

MARCH 2012

VOLUME 7 ■ ISSUE 1

water utility management

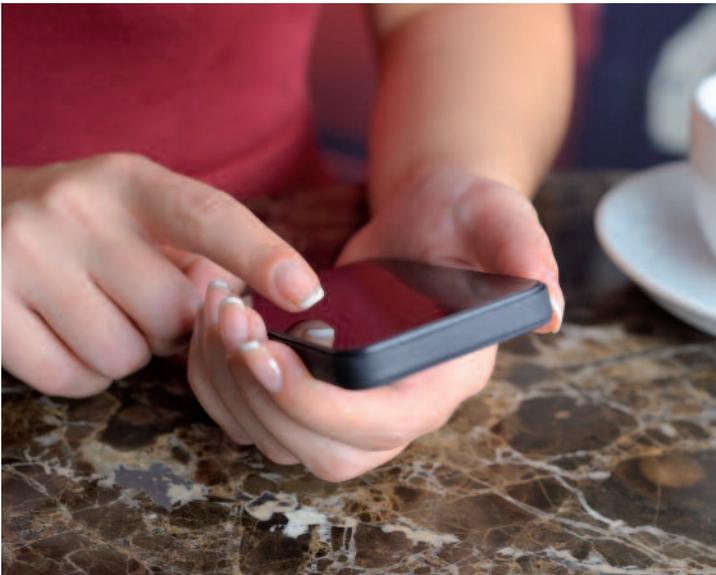
I N T E R N A T I O N A L

IWA EUROPEAN UTILITY CONFERENCE 2012

Communicating the value of water

IT / CUSTOMER INTERACTION

IT solutions for a smarter customer experience



PLUS ...

TRUST project to deliver tools for
sustainable urban water services

and

Saudi Arabia's customer care
and billing solution



PRICING POLICY



Sharing pricing policy experiences in water-scarce Cyprus

Utility ratings downgraded in weakening economic climate

A 'domino' effect of the downgrading of various nations' sovereign credit ratings has led ratings agency Moody's to similarly downgrade a number of water utilities' credit status.

Those affected include Italian hydroelectricity generator Compagnia Valdostana delle Acque (CVA), which serves the Valle d'Aosta region, and water utility Acquedotto Pugliese, whose issuer and senior unsecured ratings are placed on negative outlook. Electricity and gas provider Enel Group and its subsidiaries, including Endesa, remain unchanged.

Moody's has also downgraded Bratislavská vodarenska spoločnosť, the water utility serving the Slovakian capital, Bratislava, and changed the company's outlook to negative.

Various Portuguese utilities, including Energias de Portugal's Spanish hydroelectric subsidiary, HC Energia, were also downgraded.

Moody's determinations make clear that water utilities in general have strong financial profiles, and that the downgrading relates to the weakening of the sovereign and macro-economic environment.

The ratings agency has also warned that proposed changes to the way price limits are set and for increased competition in the UK 'have the potential to increase credit risk in the UK water sector'.

Moody's senior vice president, Neil Griffiths-Lambeth, warned: 'Although the financial and thus credit impact of the proposed upstream and downstream competition may be limited, proposals to

set retail price limits by reference to the average cost to serve could prove very expensive for less efficient companies.

'In addition, the proposed focus on "outcomes" rather than "outputs" and having performance measured against regulatory targets will challenge UK water companies. As a result, ratings may, in future, diverge outside of the current narrow range based on operational performances.'

Moody's report also observes that the UK government's proposed reforms, which include upstream and downstream competition and licence changes, 'introduce uncertainty that is credit negative for a sector that has to date been regarded as one of the most stable and predictable'. ●
See Analysis, p7

European Commission investigates 'coordinated behaviour'

The European Commission (EC) has begun formal anti-trust proceedings to investigate whether the 'big three' French water companies – Saur, Suez Environnement / Lyonnaise des Eaux and Veolia, together with their trade association, the Fédération Professionnelle des Entreprises de l'Eau (FP2E) – have, in the words of the Commission's statement, 'coordinated their behaviour on French water and wastewater markets, in breach of EU anti-trust rules'.

The opening of proceedings means that the EC will treat the case as a priority and does not prejudge the outcome of the

investigation, the statement stressed.

The EC will look at whether the companies have coordinated their behaviour in these markets, in particular on elements of the price invoiced to final consumers, contrary to Article 101 of the Treaty on the Functioning of the European Union.

The background to the case was a set of unannounced inspections carried out by the EC in April 2010 at the premises of several French companies active in the water and wastewater services market.

In the context of the same antitrust

investigation, the Commission has fined Suez Environnement and its subsidiary Lyonnaise des Eaux €8 million (\$10.5 million) for the breach of a seal affixed by the Commission during an inspection at the company's premises at that time.

The EC notes that the duration of anti-trust investigations depended on various factors including the complexity of each case, the extent of cooperation and the exercise of the rights to defence.

Veolia and Suez Environnement are both reported as confirming that they will cooperate fully with the Commission. ●

Veolia announces water and wastewater contracts for Japanese cities

Veolia Water, the only private foreign company to have won concessions in Japan since the market opened in 2002, has announced the renewal of two contracts and a major new potable water operations success.

Veolia Water Japan renewed contracts for two wastewater treatment plants serving the cities of Hiroshima and Kyoto, which it has been operating since 2006 and 2009 respectively.

The new contracts have a four-year and three-year renewal period respectively, and cover provision of wastewater services to 649,000 people in parts of Hiroshima and 51,000 people in parts of Kyoto.

The company has also won a five-year operation and maintenance contract involving all facilities used to treat drinking water for 515,000 people in Matsuyama on the southern island of Shikoku. This is

Veolia's first potable water contract for a Japanese city.

The three contracts represent revenue of €49 million (\$64.3 million) across their duration, and are due to begin in the second quarter of 2012.

Samantha Bowles, head of communications for Veolia Water's Asia-Pacific operations, explains that Veolia Water opened its office in Japan in 2002, the year that the law changed to allow private participation.

She notes: 'Before 2002 it was not even possible for companies like us to operate. Japan followed a trend in Asia – at the time, Korea and China were going through the same process.'

Ms Bowles explains that Japan consisted of many different, small municipalities but that in recent years there has been a movement to merge these into larger urban

areas, which has coincided with a need to improve operational performance in terms of efficiency, quality and environmental performance – the latter being of great importance for the country.

She adds: 'We built the business on bringing our know-how in particular on optimisation of operations, which is what made the difference.' In the early days, contracts for private companies were just for a year or two, then as these were retendered and the country became more confident in the services they were receiving, the terms began to extend.

'We are seeing it evolve,' Ms Bowles says. 'We are very happy to have the first significant contract, the five-year Matsuyama contract, and that the contracts for Hiroshima and Kyoto have been renewed. It shows their confidence in our ability to deliver operations and add value.' ●

Qatar utility appoints MWH for master plan development

Ashgal, the Public Works Authority of Qatar, has appointed consultant MWH Global to develop an integrated drainage master plan for the state.

The master plan will provide a framework for decisions on future investment in water and wastewater treatment, groundwater management, surface water and treated wastewater effluent infrastructure for the next 50 years.

The completed plan will be an updatable tool that will allow Ashgal to examine, interrogate and plan future wet infrastructure investment, taking into account the country's changing demographics and infrastructure needs.

A core driver is Ashgal's ambition to embrace an integrated water management approach that brings together the planning and implementation of all parts of the water cycle to create a state-of-the-art, sustainable infrastructure system.

The master plan will align with the main elements of the Qatar National Vision 2030 and will cover the whole water cycle, using best global practice in sustainable water resources planning and management, and working closely with major stakeholders to maximise water conservation and minimise wastage, MWH says.

MWH will also train and transfer project knowledge to Ashgal staff, including the use of the IT-related tools so that updates to the master plan can be carried out as needed by Ashgal staff.

International law firm Eversheds also announced that it had been appointed to advise the Qatar General Electricity and Water Co (Kahramaa), about its strategies for improving and expanding the country's electricity and water supply.

Kahramaa was set up by the Qatari government to establish and operate processing facilities, and to license and regulate them.

Doha-based Suzannah Newbould will lead the Eversheds team. She said: 'Qatar is in a period of rapid growth which has generated a need for the expansion and improvement of utilities in line with ever increasing standards for quality and environmental sustainability.' ●

Aquarion buys United Water Connecticut

Aquarion Water Company last month announced an agreement to purchase US utility United Water Connecticut, subject to regulatory approval. The deal is expected to take six months to complete.

The utility is a subsidiary of Macquarie Bank-owned Aquarion, and Suez Environnement is the ultimate owner of United Water Connecticut. The purchase unites the town of Brookfield and several nearby urban areas under one supplier.

The move also underlines Aquarion's interest in Connecticut, where the company bought 27 new water systems serving over 10,000 customers last year. The company now has a customer base of around 610,000 in the state.

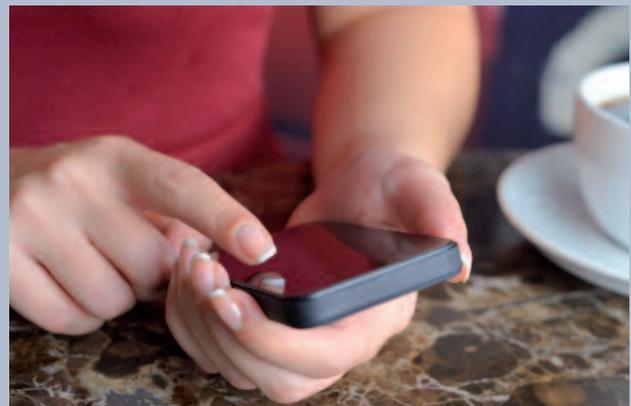
An announcement from Aquarion said: 'The acquisition of United fills a major portion of the remaining gaps in infrastructure that have long prevented people in western Connecticut from enjoying the services, reliability and efficiencies of a regional water supplier.' ●

REGULARS

- 7 **ANALYSIS**
Sector financing challenge posed by global financial crisis
- 23 **PRODUCTS & SERVICES**
- 24 **READING & RESOURCES**
- 24 **DIARY**

FEATURES

- 8 **COMMUNICATIONS**
Communications tools and strategies: valuable lessons for customer and business management
By Sanford Berg
- 10 **IWA EUROPEAN UTILITY CONFERENCE 2012**
Communicating the value of water: inspiring changes in public opinion
By Lis Stedman
- 14 **IWA EUROPEAN UTILITY CONFERENCE 2012**
Water usage forecasting: planning now for future needs
By Lis Stedman
- 15 **URBAN WATER MANAGEMENT**
Developing tools for tomorrow's urban water services: project TRUST investigates leading-edge solutions
By Lis Stedman
- 18 **PRICING**
Water-scarce Cyprus leads discussions on utility management and pricing
By Lis Stedman
- 20 **IT / BILLING / CUSTOMER INTERACTION**
Saudi Arabia modernises water provision with full life-cycle customer management
By Lis Stedman
- 21 **IT / BILLING / CUSTOMER INTERACTION**
Smarter customer service experience key to maximising revenue streams
By Roger Eatwell



Public consultation complete for Ireland's water service reform

A six-week public consultation on the proposed reforms to Ireland's water sector has recently ended. The plans include establishing a new utility company, Irish Water, and universal metering.

Irish minister for the environment, community and local government, Phil Hogan, revealed the plans, claiming that the changes will create 2000 construction jobs on an ongoing basis.

The metering programme is expected to take three years to complete, and once it is finished a steady level of capital investment in water services, said to be 'potentially €600 million' (\$787 million) per year, is anticipated.

The Irish government has committed to establishing Irish Water as a public utility, which is seen as an important element in its NewERA plan to make significant extra investment in next-generation infrastructure.

NewERA minister Fergus O'Dowd was quoted at the time as acknowledging the good track record of the local government sector in providing water service infrastructure.

He noted: 'The provision of a continuous supply of clean water is such a fundamental requirement for society, it is vital that a high level of ambition will be set for Irish Water. It will need to plan strategically for the decades ahead to ensure that Ireland, which is rich in water resources, can

continue to exploit this natural advantage to attract foreign direct investment, high end employment, and meet the needs and demands of our existing businesses and communities for high quality water and security of supply.'

He added: 'While water and wastewater treatment capacity has increased substantially over the past decade, there will continue to be a very significant demand for water services from certain industries and sectors such as pharmaceuticals, chemicals, food production and processing. Industries that are heavily reliant on substantial quantities of good quality water are some of our best performers at the moment.' ●

World Bank funds further improvements to Armenia's watsan services

The World Bank is providing a further \$15 million in funding to Armenia to complete a programme of potable water improvements.

For many years after the Soviet Union collapsed most of the country's water supply and sanitation systems were in a state of disrepair. However, over the past decade the government has succeeded in improving access, reliability and quality, with increased use of public-private partnerships.

During this time the World Bank arranged two International Development Association credits worth \$43 million to help the Armenia Water and Sewerage Company, under a management contract with French consultancy Saur, to achieve significant improvements.

However, a recently completed World Bank sector study revealed there was still a need for investment to reduce the massive non-revenue water losses (which stand at 85%),

rehabilitate poor-quality water and wastewater infrastructure and continue implementation of institutional development measures at the water company to ensure sustainability.

The Armenian government has managed to leverage an \$85 million programme from various sources, and the additional World Bank loan will make up the \$100 million that it is estimated is required to complete the task. ●

ADB releases second bond for Asian water sector investment

The Asian Development Bank (ADB) has released its second Water Bond for Japanese investors to help finance its work in the sector.

The bond, which went on sale in February, is denominated in Turkish lire. ADB said ahead of its release that it would provide assistance in an amount 'at least'

equal to the net proceeds of the bond to water-related projects in the region, for instance new water supply systems in urban areas, major rehabilitation of existing irrigation systems, and investment in wastewater management.

Thierry de Longuemar, vice president of finance and administration at ADB, said:

'Hundreds of millions of people in developing Asia don't have clean water to drink. Water to irrigate crops isn't always available and water supplies are becoming scarcer due to pollution and climate change. Through ADB's Water Bonds, investors can support projects that directly answer this critical need for sufficient safe water.' ●

water utility management
INTERNATIONAL

EDITORIAL

Editor / Associate Publisher
Keith Hayward (khayward@iwap.co.uk)

Publishing Assistant
Catherine Fitzpatrick

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

Utility reform and achieving efficiency are central themes of the publication, encompassing topics such as benchmarking, investment

planning, consolidation, public / private sector roles, leadership, IT, and human resources. Other regular themes include financing, regulation, charging policies, procurement, corporate governance and customer issues.

Editorial Advisory Panel

Dr Richard Franceys, Centre for Water Science, Cranfield University, UK
Dr Bernhard Hoersgen, Executive Board Member, Gelsenwasser AG, Germany
Dr David Johnstone, Oxford Centre for Water Research, University of Oxford, UK
Prof Hamanath Kasan, General Manager - Scientific Services, Rand Water, South Africa
Mr Khoo Teng Chye, Chief Executive, PUB, Singapore
Mr Alejo Molinari, Quality of Services Manager, ETOSS / ERAS, Argentina
Dr Renato Parena, Chief Financial Officer, Societa Metropolitana Acque Torino SpA, Italy
Mr Eric Rothstein, Principal, Galardi Rothstein Group, USA
Ms Meike Van Ginneken, Senior Water and Sanitation Specialist, World Bank, USA

PUBLISHING

Publisher
Michael Dunn

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

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

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

Advertising
Paul Tilston
T: +44 (0)20 7368 7145
E: paul.tilston@caspiandmedia.com

SUBSCRIPTIONS

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

2012 price (4 issues):
£226 / €341 / \$451
(IWA members: £190 / €284 / \$360)

Contact
Portland Customer Services
Commerce Way, Colchester
CO2 8HP, UK
Fax: +44 (0)1206 799331
Email: sales@portlandpress.com

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

ISSN (print) 1747-7751
ISSN (online) 1747-776X
© IWA Publishing 2012



Publishing

Seychelles receives funding to safeguard water supplies

The European Investment Bank (EIB) has provided €27 million (\$35.4 million) in funding to safeguard drinking water in the Seychelles, which is currently threatened by irregular rainfall and longer dry periods. Planned upgrades will also protect water quality, construct new sewer facilities and reduce water losses.

The Seychelles water and sanitation programme will help the Seychelles Public Utilities Corporation to ease water shortages by renewing and expanding the water supply on the three main islands to reduce water losses, improve energy efficiency and increase the resilience of the water supply to an increasingly-

uncertain climate and less predictable rainfall patterns.

Upgrading existing wastewater facilities on Mahé and building new sanitation infrastructure on La Digue will reduce the risk of contaminating groundwater used as potable water sources. The scheme will also contribute to improving environmental and natural disaster risk management, as well as overall water management.

EIB vice president Plutarchos Sakellaris said: 'European funding and technical assistance will ensure the supply of clean water on the Seychelles for years to come. The European Investment Bank recognises the diverse technical challenges required

by small islands to mitigate against a changing climate.'

Specific projects to benefit from the programme include an extensive non-revenue water reduction programme, which will encompass both technical and commercial losses.

Other projects will increase the capacity of four existing desalination plants on Mahé, La Digue and Praslin, improve the Hermitage and Cascade water treatment plants, construct a first time sewerage system in La Digue, and extend the Mahé sewerage network. The water network will also be rationalised to improve pressure management and reduce leakage. ●

AWWA report warns water infrastructure investment costs will top one trillion dollars

An American Water Works Association (AWWA) study warns that the cost of repairing and expanding US potable water infrastructure will tip over \$1 trillion in the next 25 years, a cost that is likely to have to be met mainly through higher water bills and local fees.

The report, titled 'Buried no longer: confronting America's water infrastructure challenge', follows the recent ASCE report which warned of dire consequences if the nation's failing infrastructure was not addressed.

AWWA's report analyses a number of different factors, including timing of water main installation and life expectancy, materials used, replacement costs and changing demographics. Nationally, the study found that infrastructure needs are almost evenly divided between replacement and expansion.

As the report warns: 'Ultimately we will have to face the need to "catch up" with past deferred investments, and the more we delay the harder the job will be when the day of reckoning comes.'

AWWA executive director David LaFrance said: 'The needs uncovered in Buried no longer are large, but they are not insurmountable. When you consider everything that tap water delivers – public health protection, fire protection, support for the economy, the quality of life we enjoy – we owe it to future generations to confront the infrastructure challenge today.'

This report finds that the South and West regions of the US face the steepest investment challenges, largely because of their rapidly-growing populations. It also warns that smaller, more spread out communities face a more severe challenge, with fewer people over whom

to share the cost burden. In the most seriously affected communities, bills could rise by over \$550 a year, the report predicts.

The report anticipates a key role for the federal and state governments: 'In particular, states and the federal government can help with a careful and cost-effective program that lowers the cost of necessary investments to our communities, such as the creation of a credit support program – for example, AWWA's proposed Water Infrastructure Finance and Innovation Authority (WIFIA),' it says.

Difficult choices may need to be made between competing needs, the report concludes, if water bills are to remain affordable. The report will undoubtedly galvanise the debate on WIFIA that is currently under way. ●

Report predicts India's desalination market will triple

A report from TechSci Research says that India's desalination business is set to triple to \$1.2 billion by 2017 as rising demand from industry spurs construction of these systems. There will be 500 desal units in the country in five years, the report predicts, compared to 180 at present, with over 300 in the states of Tamil Nadu, Gujarat and Maharashtra alone.

Ottawa wastewater upgrade gets energy grant

Ottawa, in Canada, has been given a CAN\$250,000 (US\$250,000) grant by the Clean Energy

Community Foundation towards the cost of a comprehensive wastewater treatment plant upgrade. The 1959 plant recently underwent the upgrade, which improved energy efficiency and incorporated advanced renewable energy, and features energy-efficient sludge dewatering equipment.

Lebanese government signs up to loan for water supply project

The Lebanese government has signed up to a \$200 million loan from the World Bank as part of the financing for a project that will supply Beirut with 40M.m³

of water from the Awali river each year and will enable better access to water for around 1.6 million people in the region.

AfDB provides water and sanitation aid for Sudan

An €3.3 million (\$4.3 million) African Water Facility grant has been approved by the African Development Bank (AfDB) to provide around 750,000 Sudanese people in three states in the region of Darfur with improved access to water supplies and sanitation. The grant will finance the preparation of investment plans that will optimise the \$100 million in financing required to meet the

medium and longer term water and sanitation needs of the inhabitants of 15 to 20 towns in the region, as well as neighbouring pastoral people and nomads.

The project will also address the other key factors that create inequitable distribution of water in Darfur – weak institutions and lack of resources to manage, operate and maintain water infrastructure – by building the capacity of the State Water Corporations and communities in the project towns to sustainably manage their investments and water resources, and to effectively deliver water and sanitation services.

Plans drawn up for water pipe to run alongside UK high speed rail line

United Utilities is said to have drawn up plans for a £2.6 billion (\$4.1 billion) long-distance pipeline alongside the proposed HS2 high-speed rail line, which would give it the ability to transfer water to the south of England. The utility was expected to confirm its plans before a House of Commons Select Committee in early March. The first phase of HS2, which will cover a 155-mile (248km) route from Birmingham to London, is due to be completed in 2026.

Beijing turns to desalination

Zhou Lingyun, the assistant to the president of the Beijing Enterprises Water Group, told reporters recently that a desalination plant was recently commissioned in the coastal city of Tangshan, 260km south-east of Beijing, to help relieve pressures on the city's water supplies. He noted that the plant is able to produce 50,000 tonnes of potable quality water per day, and that the output capacity will be expanded to one million or even three million tonnes in future.

Guam awarded funds for water and wastewater improvements

The US Environmental Protection Agency (EPA) has awarded over \$6.7 million as part of a yearly grant to the Guam Waterworks Authority (GWA) to improve drinking water and wastewater systems on the island. Funds will also be used to help GWA to meet groundwater monitoring requirements.

Joint LG-Hitachi water treatment company launches

LG Electronics (LG) and Hitachi Plant Technologies have launched a new joint venture water treatment company, which started operations at the beginning of February. The new company, LG-Hitachi Water Solutions Company, is based in Seoul, Korea, and the company says that it expects to play a significant role in the rapidly growing water treatment industry.

Island installs solar powered desal

The Pacific island of Nauru is to use \$4 million from Japan's Pacific Environment Community fund to install a solar power generation system and seawater desalination plant. The project is expected to save the island a significant amount of diesel each year, equivalent to 1.3% of its current energy demand. Hitachi Plant Technologies will initially manage the project, with the Nauru Utilities Corporation and Department of Commerce, Industry and Environment involved substantially in its implementation.

China invests in UK water company

China's \$410 billion sovereign wealth fund, China Investment Corp (CIC), has bought a small stake in Thames Water.

In a statement, CIC said it had bought an 8.68% stake in the UK water service company through a wholly-owned unit, though it did not reveal the value of the deal.

The deal is the second recent acquisition

of a stake in Thames by an overseas buyer – the Abu Dhabi Investment Authority has bought a 9.9% stake in Kemble Water Holdings, Thames's parent company.

CIC has plans to invest in Western infrastructure – the weakness of European currencies and economies at the present time make the region attractive to outside buyers. ●

ASCE report warns of consequences of ageing infrastructure

The American Society of Civil Engineers (ASCE) has published a report that warns ageing water and wastewater infrastructure will have serious economic and social consequences for both individuals and businesses.

The report, titled 'Failure to act: the economic impact of current investment trends in water and wastewater treatment infrastructure', provides a more detailed picture than

that provided in the annual 'report card' for US infrastructure.

It warns that unless new investments are made, by 2020 unreliable and insufficient water infrastructure will cost the average US citizen \$900 a year in higher water rates and lower wages.

US businesses can expect an additional \$147 billion in increased costs, and the economy will lose 700,000 jobs by 2020, the report claims. ●

US reuse report explores range of opportunities

A report released in the US recently by a scientific advisory group the National Research Council says that with recent advances in technology and design, treating and reusing municipal wastewater for drinking water, irrigation, industry, and other applications could significantly increase the nation's total available water resources, particularly in coastal areas facing water shortages.

It adds that the reuse of treated wastewater to augment drinking water supplies has 'significant potential' for helping meet future needs. In addition, new analyses suggest that the possible health risks of exposure to chemical contaminants and disease-causing microbes from wastewater reuse 'do not exceed, and in some cases may be significantly lower than, the risks of existing water supplies'.

R Rhodes Trussell, chair of the committee that wrote the report, said: 'Wastewater reuse is poised to become a legitimate part of the nation's water supply portfolio given recent improvements to treatment processes. Although reuse is not a panacea, wastewater discharged to the environment is of such quantity that it could measurably complement water from other sources and management strategies.'

Potable water reuse projects account for a small fraction of the volume of water currently being reused, but many drinking water treatment plants draw water from a source that contains wastewater

discharged by an upstream source – a practice that is not officially acknowledged as reuse.

The report outlines wastewater treatment technologies for mitigating chemical and microbial contamination, including engineered and natural treatment systems.

The committee emphasised the need for process reliability and careful monitoring to ensure that reclaimed water meets the appropriate quality objectives for its use.

Costs of water reuse for potable and non-potable applications vary widely because they depend on site-specific factors, the report notes. Water reuse projects tend to be more expensive than most water conservation options, and less expensive than seawater desalination and other new supply alternatives.

Although the costs of reclaimed water are often higher than current water sources, the report urges water authorities to consider other costs and benefits in addition to monetary spending when assessing reuse projects.

Water reuse regulations differ from state to state and are not based on risk-assessment methods, the report says. Adjustments to the federal regulatory framework could help ensure a high level of public health protection, provide a consistent minimum level of protection across the nation, and increase public confidence in potable and non-potable water reuse, it concludes. ●

Sector financing challenge posed by global financial crisis

The on-going impact of the current poor economic climate on water and wastewater utilities has been highlighted by the downgrading of the credit status of a number of utilities by ratings agency Moody's, whilst the recent release of the OECD's 'Environmental Outlook to 2050' shows the significant challenges facing service providers in the near future. **KEITH HAYWARD** reports on the changing financial landscape for water and wastewater providers.

The global financial crisis has impacted the key types of repayable financing used in the water supply and sanitation sector, according to Anthony Cox, of the Environment Directorate of the OECD (Organisation for Economic Co-operation and Development), at a time when fresh evidence is appearing about the scale of the long-term challenges in relation to water over the coming decades.

Sustainable financing of the sector ultimately depends on tariffs, taxes and transferred funds (dubbed the 3Ts by OECD), but repayable financing is seen by OECD as the means by which the sector can 'bridge the gap' between undertaking investment and subsequently recovering the costs over a longer period.

'There is a real challenge going forward with the financing aspects in terms of repayable market finance as a result of the crisis,' commented Cox, speaking at the World Water-Tech Investment Summit held in London at the end of February.

This is against a backdrop of huge investment needs in water supply and sanitation. 'It is a huge sleeper issue in OECD countries and most governments have not come to grips with this in a very adequate way,' said Cox. Total investment in these countries is put at some \$580 billion a year, but needs to double by 2025 according to OECD estimates. 'The water infrastructure needs in OECD countries is huge,' he added.

'In terms of the cost to human health and the impacts on societies, developing countries have the greatest financing needs,' Cox continued, pointing out that according to OECD's latest estimates there will still be 240 million people lacking access to an improved water source by 2050.

This is all in the context of wider pressures on water resources. OECD's latest projections, in its 'Environmental Outlook to 2050' released at the World Water Forum in Marseille in March, reveal a 55% increase in global water demand by 2050 and an approximate tripling of nitrogen in effluents over the same period, with the deterioration in water quality occurring primarily in non-OECD countries.

Sources of finance

Bank loans are one source of repayable finance in the water supply and sanitation sector. 'We have recognised for a while that there is a bit of a fundamental mismatch between the life of water assets – long-lived and big investment – and the availability of long-term financing in many countries, and this is often very difficult for local- and small-scale service providers,' commented Cox. 'As a result of the financial crisis, we are seeing a re-evaluation of risk, particularly around sovereign risk, and this is having an impact on the availability of bank finance for these kinds of projects.'

Bond financing is another source of finance, common in many developed countries, and used in a few instances elsewhere, such as India, the Philippines and South Africa. 'We are seeing the ability of many utilities and municipalities in the United States to raise municipal bonds being adversely affected,' said Cox.

Regarding project finance, Cox commented: 'The financial crisis has really affected project finance deals, because of the high debt levels that are often granted to off-balance sheet special vehicles. What we are seeing is that companies that are trying to invest through project finance are having to [accept] less favourable conditions with sovereign-backed banks and take bridging loans at quite expensive rates.'

Equity financing has also been affected: 'The financial crisis has seen an increase in the risk premiums that are often associated here,' commented Cox.

Faced with these constraints, developing countries in particular will need to look to more innovative financing mechanisms.

'There is a strong need now to try and pool risks. Many of the utilities and service providers are very small, local, so they lack the clout to be able to work effectively in finance markets, so we are seeing more countries engaging in grouped financing vehicles,' said Cox.

He added: 'There has to be a greater emphasis on project preparation, trying to get these small providers into the game in a more effective way, by

helping them to develop strong, soundly-based projects that are nested within a more effective governance regime.'

Innovative approaches might also include, for example, blending of grants with repayable financing or direct lending of donors and international financing institutions to sub-sovereign entities. Cox also noted the raising of equity, as seen in places such as Singapore and Brazil, where effective utility management regimes have been established.

'Despite the crisis, there is no shortage of capital out there,' said Cox, pointing out that pension funds have around \$29 trillion in assets, but that less than 1% of this is in infrastructure, and with just a small part of that in 'green' infrastructure. 'What we need to do is to shift the perception of the sector from a high risk, low return sector to one of low risk and low and steady returns,' said Cox. 'This will require a stable institutional and regulatory framework which can underpin the sustainability of the financing for the sector. We seek to do this by creating what we call the virtuous circle [in which] you can increase transparency, reduce costs, [and] increase economic efficiency. It increases the utility's ability to charge tariffs and enhances the customer's willingness to pay for cost-effectively delivered services. This can help to reduce investment risk and better align ODA with water sector objectives to try to overcome the concerns over misdirected foreign aid.'

Need for water reform

As well as a projected rise in global water demand to 2050 and threats to surface water quality from nutrients, Cox also highlighted other issues identified in the outlook to 2050, such as population increase, groundwater pollution and water efficiency. Reform in the water supply and sanitation sector therefore represents just part of the wider water reforms that are needed. 'This set of projections point to the need for governments to embark on a very significant and wide-reaching water reform agenda,' he commented. ●

Communications tools and strategies: valuable lessons for customer and business management

Effective management of customers and the business requires a skill set of communication tools and strategies that lead to improved collaboration between stakeholders and delivery of clear information to the public. **SANFORD BERG** presents some valuable lessons on the crucial nature of communication.

This article summarizes some of the lessons related to communicating with stakeholders, based on work with regulators and operators, and ideas distilled from over 30 deliveries of the University of Florida's Public Utility Research Center (PURC) / World Bank International Training Program on Utility Regulation and Strategy. To date, over 2600 infrastructure professionals from 148 nations have attended the two-week course. Although most of the lessons refer to regulatory agencies and to those developing infrastructure reforms, the principles apply to operators as well. Organizations face the same challenges: creating a sustainable infrastructure system where all stakeholders have confidence in the integrity of the process and have a shared vision of improved infrastructure performance. Communication is a crucial part of this process.

As Mark Jamison, PURC's Director, has observed during the training programme: 'Many of the lessons tend to be strategic rather than technical in nature – suggesting that many of the important ideas involved how regulators, representatives from government ministries, infrastructure managers, and consumer advocates needed to “get on the balcony” (gain a fresh perspective by removing themselves from a situation). Intentionally stepping back from the “give and take” of regulation and operation allows leaders to see how various stakeholders limit or promote reform. The lessons are intended to remind decision makers that technical skills are necessary but not sufficient for high performance. Organizations must be able to communicate to various constituencies if their activities are to be understood and appreciated.'

Communication is crucial

Expertise is necessary but not sufficient for sound decisions. While technical skills related to finance, accounting, and

engineering are necessary to document the reasons for a decision, 'soft' skills (like negotiation, communication, and political sensitivity) are also essential. 'Soft' does not mean 'easy' or 'unimportant.' Finally, board members need to know enough to not be intimidated by specialists. Winston Churchill said that 'experts should be on tap, not on top'. That advice reminds us that sound public policy needs to draw upon the expertise of professionals from many fields, but that ultimately, leaders need to take responsibility for their decisions.

Sector specific lessons inform and inspire decision makers

Since reform is a continuous process and context specific, do not 'copy' what others have done, but learn from the successes and mistakes of others. Adapt and revise tactics utilized by others. Water, energy, telecommunications, and transportation each have unique problems and opportunities that are shaped by the stage of development, geography, topology, demography, and other factors. Water prices have tended to be below cost in developing countries, so cash flows are inadequate for maintenance and network expansion. Telecommunications has benefited from advances in digital technology and the utilization of a common property resource: the radio spectrum. Energy is recognized as crucial for industrial development, with self-supply being an option for the largest demanders. However, water is both a commodity and a human right – which often results in political rhetoric drowning out economic reality when it comes to dealing with water as a resource and with the associated water and wastewater industries.

Due process is very important for the legitimacy and predictability of regulation

Following the law is crucial if agencies are to avoid long court battles and bad publicity. There is no single recipe for improving infrastructure performance;



leaders in each nation must develop their own strategies, consistent with national priorities and their own legal systems. However, there certainly are principles that must be followed if regulation is to lead to improved outcomes for citizens, namely adhering to published schedules, engaging affected parties in the process, collecting and analyzing information, and meeting all the legal requirements for operating in and regulating the water sector.

Rate-making is central to public acceptance and to financial sustainability of operators

Regulation can facilitate sustainable development that makes infrastructure available, accessible, and affordable. Water, energy, telecommunications, and transportation impact the everyday lives of all citizens. Poor performance by suppliers damages the social and economic fabric of a nation. That means regulators and operators seek credibility in the eyes of some groups (investors, government ministries, development banks), legitimacy in the eyes of citizens (acceptance of decisions), and efficiency (reducing waste, expanding access, and improving service quality). In developing countries, inefficiency in many water utilities has been documented, as have a number of success stories.

Personal capacity building helps maintain organizational effectiveness (as well as professional development)

One source for technical information

about infrastructure reform is www.regulationbodyofknowledge.org. In addition, a positive attitude can help during the processes designed to strengthen performance – it facilitates the development of comprehensive strategies and sound procedures that promote improvements in infrastructure performance. Each person in the regulatory agency or the operating company can contribute to the effectiveness of the organization. However, that means the organizational silos must be broken down – so bureaucratic inertia and information empires controlling information flow do not stifle organizational effectiveness.

Take care when discussing critical issues in public

Both regulatory agencies and operating companies put together reports and press releases that are designed to influence and educate stakeholders. Premature release of information (that has not been checked) can cause problems. Furthermore, regulators need to be sure that they maintain neutrality with regards to controversial issues. Their rulings need to be based on fact and their legal mandates. Some themes that communications specialists emphasize include: never use the phrase ‘no comment’; remember the acronym MAP – have your Message, Audience (build a connection) and Proof (examples, stories, analogies, vivid details); avoid jargon; and prepare, prepare, prepare.

Messages and objectives must be prioritized

There are many potential objectives, but not all can be given equal weight. Efficiency, affordability, resource sustainability, coverage, and service quality affect costs and prices. Citizens that are currently being served want quality improvements (in terms of reliability and meeting health standards). Those citizens who are without a convenient water service want expanded network coverage. Today’s customers seek low prices, but that means that future customers are less likely to have good service. The weights given to policy objectives depend on current levels of performance, the particular sector, and citizen attitudes. Being explicit about the priorities makes the organization more accountable to those affected by regulatory and managerial decisions. Of course, politicians tend to prefer generalities – ‘everything is important’ – yet resource scarcity requires that trade-offs be made, and objectives be clearly communicated.

Be mindful of the needs and priorities of stakeholders

For example, clear communications to groups affected by regulatory and operational decisions require that those delivering the message understand the goals of all stakeholders. Communication is both an art and a science. Many options are available for those preparing messages: the art involves selecting (when possible) the approaches that generate win-win outcomes. The science involves applying conceptual frameworks that have stood the test of time. These frameworks draw upon economics, finance, law, engineering, and many other fields.

System specific strategies are necessary (there is no single recipe that works for everyone)

Learn from others and seek allies. In addition, we need to learn from our own mistakes and from the mistakes of others. Lessons provided by others give us hope, since regulators face similar challenges and opportunities around the world. Karen Johnson, former Director of Gainesville Regional Utilities, has noted that ‘within the most dysfunctional system, someone is benefitting from the status quo.’ Thus, changing current institutional arrangements requires a number of groups to take on those benefitting from low levels of infrastructure performance – whether that is a political group benefitting from a patronage system, a group of workers who benefit from rigid work rules, managers with excessive discretion, or particular customers benefitting from prices below cost. Identifying opponents and potential allies is the first step in the reform process.

In addition to putting issues in perspective, we need to think outside the box

There is no single approach to communication that works everywhere; one size does not fit all. The enabling legislation, the judicial system, national income, and investment climate all affect opportunities facing operators. However, the same principles apply in most situations – institutions, ideas, information, incentives, and individuals (leadership) matter. Finally, the ‘ideal’ is the enemy of the ‘good’. No proposal is perfect. Communication requires thoughtful investigation and presentation of the various points of view. Operators must master the art of politics, which involves assembling coalitions that see the positive

impacts of the initiative and addressing any potential problems that could arise from change. Efficiencies delayed are efficiencies denied.

The answer to most questions is ‘It depends’

However, this answer must be followed by identifying the many factors on which the outcomes depend: institutional endowments, information, incentives, resources, and other factors. A comprehensive analysis must then be presented without jargon and without pointing fingers. Of course, sound analyses require appropriate data. Since operators manage what they measure, regulators should expect to be able to collect data on a regular basis, so historical trends are clear, current operating indicators are understood, and best practice is identified. Benchmarking allows managers and regulators to examine the determinants of current performance.

Regulation is a comprehensive subject: resolving issues requires collaboration

Of course, legal mandates must be followed, which requires relevant bodies such as commissions to act within the law, recognizing the importance of deadlines and communicating in a clear and transparent manner. Professionals do not work in silos: leaders recognize the importance of different skill sets and utilize input from others. Regulators and policymakers have only limited information about firms’ commercial activities and opportunities for cost containment. The design of regulatory institutions and incentives needs to recognize this information problem – utilizing competitive markets where feasible and benchmarking when necessary.

Living in political environment: think politically without being political

Operators should seek input from all stakeholders. All the groups affected by a pricing or network expansion decision need to be able to participate in the process by providing information, identifying concerns, and learning about the consequences of different scenarios. No one has all the information that may be required for sound regulatory rulings, so seeking that information is crucial to the process.

In many regulatory jurisdictions, instead of a trial-type hearing, ‘all-party settlements’ are utilized to engage all stakeholders in developing and implementing infrastructure policy

When groups have some ownership of an acceptable package, they are more likely to implement the decision. Of course, the regulator cannot just pick elements of the settlement, since parties have negotiated in good faith. Thus, the regulator agrees in advance to accept the settlement if: it is satisfied that the main affected interests were represented in the discussions and that the broad 'public interest' is reflected in the agreement; the provisions of the settlement agreement are consistent with relevant statutes and with existing regulatory rules and decisions; there is a sufficient factual record to enable the regulator to monitor the implementation of the decision; and the settlement has the unanimous support of all the parties (unless one party with an extremely narrow interest has made unreasonable demands).

There are five steps for effectively answering questions (while avoiding jargon)

- Begin with an honest direct answer
- Position your message ('our role or goal')
- Provide evidence through a specific example, story, analogy, or facts
- Connect to the audience – recognize concerns or interests of listeners / readers
- Conclude with a summary or memorable image

At the concluding sessions of the PURC / World Bank Training Program, Intermedia Communications Training Inc. presents these tips for communicating with different groups through the media. In the case of essential infrastructure services, an organization's internal and external communications are too important to be left to chance or to beginners – communication must become part of the organization's DNA. ●

A shorter version of this article first appeared in the February 2012 issue of *Water21*, p48. The wider relevance of these points is highlighted by their presentation by the author at a workshop on Innovative Communication Tools and Strategies for Sustainable Service Delivery held by the African Water Association in December 2011.

About the author:

Sanford V Berg is Distinguished Service Professor of Economics and Director of Water Studies at PURC, Florida, US.

Communicating the value of water: inspiring changes in public opinion

Communication is a valuable skill in educating the public regarding water issues and sharing important scientific knowledge amongst water professionals, and will be integrated as a main theme at the upcoming IWA European Utility Conference in Austria. **LIS STEDMAN** spoke to members of IWA's Specialist Group on Marketing and Communications about the necessity of developing a strong communications strategy as part of efforts to raise the profile of water.



Margarida Ruas



Brita Forsberg

The IWA European Utility Conference 2012

The IWA Marketing and Communications Specialist Group will have a distinctive function at the IWA's European Utility Conference, which will be held in Vienna, Austria, from 18 to 20 April.

Brita Forsberg, the chair of the Specialist Group, explains that for the first time at the conference, communications presentations will be integrated into the general programme rather than set aside as a separate session.

She explains: 'There will be one paper on something scientific, then a communications paper on that type of problem or situation that will reflect how you can use communications to really make technology work.'

The Specialist Group was restarted at the World Water Congress in Montreal in 2010. Ms Forsberg notes: The Specialist Group in this case is very special – the other Specialist Groups are connected to the natural sciences, but this is totally different.'

Ms Forsberg stresses: 'I am of the very strong opinion that communications are part of management. In this special field, so dominated by technical specialists and scientists, communications seems fluffy, superficial and simple, but they have challenges in communication with their Specialist Groups to get their issues understood.'

She adds: 'We want to show good examples of communication – it is why we are involved in the Vienna conference. Communications activities are based on listening to what consumers and water users think and taking this to management, thus avoiding many of the types of problems involving communications in utility work.'

She cites Professor Mooyoung Han's belief that communication is missing in his specialist field of rainwater harvesting, adding: 'We have the techniques, the models, we know they work but we have got to get people to understand and accept and see the new perspective. Professor Han is such a good example of using communications to make technology work, so that instead of seeing rain as a threat people use it in a smart way.'

Water, of course, crosses many boundaries and communication between regions and nations is inherent in its management. Ms Forsberg concludes: 'It is our responsibility to communicate this. It is our responsibility to make water visible and respected.'

The IWA Specialist Group on Marketing and Communications has among its committee members the remarkable Margarida Monteiro Ruas Gil Costa, who is a member of the advisory board of EPAL (Empresa Portuguesa de Aguas Livres), the Lisbon water utility. Ms Ruas is well known as an international champion of communicating the idea of water as both a human right and an opportunity.

She reflects on many years of remarkable successes in this field, which include work to promote the rehabilitation of water supplies in Brazil and a successful campaign to preserve the iconic Aqueduto das Aguas Livres, an aqueduct in the city of Lisbon, Portugal: 'Sometimes it has been easier to communicate and sometimes it has not. It is interesting, in that developments, scientific evolution, and even developments in communications and media are supposed to have made it easier to communicate the importance of water and preserving it.'

The value of water

Public opinion is, however, extremely changeable and strategies have to reflect this, she notes. 'Communication is meeting the needs of people. We know there are communities in great need where they walk miles for a small pot of water, where they really praise the water they have – in some cases, you could almost say they worship it. In other countries where there is water everywhere people don't realise how precious it is. It is these differences that make communication more and more important.'

Whatever the situation, drought or plenty, she feels that there is a need to have a deep appreciation of water. She says: 'We have to approach water as a value – both physical and metaphysical. In my view we have to fall in love with water, whether we have a lot of it or whether we have to fight for a small pot. We also have to understand our relationship with water.'

Ms Ruas notes that for many years rural communities saw water as coming from God and as one of the basic necessities for

existence – for their land and harvests – and as a result, used it sparingly. Then as societies developed this relationship more or less disappeared, until new ecological movements and environmental awareness brought a revived concern about water conservation and pollution problems.

However, she adds that this situation has changed once more: 'Then suddenly water also became connected with prosperity and the possibility of enjoying it and all the pleasures it can give. This changed water into another concept and again it is being neglected, so communications are indispensable. It is a dimension, I dare to say, that we cannot separate from innovation, development, science and research – everything we discover we have to share so people can understand what they are as a person, a country, on this planet, and in the future.'

She speaks of water as the 'utmost element of union', the ubiquitous element both in terms of the wider world and in individual, physical terms, since so much of the human body is also water. She notes: 'It is so omnipresent in all our

lives that we can and should use it as a symbol of the values of citizenship.'

She adds that 'everybody says that in the future water will be a reason for war, and for that reason we have to regard it as a human right, as a business and development opportunity, a scientific resource and so more and more we need good management and regulation so that the needs of nature and people are fully met.'

Changing public opinion

As well as the Specialist Group and EPAL, Ms Ruas' involvement with water extends to being International Relations Director of WASA-GN, an international organisation that provides advice to governments on water as a human right and as an opportunity, and is leader of the water section of the International Committee for the Conservation of Industrial Heritage. She notes that the Specialist Group 'has an interesting role. Over the years it has not always been easy to understand that communication is so urgent and important.'

Young people are very important opinion makers, she notes, with the ability to change the mentality of their families at home. However, the entire population has a role in continuing to understand about the values of water. She adds: 'We have something called lifelong learning. We are always learning. We have to communicate and involve people with everything, especially the theme of water – it is a matter of survival and life itself.'

She stresses that it is important to help people 'to see water and each other as building a future, and water as supporting this process, not as a subject of possible war but of human rights and a better world. We know that in this crisis we have to change the paradigms. What we can do in the IWA and this group, and through utilities, is not only provide the best water research and scientific results, but also communicate to communities and countries that water has a special and unique value, as it once did.'

EPAL inaugurated a Water Museum in Lisbon (with which Ms Ruas has strong connection, being Ambassador of the European Museum Forum). She explains: 'It is a very special branch of the water utility, providing cultural and environmental communication and education about better conduct towards water.' Other water museums have since appeared, for example in Catalonia, Spain, inspired by the Lisbon museum and in their own situations conveying

The importance of social media

Consultant Pat Bakir will speak at the European Utility Conference on the use of social media in water utilities. She notes that 'in Europe and the US, where many people are very connected, utilities are using it as an additional way to connect with people.'

It is also true that in some parts of the world statistics reveal mobile phones may be the only means of communicating – in Uganda, for instance, even in villages without electricity mobile phone ownership was found to be widespread in one study, yet 33% of the population still do not have access to an improved water source and 52% have no sanitation.

Facebook, Twitter, Flickr, even YouTube and of course texting are all methods water companies are increasingly using to communicate in addition to the ubiquitous website, both internally with their staff and externally with their customers, Ms Bakir notes. 'Utilities are using social networking for business networking, for both employees and customers.'

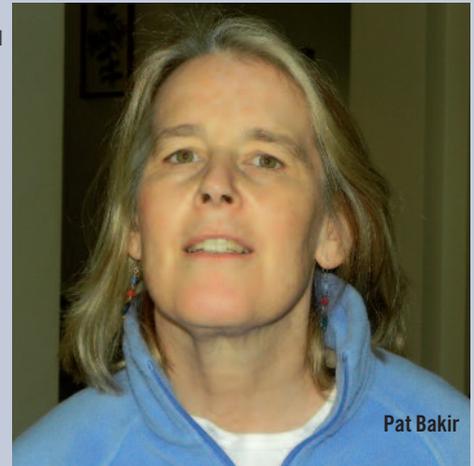
For internal communications, she explains, social media play a role in employee management, keeping people updated on company issues. Open external communication needs to be carefully managed, she adds, because junior staff may be communicating information their bosses are not aware of.

Social media can also be used to keep staff in the field up to date, and to allow them to update the office on their work, she notes – and of course the last Stockholm Junior Water Prize was awarded for an application that allowed water quality to be determined quickly and effectively on a mobile phone.

People also find it much easier to text companies than phone them (with all the many options and frustrations that causes), Ms Bakir adds, but warns: 'What companies have to be careful of with social media is that they have to keep it up – if they cannot respond, or just put something new up every three weeks, it's no use. Social stuff has got to be very active and dynamic.'

Mobile phones can also be used for billing and bill payment, and social media can be extremely useful to update people in crisis situations where other media do not provide the fast contact that is needed, she says.

'The other big thing that social media can be used for is education, providing messages about water saving and environmental issues,' she notes. It is also possible that social media could become part of the customer consultation process.



Pat Bakir

important messages about water, its use and preservation.

Bridging the gap between cultures is also one of her specialist areas – the President of Italy awarded her the title of Grand Officer for her work in the area of cultural rapprochement between Italy and Portugal. She understands that another challenge for water is the global mobility that means many deeply different views of water now co-exist in most countries. 'In this world we are more and more multicultural,' Ms Ruas says. 'We are not only communicating to the natives of the country but to all the world, because we have all the world in each country. People not only have come from different civilisations but have different collective memories, and we have to look to the capacity to build a future together. Good support from communications will be indispensable.'

In this new era, she notes, 'water is the most inspiring element, a line of union

and creating life. Water utilities are more and more not only giving their best [to] water [supply] but the capacity for lifelong learning, they are not just pure distribution companies.'

Ms Ruas has strong feelings about the vital role that water utilities must play, observing: 'Water is not only a human right, not only a business, [or] communications, [or] development – it is a mix of everything, it allows the future to be built, so it is an important role water utilities have to play. They are distributing life.'

She adds: 'I hope everybody realises what is behind the water in the tap – the scientific research that gives us safety and also has to be paid for. People have to understand. It is good to know that behind water is good research and scientific concern and it is the way it has to be. It is something people have to understand and communications have to make people understand.' ●



European
Utilities
Conference



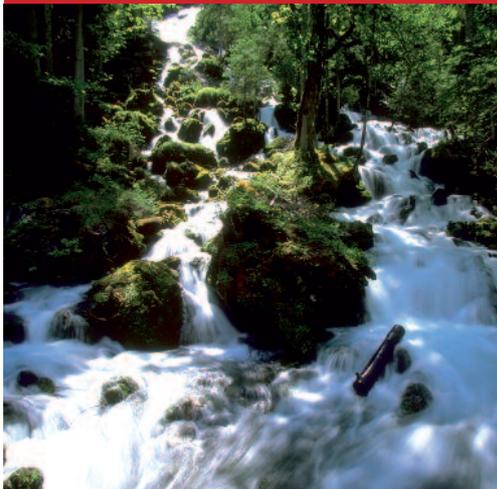
European
Utility Conference

VIENNA '12
18 - 20 April



Internationale
Arbeitsgemeinschaft
der Wasserwerke im
Donaeinzugsgebiet

www.iawd.at



Water usage forecasting: planning now for future needs

In many European countries water demand is decreasing, which in some cases may lead to network deterioration, so information is needed on customer water use patterns to allow utilities to forecast future demand. **LIS STEDMAN** looks at an Austrian research project researching water use habits, on which results will be presented at the upcoming IWA European Utility Conference, as well as a conference workshop also taking place on water safety.

Professor Roman Neunteufel is to speak about a project that has been bringing a scientific approach to future water demand and use at the IWA European Utility conference, which is being held from 18 to 20 April in Vienna.

Professor Neunteufel, of BOKU, the University of Natural Resources and Applied Life Sciences in Vienna, explains that his research focuses on Austria, which like other countries in central Europe has an ample water supply and diminishing demand. He says: 'The reason why we did the research is that we have found for the last ten to 20 years decreasing consumption, and the water utilities are interested in why this is happening. Every year, there is less water used by customers – the water companies are interested in selling water, certainly they are interested in wastewater, but Austria does not have a problem with resources.'

There are various possible reasons for the decrease in consumption, he explains, such as demographic change and climate change. He notes: 'There are areas of Austria where the population is decreasing and it is a problem to maintain the infrastructure, so the quality of water may be insufficient in future because of technical problems such as stagnation.'

To forecast what will happen, basic data



Professor Roman Neunteufel

is needed, he adds, but this is often quite old and from other countries where the situation may be quite different. 'There was no current data on water consumption. We know what is sold to each water meter, but we do not know what exactly it is used for.' There have only ever been a few projects measuring the amount of water used per household in detail (one such was run by the WRc), he adds.

Investigating water use

The Austrian Association of Gas and Water (OVGW), which represents over 200 water supply utilities, initiated a research project to obtain this data. The Institute of Sanitary Engineering at BOKU carried out the research project, funded by the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management with co-funding by the OVGW.

Normally, each dwelling has one meter, he explains, so the exact composition of water use is unclear. 'The question was what to expect for the future, where the

decreasing consumption is coming from – business or private properties – and how to forecast future demand.'

The team collected a great deal of data on utilities in different situations – urban, rural, areas with strong tourist influences – with the aim of characterising typical consumption areas.

Professor Neunteufel also notes that for individual water-using items, often the pattern of use (for example for toilets or showers) is often difficult to change, but the volume of water used is not because of existing developments such as dual-flush toilets, water saving shower heads and water-efficient washing machines.

The conclusions of the research, which will be shared at the event, will be of interest to all utilities regardless of their resource situation. In general terms, the research points to household consumption, specifically low-flush toilets, being the main source for water savings in future. If climate change bites, outdoor water use will also be significantly influenced. ●

Water safety workshop

Dr Josef Klinger, the CEO of the DVGW-Technologiezentrum Wasser in Germany, will give a talk at the IWA European Utility Conference, entitled 'How safe is safe', which will look at the definition of safety for water utilities.

He observes that safety is increasingly in focus and that the water sector therefore has to think about its definition of safety. He notes that this 'is relative and depends on many factors.' For instance in the developing world, safety may mean healthy and sufficient water, he adds, whereas in earthquake zones it may mean safe installations and preparedness for events. In developed countries it may mean safety against terrorism attacks, or protection of water quality from agricultural or industrial pollution.

Dr Klinger says: 'The main issue ultimately is how utilities can prepare to deal with the safety aspects. They have to define the main risks, balance them against the consequences and define their priorities.' This means identifying high risk, high impact issues and giving them high priority, he explains.

His conclusions will be that there are so many aspects to safety that there is no absolute definition and that it will never be possible to achieve 100% security.

Another conclusion is that thinking solely about safety and risk might mean decisions cannot be made, because every decision could potentially ignore one or two safety aspects. 'However, life is not possible without decisions,' Dr Klinger notes.

His final conclusion is that utilities have to be prepared for risk events, for instance by undertaking risk assessments.



Dr Josef Klinger

Developing tools for tomorrow's urban water services: project TRUST investigates leading-edge solutions

The European research project TRUST is aiming to develop a range of approaches and tools that can be applied to urban environments to facilitate the transition to more sustainable service delivery that can meet future challenges. **LIS STEDMAN** spoke with a number of TRUST work area leaders on the range of research activities taking place.

One of the great conundrums of our time is how to resolve the water challenges faced by urban centres – climate change, population growth, migration, increasing urbanisation and ageing infrastructure. There are many projects focused on various aspects, but one of the most ambitious, wide-reaching and practical is TRUST.

An ambitious European Commission (EC)-funded Seventh Framework Programme project, TRansitions to the Urban Water Services of Tomorrow (TRUST), has been underway for around ten months. The four-year project is driven by the need for transformation and a desire to protect natural resources, and involves 30 partners in 11 different countries who are undertaking a comprehensive programme of researching innovations and tools that, it is hoped, will be able to create a more sustainable, low-carbon water future.

There are eight work areas (WAs) within the project, led by names that many members of IWA in particular will recognise: WA1 is diagnosis and vision, led by Professor Rui Cunha Marques; WA2 is policy, financing and society, led by Professor Paul Jeffrey; WA3 is analysis tools, led by Professor Sveinung Saegrov; WA4 is technologies and operational options, led by Professor Thomas Wintgens; WA5 is future water policies and integrated tools, led by Dr Helena Alegre; WA6 is implementation and demonstration, led by Dr Theo Van den Hoven; WA7 is dissemination and knowledge transfer, led by Professor Enrique Cabrera Jr; and WA8 is management, led by Dr David Schwesig.

The results will be implemented and tested in nine participating cities or regions, which are grouped as one of three types – green cities, water scarce regions, and urban / peri-urban areas.



David Schwesig

We aim to deliver validated technology and management options to support the transition to more sustainable urban water services
Dr David Schwesig

Tools for sustainable development

Germany's IWW Water Centre co-ordinates the project. From there, Dr Schwesig, a Research Co-ordinator at IWW, has a managerial and overview role in WA8. He notes that in TRUST there will be a 'whole range of different products from analysis tools to guidelines and actual technologies. We want to enable cities to assess their current performance, including web-based self-assessment tools. We also have in mind to address the barriers, which can be governmental, social, funding or financial. We are developing tools to assess the adaptive potential and governance conditions, and aim to deliver validated technology and management options to support the transition to more sustainable urban water services.'

Dr Schwesig notes that the TRUST project was developed within the | WsTP (Water Supply and Sanitation Technology Platform), where the idea took shape and from where a number

of the project members originate. TRUST also builds on other European projects, notably TECHNEAU, SWITCH and PREPARED (which aims to prepare cities for climate change).

He talks about one of the critical phases, which will be when the research and discussion have taken form and are applied in the TRUST cities. Dr Schwesig notes that there has been wide interest in the project: 'There are nine cities that are linked as contractual partners and they will be the first beneficiaries. There have been other cities interested, and they will receive information on proven technologies or management interventions that have been tested in TRUST cities.'

He explains: 'We selected cities that we have good working relationships with, that fit into the three categories and gave a certain geographical coverage, and importantly, cities that were ambitious to change and face their challenges in an active way. These are also cities that have close links with a regional research partner. Each city is assigned to one specific research partner acting as the main interface, because implementing the first stage may require significant support and training.'

Sustainability in the water cycle

One crucial early part of the project is WA1, led by Professor Marques. He explains that the first task was a review of all the ways of measuring (and defining) sustainability, across not only water utilities but the whole water cycle. This has included a global literature review, and a move to identify the state-of-the-art and the principal aspects of sustainability – a set of 50 questions was identified and sent to the participating utilities as part of this process.

Professor Marques explains that as well as the traditional social, environmental and economic criteria, sustainability of urban water systems has further

dimensions – governance and infrastructure – that are critical to include. A set of objectives, criteria, indicators and other metrics for each dimension was developed (for example, in the social criterion, meeting the needs and expectations of customers) and several examples of sustainability scorecards were discussed and analysed.

The project also aims to identify the pressures and issues that cities face related to their water systems and how they face the pressures they are undergoing and plan for future issues, and it also includes a review of best practices on the development of flexible and resilient urban water systems.

The work has included both ‘forecasting’, Professor Marques, from the Technical University of Lisbon in Portugal, notes, looking at the issues in 2040 to 2050, and ‘backcasting’ – looking at how to get to a sustainable future. The roadmap is an important part of the project, and this will ‘design how the future should be carried out in a sustainable way’, he adds.

Professor Jeffrey, Professor of Water Management at the UK’s Cranfield University, says that WA2 is being coordinated from that university, with five other organisations collaborating. This work area is split into three parts, he explains, the first being about risk, resilience and vulnerability, and trying to validate ways in which utilities can work with their partners to improve the resilience of urban water systems.

He notes: ‘Working with utilities, customers and other institutional actors you get a feel for what real urban water systems are like and how to improve the resilience of the existing systems. It is a huge task, but we have had a lot of interest and buy-in from utilities.’

One current activity is a series of Foresight workshops, helping utilities and their customers to think about their future aspirations for the water system

and what would be the appropriate asset bases to deliver these, as well as what management and governance of these would look like, he explains.

He suggests a few options, such as not delivering all water to potable standard, a high degree of decentralisation, much more variance in the water tariff and smarter water systems. ‘The relative balance between these, what the styles of management would be, and ways of delivering these water systems – as well as the implications for real life – need to be discussed.’

The second element involves IWW and will look at delivering the regulatory, economic and financial context, aspects of market structure and the regulatory future, as well as ways competition and efficiency may be enhanced in the urban water context, where finance will come from in future, which Professor Jeffrey says will create a ‘launchpad to investing where the new business opportunities are’.

The third component is about behaviour and change, Professor Jeffrey explains. ‘It is widely accepted by the academic and commercial sides around water management that the future will be very different to at the moment if water stress starts biting. At the very least we will have to make the best of the resources we have got and probably find new resources. As part of the innovative approach we expect people will live differently, and recycled water will be cascaded down through industrial and agricultural to municipal use. We are trying to better understand how customers might respond to the changes.’

Metabolism model

One of the core products of TRUST is the metabolism model being delivered by WA3, which is seen as an important analysis tool. Professor Saegrov of the Norwegian University of Science and Technology explains that the aim of the

metabolism model is ‘to record vital information relevant to sustainability of urban water and wastewater systems in a systematic fashion. This would be the bedrock for framing and measuring the indicators for assessing the degree of improvements in performance – economic, environmental, social and functional.’

‘The industrial ecology tools of Material Flow (and Stock) Analysis (MFA) and environmental Life Cycle Assessment (LCA) are applied to the metabolism model to chart the inflows and outflows of materials, consumption of energy / fuel materials, and the environmental impacts associated with these consumptions,’ he explains. ‘The concept of metabolism here refers to the sum of activities, reactions and conversion processes that are needed in order to develop and operate the urban water cycle system, and accordingly, the annual turnover of resources (materials, chemicals, energy), wastes, by-products and emissions that is the result of these activities, reactions and conversion processes.’

‘The outputs from other work areas of TRUST enable the use of a model to test the effect of alternate “possible” and “realistic” options on the metabolism as a whole,’ he continues. ‘In addition to the MFA and the LCA, the metabolism model also permits the application of Life Cycle Costing (LCC), while considering money to be a resource, just like materials, energy and chemicals, which are procured by expending it. This automatically factors in the social aspect – the willingness of consumers to pay more if needed, for the services rendered by the utilities.’ The metabolism model will be demonstrated in Oslo, the capital of Norway.

Leading-edge technology

WA4 focuses on technologies and operational options – the true leading-edge element of the project, which will look at what is new in the sector that could be used to ‘do things differently’



Rui Cunha Marques



Paul Jeffrey



Thomas Wintgens



Sveinung Saegrov

Focus on dissemination

WA7 is about communication. Its head, Professor Enrique Cabrera Jr from the Polytechnic University of Valencia, Spain, says: 'We really felt the project impact comes from the ability to disseminate the results effectively – they should not be limited to the researchers. Our approach is different.'

He notes: 'Citizens' relationships with the environment are in critical change. Twenty years back, the scene was nothing like it is now, and it will keep changing. TRUST will try to understand what water services should be like in 2040.' The project, he explains, will develop tools and a roadmap to help the water services of today become the services of tomorrow. 'It is not an easy task, getting from A to B,' he observes. 'One of the things we are very aware of is that there is a lot to be done in governance and society.' Change also has to be across all sectors, he adds. 'It cannot just be a technical solution. Our water sector has evolved by social and political change, not just software and technology – all stakeholders participate together to promote change.'



Helena Alegre



Enrique Cabrera Jr

and create a sustainable urban water service. The outputs from this work area will be new treatment and monitoring techniques and management options, particularly suited to the challenges of the pilot cities and regions.

Professor Wintgens from the University of Applied Sciences and Arts Northwestern Switzerland confirms that this work area is 'the technical heart of the project'. It covers all elements of the water cycle, starting with water supply and looking at water use, wastewater treatment, reuse – closing the water cycle – as well as the water / energy nexus and tools for strategic asset management.

He adds that the work 'is not aiming to provide generic solutions for all situations, it is trying to pinpoint examples of challenges and new technologies in the target areas, and to see how applicable these may be in other areas.' For example, the water use area is looking at water demand reduction options and water loss reduction, and wastewater treatment focuses on SUDS (sustainable urban drainage systems), and wastewater treatment plant efficiency.

Strategic infrastructure management

Dr Helena Alegre, senior researcher at LNEC, the National Civil Engineering Laboratory of Portugal, explains that WA5 'has to do with the tools and methods that will support infrastructure asset management in an integrated perspective.' This work area's role is to produce approaches and materials that can directly be used by utilities in the decision-making process. It builds up from the expertise and findings of the other work areas on governance, economic and technological issues and from those developed by LNEC and its partners in-house (such as www.aware-p.org).

'Based on the knowledge developed during the project we need to produce recommendations, guidelines, technical books, e-learning materials and leading-edge software. The objective is to assist utilities and decision makers in general, in terms of how to manage their infrastructures strategically, coping with the transition between the urban system of today into the system of tomorrow,' Dr Alegre notes.

She adds: 'For me, it is a major difference between this and other previous Framework projects where the main results are scientific publications and research prototypes. Within TRUST we are developing research, techniques and materials that are problem-driven. We want to get to the end of the project with professional materials, tailored to the target audiences and ready to use – tested, without bugs.'

Dr Alegre recognises the complexity of moving from a conventional current system to a leading-edge one, based on different paradigms, noting that 'if you want change you have to manage the transition, which is a major challenge. You need to understand where you want to go and what is the best transition path to get there. These are the two basic questions of TRUST in general and WA5 in particular.'

The intention is to supply the tools to assist in applying these questions. These, and outputs such as guidelines and recommendations for policy makers are key, she adds, 'because governance, regulatory frameworks and institutional arrangements are critical factors in a successful transition.'

Putting outcomes to the test

Dr Alegre is also senior vice-president of IWA, and as IWA is a partner in TRUST, she is also extremely happy that the 'vast

majority' of the outputs from WA5 will be in the public domain, noting: 'I believe this way they will have a much bigger impact. This is a win-win opportunity for IWA that may provide members with valuable information and leading-edge professional solutions'.

Dr Alegre acknowledges the similarities between TRUST and the IWA's Cities of the Future Specialist Group, but adds: 'Cities of the Future is very much looking to the leading-edge, non-classical solutions, being essentially directed to new developments. These solutions are often disruptive and are not easily applicable to existing urbanised areas. In our case, the main focus is on how to manage the transition from the current situations to the sustainable services of the future. We have to say, it would be nice to get there, but we cannot ignore that we are here, so can we get there, and if so how?'

WA6 is the implementation and demonstration stage, where the cities become the testbeds for the new ideas from the project. There will be individual roadmaps on sustainable development pathways for each city or region. Although the main focus of this work area is in the later stages of the project, it has already started to intensify the links to the TRUST cities.

The first deliverables from the project are due in March and April, and the southern European TRUST partners will attend an event jointly organised by WA4 and WA6 in Portugal in April. Among the early outcomes will be the WA1 analysis of the current state-of-the-art – where we are, what the challenges are, and what the current working strategies are to cope with change. The first draft of the TRUST cities roadmap template will also be available this April, and the project is due to complete in April 2015. ●

Water-scarce Cyprus leads discussions on utility management and pricing

This year the IWA Specialist Group on Economics and Statistics has co-organised a new workshop, which aims to highlight current expertise in water utility management and pricing policy from the host country as well as bring in knowledge from around Europe.

LIS STEDMAN looks at the current challenges Cyprus faces with regards to scarce water resources, and how the country is well placed to lead discussions.

On 3 April in Lemesos, Cyprus, the IWA Specialist Group on Economics and Statistics, along with the Water Board of Lemesos, is hosting an innovating additional workshop to the Specialist Group's local meeting agenda, focusing on water utility management and pricing policies.

Socrates Metaxas, the manager of the Lemesos Water Board, explains: 'We proposed the workshop because we felt it was an issue that had not extensively been covered in recent workshops or the international water press. We hope we will come up with some conclusions.'

The workshop will enable a 'mutually beneficial exchange of knowledge', he adds, with specialist speakers both from mainland Europe and Cyprus itself.

Cyprus is well placed to lead such discussions. Mr Metaxas notes that 'our geographical location makes us consider water as a very scarce resource. We are in the south-east Mediterranean, we are on an island. Climate changes over the past few decades have made us realise how important water is, and that we should appreciate its value.'

The Government's Water Development Department (which is the bulk wholesaler of water for the Water Boards), has worked very hard in this area, he notes. 'Their strategy emphasised the construction of reservoirs, so all of the water in our rivers is collected there and does not flow all the way to the sea. Even so, it is not enough to cover all the needs of the island.

'They then had to place a lot of



Leakage detection work taking place in Lemesos, Cyprus. Credit: Water Board of Lemesos.

emphasis on maintaining the underground aquifers, both in terms of quality and quantity, and over the last decade desalination came into our lives. For the time being, all of our urban areas cover their potable water needs with desalination.'

He adds: 'If you consider that in 2008 we had to import potable water in tankers to cover our needs for the urban areas, that made us realise how important it is to establish a good strategy to deal with water issues.'

Mr Metaxas stresses that the island's efforts to reduce non-revenue water (NRW) are a 'continuous effort'. Just before the crisis in 2008, the NRW

IWA Specialist Group Water Utility Management and Pricing Policy Workshop

Session one of the workshop will look at the importance of water pricing policies, and will be chaired by Sophocles Christodoulides, manager of the Water Board of Larnaka. Session two deals with practical applications of water pricing policies and is chaired by Dr Ed Smeets. Session three examines network performance and financial considerations, and will be chaired by Bambos Charalambous, head of technical services at the Water Board of Lemesos, who is also a member of the management committee of the IWA's Water Loss SG.

level was at 15%, but nearly two years of intermittent water supply and the extreme pressure changes that caused took its toll and the level now is 20%.

The aim is to get leakage back down to 15%, he explains, adding: 'Fifteen percent is satisfactory, but this is a continuous struggle to bring it down as low as possible. We always do our best to change the network when there is a big urban project.'

Of the three main sessions (see box) he says: 'These areas are quite significant for us. Pricing policy has been a hot issue in the past few years. There was a study undertaken, so the Water Development Department now has an actual value of water including operating costs, environmental costs and scarce resource costs. We are at the final stages of implementing the new prices for potable water.'

In addition to price measures, over the past 15 years in smaller communities on the island around 66% of the pipe network has been changed because it was considered to be a more effective strategy for dealing with leakage than investing in expensive detection technologies. In the major urban areas a mix of replacement and detection technologies are being used.

Pricing policy

Mr Metaxas notes that there is a significant emphasis on pricing policy in the workshop 'because price affects demand, even though the elasticity is low. In a place like Cyprus with water shortages, it is important to have the right policy.'

The island also has incremental tariffs now, with a top deterrent block that prices water at €5/m³ (\$6.6/m³) in the Limassol area for consumption of over 40m³ per month. This helps to save water in the most affluent parts of town, he explains, where swimming pools and greenery are major water users. 'It was realised that these consumers showed an elastic response to pricing – for them water was not a necessity, like a family that has to consume water irrespective of the price.'

The island is also increasingly using recycled water, mainly for irrigation, and as more and more wastewater purification projects come online every year, this is seen as a good way to reduce potable water demand.

Benchmarking is another topic

Sharing international knowledge

Dr Ed Smeets, who chairs the IWA Specialist Group on Statistics and Economics, explains that it is the only group 'dealing with economic issues in their broadest sense, from the point of view of companies or scientists, drinking water and wastewater. We also gather statistical information about economics in its broadest sense – finance and efficiency, how to manage utilities, [and] prices and tariff structures.'

There is a core group of 20 people on the management committee who arrange two meetings a year, in the home country of one of the core group members. This time it was suggested that as well as the meeting, a small one-day workshop should be arranged, to suit the needs of the host country.

'This is the first workshop organised like that,' says Dr Smeets. The local members suggested discussing pricing policy and water utility management, and a range of topics on these broad discussion areas have been arranged.

Dr Smeets agrees that 'pricing policy has been a hot topic in the water sector for many years and will be in future. There is a lot of discussion. The first question is: do you have to pay for water? You could argue that it is not necessary, that every human has a right to water. The other extreme is full cost recovery, and there is everything in between. Then, what kind of tariff do you want?'

He explains that 'there is a lot of expertise in this area, and whether if you raise the price consumption comes down or not. The members in Cyprus want to know about the pricing systems in other countries and their impacts, which is why there are sessions on pricing policy.'

For example, a Romanian speaker, Teodor Popa, will talk about pricing policy there, and Jean-Francois Verges will speak on the topic of pricing schedules in the face of highly unequal household incomes. The pricing policy and the transition to sustainable water cost recovery in Cyprus will also be discussed, and Austrian and Norwegian perspectives on practical aspects will be provided.

The third session of the workshop covers the broad topic of network performance. Dr Smeets notes that in some European countries, notably The Netherlands, Belgium and France, non-revenue water losses stand at 5% or 6%, so their experience is valuable. He observes, on this topic: 'Do we replace a pipe when it leaks or not? There is an economic factor there.'

On the issue of pricing and tariffs, he notes that setting these depends on 'how you want to influence consumer patterns. People want to know the latest thinking, on how you deal with this in France, [and] in Cyprus. People will use what they can use.'

Changing leakage is more difficult than changing the pricing system, he notes. 'But when you want to change prices it can be hard too – you need the approval of shareholders, communities, governments, there are different types of problems, and the group has the expertise to identify them.'

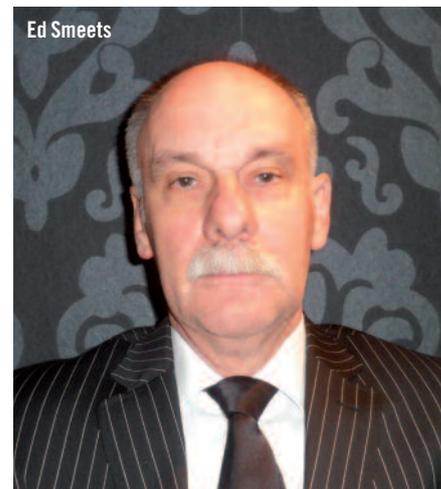
Cyprus is interested in, Mr Metaxas says, although the island cannot benefit from the economies of scale enjoyed by some utilities on the mainland. 'We are glad to cover it in the workshop. We are covering it in terms of numbers, which is a very objective way of comparing.'

Water is a national issue in Cyprus,

Mr Metaxas points out in conclusion – it often features as the lead item on the news. 'This acts as a good pressure on us to find new and more effective methods to secure the necessary water quantities, place an emphasis on quality issues, and think about implementing the most appropriate management policies.' ●



Socrates Metaxas



Ed Smeets

Saudi Arabia modernises water provision with full life-cycle customer management

Saudi Arabia's Ministry of Water and Electricity is rolling-out a customer care and billing solution from Oracle, which is being used to improve customer management through providing full life-cycle information for the utility as well as query tracking for customers. **LIS STEDMAN** spoke with **BASTIAN FISCHER** about the development of service provision in the country.

Saudi Arabia's Ministry of Water and Electricity (MoWE) has implemented Oracle's utilities customer care and billing solution to provide a fully-electronic billing system solution that echoes the sophistication of those more commonly found in the gas and electricity sectors.

The solution looks after MoWE's entire customer life-cycle management, including water billing, potable water and ancillary services. Roll-out has been completed in Al Madina Al Monawara directorate, and the second phase of the project will include roll-outs for the Qassim and Eastern Province directorates.

Bastian Fischer, vice president of Industry Strategy, Oracle Utilities, explains that MoWE already uses Oracle solutions for finance, human resources, supply chain management and more.

'Oracle is very present in the water market across Saudi Arabia,' Mr Fischer notes. 'MoWE is looking to modernise not only its asset side but also to look at the customer side.' MoWE's objectives in an area where water is scarce and expensive to produce not surprisingly include reducing non-revenue water.

Oracle is replacing the ministry's legacy customer system with a solution that will be able to collect asset data and track asset performance, providing precise data that will allow MoWE to undertake sophisticated network and district metered area (DMA) analysis and achieve targeted rehabilitation.

Oracle Utilities' Customer Care and Billing system also allows MoWE staff to have a uniform view of customers and real-time information and tools, with easy access to all historical customer interactions. Representatives can also create audit trails and monitor systems for all queries and transactions to enable greatly improved customer management.

Saudi Arabia's population is growing fast, Mr Fischer explains, and therefore its water and wastewater systems are also

experiencing rapid growth. 'Customers want to be able to track the life cycle from the beginning of the request for connection, establishing the start time of construction and see progress – when the first crew will arrive, for instance. You can track anything today, and people expect to track progress.'

Equally, when customers call, the Oracle system gives staff a total picture of their water-related issues. In Saudi Arabia water is highly state regulated, and there is a sophisticated state-defined water eligibility, so as soon as a customer calls, the representative can see key details such as what their use patterns are, their payment habits, whether there are any outstanding work orders and so on. 'It makes customer service much more proactive,' Mr Fischer adds.

Water in Saudi Arabia experiences a classic 'catch 22' situation, Mr Fischer explains – desalination requires considerable energy to produce, and energy production itself requires considerable water, so the more energy used, the more water is required – an unfortunate circle of demand. Water, and its use and management, are therefore significantly more important than in countries where there is an ample supply and conventional transmission and treatment are possible. Because of these challenges, and the pressures of population growth, a very sophisticated asset management system is required, Mr Fischer adds.

Oracle's systems are also being used by ADWEA, Abu Dhabi's water and electricity authority, which, like its Saudi Arabian counterpart, is also pushing the envelope in a similar geographical situation. Here, the emirate has already begun smart metering for water and electricity.

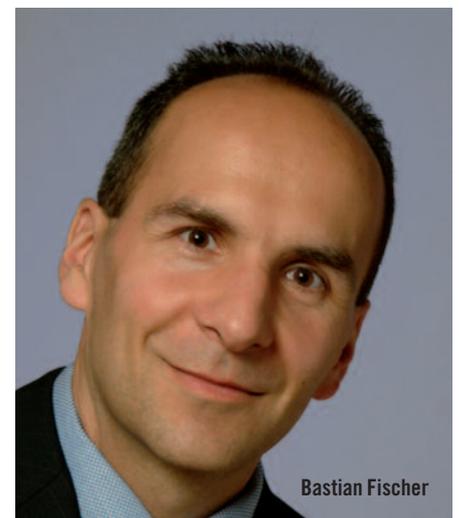
In France, Veolia subsidiary m2ocity is deploying smart meters and very advanced and reliable service quality, because municipalities are ensuring that their service contracts stipulate high network performance and low technical losses, Mr Fischer says. Oracle has also

won a contract recently here, and he notes that both companies are innovative models for the sector.

Mr Fischer explains that as pollution affects water quality, making treatment more expensive, and population growth and climate change stretch supplies, water utilities will increasingly need to treat water 'as precisely and carefully as we now treat electricity and gas'.

He observes: 'In France, for example, the requirements for water are quite tight. Cities do not want to increase the prices for treatment, which is getting more difficult and expensive, therefore they put great pressure on operators to operate the network better, in a way that reduces non-revenue water and keeps accountable those who consume and pollute more than they should.'

The technologies being used are tried and tested in the electricity and gas industries, he stresses, so there is considerable experience in their use despite the sophistication and complexity of the solutions. 'Despite their complexity there is a lot of experience, so they are manageable, therefore it is time for water utilities to think of modernising and offering a more intelligent solution, rather than as before just putting in more and better pipes.' ●

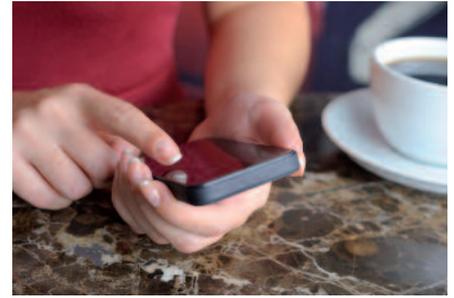


Bastian Fischer

Smarter customer experience key to maximising revenue streams

For a water utility to explore alternative revenue streams, excellent customer satisfaction is key, which requires a smart, proactive approach to managing the customer base.

ROGER EATWELL highlights the revenue options available to water companies and how improving customer communication can bring benefits to both a utility and its customers.



Water companies across the globe face a variety of challenges: finding reliable sources of water, maintaining or improving the quality of water supplied and treated wastewater discharges, climate change, and managing aging infrastructure assets that require renewal. Additionally, water companies must address regulatory requirements with regards to finance, asset management and customer management.

In many cases, these challenges have to be met in an environment where the available budgets are restricted. This is often caused by the inability of the companies to be able to directly charge their customers more, or indirectly by not being able to receive an increased proportion of the municipal budgets or rates available.

However, there are revenue opportunities for water companies, and this article focuses upon the importance for water companies to provide their customers with a positive customer experience to ensure that they are able to leverage these.

What revenue options are open to water companies?

Before addressing customer experience, we should consider how the environment for water companies varies across the world. Most companies have a fairly fixed customer base through supply of a particular city or area, although there are some companies, which are retail-only, whose customers can switch from one supplier to another as they wish. Typically there are limited routes available for a water company to increase its revenue through increased customer numbers.

Water companies must therefore look to related services to sell such as emergency insurance or supply of other utilities, e.g. electricity, to increase revenues. There are other complementary sources such as the sale of energy back to the grids, which can also be considered as

revenue generating. Although there are many potential revenue generating approaches, all are dependent upon the customer willing to do business with the water utility, therefore the satisfaction of the customer is paramount.

Risk of decreasing revenue

For water companies, there is also the risk of revenues decreasing due to customer dissatisfaction and lack of engagement between the utility and its customers.

The information demands of customers are increasing. In many cases water companies are not keeping pace with these demands and are falling below the expectations of the customers in terms of the availability and suitability of information.

In other cases customers are able to easily switch from one retail 'supplier' to another, sometimes due to the lack of satisfaction from the customer, and thus there is a real need for water companies to focus upon retaining customers to maintain and ensure revenue and reduce customer 'churn' (turnover).

The option to transfer to another water company is becoming progressively more common for domestic and non-domestic customers. For example, in the UK non-residential customers who use large quantities of water can switch supplier, and with the proposed reduction in minimum volume level it is expected that an increased number of customers will transfer from their incumbent supplier to a new provider.

Driving improved customer experience

There are a number of different reasons for interaction between the customer and the water company, but they will all usually be as the result of an issue. Last year's report on company performance¹ from Ofwat, the economic regulator of the water and sewerage industry in England and Wales, identified the top ten reasons for customer contact which, not surprisingly, were led by water leaks, sewer

floods and bill related items such as bill dispute, meter reading or bill payment. Where possible the water company needs to resolve the issue on first contact. To achieve this, companies require up-to-date and relevant information, which can then be made available to customers.

Other utility companies such as gas and electricity providers are still finding billing to be a top issue in driving customer satisfaction. Researchers from Which?, a consumer watchdog association, found that four in ten people² were dissatisfied with their energy supplier. Additionally, Britain's 'big six' energy firms received more than four million complaints from homeowners in 2011. The most common problems were mistakes on bills and inaccurate meter readings, while the dramatic increase in energy prices also sparked a large number of consumer complaints.

Getting information to the customers

The current mechanism for making this information available to customers is fairly reactive. If a customer has a problem, they contact the water company and receive information. This might be considered as the customers having their behaviour changed for them e.g. due to a loss of supply, discolouration, or flooding.

There are other situations where the water company needs to proactively communicate with its customers, for example, informing them about a contaminated supply, or the need to minimise customer usage, in order to achieve a behaviour change.

To raise awareness with customers about an initiative such as water efficiency will require bespoke proactive marketing communications, but as these are ad hoc they can be costly and inconsistent.

Changing customer behaviour

A key win is to drive the customer behaviour from being passive to active. The customers can be presented with information proactively by the water

company, for example, being told of a problem and its plan for resolution even before they are aware of the issue.

Activities which are particularly useful for customers to self-manage relate to those which often generate the highest call volumes. These include: current usage, grouping trends, availability and quality of supplied water and causes of failed supplies, information related to billing including measured or unmeasured, and ways to contact the water companies.

This increased control generally delights customers, as it allows for increased engagement by the water company with the customers, and leads to a higher level of customer satisfaction. Such customer satisfaction reduces interface costs for the companies, as well as improving the perception of the company generally, and is a win-win situation for both parties.

However, proactive presentation of information requires the use of more push-type media where information can be 'published' or made available by the water company without the customer having to get in contact to 'pull' the information. This is really where excellent customer service is required, which can manage aspects such as customer contact and relationship but can also be extended to allow support for a smarter customer experience.

Encouraging self-service

The purpose and traditional uses of Customer Information Systems (CIS) and Customer Relationship Management (CRM) systems is well understood. However, they do not necessarily lend themselves to support the new interfaces and media required to support the Smarter Customer Experience, which is now required. The first, relatively prevalent, step is the use of more intelligent customer contact systems such as Interactive Voice Response (IVR) to guide and filter customer contacts down a pre-defined contact path. This can be further extended from the traditional voice-focused view of contact into other media, as many people now wish to access information from their Smartphones, engage through social media or sharing sites such as Twitter or YouTube, or even just access information online through their computers.

These contact routes allow the customers and water companies to interact on a more customer-oriented

self-service approach. This helps customers to access their account and the information about their account through some form of online information portal where security can also be ensured through online identity authentication.

Turbo-charging the customer portal

However, the view of a portal as purely a medium for information dissemination should be adjusted so as to support a comprehensive media platform with capabilities, such as customer interaction, information acquisition, community involvement, utility response and knowledge management. Information and interaction should also be made available on mobile applications. This allows water companies to push information, like a pre-warning of loss of service or excess water consumption that potentially indicates a customer leak. It would also allow the company to actively participate in social media and sharing initiatives relating to the community e.g. specific local sustainability programmes, or the posting of 'How To' videos for common operations like meter reading, finding stopcocks, etc.

Lessons can be learnt from other sectors such as telecommunications. For example, in 2009 the 'Black Saturday' bushfires were the worst in Australia's history, taking 173 lives, destroying 2000 homes and causing over \$4 billion in damages. The Victoria Government quickly learned that they required a system that could warn residents of a future emergency – quickly. The government commissioned Telstra³, the country's largest telecommunications system, to build this. Since its inception, the system has rolled out over seven million messages all over Australia, not only for bushfires, but also cyclones, floods and missing persons.

The use of this portal-based approach provides a number of benefits. It ensures common security controls can be applied, but also allows for new functionality and enhancements to be rolled-out seamlessly across all the media in use at the same time. This maximises the accessibility and convenience that consumers have come to expect but also ensures consistency for the water companies.

Regulatory benefit

There is also the possibility of regulatory financial benefit for water companies if they are able to offer their customers a superior customer experience. An

example of this is Ofwat's Service Incentive Mechanism (SIM) where UK water companies are scored on the quantity and quality of their customer contacts (actually in the form of unwanted contacts). The companies are then ranked on their relative normalised performance with incentives or penalties applied, which can be the equivalent of up to £20 million (\$31.4 million) profit variance per year and around £100 million (\$157 million) revenue per year assuming a company profitability ratio of 20 percent.

Conclusion

The combination of the approaches and principles described will lead to improved customer satisfaction, efficiencies gained through appropriate self-service tools, and enhanced public perception of the company.

It is through delivering an improved customer experience that water companies will at least ensure that their revenue stream is protected, if not increasing. And, for those water companies in an independently regulated environment, there can also be the direct revenue benefits of providing a smarter customer experience through increased customers, or increased incentives from the regulators, thus helping water companies to maximise their revenues. ●

Notes

¹ *Service Incentive Mechanism (SIM) 2010-11 – company performance (Ofwat)*

² www.telegraph.co.uk/finance/personalfinance/consumertips/household-bills/9004896/4-million-consumers-complain-about-energy-bills-says-Which.html

³ www.infosys.com/australia/news/Pages/emergency-alert-system.aspx.

Roger Eatwell



About the author:

Roger Eatwell is Practice Lead, Water Practice at Infosys

AWARE-P asset management planning software released for public trial

A beta version of the European leading-edge support software project AWARE-P (Advanced Water Asset Rehabilitation Portugal) has been released.

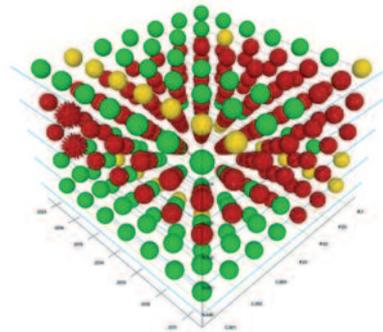
The objective of AWARE-P is to develop and implement in water utilities a structured procedure for infrastructure asset management (IAM). Based on previous and new R&D results, an open-source, professional-grade system has been developed, along with manuals of best practice and learning materials.

The AWARE-P IAM planning software for drinking water, wastewater and stormwater services is an organized assessment environment where planning solutions or competing projects are measured up and compared through selected performance, risk and cost metrics.

It comprises a portfolio of metrics and analysis tools that may be used individually for diagnosis and sensitivity gain purposes, or as part of the integrated planning procedure laid out by the AWARE-P IAM programme.

The release of this first public trial of the AWARE-P software also marks the launch of the new Baseform platform that will host and support it.

‘[Utilities] have aging infrastructure and very limited capital available to invest in rehabilitating these systems,’ explained Dr Helena Alegre, the project’s initiator



and scientific co-ordinator, when speaking to *WUMI*. ‘[So] you need to be sure that you are making the right decisions. This software is service-orientated, objective-driven and promotes service quality, service reliability, efficiency in use of resources, and service sustainability.’

‘One of the important things in the AWARE approach and software is that they are fully aligned with IWA performance indicator systems and the benchmarking manual of best practice. So we incorporate into the AWARE library all of the performance indicators of the IWA performance indicator systems that may be relevant for infrastructure asset management. This is the basis of our comparison between the alternative [network management] strategies. We worked to develop products ready to use at the professional level by utilities. All of the products of the project are available for everyone who wants to use them.’ ● **CF**
www.aware-p.org

Software solution released for smart water services

French consultancy and service provider Capgemini has announced the launch of an off-the-shelf software-as-a-service (SaaS) solution that the company says will allow utilities to deploy radio water meters and networks elements. Capgemini’s new ‘Smart Water Services Platform’ allows a utility to manage the whole radio water metering lifecycle, says the company, enabling an efficient analysis of water consumption.

Nicolas Atlan, PR Manager – Group Marketing & Communications at Capgemini, explained to *WUMI*: ‘If comparing to a classic in-house solution, the SWS Platform brings the

benefit of having a single process model and database that guarantee the quality and consistency of the collected data during roll-out and operations. The benefits include improved knowledge of customer habits and behaviour, an increased ability to innovate with services and capacity utilisation, and the enhanced efficiency of customer communications, for example planning of household water meter operations.

‘Capgemini [also] has the ability to integrate the platform with CRM (Customer Relationship Management) / ERP (Enterprise Resource Planning) systems such as SAP or Oracle, billing systems and / or meter manufacturer tools, providing a single view of evolving

Private mobile network solves communications issues at remote sites

PPrivate Mobile Networks Ltd, the UK provider of private global system for mobile communications (GSM) network technology, has announced a successful deployment for UK utility South West Water.

A Private Mobile Network (PMN) solution was deployed, initially on a trial basis, at a water treatment works on Dartmoor, south-west UK, and proved highly successful, says the company. Engineers working around the water treatment works are now able to communicate with one another and with headquarters staff using standard mobile handsets.

South West Water is now considering options to roll this solution out across other sites. ●
www.privatemobilenetworks.com

Innovyze releases Surge Line

Innovyze has released a Surge-Animate module for its surge product line.

The new SurgeAnimate module enables users to create live animations of pipe profiles by just specifying the first and last nodes; the rest is done automatically. Animation speed can be set and stopped or restarted interactively at any simulation time period, allowing the user to view and analyze the model’s transient activities (e.g. cavitation pressure). ●
www.innovyze.com

meter estate,’ he continued. ‘Further possibilities include adding a customer information portal and localised reporting. Capgemini can also propose a full Managed Business Service model [where] Capgemini is the single service provider for the utility... managing directly meter manufacturers, etc.’ ● **CF**
www.capgemini.com/ses-platform

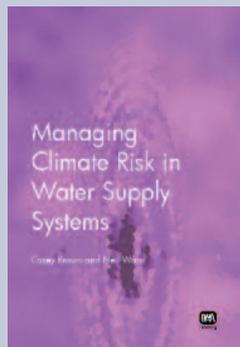


Managing Climate Risk in Water Supply Systems

Editors: Casey Brown and Neil Ward

This manual seeks to provide knowledge, resources and techniques for water resources professionals to manage the risks and opportunities arising from hydroclimatic variability and change.

Managing Climate Risk in Water Supply Systems provides materials and tools designed



to empower technical professionals to better understand the key issues in water supply systems. These materials are part of a suite of resources that are developed to share climate risk knowledge

related to a range of sectors and climate-related problems.

IWA Publishing May 2012

135pp. Paperback

ISBN: 9781780400587

Price: £79.00 / US\$142.20 / €106.65

IWA members price: £59.25 / US\$106.65 / €79.99

To order, visit: www.iwapublishing.com

Research Roadmap: Towards an Economic Decision Methodology for Remaining Asset Life

WERF Report SAM1R06G

Authors: David Marlow and Tony Urquhart

This report is an output of the fourth research track of WERF's strategic asset management research programme 'Asset Management Communication and Implementation'. Track 4 was developed to address 'remaining asset life', with the overall objective of contributing to the development of techniques, tools and methods for estimating residual life of wastewater assets. Track 4 research was planned to be undertaken in a staged manner, so as to provide a stepwise development of concepts and protocols. To this end, the research team previously produced a synthesis of knowledge in relation to 'end of life' and 'remaining asset life'. This report builds on this material and presents a road map for building asset management capacity through the development of a practitioners guide to economic decision making.

IWA Publishing April 2012

70pp

ISBN: 9781780400501

Price: £103.00 / US\$185.40 / €139.05

IWA members price: £77.25 / US\$139.05 /

€104.29

To order, visit: www.iwapublishing.com

21st Century Water Municipal Issues and Concerns: Literature Review

INFR5SG09a

Author: Neil Weinstein

Ten years into the 21st Century, municipal and county leaders are facing significant water challenges, including: high water use rates, population growth, aging infrastructure, and the impact of climate change. These challenges are no longer contained within the traditional confines of water 'issues' but are intertwined with energy, development, infrastructure, and overall issues of sustainability. Faced with the convergence of inadequate infrastructure that needs a large economic investment, persistently low water quality, and the anticipated impacts of climate change, municipalities have begun considering alternative water infrastructure investments.

This literature review provides information on the most urgent water issues of the coming century, as identified by WERF, and a discussion of the materials available to guide officials, regulators, and managers in the use of low impact development and green infrastructure to address these issues.

IWA Publishing April 2012

Pages: 20

ISBN: 9781780400150

Price: £103.00 / US\$185.40 / €139.05

IWA members price: £77.25 / US\$139.05 /

€104.29

To order, visit: www.iwapublishing.com

Research Digest: Decision Analysis / Implementation Guidance Asset Management Tools Development

WERF Report SAM1R06e

Author: Duncan Rose

This research digest summarizes five asset management support tools developed as part of the Strategic Asset Management (SAM) Challenge. These tools are available in SIMPLE (WERF's online Asset Management Knowledge Base) and are also available in stand-alone versions by downloading them from SIMPLE. The Gap Analysis, Risk Management, and the Benefit Cost tools were developed previously. The report presents an overview of the concept, description, purpose, and benefits of each tool, an organizational diagram, examples of the 'core tool', cases of task related text, and worked examples.

IWA Publishing June 2012

80pp

ISBN: 9781780400495

Price: £103.00 / US\$185.40 / €139.05

IWA members price: £ 77.25 / US\$ 139.05 /

€104.29

To order, visit: www.iwapublishing.com

Water Loss UK

26-27 March 2012, NEC

Birmingham, UK

Web: www.waterlossuk.com

The Future of Utilities and the Smart Utility Forum

27-29 March 2012, London, UK

Web: <http://marketforce.eu.com>

Water Utility Management and Pricing Policy Workshop

3 April 2012, Lemesos, Greece

Contact: Phryne Potamou

Email: contact@wbl.com.cy

Smart Water Systems

16-17 April 2012, London, UK

Web: www.smi-online.co.uk

European Utility Conference

18-20 April 2012, Vienna, Austria

Web: www.euc2012vienna.at/

European_UTILITY_Conference_

Vienna_2012.html

Water Loss Europe 2012

23-25 May 2012, Ferrara, Italy

Web: www.waterlosseurope.com

Water Loss Europe, organised by the IWA Water Loss Specialist Group, will look at all areas of non-revenue water management, including: pressure management; improvement of metering and billing systems; district metered areas; software for management of pipe networks; and disinfection techniques. Alongside the conference there will also be a specialised trade show that will provide the opportunity for companies to promote their services and products relating to water loss management.

IWA World Water Congress & Exhibition

16-21 September 2012,

Busan, Korea

Email: 2012busan@iwahq.org

Web: www.iwa2012busan.org

9th International Symposium on Water Supply Technology 2012

20-22 November 2012,

Yokohama, Japan

Web: www.jwrc-net.or.jp/aswin/en/symposium_archive/index.html

Denotes an event organised or supported by the International Water Association