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# water utility management

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

## Benchmarking sewerage services in Abu Dhabi

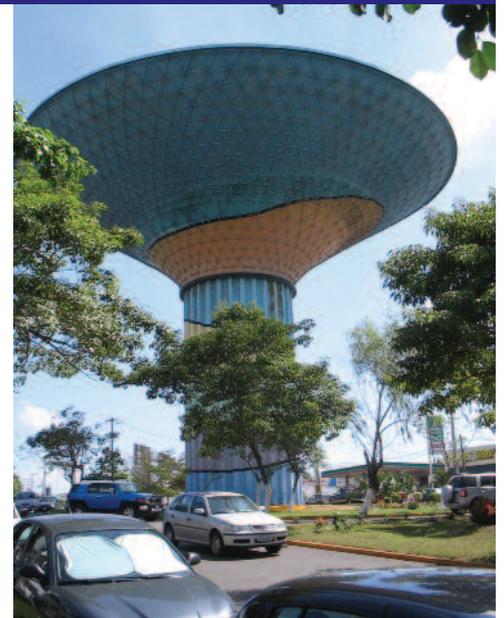


### SECTOR REFORMS

## Bulgaria's progress with reforms to release EU funding



### PERFORMANCE



### PLUS ...

IDB's water sector plans  
for Latin America

*and*

Contract lessons from the  
Greater Paris area

## Initiatives to improve Mexican utility performance

# 'Compelling case for reform' for Australia's water sector

**Australia's independent Productivity Commission has produced a draft report on the country's urban water sector that condemns the rush for desalination, and the cost of severe water restrictions.**

The report also confirms that there is a 'compelling case for reform', noting that there are 'conflicting objectives and responsibilities of institutions contributing to inefficient allocation of water resources, inefficient investment, undue reliance on water restrictions and costly water conservation programmes'.

Dr Wendy Craik, Commissioner of the Productivity Commission, commented: 'The draft PC report on urban water reform provides suggestions for achieving significant efficiencies in Australia's urban water sector, in particular in the area of augmen-

tation of urban water supplies, where large savings seem possible. Public submissions and hearings on the draft report will be taken into account in finalising the report which will be presented to the Australian government by the end of August and made public by the government within at least 25 Parliamentary sitting days.'

According to the report, initial gains are likely to come from improving the performance of institutions in terms of governance, regulation and procurement of supply and pricing rather than trying to create a competitive market like the electricity sector.

Reforms are divided into two types – universal (priority) reforms that need to be adopted across all jurisdictions and regions, and structural reforms that

will be assessed and implemented on a case-by-case basis.

The priority reforms involve:

- Clarifying that the sector's overarching policy objective is the provision of water, wastewater and stormwater services that maximize net benefits to the community
- Ensuring that procurement, pricing and regulatory frameworks are aligned with this overarching objective and assigned to the appropriate organization
- Putting in place best practice arrangements for policy making and regulatory agencies, and water utilities
- Performance monitoring of utilities and monitoring of progress on reform

● **LS** See *Analysis*, p8

## IDB gears up for Latin America support

**The Inter-American Development Bank has launched a number of initiatives with implications for the water sector in Latin America and the Caribbean, and is progressing with the development of plans that will shape its involvement with the sector in the region over the coming years.**

At its annual meeting in March the bank announced a new Sustainable Emerging Cities platform, through which it intends to partner with fast-growing cities with populations of between 100,000 and two million people. In facing climate change and fiscal issues in particular, the aim is to help prepare comprehensive plans covering areas including housing, transportation, water and energy use, and public services.

The bank also announced that it is joining with China's Eximbank (the Export-Import Bank of China) to establish an infrastructure facility and a public private investment fund for region. Eximbank's recent international water sector activity has included providing RMB 900 million worth of loans for sewer and sewage treatment work in Malabo, the capital of Equatorial Guinea, for which China Gezhouba Group Corp. was the contractor.

These developments come at a time when the bank's Board of Governors have agreed to increase IDB's capital from \$100 billion to \$170 billion. Country commitments to fund this global capital increase will be met over the coming years as each completes its processes required to release funds. According to the bank, the increase will allow it to lend on average a total of around \$12 billion a year, said to be double

the level prior to the global financial crisis.

The bank's efforts in the water sector over recent years have been focused through a Water Initiative running from 2007 to 2011. This saw bank expenditure on water rise from some \$200-300 million a year to around \$1 billion. The bank hopes to maintain this level of commitment to the sector, and is currently drafting plans for its water sector activities (see *Analysis*).

According to IDB, the capital increase will also allow it to expand its lending to the private sector in the region, and it announced that officials from Calgary Bank released plans at the annual meeting to double such financing to \$3 billion annually by 2015.

IDB has just completed public consultation on a new Private Sector Development Strategy. The strategy draws attention to the fact that inadequate infrastructure is inhibiting the region's ability to grow, particularly in relation to power and transport, but also water. It therefore proposes that infrastructure is a priority area for the strategy, and that in operational terms this should include promoting investment in infrastructure, including water and sanitation, improving the legal and institutional framework for public-private partnerships, and improving regulatory frameworks for utilities. Its proposed output measures for the strategy include a figure of 2,770,000 households with a new or upgraded water supply for 2012-2015, compared to a baseline of 1,500,000 achieved during 2005-2008. ● **Keith Hayward**  
See *Analysis*, p7

## French-Saudi partnership to run Saudi city's water services

**French water giant Saur has signed up to a partnership with Marafiq, the first private water and electricity utility in Saudi Arabia, to operate water services for the new industrial city of Jubail.**

A common operations and management structure will be created for the city's water, wastewater and industrial cooling needs. Jubail, population 150,000, is in the east of the Kingdom.

The joint venture is 51% owned by Marafiq and 49% owned by Saur. In 2009, Marafiq distributed 84M.m<sup>3</sup> of water to its residential and industrial customers in the city.

The jv will be responsible for three desalination plants producing 37,800m<sup>3</sup>/day each of potable water, two large water tanks, two major pumping stations and 29 secondary ones, as well as an 885km network.

On the wastewater side, the jv will look after one 72,000m<sup>3</sup>/day wastewater treatment works and a 60,000m<sup>3</sup>/day industrial wastewater treatment works that is currently being extended.

It will also operate and maintain a 586km domestic wastewater network, 58 pumping stations and 222 lift stations, as well as a 35km industrial wastewater network with 35 pumping stations.

The seawater cooling operation will provide water from the Arabian gulf through a canal to around 20 petrochemical customers. In all, some eight billion cubic metres of seawater per year will be provided. The jv's turnover is set to be \$60 million per year. ● **LS** See *Analysis*, p10

# Malaysia makes progress on reform implementation

Malaysia has made further progress implementing water sector reforms initiated in 2006 thanks to advances made in the states of Selangor and Penang, with the developments in Selangor apparently overcoming longstanding concerns over the bond financing of concessions already operating in the state, thanks to a deal worth RM5.8 billion (\$1.9 billion).

Reform of the water sector in Malaysia has been underway under the provisions of the Water Services Industry Act (WSIA) of 2006. A central component of this was the creation of PAAB (Pengurusan Aset Air Berhad), a state-owned company set up with the aim of it owning all water services infrastructure.

To progress the transfer of assets in Selangor, at the end of May a special purpose vehicle Acqua SPV Berhad acquired 99.6% of Selangor water-related bonds, with a nominal value of RM5.8 billion (\$1.9 billion). The bondholders include water supply and distribution company SYABAS (Syarikat Bekalan Air Selangor Snd Bhd) and the build-own-operate Sungai Selangor Water Supply Scheme concessionaire SPLASH (Syarikat Pengeluar Air Sungai Selangor Snd Bhd), along with Puncak Niaga Snd Bhd), Titisan Modal Sdn Bhd and Viable Chip Sdn Bhd. According to PAAB, it anticipated achieving a 100% target within a week of announcing the acquisition.

According to an Acqua / PAAB statement, protracted negotiations between the federal and state governments about restructuring of the sector had jeopardised the ability of concessionaires to service their bonds and had resulted in their bonds being downrated. It stated: 'If the situation remains unresolved, the risk of imminent default is high.'

The move was however criticised by the Association of Water and Energy Research Malaysia, which has also recently issued a report on the problems with the sector reforms called 'National water services industry restructuring – the truth'. Commenting on the bond deal, AWER's president, Subramaniam Piarapakaran, commented that while the move 'was seen as a step to prevent deterioration of financial market confidence towards Malaysia, the solution is still not in line with WSIA'.

Meanwhile, the state of Penang became the fifth state to sign a restructuring deal with PAAB. Under this, some RM655 million (\$215 million) of water-related assets has been transferred to PAAB. In exchange for this, PAAB takes over the state's liability to the federal government for the same amount. PAAB will lease the assets to PBA, the Penang Water Supply Corporation, and it is reported that the effect of the arrangement is that the state's loan will be interest free, rather than attracting interest at the rate of 3%, as was previously the case.

The country's reforms aim to create an 'asset light' approach to delivery of services. The intention is that PAAB will take on asset liabilities and secure investment on better terms than individual operators can achieve. The 'asset light' operators will then be able to focus on delivery of service.

AWER's recent report set out recommendations to address what it described as the 'chaos' in the Selangor water restructuring process. In particular, it recommended that the state should not be able to transfer pipelines to PAAB, said to be valued at around RM8 billion (\$2.6 billion), because of the ultimate burden this would place on tariffs.

AWER also recommended that the states of Sabah and Sarawak be brought under the WSIA, and that a task force be formed to prepare a detailed NRW reduction plan for the country. ● KH

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# Dubai to form regulator for private sector participation

**The Dubai government is creating a regulatory body for the utilities sector to enable private sector participation, according to Najeeb Zaafrani, the secretary general and chief executive of the Dubai Supreme Council of Energy.**

He told local press: 'It is going to be an independent body and will control and license the establishments related to the power and water sector. The authority will develop the economic, technical, environmental and safety standards that all establishments that work in power generation and water desalination will have to

adhere to.' The regulator will be an independent entity under the country's Higher Committee for Energy and Environment. Currently power and water are provided by the monopoly state-owned Dubai Electricity and Water Authority (DEWA).

Mr Zaafrani added: 'The regulator is expected to encourage private sector participation in this field and will create a competitive atmosphere among them as well as protecting the rights of the investors and enhancing their confidence.'

The regulator will create a legislative and

monitoring agency that will foster a climate to encourage public-private sector partnerships. It will also develop rules and regulations for a new investment model based on international best practice for the licensing of new power generation and desalination companies.

There is a strong focus on energy efficiency driving the move, with the country having a stated aim of achieving 30% savings in power use by 2030. The Dubai Global Energy Forum 2011 in April served as a springboard for early discussions about public-private partnerships. ●

# Financing facility launched for Arab region support

**An Arab region financing facility for infrastructure (AFFI) has been launched by a number of key international finance institutions and Middle Eastern governments, with the aim of mobilising support for infrastructure development to drive economic growth and meet the needs of a young and growing population.**

The anchor investors involved are the World Bank, the International Finance Corporation and the Islamic Development Bank (IDB). The investment vehicle will support both conventional and Shariah-compliant investments in infrastructure as well as grant financing for technical assistance and policy coordination.

The launch statement says the financing facility 'will specifically target projects with a regional dimension, linking countries with each other and with the wider world to build pathways of economic integration'.

World Bank group vice president for the MENA region, Shamshad Akhtar, speaking

at the start of a two-day meeting of the AFFI group, said: 'The Arab spring has demonstrated that people want better public services and a cleaner urban environment, and that means more efficient, better-designed infrastructure services.'

Data suggests the MENA region needs to invest between \$75 and \$100 billion a year to sustain recent growth rates and increase economic competitiveness. Estimates claim half of the region's population do not have adequate access to water and per capita water availability is less than 20% of the global access levels and is expected to fall further.

The first day of the meeting focused on discussions between governments and the financiers about the challenges of infrastructure financing and the role the AFFI could play in addressing them.

The second day was devoted to a public-private partnership (PPP) conference that allowed governments to promote key

infrastructure projects and policies, and share their strategic vision of the role of the private sector in infrastructure PPPs.

Dr Jafar Hassan, minister of planning and international cooperation for Jordan, told the conference: 'Infrastructure will be a strong driver for growth in the region and indispensable for the increasingly-critical water and energy deficit in many of its countries. Restructuring the risk-sharing mechanisms for the provision of private sector and development funding for such critical development and regional infrastructure programmes is a key priority in enabling governments and the private sector to jointly advance such projects.'

The conference also saw the launch of a technical assistance facility for project development. The meeting also agreed on a need to create a regional policy forum to coordinate infrastructure policies and promote a regionally-coordinated approach to common problems. ●

**water  
utility management  
INTERNATIONAL**

## EDITORIAL

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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.

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**Publishing**

## Republic of Ireland plans for water charges prompt campaign

**Plans for direct domestic water charges to be introduced in the Republic of Ireland have prompted a campaign that aims to prevent this going ahead.**

The Republic of Ireland's latest budget, released at the end of last year, reintroduced domestic water charging in line with the country's National Recovery Plan. Under the terms of its bail-out from the European Union, Ireland had to pledge in December to fundamentally reform water services provision and introduce charging by 2012/2013. Plans to progress this went before government in the latter part of April.

In response, a campaign has been started on the internet ([www.nowatercharges.ie](http://www.nowatercharges.ie)) with Sinn Féin TD (equivalent to a Member of Parliament) Aengus Ó Snodaigh as spokesperson.

According to a government spokesman, the government would also 'shortly be initiating an independent assessment of the transfer of responsibility for water services provision from the 34 county and city councils to a national water utility'.

The country also plans to create a regulator to oversee the new utility and

to introduce universal metering followed by water charges.

Water in Ireland has been provided free of charge since 1977, with only non-domestic users billed for water and wastewater services. The majority of the costs are met from tax revenues transferred from the national government to local authorities, which are responsible for service provision.

The budget's measures included significant cuts in state welfare benefits, as well as introducing prescription charges. Water charges will be introduced, the budget document says, and 'like the charge on second homes, will finance the provision of local services by local authorities'.

Mr Ó Snodaigh told *Water Utility Management International*: 'Sinn Féin and the No Water Charges Campaign are opposed to the introduction of domestic water charges because it is our firm belief that the only fair way to fund this vital resource is through central taxation.'

'Water charges, whether via a flat charge or a metered flat rate charge, have no regard to a person's ability to pay, whereas central taxation can. The charges being

proposed by the government here are little more than a new and regressive revenue-raising mechanism; the charges have nothing to do with water conservation.'

'The available evidence demonstrates that the majority of wasted treated water is actually lost by the state's antiquated distribution network before it even reaches the household level. It is our position that rather than spending €1 billion (\$1.5 billion) on household meters; the government should spend this money upgrading the network. This sort of strategic investment would more than pay for itself in a relatively short time.'

'It is also the case that low and middle-income families simply cannot afford another utility bill. Thousands of families are in mortgage arrears and in arrears on their energy bills. Repossessions and disconnections are increasing all the time. A household water bill will push many thousands more into poverty and by reducing the money in ordinary people's pockets it will further dampen consumer demand, compounding the recession in local economies.' ● **Lis Stedman**

### PPP report finds local players taking a lead

Building Partnerships for Development in Water and Sanitation has published a paper presenting an overview of emerging shifts in approaches to water and sanitation sector public-private partnerships (PPPs). According to the report, emphasis has shifted recently from longer-term concession and lease contracts to shorter, more targeted performance-based and service contracts.

### ISO publishes energy management standard

The ISO International Standard ISO 50001 on energy management systems has been published. The standard will provide public and private sector organizations with management strategies to increase energy efficiency, reduce costs and improve energy performance.

### Armenian investment requirement

Patrick Lorin, the director general of the Armenian Water and Sewerage Company (AWSC), has told local press that a \$1 billion

investment is required to improve the country's potable water supply system. The government has invested \$100 million in the company, which is state owned, he added, and expects to take out a loan for a similar amount for the next five years. This will enable fulfilment of a goal to have a 17 hour per day water supply in the country by 2017. He added that many projects are under way to improve water treatment, and that a contract with France's Saur – which manages the AWSC – is in negotiations to be extended to 2013.

### World Economic Forum notes infrastructure needs

Participants in the World Economic Forum on East Asia in Jakarta recently heard that the cost of building power plants, transportation hubs, telecom facilities, water systems and other infrastructure across Asia will exceed \$8 trillion over the next ten years. The region has enough money in various types of funds to fund the infrastructure upgrades, but bottlenecks threaten to hold back the projects, the Forum was told. These obstacles

include regulatory complexity, land use and the failure to funnel those funds into long-duration financial instruments. Some countries have not done as well because they do not know how to tender big projects, according to one speaker, John Rice, the vice-chairman of GE, Hong Kong SAR. 'There's a lot of money around the world interested in investing in infrastructure,' he said. 'Governments have the responsibility to create a level playing field and establish rules that are consistent and allow you to look forward a couple of decades.'

### EC refers Spanish directive breaches to Court of Justice

The European Commission (EC) is referring Spain to the EU Court of Justice for breaching two pieces of EU environmental legislation. In the first case, Spain is charged with failing to ensure that wastewater from agglomerations with more than 10,000 inhabitants that discharge into sensitive areas is properly treated under the Urban Wastewater Treatment Directive. In the second case, Spain has failed to submit its plans for managing

river basins to the Commission, which were due to be adopted by 22 December 2009 at the latest. Spain still has at least 39 towns of 10,000 inhabitants failing the UWWTD, and the EC notes that 13 years after the deadline its 'overall compliance is still poor'. In addition, the country has only adopted one out of 25 management plans for its river districts as required by the Water Framework Directive, a year and a half after the deadline.

### African Development Bank grant for Zimbabwe

The African Development Bank and the Zimbabwean government have signed a \$30 million grant agreement to support the country's urgent water supply and sanitation rehabilitation project (UWSSRP). The project is financed from the Zimbabwe multi-donor trust fund (known as the Zim-Fund). Once implemented, the project will improve the state of water and sanitation infrastructure in Harare, Masvingo, Mutare, Chegutu, Kwekwe and Chitungwiza, and benefit over 4.2 million people in these cities.

### Go-ahead for Dushanbe project

The World Bank has approved \$16 million in funding for the second Dushanbe water supply project in Tajikistan. The project aims to support the government of Tajikistan's efforts to improve water utility performance and water supply services in selected areas of the country's capital, Dushanbe.

### Ghana announces public intention

Ghana announced that management of its urban sector water systems is to revert to the publicly-owned Ghana Water Company, as a five-year contract with Aqua Vitens Rand draws to its conclusion.

### KBR wins Adelaide water contract

KBR has announced that it has been awarded a five-year project management and procurement (PMP) contract by SA Water to jointly manage the delivery of the metropolitan capital works programme for Adelaide, South Australia. The contract is one of the largest government water contracts for project management services to the water industry awarded in South Australia, and the final value will depend on the size of the SA Water capital plan. KBR will provide project planning, project management, procurement and construction management for projects ranging from \$500,000 to \$11 million. SA Water is wholly owned by the government of South Australia and delivers water and wastewater services to almost 1.5 million people across the state.

### Water recommendations for New Zealand

New Zealand's Land and Water Forum has made recommendations to the country's government about standards and limits for water quality and quantity, water allocation, new infrastructure and urban water service issues. Almost \$265 million of funding has been earmarked for cleaning up waterways and \$35 million set aside over five years to support irrigation infrastructure.

### Niger cities supply boost

The World Bank is lending \$90 million to Niger, enabling 500,000 people in Niamey and 23 other cities and secondary urban centres to gain direct access to piped water through the expansion of water production, storage and distribution capacities, and the installation of household water connections and public standpipes. The construction of thousands of wastewater facilities will also provide improved sanitation services to 295,000 people, including 60,000 students in schools.

# Greek budget crisis reforms impact smaller water operators

**With the Greek government's latest round of reforms due to be voted on as *WUMI* went to press, evidence is emerging of the extent to which the country's budget crisis is hitting smaller water operators that together serve more than five million people – almost half the country's population.**

Attention is focused in particular on EYDAP and EYATH, the water companies of Athens and Thessaloniki, and the future of these under the Greek government's programme of privatisations. In the meantime, other water operators across the country have seen government support cut just as customer bill payment times have increased markedly, according to a sector expert.

Water and wastewater services to much of the Greek population are provided by municipality-owned companies – DEYA. According to Dr Nikolaos Safarikas, an economist and General Director of DEYA Serras, plans announced last year to reform DEYA (see *WUMI*, June 2010, p6-7) have been carried through. Implementation of the Kallikrates plan for local government has led to a reduction of the number of DEYA from 227, serving around 4.3 million people, to 142, serving around 5.2 million people.

Government grants to water supply enterprises were cut by 37% in 2010, says Safarikas, and he believes that under the current economic situation there will not be further grants. 'As far as the grants given by the state are concerned, we estimate that they are not going to be given again and DEYA will have to assure the necessary funds through the shrinking of [operating] expenses and also through the restructuring of the way the enterprises function,' he comments.

Safarikas is just completing an assessment of customer bill payment times for a selection of DEYA. According to Safarikas, this work reveals an increase in the average collection time from around 189 days in 2008, to around 240 days in 2009, to around 258 days in 2010. 'The problems are the same for the two large companies which are quoted on the stock market,' he comments.

Safarikas continues: 'As a result of the above, there is now a lack of cash fluidity for the water supply companies, which becomes obvious in most DEYA and particularly in small enterprises, which now face cash fluidity issues.'

Given these concerns, Safarikas says that the advice to DEYA is that they need to reduce their costs and address their pricing. 'DEYA should keep on reducing the functional (operating) cost and try to rationalise their pricing policy,' he comments.

According to Safarikas, wage costs represented around 54% of total operating costs in 2009, with data from around 70 DEYA indicating this was around 49% in 2010. 'Despite the reduction of salaries during 2010, which came to approximately 15%, costs continue to remain high due to the great number of personnel that still works today for DEYA,' he says. He explains that the 2010 data show a ratio of one worker per 660 residents.

According to Safarikas, the reorganisation of the DEYA has been hindered in part by the fact that in some cases DEYA have had to take on an expanded area and that this process was not fully supported by the legislation that has been put in place. 'Many DEYA haven't yet completed the procedure of the expansion of their administrative boundaries because no time limits were put for that matter,' he says. He adds that there were also delays in mergers because of a lack of clarity on the procedures to be followed. 'Nevertheless, we [anticipate] that the large enterprises will complete the expansion procedure by the end of this year, and next year they will function as expanded DEYA,' says Safarikas.

Safarikas believes that the larger DEYA are best placed to be able to cope with the decline in central government support, but that even for these there must be a willingness to deal with costs and pricing and to offer high quality services. Regarding small municipalities and small DEYA in particular, he comments: 'We believe that the consequences for the enterprises that won't react will be the suspension of their function over time and the incorporation of the activity of the water supply field in the municipalities.'

Ultimately Safarikas sees a need for rationalisation in the sector: 'In our opinion, a new institutional frame is necessary in which the enlargement of the enterprises will be prioritized, at first at the level of prefecture, and in a second stage at the level of one enterprise in every region, so that they will be capable of coping with the demands of the time.'

**Keith Hayward**

# Prospects for IDB's water sector support in Latin America

The Inter-American Development Bank currently supports the water sector in Latin America and the Caribbean to the tune of around a billion dollars a year. The bank is getting a substantial increase in its capital, at a time when a major five-year initiative focused on the water sector has reached its scheduled end. **KEITH HAYWARD** spoke with **JORGE DUCCI**, senior economist with the bank's Water and Sanitation Division, about plans being drawn up for the next five years.

**T**he last five years have seen something of a transformation in the involvement of the Inter-American Development Bank in the water sector of Latin America. Thanks to the bank's Water Initiative, which was launched in 2007 and ran to this year, there has been a marked increase in activity in the sector. 'Through that we were able to expand very significantly the lending we were doing to the sector in Latin America,' comments Jorge Ducci, senior economist with the bank's Water and Sanitation Division. 'We went from say \$200-300 million a year to levels around a billion dollars.'

This progress was made through four programmes that formed the initiative, and the headline figures associated with these provide evidence of success. The 100 Cities Program aimed to catalyse investment financing and technical assistance to cities of more than 50,000 people, and succeeded in reaching 146 cities. The Water Defenders programme aimed to provide technical assistance and financing to protect 20 priority micro-watersheds, but covered 31 watersheds. Alongside this, the Efficient and Transparent Utilities programme aimed to finance the strengthening of management of water utilities and reached 90 utilities, and the 3000 Rural Communities programme provided support to 2600 communities.

This said, there remains a great deal to do in the region. Many countries have reached the basic UN Millennium Development Goal for access to safe water supplies, while generally they are well behind regarding sanitation. Part of the challenge, says Ducci, is to make sure specific targets are in place that can act as a focus for securing action and investment. 'The definitions that the United Nations put for the Millennium Development Goals regarding service quality are very low,' says Ducci, giving the example that having access to a safe water supply can mean walking up to 500m to obtain water. 'Of course, in Latin America that is not the standard – the standard is much higher. So



IDB-supported work on the water and wastewater system in Managua, the capital of Nicaragua, in 2008. Credit: IDB.

we are currently moving into the idea of going to universal service provision, in the sense that we don't only look at connections or people connected to the systems, but rather making sure that the systems actually work, that they are providing the water, the water is of good quality, and that these systems are sustainable. We need to think in those terms in preparing what the new targets will be.'

## Problems with progress

In looking at how further progress can be made in the region, Ducci sees three key problems. 'The first key area is political priority. In spite of what is being said, or the agreements that have been written, or whatever else the politicians say, in many, many countries there is really no priority for the water sector,' he says. This can mean that no-one is really in charge or, if they are in charge on paper, they do not or cannot take responsibility.

The second problem is governance. 'Even if you have the relative interest in dealing with these problems, the institu-

tions are not really set up in the right way to be able to make good decisions and proceed in this area,' says Ducci, while the third problem area is, he says, the water and sanitation companies themselves.

Having said this, Ducci does see positive examples in the region. In terms of country-wide approaches, he points unsurprisingly to the private sector-based example of Chile, but notes that this is often dismissed as a particular case that does not provide a model for other settings. But he also points to Colombia. 'They also made major reforms in the mid-90s and they have been steadily pushing in having good regulations, and improving the law and giving financial support to the sector,' he says. Alongside this, he refers to a number of individual companies in the region, such as those in Medellin and Bogota in Colombia, Monterrey in Mexico, and Sao Paulo and Minas Gerais in Brazil.

As IDB looks to continue its water sector activity in Latin America, Ducci explains the shift in approach that has taken place. 'We had a very bad experience in the 90s, trying

to push for private sector models throughout the region. Then, if they didn't go with the private sector, we wouldn't get into the country, and that simply didn't work.'

Now, though, he says the bank basically has to deal with public state-owned water companies and do the best possible to try to improve efficiency. 'If they want to improve, say, non-revenue water, or improve their commercial systems, and that's it, we will go with that; we won't push for anything else,' says Ducci.

'The implicit policy is in those countries where we see an opportunity, a sort of a window, because of political reasons or because there is some person there in charge who understands the subject, we will go and provide all the support we can,' Ducci continues. This may then provide an opportunity to deal with wider issues, for example, good governance in the decision making process. He cites the Bahamas, Trinidad, Panama and Peru as examples of where the bank is working or hopes to work in this way. But he also notes the limitations there can be. 'We recognise that unless there is a real interest, political interest, behind this in the countries, there is not much we can do.'

#### Planning IDB's water sector support

Against this backdrop, Ducci anticipates the bank will continue its current level of support for the water sector, but outside of

the focused activity that the Water Initiative has provided. 'There is not a specific focus on water any more,' he comments. 'This initiative that was approved in 2007 probably will not go forward as such.'

The task now is to prepare a new programme of support for the coming years to build on the targets of the Water Initiative. 'It clearly is still a very relevant sector to the bank and we are in the process of starting to set up a, say, five year plan or programme which will review these

***'In the bank it is still very easy to defend these kinds of projects, and the Board likes this kind of water project.'***

**Jorge Ducci, IDB**

physical targets and propose new targets on the basis that we might be lending at the level of a billion dollars a year,' says Ducci. 'If we can manage to keep that billion dollars per year, then I think we more or less [will be] able to maintain the importance of the sector.'

Ducci explains that preparing this programme involves looking at how the water sector targets can be dealt with as part of the wider bank targets that have been set. As examples, he says that the bank's latest capital replenishment aims for

a certain percentage of support to go to low income countries, or to be committed to environmental and sustainability issues and climate change.

With a water sector donor meeting in mid-July, the pressure has been on to prepare what Ducci describes as a 'first draft' perspective for the water sector over the coming five years in time for that. Speaking at the end of May, he commented: 'Probably we will keep working on that from here to the end of the year.'

But despite the scheduled end to the Water Initiative, Ducci remains confident about the prospects for the water sector as far as the bank is concerned. This is both because of the budget and staffing levels that are now supported, and because of the level of contact that has been built up in the countries of the region to pursue opportunities which, he says, are 'more or less demand driven'. 'In the bank it is still very easy to defend these kinds of projects, and the Board likes this kind of water project,' Ducci adds.

So is it the case that the Water Initiative has helped achieve this position of relative strength for the sector? 'Certainly, certainly. Very much so,' says Ducci. 'The water sector was more or less, I won't say abandoned, but if you see the statistics, they tell a very low profile in the 90s. We are clearly moved away from that, and I hope it will stay like that.' ●

## The case for reform of Australia's urban water sector

Australia's Productivity Commission has produced a draft report that lays out a series of recommendations for the restructuring of Australia's urban water sector, to tackle inefficiencies and what it sees as an 'undue reliance on water restrictions'. LIS STEDMAN provides an overview of the options suggested for the sector's structural rearrangement.

### The Productivity Commission's report on Australia's urban water sector looks at a number of basic options for reorganising the industry.

Option 1 essentially represents the traditional vertically-integrated urban water provider model, but incorporating governance improvements. The utility would be a corporatised entity, with government giving clear guidance on prioritising objectives, transparency regarding ministerial directions, boards appointed on merit, and compensation for requirements to undertake non-commercial activities.

Option 2 would involve vertically separating the bulk water supply function, and horizontally disaggregating it so that

individual sources are owned by separate legal entities. All available sources and classes of bulk water would compete on merit to fulfil existing and new demand.

This option would also promote greater innovation by bulk water service providers by including the development of innovative proposals for supply augmentation or demand management. This would also require the establishment of a single, government-owned 'retailer-distributor' responsible for a variety of tasks, including potable water distribution and transmission, meeting security of supply obligations, non-potable water supply distribution services, wastewater network services, wastewater treatment and discharge services and similarly stormwater services.

The commercial bulk water service providers would provide one or more bulk water services, such as harvesting and collection of bulk water, production of bulk water via desalination, production of recycled water products, and bulk water treatment, storage and transfer.

Local councils would be responsible for collecting stormwater and transporting it to a stormwater transmission network. The report notes with regard to this option: 'By making bulk water service providers compete on their merits to satisfy existing and new demand for bulk water, the true cost-competitiveness of alternative bulk water supply sources will be made explicit.'

Option 3 extends option 2 by establishing competition for wastewater treatment and

discharge services, though the report observes that the opportunity for achieving further competition-related efficiency gains is balanced by additional transaction costs and scale and scope impacts.

Wastewater treatment services would be purchased via bilateral contracts with service providers. Existing wastewater treatment assets would be horizontally disaggregated and individual treatment plants would be owned by separate, independent legal entities. Investors would also be able to build new facilities and compete with incumbents. Wastewater network services would continue to be provided by the integrated utility.

Option 4 would involve horizontal separation of retail-distribution, added to the arrangements for supply of bulk water services, wastewater treatment services and stormwater collection services envisaged in option 3.

This option would horizontally separate the monopoly retailer-distributor to create multiple geographic monopolies, similar to existing reforms in Melbourne and south-east Queensland. This option, the report says, would further increase contestability and introduce yardstick competition at the retail-distribution level.

Option 5 would create full, decentralised competition as already exists in the nation's electricity and gas industries. However, this appears to be the least favoured and likely approach, with the report warning that 'the success of competitive, decentralised markets in other infrastructure industries does not imply that the same outcomes can or would be achieved in the urban water context'.

'In addition, there might be additional costs or risks associated with establishing these arrangements that are unique to the urban water sector. The absence of any precedent of urban water markets anywhere in the world compounds the risk and uncertainty associated with this option.'

Overall, the report stresses that the Commission 'does not assume that there is a case for pursuing structural reform in one or all of Australia's large urban cities', and warns that 'although structural reform provides greater scope for efficiency gains, it might also impose costs'. As existing structural arrangements for the supply of water and wastewater services vary significantly across and within jurisdictions, the Commission notes that 'the preferred approach to structural reform in Australia's large urban cities is expected to differ'. However, in general, where there is a case for reform, the report adds that it is

anticipated that 'the preferred structural arrangements will loosely resemble either option 2,3 or 4'.

### Utility aggregation

Skills shortages, inability to ensure full cost recovery, poor performance against public health and environmental obligations, inadequate infrastructure, asset maintenance and operating processes are all identified as issues at the regional level.

Regional reform options include a strong recommendation for aggregation, which the report says is expected to provide utilities with 'greater financial capacity to undertake efficient investment, and better access to skilled staff, which in turn should improve utility performance against [public health and environmental] standards'.

The existing regulatory and legislative framework is described by respondents to the inquiry as 'excessive, cumbersome and inconsistent' and in some cases an impediment to efficient service provision. The report observes: 'Submitting parties commented on the non-trivial burden that performance reporting to government agencies imposes, and the overlapping and fragmented roles and responsibilities of government agencies involved in urban water matters.'

The concerns include the upward trend of required levels of performance, increased reporting requirements (both in frequency and scope), and an 'ad hoc and inconsistent' legislative and regulatory framework in which the roles of government agencies are not clearly defined and often overlap.

Aggregated utilities are already found in Victoria and Tasmania, though the report warns against a presumption that 'bigger is better', providing a number of criteria that have already been used to determine viability such as a comprehensive cost-benefit analysis.

Specifically, the report endorses the work done by New South Wales in determining recommendations for aggregation and notes that it urges the New South Wales government 'to progress this work as soon as possible'.

As an aggregated utility would no longer be directly the responsibility of one local government council, structural options explored in the New South Wales report that are highlighted include a council-owned regional water corporation and an asset-owning county council. The report notes: 'The common, defining feature of these two models is the transfer of ownership of all water supply

and wastewater assets (and related staff), and responsibility for all water and wastewater service provision, from local councils to the aggregated utility.'

Each option's risks, impacts and benefits for both the large urban and regional sectors are extensively discussed within the body of the report. Whatever options may be chosen, the report makes clear that the existing situation has had major impacts on the costs to consumers and the community.

It notes that 'nationally, evidence from a number of sources suggests that water restrictions are likely to have cost in excess of a billion dollars per year from the lost value of consumption alone'.

Based on modelling for Melbourne and Perth, inefficient supply augmentation (basically interpreted as deciding on expensive options such as desalination while less-expensive alternatives still exist) could cost consumers and the community of these cities between AUD\$3.1 billion (\$3.3 billion) and AUD\$4.2 billion (\$4.5 billion) over 20 years, depending on modelling assumptions.

### Draft report recommendations include:

- Urban water sector regulators should rigorously apply the six principles of good regulatory practice spelt out by the Regulation Task Force in 2006
- Price regulation is not an appropriate mechanism to deal with affordability concerns or full cost recovery
- State and Territory governments should adopt policy settings that allow the costs and benefits of all supply augmentation options to be considered
- Bans on particular augmentation options should be removed including on rural-urban trade and planned potable reuse
- Developer charges should better reflect the costs of service provision for new developments
- Metering should be introduced in all new single and multi-unit dwellings and the case for retrofitting should be assessed
- Utilities should charge tenants directly for all water charges
- Inclining block tariffs lead to inefficiencies and inequalities and should be removed in favour of a flat volumetric retail pricing structure
- There is scope for efficiency by moving to location-specific pricing
- Consumers should be given more choice in urban water tariff offerings
- The use of water restrictions should be limited to times of emergency or where restrictions are needed to avoid running out of water. ●

# Saur's success in Saudi Arabia

French water and wastewater group Saur has extended its presence in Saudi Arabia, winning the contract to manage water and wastewater activities in the new industrial city of Jubail. LIS STEDMAN speaks to **CHRISTOPHE GUILLET** about the project's requirements and Saur's expansion in the region.

**F**rench water group Saur has signed an agreement with Saudi Arabian water and electricity utility Marafiq for the operation of water services for the new city of Jubail.

Saur's Head of International Development, Christophe Guillet, who is in charge of the Jubail contract, notes that the client is Saudi Arabia's National Water Company (NWC), which is a public entity owned by the Ministry of Water and Electricity.

'During the past few years, the water sector, particularly in the big towns, transferred facilities to the National Water Company, and afterwards it contracted international utilities to operate the business units, for example, of Riyadh, Jeddah and Makkah-Taif,' Mr Guillet explains.

In 2010, Saur won one of these management contracts – the prestigious Makkah-Taif contract. However, the new project is something completely different, and indeed for a different client – Marafiq is in charge of the concession for services to the country's two new industrial cities, Jubail and Yanbu, delivered by the Royal Commission.

Saur's involvement is with the Jubail contract – the joint venture created is a specialized business catering for the operational requirements of Jubail Industrial City. The comprehensive contract covers all of the operational activities for both water and wastewater, and seawater cooling.

Mr Guillet notes that in the Makkah-Taif contract the company is 'more in a supervisory role – there is the National Water Company and subcontractors who are in charge of operational amendments. We are inside the business unit of the NWC and our job essentially is to undertake the supervision of the subcontractors. There will be a different objective with Marafiq; for the joint venture all of the operational amendments will be inside the JV and they will be done directly by us.'

Initially, a permanent staff of Saur employees, including the general manager, will be transferred to the JV. Eventually there will be a team of eight managers, Mr Guillet explains – a mix of Marafiq and Saur employees. 'The target for us is to train the employees of the JV and transfer knowhow, operational tools and procedures through the creation of a training centre.'

One objective of the programme is to

improve the number of local staff involved in the contract. Saudi Arabia's unemployment rate is high, Mr Guillet explains, and the country is extremely concerned about increasing the percentage of Saudi employees. "'Saudisation' (the national policy of Saudi Arabia to encourage employment of Saudi nationals in the private sector) is clearly a concern for the public and private companies in the country, and Marafiq asked us to take this into account when creating the training procedures,' he says.

The company has been involved in the Kingdom for five to six years, and has undertaken some 'quick win' contracts auditing for the Ministry of Water and Electricity. These were followed by the first major win, the Makkah-Taif management contract, and now the Jubail operations and management (O&M) contract and its

***'It is clear that there are problems regarding unemployment and that all companies will have to try to train and give a good level of knowledge to Saudi employees.'***  
**Christophe Guillet, Saur**

knowledge transfer imperative.

'The knowledge transfer and training elements of the contract are a major challenge for the future, especially with the new aim of Saudisation,' Mr Guillet notes. 'It is clear that there are problems regarding unemployment and that all companies will have to try to train and give a good level of knowledge to Saudi employees. It is a challenging task.'

## Future development

In terms of the company's strategy in the country and region, Mr Guillet notes: 'Over the past few years we have invested a great deal in developing the business in Saudi Arabia, which is our priority in the region.'

The company has a significant number of employees in the country, now including a large number of managers for the Makkah-Taif contract and 30 overall with Marafiq, including eight dedicated to the Jubail project. 'It is clear that the objective at the moment is to manage this project in Saudi



Christophe Guillet

Arabia, and we will probably try to expand our activities. We are looking at projects in Abu Dhabi and Qatar at the moment, though we don't have concrete plans. Saudi Arabia is our priority and the second stage will be to expand.'

He notes that the GCC (Gulf Cooperation Council) countries are interesting markets for the water business. 'We hope we will have opportunities in these countries,' he adds. 'The region's opportunities generally focus round O&M or all-management contracts, and I think the future opportunities will focus round these types of projects rather than BOTs (build-own-operate).'

Mr Guillet observes: 'In the past, Saur was present in every part of the world – Asia, Africa, Latin America. We changed our shareholders twice – we have been sold twice – and now we have a very sustainable structure of shareholders and we are able to expand our activities abroad.'

The group's activities are now focused on three regions, he explains: 'Spain is a very important market for us, as is Poland, where the first private utility is a subsidiary of Saur, SNG in Gdansk. We are trying to develop some projects in the area around Poland as well. The third development region is Saudi Arabia. In terms of business development we want to focus our efforts on these three markets.'

One other aim is to re-establish the group in Africa, where Saur was the first private utility with subsidiaries in Senegal, Ivory Coast, Mali, Central Africa, Mozambique, Zambia, and Conakry, Guinea. Mr Guillet notes: 'It is clear we want to develop our activities abroad and we have some targets. We try to be reasonable – we think it is more efficient to have sustainable development and not respond to all the opportunities around the world.' ●

# Implementing new regulatory mechanisms in Czech Republic contracts to meet EU requirements

In the Czech Republic regulatory mechanisms were created for water supply and sewerage operating contracts in order to fulfil the conditions for grants from the Operational Programme Environment, run by European Regional Development Fund (ERDF) and the Cohesion Fund (CF). In this article, **PAVEL VÁLEK, KATERINA KOHUŠOVÁ, MARTIN SALAJ, MARTIN KELBL, TIMOTHY YOUNG** and **MIROSLAV VYKYDAL** outline the aims behind the creation of these mechanisms, and summarise the practical experience of implementing them.

**The Czech Republic has more than 2000 registered water supply and sewerage (W+S) operators, the 50 largest of which cover 95% of the market. Nearly 75% of drinking water and wastewater is provided under the so-called 'separate' operating model. This model is based on an operating contract concluded with an operator, where the infrastructure is owned by the public sector and the operator is usually a company with a private sector involvement.**

The existing operating contracts have been criticized by the European Commission (EC) since 2004 in the context of grant applications for W+S projects. The EC's concerns began with W+S projects financed from the Cohesion Fund in the years 2004–6 (CF 2004–6), where grant funding was first linked to changes in the operating contracts. The EC required that contracts be re-tendered or modified 'in order better to reflect international best practice', because of concerns about non-transparent awarding of operating contracts, their excessively long duration (15–30 years), and the absence of performance monitoring and any incentives to improve standards. The EC also required that water tariffs provide for the generation of adequate funds for asset replacement and promote efficiency of operations, in place of the existing 'cost plus' approach. Experience with implementation of these requirements resulted in the search for a more universal approach to avoid the need for negotiations on each individual contract with the EC.

Operational Programme Environment (OPE) is a €5.8 billion (\$8.4 billion) programme mostly funded by the European Regional Development Fund (ERDF) and the Cohesion Fund (CF), which has the aims of supporting sustainable development, long-term competitiveness and employment in the

Czech regions.

OPE provides substantial grant support especially to meet the requirements of Council Directive 91/271/EEC (concerning urban wastewater treatment) in the period 2007–13, covering both construction and renovation of W+S infrastructure. The Programme Document for OPE was approved in December 2007, following arduous negotiations between the EC and Czech Republic concerning grant conditions for W+S projects. Basic principles from best international practice in the field of PPPs (public-private partnerships) for W+S are laid down in Annex 7 of the OPE Programme Document, together with the supporting 'Conditions of Acceptability'. The experience with modifications of contracts for CF 2004–6 projects was

taken into account in drafting Annex 7, which represents a tougher approach to the regulation of contracts so as to meet the EC's concerns.

The so-called 'separate' operational model (where an operator with private capital operates the assets of the municipal owner under contract) represents the majority (51%) of projects submitted for grant funding from OPE. The other operational models are: 'municipality owner-operator' – where the municipality takes full responsibility for operating its own W+S assets; 'in-house' – where the company that operates the assets (under contract) is established by the municipality that is also the 100% owner of the company; and 'asset-owning company' – where the operator of the assets is also their owner, but the owner is a company

## Executive summary

The Operational Programme Environment in the Czech Republic, funded by the European Regional Development Fund (ERDF) and the Cohesion Fund (CF), aims to support environmental protection, long-term competitiveness and increase of employment in the Czech regions as a basic principle of sustainable development, including the improvement of water and wastewater infrastructure and services.

The European Commission criticized existing water and sewerage operating contracts in the Czech Republic, most of which follow a 'separate' model, where the infrastructure is owned by the public sector and the operator is a company with private sector involvement. Problems highlighted were a lack of transparency in the awarding of contracts, the long duration of the contracts (15–30 years), and a lack of performance monitoring to improve standards of service. Therefore, before funding was given, regulatory mechanisms for water supply and sewerage contracts have had to be put in place, for both existing and new contracts.

This article looks at the main requirements of Operational Programme Environment, as well as the experience of implementing these regulations. Approved in 2007, the Programme Document lays out a tougher approach to the regulation of contracts, which brings in best practice principles from international practice in the field of public-private partnerships. The duration of contracts has been shortened, and all contracts now have to include a standardised system for monitoring operator performance, using performance indicators and minimum performance standards. Information relating to all aspects of the operation and maintenance of assets and other contractual obligations have to be defined, and penalties are included in the contract for non-compliance with each performance standard and other contractual obligations. Tariff prices are set using financial tools created to support the Programme Document, the overall aim of which is to cap operator revenue.

The experiences of the implementation of these regulations show that overall, operational expenditures decreased and rental income from the operating companies increased, allowing more funds to be made available for asset management. However, there is a reluctance from asset owners to change their relationship with operators due to fears of increased costs or administrative burden, and this approach does not cover the whole of the water and wastewater sector in the Czech Republic. So one of the challenges for the future is to incorporate the best practices and regulatory tools from the programme into regulation of the sector as a whole.



Wastewater treatment plant (Lednice, Czech Republic). Credit: Mott MacDonald, Czech Republic.

indices. Other pass-through of costs into tariffs is acceptable only where the operator cannot influence these, such as in the case of the unit cost of water bought in bulk from another operator. Tariffs that are ‘fixed’ in this way are applied in cycles lasting at least five years, with a process of periodic review between price control periods leading to the revision of tariffs following predefined rules.

Ex-ante tariffs must be calculated using a standard financial model that incorporates all elements making up the operator’s revenue. The completed financial model (in the form of a spreadsheet) is a compulsory annex to the contract. The profit included in the financial model is calculated strictly as the return on invested capital. The minimum rent is determined based on the rule that tariffs must rise in line with the financial analysis of the project that also forms part of the grant application. Often this requirement in practice means that tariffs must rise by at least 5% above inflation each year (until an adequate level of revenue is generated). This results in increasing net revenues that must be used exclusively for the renewal or extension of the asset base. Another requirement is to share any savings between the operator and customers – if actual profit is higher than the calculated profit, this difference is split. Finally the ‘Conditions of Acceptability’ provide that the operator has to bear the risk of bad debts.

These requirements find their expression in a number of OPE guidance

rather than a municipality. The share of projects in different operational models submitted under OPE is shown in Figure 2. The main requirements in OPE are focused on projects under the ‘separate’ operational model and the ‘Conditions of Acceptability’ address the other operational models only marginally.

Annex 7 of OPE states that the duration of existing contracts must not extend beyond 2022, and if the duration extends beyond 2015, the rate of grant support is decreased. Existing contracts must be reviewed to determine whether they were awarded in accordance with the legislative requirements of the EU and Czech Republic. New contracts that do not involve any infrastructure investment by the operator may be concluded for a maximum of ten years.

All contracts must contain a standardised system for monitoring operator performance based on performance indicators (PIs) and minimum performance standards. The system enables monitoring of whether a minimum quality of service is achieved. If not, then a system of contractual penalties must be in place to incentivise operators to perform. The contract also provides the clear option to terminate the contract (by the asset owner) in the event that the standards are not met in the longer-term. PIs also inform the owner about the operation of their assets and facilitate the dialogue between owner and operator. The system must also ensure provision of information by the operator on his performance in a way that allows for enforcement, together with data for asset management by the owner.

The contract must also include clear definitions relating to asset renewal, investments, repairs, maintenance of

assets and the resolution of emergency situations and accidents, together with unequivocal contractual obligations detailing who is responsible for the financing of each requirement and under what conditions. Furthermore, the contract must properly identify the relevant assets and define the wider rights and obligations of owner and operator, including liability, insurance and performance bonds, the settlement of disputes, termination of the contract, and the process for hand-over of assets.

The tariff setting process is also subject to rules under Annex 7 of OPE. One of the key principles applied is that of a cap on operator revenue. To simplify, this means that the cost items that form much of the operators’ allowed revenue is indexed during the price control period using a set of publicly available price

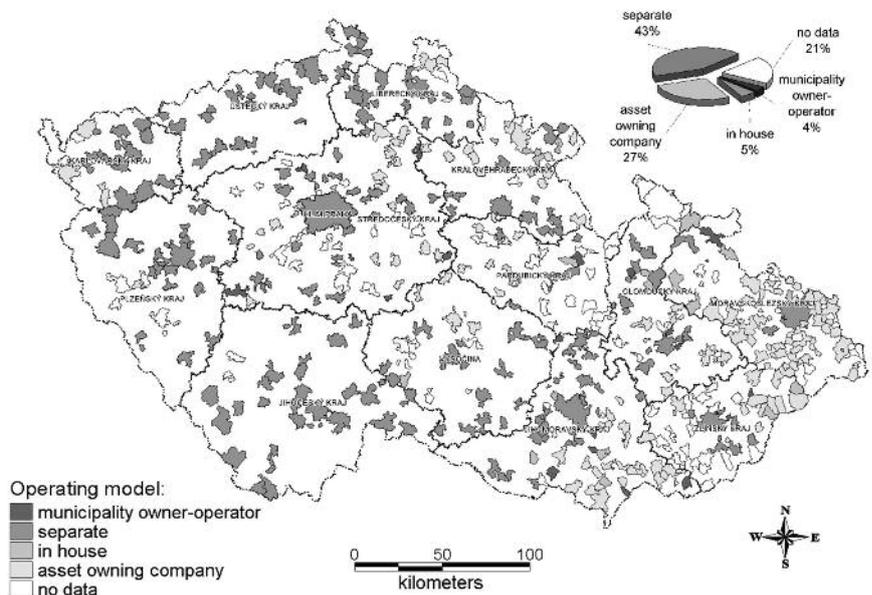
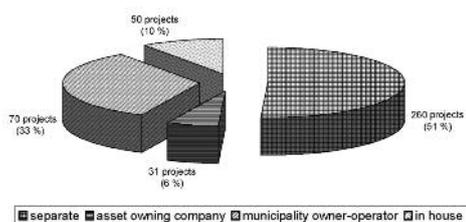


Figure 1: W+S operating models in the Czech Republic (agglomerations above 2000 PE) (data source: Mott MacDonald)



**Figure 2: Distribution of projects submitted under OPE by different operational models (data to February 2011, data source: SEF)**

documents for applicants, and their implementation in tender documents and contracts is systematically controlled by the State Environmental Fund (SEF) of the Czech Republic.

### Performance standards

A so-called Practical Performance Manual (PPM) was prepared to set the OPE requirements on performance standards (Kohušová and Salaj 2010). The approach was designed to enable even those asset owners who do not have a professional knowledge of the industry to monitor their operator's performance on the basis of clear PIs. The PIs and some of the associated standards set out in the current version of the PPM are mainly based upon established professional practice as set out in international literature (Alegre et al. 2006; Matos et al. 2003), national and European standards (including ČSN ISO 24510, 24511 and 24512), professional publications of the Czech industry association (SOVAK ČR) and legislative requirements. The PPM is regularly updated taking on board comments from stakeholders and is approved by the Ministry of the Environment of the Czech Republic (MoE) as a guidance document (the original version was approved also by the EC).

### Performance indicators

The PPM sets out a number of required and recommended PIs (16 for water supply, 15 for sewerage). The PIs are focused in three areas that the operator can influence and be responsible for. The PIs also monitor activities that have a direct impact on operations or customers. The first area covers the quality of basic services, drinking water supply and wastewater collection and treatment. PIs monitor the quality of drinking water supplied and compliance with discharge permit conditions for treated wastewater. PIs also monitor the failure of service, whether due to planned or unplanned interruptions. One PI monitors trends in drinking water losses.

The second area of PIs is basic preventive maintenance and is focused on ensuring compliance with minimum standards. These PIs are based on setting a certain standard to be met on a yearly basis as part of the preventive maintenance programme, against which actual performance is evaluated. The standard, i.e. the reference value, is set either as a specific minimum value in the PPM or by agreement between the owner and the operator as part of maintenance, cleaning and inspection plans, etc. PIs are focused on regular maintenance, inspections and cleaning of pipes or particular buildings and equipment.

The last area concerns customer service. These services include dealing with customer complaints and requests, issuing statements or opinions on planning applications, as well as the duty to inform customers about planned service interruptions.

A number of mandatory PIs are required in all contracts for OPE projects. These PIs are suitable for most operating contracts, including the smallest ones. Non-mandatory PIs may be used to extend or refine the set of PIs for larger contracts. All the PIs are defined in the PPM in contractual as well as informative versions.

The informative presentation of the PI is for the monitoring the operator's general performance and is useful in setting the reference values (the performance standards), as it usually defines the average duration of a particular situation or a ratio between the operator's performance (e.g. the length of sewer system inspected each year) to the overall condition (e.g. the total length of sewerage). The contractual forms are

used to determine penalties when the performance standards are not met.

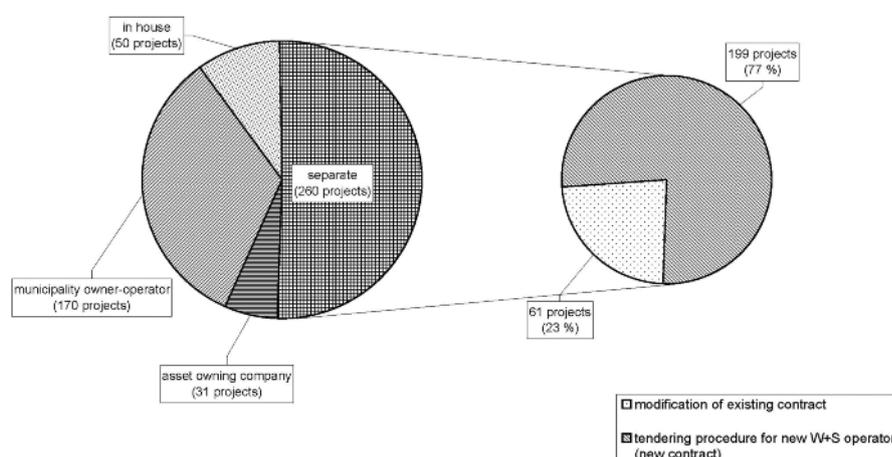
### Monitoring

A monitoring system is essential to verify the operator's performance against its contractual obligations. The PPM presents requirements for monitoring consisting of: continuous performance monitoring; provision of information in exceptional situations; and inspections by the owner.

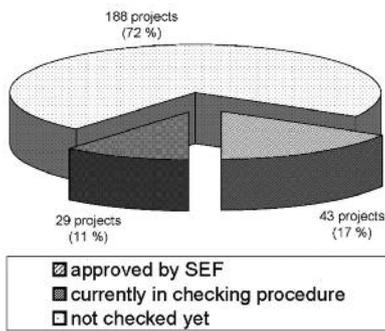
Continuous monitoring takes the form of self-monitoring by the operator with regular monitoring reports that must be submitted to the asset owner (a model report is included in the PPM). They contain various information about the operation of the assets: descriptive, technical and economic data; further details about PIs, in particular their annual evaluation; and the related quantification of contractual penalties. Penalties for failure to comply with the performance standards do not arise primarily from the initiative of the owner or customers but from the operator's self-monitoring. The operator must pay these annually to the owner (without being asked).

The operator is obliged to provide information in exceptional situations (breakdowns or emergencies caused by e.g. flooding), not only to the owner but also to customers, residents, affected municipalities and the emergency services.

A second element of monitoring is the owner's right to inspect the operator's activities, which includes the right of access to documents and facilities, the database of unplanned interruptions, as well as the contractual duty of the operator to communicate with the owner when requested to do so. These rights are



**Figure 3: Distribution of projects (in separate operating model) submitted to OPE with modification of existing contract or tender for new operator (new contract) (data to February 2011, data source: SEF).**



**Figure 4: Distribution of projects submitted to OPE by the stage of their approval by the SEF (data to February 2011, data source: SEF)**

also vital to ensure that the owner has access to the necessary operational data when the current contract is terminated or comes to an end. These rights are also needed so that the owner can check the correctness and completeness of the monitoring system.

The whole approach to monitoring builds on the compulsory data that must be provided as part of the 'selected operational data' that all operators must provide under the Water Supply and Sewage Systems Act. The system therefore does not introduce any wholly new duties for the operator, although it certainly expands their scope.

#### Contractual penalties

The PPM sets the minimum value of contractual penalty for non-compliance with each performance standard, as well as other contractual obligations and requirements related to these penalties. The system of penalties is based on contractual penalty points (CPPs). One CPP corresponds to a certain monetary value (in CZK) which depends on the operator's expected annual (ex-ante) profit. To calculate the value of the contractual penalty, the number of CPPs is multiplied by the monetary value for one CPP. This system of penalties based on CPPs has the advantage that the weight attached to non-compliance is independent of the size of the operated area. For newly-awarded contracts it is recommended that the monetary value of one CPP should be one of the evaluation criteria in the tendering procedure for the new operator. The minimum value of one CPP was originally determined to be the equivalent of €400 (\$567). But after experience with extremely small contracts where the expected annual (ex-ante) profit is less than €10,000 (\$14,500) – e.g. sewerage for 60 inhabitants – the

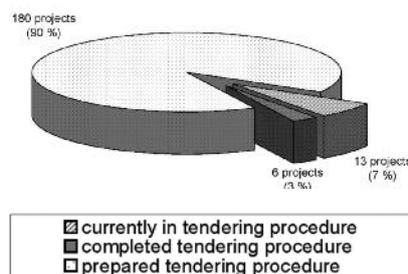
value of one CPP had to be revised.

For these smallest contracts the value of one CPP corresponds to 2–4% of annual profits. Contractual penalties should incentivise the operator but not bankrupt it. The risk of excessive penalties is greatest during the initial implementation of the system set out in the PPM, when the data available for setting the relevant performance standards is limited. As a temporary measure it may be necessary to introduce a financial cap on the maximum contractual penalties to be paid in a given year (minimum 10% of expected annual profit for existing contracts; for new contracts a financial cap should not generally be needed).

It should be noted that contractual penalties are not seen as liquidated damages and in no way affect the rights of the owner to seek damages. The owner must also have the right to terminate the contract prematurely if the performance standards are not met in the longer-term. This is indicated when the sum of contractual penalties is more than 0.5 to 1.5 times the expected annual profit of the operator over 36 months.

The PPM also includes contractual penalties for failure of the monitoring system. These take the form of both a lump sum and increases for each day of delay in submitting the annual report. For the most serious failure, e.g. deliberate distortion of the monitoring system, in addition to a contractual penalty the owner has the right to early termination of the contract. The minimum values of these contractual penalties are set in PPM in the range 5% to 50% of expected annual profits.

Operational risks should be borne by the operator even in those areas where meeting the relevant standard also depends on third parties. This approach is based on the principle of PPP projects that 'any particular risk should be borne by the party best able to manage it'. The



**Figure 5: Distribution of projects submitted to OPE by stage of tender for new operator (data to February 2011, data source: SEF)**

only exception from this rule are force majeure events (e.g. war, meteorite impact) and so-called 'liberating events' (e.g. power blackout), when the operator may be relieved from payment of contractual penalties and collection of CPPs.

#### Financial tools

##### Financial model

The MoE commissioned and published a number of financial tools in support of the requirements of Annex 7 to OPE. These take the form of a payment mechanism, which consists of contractual text (describing the mathematical relationships between elements of the tariff calculation) and spreadsheets (financial models) in Microsoft Excel that make the calculations in practice.

These models operate by first making forecasts (ex-ante) of the all items of the price calculation and comparing these with reality (ex-post). When the cost items that the operator can influence exceed the original forecast it means a loss for the operator, whilst the opposite implies savings for him, which must be shared with customers. Items that the operator cannot influence are passed through into tariffs, i.e. any loss to the operator is compensated in the following year by increasing his revenue (i.e. increasing the tariff) and savings are completely 'returned' by reducing his revenue in the following year (i.e. a tariff reduction).

The Financial Model for Water Sector Owners and Operators (FM) is used to determine all elements of the tariff calculation ex-ante. This calculation is based on the required revenue of the operator and delivered volumes, where the ratio of these elements (together with the collection rate) determines the price. The operator's required revenue consists of operating costs, rent and reasonable profit. To make a complete forecast not only costs are required, but also the development of demand, price indices and invested capital.

The quantitative calculation of reasonable profit, as required by the 'Conditions of Acceptability', is achieved in the FM by the clear definition of the terms 'invested capital' and 'return on capital'. So-called 'regulatory capital', invested by the operator, consists of up of five elements: operational assets; infrastructure assets (financed and depreciated by the operator); working capital; prepaid rent and loans provided to the owner; and expectations. Expectations represent a special element that takes into account transactions realised prior to

introduction of the FM, when an investor could put significant capital into an operating company in anticipation of future profits until the end of the contract. In the absence of an exact methodology for the calculation of profit in the past, expectations can be seen as a legitimate form of invested capital on which return must be allowed. The return on capital in the FM is expressed based on the Capital Asset Pricing Model by the weighted average cost of capital (currently set at 7% in real terms, after tax) calculated for the relevant and market (water in the Czech Republic). The identification and apportionment of risk is also very important. The most significant change to existing practice is the elimination of demand risk for operators. If sales are not the same in reality as in the original forecasts, then this difference is reconciled – either the loss to the operator is compensated or the operator ‘returns’ excess revenue to customers.

#### *Reconciliation tool*

After the FM has been set up with ex-ante values, next comes the step-by-step recording of reality ex-post. This is done in the reconciliation tool for setting water and wastewater tariffs (RT). The RT is a second application that builds on the initial forecasts in the FM. The RT reproduces the original ex-ante forecast and compares it with the actual values observed over time.

Not all deviations from the original forecast will affect tariffs in future years. Items that are under the operator’s control (e.g. overheads) are distinguished from those that are only partly so (e.g. wastewater discharge fees or the costs of emergency repairs) and those that he can hardly influence (e.g. invoiced volumes or the general inflation rate). In principle, deviations of ‘controllable’ items are not taken into account, i.e. the operator suffers a loss or keeps part of the savings as a contribution to his reasonable profit. On the other hand, the effect of ‘uncontrollable’ items on the operator’s net revenue is eliminated by increasing or decreasing future revenue. Partly controllable items are treated using mechanisms that allocate risk between the operator, owner and customers.

The process of comparing plan and reality as described above continues for the price control period, after which follows the periodic review, which ‘resets’ the FM in the middle of the contract. The periodic review offers an important

opportunity for the asset owner and customers. If the incentive mechanisms of the payment mechanism have resulted in cost savings, much of these will be transferred to the customer in the periodic review as a reduction in the cap on the operator’s revenue.

On the other hand the periodic review mitigates the risk for the operator associated with an absolute cap on revenues. The operator may argue that some cost items grew faster than expected for objective reasons outside his control

### ***An appropriate approach proved to be the setting of binding norms and subsequent consideration of deviations from these in specific cases, based on detailed justification***

within the price control period. If the owner recognises these arguments then the revenue cap may be moderated appropriately.

#### **Model contract documentation**

A set of model contract documentation that complies with OPE requirements was also gradually assembled, building on experience gained during the process of checking contracts. This contains a model contract and annexes, notably the PIs, their associated reports and the payment mechanism. The model contract allows owners in small municipalities who have little professional knowledge of the water industry to prepare a contract meeting the OPE requirements without undue costs for external advisory services. Although this documentation is publicly available from the SEF it is not mandatory for OPE.

#### **The requirements in practice**

Since 2009 these requirements have been implemented in existing and new contracts. The total number of projects submitted to OPE in the ‘separate’ operational model (260) is dominated by projects with a tender for a new operator and hence a new contract (77%), with modification of the existing contract in 23% of cases (Figure 3).

Tens of contracts in small municipalities and in the largest cities are currently being modified. For example, the contracts for Brno and Pilsen (the second and fourth largest cities in the country) have been modified successfully. During the

checking process for modification of contracts there is a dialogue between the SEF and beneficiaries, usually with several rounds until the contract is finally approved. There are also numerous ongoing tenders for the operation of new water infrastructure in towns in the range of 2000–10,000 inhabitants that have been checked and approved (Figure 4). For six projects a new operator has already been chosen and other tenders are ongoing (Figure 5).

There have also been two significant tenders for regions with approximately 40,000 inhabitants each and for both of these bids from the largest operators in the country were submitted.

#### *Experience with implementation of regulatory requirements into operating contracts*

Table 1 presents a summary of three tenders for a new operator as case studies that were tendered according to OPE requirements.

For the case study ‘Municipality’ there was a significant reduction in operational expenditure (opex) (from €180,000 (\$260,000) before the tender to €176,000 (\$254,000) after) in the winning bid. Rental income for the municipality has increased (from €48,000 (\$69,000) before to €64,000 (\$92,000) after, and in 2013 – when the contract expires – the value will be €90,000 (\$130,000)), so the funds available for asset management have been significantly increased. This experience demonstrates that operating companies are interested in bidding for the operation of assets for such a small contract despite the fact that the OPE regulatory tools are applied.

For the case study ‘Conurbation’ the asset owner experienced a considerable strengthening in its contractual position, as well as a reduction in opex and a saving of €720,000 (\$1 million) over the contract lifetime. In addition, the owner has the benefit of a ‘contractual’ investment by the operator in infrastructure assets.

For the case study ‘Small part of town’ (where wastewater is delivered to a small local wastewater treatment plant) there was a significant increase in tariffs for sewerage compared with the tariff in the rest of the town (€1.39/m<sup>3</sup> (\$2/m<sup>3</sup>)) despite the fact that requirements of OPE were kept to a minimum.

In general, use of the OPE financial regulatory tools leads to a reduction in ex-ante profit as a share of opex, rent and depreciation from approximately 10% to 5–6%. On the other hand, it entails

**Table 1: Summary of case studies**

	<b>Municipality</b>	<b>Small part of town</b>	<b>Conurbation</b>
<b>Population</b>	3500	208	46200
<b>Infrastructure</b>	W+S, including wastewater treatment	Sewerage, including wastewater treatment	W+S, including wastewater treatment and drinking water treatment plant
<b>Length of contract</b>	Three years	Ten years	Ten years
<b>Number of bids</b>	5	1	2
<b>Expected revenue of the concessionaire for the duration of the contract</b>	€800,000 (\$1.2 million)	€100,000 (\$144,000)	€104.4 million (\$150.5 million)
<b>New tariff</b>	€2.05/m <sup>3</sup> (\$3/m <sup>3</sup> )	€5.4/m <sup>3</sup> (\$7.8m <sup>3</sup> )	€2.57/m <sup>3</sup> (\$3.7m <sup>3</sup> )
<b>Change in tariff</b>	+ 5%	+ 288%	- 3.6%

a redistribution in the current risk allocation. Furthermore ex-post profitability will in general differ from the ex-ante forecast. It is therefore impossible to judge the impact on profits unambiguously. There is however a clear benefit in terms of reduced opex, which delivers better value for money to owners. Furthermore, the OPE requirements lead to regular increases in rent, the key source of funds for asset renewal. These increases are essential if assets are to be self-financing.

## Conclusions

The modification of contracts for the CF 2004–6 projects took a number of years due to the absence of guidance and the lack of any consolidated requirements at first. The first draft contract modifications showed widely differing (but mostly poor) quality. Especially given the number of projects submitted to OPE, it was clear that nonbinding general recommendations were not feasible. This approach would have led to an extreme increase in the time and cost needed for small asset owners to comply, with a real possibility of failure. An appropriate approach proved to be the setting of binding norms and subsequent consideration of deviations from these in specific cases, based on a detailed justification.

As a result of the gradual creation and updating of guidance documents the time needed to prepare tender documentation has been shortened from several months to weeks (excluding the so-called ‘concession project’ that is required by law for larger contracts, whose preparation takes longer). Thus although many projects do not have their tender documentation or contract prepared, on current trends it is realistic to assume early tenders or modification of existing contracts according to the OPE requirements, with subsequent

grant funding provided for the vast majority of projects submitted.

Although the OPE requirements led to fears of increased tariffs, the experience from completed tenders demonstrates that it is possible to reduce these. The exception to this trend are very small contracts where the final tariffs can be significantly higher than is common, despite applying the latest guidance. This is mainly due to the real economic costs of services in these small, marginal areas. The only solution is to have larger areas as the basis for tariff calculations, by consolidation of operations and ownership (in line with national policy).

Although the changes driven by the OPE requirements predominantly improve the contractual status of the owner, in many cases asset owners have not seen these changes in a positive light. There is a reluctance to change the existing relationships with operators, for instance because of fears of increased costs or administrative burden. Asset owners therefore sometimes try to modify even the minimum requirements of OPE to the operator’s benefit, including during the tender itself. These effects can be eliminated by well-established control mechanisms within OPE, unfortunately however sometimes at the price of a lengthy checking process for draft tender documentation.

The main disadvantage of the system presented here is that it is a regulatory approach that is only applied in the context of OPE. The approach is not applied to the whole water and wastewater sector in the Czech Republic and so can at best be called ‘quasi-regulation’. It is therefore a challenge to incorporate best practices and regulatory tools from OPE into the regulation of the sector as a whole. Some asset owners are already preparing tenders in accordance with the

OPE principles using the OPE guidance documents, although they are not themselves applicants for grant funding. ●

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# Information database development key to Mexico's utility improvement

There have been ongoing attempts to utilise performance indicators in the improvement of drinking water and sanitation services in Mexico, but a lack of co-operation between various agencies means a comprehensive database of information, which can be then used to improve performance, is still lacking. In this article, **RAMÓN PIÑA** and **VÍCTOR BOURGUETT** outline a proposed method for the collection, analysis and publication of information relating to billing and revenue of services, which can be used as a benchmarking approach to incentivise service improvement in the country.

**Although several government and private institutions related to the water sector in Mexico regularly publish performance indicators of water supply and wastewater utilities, one of the main problems in utilising these indicators has been the lack of an inter-agency process for the planning and development of an information system, and principally for the billing and payment of water services, which has the participation of water users.**

Mexico's National Water Commission (CONAGUA) has since the early 1990s published a yearly document, 'The current situation of the drinking water and sewerage subsector', which includes a statistical annex of performance indicators of a sample of national utilities. This has allowed for the partial assessment of their efficiencies. However, this still presents inconsistencies and deficiencies that hinder the consolidation of an indicators system that could guide and encourage utilities showing improved performances, and encourage the stragglers to achieve better management.

Likewise, the Mexican Institute of Water Technology (IMTA) in the mid 1990s developed the Water Utilities Efficiency Assessment System. However, although it contributed ideas for data processing and for calculation of performance indicators, which served as basis for developing similar systems in other countries (e.g. 'Sigma', promoted by the International Water Association (IWA)) (Cabrera, 2001), nationally it did not achieve consolidation and improvement. Similarly, in 2005 the Institute began developing another system, the Performance Indicators Monitoring Program of Water Supply Utilities (PIGOO), which publishes some results on its website, but also has omissions and inconsistencies, just like

## Executive summary

Despite a range of attempts to use performance indicators to show the performance of water and wastewater services in Mexico, problems around co-operation between different agencies and a lack of a thorough performance overview have limited their use in encouraging service improvement.

In an effort to improve water and sanitation services in Mexico, a range of public and private institutions have begun to collate and publish relevant information. The Gonzalo Río Arronte Foundation (FGRA) is one of those aiming to encourage the sustainable development of water and wastewater utilities through developing the use of performance indicators. This article outlines a proposal made to FGRA by the Mexican Institute of Water Technology (IMTA) for the planning, organizing and development of a performance indicators system.

The proposed method for service improvement has four stages. First is the defining of the major stakeholders and the current situation of data management within a selected range of utilities. Principal performance indicators can then be identified, and processes and procedures for information collection and management established. Second is the design and development of the information system, where initial information for the proposed indicators is gathered and used to develop an online database system. Third is the implementation of this system, training of stakeholders, and the publication of the project's results after a six month pilot period. The fourth stage is the ongoing development of the project, with rewards for the best results and incentives for continued contribution.

It is expected that the participation of key stakeholders and the information collected from the sample of utilities will then encourage participation from other utilities, which will create an information system of reliable data that can then be used for billing and payment processes, and evaluation of performance. It is thought that this will allow utilities to realize an efficiency cost recovery plan, improving services to users.

CONAGUA's publication.

Recently, the National Statistics, Geography and Informatics Institute (INEGI), as well as the National Association of Water and Sanitation Companies (ANEAS) and the State Water Commissions of Guanajuato, Coahuila and Sonora, and other public and private institutions interested in successfully

fulfilling their particular mission of improving water and sanitation services, have started, by their own means, the integration and publication of this type of information.

The Gonzalo Río Arronte Foundation (FGRA) is a private assistance institution that, through its Water Committee, has taken the initiative to support and

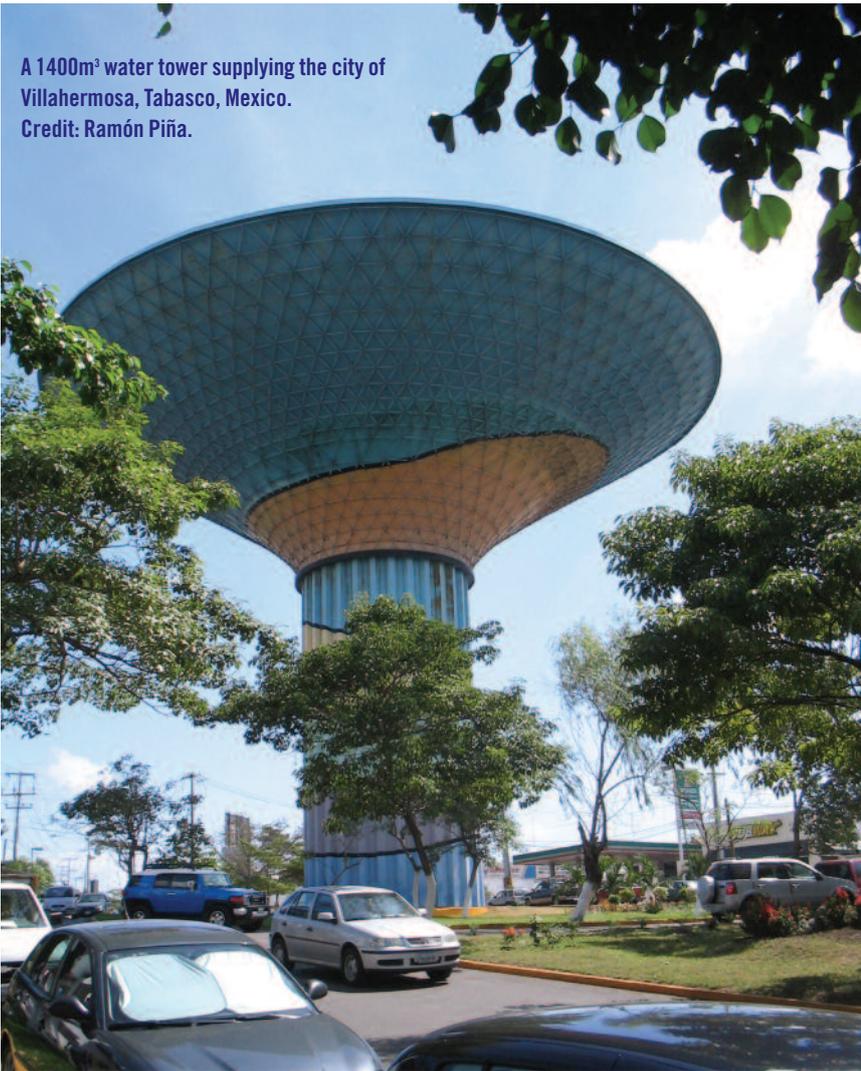
Ramón Piña



Victor Bourguett



A 1400m<sup>3</sup> water tower supplying the city of Villahermosa, Tabasco, Mexico.  
Credit: Ramón Piña.



promote actions to encourage sustainable development of the water supply and wastewater utilities (known as OOAPAS) and other large consumers of this resource in the country. Therefore, FGRA is interested in promoting the development of an organized process for the integration, evaluation and dissemination of performance indicators for billing and revenues of Mexican water services, seeking to avoid past mistakes by only creating another set of disjointed indicators without inter-institutional planning.

This article outlines the proposal that has been made to FGRA for the development and implementation of an information system to systematize the process of gathering, processing, comparing and disseminating performance indicators in the management of billing revenues of water services in the country, establish the mechanisms for its maintenance and steady updating, and provide incentives to OOAPAS to improve their performance.

### General context

Since the 1980s in Mexico, with water being a scarce resource, CONAGUA proposed rates each year established by Federal Law on Water Rights (LFD), which are differentiated by water use and availability by region. For wastewater discharge into receiving water bodies, rates depend on the nature of contaminants. Also, for the revenue of drinking water and sewerage services, the Constitution of the United Mexican States (Art. 115) establishes the legal basis to fully recover all costs of providing these services and allocate all income to the municipal providers, but much remains to be done to improve the existing bill payment systems (e.g. looking at the recovery of direct costs of operation and maintenance of these services).

Determining rates for the recovery of water services contains a strong socio-political component, which sometimes causes a vicious circle where the service provider does not meet the

quality standards that users require, so they are reluctant to pay for a deficient service, which means the provider runs a deficit, and hence delivers a bad service. This is compounded when the rates are kept low as a political strategy to gain votes, which represents one of the main problems for OOAPAS, causing them to get into debt.

CONAGUA has established the Public Registry of Water Rights (REPDA) to support the adjustment of the charges for water use and wastewater discharges, but as this is a fiscal instrument, the access to information is subject to the constraints of fiscal secrecy.

Similarly, the recovery of drinking water and sanitation service costs derive from a contractual obligation between the service provider and its customers, so that each utility sets its user registry, their billing and payment processes, and the means for collecting the debts of its users.

In this context the value of water and its legal, socio-economic, political and institutional frameworks strengthen and support the information management processes, which, along with transparency, is necessary for the accountability of management of the billing and revenue of water services, in which performance indicator benchmarking has a very important role.

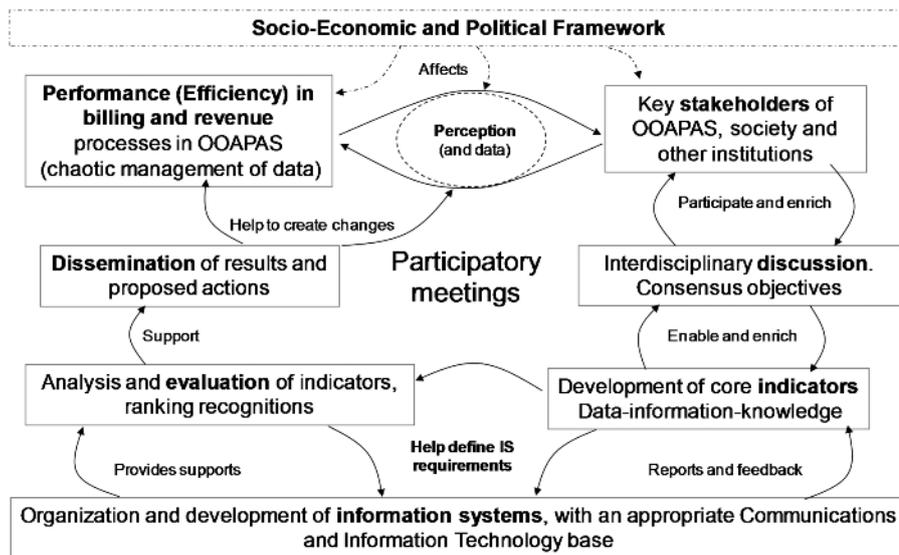
### The proposed method for service improvement

The applied method is proposed in four stages (Figure 1). Firstly: identify the main actors or stakeholders involved in the development and implementation of the system; integrate and review information from major national and international sources to define the current management situation of this information; conduct participatory meetings with key stakeholders and jointly refine the perception of the current situation and identify principal performance indicators for the billing and revenue of water services, and the establishment of processes and procedures for managing information; and develop a conceptual model of the information system.

Second: undertake the first data collection for the proposed indicators (review, validate and analyze); begin system design, including a website; develop system programming, manuals and processes.

Third: formalize at a national meeting the system implementation and present the main achievements and results of the

Figure 1: Diagram of organisational processes (POM-based. Checkland, 1998)



first indicators evaluation, giving the first incentives; implement mechanisms for monitoring, evaluation and continuous improvement.

Fourth: design and implement mechanisms and strategies for communication and dissemination of the results achieved, in the written press, radio and television, as well as national and international events; continuously update the information system.

### Stage 1: Framework analysis and definition of indicators

#### Identifying key stakeholders and the current situation

Key stakeholders involved have to be identified, as well as the most important national and international sources of information (OOAPAS, CONAGUA, IMTA, ANEAS, INEGI, IWA, ADERASA (Association of Water and Sanitation Regulatory Entities of the Americas), OFWAT (UK water and wastewater regulator), etc.), in order to analyze the indicators currently used, and make a proper classification of the different OOAPAS according to type of organization, size, structure, socio-economic status, legal and political aspects, etc.

Five or six regions should be defined to group the different utilities taking part. There then should be a review and analysis of the legal and regulatory framework at the federal, state and municipal level, as well as the institutional level, to define the current factors that favour or limit the management of the required information. Results of the above can then be taken to form a base

document, which is then presented to a meeting of the participants.

#### Determining indicators to be used and the information system conceptual model

At participatory meetings conducted with key stakeholders, past experience and knowledge is used to determine the main and final management indicators for billing and payment of water services (with which a matrix can be developed to facilitate understanding and analysis). These meetings will also serve to adjust the issues to be faced and assure that the information system design meets the expected requirements.

Based on the above, a consensus will be sought on the procedures and mechanisms to be applied for collecting and processing the basic information for indicators evaluation and comparison. Thus, the information system conceptual model can be defined, with support of experts in information technology and telecommunications.

Another important outcome of the participatory meetings are the agreements established with the stakeholders, to ensure ongoing and continued commitment in the implementation, maintenance and continuous improvement of the system (processes will be defined and established considering the different actors' visions).

### Stage II: design and development of the information system

#### First data collection

In accordance with the mechanisms and procedures agreed and established at the participatory meetings in Stage I, the

gathering of the first delivery of information (from the years 2005 to 2010) from selected OOAPAS can begin. This is done over the internet or whichever is the most feasible method in each case, then it is analyzed, validated and integrated into a database. This will allow for the determination of the basic indicators for managing the billing and payment of water, as well as the processes of evaluation and comparison of these.

#### Design and developing the system

Based on the system conceptual model and the flow charts that clearly describe each of the integrated processes for capturing, processing and generating queries (statistical reports, graphs, maps, etc.), entity relationship diagrams can be developed for a flexible and efficient database, as well as variables and algorithms for determining each particular indicator. The interfaces required for the web-based information system are also defined at this point.

Programming should be developed for each module of the system, according to the technology that is considered most suitable, and the preparation of manuals (technical and user), which describes the main features and instructions for proper use.

#### Testing and validating the system

The necessary tests should be developed for the operation of the system, with any faults documented, as well as the procedures for resolving them.

Throughout this stage, working



A 64km pipeline carrying water to, amongst others, the cities of Tijuana and Playas de Rosarito in the state Baja California Norte. Credit: Victor Bourguett.

meetings should be conducted with stakeholders when necessary, for an effective interaction that facilitates the development of the project activities.

### Stage III: implementation of the system, and evaluation and monitoring mechanisms

#### System implementation

Implementation of the system takes place at a national meeting with all actors involved, where the main achievements and problems of the different information system stages will be presented.

At the meeting, all stakeholders are trained to operate the system and are provided with a document with the mechanisms for monitoring, evaluating and implementing continuous improvement. The results of the initial assessment of indicators generated from the information provided by OOAPAS, is also presented in order to develop awards and incentives for improved performance, according to the methodology implemented.

#### Mechanisms for monitoring, evaluation and continuous improvement

The system, once implemented, will apply the mechanisms for monitoring, evaluation and continuous improvement established with key stakeholders. This will be used to keep a record of all operations and activities carried out during a six month probationary period, and users will have the opportunity to get feedback (through the website) on the operation of each system component, including preventive, corrective and improvement steps. At the end of this period, results are published on the same website, as well as improvements to be made to the system over the following months.

### Stage IV: Publication of results

#### Design of a communication strategy

Based on the available budget, mechanisms for the communication and dissemination of the project's results are designed. Strategies should be supported by an interdisciplinary group of experts for the dissemination of information to the press, radio and television, as well in national and international events related to the costs and payment of water services.

#### Recognition and encouragement

Schemes of granting awards should be defined for the best results, as well as incentives for other participants to

contribute to the continuous improvement of the system and the gradual incorporation of new water users as part of the information system.

#### System updates

The design of the information system updating procedures should be adjusted to be implemented by IMTA, considering the procedures for adding new users with the respective agreements, and implementing all the mechanisms for maintaining and updating performance indicators.

### Expected results of the system's implementation

The application of this methodology, particularly through the participation of key stakeholders, will enable them to gain a better understanding of the roles of each in the processes and procedures to be agreed as part of the information system for the generation and dissemination of performance indicators for billing and payment of water.

Moreover, the information available from the sample of OOAPAS will allow other utilities to determine and compare: the amount of revenues derived from rates charged for different water users; the key factors for financial sustainability (revenues and expenses) of OOAPAS involved; implicit subsidy schemes in rights, tariffs or quotas (direct or cross); and the performance indicators used for the billing and payment of water services (particularly the efficiency and effectiveness in these processes).

### Conclusions

Given the significant changes required in the field of water policy in Mexico, it is necessary to take into account the billing and revenue processes established, and the idea that water rates should serve as incentive to improve efficiency in water use and increase environmental sustainability.

Transparency in the management of information on billing and revenue is essential to support economic growth and the provision of water services. It is essential to know what is paid and who pays in relation to their economic capacity, then make better assessments and take steps to improve the situation using this knowledge.

All water users have the right to know what services actually cost and what they really pay for them, and the government has a duty to disclose such information. Therefore, there is an urgent need to

integrate and analyze information on what it costs to provide water services, on payments made by users, and the use of subsidies and social considerations in the determination of rates and how they encourage more efficient use of water.

The information system proposed is a feasible and viable method to create a source of reliable information to assist in these billing and payment processes, and to support utilities in decision making and evaluation of their performance in order to facilitate design of financing alternatives that allow utilities to realize an efficient cost recovery plan and its application in improving services to water users. ●

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# Improving Mexico's utility services with performance indicator-focused investment

For many years, the National Water Commission of Mexico (CONAGUA) has faced the problem of not having adequate information regarding the performance of the country's water utilities. CONAGUA's **MARIA EUGENIA DE LA PEÑA** and **ALBERTO ESTEBAN** give details of a new strategy being developed by the federal government, and the tools planned to support its implementation.

**Since 1989, the National Water Commission of Mexico (CONAGUA) has been responsible for regulating water services and providing financial support to water utilities and municipalities to invest in new infrastructure and improve their efficiency. This represents more than \$2 billion invested each year through federal financial programmes, which are conveyed through the state or local governments, or directly to water utilities.**

In parallel to these activities, efforts have been made since 1993 to integrate data and indicators from water utilities through questionnaires which are distributed and integrated by the regional representations of CONAGUA each year. These indicators are published in an annual report, which comprises information on more than 800 water suppliers serving almost half of the population of the country.

Unfortunately, the quality of the data collected has not been adequate to verify the real impact of the investments that are executed each year using the federal budget, and to better focus the financial resources. Additionally, a reliable benchmarking process, which can monitor the development of water utilities and the progress of the water and sanitation sector, has not been achieved. This

is a constant requirement of auditors, researchers, technical and social organizations.

Therefore, a new strategy is under development by the federal government. This will allow water utilities to organize and systematize their daily processes and generate necessary data for decision making within the utility, and at the same time comply with all the information requirements from authorities and the population, giving more transparency to their administration.

### Main obstacles

The obstacles that have been detected for the consolidation of a reliable information system for benchmarking processes and evaluation of the performance of water utilities are:

- Inconsistency of the data provided due to the lack of metering systems in water sources and water connections, which result in estimations of data with inconsistent and undefined criteria.
- The voluntary delivery of information by water utilities gives rise to reports that are not delivered at all or not delivered in a timely fashion.
- The constant changes in the leadership of water utilities (less than three years) generates a lack of continuity in the information reported, the loss of data registers, and a lack of support of the

information provided by former administrations to the new ones.

- The non-existence of reliable registers of information or systems which can automatically generate data and indicators for the quick reporting of information.
- The lack of use of indicators inside the same utilities for decision making and monitoring achievements and the lack of knowledge of the benefits of using them.
- The lack of capacity of those in charge of reporting information, along with the lack of suitable planning areas able to consolidate information from different processes.
- The information requirements differ between different associations, governmental institutions and other organizations, and even different areas of CONAGUA.

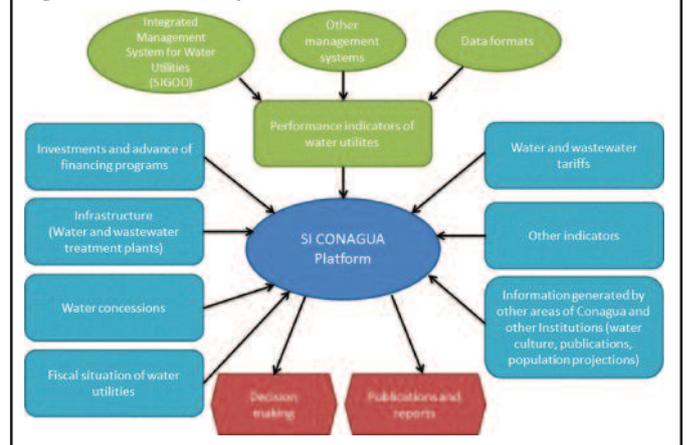
### New strategy

New software is being developed, in which water utilities will be able to report their data and generate performance indicators. This software will allow them to make analyses of their own indicators for decision making. At the same time the system will generate reports, which will be sent to CONAGUA. The indicators generated are based on common indicators already used in Mexico and are

**Figure 1: Structure of the Integrated Management System for Water Utilities (SIGOO)**



**Figure 2: Structure of the platform 'SI CONAGUA'**



complemented by the guidelines established by three Mexican Norms published in 2008. These are related to the performance of water utilities and are based on ISO Standard 24510 on activities relating to drinking water and wastewater services. The software will have a manual, which will explain each indicator, the criteria to calculate it, and the goal expected for each.

The Integrated Management System for Water Utilities (SIGOO) (see Figure 1) will be compatible with operating modules, which will not only help utilities to generate information, but also to undertake their processes in a systematic way. The modules will be flexible enough to be adopted by all utilities of any size, considering the particularities of their legal and regulatory framework, as well as their special policies, but establishing a general standard which can be adopted by all of them.

The information generated in SIGOO will be incorporated to the platform 'SI CONAGUA' (Figure 2), which will integrate not only the performance indicators but also the information generated by the different systems operated in CONAGUA, especially the financing programmes, in order to better analyse information and for better decision making at the national level.

### Implementation

Implementation of the new system will include a capacity-building component for water utilities. Technical assistance will be provided by telephone and email, and there will be visits from the project consultant when required. Manuals and tutorials will also be developed.

From 2011, the guidelines accompanying the federal financial programmes established that the use of an adequate management system is compulsory in order to access to the financial resources of the programmes. Therefore, it is expected there will be a good response when the implementation phase begins.

The contract with the consultant considers a permanent service of assistance and support. It is expected that this will guarantee the continuity and sustainability of the project.

### Benefits expected

The new strategy being implemented will generate a tool to allow water utilities to better understand the use of performance indicators and to standardize calculation criteria within

the water and sanitation sector.

It is expected that the operating modules that will complement SIGOO will allow better registers, and therefore more reliable information, to be generated. This will permit not only CONAGUA, but also other institutions and organizations in the water and sanitation sector, to have better data for their own activities, reducing the information demands on water utilities.

The 'SI CONAGUA' platform will allow the performance of water utilities to be monitored and evaluated and the impact of the investments made on the indicators to be identified. This tool will also allow CONAGUA to better focus the financing programmes it operates in order to increase the quality of the water and sanitation services provided to the population.

### Conclusion

The implementation of the strategy will not be easy, especially considering the large number of water utilities, the big difference in their level of development and their capability of installing, operating and maintaining a system, but all the necessary precautions are being taken to guarantee the success of this project.

Complementary tools are being developed, which consider the publication of additional standards related to the certification of the personnel working in water utilities and the corresponding capacity-building programme, which is being developed jointly with Mexican universities.

The Water and Sanitation Handbook (MAPAS), published by CONAGUA for the first time in 1994, is being updated in order to provide water utilities with a worthy technical guide for their activities and projects.

The complementary investments needed to correctly operate the software, such as computers or electronic water meters, will be financed through the respective federal financing programmes.

The project presented will be implemented at the national level, contemplating the eventual participation of all water and wastewater operators in Mexico, which amount to more than 2500. This will not only allow the generation of reliable and general data for evaluation of the water and sanitation situation in the whole country, but will also motivate the improvement of the quality of the services provided to the population through transparency and

reporting of information. ●

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# Delivering direction in Abu Dhabi: *the role of the Regulation & Supervision Bureau*

With the Emirate of Abu Dhabi dependent on desalination for its potable water supply, water and power provision form what is in effect a combined sector regulated by the Regulation & Supervision Bureau.

**KEITH HAYWARD** spoke with its director general, **NICK CARTER**, about the role and contribution of the regulator.

**‘Primarily some direction’ is what Nick Carter, director general of Abu Dhabi’s Regulation & Supervision Bureau (RSB), says the regulator tries to bring to the water and power sector in the emirate, combined as they are because of the dependence on desalination for potable quality water.**

Abu Dhabi is the largest of the seven emirates of the United Arab Emirates in terms of land mass. It has around 1.6 million inhabitants, a figure that increases by around 5% a year. Most water used in the emirate – 79% according to 2003 figures – is groundwater, but this is used for irrigation. A small amount of treated sewage effluent is used. Other than this, domestic, commercial, government and school customers rely on desalination for their water, with a significant proportion of this also being used directly in agriculture. RSB’s role there currently includes regulating 11 companies. ‘There is something like US\$24 billion worth of investment in this sector in regulated companies,’ comments Carter. So the level of investment and the prospects regarding future demand means the need for direction is clear.

RSB brings this direction to bear on a sector structure that was basically established in 1999, although it has evolved since. Most potable water and power production is carried out by independent water and power producers. All the water and power output is purchased by the Abu Dhabi Water and Electricity Company (ADWEC). Bulk transmission of all water and power is carried out by the Transco transmission company, while distribution and sale of water and power to customers is carried out by two regional distribution companies, the Al Ain Distribution Company and the Abu Dhabi Distribution Company. Wastewater collection and treatment is mainly carried out by the Abu Dhabi Sewerage Services Company, although there are now independent sewerage treatment plants operating also.



*‘Ten years ago we couldn’t even talk about subsidy really. It was considered quite sensitive. Now we are publishing on everyone’s bill just how much the government is paying towards their bill...’*  
**Nick Carter**

Within this structure, RSB provides an independent regulatory function. ‘We derive our income from licence fees. We are not paid by the government, so that is one stem of independence,’ comments Carter. ‘Another is that we have very good laws in place which have been in place for the last 12 years [and] which set up or unbundled the sector and provide a great deal of security and surety, particularly to foreign investors here,’ he continues. ‘That gives us a high degree of stability. That is important, and because of that we also report into the government through our chairman, but we don’t really report to the government. We are not an extension of government. We are a separate entity with its own legal identity.’

The focus of RSB’s role is to provide technical and economic regulation of the activities of licence holders. In terms of providing direction, this role is very much shaped around RSB’s oversight of the long-term plans of the various entities operating in the sector. Seven-year forward-looking plans have to be submitted to RSB for approval. ‘We have the power to approve or reject, and sometimes we have rejected,’ comments Carter.

Companies then use these strategic

plans as the basis for preparing capital plans that are submitted to RSB as part of its four-yearly pricing cycle. Carter explains that RSB does not approve the capital plan as such at this stage, but does look at the pricing proposed to support the capital plan. ‘We would look at the capital plan within the price control because that is part of the funding mechanism and we generally mark that down. I don’t mean to be cynical here, but we generally mark it down because it is often talked up.’

RSB can exert further influence on companies, by looking retrospectively at their expenditure. With the fourth price control period since 1999 currently underway, the expenditure of the second period was reviewed during the third period. This approach means looking, for example, at whether plant required to support extra future capacity was installed earlier than was necessary. ‘We decide if they have spent the capital wisely. If they haven’t, we mark it down,’ comments Carter, meaning that the value of the assets is marked down. ‘We marked down all network companies’ capital under the PC2 review, which we carried out during PC3 period, and we marked it down by

## Overseeing infrastructure expansion

Key anticipated water and wastewater projects by companies regulated by RSB, 2011-2015

### Desalination

Completion of S2 at Shuweihat  
Expansion of Fujairah F1  
Retrofit expansion of Mirfa  
Evaluation of two new plants

### Transmission and distribution

Fujairah / Al Ain transmission improvements  
Shuweihat transmission upgrade  
Abu Dhabi transmission improvements  
Full pressurisation of Al Ain distribution network  
Transmission work at Taweelah Unit III pumping station  
Fujairah and Taweelah transmission upgrades, dependent on desalination upgrades

### Wastewater

ICAD (Industrial City of Abu Dhabi) Industrial Effluent Treatment Plant entering operation  
Ethiad Biwater Al Wathba and Al Saad phase 1 plants into operation  
Veolia Besix Al Wathba phase 2 plant  
Decommissioning of plants, including Mafraq (proposed) and Zakher  
New plants for Reem, Saadiyat and Yas  
Strategic Tunnel Enhancement Programme (STEP)

**Source: RSB Annual Work Plan and Five-Year Sector Timeline 2011-2015, 2011. (Information therein based on documents from ADWEC, TRANSCO and ADSSC.)**

about 10%,' he adds. 'So that does have a long-term impact for them.'

Overall, then, Carter sees that RSB is able to shape the direction of the sector: 'So we do have a lot of sway and a lot of influences at different pressure points throughout the whole planning, design, installation and operational parts of the typical lifecycle of any plant.'

### Customer connection

RSB's role extends wider than this focus on the price control process, and includes in particular looking at issues around customer billing and demand. 'One of the things that we are looking to do is a whole range of promotional activities here, particularly with respect to people visualising what they use,' says Carter.

As a small example, he explains that the units used on customer bills have just been changed from gallons to cubic metres. 'We know through talking to people and various focus groups that generally people can visualise a litre bottle of water and they can visualise a thousand of them, or a cubic metre of water, rather than 1000 gallons, which really no one can visualise,' he says. 'So we have done that really not necessarily to become metrified as such, but just to make sure that they visualise that.'

More radical though is an overhaul of Abu Dhabi's approach to billing, which will see electricity, water and wastewater charges split and make clear to customers the extent to which government covers the true cost of these services. According to Carter, RSB has been working with the two distribution companies with the aim of introducing a 'new major billing upgrade' in the middle of this year.

'We are looking now to raise separate

bills, because at the moment they are combined,' says Carter. 'We feel that is a bit foggy because it doesn't focus on the costs or the messaging.' He explains that there will be a separate electricity and water bill, and that RSB has given the distribution companies permission to look at billing for wastewater services. 'So the new billing system will have three bills, three different colours, and in each case they will tell customers what the true cost of those services is,' he adds.

'That is quite a leap forward,' says Carter. 'It may not sound a great leap forward, but this is not Europe here, and ten years ago we couldn't even talk about subsidy really. It was considered quite sensitive. Now we are publishing on everyone's bill just how much the government is paying towards their bill, and we recently put some bill stuffers into bills showing that national people have an average saving on their units of something like 86% ... and foreigners have a saving of about 50%. These are quite significant figures and it has made people sit up and think, and a lot of people have said "I hadn't realised how much the government was paying." In terms of wastewater services, 100% is paid by the government.'

Alongside this RSB has set up a Water Wise initiative with a dedicated manager. Linking with wider public relations work, the initial focus of this will be to provide customers with advice on saving water, but will in time look to offer services to companies about how to save water.

'So there is a whole package of different initiatives, all aimed at seeking to reduce demand, which is massive here,' says Carter.

### Reuse reforms

Such efforts to shift the course the sector is taking can also be seen in relation to wastewater. This is focused on the statistic that less than 20% of the water entering the transmission system is returned to sewer.

The 'Trade Effluent Control and Recycled Water and Biosolids Regulations' were introduced in June of last year, setting standards that the sewage services companies must meet for water recycled for use by irrigation companies. 'In the strictest sense it doesn't quite meet the recycled water international understanding of what recycled water is, but we feel that for this market it is fine,' says Carter.

Carter sees the potential for two long-term developments, the first being to make greater use of recycled water rather than potable water for landscaping use. He says RSB is highlighting to government that population growth in the emirate is seen mainly in flats, where almost all water used is captured and returned to sewer. 'The demographic drivers will potentially provide an increase in water return to sewer, and what we are then saying is start to rely only on that water for beautification purposes, rather than potable water,' says Carter. 'That is a long-term strategy – 10-15 years maybe – but it is where we are trying to take the sector.'

Alongside this is the role of irrigation companies. 'We do not regulate irrigation companies, but we may do one day,' says Carter. 'We are promoting the concept of one irrigation company in the emirate. We genuinely feel that if we had a company that was completely responsible for all recycled water, with the ability to take top-up from the sector, but with limits imposed on how much top-up they could take, and it were regulated, we feel that would be a huge leap forward.'

Overall then Carter can believe progress is being made. 'It does take a while to get these things through, but I think [the position] we have reached is that everyone understands where we are coming from, and we understand where the government and where the environmental agencies are coming from... So one of our strategies is to keep banging the drum, if you like. We have some strategies, and we are pursuing them, but we don't pursue them aggressively – we move with the times in a pragmatic way, and we are getting there.' ●

For more information, visit: [www.rsb.gov.ae](http://www.rsb.gov.ae)

# Process benchmarking a Balanced Scorecard system: developing best practices for Abu Dhabi's sewerage expansion

As part of the long-term vision of the Emirate of Abu Dhabi to meet future demands on sewerage infrastructure and treatment there, the Abu Dhabi Sewerage Services Company (ADSSC) has undertaken benchmarking of its core processes to facilitate the expansion of its network and operation of service. **ZILLAY AHMED, DAVID MAIN, KATHY DAVIES MURPHY** and **LINDA PETELKA** discuss how ADSSC commenced a programme with two Canadian utilities in order to process benchmark the development of best practices in the establishment of a Balanced Scorecard-based performance measurement system.

**The Abu Dhabi Sewerage Services Company (ADSSC) was established in 2005 to take responsibility for the wastewater collection and treatment requirements for the Emirate of Abu Dhabi (including the cities of Abu Dhabi and Al Ain). The ADSSC's strategic plan is directly tied to the strategic plan of the Emirate of Abu Dhabi, which has set an ambitious long range vision for the region in a plan called 'Abu Dhabi 2030'. The long range plan includes the provision for substantial growth over the next 20 years as the population more than doubles in this timeframe. This will create a significant demand for new sewerage infrastructure.**

Currently ADSSC owns, operates and maintains two large sewage treatment plants (STPs), 24 packaged STPs, 236 pumping stations (80% in the city of Abu Dhabi) and over 7400km of sewer mains (66% in the city of Abu Dhabi). ADSSC is also responsible for planning and implementing system expansion required to support future growth. To meet these extraordinary growth demands, ADSSC has embarked on a major sewer trunk tunnel programme, which includes a 41km trunk tunnel that is up to 5.5m in diameter. When completed in 2014, this gravity trunk system will enable the decommissioning of 34 existing pumping stations in a new system that will be simple to operate, energy efficient, and eliminate odours and overflow risks.

Current ADSSC management challenges include:

- Meeting the Emirate of Abu Dhabi's projected rapid population growth
- Ensuring that the infrastructure expansion and capital projects are delivered on time and to budget
- Managing cost in a relatively high inflation environment

- Operating and maintaining the utility for the benefit of customers with an acceptable level of service
- Attracting and developing a skilled workforce

ADSSC is also faced with the growing need to renew and replace aging infrastructure, as well as ensuring that all levels of service can be maintained through the aggressive construction phases. This will require that the ten divisions within ADSSC operate in close association with one another to ensure that all organizational objectives set out in the ADSSC strategic plan are met.

The ADSSC is committed to continuous improvement and has participated in benchmarking some of its core processes with a broad range of leading utility agencies. Based on past success with



Zillay Ahmed

benchmarking, ADSSC approached the consultancy AECOM (due to AECOM's long-term experience in designing and implementing benchmarking within the water and wastewater sector) to develop a cooperative approach to benchmark its

## Executive summary

The Emirate of Abu Dhabi has set a long-term plan for the region, called Abu Dhabi 2030, which includes substantial growth of infrastructure to meet the demands of a rapidly increasing population. Part of this demand will be the need for new sewerage infrastructure, and Abu Dhabi Sewerage Services Company (ADSSC), which is responsible for wastewater services across the Emirate, has created its own strategic plan for expansion in line with the Emirate's overall vision.

ADSSC's plan includes a major new trunk tunnel to be completed in 2014, and the renewal and replacement of current aging infrastructure. With the aim of continuously improving its service, ADSSC has implemented a Balanced Scorecard-based Organizational Performance Management System. The Balanced Scorecard system is used to align business activities to the company strategy, and ADSSC as well as over 45 other organizations reporting to Abu Dhabi's Executive Council have implemented this framework.

In order to guide the implementation of ADSSC's strategic plan, around 150 key performance indicators were defined for all departmental objectives, some of which were set by the Executive Council and some by the divisions of ADSSC. These are being tracked using an automation and reporting project software application. As ADSSC did not have long-term experience in the use of wastewater-utility based performance indicators, it decided to commence, through the consultancy AECOM, a programme to benchmark the implementation of the performance management system, coordinating with the City of Calgary and Region of Peel in Canada, who are both involved with the Canadian National Water and Wastewater Benchmarking Initiative and have been using performance management systems for over ten years.

The process benchmarking exercise allowed the assessment of best practices through analysing a wide range of effective utility processes and comparing the experiences of all three utilities in the tracking of their various performance indicators. ADSSC can now use the best practices identified through this benchmarking process to continue its Balance Scorecard implementation in a gradual and sustained manner.

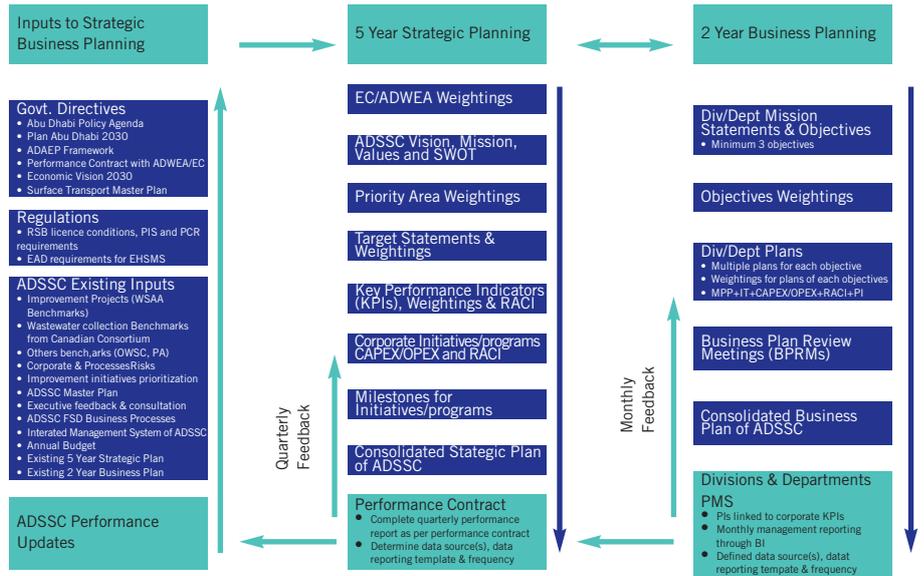
Balanced Scorecard-based Organizational Performance Management System with a range of similar wastewater utilities, for the purpose of assisting in the optimization of the performance management system to its full potential.

Abu Dhabi Executive Council opted for the implementation of the Balanced Scorecard framework, created by Harvard professors Robert Kaplan and David Norton, to facilitate achievement of its ambitious vision. ADSSC and more than 45 other organizations reporting to the Executive Council implemented this prescribed framework, which is centred around:

- Agreeing on the organizational change agenda
- Translating strategy into everyday actions
- Aligning all divisional / departmental plans with ADSSC strategy
- Ensuring that strategy is integrated with all ADSSC employees work
- Making strategy management a continuous process

**The need for a precise and well documented strategic plan**

The ADSSC’s directives from the Abu Dhabi Executive Council are precise and critical. Sewerage infrastructure must be in place to support the high growth demands of Abu Dhabi, and current operations and maintenance must be conducted to ensure a high rate of customer service. In addition to this challenging environment, the ADSSC organization is relatively small, with approximately 500 staff. All of the capital project and operations and maintenance (O&M) work is outsourced to a range of consultants and contractors. In order to ensure that work proceeds as required,



**Figure 1: ADSSC strategic planning process**

ADSSC has an advanced, detailed and comprehensive strategic planning process (Figure 1).

**Use of performance indicators to guide the implementation of the strategic plan**

ADSSC planning process is two-tiered. At the corporate level, the company develops a structured five-year strategic plan, in accordance with the Abu Dhabi Executive Council’s prescribed framework. At the divisional level, detailed two-year business plans are developed in alignment with the corporate five-year strategic plan, by all ten divisions within ADSSC. Since the plan can only be attained if all ten divisions work together as a team, the need for a performance management system that included meaningful key performance indicators (KPIs) was defined. In 2009, ADSSC began development of a Balanced Scorecard performance measurement system to

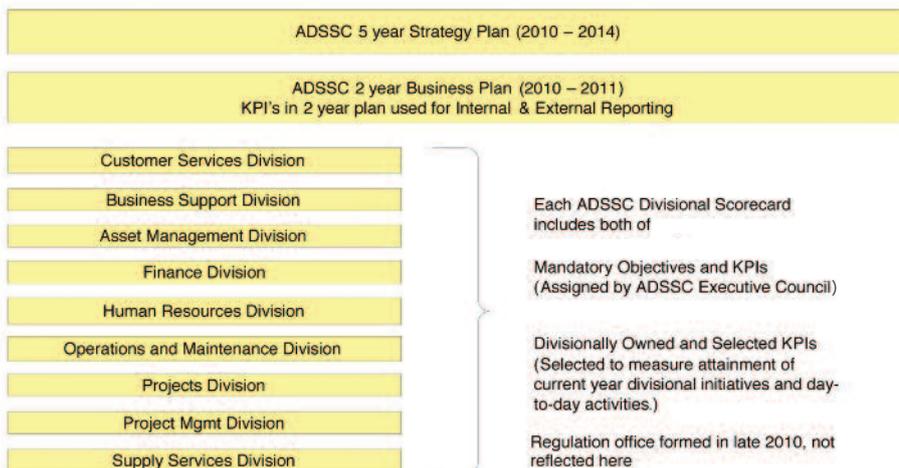
ensure that all vital initiatives and utility levels of service can be tracked and monitored. The performance management system aims to translate ADSSC’s strategy into operational objectives that will drive both behaviour and performance at all levels of the organization.

ADSSC adopted a very comprehensive and interactive approach in developing its performance management system. Since the issuance of its five-year strategic plan in December 2008, within which the Executive Management team was engaged, the most recent 2011–2015 strategic plan and the 2011–2012 divisional plans were developed in collaboration with over 80 ADSSC employees.

In April 2010, ADSSC selected QPR, a Finnish software application, for automating its process, risk, integrated management system, strategic plan and business plans, with the objective of integrating its internal / external reporting and deployment of an effective and efficient performance management system, via the ARP (automation and reporting project).

Since its pilot launch in June 2010, ARP has undergone modifications after a six-month trial run, based upon user feedback. Today, with its enhanced look, feel, maximum three-click functionality, voice guided assistance and single-window interrogation feature, ARP has received both local and international recognition as a best-practice feature.

Performance indicators were selected for use for each departmental objective. At least one performance measure for each objective is required, but complex objectives would likely require a range of indicators. There are two important types



**Figure 2: ADSSC performance management system structure**

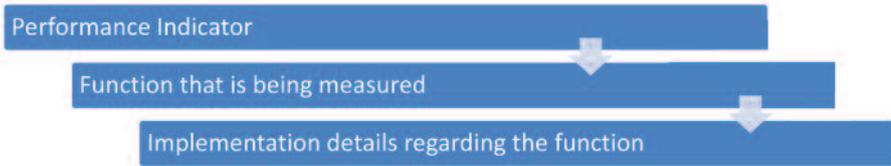


Figure 3: Performance indicators and their link to utility functions

of objectives.

Firstly there are the Abu Dhabi Executive Council-mandated performance indicators. ADSSC and all the other 45+ organizations are obliged to measure and report on these to the Abu Dhabi Executive Council on a quarterly basis. These mandatory measures relate to human capital, financial efficiency, technology, corporate social responsibility, health, safety, environment and other aspects deemed critical by the Abu Dhabi government in attainment of its vision. Internally, within ADSSC, strategic priorities and divisional objectives are aligned to these mandatory performance indicators.

Secondly there are divisionally-owned KPIs. These are developed and selected to monitor and track initiatives and levels of service within the respective division. They differ from division to division and reflect the specific nature of each divisional business plan.

As of late 2010, ADSSC was tracking about 150 KPIs via its computerized ARP Balanced Scorecard system. Each measure is updated quarterly by staff within each division, with various levels of management and executive reporting. Success with the system will be based on many factors, but the following attributes will be important if the system is to meet its objectives:

- The KPIs result in a meaningful measure of progress in business plan attainment
- KPI results (especially where an unexpected variance occurs) trigger specific and timely action
- ADSSC staff use the KPI reports as useful information to prioritize their work in the coming period
- ADSSC management and Executives are confident that KPI results are accurate and reflect the complete picture of progress on the ADSSC strategic plan
- The Scorecard enhances ADSSC staff work satisfaction as opposed to being used as a tool to offer negative reinforcement.

### Purpose of process benchmarking

Since ADSSC did not have long-term experience with wastewater utility-based

performance indicators, ADSSC commenced a programme to process benchmark the implementation of the Balanced Scorecard performance management system with two leading utilities from the well-established Canadian National Water and Wastewater Benchmarking Initiative (CNWWBI). The CNWWBI has been successfully benchmarking water and wastewater utilities for over ten years and has unmatched experience in the productive use of performance indicators<sup>1</sup>. Both the City of Calgary and the Region of Peel have been using performance management systems such as Balanced Scorecard during part of this time as well.

The City of Calgary and the Region of Peel represent leading Canadian wastewater utilities that exhibit many similar attributes as ADSSC, including high rates of urban growth, growing inventories of aging infrastructure, and a strong commitment to the environment and customer service. Both of these municipal wastewater utilities are extremely conversant in the use of PIs, having engaged in extensive benchmarking for over ten years. Interestingly, while Calgary and Peel both operate at a very high level of service, there is a gap regarding useful performance indicators to guide key priority strategies. In some cases, tactical PIs are being used out of context. By benchmarking the use of PIs and performance measurement dashboards such as the Balanced Scorecard for the purpose of achieving strategic goals, a range of implementation best practices have now been identified and documented to aid each of the subject utilities in enhancing their corporate level performance management systems.

It is interesting to note that even though the Canadian wastewater utilities operate in vastly different geographies and climates, the basic goals of a utility remains similar. With a generally common set of goals and objectives, good management practices in an arid and hot climate are equally effective in a temperate climate where wet weather is a significant local factor, and that benchmarking is an effective way to agree on and share best

practices. At the tactical level of a utility, many of the same PIs can be used, but at the utility's strategic level PIs must be carefully considered and developed to reflect the overall attainment of key strategic priorities.

This process benchmarking exercise was not meant as a replacement methodology for current utility performance management efforts, but rather to learn from the experiences of a range of leading wastewater utilities as to how to deal with unanticipated issues and challenges associated with implementing a complex process for monitoring and managing continuous improvement.

### Process benchmarking procedure

The benchmarking methodology involved a detailed review of each utility's performance measurement programme by the AECOM facilitator, including the systems and efforts that are required to operate the programme and an assessment of each programme in terms of it meeting its desired objectives. Following the review of the individual performance management programmes, a series of workshops were convened as a forum to have an open discussion and to facilitate information sharing. In all cases, each workshop featured a range of presentations and discussions that included a diverse range of managers and staff who are responsible for conducting individual utility functional processes.

As a process benchmarking exercise, it is not the intention or objective to rank or grade each of the performance management programmes, but rather to create an environment whereby each utility can learn from one another. As individual best practices or successful outcomes are observed, utilities have an opportunity to share the practice to everyone's benefit.

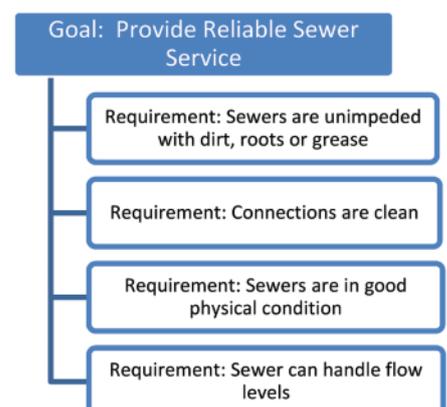


Figure 4: Relationship of tactics to a goal

Goal: Attract and Retain Skilled Employees

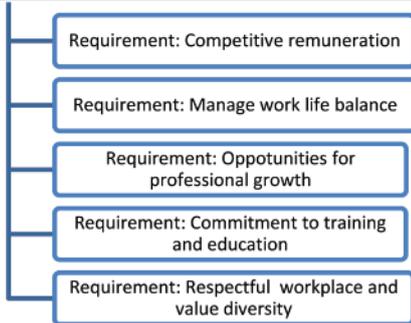


Figure 5: Example tactics regarding a strategic goal

**Observations from the process benchmarking exercise**

The ability to match performance measures with the process for conducting the utility function, and then examine the detailed elements of the function, was a powerful tool to not only evaluate performance indicators, but also to conduct assessments into best practices. All of the participants agreed that this methodology enabled a very thorough analysis of a large range of effective utility processes. Figure 3 shows the PI to function relationship that was effective in this exercise.

The relationship of the strategic plan to utility actions was of particular interest in this exercise, and was the focus of considerable analysis. It was quickly observed through the workshop sessions that ADSSC’s strong and well articulated strategic planning process has made the physical implementation of the Balanced Scorecard mechanisms possible in a fairly short period. The process benchmarking project team (made up of participants from each of the three cooperating utilities and the AECOM facilitator) agreed that an ambiguous strategic planning process would make organizational performance management very difficult, and a Balanced Scorecard-based programme would become a frustrating experience due to lack of strategic



planning clarity. It was agreed that organizational goals and objectives need to be actionable and tangible to support true measurement.

ADSSC has successfully incorporated most of its non-wastewater utility specific success factors into its Balanced Scorecard. These factors were documented through the fairly significant number of Abu Dhabi Executive Council mandatory KPIs that measured broad organizational objectives such as:

- To ensure the prudent management of the ADSSC by eliminating unnecessary costs and following policies and procedures
- To continuously develop and improve the skills and capabilities of all staff, thereby ensuring that ADSSC is an attractive place to work
- To improve ADSSC’s internal and external communication capabilities (e.g. via regular meetings / newsletters / emails, etc.)
- Achieve organizational excellence via the introduction of best practices within ADSSC

Since both the City of Calgary and the

Region of Peel wastewater utilities were subsets of their larger municipal operations, these objectives, while vital to overall utility success, were managed and tracked by teams outside of the direct utility functions. There is a separation between wastewater utility performance indicators that are used for utility benchmarking and indicators that could be used to measure the efficiency of support service functions.

Both the City of Calgary and the Region of Peel featured extremely detailed management and tracking of performance indicators, and conducted annual comparative benchmarking within utility functions, most particularly within the operations and maintenance functions. Both utilities tracked and managed performance measures around a common utility management goal model that includes seven core utility goals:

- Provide service reliability
- Provide sufficient service capacity
- Meet service requirements with economic efficiency
- Protect public health and safety
- Provide a safe and productive workplace
- Have satisfied and informed customers
- Protect the environment (water, land, and air)

Calgary and Peel track and manage about 70 performance indicators on an annual basis that directly connect to the above seven goals to measure the attainment of overall utility success and conformance to stated levels of service. These measures were also enabling a broad range of detailed process benchmarking within the utility.

In contrast, ADSSC is presently

**Table 1: Some examples of ADSSC’s current mix of KPIs**

% operational budget variance
% plans expenditure variance
% plans executed on time
Quality of treated wastewater
Average response time for emergency incidents
Number of public network blockages
Number of odour complaints
% completion of planned preventive maintenance tasks
Number of public complaints resolved
Number of non-public (private) complaints resolved
% compliance in O&M health and safety inspection reports
Number of top leadership communication sessions

## Process benchmarking methodology

The general methodology for the process benchmarking exercise is presented below:

### Part 1: Understand system design and implementation

- Compare and contrast each utility's objectives for their performance management system: were these systems developed for the same or similar purposes?
- Compare and contrast each utility's general implementation approach
- Document issues and challenges that arose during implementation and the strategies used to deal with overcoming issues and challenges

### Part 2: Understand the physical nature of the current systems

- Comparison of the physical nature of the Balanced Scorecard
- Use of metrics within the dashboard
- Collecting, storing and managing KPI data to assist decision making

### Part 3: Attainment of the desired objectives: to what extent have the performance management systems met the anticipated objectives?

### Part 4: Proposed programme evolution / enhancements for system: recognizing that the systems are still in the early stages, what are the recommended steps to further the overall implementation of the Balanced Scorecard system?

### Part 5: Utility best practice identification: examine individual best practices that are resulting in superior results within each utility and breaking down these practices into components for evaluation. Highlight best practices that are exportable to ADSSC for consideration.

tracking a mix of KPIs (Table 1) that pertain directly to the wastewater utility services, financial and customer outcomes. The current suite limits the information that O&M staff has access to for the purposes of optimizing O&M services, though some high level tracking of overall customer service can be successfully tracked over time.

### Challenges common to each participant: tactical vs strategic performance indicators

Not surprisingly, ADSSC, Calgary and Peel all have greater comfort with tactical performance measures as opposed to strategic indicators. Tactical performance indicators are those that measure a focused and narrow aspect of a programme, project, or function. They are associated with measuring a tactic within a strategy. For example, the number of sewer blockages is a tactical measure within the strategic goal of providing a reliable service. Since blockages are only one cause of service interruptions, we need other tactical measures to determine if the overall service is truly reliable. If we do not fully understand the tactics required to provide service reliability, we are at risk of measuring the strategy incorrectly or inaccurately. Figure 4 illustrates this example.

Industry-wide, almost all of the individual performance indicators that are commonly used within water and wastewater benchmarking activities are tactical

measures. This includes indicators in use with AWWA QualServe, the IWA Performance Indicators for Water Supply Services Handbook, and CNWWBI. Attempting to use an individual tactical measure to assess the progress of a strategy is at risk of being incomplete or incorrect. Since a range of tactics are used to achieve a strategy, strategic measurement is a more complicated process.

### The challenge of measuring attainment of strategies

Advanced wastewater utilities such as ADSSC, Calgary and Peel are all facing strategic environmental, financial and organizational challenges as well as routine technical challenges in the provision of wastewater services. For example, a common strategic need in each utility concerns the attraction and retention of skilled staff. Without dedicated and skilled staff, utilities have no chance of success. This is a good example of where a more rigorous approach to developing strategic KPIs is required. Figure 5 illustrates some of the possible tactical requirements that might be required to ensure that the strategic goal of attracting and retaining skilled employees can be achieved.

It is simply not possible to isolate a single KPI to measure this strategy. The final measure of this strategy would include multiple tactical measures in association with subjective commentary.

## Conclusion and final observations

ADSSC's strong vision and the strategic plan around this vision has enabled the utility to begin a Balanced Scorecard-based performance measurement system that is well positioned to succeed. Through this process benchmarking project, ADSSC has now identified a range of best practices that can be implemented to enhance its Balanced Scorecard implementation in a gradual and sustained manner. Beyond a plan for continued enhancements to the Balanced Scorecard process however, ADSSC has successfully identified a selection of utility management and operational best practices that are currently in use within Calgary and / or Peel that can be exported to ADSSC. These practices include:

- Integrating GIS into risk-based asset management
- Employee recognition programmes
- Implementing sewerage tariffs
- Customer care management
- O&M performance management and benchmarking

As the Balanced Scorecard programme begins generating reports, actions can be prioritized and implemented to further advance ADSSC in its mission of organizational excellence. ●

### Note

<sup>1</sup> Main et al (2008) *The Canadian National Water and Wastewater Benchmarking Initiative: Using Process to Drive Improvement. Performance Assessment of Urban Infrastructure, IWA (pg 243).*

**Article based on a paper presented at Pi2011, the 4th IWA International Conference on Benchmarking and Performance Assessment of Water Services, which took place 14-16 March 2011 in Valencia, Spain.**

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# The rise of hybrid delegated management contracts: *emerging lessons from France*

Delegated management contracts are becoming increasingly diverse and can no longer be easily classified into a single category in the spectrum of public-private participation options that exist. Variants include the basic *affermage* delegated management contract, in which the operator undertakes operation and maintenance, and collects tariffs for the contracting authority. **JAN JANSSENS, DIDIER CARRON** and **VIVIAN CASTRO-WOOLDRIDGE** share their perspectives of this trend, and look at the characteristics and benefits of a particularly innovative approach, the performance-based *affermage*, applied in the case of France's largest water utility, SEDIF - Syndicat des Eaux d'Ile-de-France, which supplies water to areas across the Greater Paris region.

**Delegated management contracts today have more of a mixed, hybrid nature than in the past. They borrow elements from different models to create a new, tailored model. The result is that many delegated management contracts can no longer be easily classified into a single category on the public-private partnership (PPP) spectrum.**

## The basics of the *affermage* contract

An *affermage* is one type of delegated management contract in the PPP spectrum. Under this type of a contract, the operator is responsible for operations and maintenance (O&M). The operator collects the tariff directly from consumers on behalf of the contracting authority (CA). The CA is usually responsible for major rehabilitation and new capital works. However, each contract defines the exact terms and responsibilities for financing and implementing maintenance, rehabilitation and new works (Table 1).

The operator earns an operator's price based on an agreed-upon proportion of the water tariff (per m<sup>3</sup>) that is produced and sold. The difference between the tariff and this price is paid to the CA, which may be either an asset holding company, or the government, depending on the sector's institutional framework. The CA uses these funds to pay its expenses, including debt service on capital investments.

The *affermage* combines public financing with attracting private efficiency. It may be attractive in situations where private equity and commercial debt for the water supply and sanitation sector are not readily available. CAs may also prefer an *affermage* to just a management contract because the *affermage* transfers the

commercial risk to the operator, believed to create greater performance incentives.

## Differences and similarities between the *affermage* and the lease

The commonly used English translation of *affermage* into lease contract may be misleading. The words *affermage* and lease are often used interchangeably, although they are technically different. In the *affermage* contract, applied in civil law contexts, the operator has an intangible personal right to the infrastructure (similar to a patent or a copyright), but

not the real property right of a leasehold (bail or rental). The lease contract, originally designed within a common law context, may however be constructed as a synthetic equivalent to the *affermage*. Table 2 describes a few of the key differences and similarities between the *affermage* and the lease models.

An *affermage* / lease contractual framework may feature five contracts: the delegated management or *affermage* / lease contract with, in parallel, the performance contract; the concession contract with, in parallel, the development

**Table 1: The *affermage* model – roles and responsibilities**

	Role	Functions
<b>Government</b>	Define the water sector policy and strategy	Define the sector's policy Define the institutional framework Manage water resources Establish the regulatory framework Review and approve tariffs and subsidies
<b>Asset holding company</b>	Manage resources (on behalf of the government)	Manage assets (development, amortization, debt service) Develop and implement master plan and investment plan Secure finance Acts as the contracting authority for new works Liaise with the public / implement awareness campaigns Monitor the quality of operations and maintenance (maintenance audit) Monitor / oversee the operator's performance based on contractual targets
<b>Operator</b>	Deliver services (technical operations and commercial management)	Operate and maintain infrastructure (fixed assets and operations materials) Renew operations materials Purchase meters and materials for connections Renew and extend the distribution network (based on contractual obligations) Project management of extension works of distribution network, financed by donors Studies to justify necessity of renewal and extension works Billing and bill collection Customers public relations, and customer accountability

contract; and the end-user contract with the consumer (see Figures 1 and 2). In addition there may be a technical assistance contract between the operator and its majority professional shareholder.

**The flow of funds**

There are various possible scenarios for the flow of funds. In a simplified affermage context, the operator collects tariffs directly from its customers and deposits this revenue into its own account (i.e. the tariff account). The total revenue, the volume of water billed, multiplied by the tariff, is collected by the operator and goes into its own tariff account. The operator retains part of the total revenue at a certain fee per cubic metre (which is the bid criterion). The CA (either the government or the asset holding company (AHC)) then receives the balance, which is the volume billed multiplied by the difference between the average tariff and the operator's fee. This balance is used for investments and debt service.

Also in the lease arrangement, the operator collects tariffs directly from its customers (Figures 3 and 4 illustrate the flow of funds).

Either the operator or the CA may hold the tariff account. In case the operator holds the tariff account, it remits to the AHC the operational surplus – the difference between collected tariff revenues and O&M expenditure. If the difference is negative, then the AHC must subsidize the operational deficit and / or can opt to increase tariffs, subject to prevailing tariff review regulations.

In cases where the CA holds the tariff account, it reimburses the operator's O&M costs out of the tariff revenue. In the lease model, the operator always pays a lease fee for infrastructure to the CA – and the bid award criterion is the highest lease fee offered.

It is clear that in both cases there is a need for the AHC (or the regulator) to closely monitor the costs of O&M (price cap regulation) as the operator will have the tendency to inflate these.

**Emerging hybrid contracts**

Today's emerging options for delegated management are increasingly hybrid contracts. One example of a hybrid is the enhanced lease (or affermage amélioré), whereby the operator may not be given the immediate responsibility for implementing capital investments, but is responsible for implementing certain renewal investments. Examples of the

affermage amélioré may be found in Senegal and Cameroon.

A subsidized concession is another example of a hybrid contract, whereby the operator is responsible for contributing financially to capital investments that are also receiving public subsidies.

These emerging hybrids are less restrictive than traditional models and provide more options for transferring commercial risks and for attracting private finance. However, they work best in contexts where a certain level of reform

has already taken place and there is a strong and capable CA.

**The performance-based affermage model**

Another emerging, innovative model is a more sophisticated affermage model – what we call the performance-based affermage (PBA) model, which is based on an incentive-driven and more equitable distribution of the surplus between the operator and the CA. The PBA is also innovative for its

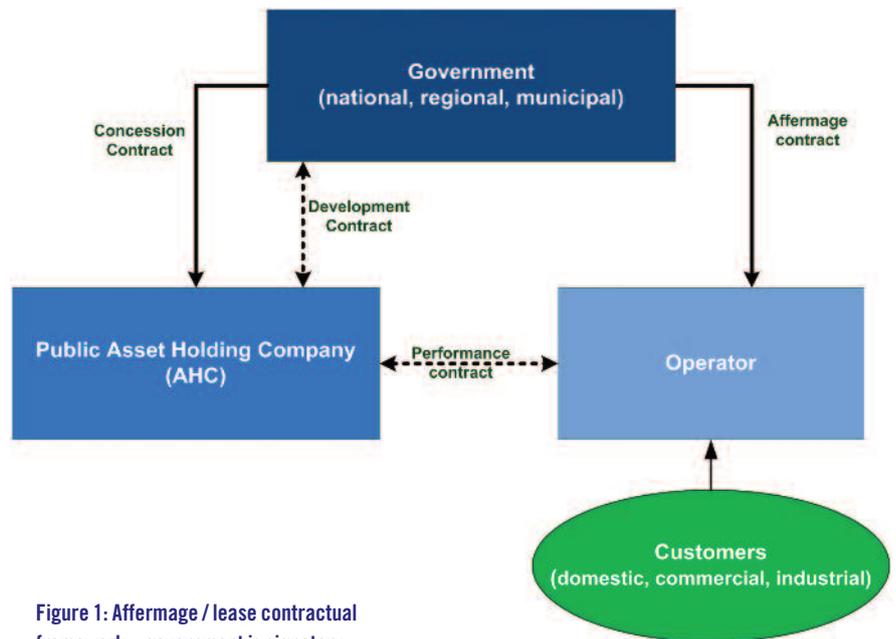


Figure 1: Affermage / lease contractual framework – government is signatory

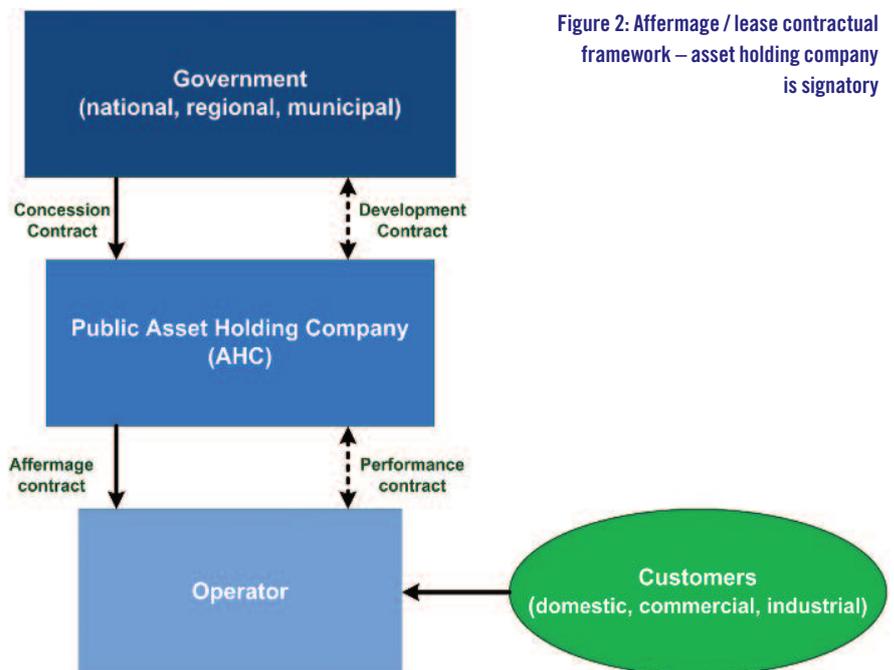


Figure 2: Affermage / lease contractual framework – asset holding company is signatory

SEDIF's Massy Palaiseau reservoir.  
Credit: Pöyry.



combination of both operational and financial parameters for calculating the operator's revenue and bonus.

**Why is this innovative?**

In a conventional affermage contract, the operator pays for operations and maintenance costs, remits the difference between average tariff and operator's price to the CA, but retains the entire operational profit. In the PBA, the operational profit is shared between contracting parties according to an incentive structure that combines both operational and financial performance indicators – and which are explicitly defined in the contractual agreement.

Figure 5 illustrates the differences in the distribution of revenue between the conventional and the PBA models. The most obvious benefits of the PBA include:

- Efficiency gains – reduced operational expenditure
- More equitable distribution of operational profit – a reduced operator's income
- More equitable revenue distribution – an increase in the operator's payment to the CA
- Introduction of a performance-based bonus – according to the operators' financial and technical performance

In some PBAs, the operator's surplus is transferred to an escrow (third party-managed) account in order to create comfort for the operator. The operator can only access these funds when it achieves both the financial and technical performance targets.

In case of poor performance vis-à-vis the contractual targets, the operator may only earn a reduced part of the surplus, or even no surplus. In case of high perfor-

mance, vis-à-vis the contractual targets, the operator may earn a large part of the surplus, up to 100 percent, depending on the contractually agreed equation for distributing the surplus between the parties.

**How are the operator's final earnings calculated?**

The operator's surplus is calculated as a function of his technical and financial performance. The equation may vary, but in the context of the Syndicat des Eaux d'Ile de France's (SEDIF) performance-based affermage, serving more than four million people, the operator's surplus was calculated as follows:

Operational performance

- 25% on water quality, wastewater and asset management
- 25% on quality of customer service

Financial performance

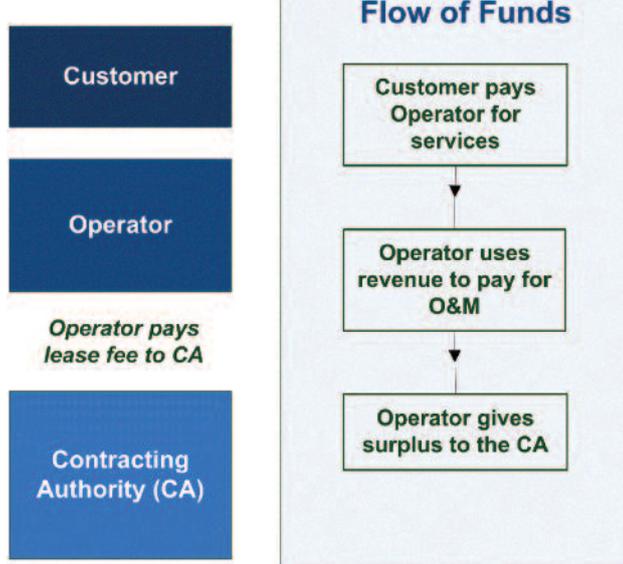
- 25% on profitability
- 25% on cost controls (i.e. productivity efficiency)

The application of these operational and financial indicators requires reliable baseline data, and the contract should define both target and minimum values for each indicator. In the case of SEDIF, the baseline data was audited and validated by an accredited independent third party prior to the tendering process.

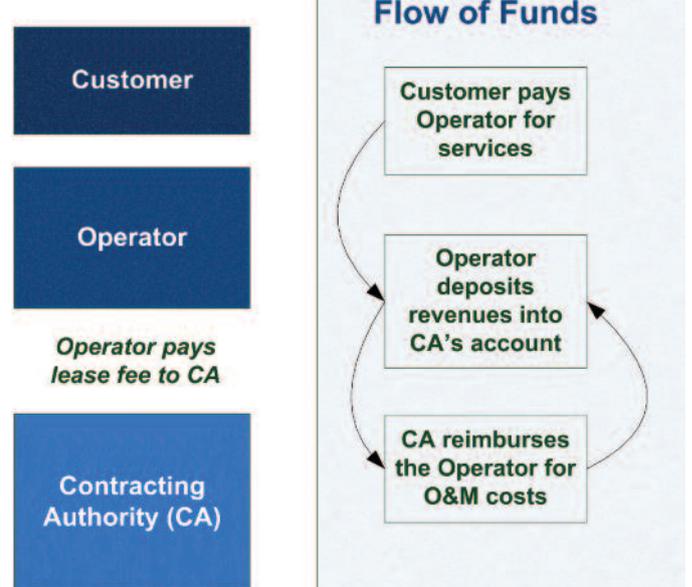
**Incentivizing increased efficiency**

The PBA is a performance-based contract, with the operator's profit varying as a function of a combination of both its

**Figure 3: Lease – flow of funds**  
(operator holds the tariff account)



**Figure 4: Lease – flow of funds (CA holds the tariff account)**



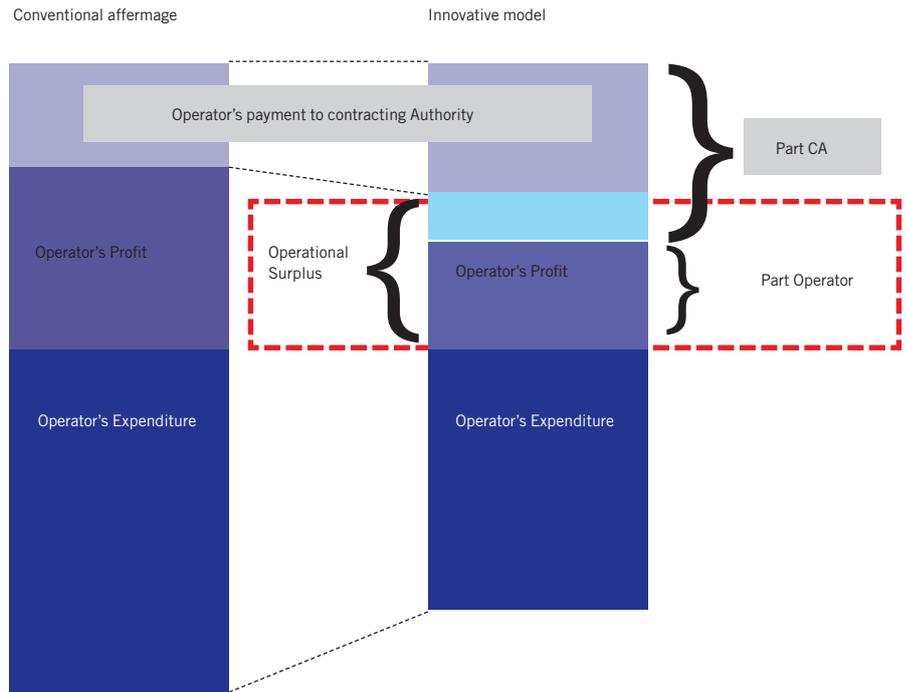
technical and financial performance. In situations where the operator's profit can be clearly quantified through a dedicated accounting system, the performance incentive mechanism may be applied on the total operational surplus, or on a given proportion (e.g. 50 percent).

In cases where the operator's operational profit cannot be easily quantified or ring-fenced due to combined accounting for many interrelated activities (or other reasons), the incentive mechanism can instead be applied on a predetermined, fixed part of the operator's revenue.

**What are the advantages of the PBA?**

The operational surplus or profit – the financial gains – of the operation is shared between contracting parties on the basis of an incentive structure combining operational and financial performance indicators (PIs). The contractual arrangement may be more politically attractive to public authorities, particularly in contexts where officials and civil society may feel that private operators benefit disproportionately from PPP arrangements. The contract design also helps strengthen the bargaining power of the public authority to demand improved service delivery from the operator.

In the case of SEDIF, the PBA contract was designed so that two to three years before the end of the contract, SEDIF would be in a position to freely explore and choose another – perhaps different – PPP option, or return to publicly managed operations. This flexibility in decision-making is helped by the fact that the contract ensured public ownership and access to data and open book operations, including most of the information systems developed during the contract period.



**Figure 5: Revenue distribution – conventional affermage vs. performance-based affermage (PBA)**

Key preconditions for the successful implementation of this type of affermage include an incentive mechanism based on an audited and validated baseline, and a capable contracting authority, leading to a balance of power and mutual respect between partners.

Experience shows that in low and middle-income countries, most often a sequential approach is the preferred way forward, starting with a technical assistance or an input-based, professional support partnership, and moving towards a deeper partnership, such as the present output-based PBA contract.

**Conclusion**

Delegated management contracts, and in particular the affermage-based option, today have more of a mixed, hybrid

nature than in the past. These new hybrids borrow elements from different models to create new, more tailored arrangements for incentivizing efficiency gains and equitable distribution of revenue gains amongst partners, which makes these arrangements quite attractive for the water supply and sanitation sector. ●

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Carron, D, Janssens, JG and Castro V (2011) *The Affermage-Lease Contract in Water Supply and Sanitation – the NRW incentive structure and new developments*. Paper submitted for presentation at the 2nd IWA Development Congress, Kuala Lumpur, Malaysia, Nov. 2011.

**Table 2: Key features of the affermage and lease models**

Features	Affermage	Lease
Operator's price	based on €/m <sup>3</sup> produced and sold (volumetric)	Annual monetary, non-volumetric, based on cost-plus
Competitive bidding process	Lowest bid (operator's price) wins The operator's price covers O&M costs, including some renewal costs	Highest bid (lease fee) wins The lease fee is paid to the CA by the operator
Performance incentives	linked to water production (m <sup>3</sup> )	Linked to water sales
Bulk metering	Mandatory	Optional, is not a prerequisite
Domestic metering	Mandatory	Optional, is not a prerequisite
Regulation	By contract (contract compliance in achieving target performance)	Cost-plus or price-cap

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# Trends, challenges and opportunities for water utilities in Africa

Water utilities in sub-Saharan Africa face a wide range of challenges, but progress is being made in meeting these and taking advantage of the opportunities that are developing. **DENNIS MWANZA** provides a perspective on the main areas that need attention if water supply and sanitation are to improve in this region.

**Although access to water in Africa's urban areas is estimated at 81% (UNICEF / WHO, 2008), just 35% of the urban population have connections and are therefore direct customers of utilities. The problem of low connectivity to water utility networks in Africa is made worse by the ever-increasing demand generated by high urban population growth.**

Africa is urbanising at a higher rate (over 5% in some countries) than any other region in the world. It is estimated that around 45% of the continent's population will live in urban areas by 2025, up from 36% in 2007 (UN-DESA, 2007). Most cities in Africa have an average annual population growth rate of at least 4%, compared to the European cities' annual average of less than 2% (UN-DESA, 2009).

This high rate of urbanisation has placed ever-growing pressure on already overstretched water infrastructure. The worst affected are the urban poor, the majority of whom live in informal settlements. In Africa, as many as 60% of the urban population, approximately 274 million out of a total of 456 million, live in low income or informal settlements (UN-DESA, 2009). Often unplanned and sometimes illegal, these settlements share a common problem of inadequate access to basic services such as safe water and adequate sanitation. Water services are mainly from unregulated alternative service providers, at higher prices and at times at lower quality.

The UN Millennium Development Goals (MDGs) will not be achieved through increased investment alone, but will require institutional reforms, including the establishment of commercially viable, autonomous institutions that operate on clear good governance principles and under transparent regulatory frameworks. The United Nations Millennium Task Force on Water Services (UN-Millennium Task Force on Water Services, 2004) identified the absence of a sound regulatory system as one of the

constraints to expanding water services.

Adequate regulation of utilities should result in more accountability, transparency and efficient provision of services. It is also necessary to ensure that roles of the different key players in the urban water services sector are clearly defined. These include separation of policy making from regulation and also separation of service provision from policy making and regulation.

In spite of decades of government and donor-supported investments in the urban water services sub-sector, state-owned utilities in many African countries have been unable to fully meet the demand for water services (Water Utility Partnership, 2001; Mwanza, 2005). Barriers to improved provision of water and sanitation are not so much technical or financial, but institutional and political (UN Habitat, 2003).

On the other hand, governments in over 30 sub-Saharan African countries have in the last 15 years embraced

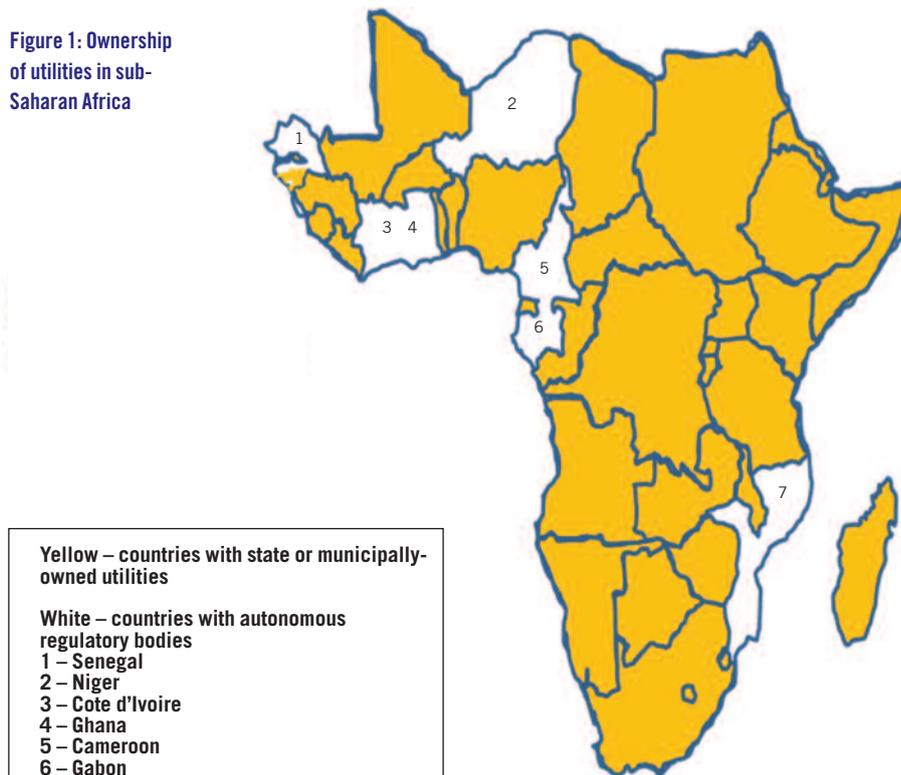
water reforms that have resulted in a number of policy documents. On paper, government policies generally lean towards sustainability and commercialization, the latter being achieved through cost-reflective tariff policies. The policies also show a desire by governments to provide as much management, financial and technical autonomy to the water utilities as possible.

## The challenge of autonomy

However, in reality most utilities operate under considerable challenges, and there is a great deal of concession on the policies that governments have adopted. For instance, their autonomy is extremely compromised, so they are vulnerable to political interference. In addition, sometimes they do not even have the incentives or means to provide adequate services to their existing customer base, let alone to expand their services to those who are not connected.

This concession is often due to the

**Figure 1: Ownership of utilities in sub-Saharan Africa**





**Due to insufficient network coverage, residents are forced by circumstances to purchase water from water vendors such as these. The price of this water is unregulated and quality is also not assured. Credit: Emily Mutai, SUWASA.**

current institutional arrangements for urban water service providers – at least 75% of the service providers in Africa are state-owned. Many state-owned water utilities are inefficient, with some losing at least 40% of the treated water they produce, for technical reasons and / or management issues such as poor bill collection. Often government departments such as schools, police camps, hospitals and military establishments owe the largest debts. Figure 1 shows the general situation in terms of the ownership and management of the utilities in sub-Saharan Africa.

There are a number of examples that prove water and sanitation services are more likely to be financially sustainable if they are delivered by service providers with sufficient autonomy to make management and budgeting decisions based on customer demand and operational needs, without undue political interference from central, local or regional governmental bodies.

While there may be a general issue of lack of autonomy among African utilities, there are examples within the continent of utilities that enjoy a higher level of

autonomy, which has enabled increased efficiency in their operations. Examples of state-owned companies that enjoy a high level of autonomy and are showing higher levels of sustainability include the National Water and Sewerage Corporation (NWSC) in Uganda, the Swaziland Water and Sewerage Corporation (SWSC), National Office for Water (ONEA) in Burkina Faso, and the Water and Sewerage Authority (WASA) in Lesotho.

The first step in obtaining autonomy is to create legislation that establish the water utilities. Examples of legislation that provide for autonomy include State corporation Acts (for example in Uganda, Lesotho and Swaziland, where the utilities are national state owned entities), and water and sanitation legislation – for instance, in Zambia.

Another challenge relates to utility governance and accountability. Many state-owned utilities in Africa do not respect good governance principles, so both autonomy and accountability remain a distant reality. This problem is usually exemplified by the composition of their boards of directors, who are usually

appointed as a way of achieving some kind of allegiance rather than for their competence.

Autonomy is further compromised by Government interference (sometimes indirectly) in the appointment of Chief Executives and senior management staff. Often this leads to a high turnover of CEOs (few utilities in sub-Saharan Africa have CEOs that have served for ten years or more, such as NWSC and SWSC).

### **Autonomy and regulation**

The level of autonomy can also be increased when a government establishes a clear regulatory framework. While the framework may not necessarily be an independent body, current research shows that the benefits of a regulatory framework are more likely to be achieved if an autonomous regulatory institution is created. Of course, success is subject to a conducive and appropriate political and socio-economic environment.

The autonomy of the regulatory agency will be enhanced if it has its own legal status and is able to develop, manage and control its own budget, which is financed through a regulatory fee charged

to the regulated water providers.

Governments should be willing to relinquish regulatory decision-making powers to such a non-political and non-governmental body. The reporting and appointing mechanisms for the board of the regulatory body could also have an influence on the autonomy of the regulator.

So far, only ten out of the 47 sub-Saharan African countries have established autonomous regulatory bodies (see Figure 1). The ten are Mali, Niger, Rwanda, Ghana, the Gambia, Tanzania and Gabon (multi-sectoral); and Zambia, Kenya and Mozambique (water-only regulators). Regulatory bodies should, among their other functions, promote achieving full cost recovery by approving tariffs that reflect this concept. They should also drive for improved efficiency by monitoring performance – also referred to as incentive-based regulation.

**Services for the urban poor**

Services for the poor are another important element of service delivery in sub-Saharan Africa’s urban areas. As stated above, at least 60% of the urban population live in informal settlements and are generally considered to be poor. As a starting point, utilities need to acknowledge the poor as valued customers. This segment of the population cannot and should not be neglected. Utilities should further consider adopting lifeline tariffs that take into account affordability levels (essentially cross subsidies). However, lifeline tariffs should not in any way lead to the commercial viability of the utility being compromised.

A third strategy that seems to help utilities to focus on serving the urban poor is establishing special units to deal with this sector. A number of utilities in the region have established such units including Zambia (Lusaka Water and Sewerage Company), Kenya (Nairobi City Water and Sewerage Company), Uganda (NWSC), Tanzania (DAWASCO) and Malawi (Blantyre Water Board and Lilongwe Water Board).

However what is true is that ‘a well performing and financially viable utility is a necessary but not sufficient condition to serve the urban poor’.

**Performance incentives**

As a performance improvement tool, utilities should work towards developing and signing performance agreements with government bodies.



Water treatment plant in Bauchi, Nigeria. A lack of maintenance can lead to deterioration of treatment facilities. This treatment plant is however reasonably maintained. Credit: D Mwanza.

The performance agreement is usually signed with the line Ministry or an oversight or supervisory body. For instance, in Ghana the agreement is with the state enterprise supervisory body, in Uganda it is with the Ministry of Water and Environment, in Swaziland it is with a special unit in the cabinet office, and in Kenya the agreements are with the Water Service Boards.

Performance agreements in themselves are not sufficient, mainly because of unclear monitoring mechanisms and a lack of incentives for achieving the agreed indicators. However, in Uganda, Burkina Faso, Lesotho and Swaziland the use of performance agreements have brought positive results.

**Remaining challenges**

While the above actions may be recipes for improved utility performance, challenges still remain. Sustainability and commercial viability are usually highly compromised – tariffs still do not reflect costs in many countries. The issue of tariffs tends to be extremely emotive, and yet under the current system of suppressed tariffs utilities are not guaranteed to provide efficient and effective water services.

Non-payment for services rendered, particularly by government entities, makes the situation worse. Sometimes the problems are exacerbated by inaccurate utility records, and low levels of billing and collection.

In terms of technical operations, many utilities have high non-revenue water levels. This is usually due to a combination of factors including low levels of

metering, low billing and collection rates, and low investment in the sector. Other technical issues include a high turnover of quality staff, and a high rate of staff per 1000 connections. Utilities in sub-Saharan Africa should strive to achieve around eight staff per 1000 connections.

While there may be challenges and difficulties in meeting the MDGs, there are opportunities for utilities in sub-Saharan Africa to contribute to the development agenda. These opportunities include a growing market for water services in Africa that presents opportunities to invest in infrastructure, and the fact that governments have in recent years been embracing reform. Utilities are also generally eager to learn and develop innovative ways to improve performance and motivate their staff, and thus improve their image. ●



**About the author:**

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# Beyond the privatisation debate: understanding good governance in water services provision

Transparency, accountability and participation are three central aspects of the public's ability to engage with how water services are provided. **KEITH HAYWARD** reports on a research project that has developed an approach for assessing how national legal frameworks deliver such governance and has used this approach to look at governance in a range of settings across Europe.

**T**he term governance has been in the English language for quite a few centuries now, but the term spread really during the 1990s and the 2000s and the idea was to reflect the existence of new ways of regulating and providing services,' says Dr Monica Garcia Quesada, a Research Fellow at the UNESCO Centre for Water Law, Policy and Science at the University of Dundee, Scotland. 'The term water governance is usually defined quite loosely as the range of political, social, economic, and administrative systems that are in place to develop and manage water resources and provide water services.'

Quesada continues: 'National legal frameworks establish the formal mechanisms for those relationships, for that range of political, social, economic, administrative systems; they are the formal mechanisms that have been agreed to manage water resources and provide water services.'

Against this backdrop, Quesada has carried out a three-year research project, funded by Suez Environnement, to assess the governance of water services provision in a range of countries across Europe. Governance is a broad concept, yet, says Quesada, debate around the provision of water services has tended to focus on the involvement of the private sector. One of the aims of the research has therefore been to fill the gap between the usual area of debate and the wider range of factors that can actually be of relevance.

'Certainly the debates on water privatisation are very, very important,' says Quesada, but she adds: 'We need to go beyond the debates on water privatisation and really understand what is happening on the ground in different countries, to what degree citizens can intervene, regardless of the ownership of the industry, to what extent citizens can be informed, can make the providers accountable.'

At the heart of the research is an approach that Quesada has developed to evaluate the governance provided by national legal frameworks. This approach takes as its starting point the Aarhus Convention – the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

'It is a very well established international convention that pointed at key features of governance,' says Quesada. 'It sets out certain key elements of governance we felt could be used to understand water services.'



Dr Monica Quesada

## Criteria for evaluating transparency, participation and access to justice in relation to setting price and quality of service for water services provision

(Water and sanitation services in Europe: do legal frameworks provide for 'good governance'? Mónica García Quesada. UNESCO Centre for Water Law, Policy and Science, University of Dundee, 2011. p54-57.)

### Transparency

- 1 Regulatory documents are in the public domain so that consumers can have access to them
- 2 Tariff setting process and the quality service procedure is regulated so that the consumers know how it works
- 3 Decisions published so that consumer can access them
- 4 Reasoning behind decisions published so that consumer can access them
- 5 Formal mechanisms for protecting the right to access information

### Participation

- 6 The regulatory framework guarantees the right of consumers to participate in price and customer standard setting
- 7 The regulatory framework allows for participation of consumers in the spheres of investment, operation, pricing, and service quality
- 8 Consumers can participate in stakeholders multilateral meetings: for co-decision, consultation or opinion for water price and water standards setting
- 9 Consumers have the right to receive feedback so that they can understand to what extent their views are taken into account

### Access to justice

- 10 Consumers can initiate non-judicial proceedings against water services providers (either the responsible body directly or a contracted water operator) if they fail to perform their duties
- 11 Consumers can initiate non-judicial proceedings against relevant authorities if they fail to perform their duties
- 12 Consumers can initiate judicial proceedings against water services providers (either the responsible body directly or a contracted water operator) if they fail to perform their duties
- 13 Consumers can initiate judicial proceedings against relevant authorities if they fail to perform their duties
- 14 Consumers have to assume financial costs of bringing cases to court
  - a) Court fees apply
  - b) Legal aid is available



**Access to justice – one of the three main aspects of good governance.**

**Credit: michelangelus – Fotolia.com**

### Price setting and quality of service

The approach therefore uses transparency, participation and accountability, or access to justice, as the three pillars of governance. A number of criteria have been identified in each case, all geared towards assessing governance of two key areas of decision-making in water services provision: setting water prices, and establishing standards for quality of service.

‘We focused on decisions concerning the establishment of the water tariff and the service standards because, regardless of their institutional and regulatory frameworks, all countries need to make decisions to set water tariffs and decide on the characteristics of the service they give to consumers,’ says Quesada. For example, one of the criteria for assessing access to information is whether or not the processes to do with tariffs and quality of service are regulated so that consumers know how they work. In all, 14 criteria have been identified and used as the basis for assessing governance.

Much of the project dealt with getting a full picture of the various national legal frameworks that provide for the governance in this area. The work covered England, France, Italy, the Netherlands, Scotland and Spain, as well as looking at the wider context of European Union legislation.

‘These six countries represent different cases worth examining, from the privatised model of England, to the direct provision of certain municipalities in Italy, France or Spain, or the delegated and public model of Scotland and the Netherlands,’ comments Quesada.

That much effort went into this aspect of the project is reflected in the final report: ‘Readers of the report can benefit from having a detailed account of the content of national regulations concerning access to information, consumers participation and access to justice in water

services provision, from six different national jurisdictions,’ says Quesada. ‘We consider this to be a main contribution of the research, which can be useful to both academics and practitioners. The concept of good governance is “demystified”, as the report shows that it translates into particular regulatory decisions taken by relevant authorities.’

Quesada then used the 14 evaluation criteria as the basis for assessing the governance in the countries studied. The criteria were used primarily as a means of comparing the governance of the countries. This means the results do not present, for example, a discrete assessment on a country-by-country basis of how the national legal frameworks rate against the criteria.

‘Throughout this study it became quite clear that we were dealing with very different regulatory frameworks,’ says Quesada. ‘We thought that it would be insufficient just to grade countries in terms of good or bad governance... Comparative analysis is valuable in the

***‘The concept of good governance is “demystified”, as the report shows that it translates into particular regulatory decisions taken by relevant authorities.’***

**Monica Quesada**

sense that it allows us to understand what is going on in different countries.’ Quesada nonetheless adds that she believes the indicators could be used to evaluate individual countries.

Three broad approaches to setting prices and service quality standards were identified: a regulatory approach by an independent national body, as seen in England and in Scotland; a bilateral contract approach between the public authority responsible and the provider of the service, as seen in France, Spain and Italy; and what is termed the self-regulatory approach, where the service provider substantially decides on price and service, as seen in France, Spain and The Netherlands. The discussion of the evaluation therefore highlights these approaches and groupings.

### Need for a nuanced analysis

The overall conclusion drawn from the research is that, while ownership and delegation of water services may shape governance, they do not determine what

legal provisions are made so that consumers have access to information, can participate in decision-making processes, and have access justice, and Quesada concludes the report by stating: ‘The present report advocates a more nuanced analysis in order to understand governance in water services provision, beyond indiscriminate assumptions on the consequences of particular management and ownership solutions.’

Alongside this, one of the general conclusions of the project is that, while there are marked differences in water services governance between countries, there are some patterns evident in relation to these three different broad approaches.

‘Within each category, certain countries rank better than others,’ says Quesada. ‘For instance, within the regulatory agency model, we have observed that Scotland provides more opportunities to consumers to access information, to participate and [to obtain] access to justice than England. Within the delegated model, French local authorities that contract out services to either private or public providers ensure better governance mechanisms than their Spanish or Italian counterparts. As for the self-regulatory model, the Netherlands has set more comprehensive mechanisms to favour access to information and to justice than local authorities directly providing the service in France, Spain or Italy.’

While the research has delivered findings that can now be shared with others in the sector, Quesada already sees scope for further research.

‘I think that for future research it would be interesting to go forward comparing countries within the three different subgroups,’ says Quesada. She comments that there is a trade-off between looking at quite different countries but having to make what may be more superficial comparisons, or getting greater depth by looking at fewer similar cases. She gives the example of Italy, France and Spain as cases that could be looked at more closely: ‘Those three countries have very similar regulatory mechanisms, but I think it could be interesting to provide more nuance to those differences between countries that have similar regulatory frameworks.’ ●

**Water and sanitation services in Europe: do legal frameworks provide for ‘good governance’.** Mónica García Quesada. UNESCO Centre for Water Law, Policy and Science, University of Dundee, 2011. Available at: [www.dundee.ac.uk/water](http://www.dundee.ac.uk/water).

# Faster in the field – mobile technology management solution for Scottish Water

UK utility Scottish Water has improved its management system for the mobile technology used by its workforce. **LIS STEDMAN** reports on the approach, which is supported by the services of communications company BT.

**The Managed Devices service of the Field Force Automation business of UK communications company BT is being used by the utility Scottish Water to provide management and support for the hand-held devices used by over 500 engineers on the ground to make their daily tasks swifter and more efficient.**

The range of managed mobile devices includes personal digital assistants (PDAs) from Motorola and Panasonic Toughbooks with backup from a team of BT Field Force Automation service engineers that Scottish Water's 1200 engineers can contact via a dedicated helpdesk.

BT's expert in field force automation, Dave Lewis, says that the company built its Field Force Automation business from its own work. 'Back in the late 1980s we had 36,000 engineers in the field. There was an obvious manpower resource required to handle faults and engineers and we went down the mobile Field Force Automation route.

'This was before broadband and computer literacy – people did not have computers of their own. We had a steep learning curve, because we had to train our own workforce in using computers. After doing that, a slim-lined workforce put us in good stead. We ran our own system for years and then thought, why not offer that expertise to other utilities?'

## Developing mobile working

Scottish Water had realised in 2007 that the mobile technology used by its field force could no longer support the requirements of its business, and so decided to upgrade from devices running the latest version of Windows Mobile and Windows XP. This was also seen as an opportunity to develop mobile working further, in order to improve the productivity of field force staff while reducing operating costs.

The plan was to have more dynamic work scheduling to help ensure the most appropriate person was the first to respond to an incident, ensuring faster

fault resolution. The utility developed an application for mobile work management, closely integrated with customer, work and asset management solutions, but



Celebrations at the BT Tower in London to mark 500 days to go to the start of the London 2012 Olympic Games, of which BT is an official partner. Credit: BT.



The Panasonic Toughbook CF-19

wanted a partner to be responsible for the provision and 24/7 support of mobile devices and connectivity across the field force.

The concept that BT worked on with Scottish Water is identical to that offered to other industries, in that it involves passing information from a central area to mobile stations, capturing what these do and sending that information back to the centre. 'It could even be ambulance staff picking people up for daycare,' Mr Lewis notes.

He adds: 'When Scottish Water put out a request for information to prepare for tender, I believe we proved not only that we could do what they wanted, but that we had already done it efficiently with our own people.' Another important consideration in a difficult economic climate would likely have been the need to be confident that the chosen partner would be in business over a number of years.

### Dealing with faulty devices

BT also already had a partnership with one of Scottish Water's neighbouring water utilities, so there was additional confidence in the service. The main challenge, Mr Lewis says, was the BT next-day replacement service for faulty devices. Despite modern communications and the ability to transfer parcels in a very short time from one urban centre to another on the other side of the world, rural Scotland, like other areas with small road systems winding round rugged terrain, is not so easily reached.

## Thames Water's Toughbook extension

The UK's largest water and sewerage company, Thames Water, has extended an eight-year relationship with Panasonic by ordering 2000 Toughbooks for its mobile field force. The below-ground and new connection teams will use the Panasonic Toughbook CF-19, which is described as 'fully rugged', while the above ground engineers and water quality sampling teams will be using the full-function hand-held PC, the Toughbook CF-U1.

The devices are said to be an important element of the company's business transformation programme, allowing the engineers to interact with the utility's new work and asset management information system.

The intention is to improve operational efficiency through more effective job allocation, scheduling, reporting and communication. All of the devices have integrated GPS systems to help locate assets, and record work correctly against fixed assets. Live information can also be provided to scheduling teams to improve the response to customer and operational calls.

'Given the remoteness of some of the areas, we had to have a prior agreement with Scottish Water that in some areas we couldn't meet that target, it had to be 48 hours,' he notes. However, more positively, improved mobile service provider coverage meant that mobile staff could upload and download information without needing to travel back to base, which provided significant time savings.

This meant that in some areas one mobile service provider would be used and in others, another, depending on which had better coverage in that particular area. 'We saw it as normal business as usual,' Mr Lewis said. 'BT has employees of its own in the same location as Scottish Water and we have to look after them in exactly the same way as Scottish Water; although we have dedicated people looking after this contract, the processes are the same.'

This thinking applies to all client companies. 'We know from our own experience how important it is to get engineers' equipment working 100% of the time. The service desk has trained engineers, not people following a simple flowchart. We are able to fix the majority of devices over the phone rather than just send out a new device the next day.'

This also adds to the efficiency of the service Scottish Water's engineers are able to provide, as they are able to continue working with the equipment designed for the task rather than reverting to a paper-based system. 'It also saves postal costs, and looking at it from a utility point of view it is a way to save on costs and carbon footprint, save on fuel costs and cut down on journeys, having the right person in the right place at the right time.'

Field force automation also enables swift responses to customer calls, which is important in a society that increasingly expects fast results, Mr Lewis observes. With two water utility contracts already

in BT's portfolio, the company is aware that as other utilities come to re-examine their field force systems, new elements such as GPS location, in-vehicle tracking and other advances may prove attractive.

BT is still working on a further element that would extend the service to Scottish Water's laboratories. 'We are doing some testing. Obviously with the laboratory tests there are different issues. With vehicle tracking we can have scenarios where people have fridges in the vehicle and we can monitor these so the temperature doesn't rise and make the test void. We could monitor a whole range of data potentially,' he says. This potential new avenue is being reviewed with a third-party tracking company.

'Technology never stands still,' Mr Lewis notes. 'There is always something round the corner, someone comes up with a new idea that may have costs and benefits – some ideas you think are good do not have the right costing, whereas something simple would. We are constantly looking at ways to improve on costing and service in our own industry, and there are so many synergies we may find that what works well for BT would work well for water or gas or other utilities.' ●



BT field force automation expert Dave Lewis

# A role in reforms: representing Bulgaria's water industry in a time of change

Bulgaria's water sector is undergoing fundamental reforms, aimed in particular at accessing available European Union funds in order to support much-needed improvements to the sector. **KEITH HAYWARD** spoke with **PROFESSOR ROUMEN ARSOV**, President of the Bulgarian Water Association, about the changes and the role of his association.

**‘We would like to be an opponent – of course a creative opponent – of the government’s strategies,’ comments Professor Roumen Arsov, President of the Bulgarian Water Association. ‘We are preparing to review [them] and declare our position, as we usually do.’**

Arsov is Professor in the Department of Water Supply, Sewerage, Water and Wastewater Treatment at the Faculty of Hydraulic Engineering at the University of Architecture, Civil Engineering and Geodesy. He sees this task as one of the top priorities for his association over the coming year – to play an active part in the development of the sector in the country. And there is indeed a lot happening, and so potentially a great deal to comment on, and a great deal taking place that affects BWA’s members.

In particular, the country’s Ministry of Environment and Waters has prepared a new Strategy for Water Resources Management. Arsov explains that this is currently subject to negotiations between ministries. ‘This summer we expect this strategy to be published for official comments,’ he says.

This policy is to be accompanied by a second key strategy, the Strategy for Water Supply and Sewerage Sector Reorganization and Development, which is the responsibility of the Ministry of Regional Development and Public Works. Arsov explains that a document has been prepared by his Faculty and that this is expected to undergo further development.

Arsov does however point to challenges in influencing these strategies. For example, an earlier request by BWA to provide input to the water resources strategy was, he says, turned down. And while the second document was prepared to include four options, he states that it appears the variant preferred by the Ministry is the one that will be taken forward. ‘This option is already negotiated

with the EU and the World Bank, and it seems this will be the final version, or starting point for the development of the strategy [itself],’ he says.

In the meantime, fundamental changes to the Bulgarian water sector are already underway following amendments to the country’s Water Act.

At the heart of these changes is the need to tap into the EU support available to help address the country’s huge water infrastructure needs. Arsov explains that some €1.3 billion of EU funds are allocated to the sector for 2007–2013. The problem, he says, is that this ‘is utilised less than 10% up to now’. Furthermore, water and wastewater services across the country are provided by companies. ‘Only municipalities are eligible for authorisation of European funds allocated for Bulgaria,’ says Arsov.

In an attempt to address this, Bulgaria is transferring ownership of water sector assets over to municipalities. ‘I would say that now all the water companies have transferred their properties to municipalities, with some exceptions,’ says Arsov. He explains that these exceptions are where assets are not well documented, so he anticipates this somewhat technical issue can be resolved.

More problematic though is the municipalities who have to take control of the assets. According to Arsov, these just do not have the capacity and the right staff to take on management of the infrastructure. ‘I guess maybe one or two years have to pass [before] municipalities will be able to accept these properties and start managing them properly,’ he says. But of course the intention is that this is a process meant to help release EU funds. ‘So the problem is really very serious from the side of municipalities.’ In the meantime, the municipalities need to rely on the water companies. ‘Now municipalities use the expertise of the water companies – they have no other options now,’ adds Arsov.

On top of this, Arsov sees that



Roumen Arsov

municipality budget restrictions mean the number of projects getting initiated is limited. ‘Very few applications for design projects and for construction took place because municipalities do not have money to pay for design projects,’ says Arsov. He says municipalities have had budget cuts of 20% or more, and that they have to spend from their own budget and then get the money reimbursed as technical support by the EU in the following budget year. ‘That is why the process started, but with a very low rate,’ he explains, adding that presidential and local elections due in the autumn mean mayors are reluctant to commit funds. ‘They are afraid to spend money just now,’ he says.

To add to this, the government has initiated the creation of ‘Water Associations’ across the country, with each bringing together representatives of government and municipalities as the new framework for managing water. There are 51 ‘definite territories’ across the country, corresponding to the operating areas of the water companies. According to Arsov, the intention is to reduce the number of territories to 28, with one Water Association covering each. He says that 24 Water Associations have been created, but they are not functioning. ‘So associations exist, but they don’t work; they didn’t start working since their creation,’ he says.



A new WWTP for the town of Stara Zagora, central Bulgaria

In the meantime, he says that the intention had been for municipalities to act voluntarily and reduce the number of definite territories, and that in turn there would be a reduction in the number of operating companies. 'Municipalities have to cooperate on a voluntary basis and to agree to organise one territory of this type, and this is also a problem now,' says Arsov. He says that a further amendment to the Water Act is being prepared with the aim of accelerating this process. 'There will be a definite regulation which will make possible these existing definite areas to be merged, but the law amendments are not available yet,' he says.

Further changes on the way relate to the opportunities for the private sector to be involved in water and wastewater services provision. Bulgaria's current laws on public private partnerships allow only for concession contracts, as a result of which there has only been limited involvement by the private sector, but a new law is set to change this. 'The new law includes possibilities for other options of PPP well known around the world, and it is expected that this will attract more participants from the private sector,' says Arsov. He explains that the proposed text of the law was published in late May for comment, and that parliament is expected to vote on it in the autumn.

The hope is that this will open the way for extra funding in the sector, as the EU funding that is the shorter term focus of the reforms will not be enough to cover the sector's requirements. 'If it was utilised 100%, it will cover no more than 20% of the needs,' says Arsov. 'The rest should come from national budgets, which is

not very promising, and the last part is expected to come from PPP.'

With some €12 billion needed to meet the needs of the sector, attracting funding is going to take time, maybe 20 years, but it raises the prospect of tariff increases, which will no doubt be another issue for BWA to comment on. 'There is potential in this respect because now the water tariffs are even lower than 2% of average family income,' says Arsov, comparing it to the 4% or more generally seen across the EU. But he sees potential problems too. 'The problem is that we have a lot of small settlements where only elderly people live. They are not able to respond adequately financially... For now it is really a very delicate situation. Tariffs obviously have to be drastically increased, but on the other hand this will decrease the percentage of payment.'

Current concerns around tariffs also relate to the government's hope of creating a state water company to manage all water resources and act as the bulk supplier. 'They intend to manage this for one price for all the country and to sell to different Water Associations,' says Arsov. While this will equalise tariffs, this means there will be increases in some places. 'This is not quite fair from the point of view of some municipalities and some water companies currently operating in these areas,' he says, adding: 'This is one of the problems and it is under negotiation between municipalities, water utilities and central government.'

Clearly all the reforms have major implications for the current operating companies, facing as they do the

process of a reduction in the number of operating areas and the need in due course to seek to be awarded new operating contracts in the face of competition from the private sector.

'We have good technical staff at all water companies,' notes Arsov. 'They are very skilled, well educated.' He does however note that there is a skills gap at the operator level, hence one of the other current main priorities for BWA is to complete the creation of a training centre for water utility operators.

He is therefore optimistic about the prospects for these companies. 'There is a good base. They are quite competitive. I hope most of them will continue to do their job in the same place.' But it is not clear yet what will be the interest or impact of, say, competition from international bidders. 'Nobody knows what will happen,' adds Arsov. That said, he is confident that local staff will remain key to delivering the services and improvements. He notes that international companies 'definitely will hire experts from local companies... This is indispensable because local people know better the situation and they know their job... So I expect that local companies, if they don't succeed to win the bids, they will join the winner.'

In this period of intense change, Arsov sees another priority for BWA: 'One of the main tasks of the association is to create an environment for discussions of the problems and to make declarations and to disseminate knowledge.' This means there is what he describes as 'quite a tough programme' of conferences and seminars, on topics such as water losses, water operator partnerships and commercially-available wastewater technologies.

But it is the task of seeking to provide input to legislation and policy that clearly looks as though it will be demanding. 'We have to work on this professionally, and this is one of the challenges of our association. We are corrective of the government, trying to cooperate positively and to criticise the wrong steps, and in the latter we face a lot of problems obviously. Negotiations are not very smooth, and sometimes our advice is just neglected.' ●

#### **Acknowledgement / additional information**

'Bulgaria – Sector reform to meet European Union requirements'.

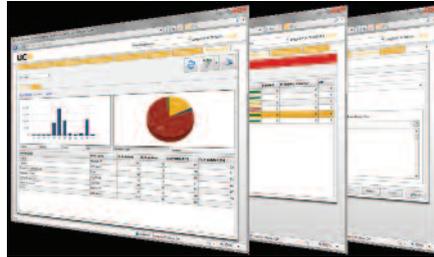
Roumen Arsov. p42. IWA Yearbook 2011.

## Next generation service management tool released

**UC4, a US IT automation software company, has released UC4 Service Level Governor, what the company says is a proactive management, monitoring and reporting tool that enables the efficient delivery of service level commitments. UC4 Service Level Governor takes ONE Automation, which integrates the automation of business processes, applications and IT infrastructure onto one platform, to the next step, says UC4, by automating decisions and using cloud computing.**

Commenting to *Water Utility Management International* on this software's application to the water industry, Matthew Busch, Product Marketing Executive at UC4 Product Management, said: 'Utility companies use sophisticated customer care and billing software systems to ensure a continuous stream of revenue and consistent customer service. These systems are invaluable to the business. A delayed, failed, or incorrect billing cycle can result in missing or delayed revenues. UC4 can proactively monitor the service levels associated with billing processes. If a process is going to be delayed, UC4 will recognize the situation and allow for proactive measures to be taken to ensure billing is completed timely and accurately.'

'The core technology is a Complex Event Processing (CEP) engine to



identify event patterns that could lead to problems; and proactively resolve them before SLA (service level agreement) violations occur,' he explained. 'For example, it might avoid an SLA violation by automatically provisioning additional resources or reprioritizing other workflows. At the same time, it will send out pre-emptive alerts, to keep you apprised of the situation.'

UC4 Service Level Governor includes a service-level management wizard that provides a dashboard overview of SLA rules and automated actions; a real-time monitoring dashboard that provides an overview of fulfilled and violated SLAs; and a reporting dashboard that tracks the fulfilment or violation of SLAs over extended periods of time.

'UC4 service level governor changes the way you manage your service levels,' said Busch. 'Yesterday you knew what you missed, with UC4 you know what you deliver. The approach is about being proactive and not reactive.' ●

[www.uc4.com](http://www.uc4.com)

## Grontmij launches asset management programme

**Grontmij has launched a new Asset management service targeted at water utility providers to appraise and improve the effective use of existing data management systems.**

The RAM Policy Programme has been developed to improve the efficiency of people, business process, technology use and data resources, says Grontmij. Ian Gray, regional director in the Asset Management team for Grontmij, said: 'We have spent a long time developing a programme that will enable us to go into an organisation, examine their data management approach, identify where efficiencies could be made and make changes that will offer substantial and long-term savings.'

The new service will see Grontmij assess water providers' existing assets and data management systems and identify any poorly performing or 'stressed' assets which are operating beyond the expected cost.

Mr Gray added: 'We're incredibly optimistic about the level of efficiency savings we can achieve with the new RAM policy programme.' ●

<http://grontmij.com>

## Data acquisition upgrade for Portland Water Bureau

**Telvent has announced that it will partner with the City of Portland, Oregon, USA, to upgrade the Portland Water Bureau's real-time data acquisition system.**

Portland Water Bureau managers and planners will use Telvent's OASyS Dynamic Network of Applications (DNA) supervisory control and data acquisition (SCADA) system to utilise real-time data monitoring.

This will be used, says Telvent, to monitor and manage the water network's pump control, reservoir volumes and flow control. ●

[www.telvent.com](http://www.telvent.com)

## KOREC to distribute 'Intelligent Trench' underground mapping solution

**Surveying instrument distributor SKOREC has announced that it has signed an agreement to become an Intelligent Trench partner and a UK supplier of the Intelligent Trench underground mapping solution, which will allow every road excavation in the UK to be recorded, photographed and mapped on a national database, the company says.**

Contractors and utilities can record data on a new excavation for future reference by recording the GPS coordinates of the marker positions and allocating photographs and asset data to this point,

including attributes such as the material and diameter of the pipe. Surveys can also be uploaded and shared for future reference.

Contractors and utilities can view existing information remotely via the web portal to see what information already exists, or at the location itself in order to plan works, carry out targeted digs and avoid third party damage. ●



[www.korecgroup.com](http://www.korecgroup.com)

**Bank releases tool for customer management best practice**

The Inter-American Development Bank's (IDB's) water and sanitation division has released an evaluation tool to implement good practices in customer management for water and sewerage operators.

In designing the tool, the bank considered four levels of customer management development, ranging from level 1, the obsolete company (with old procedures and tools designed in the 1980s); through to the operational company (where basic customer management processes are in use), the modern company (which has implemented modern technologies to achieve a productivity level and quality of service), and the company of the 21st century (described as 'a communicating business, where all systems are interconnected to facilitate the exchange of data and information').

To facilitate use of the tool, all customer management issues have been grouped into four main functional areas – the 'billing factory', which consists of recurrent billing and collection activities, revenue management, customer care, and customer marketing.

Pilot projects at ANDA in El Salvador and EMAAP-Q in Quito, Ecuador, helped to validate the concept and the questions in the assessment tool in detail. Separate reports have been produced that include an analysis of the utilities' customer management activities, the results from using the tool, and the proposed action plans to strengthen their customer management. ●

The tool is available at: [www.iadb.org/en/topics/water-sanitation/publications,2031.html](http://www.iadb.org/en/topics/water-sanitation/publications,2031.html)

**Wastewater Treatment Operator Training Manual: Fundamentals of Utility Management**

WEF says that this manual is intended for water and wastewater utility operations professionals who aspire to or have been promoted to management or leadership positions. Utility managers must be knowledgeable in the areas of personnel management, budgeting and financial management, communications, utility operations, safety and security, record keeping, and relevant laws and regulations, says WEF, and this manual conveys some of the lessons learned from high-performing utilities' management strategies.

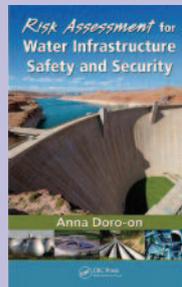
**WEF 2011**  
**240 pages. Paperback.**  
**List price: \$70**  
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**Risk Assessment for Water Infrastructure Safety and Security**

Author: Anna Doro-on

Providing a quantitative risk assessment methodology, Risk Assessment for Water Infrastructure Safety and Security analyzes the terror threats against United States' water infrastructure. It focuses on the human safety, environmental, and economic consequences that could be triggered by terrorist attack. It includes detailed plans, engineering designs, economic analyses, and protocols for strategic counterterrorism and emergency preparedness. The text also examines the legal and regulatory requirements related to the protection of water infrastructure from terror hazards against human health and the environment.



This book:

- Provides a full evaluation of the potential terrorist threat against human health and the environment through the water supply system
- Presents qualitative and quantitative processes and models for the secure and safe operation of facilities and critical infrastructure as required by EPA, DRS and other regulatory agencies
- Examines all aspects of water safety and security, including recent incidents of high trace levels of prescription and other drugs in the water supply
- Offers various risk and vulnerability methodologies for assessing critical water infrastructure

**IWA Publishing and CRC Press August 2011**  
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**IWA members price: £51.00/US\$91.80/€68.85**  
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**ArcGIS for Water Utilities**

Geographic information systems solution company ESRI has developed a range of maps and apps packaged for the ArcGIS platform and specifically designed for water utilities. Maps, apps and best practices are available for download from ArcGIS's Water, Wastewater & Stormwater Utilities group, and the ArcGIS Resource Centre has a blog and forums explaining the applications and tools available. ArcGIS for Water Utilities is an expansion of previous templates provided for water utilities.

[www.esri.com](http://www.esri.com)

*PURC Advanced International Practices Program: Benchmarking Infrastructure Operations*  
**7-10 August 2011, University of Florida, Gainesville, Florida, USA**  
**W: <http://warrington.ufl.edu/purc/develop/details.aspx?courseId=204&courseMeetId=117>**

*African Water Leakage Summit*  
**6-7 September 2011, Midrand, South Africa**  
**8-9 September 2011, Cape Town, South Africa**  
**E: [zamas@wrp.co.za](mailto:zamas@wrp.co.za)**

*Leading-Edge Conference on Strategic Asset Management*  
**27-30 September 2011, Muelheim an der Ruhr, Germany**  
**W: [www.lesam2011.org](http://www.lesam2011.org)**

**LESAM 2011 will provide an opportunity to discuss developments at the leading-edge of asset management to an audience of utility personnel, regulators and consultants. It will be focused on the techniques, technologies and management approaches aiming at optimizing the investment in infrastructure, while achieving required customer services standards. Topics include: technical innovations; sustainability approaches; and risk management.**

*Water Loss Reduction in Water Supply Systems*  
**14-15 November 2011, Sofia, Bulgaria**  
**W: [www.bwa-bg.com](http://www.bwa-bg.com)**

*Water Loss 2012*  
**22-25 January 2012, Manila, Philippines**  
**W: [www.iwa-waterloss.org/2012](http://www.iwa-waterloss.org/2012)**

*IWA Water Security Conference - Resilience 2012*  
**25-27 March 2012, Sydney, Australia**  
**W: [www.watersecurity2012.com](http://www.watersecurity2012.com)**

*IWA World Water Congress and Exhibition*  
**16-21 September 2012, Busan, South Korea**  
**E: [2012busan@iwahq.org](mailto:2012busan@iwahq.org)**  
**W: [www.iwa2012busan.org](http://www.iwa2012busan.org)**

**Denotes an event organised or supported by the International Water Association**