Develop formal policies and procedures for board operations
- Establish specialised board committees
- Develop a board evaluation and remuneration system
- Ensure clear policies for addressing potential conflicts of interests
- invest in board director training

Transparency, disclosure and controls: improving the control environment

The systems, standards and procedures that form companies control environment safeguards the integrity and efficiency of its governance and operations. Every company needs some internal controls. Effective internal controls allow top managers to know what is going on in company and whether their instructions are carried out. In SOEs often lack internal audit functions or have internal auditors that report to or are tightly controlled by management, thus cannot be expected to act as an independent source of information or of vigilance of the board a part of these functions are carried out from State

Authority Control. From the experience this body might not be able to conduct an effective internal audit on a commercially oriented state owned enterprise. Weaknesses in internal audit are serious, as internal auditor is a critical source of information for audit committee and independent board members. As the Institute of Internal Audits notes: Internal audit helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes.

Recommendations

- A corporate governance assessment for all utilities to identify the nature and the extent of their specific strengths and weaknesses in corporate governance, with an underpinning policy dialogue that will identify priorities, leading to improvements in corporate governance and economic performance for the following issues:
 - The state ownership arrangement
 - Performance monitoring
 - Boards of directors
 - Transparency, disclosure and controls.
- Drafting and approving a corporate governance code for the utility sector
- Drafting and approving a corporate governance improvement plan for the utility sector ●

References

- Corporate governance of State Owned Enterprises, World Bank Group, IFC Toolkit*
- OECD Guidelines Corporate Governance of SOE, OECD*
- Andres, Luis, Guasch JL, Lopez Azumendi S 2006 Assessing the Governance of Electricity Regulatory Agencies in Latin America and the Caribbean: A Benchmarking Analysis. Policy Research Working Paper 4380. The World Bank. Washington DC.*
- Bakker K Good Governance in Restructuring Water Supply, University of British Columbia*
- National Water supply and Sewerage Services Sector strategy 2001-2017, Ministry of Public Works and Transport*
- Annual Report 2013, Water Regulatory Authority*
- Decentralization and service delivery in Albania: governance in water sector, a World Bank issue.*

This article is based on a paper presented at the IWA Regional Utility Management Conferences, Tirana, Albania, 13-15 May 2015.

About the author:

Rezarta Cenaj Melo is Executive Director of the Corporate Governance Institute of Albania.

Achieving effective social measures in water supply and sanitation provision

It is obvious that water supply and sanitation services have a social dimension, but for societies in South Eastern Europe it can be difficult to work out how to provide services to low income households.

GIEL VERBEECK and **BRANKO VUCIJAK** discuss tariff structures in use across Europe and analyse and contrast them to understand the relative costs and benefits of these mechanisms.

Water supply and sanitation services (WSS) provision has multiple social aspects. The provision of drinking water has strong health and income generation effects (OECD, 2011), having access to clean drinking water makes people more productive and saves people time, energy and money. The price of a litre of bottled water is often at least a hundred times higher than the price of a litre of tap water. Providing and maintaining access to WSS is therefore an agreed social objective. Beyond that, water has now become a human right (UN resolution 64/292).

It is less clear how this right should be implemented, who is responsible for that, and who will have to pay for it. How can affordability of services be balanced with sustainability? Is increasing the connection ratio more important than subsidising tariffs or social cases? How should utilities, municipalities and customers divide the burden of shouldering the poor? Can it be done more efficiently? This paper looks at these questions within a context of EU approximation for South Eastern Europe (SEE) and Eastern Europe, Caucasus and Central Asia (EECCA).

To answer the questions raised above, the authors have analysed tariff setting

systems in Europe and WSS social support systems in OECD countries.

Based on this, the balance between increasing connection ratios and affordability has been analysed. The authors have used their own experience as consultants to operators, owners and policymakers in the field of WSS to outline a few of the promising social (tariff) measures for SEE / EECCA region.

WSS tariff setting systems in Europe

There are three conceptual tariff structures: fixed tariffs (F), single volumetric tariffs (Vol.) and increasing block tariffs (IBTs). Fixed tariffs are paid irrespective of consumption even though they may vary according to the number of inhabitants per household, surface of the apartment or even income tax bracket. In the case of single volumetric tariffs each additional m³ is offered at the same price. In the case of IBTs defined consumption blocks are priced progressively. IBTs may therefore be called multiple increasing volumetric tariffs. Decreasing block tariffs (DBTs) are rare in Europe and left out of further consideration. It is noteworthy however that apart from water, most other economic goods are priced according to a DBT. Because of the need to consider environmental and resource

costs, DBTs have even further decreased over the last 20 years.

All three conceptual tariff structures may be used in isolation or combined, thus leading to blended tariff structures. These provide a combination of price incentives. First, however, the mechanics of the three basic conceptual tariff structures is illustrated in Figure 1.

What is the distributional effect or social impact of these conceptual structures? This is presented in Table 1. The fixed tariff structure has an obvious regressive effect. The effect of the single volumetric tariff depends on the income elasticity of water demand. Only if people buy more water exactly in proportion to increased income is the effect neutral. If they buy proportionally more, the effect is progressive. Income elasticity of water demand is broadly considered as inelastic. Overall higher income is associated with higher demand. But the estimates for income elasticity vary widely between 0 and 1 (Green, 2003) and depend on location, income level, etc. Therefore, all one can say is that the distributional effect of volumetric charges is between regressive and neutral, depending on the circumstances.

For IBTs the distributional effect is meant to be progressive, but the outcome depends on many factors. The income elasticity of water demand, together with the size of the consumption brackets and the associated tariffs determine whether the distributional effect is progressive, neutral or even regressive. To complicate matters further the dominant tariff structure applied in Europe is neither of the above conceptual tariff structures, but typically a combination.

A recent inventory of cost recovery in EU countries from the European Environment Agency and earlier research from OECD reveal the typical tariff

Table 1: Distributional effect of conceptual tariff structures

Tariff structure	Social impact
Fixed	Regressive, whether charged per household or per person in household. Lower income groups may share connection with more persons to alleviate the effect.
Single Volumetric	Depends on income elasticity (ie) of the water demand. If it is inelastic ($0 < ie < 1$), it is regressive, if it would be elastic (> 1) it is progressive.
IBT	Meant to be progressive, but depends on income elasticity of water demand, size of the consumption brackets and tariff differential between brackets

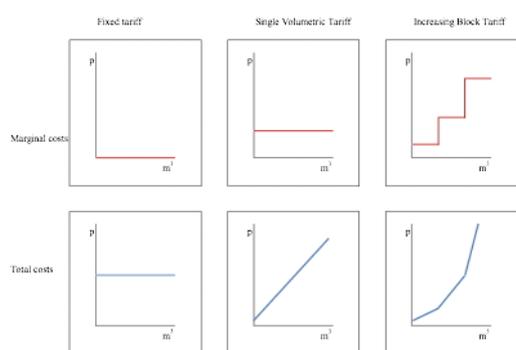


Figure 1 : Conceptual tariff structures: Marginal and total price at units of consumption

structures or combinations thereof that prevail in Europe. This is shown in Table 2.

The most common form in EU countries is a combination of a fixed plus a single volumetric charge. The volumetric element is obviously related to consumption. However, volumetric charges are sometimes based on a notional consumption in the absence of a (functioning) water meter, making it essentially a fixed tariff from an economic perspective. The fixed tariff element itself is sometimes charged per household, but may also be related to additional parameters such as the number of inhabitants in a household, social criteria or housing characteristics (m_2). Sometimes invoices refer explicitly to cost of water meter maintenance, billing and / or meter reading costs or other fixed costs of the operator.

IBTs are the dominant form in Europe's Mediterranean countries (except for France) and also in China, South East Asia and Latin America. IBTs may include additional parameters such as the number of inhabitants in the

household or social criteria.

Table 2 does not reveal the relative weight of individual tariff structures within any mix of structures. It is therefore all the more impossible to tell upfront which countries charge more progressively and which ones more regressively. In France for instance, the more regressive single volumetric charge is used in combination with a fixed tariff that is of minimal size. In Spain on the other hand, a more progressive IBT is applied, but the additional fixed tariff element is so large that any progressive effect of IBTs may have been undermined.

An interesting final observation is that new EU member states and EU accession countries mostly use single volumetric tariffs without combinations.

The geographical occurrence and social impact of the (combined) tariff structures is summarised in Table 3. The total costs at increasing levels of consumption associated with some of the main tariff structures are illustrated in Figure 2.

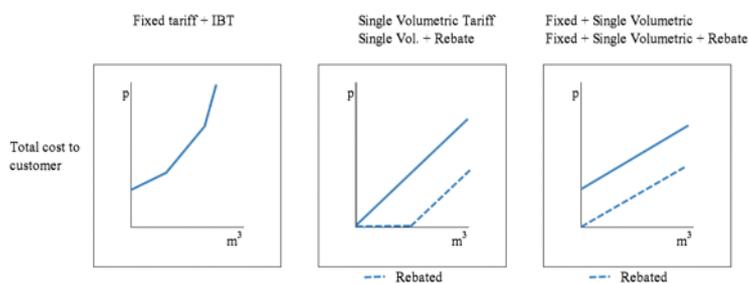


Figure 2 : Fixed plus IBT, single volumetric and fixed plus single volumetric

WSS social support systems in the EU

The opted for tariff structures reflect an initial social choice. Once adopted it is difficult to achieve the political consensus leading to a different tariff structure or mix. To compensate for regressive effects of a given structure, countries would supplement the existing structure with additional social measures, rather than changing the tariffing structure itself.

Following OECD (2003) such social support measures can be classified broadly into tariff related measures and income support measures.

Tariff related measures

Tariff related measures include all those that reduce the amount of WSS payments for (eligible) customers, including charges for consumption, other charges and taxes. Tariff related measures can come in variety of forms such as:

- Reduced cost recovery requirements through state or local subsidies or otherwise
- Cross-subsidies
- Conservation programmes aimed at poorer parts of the service area
- Pro-poor tariff structures, discounts, exemptions, rebates and vouchers

Reduced cost recovery requirements and cross subsidies are the traditional and still dominant tools to suppress tariffs; often threatening financial sustainability for the utilities. They still play an important role as a social measure in SEE and EECCA, and even in new EU member states.

Although suppressing tariffs in this way is often considered to be a true social measure there is no targeting involved towards vulnerable groups. One may even argue that most of the benefit goes to those who consume the most cubic metres. This argument also holds for preferential VAT treatment. If the objec-

Table 2: Tariff structures for households in selected EU countries

Country	Drinking water tariff structure	Sanitation tariff structure
Czech Republic	Vol.	Vol.
Croatia	F or F+Vol.	Vol.
England and Wales	F+Vol. or F+RVal.	F+Vol. or F+RVal.
France	F+Vol.	F+Vol.
Germany	F+Vol.	F+V+ROm ²
Ireland	<2015: no tariff	<2015: no tariff
Italy	F+IBT	F+IBT
Netherlands	F+Vol	F (based on size)
Poland	Vol.	Vol.
Romania	Vol.	Vol.
Scotland	F (based on tax bracket)	F (based on tax bracket)
Slovenia	F+Vol. or Vol	F+Vol or Vol
Spain	F+Vol. or F+IBT	F or F+Vol.

F: Fixed monetary amount; IBT: Increasing Block Tariffs, V: Single Volumetric tariff (per m³), ROm²: Run off charge for rainwater per m² of cadastral area, RVal: Rateable value (in case of unmetered). Source: European Environmental Agency (2013), OECD (1999a), OECD (1999b), OECD (2010)

tive is to support vulnerable groups, then the foregone revenues and VAT could have been applied much more efficiently.

These traditional social measures erode the long-term sustainability of the service, make the utilities dependent on subsidies and ultimately on political interference. Use of these measures should therefore be discouraged. They are also inconsistent with the provisions of Article 9 of the EU Water Framework Directive on full cost recovery and the polluter-pays principle.

More innovative social measures are found in the US and Australia. Some US cities have voucher systems that are issued to eligible groups and can be used to pay for water bills or receive discounts. If the utility is simply a department of the municipality, such a voucher system can be more easily developed. A more arm's length relationship between owner and operator requires a clear definition of who pays for these vouchers (utility, municipality or ineligible customers). Since social measures can differ from city to city a variety of benefits exist, including straight discounts in the form of fixed percentages on the total bill, discounts on usage charges, provision of lifeline rates and fixed charge waivers. They act (grossly) similar as illustrated for the rebate and voucher system illustrated in Figure 2.

Other innovative examples include various water conservation programs aimed at poorer neighbourhoods and people. Reducing the quantity of consumption rather than the tariff is another way to reduce bills. It serves both the customer and the environment.

Income support measures

Income support measures target the available household budget in order to meet WSS expenses. These can be in the form of:

- Income assistance and reimbursements
- Arrears forgiveness, debt restructuring
- Hardship initiatives

In a number of OECD countries, for example France, the Netherlands, Belgium (i.e. Wallonia), Hungary and Slovakia, social support systems provide subsidies to reimburse for, or exempt from, WSS bills. These mostly involve municipal subsidies. Often, this support is targeted at the fixed element of the tariff in order to leave economic incentives for water conservation and scarcity signals intact.

Social assistance is not always provided by the government. In England and Wales, families facing disconnection could, previously, receive charitable assistance. However, the disconnection of customers is now illegal in England and Wales. In the US and France, charitable organisations also provide support in settling unpaid debt to utilities, in addition to government support. The utilities themselves can also play an active role in writing off debt and resolving hardship situations with customers. Taking an active approach towards, for instance, debt restructuring can actually make commercial sense too, by preventing repetitive customer default.

Influencing factors for tariff choice

What determines the choice for a certain mix of tariff structures? Perhaps it reflects a balance between institutional, economic and social considerations, in addition to historical custom. Apart from those mentioned already, it can be expected that ecological considerations will become increasingly important in pricing structures, mostly through the adoption of environmental and resource costs pricing as required by the EU WFD.

1: Role of institutional development

In the absence of governmental intervention, social issues are left to the utility and customer to work out. The IBT pricing structure is an attempt to cross-subsidise from higher income households and businesses to lower income households.

This may explain the prevalence of IBT in (traditionally) lower income countries. More advanced economies with more advanced governmental social support systems can opt for the fixed plus single volumetric structure. Their general social support systems would deal with any affordability constraints.

IBTs have been subject to considerable criticism over the last decade, even in the absence of a fixed price element (Smets, 2002). Of particular concern is the fact that lower income households typically have more inhabitants per connection. As a consequence, the higher brackets would apply to lower income groups. This can be alleviated by applying the brackets to individuals, rather than to connections or households. But this does make the administration of the system more costly and harder to manage (Dahan, 2005).

2: Role of utilities' interest

Although there are strong individual differences, most of the utilities' costs are fixed and unrelated to current production. Apart from electricity in non-gravity-based systems and chemicals, few costs vary directly up and down with water production. A large fixed tariff component therefore shields operators from downward shifts in demand. A combination of fixed and variable price elements better reflects the actual cost structure of the utility.

To lessen the regressive effect of the tariff structure that favours utilities, most Western European countries have supplemented their F+Vol structures with a number of social policy measures that have been discussed. Utilities in IBT countries lack this protection and perhaps for that reason have added fixed elements to the IBT structure.

3: Why new member states and accession countries prefer single volumetric

What explains the dominance of single volumetric tariffs in new member states

Table 3: Main tariff structures, geographical occurrence and social impact

Tariff structure	Examples	Social impact
1a. Single volumetric.	New EU MS	Regressive to neutral
1b. Single Volumetric plus rebate ¹	Applications in some US cities	Progressive if rebate is well targeted through relevant eligibility criteria chosen
2a. F+ IBT	Southern Europe (Spain, Italy, Turkey, Greece)	Depends mainly on the relative size of the fixed element
2b. IBT (without fixed charge)	China and several SE Asian countries	Depends on definition and parametrisation of blocks

¹A rebate is a credit on the water bill towards which defined social cases are entitled.
Source: OECD (2010), Komives et al. (2005)

and accession countries? This group of countries had often no advanced social support systems. Budget had to be reserved for increasing first time connections, a more pressing social goal. IBTs could neither achieve their desired effect without careful calibration and administration considering tariffs, brackets and income elasticity.

Single volumetric tariffs may thus avoid both the administrative, social engineering and targeting loopholes associated with the other tariff structure mixes (IBT+F, IBT and F+Vol). There is no strong regressive effect and no extra administrative burden. In addition it provides (still) a strong incentive to conserve water. The absence of a fixed price element poses a risk for the operator, but not as much as IBTs.

Therefore the 'real' social policy one may say in those countries is reflected in the increase of the connection ratio. In Western European countries WSS social support can exclusively target the affordability of services. In SEE and EECCA it should target first of all the connection ratio and then affordability of service. In most SEE countries such customers are mostly not entirely first time customers. Mostly they had their local rural water supply systems organised. These however fail to meet health and management requirements. Increasing the connection ratio to the public supply network remains therefore an important social objective.

What can be improved? Two examples with potential

The single volumetric tariff may be a rational response to the challenges that the SEE / EECCA region faces. In Romania that tariff structure has even been established as the only one allowed by law. But despite the rational response, in most SEE / EECCA countries the question of responsibility for social support in WSS remains unanswered. Cooperation amongst municipalities, central government, utilities and customers could yield big improvements for those who need it most.

Voucher system

In case municipalities are responsible for social support, a service agreement between the municipality and the utility could explicitly allow for vouchers to be procured and distributed by the municipality. Rather than physical documents these could be electronically adminis-

tered by the utility. Eligible social cases would receive a credit on their WSS bill corresponding to a certain household or personal consumption. The water bill would not become negative and the voucher is only active if the bills are paid on time. The municipality, which has a natural need to be informed about social cases, would update eligibility and amounts from time to time. Rather than providing direct financial support to the eligible social cases, it would buy the vouchers from the utility. Such a system would function irrespective of the legal form of the utility operator (regional / local, incorporated or unincorporated). The voucher budget can be amended according to the changing needs. But, since there is a voucher system, it means the utility can pursue unpaid bills more vigorously. Economically it works as a subsidy from the municipality to the social cases. Customers that do not need the subsidy are excluded. The utility can adopt a more straightforward commercial mission.

Rebate system

In case the utility does have a social responsibility, for instance because the municipality is unable to take responsibility, there is a second alternative: social tariff provision through a rebate. How does it work? This system establishes a cross subsidy from better off households to poorer households in two steps.

First one decides on the total monetary value of the rebates and expresses this as a percentage of the household revenue requirement for the WSS. Suppose the opted for percentage is 10%. The single volumetric household tariff is then set at 11% above the full cost recovery level for the single volumetric tariff. Such a tariff allows for rebates of up to 10% of revenue.

The above cost recovery tariff is charged to all households. However, a certain group is eligible for a rebate. This group may be defined by means testing or on the basis of straightforward eligibility criteria such as being a pensioner, being disabled, etc. The more restricted the group is, the more targeted the measure can be. In theory, however, all customers may be made eligible. This would improve acceptability, but it would create unnecessary redistribution, in a way that is similar to IBTs.

The rebates amounting to 10% of sales are issued as discount notes and subtracted on the bills that are going to customers

as a discount. It is not a credit note, because it can only be used to reduce the invoice of the utility and not be transformed into cash. In addition the discount note may be temporary in order to give an incentive to pay the utility on time. Most billing and accounting systems allow for credit discounts to expire automatically if payment does not happen within the defined period. Even if all customers use the rebates to the full extent the utility will meet its full revenue requirement, because the volumetric tariff has been raised accordingly. This tariff increase is a one off event, unless one increases the total value of the rebates. Apart from administration the instrument is financially neutral for households as a whole, utility and municipality. The system is entirely paid for by households that are not eligible for a rebate. Therefore, the value of the rebates as a percentage of total revenue should remain politically acceptable, i.e. below 20%. Still, at that percentage it remains applicable for countries that have sizeable populations below the poverty line (>10%). The rebate system can be customised in terms of size, eligibility and duration according to the particular local circumstances. Figure 2 illustrates that the economic effect of the rebate and voucher system are similar for the eligible customers. They differ in the way that they are financed and administered.

Conclusion

The three most widely applied mixes of tariff structures have different social impacts, depending on their design, and the income elasticity of water demand. Particularly in the case of IBTs, the resulting progressive or regressive effect on society is obscured by the number of consumption brackets, tariffs and the associated income elasticity involved.

Western European countries have supplemented their F+Vol structure with a wide range of social measures that mainly provide income support to eligible vulnerable groups.

Transition countries in SEE and EECCA have largely avoided both the social engineering challenges of optimising IBTs on the one hand and that of repairing the regressive effects of F+Vol structures by social support measures on the other. Instead they have opted for a straightforward, transparent and easy to administer single volumetric tariff structure.

Rather than applying targeted social

measures for those that really need it, SEE and EECCA countries have mostly tried to keep tariffs low for everyone. Legally required phasing out of cross-subsidies, proper cost accounting, the need to attract market based external financing and the eventual pricing in of environmental and resource costs will make it impossible to sustain this policy much longer. Therefore there is a strong need for smart social measures in relation to WSS. Two promising measures in this respect deserve special attention. These are the voucher system and the rebate system. In addition there are a number of other measures that SEE and EECCA countries may consider substituting or supplementing existing domestic social measures. ●

References

Dahan, M et al. (2005), *The unintended consequences of IBT pricing policy in urban water*, *Water Resources Research* 43.

European Environment Agency (2013), *Assessment of cost recovery through water pricing*, *EEA Technical report No 16/2013*.

Komives, K et al. (2005), *Water, electricity and the poor. Who benefits from utility subsidies?* *World Bank*

Green, C (2003), *Handbook of water economics: principles and practice*, *John Wiley and Sons*

OECD (2003), *Social issues in the provision and pricing of water services*, *OECD Publishing*.

OECD (1999a), *The price of water, trends in OECD countries*, *OECD Publishing*.

OECD (1999b), *Household water pricing in OECD countries*, *OECD, Paris*.

OECD (2010), *Pricing water resources and water and sanitation services*, *OECD Publishing*.

OECD (2011), *Benefits of investing in water and sanitation: an OECD perspective*, *OECD studies on water*, *OECD Publishing*.

Smets, H (2002), *Charging the poor for drinking water. Public Policy*. Available at: www.publicpolicy.ie/wp-content/uploads/Water-for-Poor-People-Lessons-from-France-Belgium.pdf

Are adjustments needed for water utility Key Performance Indicators and benchmarking values in countries in transition?

During last 10-20 years quite a large number of Key Performance Indicators (KPIs) have been introduced into the management practices of water utilities. They aim at comparing the relative performance of water utilities and thus to be used as a tool to improve performance. In addition, benchmarks can be adopted allowing utilities defining a path towards efficient operations. But which of the numerous KPIs defined are relevant, easily accessible, measurable and informative for mid-sized urban water utilities in countries in transition? Is there a need for a special oriented set of KPIs and benchmarks for water utilities in the countries in transition? **BRANKO VUCIJAK** and **GIEL VERBEECK** provide proposals for specific KPIs addressing the most critical issues in water utility operations in the countries in transition, as well as proposals for appropriate benchmarking values for such KPIs.

Benchmarking is a process used in management, where organisations evaluate various aspects of their processes in relation to best practice, usually within their own sector. This allows organisations to develop plans on how to adopt best practice. Benchmarking may be a one-off event, but is often treated as a continuous process in which organisations continually seek to challenge their practices.

Performance indicators (PIs) facilitate the process of benchmarking. A PI evaluates the success of an organisation in a specific area of its work. PIs are evaluated periodically and it can relate to the level of achievement of a set operational goal during that period (e.g., 100% of meters read in a decided period, 100% customer satisfaction, real water losses lower than 30%, etc.), but it also may be measured as level of progress toward set goals, especially when the baseline is far from the goal. They may relate to a business unit or the organisation as a whole.

Key Performance Indicators (KPIs) are identified at the organisational level and relate to a set of strategic objectives,

aiming to enable tracking improvements in meeting these strategic objectives during the decided planning period. They should therefore be few in number, i.e. well chosen, straightforward, indicative for overall performance, relevant to the water utility and its regulator, comparable over time and to other utilities, and suitable for target setting.

Consequently the selection of strategic goals and associated KPIs and targets relies on understanding what is important to the water utility and what is achievable over the planning period. There is a wide variety of approaches to assessing the present state of operations, which are directly related to the selection of PIs. A common goal of such assessments is to identify areas of potential improvements and PIs are tools to measure such improvements. KPIs follow from strategic objectives, and target levels for KPIs follow from the foreseen progress towards the benchmark.

There are numerous KPIs defined for water supply utilities. Examples are shown in the box 'Example KPIs for water supply utilities'.

More examples can be found in

About the authors:

Giel Verbeeck is Partner and Founder of TreeVelop, Bussum, The Netherlands. Email: gverbeeck@treevelop.nl

Branko Vucijak is at Mechanical Engineering Faculty Sarajevo, Sarajevo, Bosnia and Herzegovina. Email: branko.vucijak@heis.ba

Danilenko et al. (2014) or in the publications of the State of Queensland (2014) and Ofwat (2012).

Which of these numerous KPIs defined are relevant, easily accessible, measurable and informative for mid-sized urban water utilities in countries in transition? What is the best approach for implementing a benchmarking system? What motivates a utility to develop a good monitoring system and enter into a process of permanent improvement in performance, and what discourages this? Is there a need for a specially-oriented set of KPIs and benchmarks for water utilities in the countries in transition? To answer these questions the authors have analysed commonly-used PIs and related benchmarks in developed European countries and compared them to the baseline in countries in transition, where they both have extensive experience. The authors have used their own experience as consultants to utility operators, owners and policymakers in the field of water supply to outline potential benchmarks for several selected indicators for countries in transition.

Water utility managers' view

In discussions with management level staff at utilities, the following areas were typically depicted as being critical for their operations, listed by the expressed relevance:

- Non-revenue water
- Tariff level
- Collection rate and collection period
- Number and expertise of employees

For most water utilities in countries in transition, non-revenue water could be the most important performance improvement area. Actual values are often not known and are only roughly estimated, so what is needed initially is a water balance evaluation that will show the real size of this issue.

Since utility managers do not formally set their own tariffs, their level cannot be indicative of management performance. It is informative for the performance of the utility as a system, taking into account its interaction with the community and owners. Formally, tariffs are beyond the control of utility managers, and for that reason alone it cannot be part of any performance scorecard for managers. Yet, informally, utility managers have a strong influence on tariffs through the way they negotiate with municipalities and other stakeholders, and through preparing



Branko Vucijak

applications for tariff increases, backed up with business plans, etc. A further complication is that managers who push too hard to increase tariffs risk being replaced.

Cost recovery also cannot be a PI for management, since that is determined partly by the level of the tariff. In theory, any utility could recover its costs if it were allowed to raise tariffs high enough. Furthermore, it is not always clear what is meant by the terms 'costs', 'operating costs' and 'full costs'.

Cost control and cost optimisation are, however, clear areas of performance improvement for management. These areas are not so frequently mentioned in discussions and utility managers often have limited understanding of the performance improvement potential that exists.

More often than not, the number of staff is heavily influenced by the local government and staff optimisation is controversial – if not in theory, then certainly in practice. The vast majority of managers do recognise overstaffing as a problem, often in combination with a lack of qualified personnel for certain functions. Many utility managers are aware of the political reality that a focus on staff optimisation would endanger their own job security, no matter what formal KPIs are imposed by external financiers.

The bill collection rate and collection period are typically correctly perceived as being problematic and attention is being paid to this.

Summarising the above, utility managers do recognise NRW and collection as performance improvement areas. Tariffs are perceived as a performance improvement area, but are formally beyond the control of managers. Staff optimisation is formally within their control, yet informally managers face pressure to employ more and other people than they would on economic



Giel Verbeeck

grounds. Cost control is an area which requires improvement, whilst performance attribution remains a novel concept and it is therefore not surprising that managers define the performance of a utility by factors that are beyond their control. Without a clear distinction of what is within and without the sphere of management's control, any talk about performance improvement will, indeed, remain just talk. Until responsibilities have been clarified, performance monitoring will not translate into improvements in operation. It is only once managers see their own role in, and responsibility for, performance improvement, that a utility can start defining KPIs and set meaningful targets.

Key areas for improvement and KPI adjustment

The International Water Association (IWA) has recognised the need for different benchmarks in its guidelines on NRW management, where the new Infrastructure Leakage Index (ILI) indicator was classified as shown in Table 1. The ILI, which is the ratio of real losses to unavoidable losses, is formed of the following categories: category A (good status); category B (potential for marked improvements); category C (poor status); or category D (bad status). It is recommended that bad status in developed countries relate to ILI values higher of 8, while in developed countries it relates to values higher than 16.

A similar approach is conceivable for other KPIs, with the selection of PIs and related benchmark values adjusted to the local conditions in countries in transition. Such benchmarks would reflect the fact that the transition implies lower baselines in terms of the actual condition of the operational and financial management. The improvement potential is initially higher, but the normal benchmark may not be reached over the term of one

Example KPIs for water supply utilities

Population water supply coverage (%)
 Population sewerage service coverage (%)
 Percentage of waste water treated only with primary treatment (%)
 The percentage of wastewater treated with at least secondary treatment (%)
 Electrical energy costs vs. operating costs (%) (share of energy cost as percentage of operational expenses)
 Non-revenue water (%)
 Non-revenue water (m³/km/day)
 Non-revenue water (m³/connection/day)
 Real losses (%)
 Real losses (m³/connection/day)
 Apparent (administrative) losses (%)
 Apparent losses (m³/connection/day)
 Non-revenue water (ILI – Infrastructure Leakage Index value)
 Metering consumers (%)
 Metering consumption (%)
 Number of leaks per km per year
 Continuity of service (hours/day)
 Operating cost coverage (ratio)
 Debt Service Coverage Ratio (ratio)

Unit operating costs for water and sewerage (related to water invoiced, US\$/m³)
 Unit operating costs for water and sewerage (related to water abstracted, US\$/m³)
 Unit operating costs for sewerage (related to population served, US\$/person)
 Revenue per connection (US\$/conn.)
 Collection period (days)
 Collection rate (%)
 Invoice amount per household (US\$)
 Affordability (share of the monthly bill for a household in the average income, %)
 Water production (l/person/day)
 Total water consumption (l/person/day)
 Residential water consumption (l/person/day)
 Total revenues/service population (% of GNI (Gross National Income) per capita)
 Ratio of industrial to residential tariff (level of cross-subsidy)
 The share of staff costs in operating costs (%)
 The share of electricity costs in operating costs (%)
 The share of the costs of external contracts in operating costs (%)
 Number of employees per 1000 population served
 Number of employees per 1000 connections

multiyear business plan. Another aspect to have in mind is the accessibility of the input data for the valuation of selected indicators. Data availability is another constraining factor for most utilities in transitioning countries. This concerns both external data for the purpose of benchmarking as well as internal data for performance monitoring. Further constraining factors on the performance improvement path lie in the capacity to process, control, present and analyse the data.

This paper intends to raise awareness for the need for specific KPIs for utilities in countries in transition, together with tailored benchmark values in order to address the specific challenges that they face in operations, finance and customer service. The differentiated application of the ILI indicator above serves as an example of the foreseen practise.

Non-revenue water (NRW)

There are a number of indicators that were used in the past to monitor NRW management. Most commonly in countries in transition the ratio of water abstracted and water invoiced is used, in the form of a percentage. However, this indicator does not take into account the network size and population served, and thus is not effective for the mutual comparison of utilities with different network sizes and number of consumers.

IWA formed a task force on performance indicators and water loss in order to achieve internationally comparable figures. An international best practice approach to calculating PIs was published in July 2000 (Water Loss IWA Task Force, 2004). A steadily increasing number of

countries and water utilities around the world have since recognised and adopted this approach and water utilities are advised to follow the IWA terminology, particularly with regard to national and international benchmarking.

According to the IWA recommendations, PIs alone, or in relation with others, define the value of water losses. The following PIs are often considered:

- Total water losses with regards to water abstraction. This indicator is defined as a percentage, showing the proportion of total losses of the volume of water delivered through the network each year. This is the most commonly used indicator in countries in transition.
- Apparent losses with regard to the authorised consumption. This indicator is defined as a percentage, showing the proportion of apparent losses to the volume of water supplied per year.
- Real losses with regard to the authorised consumption. This indicator is defined as a percentage, showing the proportion of real losses to the volume of water supplied per year.
- Litres of apparent losses per connection per day. This is defined as the volume of water lost through apparent losses per number of connections per day.
- Litres of real losses per connection per day. This is defined as the volume of water lost through real losses per number of connections per day.
- Litres of real losses per connection per metre of pressure. This represents the value of real losses expressed in relation to the number of connections and network pressure.
- Amount of real losses (in m³) per km of pipeline per day.

- UARL – unavoidable annual real losses. This indicator was introduced by IWA and is defined as a theoretical reference value representing the lowest possible technical level of water leakage from a pipeline by using the best technologies available. UARL is calculated as:

$$UARL = (18 \times L_m + 0.8 \times N_c + 25 \times L_p) \times P$$

where L_m represents network pipeline length (km), N_c is the total number of connections in the system, L_p is the total length of service connection pipes passing through the private property (km), and P the average pressure value in the system (m).

- CARL – current annual real losses. It represents the total volume of water being lost through all system failures, including e.g., reservoir overflows.
- ILI – infrastructure leakage index. ILI represents an indicator defining the quality of water system operation (maintenance, repairs, rehabilitation) needed for the real loss (leakage) control. It mathematically represents a ratio between current annual real losses (CARL) and unavoidable annual real losses (UARL). Low ILI indicates that the water utility company has managed to reduce system leakage to the UARL level or to the lowest limit which theoretically could be reached (ILI has to be ≥ 1).

Since ILI is a non-dimensional indicator, it represents a leading indicator in the benchmarking of water leakage from one utility to others worldwide. In that sense, ILI is a superior indicator, although it is

Table 1: ILI categories

Category	A	B	C	D
ILI - developed countries	1-2	2-4	4-8	>8
ILI - countries in development	1-4	4-8	8-16	>16

harder to monitor than, for instance, NRW as a % of total system input.

Each indicator is optimal for a different purpose. Monitoring all of the above mentioned indicators provides a complete picture. For individual purposes, such as projects or the selection of KPIs, individual indicators could be selected.

Benchmark values should be addressed especially for two of these indicators in particular: total water losses with regard to the water abstraction, and ILI. While for ILI IWA recommends the data in Table 1 and already provides different benchmarks for developed and developing countries (which may include countries in transition), there is no generally accepted indication on total water losses as a percentage of the water abstracted. The problem is that, usually, NRW is very roughly estimated using data on pumping periods and pump characteristics, since there is rarely a water meter installed at the water source or data on water invoiced, and sometimes even it is just compared to neighbouring utilities. Without appropriate measurements such numbers are not reliable, and thus disable reliable benchmark setting.

As an example, the World Bank recommends that NRW should be 'less than 25%', while England and Wales' NRW target is 19%, the Chilean water regulator has defined a NRW level of 15% as optimal in its model of an efficient water company that it uses to benchmark service providers, and the California Urban Water Conservation Council identified a 10% benchmark for NRW.

It is very important to stress that NRW reduction is optimised only if initiated with appropriate measurements and water balance evaluation by each of the defined DMAs (district metered areas), thus focusing leak detection measures towards the most critical parts of the network. In that case a utility could expect to decrease its NRW by 10-15% per year if the baseline status is very high, but what is frequent in countries in transition is that as soon as NRW drops below 35-40%, further reduction becomes more and more expensive, and around 5% reduction per year may be considered a success. It is not economically justifiable to reduce NRW to the lowest level, since the marginal cost of

such reduction exceeds the marginal benefits or water savings, and their balance should be the point when to stop. In countries in transition countries that could be within the range of 20-25%, at some areas even up to 30%

Costs and cost coverage

The first issue is to decide on the indicator to measure tariff level. An appealing one is the actual monetary value (per m³, if such tariff model is applied), but it does not reflect local conditions like labour and energy cost and thus is not appropriate for mutual benchmarking (still might be used for individual benchmark targets). As mentioned, management cannot be held accountable for setting tariffs at adequate levels.

Other possible indicators may include: Operating cost coverage, evaluated as ratio (percentage) of income generated by the tariffs and actual operational costs. It reflects capacity of the tariff to cover at least operational costs.

Operating and maintenance cost coverage, evaluated as ratio (percentage) of income generated by the tariffs and actual operational and maintenance, including regular fixed assets replacement, costs. It reflects capacity of the tariff to cover all costs except capital investments.

Affordability, evaluated as ratio (percentage) of average water invoice and average household income, measure of affordability for payments for water.

Ratio of industrial to residential tariff, defining level of cross-subsidy from one category of customers to another.

From the perspective of countries in transition countries, it is important to stress that they should target a benchmark for Operating and maintenance cost coverage with an indicator value of 1 or more, to finally allow for improved asset management in these utilities. All should abandon a focus on Operating cost coverage, which does exist in practice in countries in transition, since it disables the long-term viability of these networks.

The affordability indicator is often discussed as up to 4% of average income maximum, yet in practice it is often around 2-2.5%, but with inclusion of wastewater treatment plants into operations it will quickly 'jump'.

Most countries in transition countries apply discriminatory tariffs towards industrial consumers in favour of households, having ratio of 2 or more, sometimes even around 4. It can be expected on the basis of the application of EU Water Framework Directive that such practice will be eventually ceased and that the household tariffs will increase tending to balance with the industrial tariffs. Thus the benchmark value for Ratio of industrial to residential tariff indicator should be set to one.

Collection rate and collection period

Often managers of utilities in countries in transition complain that their collection rate is low and may not be higher due to the low employment rate in their community, bad salaries, lack of awareness that the service needs to be paid for in order to cover related costs. The indicator of collection rate is expressed as ratio (percentage) between the invoices paid and issued. But in countries in transition it is quite convenient that the individual payments are not recorded as linked to the individual invoices, but as general payments decreasing the total debt of the customer. Thus this definition is not applied in practice, but is replaced with the ratio of total payments and sent invoices within the same period. That leads to results showing sometimes collection rate higher than 100% (which is not possible with the former definition), based on advanced payments of customers' old debts during such period. Utilities usually apply periodical incentives for payments and with this approach it results with large variations of the collection rate. On the other hand such an indicator is easier to compare to other utilities.

The authors suggest relating payments to individual invoices, which would allow for evaluation of collection rate. This indicator can be used in addition to the traditional revenue collection rate indicator. The long-term objective should be a collection rate of 97-98% (or even 90-95 in countries in transition countries, 100% is not practically feasible, since some of consumers, legal or physical bodies, may cease to exist), but it is hard to expect it to be achieved in a short period. Starting from an existing baseline, and in some countries in transition areas it could be as low as 50% or even less, increases of 10-15% per year can be expected and it needs a combination of very committed incentives, penalty measures, raising

awareness activities to be applied.

The average collection period presents amount of time needed to receive payments owed from customers. It is calculated as a ratio of accounts receivables and total sales in a year (expressed as number of days, multiplying that ratio by 365), and is another KPI showing the result of utility efforts to get the payments in due time. The invoices usually state that the payment is due in 15 days, but in practice the evaluated collection period often is higher than 180 days, and the authors have been in utilities in countries in transition where it amounts to 360 days or more. Again, it is not feasible to achieve a decrease of such a performance indicator quickly to the desired 30 days or less in a short time, but needs to be addressed gradually with decreases of 30–45 days per year. Setting higher goals may lead to disappointment and giving-up.

Number and expertise of employees

It is widely known that most of the utilities in countries in transition are overstaffed. There are several reasons for that, but two may be specially underlined. The first relates to outdated approach to staff positions based on needs for specific work, but not accompanied with the estimate of the needed average weekly level of effort of such staff. Thus job titles listed in the organisational structure documents, or the number of such positions, are hardly justifiable for full time jobs (e.g. several drivers in a utility where the plumbers and engineers drive by themselves, operator of construction machines in a utility that have construction works 2–4 weeks per year, vehicle mechanic in a utility with 1–2 cars, mason or carpenter needed 3–4 days per month, etc.). This can be eliminated using the principle of full-time equivalent positions instead of only job titles with single expertise, actually combining several duties into one with 40 hours of work per week, or outsourcing work when this is not possible or is cheaper.

The second reason relates to local governments' approach to the legitimate goal of increasing employment rate in the community. That, but also nepotism and corruption, leads to a pressure from the local governments for the utilities to employ new staff in a way that is not justified by the level of work needed. Since the directors are appointed by the local governments, they are not in position to reject such pressure and are facing serious problems in human resources

management – staff not being fully engaged influence the commitment of other employees overburdened with work. This is a very complex problem and a response is needed at the utility level (more autonomy) and at the municipal level (awareness of the consequences of such enforced employments and identification of alternative solutions).

The accepted benchmark for staff per 1,000 connections is 3–5 per 1,000 connections for efficient water companies and 1–1.5 per 1,000 population served. In the application of the benchmark, one must take into account the size of the utility and the scope of the services. In the application of the benchmark to a utility one must consider that the number of the administrative staff should be limited relative to the operational staff, which often is not the case in countries in transition.

These numbers in many utilities in countries in transition are not achieved and actual values are often higher than 3 per 1,000 population served, at the same time still with a lack of specific engineering expertise. But 'optimization' of the staffing (as a more acceptable expression for an actual decrease of the number of staff) is a very sensitive project and contradicts the common goal of a higher employment rate. Thus any final benchmark set needs to be reached on a period decided after a careful analysis, and applying a variety of measures including prevention of new employments, retirements, adjusting organisational structure and job descriptions to actual needs, repositioning the staff where they would be better used, training staff for the expertise required, but also firing all those not able to adjust to the new directions.

Conclusions

Key Performance Indicators are a good tool for water utilities to improve operations. A distinction must be made between performance for which managers can be held accountable and indicators reflecting the performance of the system. The introduction and regular use in countries in transition, accompanied by benchmarking, has to be welcomed. Nevertheless the selection of KPIs and benchmark targets suited to more developed countries could lead to disappointments and giving up. Too many or inadequate KPIs may be selected. There may be a lack of input data needed to validate the KPIs, or the benchmark may be set at a far too ambitious target

that cannot be reached in a 3–4 year period of time.

Thus the selection of KPIs is very sensitive. It is indeed an achievement in itself for mid-sized urban water utilities in countries in transition to agree on the measurable, understandable and relevant KPIs that relate to the strategic goals. The authors opt for starting with a limited number of such KPIs, which could be increased over time with increased familiarity with their use. An initial set of KPIs could relate to the previously described areas of water losses (non-revenue water), collection rate, staffing and cost control, they could even be evaluated back in the time, to enable present trends to be assessed.

Once the set of KPIs to follow and the target benchmarks are decided, they should be the key drivers in planning, and reporting and planning should take care to avoid any risk of abuse of indicators in presenting actual success. ●

References

- Danilenko A., Berg C.V., Macheve B., Moffitt L.J. (2014), *The IBNET Water Supply and Sanitation Performance Blue Book 2014 - The International Benchmarking Network for Water and Sanitation Utilities Databook*, The International Bank for Reconstruction and Development / The World Bank, ISBN: 978-1-4648-0276-8
- IWA (2006), *Performance Indicators for Water Supply Services*.
- Key performance indicators – guidance* (2012), Ofwat, Birmingham UK
- Key Performance Indicators for Queensland Urban Water Service Providers, Definitions Guide*, (2014), State of Queensland
- IWA Water Loss Task Force (2004), Best practice performance indicators: a practical approach*, Water21 August 2004
- Water Supply Policy and Economics*, Department of Energy and Water Supply, State of Queensland (2014), *Key Performance Indicators for Queensland Urban Water Service Providers, Definitions Guide*

This paper was presented at the second Balkans Joint Conference and Exhibition, entitled 'Water and Energy', held in Tirana Albania, on 5-7 November 2014.

About the authors:

Giel Verbeeck is Partner and Founder of TreeVelop, Bussum, The Netherlands. Email: gverbeeck@treevelop.nl

Branko Vucijak is at Mechanical Engineering Faculty Sarajevo, Sarajevo, Bosnia and Herzegovina. Email: branko.vucijak@heis.ba

São Paulo: a 45-year on-going fight against water losses

In the grip of a long drought, São Paulo has been working to improve its response to water losses. **JAIRO TARDELLI FILHO, MICHEL VERMERSCH** and **FÁTIMA CARTEADO** provide a summary of an in-house review ⁽¹⁾ carried out by Sabesp in 2014.

Sabesp (Companhia de Saneamento Básico do Estado de São Paulo SA) is the public utility responsible for providing urban water and sanitation services to 60% of the population in the state of São Paulo in Brazil. The company was created in 1973 as part of the National Water Supply and Sanitation Program (Planasa) put forward by the federal government to support development of the sector.

Today, Sabesp is a mixed capital company, majority-owned by São Paulo state. Sabesp operates water and sewerage services, including water production and treatment, water distribution and customer management for 364 municipalities and serves more than 28 million people.

This article focuses on the São Paulo Metropolitan Region (SPMR), which provides water to more than 20 million

inhabitants. It has more than 4.2 million active service connections, and operates the water production facilities and 37 municipal distribution networks, including eight from the Bragantina region. Today, it also provides water on a bulk basis to five other municipalities of the Metropolitan Area, where the public water networks are operated by the local councils.

Over the past months, the city of São Paulo and surrounding areas have experienced severe drought. In this context, Sabesp has carried out a specific survey to assess the water loss control actions implemented during the last 45 years and to define new actions and investment programmes to be launched.

The results of the actions implemented during the period were varied: often positive, but sometimes not. They were also dependent on the level of financial resources that could be allocated to the projects. This paper clearly shows that

without those actions, the collapse of the system was inevitable.

More than just documentation on the usual operational area, this paper reports on the conceptual, methodological and technological advances during the past 40 years. They also discuss the results, good and bad, as a basis for defining future structuring actions and setting targets consistent with the reality of a complex and dynamic metropolis such as the São Paulo Metropolitan Region.

The water losses

Losses in water supply systems are mainly generated by leaks in pipes and tanks (real losses); and fraud and measurement errors in the volumes consumed by customers (apparent losses). Real losses represent physical water losses, affecting the utilisation of water resources and the operating costs. Apparent losses represent commercial losses, and directly affect the financial management of the utility.



Aerial view of São Paulo.

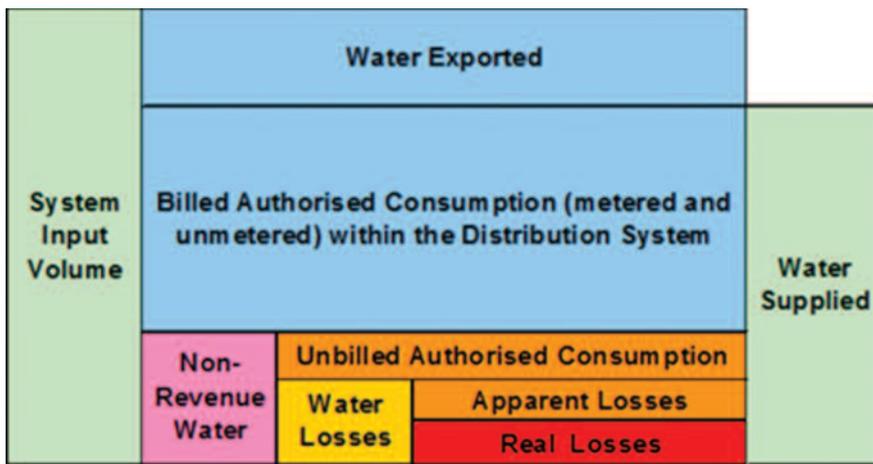


Figure 1: Typical Water Balance in a defined area (Source: Allan Lambert and IWA)

There is no water supply system that does not have losses. The reduction targets should reach a framework compatible with the constraints imposed by the available technology and the actual hydrological, physical, social and economic context in each region. Fighting against water losses has been a continuous activity at Sabesp, as evidenced by the actions and the various loss reduction programmes implemented from the late 1970s.

In the context of the operational development programmes financed by the former National Housing Bank (BNH), Sabesp was used as a ‘pilot’ within the country as it was chosen to pioneer different water reduction action plans in order to test their suitability in Brazil. Later on, new knowledge was brought by international consulting firms and international organizations (the International Water Association (IWA), and the Japan International Cooperation Agency (JICA)). At present, Sabesp is involved in diffusing knowledge on reducing losses via seminars, specialised publications and academic works

developed by its technical people and professionals.

The water loss reduction strategy

In terms of strategy, Sabesp has adopted several complementary approaches that are summarised below.

In the 1980s, the BNH planned investment programmes were used to control water losses in the Metropolitan Region of Sao Paulo. During this period, Sabesp was a pioneer in Brazil to demonstrate the importance of production and customer metering, and to develop research on unreported losses, large metered areas (sectorisation) and public participation through the use of call centres.

The BNH investment programmes reduced losses to 25% of the volumes produced by mid-1980. After that, due to a lack of awareness and insufficient investment, the quality of service and facilities began to deteriorate. The delay in the commissioning of new resources led to intermittent water supplies in some areas of the city. Each implementation of new production units (Guarau in 1990

and Alto Tietê in 1992) led to dramatic increases in losses, as shown in Figure 2. In 1992, the losses reached 42% of the volume of treated water injected into the network.

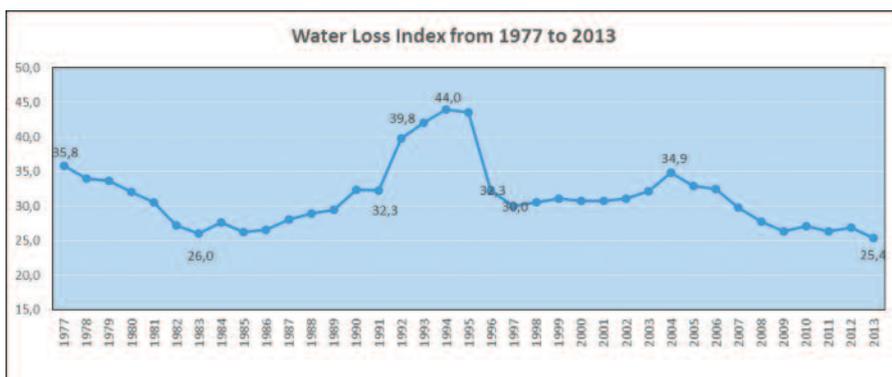
In the early 1990s, with the support of a consultant specialising in NRW (Lysa SA), Sabesp developed the innovative concepts of water balance and component analyses (as an audit of the various components of the water losses). Sabesp initiated corrective actions to address the different components of the loss: controlling real losses through sectorisation, pressure management, investigating reported and unreported leaks with modern devices, optimising the materials and equipment used, controlling apparent losses and optimising customers and water meter management.

Particular phenomena were highlighted and quantified, such as the impact of residential tanks on measured consumption or the impact of the inclination of velocity meters on registered volumes. Water consumption in the favelas was reviewed: it was shown that the favelas’ consumption was not as important as had been claimed. Optimisation strategies were identified to reduce water consumption and water losses in the favelas.

Based on these analyses, Sabesp developed an in-house loss reduction program (PIRP), launched in mid-1990s. The reduction of the Loss Index between 1996 and 1998 proved the efficiency of the actions recommended in the PIRP. However, the losses grew again in 1998 due to a reduction in the financial efforts, in terms of investment, and to some changes in the structure of the services (the potential of water losses had not yet been reached in the areas submitted to intermittent supply). Moreover, the unreliability of computerised systems also constituted an important handicap to taking corrective actions in a timely manner.

From 2000, Sabesp continued its previous actions by integrating the concepts and best practices recommended by the IWA, in particular in the following areas: establishment of a standard water balance and associated performance indicators, sectorisation, pressure control and management, and active leak detection programmes (ALD). Dividing the Metropolitan Region into five business units enabled better tracking of losses and better accountability of the

Figure 2: Water Loss Index from 1977 to 2013



operators. With support from the Institute of Technological Surveys (IPT - Instituto de Pesquisas Tecnológicas), Sabesp has conducted numerous studies on the behaviour and aging of water meters with a view to optimising their renewal periods. As part of those studies, water meters of different classes were tested. In the framework of the fight against unauthorised use of water, Sabesp formed and trained special teams (TACE - Técnico de Atendimento Comercial Externo).

Finally, since 2010, while continuing the former actions, Sabesp has developed a fully computerised and geo-referenced management system based on establishing district metered areas (DMAs). The utility has also focused on improving the quality of service and of its own professionals. Furthermore, it has gradually shifted its contracting-out policy by applying a global sourcing approach.

The results: the Water Loss Index

Figure 2 shows the evolution of the Water Loss Index as a percentage of the volumes put into the system since 1977. The graph must be carefully interpreted, because the definition of the indicator has changed over time.

Sequentially, Sabesp made three basic changes in establishing performance indicators and hydraulic balances:

- Up to 1995, the percentage of losses was calculated with reference to the water supplied to the operating area, that is, the difference between the system input volume and the water exported to the six municipalities not operated by Sabesp (see Figure 1).
- From 1996 to 2004, the percentage of losses was calculated with reference to the system input at the entrance to the distribution area, and the non-operated municipalities were considered as large customers.
- Finally, since 2005, the overall consumption of the favelas has been considered as an unbilled authorised consumption. Furthermore, the volumes of billed authorised consumption is not calculated from the volumes read on the customers' meters but from the invoiced volumes, which are slightly higher. ⁽²⁾

The successive changes in the way of calculating the Water Loss Index have certainly led to 'fictitious' reductions in the percentage of losses - which did not correspond to real reductions in volume.

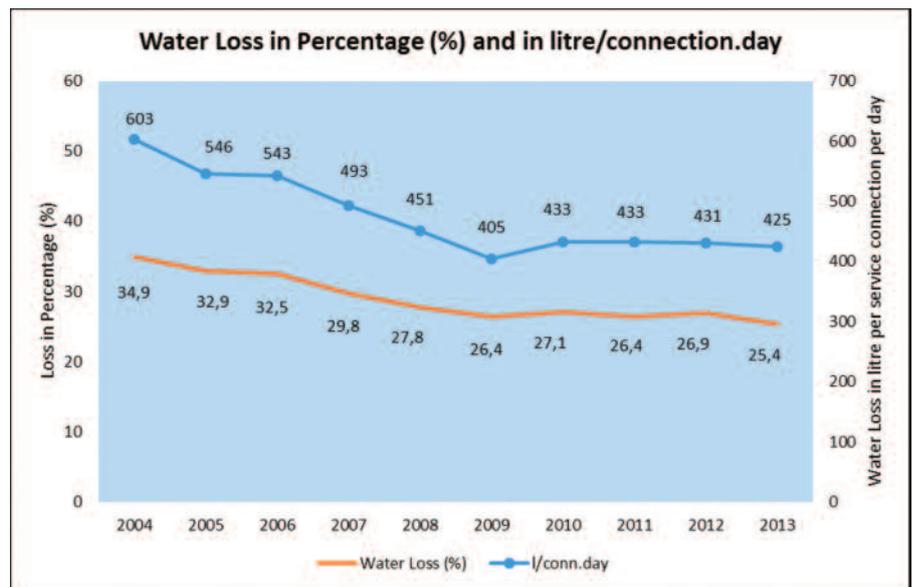


Figure 3: Evolution of the loss by service connection in the Metropolitan Area

It confirms the position of the IWA when stating that losses defined as a percentage of the water input is not the best indicator to compare the performance of various utilities.

However, Sabesp's goals were to align its own practice to international practices and to isolate specific problems to better address and treat them. This refers to large metering and losses in the transmission mains, and water management in the favelas.

The Water Loss Index is now called the Billing Losses General Index: it is a valuable and practical financial indicator. Following IWA's recommendations, Sabesp has gradually used more operational indicators such as the loss per

service connection per day.

In 2013, the achievements were as follows:

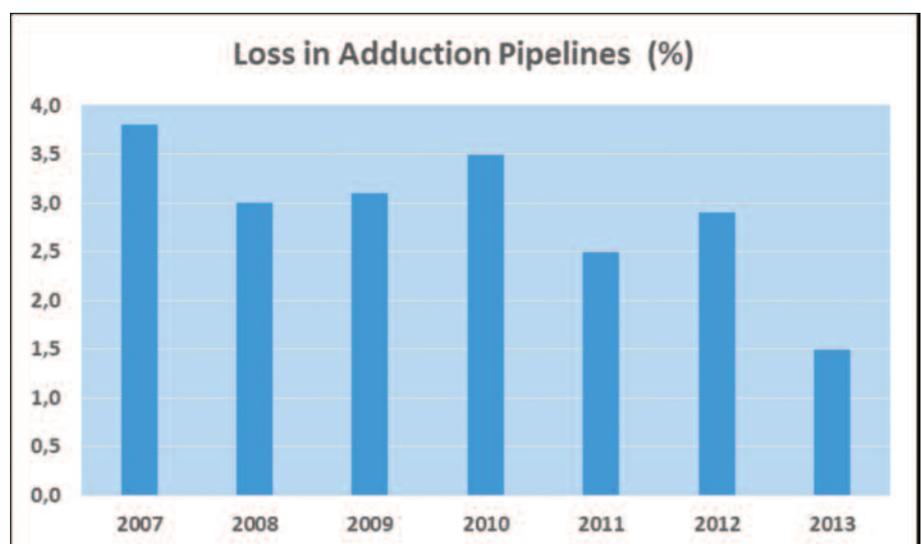
- Billing Losses General Index: 25.4%
- Losses in Distribution Index: 425 L per service connection per day

Figure 3 shows the recent evolution. Simultaneously, Sabesp continued its efforts to improve the performance of the water supply systems (Figure 4)

Performance-based contracts and global sourcing

Initially, Sabesp contracted out most of the elementary activities to reduce losses: leak and fraud detection, meter replacement or resizing, and so on. Since 2000,

Figure 4: Evolution of the Loss Index in the Transmission System of the Metropolitan Area



the utility began to use risk and performance-based contracts: this type of contract implies more involvement from the contractors, since their remuneration is partly based on performance. The assessment of this measure was positive in terms of flexibility and results. However, this approach also leads to a complete fragmentation of the contracts, and requires huge efforts from the utility in terms of supervision and monitoring.

At present, Sabesp is undertaking a new global approach known as Global Sourcing. This approach is based on contractual clauses that curtail rework and stipulate quality assurance of performance as well as other criteria that sought to improve management and agility in service delivery. However, this is not a panacea, and some problems do remain. The project includes many different services of a varied nature that are focused on the urban area, making it difficult to monitor in the traditional way. Experience with Global Sourcing environment contracts shows the importance of planning the bidding process to ensure the continuity of maintenance services in water distribution networks. Staff involvement remains essential to ensure both success and sustainability.

Knowledge management

Sabesp staff constantly update their knowledge of losses in water supply systems in various ways:

- Participation in conferences and national seminars (the Brazilian

Sanitary and Environmental Engineering Association - ABES) and international seminars (IWA, for example)

- Participation in technical training courses abroad (JICA, and so on) and incentives for academic development (MSc and PhD courses)
- Relationship with specific consulting companies or prominent international consultants
- Participation in developing relevant ISO technical standards for the water and sanitation sector.

In return, Sabesp contributes to the exchange of knowledge in different ways:

- Organisation of international seminars on reduction and control of water losses, with the participation of international consultants
- Permanent improvements in water meters, through the work of the hydrometry laboratory, which acts as a national reference on the subject
- Development of computerised management systems
- Preparation of internal technical standards that later become benchmarks for other Brazilian water utilities
- Pioneering development in Latin America on a professional certification system for unreported leak detection services and pipe and service connection installation
- Organisation of annual seminars and exhibitions by the Association of Sabesp Engineers.

Economic and financial aspects

Over the past 45 years, Sabesp has designed and implemented several multi-year programmes to meet intermediate water loss reduction targets in order to reduce real and apparent losses. These programmes were based on lessons learned from former programmes, and relevant cost/benefit analyses for each component of the programmes.

When the programme failed, or when the targets were not achieved, very often it was due to financial requirements not being met. Actually, even nowadays, it is difficult to convince decision makers that financing loss reduction may be more useful than financing new production units, in most cases. In fact, both aspects are necessary and need to be achieved in due time.

The following figures provide a good illustration of these statements: Figure 5 shows that the project costs achieved or planned by Sabesp are consistent with similar projects implemented in the region. Figure 6 shows what the increase in real losses would be if there were no action to compensate for the natural rate of rise in real losses (the ‘do nothing’ scenario).

These figures also provide a good illustration of the efforts necessary just to compensate the natural rate of rise of the real losses.

Assessments in the ‘do nothing’ scenario show that the water system of the São Paulo Metropolitan Region could collapse in a few years if the actions of the Real Loss Reduction programme had not been implemented.

The funds invested are at a level of R\$200 million (\$52.7 million) annually (uncorrected for inflation). This amount is expected to double in the current corporate programme of loss reduction. The results obtained and planned are comparable with the levels of funds invested or planned over the years in other countries, as evidenced by evaluations based on the criteria of the Inter-American Development Bank (IADB) (RTI project).

Lessons learned

The review of the former programmes does confirm the following statements:

- An active leak detection campaign and pressure control do provide excellent results
- Actions to control apparent losses through water meter replacement and fraud detection need to be kept at

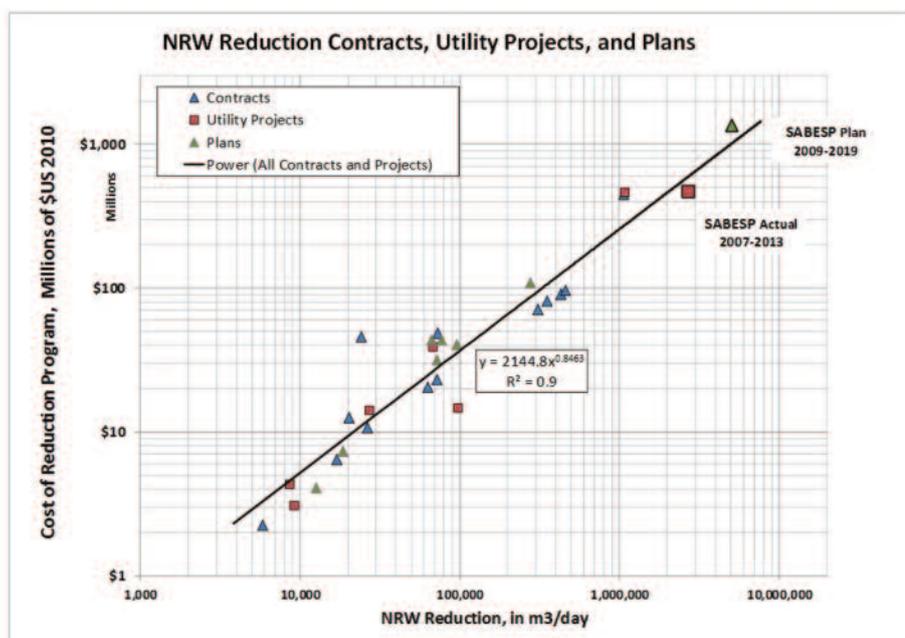


Figure 5: Simplified Cost of NRW Reduction Programme vs. NRW Reduction (Source: Alan Wyatt in the original report)

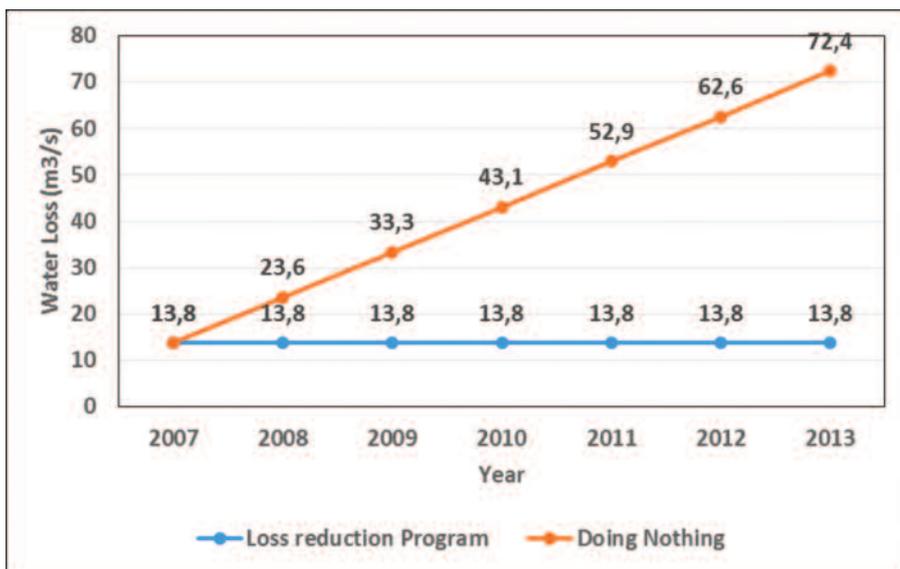


Figure 6: Simplified Natural Rate of Rise of Real Losses in Sao Paulo Metropolitan Area

current levels

- It is also necessary to set up continuous and optimised renovation programmes in terms of pipe and service connections.
- These three categories of actions need to be supported by a continuous improvement in the technical specifications of the materials and equipment used, and in the professional capacity of the staff in the utility and the contractors' teams.

The analyses of the results also focus on the following items:

- Municipalities and the water utility need to work together and find provisional or final measures to get the social use of water under control: this mainly refers to the water supply to the favelas and similar areas. This is a major issue in terms of finance, but also in terms of public health and social order.
- Critical episodes in the hydrology of water sources may require water-rationing actions that degrade the system. It may take years of work to restore the previous situation
- Domestic water tanks are widespread in Brazil. The common use of float valves has a perverse effect, as it generates a significant under-registration of the volumes consumed
- Finally, there should be no interruption in funding for the water loss reduction programmes: the negative impact of temporary insufficient funding or discontinuity in maintenance contracts may be very high, and very long to recover.

Short term and medium term challenges

In the São Paulo Metropolitan area, the target is to reduce the water losses to between 235 and 310 litres/service connection/day, including both real and apparent losses.

Sabesp already has wide conceptual, methodological and technological experience in the areas mentioned in this paper. The utility will build on these solid bases to go further by getting a deeper knowledge of the metropolitan specificities and by continuously taking advantage of the new techniques (technology watch).

The following topics among others are already under consideration or under survey:

- Reduce the impact of estimation when establishing water balances and calculating performance indicators. Put the stress on evaluating the error margin for each component of the water balance
- Strengthen the detection of unauthorised use of water
- Use powerful modeling tools for planning and evaluating the results of the Loss Reduction Program.
- High Density Polyethylene (HDPE) pipes used for networks and house connections should have improved specifications. Continue to train contracted out staff on proper installation
- Carry out systematic leak detection programmes with newly available techniques on the large pipes conveying water to the distribution systems
- Develop large district metering systems

and install fixed and mobile devices for better understanding and better control of network operation

- Optimize the water meter replacement policy and check the new generation of smart meters, which could dramatically reduce under registration due to the floating valves in domestic water tanks
- Envisage using automatic meter reading (AMR).

Reducing and controlling water losses is an endless fight: new stages are under preparation. ●

Notes:

- 1) *Technical Report on Water Loss Reduction in the Metropolitan Area of Sao Paulo (rev.1, January 2015)*
- 2) *According to the Sabesp tariff structure, if the measured monthly consumption is lower than 10 m³, the customer is billed 10 m³/month. The difference is 'revenue water'.*

About the authors and contributors:

Jairo Tardelli Filho (Sabesp), Michel Vermersch (MF&E, michel.vermersch@free.fr), Fátima Carteado (MF&E).

Eng. Jairo Tardelli Filho prepared the review with the assistance of several consultants: Michel Vermersch, who has been involved in the NRW reduction policy since the early 1990s, Julian Thornton and Fátima Carteado. Sabesp also received collaboration from other international consultants including Allan Lambert and Alan Wyatt. The Sabesp professionals involved were Cícero M Rocha, Eric C Carozzi and Carla Chiara.

New tariff setting tool and tariff setting processes as effective instruments for Albania's Water Regulatory Authority

Albania's Water Regulatory Authority (WRA) has two main instruments available to achieve its objective of 'ensuring that water and sewerage service providers deliver the highest achievable quality at a fair price and in a financially sustainable manner for all Albanians' – tariff setting and technical licensing criteria. **ORNELA SHAPO, FRIDTJOF BEHNSEN** and **ANA METOHU** look at the WRA's tariff setting model and policy, and the WRA's major challenge – trying to ensure utilities can cover the cost of their services as efficiently as possible while ensuring tariffs are affordable to consumers.

Albanian decentralisation and administrative reforms are expected to affect the water and sanitation utilities and the entire water and wastewater services (WWS) sector in general. While a new scheme for organising the sector is still the subject of ongoing discussions, Albania's Water Regulatory Authority (WRA) has to continue implementing its legal mandate: obligations such as renewing operators' licenses, tariff setting, sector monitoring and benchmarking. These reforms aim to improve governance at a central and local level.

Michael Rouse in his book *Institutional governance and regulation of water services* defines good governance in the water sector as a set of preconditions of:

- A governance structure in which sound integrated policies can be developed
- The professional capability within governments and civil services to develop sound policies
- The separation of policy, regulation and delivery
- Regulatory bodies that are independent and that have the power to implement policies, laws and rules in a transparent way
- Effective monitoring and enforcement of regulations
- Open and transparent information and reporting as the most effective means of combating corruption
- Effective public participation as transparency, but also to provide for buy-in commitment
- Utility operators who, having been

given clear objectives, targets and resources, are free from political interference, so that good operational management can concentrate on providing efficient services.

In many places, the Albanian population still lacks adequate water supply and sanitation services. According to sector information, about 80% of the population are connected to the central water supply system and about 50% to sewerage systems. The treatment rate for wastewater nationwide at present amounts to only 4%. Presently only six utilities out of 58 manage to supply water for more than 20 hours/day. In many other utilities the average supply is well below 10 hours/day.

Urgently needed improvements are hampered in part by the very slow decentralisation process, which is delegating responsibility for water supply and sewerage utilities to the Albanian munic-

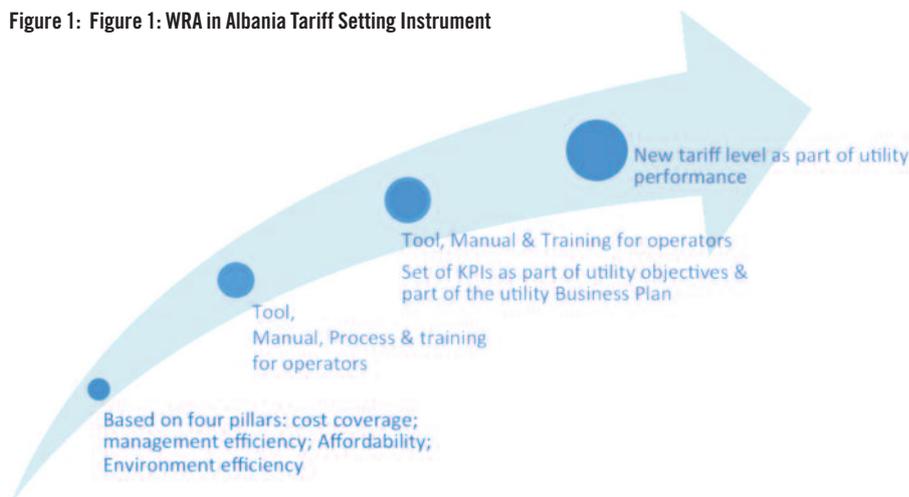


Ornela Shapo

palities, and the utilities' general lack of capacity and competitiveness. Despite positive progress over the years, the capacities of the Albanian water sector institutions are still insufficient, and represent the core problem in implementing planned developments.

To better understand the actual situation on the ground and devise effective interventions such as infrastructure

Figure 1: Figure 1: WRA in Albania Tariff Setting Instrument



investments and capacity development initiatives, accurate and reliable information is of key importance to be able to plan, implement, manage and steer the sector to more efficient and effective service delivery.

The WRA has been given a legal mandate since 1996 to:

- Issue licenses to commercial entities that are engaged in the supply of water for the benefit of the population
- Approve water and wastewater tariffs for operators that provide water for public consumption, even in cases where water and sanitation systems have passed to the management or ownership of local governments
- Set standards for investment programmes and asset sales by licensed operators in the water and sanitation sector, even when the water supply and sewerage systems have gone into administration or are owned by local governments
- Establish and ensure implementation of labour standards for licensees
- Encourage uniform management standards and rules for the sector

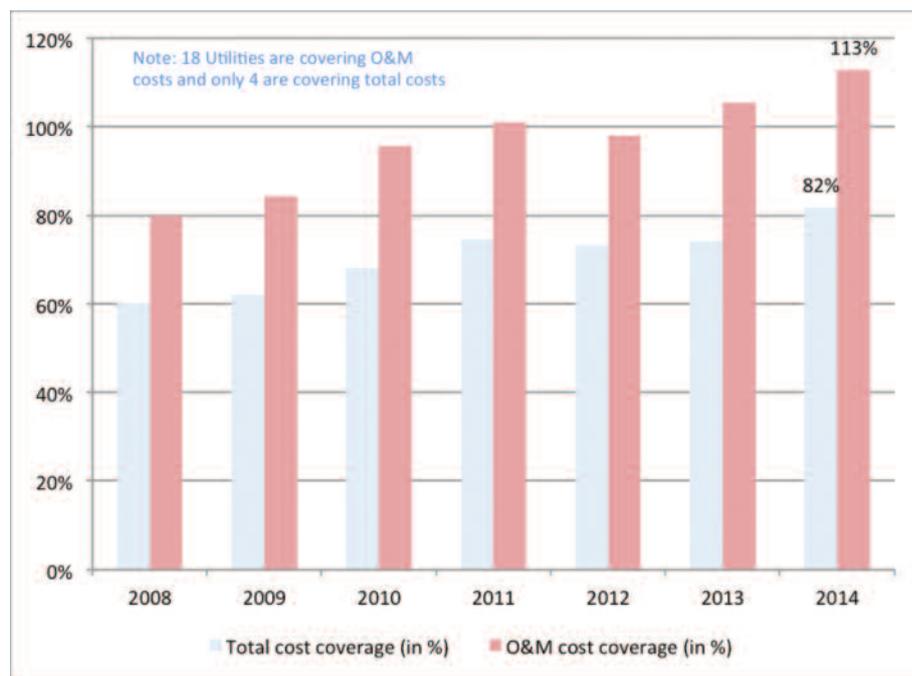


Figure 2: Figure 2: Cost coverage in WWS in Albania by year

- Prepare reports on the state of the sector for the Council of Ministers and collect relevant information from licensees
- Determine the applicable fees for licenses

Table 1: Tariff setting pillars for WRA and its impact

Tariff setting policy	Impact of the tariff setting policy	
1. Cost recovery	No. of utilities that cover the Operational & Maintenance cost	No. of utilities that cover the total costs
	During 2013 only 18/58 utilities have covered the O&M costs	In 2013 only 4/58 utilities have full cost coverage: Tirana, Shkodra, Pogradec and Gjirokastra
2. Management efficiency	No. of targets / key performance indicators achieved in average by all active utilities	There are 10 KPIs but directly related with management are measured & monitored 8 KPIs *
	8 key performance indicators measured and subject of new tariff level approval. Achieved only 2 (coverage of O&M costs and total costs) as a sector average	Only one utility is achieving all key performance indicators (Korça) while Pogradec is achieving 7 out of 8 indicators and Tirana 5 Out of 8 indicators.
3. Affordability	The level of the monthly water bill in average (in All and % of the monthly income) for all licensed utilities	No. of utilities that apply tariff above or very close to the 5% of the monthly family income
	Average water bill/family/monthly is around 46 All/m ³ and sanitation around 15 All/m ³ For a family that is consuming 18m ³ water monthly the average bill (for both water and sanitation is 1100 All/monthly no VAT included). This bill represent 3% of the average monthly income of the families	Only Korça is very close to the level of 5% (exactly 4.6% of the monthly income), followed by Pogradec (with 4% of the monthly income)
4. Environmental efficiency	Applying tariffs with blocks increasing the level on the volume of the water consumption	
	The methodology encourages the tariff in blocks	Only Pogradec is applying the tariff based on blocks of water consumption increasing the level of tariff based on consumption. It is assessed that the application of this formula in Pogradec has increased the revenue collection and discourage the water consumption in this case.

* The KPIs namely: (1) Total cost coverage; (2) Operational and maintenance cost coverage; (3) Metering rate; (4) Collection rate; (5) Service hours; (6) Staff efficiency; (7) Non-revenue water and (8) Waste water coverage.

Table 2: Sector Performance Indicators

Performance indicator	2011	2012	2013	2014	Performance trend	WRA good performance objective 2015	Sector strategic objective 2015
Water coverage (%)	80.8	80.8	80.8	81.0	=	n/a	95/74 *
Sewerage coverage (%)	50.8	51.0	51.0	51.0	=	75	86/25 **
Hours of supply (hr/day)	10.9	10.8	11.5	11.5	=	18	14
Total cost coverage (%)	79.4	82.7	84.6	85	↗	87	76
O&M cost coverage (%)	105.2	106.3	113.8	114.0	↗	>100	>100
Collection rate (%)	79.9	90.9	82.0	89.2	↗	82	90
Staff efficiency (staff 1000 connections)	9.3	9.3	9.5	8.9	↗	4/6/10	n/a
Non-revenue water (%)	63.5	67.1	67.4	67.4	=	30	54
Metering ratio (%)	50.6	55.1	59.0	60.0	↗	85	60

* Water coverage for urban / rural areas

** Sewerage coverage for urban / rural areas

- Impose administrative monetary penalties
- Issue regulations to help in exercising the powers and functions provided for in this Law.

Contributing to the good governance of the water sector, the WRA has conducted a number of activities to fulfill its mission and has developed several instruments in recent years to establish a regulatory framework within which utilities can operate their services and at the same time have incentives to improve performance. Basically the WRA has only two main tools empowering its legal mandate: tariff setting and the licensing of water and wastewater operators.

The WRA tariff setting instrument

In order to motivate utilities to improve their services and strive for total cost coverage, a new tariff setting methodology was introduced in late 2011. The WRA is basing the tariff setting on four pillars: cost recovery – operation and maintenance (O&M) initially until full cost recovery is achieved; management efficiency – systematic efforts to reduce service costs through management and technical efficiencies; affordability – the water and sanitation bill must not exceed 5% of family revenues for poor households; and guiding environmental efficiency – encouragement of resource conservation.

Licensed utilities can apply for a change in tariffs once a year by submitting a number of documents that explain the actual state in which they are operating as well as the activities they plan to conduct in order to improve performance. The application is analysed by the WRA to ensure that the tariff increases

are reasonable and necessary to improve services for customers. To date, 45 utilities have applied tariffs that are approved by WRA. Some facts on the impact of the tariff policy are shown below.

Making the tariff setting tool an effective instrument for utilities

The current tariff setting methodology has been used by the WRA for approving new tariffs since September 2011. The experience gained during the past four years shows that this instrument has been a good promoter for utilities in setting objectives for further performance improvements, by applying tariffs that cover operational costs and help improve services. The tariff approved by the WRA is conditional upon a set of Key

Performance Indicators (KPIs) that have to be achieved by the operator within a fixed timeline.

The regulator is currently engaged in establishing business planning as a common management tool in the country's WWS sector. This will guide the setting and attainment of realistic goals through strategic planning for financial, commercial, technical and personnel aspects. It is anchored in the National Strategy of Water Supply and Sewerage (2011-2017) and aims to link the approval of multi-year-tariffs to preparation of a Business Plan for the utility and a summary version for the regulator.

Some progress has been made, especially in the financial situation of the

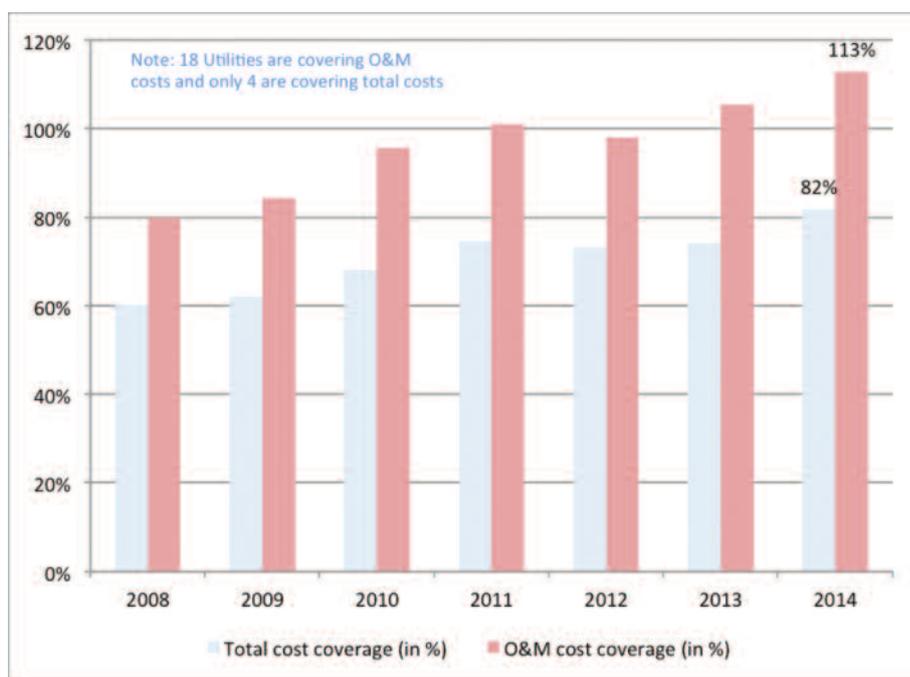


Figure 3: Figure 3: WWS utilities fund structure (2013 in %)

operators, but in some other key areas such as water and sewerage coverage and management efficiency the situation has not improved. It is very hard to show clear evidence because of the availability of data as well as its accuracy and reliability, but an achievement can be identified: full coverage of O&M costs as a sector (on average). At the end of 2014 it is estimated that across all 58 active utilities (considered as unique service delivery enterprises) up to 114% of the O&M costs have been recovered, showing a positive trend over the years. As a result, total cost coverage also increased to 85% at the end of 2014. Based on the performance benchmarking system that the regulator used until 2014, the sector results are shown in Table 2.

However, some of the trends are skewed by the effect of some of the country's large utilities. This is evident when one looks at individual utilities, where only 18 out of 58 utilities manage to cover their direct operational costs and only four out of 58 utilities manage total cost coverage.

Need for improvements to accelerate progress and attain targets

The regulator identified some issues during the tariff setting process, in terms of matching the utility business plan, the performance target, and justifying the new tariff level required by the operators. For this reason the regulator has revised the tariff setting methodology to clearly identify tariff-setting instruments such as tariff policy, the tariff tool, justification and process. The WRA now requires detailed and clear justification of how the new tariff level is set, linking the need to implement the utility business plan and achieving the predefined targets.

Some qualitative improvements made recently to the tariff setting instruments involve the following:

- The revision of the tariff setting tool (the Excel document), making it more friendly for the operator's personnel to use
- Preparation of a tariff setting tool manual and training for a number of utilities
- Preparation of a tariff setting justification tool and manual for users
- Redefining the tariff setting process, extending it through the whole year to make it more clear from the utility side

Due to these improvements in terms of refining the instrument qualitatively,

during the past year only 14 utilities managed to submit a new tariff application.

To be able to fulfil the legal mandate of the Albanian regulator in a more effective way, a regulatory reporting system has been developed which provides WRA with direct access to key operational data from the utilities. This ensures the regulator can effectively perform its role in measuring performance, setting targets, issuing operating licenses and approving tariffs. For this reason a new monitoring system called SIGMA has been designed and is ready to run based on utility operational data since the 2008 financial year. This system contains detailed information on water, wastewater and wastewater treatment from the active operators in the country, and also supports the automatic calculation of predefined KPIs, template reports and graphs.

The KPI system used by WRA was designed and is used to help the regulator to monitor whether sector targets are being met. The initial set of 10 indicators was in use until 2014. In early 2015, this set of indicators was expanded to monitor additional aspects of service delivery and now also prominently features sewerage services. The process of assessing the need for monitoring the sector through new KPIs was guided by the logic of selecting those KPIs that reflect the strategic objectives of the sector and thereby provide guidance on the most critical areas where performance improvements and efficiency gains are required. The logic of the ISO 24500 framework was used in defining a new set of KPIs for the Albanian regulator that are fully in line with sector targets and WRA mission and objectives.

Financial challenges

One might ask if this is enough, or how the tariff is contributing to the main objective of improving services to consumers? There is not an easy answer, while the financial situation on average for the sector looks not that optimistic:

- Service cost recovery through the tariff is less than 90%; only four utilities manage to have full coverage from the total service invoiced, almost all of them large utilities (with more than 15,000 consumer connections for water supply)
- The biggest cost items are labour costs/salaries and related social and health contributions for utility staff,

representing 35% of operational costs

- Energy bills are the second highest contributor to the cost of the service at up to 26% of operational costs
- There are no data on the level of investments from own source revenues (OSRs), while a good part of these investments come from Central Government dedicated funds
- The utilities' revenues come from the billed service to consumers, which provides up to 30% of total income, while subsidies to 2013 provide up to 16% of the O&M costs
- Given their huge energy bills, utilities are continuously asking central government to intervene to pay off of their energy debts.

Tariff level increases have been a good support for utilities in helping to cover their operational costs, but they now continue to increase service tariffs without providing good justification. Implementing improvement measures based on sound strategies that consolidate the financial situation in terms of cost coverage, restructuring utility costs, increasing tariffs to meet increased expenditure for maintenance and smart investment are a no-go strategy.

Cost-covering tariffs and the link to subsidy-policy

One of the main tariff policy pillars applied by the WRA is utility cost recovery. The overall long-term goal of the WRA is to challenge utilities to reach a status in which they operate in a financially sustainable situation, are able to cover their costs from their own revenues and are no longer dependent on external funding bodies, for instance government subsidies or international donors. The long-term objective is to cover all utility costs, initially O&M costs and then the rest (amortisation and investments). Unfortunately, despite the slight positive trend, only four out of 58 utilities are covering all their costs.

Data show that one third of the utilities are covering their O&M costs, indicating a positive development in the sector. Unfortunately this improvement is mainly due to tariff level increases approved by the regulator, with a lack of improvement in management efficiency.

Rough calculations indicate that billed service volume decreased by 4% last year, while revenues from billed services increased by 9%, indicating the powerful financial lever of the tariff and an urgent

need for management interventions in terms of revenue collection and service metering. One might say that the regulator is really supporting the utilities, transferring service costs to formal consumers (the ones that pay for their services) and central government (in the form of subsidies).

The WRA is in favour of allowing utilities to increase tariffs, and through that narrowing the gap between costs and revenues to reach total cost coverage levels eventually. However, tariff increases always have to go alongside improvements to quality and customer service to justify the higher prices. Therefore the WRA approves tariffs on the basis of individual performance development that is measured by using actual performance towards predefined utility objectives. The tariff application is the subject of detailed analysis of objective achievements, and the way in which new objectives will be achieved with the support of the new tariff level.

While subsidies granted by central government are considered to demotivate utilities to improve services, the WRA does not allow tariff increases without corresponding performance achievements. Subsidies that do not necessarily undermine the WRA's activities are those directed to investment programmes and to helping utilities to build new infrastructure or renovate existing assets, and increasing service coverage.

On the other hand, subsidies that can be used to finance O&M costs give the wrong incentives and ramp up the regulatory impact. Utilities that do not achieve their KPI objectives and are consequently not allowed to charge higher prices might instead apply for subsidies to cover their costs. In Albania, subsidies for O&M costs are granted on a regular basis basically to cover electricity bills/issues. They have been proved to make utilities lazy and lack the incentive to stay cost efficient. Almost every year the state budget pays WWS utilities for their electricity bill, which represents up to 35% of the O&M costs. This is not done on any structured basis (from time to time, when it really becomes an issue with the electricity companies). Policy can be implemented by linking the subsidy to some incentives (for example to preferential prices for WWS utilities instead).

Theoretically the subsidies that are granted by central or local government have to be linked to performance

improvement, otherwise they seriously undermine the WRA's sector regulation. The central government has declared several times that it will no longer grant any subsidies for O&M to the WWS sector in the long run, when the WWS service is a local government function. Central government intervention is still present through subsidies covering the operating deficit of the WWS utilities, roughly €4 to €5 million annually. Both central government and/or local government by distributing subsidies based on some performance criteria, are helping utilities to improve over the course of time, or helping families in need (if the tariff level is above the affordability limit). As shown in the graph, the level of investment represents more than 60% of the total WWS utilities' budget structure (as a grant transfer from central government to utilities). This is a considerable amount invested every year into the WWS network, while the service coverage area has remained the same for several years.

A possible solution to avoid central government intervention and create more impact for WRA instruments might be to harmonise the investment grants from central government to WWS utilities with the annual performance assessments by the WRA in the annual sector performance report, while subsidies would be distributed only for families in need. In this way, the WRA is allowing tariff increases and at the same time providing social support by subsidising poor families instead of utilities. This can be achieved by implementing block scheme tariffs, with free water to a certain amount of consumption, or through direct subsidy to families in need using the same criteria as applied in Albania's energy sector today.

Conclusion

The WRA's regulation and its instruments have been consolidated over the course of time. The regulator has been proved to enhance performance and to push for formality and service improvements. Still the effects of its regulatory instruments remain very limited if central government intervention into the WWS sector is so evident, through direct subsidies and investments.

One of the most important regulatory instruments is and remains tariff setting. The regulator has provided a clear policy, methodology, tool and process to all active utilities. An internal discussion

within the regulator is on the need to harmonise tariff setting with the central government intervention (subsidies and investment) based on utility performance. A set of criteria, processes and a pool of funds are prerequisites for discussion in the new decentralisation reform and reorganisation of the WWS sector.

Some recommended actions are to predefine an interim period until the phase out of subsidy support from the central government, and to push utilities to improve management efficiency (reducing administrative losses and staff costs, and increasing revenue collection) instead of tariff increases. Design of a subsidy scheme besides the tariff block scheme is already part of the tariff policy foreseen by the WRA. Energy efficiency projects should be implemented, and WWS utilities encouraged to apply for grant investments in this kind of project. Grant investment should be harmonised with utility performance achievements based on WRA Key Performance Indicators. Local government should be encouraged to be part of utility performance monitoring. ●

References

- Rouse, M (2013) *Institutional Governance and Regulation of Water Services*, IWA Publishing, Alliance House, London.
- Berg, S (2010) *Water Utility Benchmarking*, IWA Publishing, Alliance House, London
- Albanian Official Journal (2011). *National Strategy of Water Supply and Sewerage*.
- Water Regulatory Authority of Albania (2014) *Report on the Performance of Water Supply and Sewerage Companies*
- Water Regulatory Authority of Albania (2015) *WRA Annual Report 2014*

This article is based on a paper presented at the IWA Regional Utility Management Conference held in Tirana, Albania, 13-15 May 2015.

About the authors:

Ornela Shapo MSc, PhD in Finance
(Ornela.shapo@giz.de)
WSR Project/GIZ

Fridtjof Behnsen, MSc, MBA
(Fridtjof.behnsen@giz.de)
WSR Project/GIZ

Ana Metohu, (ana.metohu@erru.al)
Head of Economic & Monitoring Sector, Water
Regulatory Authority in Albania