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## ADB promises extra water financing

**The Asian Development Bank has held a water financing programme conference at its headquarters in Manila to accelerate water investments for the five participating countries: India, Indonesia, Pakistan, the Philippines and Vietnam. All five had central and line agency high-level representatives at the meeting, including experts on urban, rural and basin water issues, as well as finance and planning ministry officials. Over the two day meeting the group discussed barriers to water investment, practical strategies to overcome the barriers, ADB products and services that can help, and opportunities for water investments.**

Meanwhile, the ADB has reported that India

and China are likely to meet the MDG safe drinking water target but that four other Asian nations are expected to fail. Indonesia will miss both water and sanitation targets, while Pakistan, the Philippines and Vietnam will miss the water target, it noted. ADB President Haruhiko Kuroda said at the beginning of the bank's two-day conference that improvements in other indicators 'all have one factor in common: water'. He added: 'Water has become everyone's business, and therefore a national development issue.' Coordination and leadership are required, he added, not only in the water sector but finance and planning agencies, civil society, the private sector and development institutions. ●

## £1 billion warning on company spending in England and Wales

**The Consumer Council for Water, the water industry consumer watchdog for England and Wales, has urged water companies to 'get back on track' and give customers what they have paid for as it emerged in report on financial performance and expenditure by the sector's economic regulator, Ofwat, that the companies spent nearly £1 billion less last financial year than they were supposed to.**

Instead of £4.3 billion (\$8.1 billion), the spend was £3.4 billion (\$6.4 billion) despite average domestic bill increases of 12%. CCW accused the companies of being 'slow getting the new

projects off the launch pad', and is pushing for companies to 'deliver clear benefits to customers at the speed that they have promised'.

Dame Yve Buckland, Chair of the Consumer Council for Water, said: 'We know that it is only the first year in a five-year investment period and the industry has time to catch up. However, this is an awful lot of money and it translates into projects and programmes like work on maintaining and improving pipes, sewers and treatment works.' She added: 'Companies must deliver consumer confidence as well as investor confidence.' ●

### AUSTRALIA: Sydney works on infrastructure access

The New South Wales government was set to give private companies access to Sydney Water's wastewater infrastructure under legislation due to be introduced into the state's parliament. Minister for Water Resources David Campbell said the companies would have to meet strict health standards and that the Independent Pricing Tribunal would have a role in regulating them. The third-party access regime will open Sydney's three wastewater networks to recycling companies and will also potentially provide the right to negotiate access across all of the potable water, recycled water and wastewater infrastructure in the Greater Sydney and Hunter regions.

### US: Terror assessments completed

A US EPA official has reported to the House Environment and Hazardous Materials Subcommittee that water systems serving over 230 million people have completed their critical assessments of vulnerability to terrorist attack as required under Title IV of the Bioterrorism Act. The EPA is continuing to work to ensure it receives all vulnerability assessments and emergency response plan certifications for all of the US's community water systems serving more than 3300 people.

### SCOTLAND: Scottish Water put at foot of customer service league

The Water Industry Commission for Scotland has released a report that says that Scottish Water's customer service is still worse than the most poorly-performing water company south of the border. Although the authority has narrowed the gap, it is still 39% behind England and Wales's worst performer in 2004 to 2005. The authority had improved water quality, unplanned interruption and its written response time for complaints and inquiries, but sewer flooding had increased and its customer service response by phone had deteriorated.

## EDITORIAL

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Water Utility Management International is a new publication focusing on the needs and interests of senior water utility managers. The aim of this publication is to provide those heading water and wastewater utilities with an international reference point on the strategic issues affecting their organisations. Water Utility Management International will also be of value to consultants and others following developments in this area.

Presented in a newsletter format, Water Utility Management International will contain news, interviews, and in-depth briefings on topical issues. Other articles will take an executive briefing approach or be based on landmark case studies. Regular themes for articles will include financing, investment, regulation and personnel matters. There will also be a central theme of achieving efficiency in water utilities, encompassing topics such as benchmarking, billing, tariffs, IT and service standards.

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## RWE sells Thames to Macquarie venture

**RWE has agreed to sell Thames Water Holdings – the Thames Water group of businesses – to Kemble Water, a consortium led by Australia's Macquarie Bank's European Infrastructure Funds.**

The transaction was approved by parent RWE's management board, subject to approval by the German utility's supervisory board and by relevant antitrust authorities. The transaction is expected to close by early December.

The purchase price for Thames was £4.8 billion (\$8.9 billion), less than estimates suggested. RWE noted that Thames Water has a pro forma net debt of £3.2 billion which implies an enterprise value of £8 billion (\$15 billion). RWE expects the transaction to result in a book gain of 'at least in the mid hundreds of millions of Euros'. The purchase comprises the activities of Thames in the UK and some international operations.

The day of the announcement, economic regulator Ofwat had issued a warning to bidders that the regulatory regime might tighten up on the current 5.1% rate of return determined for the current AMP period, and that a failure to appreciate this might mean bidders paying too much for Thames.

Keith Mason, director of regulatory finance and competition at Ofwat told Reuters that the regulator had made it clear to all bidders that 'if market evidence suggests the return is too high, then we could shave it down.'

The current rate was set in 2004, with an expectation that interest rates would rise more quickly than they have in reality.

RWE bought Thames for £4.3 billion (\$8 billion) in 2000 and took on a further £2.5 billion (\$4.7 billion) in debt. The group recently refinanced the company, taking out a \$1 billion dividend.

A Macquarie-led consortium acquired US water utility Acuarion Co for \$860 million in February this year, and the investment bank also owned water utility South East Water in the UK until recently, but has now passed ownership to Mid-Kent Water owner Westpac, in the form of Hastings Diversified Utilities Fund and the Utilities Trust of Australia, which it manages.

The move was thought likely at the time to be the precursor to a Thames bid, clearing the way to ensure that a Competition Commission inquiry was not needed.

**Lis Stedman**

### UK: Consumer study says yes to hosepipe bans

A study undertaken by business service provider LogicaCMG in the UK reveals that 75% of consumers agree that hosepipe bans are the right way to tackle water shortages. Fifty percent would support the idea of households receiving a water quota during times of drought. The 'Water efficiency – public opinion, private action' report looked at consumer attitudes towards water conservation and use in an average household. The key additional findings based on a survey of 1000 were that 74% of consumers were more likely to report leaks since the drought this summer; 51% were more concerned about the environmental impact of water use rather than the cost; and 69% said they would change their behaviour if the government ran an awareness-raising campaign.

### INDIA: Consumer body praises privatisation rejection

US-based consumer protection body Corporate Accountability has praised New Delhi, India, for turning down water privatisation, describing it as a 'seductive option'. Associate director of the group, Kelle Louailler, wrote: 'Water systems cost a lot of money to maintain and more to improve. Meanwhile, governments are under tremendous pressure from the World Bank to decrease budget deficits, and balancing competing water demands is a politically difficult feat.' He added: 'By outsourcing water problems to corporations, public officials often hope to cut government spending while distancing themselves from conflicts among constituents about who should get how much water.'

### CHINA: Government announces ambitious spend

China has announced ambitious plans to improve its water and wastewater systems, allocating \$41.3 billion to build sewage treatment facilities in urban areas from 2006 to 2010. According to Vice Minister of Construction Qiu Baoxing, by the end of 2007, China will finish renovating water networks that have

been in use for more than 50 years or that are damaged, and by 2010 some 95% of urban homes will have access to clean water. Around \$125 billion will be spent over the next five years in all, including work on water security, the south-north water transfer and desalination projects. Qui Baoxing warned that the country's water situation was deteriorating 'overall' due to inadequate control of pollution from domestic, industrial and agricultural sources.

### PALESTINE: UK commits funding for services

The UK has committed £3 million (\$5.5 million) via the Department for International Development (DfID) to help ensure water, sanitation and electricity services are kept running by paying for essential operation, maintenance and repair work. This is the UK's second payment towards the international funding mechanism, to help meet Palestinian basic needs. The Temporary International Mechanism (TIM) channels aid directly to the people rather than the Hamas-led government.

### US: EPA publishes small works reference guides

The US EPA has provided quick reference guides for certified operators and owners of water treatment works serving less than 10,000 people to help them operate sustainable drinking water systems that deliver safe drinking water. Topics include best practices for general operating practices, maintenance of distribution systems, vital record keeping and building good working relationships with decision-makers.

### GLOBAL: Report warning on urban migration

A new WHO/UNICEF report warns that large-scale migration to cities in the developing world threatens the MDG targets for clean water and improved sanitation. It calls for a dramatic increase in the pace of work and investment to achieve the UN goals of halving the proportion of people without safe drinking water and basic sanitation by 2015.

## Business

### CHINA: Salcon wins supply contract for Haining

Leading Pacific Rim water and wastewater service provider Salcon has signed a contract to manage and operate the bulk treated water supply for the city of Haining, in China's Zhejiang province. The 30-year contract is expected to generate a total of over RMB1.2 billion (\$152 million).

### CAMBODIA: Dayen wins Phnom Penh project

Singapore-based Dayen Environmental has won a \$16 million (\$10 million) municipal water supply contract from the Phnom Penh Water Supply Authority. Construction is expected to begin in December and finish in mid-2008. The project is part of the Cambodian government's attempts to improve the water supply in two of the country's biggest cities, Phnom Penh and Siem Reap. Agence Francaise de Developpement, the French development bank, is financing the project.

### CHINA: Asia Environment succeeds in Harbin venture

Asia Environment has won a \$38.2 million contract to build, own and operate a water supply plant and wastewater treatment works for the city of Harbin in China's Heilongjiang province. Construction will start early in 2007 and will last 15 months. Harbin was at the centre of a major pollution incident last year when an explosion at a nearby chemical plant contaminated the Songhua river, which provides the city's potable water.

### ARGENTINA: Water operator to fight for compensation from Suez/Agbar

AYSA, the renationalised water utility for Buenos Aires, Argentina, has issued a report saying that an investment of \$910 million is needed to end water pressure problems, repair and maintain the network, renew meters, increase connections and replace half of the pipes in the city.

The Aguas Argentinas concession was revoked in March, but AYSA's report says the funding for the upgrade must be obtained by taking legal action against the Suez and Agbar-controlled former concessionaire for failing to return the services 'in good condition' as the contract stipulated.

### CHINA: Suez wins Changshu contract

Suez and its local joint-venture partner New World have been named preferred bidders for a €1 billion (\$1.27 billion), 30 year water services contract for the Chinese city of Changshu, near Shanghai, population 1.5 million. The concession, due to begin at the end of the year, will operate through the partners' Sino-French holding joint venture, which will acquire 49% of the Changshu Water Supply Company. The other 51% will remain the property of the city.

### INDONESIA: Suez sells of part of Paljya stake

SUEZ Environment has sold 49% of its Indonesian subsidiary PT PAM Lyonnaise Jaya (Paljya) to local partner PT Astratel Nusantara and Citigroup Financial Products. Under the deal, the Paljya ownership is 51% Suez Environment, 30% Astratel and 19% Citigroup. Legal group Baker & McKenzie represented Suez in the deal.

### MEXICO: State government announces call for wastewater plant bids

Western Mexico's Jalisco state government has launched a call for bids for the design, construction, fitting and operation of the Agua Prieta and El Ahogado wastewater plants, according to the state water and sewerage commission (CEAS). Bids are due in by 11 December, and the contract award will be announced on 22 December. The work is expected to cost \$276 million for both facilities, with half of the funding coming from the federal infrastructure fund, state and federal governments and the remainder from the winning bidder.

### BRAZIL: State looks to launch sanitation project

Brazil's Minas Gerais state is looking to launch the \$12.1 million Alto Jequitinhonha basic sanitation scheme in 2007. The state is currently evaluating the most feasible financing and administration model, but appears to favour some kind of public-private partnership. The project will be funded by public resources and administered by the private sector. The work will provide basic sanitation in the 19 municipalities of the Alto Jequitinhonha sub-region.

## Loans and tenders

### MONTENEGRO: EBRD passes first stage review of supply project

The European Bank for Reconstruction and Development has finished preliminary reviews of the Montenegro regional water supply project, which would provide potable water from lake Skadar to municipalities along the Montenegrin coast.

The EBRD will provide €17.9 million (\$22.4 million) for the northern branch of the regional system, which will supply Budva, Tivat, Kotor and Herceg Novi, and the World Bank will provide €9 million (\$11.3 million) for the southern branch, which will supply Bar and Ulcinj. The project will contribute to the transition process by introducing commercial contracts between the public bulk water supply enterprise and the local municipal water companies, setting cost-recovery tariffs, and setting in place sector reforms.

### ZAMBIA: World Bank provides water sector reform credits

The World Bank has approved a \$23 million credit to help the government of Zambia consolidate ongoing reforms in the water sector by improving access and sustainability of water and sanitation for customers in Lusaka. The water sector performance improvement project complements the Lusaka Water and Sewerage Company's own efforts to improve efficiency, and supports its goals of financial recovery, commercial and technical performance improvements. The heart of the project is a performance enhancement agreement with the government of Zambia that sets out specific improvement targets to be met over a three-year period. This agreement covers consumer service improvements and operational optimisation.

### GEORGIA: EBRD provides water supply funding

The European Bank for Reconstruction and Development is supporting key improvements to the water supply in two Georgian cities - Kutaisi and Poti - with a €3 million (\$3.82 million) and a €2.5 million (\$3.18 million)

loan respectively. Teamed with grant finance and Technical Cooperation funds, the loans will finance major investments in both cities to enable a 24-hour water supply.

The water and wastewater infrastructure in both cities is in urgent need of rehabilitation and renewal. Kutaisi is Georgia's second-largest city with 185,000 inhabitants, and the money will go to rehabilitating wellfields and pumping stations, reservoirs, the supply network and installing meters. In Poti, on the Black Sea, the 45,000 inhabitants will benefit from a new 47km pipeline, rehabilitation of the existing network and meter installation.

### BRAZIL: State utility calls for tenders on sanitation infrastructure

Brazil's Paraná state water utility Sanepar has called for tenders for works to expand the basic sanitation infrastructure in four municipalities. The project is being funded with a \$392 million financial package secured by Sanepar with JBIC.

### SERBIA: EBRD project set to improve municipal infrastructure

A European Bank for Reconstruction and Development project to help the city of Pancevo in Serbia to improve its municipal and environmental infrastructure has been passed forward for final review. The project will improve the condition of the Danube by providing wastewater treatment, and provide institutional capacity building as well as improving the financial and operational performance of the water company. A €9.3 million (\$11.84 million) loan will be made to the city and on-lent to the water company. Total project cost is €16.1 million (\$20.50 million).

### BELGIUM: EIB lends for Belgian improvements

The European Investment Bank (EIB) has granted Aquafin, the company responsible for managing wastewater facilities and treatment in Flanders, and SPGE (Société Publique de Gestion de l'Eau), which is in charge of sewage treatment in Wallonia, a €200 million (\$253 million) loan each. This will enable both firms to continue their medium-term (2006-2008) capital expenditure programme.

# Joint venture launched to tackle water sector corruption

Leading water organisations have joined forces to back an initiative to tackle corruption in the water sector. **LIS STEDMAN** looks at its aims.

**One of the interesting activities of World Water Week in Stockholm in August was the launch of the Water Integrity Network, which has been set up with a pledge to fight corruption in the water sector.**

Taking the lead role in the organisation is anti-corruption watchdog Transparency International, in joint venture with five leading water organisations – founder members International Water and Sanitation Centre (IRC), Stockholm International Water Institute (SIWI), Swedish Water House (SWH), and Water and Sanitation Program-Africa (WSP-Africa), along with AquaFed, the international federation of private water operators

Among WIN's defined broad goals are 'greater global access to clean water and safe sanitation for the poor, better quality of service to citizen-consumers, and increased confidence by tax-paying publics'.

Dr Donal O'Leary, senior advisor at Transparency International, which hosts the WIN secretariat, said at the launch: 'The World Water Week in Stockholm is an ideal platform to highlight the importance of tackling corruption in all areas of the water sector internationally. The Water Integrity Network hopes to help plug a leak which effectively serves as a barrier to improving the lives of poor people around the world.'

The aim is for WIN to address the need to raise awareness and facilitate effective anti-corruption actions on the ground, by actions ranging from influencing national policy through to community-level initiatives involving both the private and public sectors.

Dr Håkan Tropp of the Stockholm International Water Institute (SIWI), and chair of the WIN steering committee, noted: 'The Millennium Development Goal target to halve

the number of people without access to safe drinking water by 2015 cannot be met if corruption is not reduced. We call on leaders and citizens throughout society to stop the leakage of corruption now.'

The recent 'UN World Water Development Report 2: Water, a shared responsibility', set out the scale of the problem. This noted that 'in the water sector, as worldwide, corruption is pervasive, though shortage of information about its extent in the water sector prevents a full picture from being obtained. It has had little attention to date in the water sector and much remains to be done.'

***'Falsified meter readings by paid-off readers, ill-advised procurement of expensive but poorly constructed facilities, and bought directorships are some further examples of corrupt behaviour.'***

WIN's launch publicity outlined some of the challenges, saying: 'Corruption hurts, and it hits the poorest the hardest by forcing them to pay bribes to connect to water pipes or tankers. It helps to inflate the cost of creating and maintaining water infrastructure and diverts irrigated water away from poor villages.

'As in other areas where corruption is present, it leads to biased decisions on the allocation and location of water supplies, wastewater treatment facilities, service points and pipe systems.

'Falsified meter readings by paid-off readers, ill-advised procurement of expensive but poorly constructed facilities, and bought directorships are some further examples of corrupt behaviour.

'As a result, citizens and especially the poor, suffer from

increased water expenses, limited or denied access to services, lost dignity, poor health and eroded democracy and social equity.'

WIN's approach to solving these endemic problems will be to promote 'solutions-oriented action and coalition-building between civil society, the public and private sectors, media and governments'.

More specifically, WIN is pledged to influence national and international policy by providing information and anti-corruption tool kits to governments, companies, regulators and non-governmental groups. The network's core work will include diagnosing the

take some years to develop, he adds. 'It is one of the things we will be working on over the next few years, as well as detailed work on the causes of corruption.'

TI also has an annual global corruption report, which focuses on a different sector each year – its focus in 2008 will be the water sector and Dr O'Leary hopes that it will be possible through this to publicise 'to a very wide audience the causes of corruption and what can be done about it by all the players – government, utilities, regulators and financial institutions.'

Of other anti-corruption initiatives, like the lending bank anti-corruption drive announced recently, he says: 'We will very much try to work with what we are doing, with initiatives of other organisations. The big difference is that we are working at a sectoral level, but we will try to work with the people in these organisations that are working in the water sector.'

Dr O'Leary also wants to see the media become involved in the process. 'We very much want to work with people in the media. We feel it has a very important role in putting pressure on the various players in working to identify the causes of corruption and cleaning up problems where they occur.'

There is a challenge in countries where the press is not really free, he observes, but general publicity is a start – as this venture is. Over the next few years, as the detail of its work develops, there will undoubtedly be considerable interest in what the effect on corruption may be around the world. Finding the causes of corruption in the water sector and stamping it out is a challenge up there with the most difficult, but most worthwhile in terms of the benefits that should accrue. ●

**Lis Stedman**

# Australian study reveals long-term price pressures for major urban areas

Faced with upward pressures on urban water prices due to population growth and a decrease in available water resources, Australia's major urban water utilities may need to embrace urban-rural trading and the use of new sources such as desalination, a new report has claimed.

**KEITH HAYWARD** outlines the findings.

**An Australian assessment of long-term prospects for water prices has warned of the likely pressures on prices in the country's major urban areas. It also highlighted the potential for greater water trading with rural areas to mitigate these pressures.**

The research was carried out as part of a partnership between CSIRO Social and Economic Integration Emerging Science Initiative and the Centre of Policy Studies (CoPS) at Monash University. The work was overseen by an informal steering committee that included a representative of the utility organisation Water Services Association of Australia.

The research was based on the concept of 'shadow price'. This is the price water managers would need to set in order to maintain consumption at the amount available for use. 'Sydney, Melbourne, Brisbane / Moreton and Perth face rather large shadow price increases unless they embrace urban-rural trading and/or desalination,' state the researchers in the report on their findings, 'Without water - the economics of supplying water to 5 million more Australians'.

As the name of the report suggests, the study was based on there being an increase in Australia's population of five million. This is the figure predicted by the Australian Bureau of Statistics for 2032, representing a 25% increase from the current 20 million. Alongside this, the assessment was based on there being 15% less water in the eastern states and South Australia. Using CoPS's suite of models of the Australian economy, the work looked at what will happen to the country's economy and, in turn, what will happen to the price of water, all with

the aim of informing policy decisions.

Four scenarios were evaluated in the research. In the first of these, the only changes in water management were increased efficiency in household and irrigation water use, by 22% and 34% respectively, accompanied by changes in the supply price of water. In the second scenario there was unimpeded water trading between cities and between rural and urban areas, along with construction of the necessary infrastructure to link with sources near to the main cities. The third scenario envisaged the construction of desalination plants or development of other new sources at a comparable cost, while the fourth scenario was based on the third scenario accompanied by wage-driven migration to encourage growth and development of smaller cities.

For the first scenario, the report notes: 'The shadow price of water would rise dramatically – for our worst affected city, a 10 fold price increase is predicted.' It continues: 'By allowing urban water supply utilities to purchase water from the irrigation industry (as some are already doing) the extent of the increase in the shadow price of water will be much less – for our worst affected city, a 6 fold price increase is predicted.' Implementing the measures under the third scenario 'changes the story dramatically', the report states, with 'only' a three fold increase being predicted for the worst affected city.

The researchers note that under Australia's water resources licensing arrangements, many licences issued to irrigators can be traded. 'While most urban entitlements and allocations are not yet tradeable, a number of urban

water supply utilities are either considering or have begun to purchase water from rural areas,' the report states. The researchers point out that Adelaide and Perth, for example, are considering rural areas as a source of water. 'Other cities would need to install pipelines, pumps, etc to make it possible to transfer water from rural to urban areas,' states the report.

From an agricultural perspective, the researchers conclude that the introduction of water trading has mixed consequences. Water intensive industries such as cotton and rice would face greater reductions in water use and, overall, the report notes that 'water trading potentially diverts economic activity away from irrigation regions and the associated industries'. The result is that the shadow price increases in these regions.

From an urban perspective, the researchers conclude that the shadow price of water in 2032 would be significantly reduced for most regions by the introduction of trading and to an even greater extent where it is combined with desalination. 'For example, water shadow prices in Melbourne are greatly reduced under all alternative scenarios compared to the Scenario 1. To a lesser extent, water trading is a reasonable solution for Brisbane/Moreton (and, if technically feasible, Sydney) although shadow prices do still increase significantly compared to what they are at present. Water trading, however, is not by itself able to resolve the water supply challenges faced by Perth.' The report states that water trading does however halve the shadow price for Perth in 2032 and that a new water source such as desalination has a key role to play if there is a desire to keep the cost of water down. New

water sources could have a similar role to play for Sydney and Brisbane / Moreton. 'The economic answer to the question of whether or not one goes with desalination, sewage recycling, storm water capture or some other source depends upon relative costs and reliability issues,' the report states.

'Water trading between and within urban and rural areas as well as the establishment of desalination plants are two possible options to be considered to mitigate the effects of a growing Australian population and reduced water supplies due to climate change,' the report states. 'There are however two other important trends evident in Australia that also need to be taken into account. These include the introduction of water saving technologies and wage induced migration.'

'In summary,' the report states, 'expansion of urban-rural water trading and the development of new sources of water offer powerful ways to influence Australia's economy. With 5 million more people living mostly in our big cities, the way Australia allocates and uses water will change significantly. Under the influence of the scenarios selected, the report observes that water policy choices will influence where people choose to live in Australia.' ●

'Without Water - The economics of supplying water to 5 million more Australians,' by Mike D. Young, Wendy Proctor and M. Ejaz Qureshi, Policy and Economic Research Unit, CSIRO Land and Water, and Glyn Wittwer, Centre for Policy Studies, Monash University. Water for a Healthy Country Flagship report, May 2006. Available at: [www.clw.csiro.au/publications/science/2006/WithoutWater.pdf](http://www.clw.csiro.au/publications/science/2006/WithoutWater.pdf)

# Performance product: IWA's revised manual supports indicator implementation

The original version of the International Water Association's manual 'Performance Indicators for Water Supply Services' set out a comprehensive range of indicators for measuring the performance of water utilities and so provided an important reference point in this area. The new second edition represents a significant evolution, with the original document having been expanded to make it much more of a true manual, supported by case studies, that utilities can use when implementing performance indicators. **LIS STEDMAN** spoke with **DR HELENA ALEGRE** about the developments.

**The second edition of 'Performance indicators for water supply services', the manual of best practice authored by the International Water Association's Performance Indicator (PI) Task Force, is unlike many sequels in that it provides a considerable addition to the original publication.**

As Dr Helena Alegre, leader of the Task Force and senior research officer at Portugal's National Civil Engineering Laboratory (LNEC), notes, a key difference between the first and second editions is that 'the first edition was a dictionary – it contained the definitions and concept. It was not a manual as such; it did not teach how to implement the PI system. The second edition is a proper manual – the first section is new, and tells the user how to implement the PI system. It is much expanded from the very minor

bits in the first edition; it was basically written from scratch. Basically it is a new book; it is not a normal second edition.'

The authors note in the foreword in the follow-up to the original 2000 edition: 'We thought that the road ahead was still long and winding, and further work was needed to produce a truly useful tool for the water industry.'

During a nine-year process, which involved hundreds of people and 'endless hours' of discussions, several side projects appeared and evolved, and another manual – focusing on wastewater services – was published. Dr Alegre explains: 'In parallel with the field tests was the development of the wastewater manual, and while they were discussing and analysing and developing that they were contributing to us and vice versa. They learned from us and we learned from

their experience.'

Another major contribution to the new manual was its translation into other languages, Dr Alegre notes. 'When we were translating the English version to Portuguese, German and French we realised that some of the definitions were not as accurate as we had thought. When it came to translating them we realised we had some doubts about our definitions.' In particular, she praises the French translator's 'very useful' input.

## Differences in the new edition

Specific differences in the PI system include a new grading scheme for the confidence in data. While the concepts of accuracy and reliability remain, grading bands have been adjusted to make them easier to use with real data. Dr Alegre explains: 'In the first edition users had to specify the accuracy of the data. In the second edition the user still has to provide the information but in a simplified way.

'We have reduced the number of categories of terms, but on the other hand the accuracy is enhanced. In this version it is possible to determine the accuracy of the results of the indicator used, through a process established in an ISO standard on uncertainty propagation.

'The software that accompanies the manual, Sigma Lite, is also able to estimate accuracy. This is very important – you need to know how accurate your information is. For instance, if you have 20% non-revenue water, it is completely different if this is plus or minus 1% or plus or minus 20%.'

This managerial decision is as important as the manual itself, she adds – the importance of managerial decisions cannot be underestimated. There is a lot of money involved, and a considerable impact on the utility, she points out, so knowing the accuracy of the information is vital.

This section sets out principles for assessing the quality and accuracy of input data and pitfalls in the process. It notes: 'Practice shows that, in general, data providers do not have detailed information on reliability and accuracy, but are able to provide informed guesses, if broad bands are adopted.' The IWA PI system field tests showed that using four categories for data accuracy and three for reliability was 'feasible' and a good balance between an ideal situation and not using such information.

The definitions for these reliability bands are also set out, as well as instructions for assessing data source reliability and the accuracy of the calculations.

Another key aspect of the new text is that the system itself is much more mature, Dr Alegre says. 'The concepts

## Objectives of the Performance Indicator manual of best practice

The manual resulted from the belief that PIs could be used in the water industry, and that guidelines should be set out for how to define and use them. The main objectives were:

- the manual should not only contain guidelines and theoretical principles but also develop a robust, consistent and coherent set of PIs as a top priority
- the system was to be as universal as possible, though water supply conditions around the world vary so greatly that compatibility for some indicators is impossible
- the system should be useful for all stakeholders with a role in the water undertaking context
- despite this, the main user in mind was always the utility and the goal improvement of the service
- aspects particular to each undertaking were left out of the system
- the number of PIs had to be limited – over the years, the number of indicators and variations on indicators probably exceeded 1000

have been consolidated – the system is more easily used for different situations such as in developing countries and with bulk systems. The first edition was for distribution systems, so this is much more flexible.

Another change – which the authors note ‘is likely to disappoint some readers’ – is the removal of pre-classification of the indicators into levels of importance, a popular feature of the first edition that was adopted by a number of utilities and waterworks associations. The reason, the authors note, is that they feel ‘this information is sometimes misleading. An important indicator in one instance is irrelevant in others, and any prescriptive recommendation that is not linked with the specific objectives of the PI system should be avoided.

Instead, the second edition recommends a step-by-step procedure for implementing a PI system. It includes examples of applications, as a source of hints and inspiration, as the authors point out.

#### **A true manual-based approach**

Along with such specific changes, there is a broader, fundamental change to the publication. An evolved version of the original manual, containing all the PIs, variables and context information with full definitions and references, now forms the second part of the document. The first part, meanwhile, sets out a manual-based approach, with instructions for using the IWA set including real examples. These are not typical solutions per se, but illustrations of how the PIs can be adapted for every situation.

As the preface notes: ‘There is consequently much more to this second edition than just an update of the first one. A great deal of the effort has been placed in explaining how to apply the IWA set in real life, a task which involves the selection of the adequate PI from the IWA set, the possible development of new and compatible indicators, and the integration of the resulting PI system in a performance assessment scheme that should be used to assist the decision-making process in a utility at all levels.’

The first, new part of the manual provides the ‘how to’ information, including an introduction and rationale for the manual, as well as setting out its objectives. Introducing the PI system, it notes that ‘the final goal of any performance indicators system is to provide information. It is important to make the distinction between information and data.’

As a result, PIs must not only provide ‘the value of a few ratios’ but also elements such as the quality of data, explanatory factors and context,

which must be available to enable decision making.

A PI system, therefore, consists of a set of PIs and related data elements, representing real instances of the undertaking context. These elements are classified depending on the active role they play. Definitions of data elements, variables, PIs, context information and explanatory factors are given.

Part one then goes on to look at the requirements for defining a system of PIs, pointing out that a ‘good number’ of the problems in using PIs can be solved in advance at the definition stage. ‘Setting the objectives and constraints of the system is helpful when choosing and defining the indicators,’ it notes.

While the main definition and selection of PIs is dealt with in a chapter on implementation, the report sets out principles that should be taken into account at the definition stage. It suggests individual and collective requirements with which a PI should comply, as well as requirements for variables and observations about requirements for variables outside the organisation’s control. Compliance factors for context information and other data elements are also covered.

Following the section on data reliability, part one moves on to explain the original objectives of the work, an interesting background to the document’s genesis (see box). The

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***‘The reaction to the first edition was that it was too complicated – there were too many indicators. But the idea was never for a utility to implement the whole bunch. It was written down, but maybe not sufficiently clearly.’***

#### **Dr Helena Alegre**

structure of the PIs is also explained – they are grouped in a way that makes sense for every utility and all types of uses of the system, in six groups: water resources; personnel; physical; operational; quality of service; and economic and financial.

These main groups are intended to help identify the purpose of a particular PI and the final user within the utility. A unique two-letter indicator code is assigned to each PI, and a number shows its order within the group.

Each group also has subgroups, aimed at helping to identify the use and user of particular PIs. In some cases, these subgroups are also broken down into smaller units and some indicators are broken down into sub-indicators, a process that is explained.

Next, variables are examined – the reason for their establishment, and the

groups they are divided into. The distinction between primary and secondary variables is also explained – primary variables are directly involved in the calculation of the selected PI, and secondary variables are used to calculate primary variables. This means the classification varies depending on the indicator, but is a useful tool to determine the number of data items needed to evaluate the PI.

Context information and other system data are also defined, including the context information element categories, and the report then delves into how to use the PI system. It begins by countering some common misconceptions, noting: ‘Contrary to the general belief, the IWA system of performance indicators should be considered as a very flexible and adaptable tool.’

Part of the problem appears to be users’ perception that the number of PIs was too high, that the definitions did not serve their purposes or the time frame was not appropriate for their business. But the report counters: ‘It never was in the authors’ minds to impose those criteria on users worldwide, but simply to turn the long process into an easier and shorter one.’ Dr Alegre adds: ‘The reaction to the first edition was that it was too complicated – there were too many indicators. But the idea was never for a utility to implement the whole bunch. It was written down, but maybe not sufficiently clearly.’

The manual tackles each of the misconceptions and explains the thinking behind the approach taken. For instance, on the argument that there are too many PIs, the text says: ‘The IWA system should be viewed as a large supermarket where users can shop for “quality” indicators (with thorough definitions, consistent in their nature, and with the added value of potentially being used by many others).’

The message is that the system is almost infinitely flexible and at least some elements should be of use to every utility. One common problem has been that elements that have been seen as fixed are in fact optional, enabling the system to be tailored as required.

The manual also looks at the underlying assumptions behind the PIs, with the full definitions of each one being in the second part of the manual. The main difference between the original manual and this is that it has been changed to deal with the perception that it was not adequate to deal with bulk supply systems.

There have also been a number of minor changes and refinements to the definitions, the authors point out, a few PIs have been removed as they did not

prove to be feasible or useful, and some new ones have been added. The authors strongly recommend that utilities that adopted the first manual indicators but didn't take part in the field test spend some time with the corresponding PIs in this edition so they are familiar with any differences.

Part one also provides a 'guided tour' of each PI group, defining them in general terms and explaining how and where they should be applied, giving context from the field tests as appropriate. A thorough read-through should enable users to understand which are the most important indicators, and which are relevant to their own undertaking.

Variables are also explained in some detail, including the logic used to set their definitions. Emphasis is placed on the fact that only a selection of variables is required for any particular implementation of a PI system. Importantly, it is only after a PI is chosen that the subset of variables should be identified, the manual notes. Explanatory factors are dealt with in a similar way, as is context information. Reading the text will provide a good overall understanding of what these factors are and how they should be applied.

The manual then provides details about the implementation of a PI system, starting from fundamentals such as ensuring that a utility has the right reasons for adopting such a system in the first place. This critical section provides a necessary extra layer of understanding both about the implementation framework and the use of the indicators, as well as important steps in the process such as defining objectives and strategies, and establishing critical success factors.

Dr Alegre notes: 'The first thing users need to do is define their objectives well – what they want to measure and what for. They can then go to the PI system and see if there are PIs that suit their objectives. If these are missing, they can use the same principles to make their own custom-made PI system. It will be robust and will make sense. The idea is not to use all the PIs but to customise them to need, using the PIs we have defined or if necessary creating their own. The disadvantage of this is that you can't compare your company with others.'

The advantages and disadvantages of the IWA PI system are elaborated within this section of the manual, and recommendations are set out for establishing a good system. This segment also takes a high-level look at defining the strategic performance assessment policy, including best practice advice.

Selection and assessment of PIs is

also dealt with. These sections include important observations on how and why to adopt indicators, going in considerable detail into the selection and assessment procedures.

#### Case studies

The case studies are an important element of the first part of the manual – these are authored, and were deliberately not a product of general opinion in the way that the main manual is. The examples include use within the European CARE-W (computer-aided rehabilitation of water) project, the use by Portuguese regulator IRAR, a demand management project in Madrid and the German benchmarking project. Dr Alegre explains that the main projects were in Portugal and Bavaria, Germany. The Bavarian project brought in over 100 small utilities and was a 'very useful contribution to the manual,' she says.

There are within this section studies and discussions of the main components of efficiency analysis, an example list of indicators in various topic areas, and much other relevant and interesting detail. Dr Alegre says: 'We simply wanted to demonstrate the flexibility of the system and that it can be customised in many ways.' She adds: 'The idea is that the case studies show you don't have to implement all of the PIs, just to fit specific objectives.'

Dr Alegre concludes: 'We wanted to demonstrate that the IWA system is robust and flexible and can be adapted for any situation. The principles are quite general. It can be used for water systems or any use.' It is currently being used as part of a European COST Action (C18) which has an objective of looking at the interpretation mechanism and synthesis mechanism of PI systems. This has already proved that the IWA PI system can work for other sectors, such as solid waste. ●

### Field testing of the manual

The original version of the manual became a cornerstone of many PI-based developments in the water industry, but there was an acceptance that there was a need to improve this powerful and useful tool.

Early feedback from the first manual caused a rethink – readers suggested the system appeared too complicated, and was either too large (users could not use all 133 indicators) or too limited (users could not find the indicators they needed in the set). Although the authors had in mind that not all indicators would need to be used on every occasion, and that additional indicators could be added when needed, they realised that the first manual could not be making this clear enough.

To better understand the needs of industry professionals willing to use the IWA PI system, a field test project was developed, involving over 70 organisations in 20 countries around the world. A number of workshops were held, and the PI set was adapted to take account of their recommendations.

Dr Alegre says: 'Much of the information we got for the new manual was based on the tests and the implementation by the Portuguese regulator of a simplified PI system.'

When the field tests were under way, the workshops also proved an invaluable source of feedback, she notes. 'It was very interesting to have the workshops – one in Malawi, Africa, raised a lot of questions related to developing countries. It was interesting to have such different views from people with such different backgrounds. It was the same text, but a different interpretation.'

The workshops generally were very productive, she adds, and the meetings produced 'very intensive' discussions on very detailed aspects of the PI system. 'It was a very important contribution to improving and making the system more mature,' she concludes.

### Performance Indicators for Water Supply Services - Second Edition

#### Second Edition

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# Albania's struggles with water sector reforms

As Albanians know, being European does not necessarily mean getting better water and wastewater services than in some developing countries. **PETER REINA** reports on the patchy efforts of the country's government to improve conditions for the country's 3.3 million people.

**H**aving emerged from decades of obscurity under eastern Europe's most secretive political regime, Albania remains one of the continent's poorest countries with correspondingly weak infrastructure services. Decentralising utilities and privatising services are among the government's chosen remedies, but these are proving hard to implement.

At a recent seminar in Tirana, deputy public works minister Stavri Ristani reportedly listed low billing coverage, low collection rates, low sewerage service coverage and low levels of urban wastewater treatment among the sector's prevailing problems.

Efforts to resolve these shortfalls were being hampered by a lack of investment strategies. Central government's reluctance to relinquish water sector control in favour of local authorities also presented obstacles. Government concerns about local capacity to manage the sector should be overcome by preparatory training, he urged.

And while local politicians supported reform, they also demanded central financing for infrastructure investments, noted Ristani. On top of that they called for debt write-offs for the utilities before taking responsibility for them.

Arben Bakllamaja, World Bank consultant working on the country's water sector reform, perceives a mismatch between policy and practice: 'Central government... is understanding you cannot continue with the same way you did in the past,' he says. But he adds: 'We don't see the government to be dynamic enough to take actions that would match (its) political statements.'

Ingrained poverty, high unemployment levels and mass migration from the countryside to the cities have

combined to leave Albania with hopelessly inadequate water and sanitation provision, note most observers. And the eruption of informal settlements around cities has spawned illegal connections to networks, aggravating conditions.

Like many emerging economies, Albania has chosen the path of devolving control of water services to local entities. And it has encouraged the involvement of private sector operators, also with mixed success.

***'They have to increase tariffs and take political risk, and support the private sector to take over management of the utilities.'***

**Arben Bakllamaja, World Bank consultant**

Having limited budgets, Albania relies heavily on financial support from institutions, including the World Bank and the European Commission, as well as bilateral aid, notably from Germany.

Albania kicked off decentralisation reforms of its water and sanitation in 2000 with legislation revising the functions of local government. Within three years, the government had substantially completed an inventory of assets belonging to the nation's 53 centrally-run water utilities. However, the transfer of utility control from the centre downwards has been slow.

'A few utilities have been transferred to local government (but) the experience so far is not positive,' says Bakllamaja. Lack of experience at the municipal level 'is one part of the future challenges', he adds. To what extent the private sector will step in to manage utilities is unpredictable. But its presence is welcomed, he notes.

'The public management is so poor in (running) the utilities... and the government considers the only way of

improving the management... is by bringing in the private sector, international and domestics,' says Bakllamaja.

Now looking ahead, the World Bank is funding a study, due to start in the latter part of this year, into the potential of local entrepreneurs joining the market. 'What we aim at this stage is first to evaluate the situation and see what Albanian businesses are interested to be engaged and what kind of incentives they need and what kind of support they can get from local government,' says Bakllamaja.

But from the experience of one foreign operator, the search for local talent may be unrewarding. 'It's very difficult to find local firms to provide services on international levels,' says Ulrich Pohl, an executive with Germany's Berliner Wasser International. Pohl is the project director on two of Albania's three private sector water contracts. 'Even engineering consultants are very difficult to find,' he adds.

So far, central government has introduced private sector provision of utility services for six cities, representing around 15% of Albania's population. Two management contracts covering five cities are now roughly halfway through their terms. Meanwhile, Albania's only water and wastewater concession is being wound up.

Though Albania's experiment with private sector participation is just a few years old, it is facing some serious difficulties. On one side, 'the government is not very happy with the private sector operators,' says Bakllamaja. 'Part of the problem rests with the private operators – with their performance (and) implementation of investments programmes,' he says.

But the government side is at fault too, notes Bakllamaja. 'Experience so far has shown that local government utilities don't want to take the risk to support the private sector to take full control,' he says. 'At the same time, they have the wrong perception that the private sector operators are magicians (and) can turn around the situation overnight,' he adds.

The most dramatic consequence of this political tension is the premature termination of a concession serving the city of Elbasan. The concessionaire, controlled by Berliner Wasser, spent part of this summer extricating itself from the contract, with most of its 30 years yet to run.

'We have been consolidating losses over the last three years,' says Pohl, Berliner Wasser's project director. Central government, which is still responsible for awarding private sector water contracts, failed to create

conditions that would allow the concessionaire to establish a viable, sustainable utility, he claims.

Elbasan's concession began four years ago, supported by around €12M from the German government through its development bank, Kreditanstalt für Wiederaufbau (KfW). Germany was no newcomer to the sort of conditions in Albania that would later scupper its efforts at Elbasan.

Germany's development ministry was among the first to support post-Communist Albania's water sector over a decade ago. It started with emergency work to improve supplies in the towns of Kavajë, Kukes and Krume. And the German development ministry more recently invested in the current private sector management operation in Kavajë.

On the Elbasan concession, the Berliner Wasser-controlled concessionaire, Elber Sh.p.k., was committed to investing over €5M in the first few years. Among its most visible goals was to increase water supply from four to 24 hours a day in the concession's early stages.

Among the problems at Elbasan, Pohl was particularly concerned about tariff levels and the handling of depreciation values of the utility's assets under its control. He cites issues concerning depreciation for causing nearly two thirds of the loss, equivalent to €760,000, made by the concessionaire last year.

Other factors impairing the concession, according to Pohl, included overestimations of numbers of customer calculated by a consultant for the government and used in setting up the concession. More detailed surveys after the concession began found the tariff-paying population to be around 90,000 not the 138,000 originally assumed, he adds. Similarly, the 'technical status of the networks were a lot worse than previously anticipated,' says Pohl. The allotted investment would simply not have been enough, he believes.

'The problem was identified very early, at least after the first year,' says Pohl. Negotiations with the authorities in 2003 and 2004 'never accomplished very much', he adds, echoing complaints by other companies as they withdraw from some Latin American concessions.

Berliner Wasser finally lost patience over Elbasan and triggered clauses in its contract opening an exit door. Earlier this summer, Pohl expected the contract to be terminated this year, although he was uncertain what official entity would take over running of the Elbasan utility.

Pohl believes his troubled concession will be Albania's last for the foreseeable

future. But other forms of private sector involvement, such as build-operate-transfer, build-own-operate-transfer and management contracts, in which operators take no revenue risk, remain viable, he adds.

Under such conditions, Pohl seems happy about the other Albanian water and wastewater contract under his control. The management contract, which is financed by a \$15M soft loan from the International Development Association, covers the cities of Durrës, Fier, Lezha and Saranda.

The combined population of the four cities is about 350,000, with Durrës being the biggest with some 170,000, according to municipal data quoted by the World Bank. Inward migration has been intense at all four cities, creating settlements devoid of proper water and wastewater services.

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***'The technical status of the networks were a lot worse than previously anticipated.'***

**Ulrich Pohl, Berliner Wasser International**

Populations mostly doubled in size since the late 1980s, and more than trebled in the case of Lezha.

Around 90% of three of the cities' populations have access to water, but coverage in Lezha is down to about two thirds. Water losses generally exceed 50%. Lezha also has the worst wastewater service, at under 40%, while the others range from about 65% to under 90%. Generally, wastewater facilities are 'dire', according to the World Bank.

Billing remains mostly on a flat-rate basis with some with metered consumption. The four cities are forecast to be the first to follow government policy for universal metering. In the early stages of the management contracts, tariff collection ratios were poor, down to 55% in one case, according to World Bank data.

As tariff increases, imposed to ensure long-term viability of the utilities, affect the poorest customers most, the management contracts incorporate safety nets. For the poorest users, there is a 'lifeline tariff' providing each person with 20 litre/day of water free of charge.

Berliner Wasser began the five-year contract in 2003, leading German-based, but Saudi-controlled, Aquamundo. But because of resourcing difficulties, Aquamundo pulled out early last year leaving Berliner Wasser alone, explains Pohl.

In exchange for managing the utility services, Berliner Wasser earns a fixed fee plus performance and incentive payments which rise annually over the five years. 'It's been a little bit more

difficult with the new government,' says Pohl. For the new coalition government, which won power late last year, to bed in 'took a considerable period of time,' he adds.

Under a second management contract, signed in 2002, Aquamundo took over operations of the utility serving Kavajë, initially for four years. Financed also by KfW, the contract has been extended by two years, says an Aquamundo official. Around 77,000 people in Kavajë have access to water and 25,000 are linked to sewers, according to Aquamundo.

Aquamundo aims to raise water availability from an average of around five hours a day to 24-hour coverage. It also plans to legalise illicit connections and cut water losses to under 15%. Other contract targets include introducing full metering and to collect due payments from 95% of customers on a sustainable basis.

In Albania, private sector participation remains the responsibility of central government. And local governments have shown mixed responses to the strategy, with Durrës and Saranda being supportive, according to the World Bank. In Vlorë, where the utility remains publicly run, water company officials reportedly support private involvement. The municipality, meanwhile, opposes it.

'This is something new to Albania... they have many challenges,' says Bakllamaja. 'They have to increase tariffs and take political risk, and support the private sector to take over management of the utilities,' he adds.

But the radical structuring of Albania's centrally managed industry has created many other tensions as well. Among reforms causing friction has been the transfer of tariff-setting powers from the water regulator to local governments. That reform would leave the 10-year-old regulator with a more strategic role, which has been unpopular within the organisation, according to the World Bank.

Another factor worrying reformers is the prevalence of corruption among current utility employees. The World Bank has logged anecdotes describing the imposition of illicit fees and other nefarious practices that cast a cloud over the sector's reputation. Raising staff salaries is seen as a possible remedy.

Despite the difficulties, prospects for contracts in Albania are rosy, believes Berliner Wasser's Pohl. 'There is a lot of money flowing into Albania from a variety of institutions... the focus now is on development,' he says. With investments in tourism, for example, fuelling demand for better water and wastewater services, 'there are plenty of contracts in the pipeline (and) plenty of things yet to be done.' ●

# Pro-poor regulation: time for utility managers to engage

Work with regulators in East Africa provides an early indication to water utility managers about how regulatory frameworks can be shaped to ensure poor communities are served. **DAVID SCHAUB-JONES** outlines five key areas where regulatory frameworks can have an impact.

**I**ncreasingly regulators are being assessed not only on their ability to drive utilities to greater efficiency, but also on the role they play in ensuring services reach poor communities. This is particularly true in developing countries, where up to 50% of the population (many of them poor) currently receive little or no service from the formal utility.

This trend underpins work recently completed in East Africa. BPD, a membership organisation that works with partnerships that provide water and sanitation to poor communities, engaged four regulators to understand how they address services to the poor. The regulators – from Zambia, Mozambique, Kenya and Rwanda – first came together in October 2005 to discuss their work with each other, with water sector representatives from Kenya, and with a number of donors. The World Bank has also been looking at the topic, and is soon to publish a review entitled ‘Taking account of the poor in water sector regulation’.

The focus has been on what regulators (or indeed, the broader

‘regulatory framework’) can do to help and encourage utilities to serve poorer communities. Some of the discussions are at an early stage, but it is helpful for utility managers to engage now with the issue. Being proactive may allow managers to adapt their operations to the evolution of the regulatory framework, but it also gives them the opportunity to have their say regarding why and how the rules of the game may change.

## Key levers for regulation in improving services to the poor

There are essentially five key areas where the regulatory framework can have an impact. These either encourage utilities to do better in serving poorer communities or remove existing blockages.

### Increasing access

As the first issue of *WUMI* highlighted in ‘The contract key to municipal PSP: lessons for improving private sector participation’ (see [www.iwaponline.com/wumi/00001/1/default.htm](http://www.iwaponline.com/wumi/00001/1/default.htm)), the poor have a keen interest in expansion of the service network. As the poor are

mainly not connected to a formal utility, increasing access can be one of the most effective pro-poor measures.

One way that regulators can achieve this is by not only policing but also instigating coverage targets (for public as well as private operators). Experience in enforcing such targets is very mixed though, and there is little that relates just to public service providers. In Zambia, Mozambique, Rwanda and Kenya, the regulators were typically found to lack formal tools to enforce existing coverage obligations or targets. Worldwide, such targets are often unenforceable because of the lack of public funding allocated to them (the Devolution Trust Fund in Zambia was an interesting exception to this, but has yet to scale up its activities fully. See [www.zambia-water.org.zm/nwasco/admin/poor/user/news.php](http://www.zambia-water.org.zm/nwasco/admin/poor/user/news.php) for more).

Another way in which the regulatory framework can encourage increased access is by permitting differentiated service levels. One route is to use alternative, more affordable technologies that deliver a lower but still acceptable level of service. This reduces the ‘cost of compliance’ for utilities looking to serve poor neighbourhoods. The amendment to the operator’s contract in La Paz/El Alto to allow for condominial sewerage in the late 1990s remains one of the better examples. In Durban (see next section) it was the operator that led the change by piloting alternative approaches. The regulations were later altered to allow this to be reproduced nationwide.

A third way to increase access is to acknowledge and encourage the services provided by small providers separate from the formal utility. In Manila, connections belonging to networks of small independent providers were allowed to count towards the concessionaires’ own coverage targets. More than a mere ‘accounting trick’, this fostered a co-

## Defining regulation and regulatory frameworks

A few definitions are needed. This box is taken from ‘Adapting regulation to the needs of the poor: experience in four East African countries’ (Tremolet, BPD 2006).

**Regulation** can be defined as a set of functions that ensure that water and sanitation service providers comply with existing rules and allow for those rules to be modified in order to cope with unforeseen events. In the water and sanitation sectors, regulatory functions can be broadly divided into three categories: economic (focusing on price and service quality), environmental, and public health regulation (focusing on drinking water standards). The way in which these functions are performed can have a significant impact on whether or not the poor have access to the service, and at a price they can afford.

A **regulatory framework** consists of the set of rules and processes that bind the water and sanitation service providers, including formal rules (laws, contracts, by-laws, and so on) and informal rules (personal commitments, financial incentives, reputation, etcetera). It also defines how the main regulatory functions are allocated to various institutions, which can include an autonomous regulatory agency, a ministry, an asset-holding company, a customer group, an independent expert, and so on. As the poor often suffer from limited access to services, regulatory frameworks should generate increased access to water and sanitation services and improve the nature of this access in terms of the availability, affordability and sustainability of these services.

operative attitude to service provision and ultimately benefited the 'unserved' (see [www.ppiaf.org/conference/docs/papers/manila.pdf](http://www.ppiaf.org/conference/docs/papers/manila.pdf) for more). Such providers are becoming a focus for regulators, as outlined below.

### Quality standards

As in La Paz and Durban, regulators are being urged to pay more attention to quality standards. This touches upon several aspects of a utility's operations. Environmental standards can be a key determinant of costs, for instance for abstraction or discharge. Engineering and construction standards are also crucial in shaping the cost of providing the service, and particularly the cost of extending access to the unserved. A third arena concerns service quality. The regulator's tools here range from rules relating to hours of service, pressure and turbidity to guidelines on leak response time or the time taken to fulfil applications for new connections.

In the setting and enforcement of such standards there is a sharp contrast between the concepts of 'a regulator' and the 'regulatory framework'. Environmental, engineering and service standards are typically the responsibility of quite different stakeholders within the water sector. If there is an independent regulator, their ability to influence some of the standards may be limited at best.

Yet the ability of a utility to experiment can radically affect its performance in serving poor communities. This is particularly true for the level of service provided.

### Tariff regulation

A more traditional role for regulators is in setting tariffs. There is a common perception that the best way to help the poor is to keep tariffs low. As was highlighted in the first issue of *WUMI*, this often leads to poorly-targeted and regressive subsidies that end up benefiting the rich more than the poor. This underlines the fact that it is vital for regulators in developing countries to understand how the market for water services in poor communities actually functions. Research here gives a clear view of market structure (revealing that the poor are often served by a secondary provider or reseller), as well as highlighting whether existing subsidies are inappropriate.

Low tariffs may in fact hinder service to poor customers. Where revenues from the service do not cover costs, the financial health of the entire sector is jeopardised. Plans for new connections are often the first to stall, hurting the poor most.

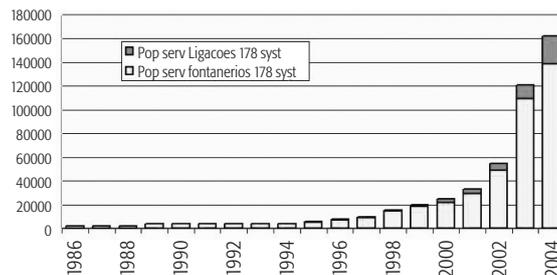
Unfortunately, the work in East Africa highlighted the challenges that

## Adapting quality standards in Durban, South Africa

Durban Metro Water Services (DMWS) has introduced a series of innovations to provide services to poor neighbourhoods. In response to high levels of non-payment and experiments with providing limited amounts of water free of charge, DMWS developed non-pressurised water systems that filled a series of 200 litre roof tanks. This alternative to either full pressure systems or standpipe provision utilises small diameter piping and a manifold that connects to around 20 houses. The service is cheaper for DMWS to provide, spares costly administration, but still provides sufficient water to households to maintain a basic level of hygiene and health.

regulators face in setting appropriate tariffs. There may be political imperatives to keep tariffs down. Or the restructuring of an entrenched system may be too daunting, however unfair this is.

Utilities themselves may face a dilemma. Should they be the ones to highlight the way in which low tariffs undermine the utility without necessarily helping the poor? Or do they avoid the subject, being reluctant to highlight their failure to meet universal service goals and keen not to antagonise existing customers?



The explosion in the number served by independent providers (178 syst) in Maputo, Mozambique, either offering connections (*ligações*) or standpipes (*fontanários*).

### Alternative providers

In many settings the poor obtain their services from providers other than the formal utility. Such alternative providers may be re-selling utility water, or be independent. Often their activities fall outside the formal regulatory framework and may be technically illegal.

Yet the importance of these providers, in a context where utilities cannot or will not serve the poor, means their role is being increasingly recognised. Clearly it is territory that regulators should be treading, yet one they approach with some trepidation. This market is often opaque at best, and it is hard to define an adequate regulatory framework for it – one that harnesses the activity and resources of

alternative providers, yet ensures access at an acceptable quality and price.

The issue is nevertheless a growing one and regulators in various settings are looking at how they can tackle it. A good place to start is with the legal standing of these providers. In many settings the formal utility is the only entity licensed to provide water services in a given geographical area. While this may not reflect the reality on the ground, it relegates alternative providers to informality or illegality. Repealing the 'exclusivity' of the main provider addresses this and can bring this informal market within the remit of the existing regulatory framework.

Ghana provides a good example of this. Here, the independent regulator PURC (the Public Utilities Regulatory Commission) 'recognises the role and importance of secondary suppliers in the water distribution chain, particularly in reaching the urban poor. It will therefore support initiatives that enhance their capacity to deliver acceptable service at an affordable price'.

Regulating the price that these providers sell at can be a different proposition altogether. Often this is neither easy nor cost-effective, so regulators are increasingly looking at other ways to intervene, such as in quality regulation. PURC is going down this route, as did the regulatory framework in Manila. Manila's local resellers are not bound by the same service standards – particularly for prices charged – as concessionaires, but their engagement has been largely successful and regulators elsewhere have been able to influence prices through price agreements on bulk water purchase by resellers.

Other regulators may be in a good position to influence the terms of engagement between the formal utility and alternative providers (such as policing resale rates or service ➔

## Zambia's Water Watch groups

Zambia's Water Watch groups are voluntary consumer groups responsible for ensuring that water consumer rights are protected and that consumers are aware of their rights and responsibilities. They monitor utilities' technical performance on parameters such as service hours, pressure, billing, water quality or sewer flooding. Staffed by volunteers, they are supported and mentored by NAWSCO.

# Improving your water utility the Six Sigma way

The Six Sigma business process has delivered huge savings in sectors such as electronics, manufacturing and telecoms. **LIS STEDMAN** looks at the process and its potential in the water sector.

**Six Sigma may sound rather like the name of a space station, but it is actually rather more interesting than that. Six Sigma is a concept that has been around for some time in other industries and is effectively a means of driving major quality improvements while reducing costs. And now it appears the utility sector is paying attention.**

Global operations management consultancy Celerant has been working with companies to help them achieve Six Sigma for a number of years. Sal Puaar, who heads up Six Sigma at Celerant, explains that Six Sigma is two things, with one being a statistical measure of 'goodness'. 'Sigma is variation of a process – the more variation you have, the more "bad" the process is.'

For instance, if you want to sell a litre of soft drink, you always want a litre in the bottle. If the variation is high – say, 10% – that means that all the bottles in which the liquid is low cannot be sold, and you lose money on the over-filled ones.

'Variation is bad for you and bad for the customer, as well as being bad for costs,' notes Mr Puaar. Sigma is a way of measuring this. For instance, a level of Three Sigma means that 99% of the output is within the prescribed level. At Six Sigma this drops to 99.999% – almost zero defects. It equates to about three in a million bad results from the output.

Three Sigma doesn't sound too bad until you think of it as one transaction in 100 going wrong. 'Airlines operate at around 6.5 to Seven Sigma,' says Mr Puaar comfortably. However most businesses internally operate at around Three Sigma, which is, he notes, 'quite bad'. 'For a water company that means 15 minutes of unsafe drinking water per day,' he adds.

The second aspect of Six Sigma is the methodology behind it, which is

► licences). In Zambia, the regulator NWASCO (the National Water Supply and Sanitation Council) is overseeing the extension of the Lusaka utility's licence to bring in autonomous Water Trusts, which serve up to 625,000 people in peri-urban settlements.

Rather than viewing such providers as competitors, utilities can find them to be reliable clients, buying bulk water and selling it to customers that are beyond their reach (in Manila, for instance, land title issues prevent many users being 'formal' customers). They can also turn to such providers to help them meet coverage or service targets. Here utilities can therefore not only influence regulators actions, but should perhaps also encourage a proactive engagement that can benefit both sides.

## Consumer voice

The final development of interest is in a field known as 'consumer voice'. This emphasises the key role that consumers can play in informing regulation and in bringing discipline to service providers. A physical incarnation of this 'voice' is consumer report cards. Bangalore has pioneered these, and they have been used to benchmark municipal services against each other and put pressure on providers to make improvements.

Responsiveness is up and corruption down as a result, while consumers appreciate the chance to have their views heard. Indeed the initiative has proved to be a useful tool for utility managers, giving monopoly providers

valuable feedback on performance and on areas that are ripe for improvement. Water Watch groups in Zambia perform a similar function (see box), while various regulators are investigating how they can work with NGOs and others to improve their understanding of what services poor communities are actually receiving.

## Looking for guidance

What sort of guidance is there out there, not only for regulators, but utilities that wish to understand how the regulatory framework can help them engage with poorer customers? Although the field is growing, documented current experience remains patchy. Below are four recommended sources. Between them, these discuss the merits and drawbacks of 'pro-poor regulation', highlight the key trends and showcase experience to date. They also point the way to other resources relating to the five areas discussed in this article.

**Report:** 'Adapting regulation to the needs of the poor: experience in four East African countries' (Sophie Trémolet, BPD, 2006) [www.bpdws.org/web/w/www\\_47\\_en.aspx](http://www.bpdws.org/web/w/www_47_en.aspx)

**Resource centre:** BPD's resource centre highlights other case studies, reports and programmes related to various aspects of pro-poor regulation. [www.bpdws.org/](http://www.bpdws.org/)

**Report:** 'Taking account of the poor in

water sector regulation' (Trémolet and Hunt, World Bank, 2006) <http://rru.worldbank.org>

**Webpage:** The Water and Sanitation Program (WSP) is championing consumer report cards as part of consumer voice activities. See [www.habitatjam.com/viewIdea.php?iid=65&section=6](http://www.habitatjam.com/viewIdea.php?iid=65&section=6)

## Conclusions

Utilities should be open-minded about how they can engage with the regulatory framework. Work by BPD in 2002 ('The interface between regulatory frameworks and partnerships', Trémolet and Browning) showed that regulatory frameworks had a major impact, not only on the operations of utilities but in shaping how or whether they could engage with others in partnerships to provide water and sanitation services.

It hinted at the merits of proactive engagement by utilities – regulators are keen to see utilities providing a good service and are increasingly open to proactive suggestions about regulatory engagement (such as what incentives can complement their demands for compliance – that is, how they can use the carrot as well as the stick).

Zambia and Mozambique are two early examples where this approach is bearing fruit, showing how regulators can work with others to ensure that services reach those who need them most. Utilities can no doubt push this envelope further. ●

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## A brief history of Six Sigma

Six Sigma began life in the electronics sector with one of the giants of the sector, Motorola, in 1987. The company won a prestigious US quality award two years later off the back of its adoption of the approach, and because of this win Six Sigma received its first publicity.

However, it took some time for the process to percolate further – in 1995 GE began to use it, with the logic that, if the company had a \$120 billion revenue, it was wasting \$18 billion if it was not at Six Sigma – a powerful motivator. GE's use of the approach saw other companies sit up and take interest, and manufacturers such as Dow Chemicals and Du Pont took it up, followed by telecoms giants such as BT.

For around a year now, Six Sigma has been moving into the utilities and financial sectors – companies such as RWE and E.ON are interested – and it is predicted that the next big move in the UK will be into the National Health Service as a way of sorting out the service's huge problems.

used to help companies get to this high level of quality. This is known as the Define, Measure, Analyse, Improve and Control (DMAIC) approach to problem solving, and is now fairly standardised in the industries that use Six Sigma.

Typically, it's said that a company at Three Sigma is losing 15% of its annual revenues, not just on internal problems but on clients leaving and on dealing with claims. 'Water company billing processes are at around Three Sigma,' Mr Puaar says. 'This means that out of one hundred bills, one will be incorrect.'

There are various ways in which Six Sigma can be applied. In the UK, for example, several companies have explored the approach, including one of the major water service companies, which used it to polish its performance at one of the country's biggest sludge processing sites.

Here, Celerant was brought in to help the company improve its running costs by using the Six Sigma approach. This trailblazing contract began by using the DMAIC methodology to define where the costs were, and what the utilisation of the process was – how much sludge was being put through. Celerant also defined the process; it comprises straining the sludge, drying it and adding chemicals before converting it to granules and pellets. The granules are used as a fertiliser and the pellets, which have some calorific value, are used as fuel.

'Ideally as little chemical as possible should be used and as much sludge as possible should be treated,' Mr Puaar notes. 'If the sludge and pellets are of good quality, they can be sold.'

Defining the problem in the first phase revealed that the plant was not running optimally. It was only running at 50% capacity and the quality of the pellets and granules was 76% – not that this level is bad by industry standards, far from it, it's a common situation.

In the measurement stage it was found that the way that measurements were taken and the way that equipment was used were not consistent. This meant more chemicals were always

used than were strictly needed 'to be on the safe side' because of the apparent variations that these differing methods were showing – the wastewater industry equivalent of always overfilling the one litre bottle of soft drink.

Looking more deeply into what was causing the variation, statistical methods used in Six Sigma were used, in which all of the variables are kept the same except one, which is altered to gauge the effect. In this case, the chemical level was experimented with to find the optimum level.

In addition, as well as improving the measurement system, other elements of the process were analysed, and certain things that were not being kept under control were improved. 'Most of the time the improvements don't involve capital investment,' Mr Puaar explains. 'For instance, you decide that when the barge comes in with the sludge that you have to measure at that point, and you always do it this way and don't have different people and different shifts doing it different ways.'

The results were astonishing: the output improved to 107% – actually above the hypothetical figure for continuous operation. Quality improved from 76% to 90%. This meant that the company could sell the pellets as fuel to Blue Circle Cement because of the improved calorific value.

'It's not yet at Six Sigma,' Mr Puaar explains. 'That takes years. What you do is aim to have it as a goal and work towards it. Even going from 2.5 Sigma to Three Sigma could mean millions of pounds in savings.'

What Celerant also did was to train the people on site in the methodologies so that the company could continue working in this way and instigate further behaviour changes. The people were encouraged to sit together and share knowledge, work in a consistent way and not have each one adopting their own individual approach.

Celerant also encouraged the site to improve its data collection, which is a critical point. If data isn't collected consistently, trends aren't spotted. The

## Six myths of Six Sigma

Celerant has identified six common myths about Six Sigma and has provided answers to these.

### It's a quality initiative

Many companies put Six Sigma in the same category as Total Quality Management (TQM) and give responsibility to quality control managers. However, to deliver significant financial results, responsibility needs to be given to senior executives with wider roles.

### It will replace current initiatives

This is simply not the case and Six Sigma is much better positioned as something that will complement existing initiatives and give them a much-needed boost.

### There is only one way of implementing Six Sigma

Not all companies are able to drive company-wide, top-down deployment of Six Sigma. And the good thing is that they don't need to. It is quite possible to start off Six Sigma implementation with a significant pilot project – provided that project is designed with a view to expanding it to the rest of the organisation once it has been proven.

### It's a numbers game

Some people say success lies in having 1% of the people in your organisation trained to the highest level. Celerant says success does not lie in an arbitrary percentage, but in the dedication of those who are trained and the right selection of projects to fulfil the strategic intent of the business. The focus should be on quality rather than quantity.

### Six Sigma only applies to high volume products or repetitive processes

Six Sigma is a way of improving processes. It improves how projects are managed, and how customer needs are met. It's about not just fixing errors or defects, but anticipating and avoiding them.

### It's about training

The theory of Six Sigma is important, but training is only one element of successful deployment. Coaching is more important, and the measure of success for Six Sigma should be the completion of projects delivering significant business value and which are endorsed and championed by those left to continue them. Success is not about the feedback forms from the classroom training.

operator manuals were also revised to enhance consistency and information exchange between shifts.

Mr Puaar concludes: 'At the end of the day it is an improvement in the way people work and their behaviours. Some people always added extra chemicals because they did not trust the data. We are getting them to use that rather than their gut feeling. In Six Sigma we say: "In God we trust, everyone else brings data." This applies whether you are an insurance company or a telecoms business. Getting them to focus on the data is a key element. Fact-based decision-making is key.'

The rewards are potentially huge. One customer in the UK water sector has saved £18 million (\$34 million in one year and is on track to meet targets of 85% compared to 53% before the programme was implemented. ●

# The IWA Statistics and Economics Specialist Group's European water regulation survey: **introduction**

In 2003, the Task Force on Tariffs and Finance of the International Water Association's Statistics and Economics Specialist Group circulated a questionnaire on water sector regulation to representatives in eleven European countries. Since processing the data, the survey has formed a backdrop to the Group's activities. Most recently, the survey was used as one of the foundations for a workshop on water pricing and tariffs held at the IWA World Water Congress in Beijing in September.

Results were obtained from eleven countries: Belgium, Cyprus, Denmark, England and Wales, Finland, France, Greece, Italy, Romania, Spain and The Netherlands. A summary of the survey results is published here as a formal published record of the initiative.

A short introduction gives a context regarding the significance of the original survey. This explains the need for a better understanding of water sector regulation as part of the process for improving governance in the sector. It also outlines the ongoing priorities of the Group.

The survey summary itself highlights the differences between the various water services regulatory systems in the European countries covered and suggests ways of enabling access to water for low-income groups. It is divided into four parts:

- general information about water and wastewater services
- organisations responsible for water and wastewater services and regulatory mechanisms
- private sector involvement: what responsibilities may be transferred
- access to water and sanitation for low-income groups.

## **The need to change water sector governance methods**

The IWA Statistics and Economics Specialist Group provides a forum to discuss and internationally compare the ways utilities access finance, the different water tariffs structures, and how to measure international performances. With such a purpose in mind, the Group periodically collects key water figures to work out statistics on the situation in various countries.

Results are presented in a leaflet on International Statistics for Water Services at each biennial IWA World Water Congress. The last of these was published in Beijing on September 2006 along with the outcomes from a survey about water regulatory regimes as observed in ten European countries and one on five Asian countries.

What is the need for such activities? To begin with, comparing prices is a complex task because it involves different organisational systems overarched by different rules for accounting and allocating costs and different political priorities that may strongly influence the operators' performance levels and then require close explanation of the regulatory regimes that underpin water pricing policies.

Direct links between tariffs and regulatory schemes exist. Pricing principles emphasise the need for water prices to be based on both "economic and environmental efficiency" and "broad (social) equity" goals rather more strongly than in the past, and stress the desirability of consumption-based pricing and (more generally) of improving pricing signals in order to move towards efficient and sustainable use of natural resources.

Water financing transcends the water sector, requiring that economic and political contexts be closely considered. In 2003 the Global Forum on Sustainable Development, arranged by the OECD, met to discuss the financing dimension of the water business stressing again the need for fundamental reforms of water governance.

As part of a more focused effort to alleviate poverty, the international community agreed to halve by 2015 the number of people without access to safe water and adequate sanitation. This objective requires deep reforms of water governance because, if money is a factor that objectively limits projects that aim to increase access to water and sanitation, this limiting factor more

often than not relates to governance.

This survey mainly aims to provide a synthetic depiction of water regulation systems as observed in the selected countries. In fact the mechanisms implemented are extremely diversified, since water is a local public service. As a consequence, regulatory regimes are often organised at local levels and differ greatly in every country.

## **The Beijing workshop, September 2006**

Based on the Group's most recent leaflet on international statistics about water prices and regulatory regimes and on case studies from Spain, Austria, France and UK, a workshop on "Water Pricing and Tariff Structures: Trends and Case Studies Towards More Efficient Water Use" was held in Beijing on September 2006 at the IWA's World Water Congress.

This workshop, organised by the IWA Statistics and Economics Specialist Group, provided an overview on water costs and tariffs and examined the role water pricing and tariff structures play in both cost recovery and the promotion of more efficient water use in advanced economies.

Practices of cost recovery, tariff structures and their impacts on utility revenues, affordability and efficiency of water use have been analysed in particular so allowing numerous participants feeding a fruitful debate on how water pricing impacts on sustainable water use and management.

## **Outcomes**

Good governance schemes are vital in order to give the water sector a proper functioning framework as water policies cannot be effective without a clear breakdown of responsibilities between public authorities, service operators and financing organisations.

Politicians and key decision makers need to be better informed about water sector requirements and regulation.

The Specialist Group believes that reporting on regulatory regimes actively contributes to enhancing and explaining comparisons between different ways to run essential services. This represents moreover a strong opportunity to assess pricing policies with increased clarity while fine-tuning the Group's activities to fit the expectations of the water community and gradually build up and deliver to IWA members broader expertise. ●

**Nicolas Renard, September 2006**

# The IWA Statistics and Economics Specialist Group's European water regulation survey: **survey results summary**

The Task Force on Tariffs and Finance (headed by Dr Nicolas Renard) of the IWA Statistics and Economic Specialist Group (chaired by Dr Renato Parena) carried out a survey in 2003 of water services regulation in Europe. Since processing of the results, the survey has formed a backdrop to the Group's activities. A summary of the survey results is published here as a formal published record of the initiative. By the **TASK FORCE ON TARIFFS AND FINANCE OF THE IWA STATISTICS AND ECONOMICS SPECIALIST GROUP**.

**In 2003, a questionnaire containing 30 questions was sent to the representatives of the countries attending the regular meetings of the IWA Statistics and Economics Specialist Group. Eleven countries filled in the survey: Belgium, Cyprus, Denmark, England and Wales, Finland, France, Greece, Italy, Romania, Spain and The Netherlands.**

This document is a summary of the survey. It highlights the differences between the various water services regulatory systems in these European countries and suggests ways of enabling access to water for low-income groups. The summary is divided into four parts:

- general information about water and wastewater services
- organisations responsible for water and wastewater services and regulatory mechanisms
- private sector involvement: what responsibilities may be transferred
- access to water and sanitation for low-income groups

The survey gives a general overview of the various water regulation systems implemented in European countries. It does not aim to provide detailed and exhaustive information about each of them.

## General information about water and wastewater services

### Number and size of water services organisations

The number of water services varies considerably between countries, both in terms of potable water services and sewerage and wastewater treatment

services. The average size of water service in terms of the number of inhabitants served varies between an estimated one thousand to a million inhabitants (see Figure 1).

In any given country, the number of water services and the number of sewerage and wastewater treatment services are similar. Nevertheless, the number of wastewater treatment services is usually fewer than the number of potable water services (except in Cyprus and The Netherlands), mainly because potable water services in these countries were extended and improved before wastewater collection and treatment services.

Finland and England and Wales have in some cases unified their potable water and wastewater services. Greece and Romania always manage water and wastewater together.

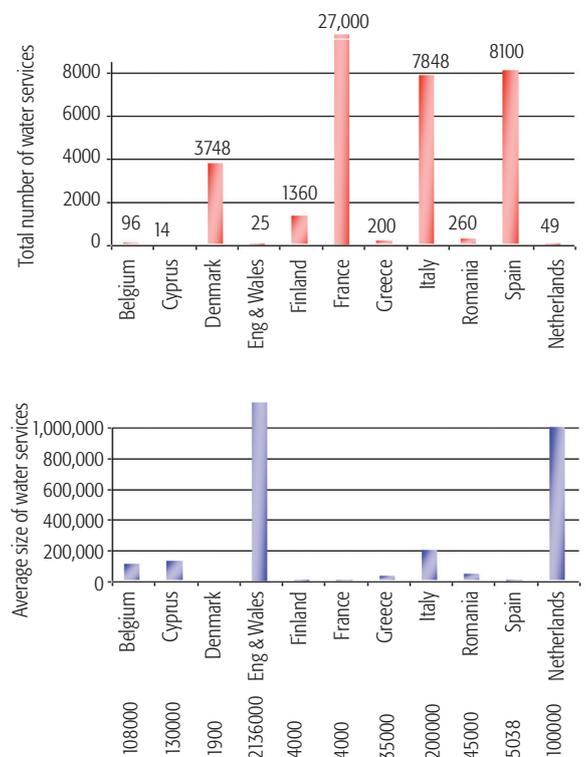
The Cyprus data doesn't take into account the numerous local authorities dealing directly with water services. They also benefit from the support of the government's Water Development Department.

### Average coverage ratio (percentage of population served)

Almost all of the population in all 11 countries is connected to the potable water network (see Figure 2).

Only six countries revealed the percentage of their population connected to the sewerage network. This figure is slightly lower than for potable water, varying between 70% to 85% (except in Romania, where 52% of the population are connected).

The percentage of population connected to a wastewater treatment plant or to a non-collective treatment



**Figure 1**  
Total number of water services (water and wastewater) and average size of drinking water services in number of inhabitants.

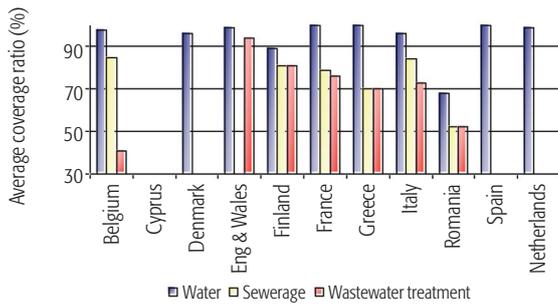
system ranges from 70% to 94%, except in Romania and Belgium, where the figures are 52% and 41% respectively.

## Responsibilities

### Level of water services management

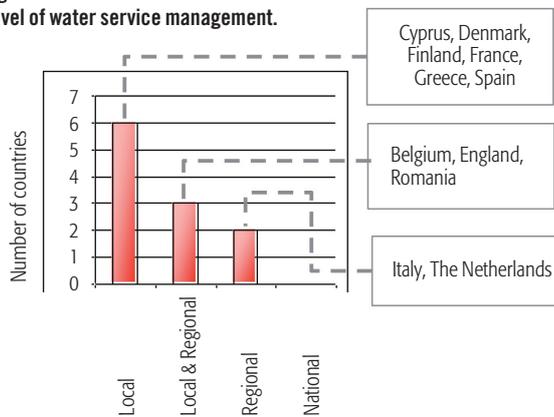
The management of water services is always undertaken at local or regional level (see Figure 3). Six countries manage their water services at a local level (Cyprus, Denmark, Finland, France, Greece and Spain), two at regional level (Italy and the Netherlands) and the three others manage their services at both levels (Belgium, England and Wales, and Romania).

A change was recently introduced in



**Figure 2** Percentage of population connected to drinking water and sewerage network and % of population whose wastewater are treated.

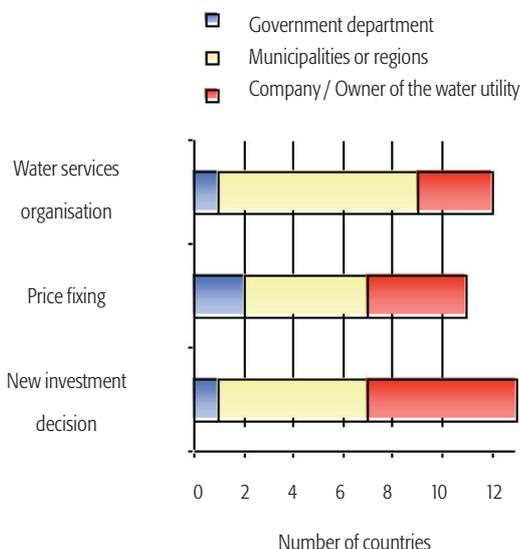
**Figure 3** Level of water service management.



Italian legislation, when law 36/94 – the so-called ‘Galli Law’ – came into force. Before this, water services were managed at a local level. With the implementation of this reform, water services will be managed at a regional level.

**Role of municipalities in water service management**

When water companies are responsible



for organising water services, municipalities have no concrete role (England and Wales) or are just shareholders (The Netherlands).

When municipalities are in charge of water services organisation:

- they can be a member of the board of directors of the water companies (Belgium and Cyprus)
- they can decide local strategy development (Romania)
- they can act as supervisor and planning authority (Denmark, Italy)
- they can provide water services to customers themselves (Finland, France)
- they can either provide water services directly to customers or establish independent water and wastewater water companies (Greece);
- they can choose the management method, by public or private operator (France). If a municipality decides to outsource management to a private operator, it defines the level of autonomy it wants to give to the private operator, within the framework of a fixed-term contract. But in all cases, the municipality always defines water policy and objectives.

**Competent organisation for delivering water and ensuring sanitation**

There are two main types of competent organisation for delivering water and providing sanitation: local authorities and water companies.

Local authorities or autonomous

regions are the competent organisation in most cases.

In five countries, the companies, whether public or private, are the competent organisation.

In England and Wales, private companies are responsible for delivering water and providing sanitation.

In The Netherlands, public companies only manage water services and the wastewater services are the responsibility of the regional water board.

In Finland, in some cases, customers can own the private utilities which could be considered as companies.

In Romania, either private or public water and sewerage utilities can be the competent organisation.

In Greece, either companies or local authorities are in charge of water services. There are three different situations: municipalities with fewer than 10,000 inhabitants manage water services themselves; when the population exceeds 10,000, an independent water and sewerage company is set up; in Thessaloniki and Athens, the two largest Greek cities, the companies are partially privatised.

**Decision-making powers**

Regarding organisation of water services, in most cases, municipalities or autonomous regions are in charge of organising water services (Belgium, Denmark, France, Greece, Italy, Romania and Spain) (see Figure 4).

In England and Wales, this power is assigned to a government department,

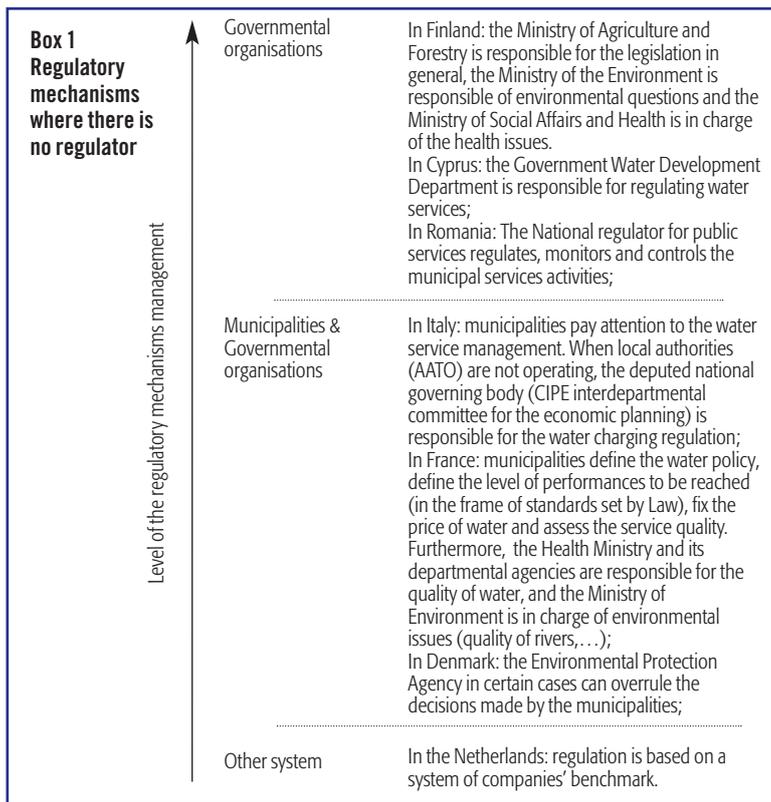
	Water services organisation			Price fixing			New investment decision		
	Gov	LA	CO	Gov	LA	CO	Gov	LA	CO
Belgium		■		■					■
Cyprus		■	■	■			■	■	■
Denmark		■				■			■
Eng & Wales	■					■			■
Finland			■		■			■	
France		■			■			■	
Greece		■				■		■	
Italy		■			■			■	
Romania		■			■				■
Spain		■			■			■	
Netherlands			■			■			■

Gov = Government

LA = Local Authorities

CO = Company / Owner of the water utility

**Figure 4** Overview of different kind of organisations which decide how to manage water services.



the Department for Environment, Food and Rural Affairs in England and Wales, and the Water Development Department of the central government in Cyprus.

In The Netherlands, companies and regional water boards manage the services. In Finland, the owners of the water utilities undertake this task. In Cyprus, day-to-day business is organised by both local authorities and companies.

Regarding fixing the price of water services, local authorities or autonomous regions fix the price of services in France, Greece, Italy, Romania and Spain.

On the other hand, the government assumes this responsibility in Belgium through the Federal Ministry of Economic Affairs in consultation with each water company and in Cyprus this is undertaken through the House of Representatives following a proposal

issued by the Council of Ministers.

In other cases, water companies fix the price: in Denmark, with the approval of municipalities; in England and Wales, the price is set in accordance with the annual price limits set by economic regulator Ofwat (Office of Water Services); in Greece with agreement of the municipal council; in the Netherlands with stakeholder agreement.

Regarding decisions about new investments and their financing, in France and Greece, local authorities decide on new investments and how to finance them in line with their long-term budgets. In Finland and Romania, the owners of water utilities (mainly cities or rural municipalities) make these decisions. In Italy, it is the water provider that decides how to finance investments.

Companies decide on new investments and how to finance

them in four countries: Belgium, Denmark (with the approval of the municipalities), England and Wales (subject to agreement with Ofwat) and The Netherlands.

In Cyprus and Spain, the organisation that decides on new investment varies depending on the project's size. Major project investments are decided by the government's water development department in Cyprus and by the autonomous regions or the nation in Spain. In addition, in Cyprus companies can also play a role in decisions about new investments.

**Water service regulation**

Only two countries have a specific agency in charge of water regulation. In England and Wales, Ofwat checks that the water and sewerage water companies provide an efficient service at a fair price. In Italy, local regulatory authorities are established by regional government according to the regulations within the Galli Law. They are responsible for regulation and organisation of water services. In addition, a national authority monitors national regulation patterns (COVIRI, from the Ministry of the Environment).

In Belgium, there is no regulatory agency, but the government decided recently to set up a regulatory commission. A decree from the Flemish government defines its responsibilities. The federal Ministry of Economic Affairs and the Flemish or Walloon Ministry of Environment currently take care of regulation.

In countries where there is no regulator, different regulatory mechanisms exist to ensure that water services are properly managed. They are implemented by governmental organisations and/or by municipalities (see Box 1).

**Main principles for fixing the price of drinking water**

One of the main principles for fixing the price of drinking water is according to the principle of covering costs (see Figure 5). The price of drinking

**Table 1  
Origin of new investment financing for each country**

	Belgium	Cyprus	Denmark	Eng & Wales	Finland	France	Greece	Italy	Romania	Spain	Netherlands
By the clients	Drinking water	Smaller projects		Self financed		Mostly					
By local taxpayers	Sanitation	Smaller projects				Partly (municipalities <3000 inh.)					
By national taxpayers		Major projects									
By international businesses							EU	EU			Where possible

**Table 2**  
Overview of the infrastructure owner for each country.

	Belgium	Cyprus	Denmark	Eng & Wales	Finland	France	Greece	Italy	Romania	Spain	Netherlands
Government		Major									
Local Authorities		Smaller									
Water Organisations		Smaller		Private operators only							Companies & Water Boards

water is fixed according to the principle of covering costs in most European countries: Belgium, Cyprus, Denmark, Finland, Spain and The Netherlands. In France, Greece and in Romania, the price of drinking water is determined by a combination of the principle of covering costs plus inflation rate growth.

Another main principle is according to annual price limits or a general price-cap principle. In England and Wales, Ofwat sets the annual price limits or 'K' factors for each company for a five-year period. This reflects what companies need to charge to finance the provision of services to customers. The current price limits were set in 2004. Price limits will be set again in 2009.

In Italy, the price is fixed according to a general price-cap principle based on RPI (Retail Price Index of inflation) growth and recovering productivity.

#### Controlling the cost of new investments and associated tariff increases

Verification of the cost and investment drivers submitted by water suppliers for water tariff increases is undertaken by:

- the Ministry of Economic Affairs in Belgium
- the Council of Ministers and parliament in Cyprus
- the national regulator for public services in Romania
- Ofwat in England and Wales
- the municipalities in France and Spain
- local authorities (AATOs) in Italy

Once the investment has been allowed, control of cost and investments drivers can be achieved in several ways.

In England and Wales, a review of price limits takes place every five years.

In France, water service prices and investment costs are discussed at least once a year by the municipal board. When the water service is outsourced to a private operator, the private companies must submit financial accounts and technical reports to the local authority every year. If the private operator is required to make a programme of new investments, the specifications, price and method of financing are defined in the contract signed by the municipality and the operator.

In Italy, AATO verifies the costs and investments made one year after the

related charge increases.

In Romania, the national regulator for public services checks costs and investments one year after they are put in place.

In Spain, the municipalities check the costs and investments made.

#### Financing new investment

The customers finance new investments in all of the countries in the survey (see Table 1). However, complementary sources of financing may be mobilised.

In Belgium, new drinking water investments are financed by the customers and local taxpayers finance sanitation and wastewater treatment investments.

In Cyprus, investments for small projects are funded by customers and local taxpayers and major projects are funded by national taxpayers.

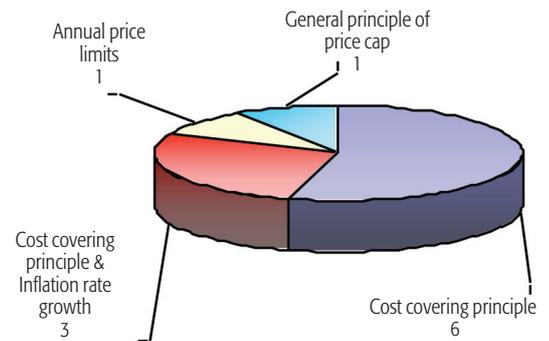
In France, customers usually pay 100% of the price of new investments. The six Water Agencies provide grants or loans to municipalities to fund part of their investments. But these Water Agencies derive their income from the bills paid by the customers. In small municipalities (fewer than 3,000 inhabitants), local subsidies funded by taxpayers can be used to partly finance new investments. Capital expenditure is also shared through the six Water Agencies (which receive some taxes that are included in the price of water).

In Greece and Italy, customers, financing of investments is through national taxpayers or international subsidies.

In Spain, new investments can be financed by customers, international subsidies, local or national taxpayers.

#### Ownership of the infrastructure

Local authorities own the water service infrastructure in France, Italy, Romania and Spain (see Table 2). In Belgium, the government and the municipalities own the water service infrastructure. In Greece, the water infrastructure is owned by the entity that manages it (either the municipality or a company). In Cyprus, major service infrastructure is owned by the state and smaller water services infrastructure may also be owned by one of the four independent water organisations. In The Netherlands,



**Figure 5**  
Different kinds of mechanism for setting water prices.

companies and water boards own the water infrastructure. In England, the water service infrastructure was sold to the private operators.

#### Organisation in charge of water services management

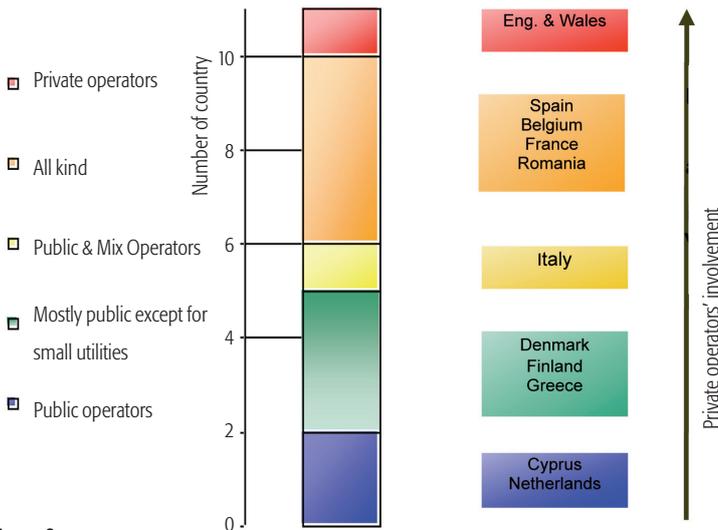
Only public operators are allowed to manage water services in Cyprus and The Netherlands (see Figure 6). In Denmark, Greece and Finland, the water services are managed by public operators except for small utilities, which can be managed by a mix of both public and private, or private operators. In Italy, either public or mix operators are in charge of the management. All options are possible (public, private or mixed operators) in Belgium, France, Romania and Spain. In England and Wales, only private operators can manage the water services.

#### Involvement of private operators, where they are allowed to manage water services

##### Percentage of population served by public or private operators

In Cyprus, Denmark, Greece and The Netherlands, the market for operating an entire water or wastewater service is not open to private operators (see Figure 7). However, in The Netherlands some BOT contracts have been agreed with private operators for the construction, financing and operation of plants. England and Wales are the opposite: water service delivery is undertaken by private operators: there are no public operators any more.

In Italy, Finland and Romania, the percentage of the population whose



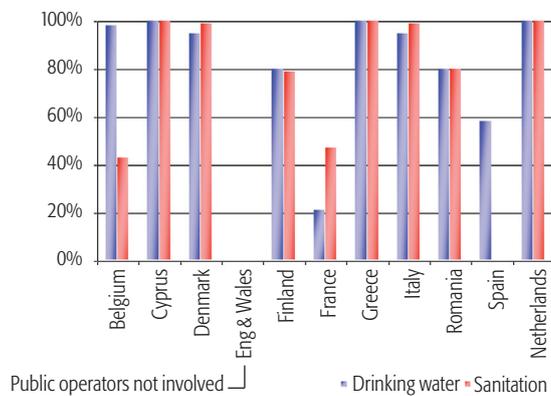
**Figure 6**  
Level of private operators' involvement.

drinking water is provided by private operators is 5%, under 10% and 20% respectively. In England and Wales, France and Spain private operators are involved at a significant level: respectively 100 %, 79% and 42% of their populations have their drinking water provided by private operators.

Belgium is a unique case, because private operators are only involved in managing wastewater treatment plants. Indeed, less than 2% of population have their drinking water supply provided by private operators, while public-private partnerships ensure wastewater treatment for 57% of the population (n.b. the company Aquafin is a mixed public/private company).

**Responsibilities that can be transferred to private operators**

In six countries (Denmark, England and Wales, Finland, France, Italy, Romania and Spain), major responsibilities – apart from the supervision of the service – can be transferred to private operators. They can: operate the service; manage customer relations; renew electromechanical equipment or existing infrastructure; extend the main infrastructure (except in Romania); implement research and development



**Figure 7**  
Percentage of population served by public operators (drinking water and sanitation).

programmes (except in Romania and Spain).

Belgium is an intermediate case: the renewal of electromechanical equipment is the only element that can be transferred.

**Existing contractual arrangements with private operators**

England and Wales is the only country that allows full privatisation of water services (see Table 3). In Denmark and Belgium, three types of contracts can be concluded:

consultancy contracts, operation and maintenance contracts and lease contracts. In Finland one BOT contract has been agreed and in Romania one concession contract has been signed. In France 90% of contractual agreements are lease contracts. The remaining 10% are mainly concession contracts or 'régie intéressée'. In Italy, private operators can contract for either an operation and maintenance contract or a concession contract. In Greece and Spain, all kind of contracts except full privatisation contracts can be agreed. Despite this, very few public private partnerships have been set up in Greece.

**How to contract with private operators**

The procedures for contracting are specific to each country. In Belgium, there are national calls for tender. In Denmark, Romania and Spain, only international calls for tender can be initiated. In Italy and France, both national and international calls for tenders are initiated. In France, which type of call for tenders is used depends on the size of contract. According to the law, an international call for tenders is required when the contract exceeds €200,000 (\$254,146, VAT excluded) for sanitation and €400,000 (\$508,154, VAT excluded) for potable water contracts. In England, companies operate under long-term licenses.

**Number of call for tenders organised every year for selected private operators**

Information is available only for France, Italy and Romania. In France, there is an active water services market: 600 to 800 calls for tender are initiated every year. In Italy, about 25 calls for tenders are set up every year to outsource water services management. In Romania, in general just one call for tender is launched on average every year.

**Average duration of contracts with private operators**

The duration of contract depends of the responsibilities delegated to the private operator, the level of performance to be achieved, and any new investments that have to be made and funded. The duration of contracts is very variable.

In Belgium and Italy, the maximum duration of a contract is five years (except for concession contracts in Italy, which allow private operators to recover the sums invested).

In Romania, the average duration is 25 years. In Spain, contract duration may be up to 50 years. In France, the average duration of lease contracts is 12 years. The 'Sapin Law' authorises 20 year contracts where new infrastructure has to be financed.

**Table 3**  
Contractual arrangements that can be made with private operators in each country.

	Belgium	Cyprus	Denmark	Eng & Wales	Finland	France	Greece	Italy	Romania	Spain	Netherlands
Consultancy contract											
Operation and maintenance contract											
Lease contract											
Concession contract											
BOT contract or equivalent											
Full privatisation contract											
Others											

## Access to water and sanitation for those on low incomes

### *The population that does not have access to the public water supply and sanitation services*

Few people have no access to the public water supply in Europe (see Figure 8). In Belgium, Cyprus, Greece, Spain and The Netherlands, the entire population has access to a water supply and sanitation.

There are two main types of people that face difficulties in getting access to water or wastewater services. One is people living in remote rural areas where there is no public infrastructure. This percentage can be high in countries with low population densities such as Finland, where 11% of the population does not have access to a public water supply and 19% of the population is not connected to the sewerage network. In France, 21.2% of the population is not connected to a sewerage network because of the large rural population. The other type are insolvent or poor people. These groups may face either temporary financial difficulties or permanent ones.

Romania is a particular case. Here, 32% of the population don't have water services and 48% are not attached to sanitation services.

### *In rural areas*

To satisfy their basic needs, people living in rural areas that do not have access to public water systems usually abstract water from private wells or are connected to small treatment plants. For sanitation, they usually use private septic tanks.

### *Social tariffs and solidarity mechanisms*

Non-solvent people can obtain drinkable water from public taps or may benefit from financial help (see below).

### *Social tariffs*

In Belgium, there is a social tariff for water consumption and connection to the local network.

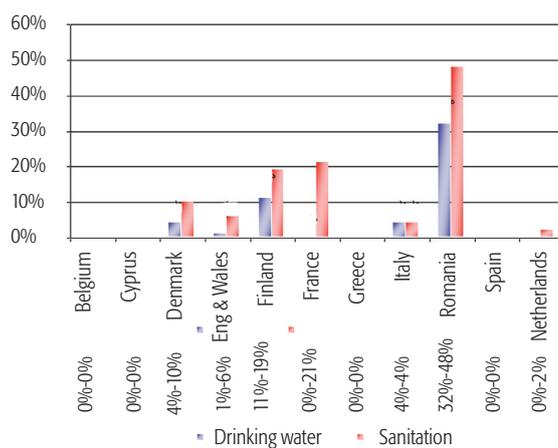
In Cyprus, a special reduced tariff has been set up for families of more than seven people living in one household.

In Greece, there are some discounts for families with more than four children and other low-income groups.

In Italy, there is a reduced tariff that applies to basic needs (100 m<sup>3</sup>/year/flat).

In The Netherlands, there are subsidies for purchasing septic tanks when a connection to the sewerage network is not possible.

In five of the 11 countries surveyed (Denmark, Finland, Greece, Romania



**Figure 8**  
Percentage of population without access to public water supply and sanitation.

and Spain), social tariffs and financial help do not exist for two reasons: either the people that are not connected to potable or sewerage networks are located in rural areas or the standard of living is generally high. People use partial alternative solutions such as private wells or public taps.

### *Other solidarity mechanisms*

Special solidarity mechanisms that facilitate access to water and sanitation services have been implemented in England and Wales, Belgium, France and Italy.

In Belgium, there is a distinction between the incentives provided for drinking water and sanitation. In Flanders, each person registered gets 15 m<sup>3</sup> of potable water free each year. In Walloon, there is a special fund for those with low incomes. Service users finance this mechanism through their water bills. There are also some tax exemptions that reduce the cost of water supply and sanitation for low-income families.

In England and Wales, people receiving benefits or tax credits can get financial aid when paying water bills via a metered supply and pay a fixed charge corresponding to the average household bill of the water company if their bill is higher than the company average.

In France, a specific organisation, the Convention Nationale de Solidarité Eau was created in 2000 by the government to pay the water bills of people facing financial difficulties. The budget for this Commission was E7.6 million (\$9.65 million) in 2003: 60% of its finances come from public funding and 40% from the private water service operators.

In Italy local authorities enforce a scheme of cross subsidies between consumer groups ●

**Table 4**  
Details of those who filled in the questionnaire.

Country	Name	Organisation
Belgium	Jan Hammenecker	Vlaamse Maatschappij voor Watervoorziening
Cyprus	Socrates A. Metaxas	Water Board of Lemesos
Denmark	Jens Bastrup	Danish Water and Wastewater Ass
Eng & Wales	Martin Day	WRC plc
Finland	Mika Rontu	Finnish Water and Waste Water Works Association
France	Nicolas Renard	Veolia Water
Greece	Kotselidou Olga	Union for the Municipal Enterprises of Water Supply and Sewerage of Greece
Italy	Renato Parena	SMA Torino Spa
Romania	Silviu Lacatusu	Romanian Water Association
Spain	Carles Sanclemente	Aguas de Barcelona
The Netherlands	Ingrid Troquet	WML

# The reforms at the heart of Veolia's Chinese water service contracts

Overhaul of management and workforce roles and the introduction of customer services are the type of benefits Veolia Water believes it can bring to the running of water utilities.

**KEITH HAYWARD** spoke with CEO **ANTOINE FRÉROT** about what underpins the company's recent success in the Chinese market.



**C**hina's water sector is proving to be good hunting ground for France's Veolia Water. In addition to construction-only contracts, the company now has 19 operating contracts. Of these, 14 involve just a segment of the water service, such as the operation of a single plant. The other five are for global service provision for either drinking water or wastewater or for both. 'We have a lot of competitors,

especially under the first type of contract. What is important for us is to be able to propose where we are able to make more difference,' comments the company's CEO, Antoine Frérot.

'One way we are able to show our difference is to show that we could manage the interfaces between the different segments of the global water service, between production and distribution, between distribution and customer service, between investment

and operation,' he continues. 'If you manage them closely and well you can create value. We think that there are not so many companies in the world, especially in China, which have this knowledge, so we are more interested by this global product.'

This breadth of the global contracts means they can include commitments such as establishing call centres or creating a real-time control system for the network. Frérot cites the company's performance on its earliest global

contract in China, for Pudong, as evidence that it is delivering on such commitments. A call centre for customer services has been set up, a model of the network has been developed, and real-time control has been put in place. The aim now is to meet the 2010 deadline for full compliance with water quality targets. 'The achievement of the commitments and the control by the public authority of these commitments are exactly the same as they are in, for example, Europe,' Frérot notes.

### Management changes

Such global contracts potentially present a whole range of issues to be dealt with. 'Organisation is probably the main task we have,' says Frérot. The reason he gives for this is that the preceding organisations are generally 'highly centralised and fairly bureaucratic', as with all public authorities in the world. 'In these highly bureaucratic bodies you don't have real field managers who are able or allowed to take decisions in their field,' says Frérot. When problems arise, communications must go up and down a chain of command. 'When the answer come, if it comes, the problem is over for a long time. So the first thing is to decentralise the company,' he adds.

'The second thing is to find, to train, to build managers at the head of each of these [decentralised] parts,' says Frérot. That takes time. 'Very often the managers in place are not able to play this role, so either we find young people with the talent and potential to play this role, then we have to train them, or we have to hire them from outside. Normally we find them, but they are not the oldest people in the company, so there is a challenge for us and for them to take a management position and very often to become the boss of their previous boss.' Overall Frérot estimates that it takes two or three years to reorganise a company to a point where field managers are able to take decisions themselves.

This process clearly demands a shift in perspective for the new managers. Frérot believes that, despite the bureaucracy, organisations will tend to be 'not completely polluted', such they will be able to find people with enthusiasm. 'These people who have this potential, we feel it immediately,' he says. The task then is to help them learn how to manage a small or medium sized team with other colleagues, sometimes with training outside China. 'Sometimes after one or two years, they are able to do the same back in the city,' says Frérot. Activities in support of this include the company's management training centre in Shanghai. In 2005, 1200

managers spent a minimum of two days each in sessions there.

'The entrepreneurial spirit is key for the management of our activities,' says Frérot. 'In a big group of people, in say 1000 people, you always have people, normally quite young, who have this spirit... We have to capitalise on that. We have to detect them, help them, promote them, support them, and if we are doing that well, we can be sure we will find at least half of them who will be able to go up in the organisation.'

In practice this means that use of external staff can be limited, with even that limited use diminishing over time. 'At the beginning we put at the top level of the company external managers coming from our group,' says

managers of the group. At the end we will have no more managers of the group.'

Frérot cites the Chenghu contract as an example, where he says the whole activity is now managed by a Chinese person they found in the group. 'It is not a very big contract, but we succeeded in this case to replace all our French, British, Australian or American managers. That is our goal. For a much bigger contract, such as Shanghai, it will take probably more than five years to replace everybody, and the step after that is to use our top Chinese managers to do the same in a new country, and so on.'

### Workforce changes

Alongside changes to the management of the company are wider changes for the workforce also, and Frérot notes two points that frame this issue. 'The first thing is that the organisation has to be changed, because it is too bureaucratic, too centralised, without enough freedom to take decisions in the field. The second thing is that in China, as in all the countries in the world, when we get the contract we are not allowed to fire people.'

The company does, for example, have the option not to replace people when they retire, and such natural wastage is used to reduce staff numbers. 'In such bureaucratic and centralised bodies everywhere in the world there

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***'Organisation is probably the main task we have...  
In these highly bureaucratic bodies you don't  
have real field managers who are able or allowed  
to take decisions in their field.'***

Frérot. This might be just three to five people for a contract the size of Pudong or Changzhou. At the same time there might be up to around 20 people being trained as field managers. 'From these 20 young local managers or field managers, we will detect one, two, three which have more potential and these people will replace the top

## A new era for Chinese customers

'Before we came in, the consumer was not really a customer,' notes Frérot. Instead, consumers were simply users with a right to use the services and pay the bills. 'We and our competitors, and also the other utility businesses, have had to change their mind about that. Usually in China, as elsewhere, there were no real customer services or customer-oriented information... Excepting very few exceptions in China, such tools do not exist at all, so we create them when we arrive.'

In Pudong, for example, the company established a new call centre after 18 months of operation. This, the company says, was the first one in China running 24 hours a day. Customers can obtain information about their account, including billing and payment issues. There is a laboratory nearby, meaning water quality data is readily available. Also, there is a network data room at the centre, meaning it can field queries about distribution during a crisis. Overall the service level is said to be comparable to what the company provides in, say, France.

More generally, the company issues information with bills about how customers can obtain information about their bills, water quality, and connection.. It also works through schools to explain the importance of water and to raise awareness about how to obtain information. 'We give to the population the means to use our customer services,' says Frérot.

A key question though is the extent to which there is public oversight of the service provided. 'Everywhere, in every country, you have customer organisations which have a link with a political body, in countries where you have an election and also in countries where you do not have an election. You can be sure that the public authorities in China are very aware about the level of satisfaction of the population,' says Frérot. He contrasts the situation with that in European countries such as the UK, France and Germany. 'In China it is less formalised at this time, but it has its importance. There is in the Chinese cities a commission on citizens which are the relay to inform the high political level about how we are doing.'

What this means is that there is the potential for action against the company. 'When the population globally, statistically, is not satisfied, we would have problems, probably penalties,' says Frérot.

are too many staff – it is not a surprise,’ notes Frérot. But there is more to the company’s approach than that. ‘One of our tasks, because we cannot fire them, is to progressively transfer them and to make their job useful or more useful than they were before. One of our tasks, for example, is to extract people from the offices to put them back in the field. That is not very easy of course because everywhere in the world people think that to be in the office is a better job than to be in field, but surprisingly they are less happy in the offices... Our mission is first to convince them, to push them, to go this way, and to build the conditions for where they could be happier in their new job in the field which is useful and to build a spirit, the family spirit or human scale spirit, of the smaller team we built with our young manager.’

**Market potential**

In considering the extent to which Veolia will be able to win further contracts in China, Frérot notes that reforms of China’s water sector will take place within the context of both privately- and publicly-run utilities. ‘China is a developing country with a high growth rate, so it has a lot of needs but, positively, also a lot of means to reach the needs,’ says Frérot. ‘They have decided to play two ways to meet these needs. The first one is to support strongly the PPP (public-private partnership) model. The second way is to push the public-owned bodies to follow the private, particularly foreign private, operators with the same level of quality.’

Frérot notes the role of the public sector. ‘This PPP model could exist only if there is also near it the classical public-owned company to challenge the model and to force the two different ways to contest. There is no country in the world where you have the PPP model as 100% for water services. In China it will be the same.’

Nonetheless, the Chinese market is set to continue to grow. ‘Probably it is still the case now that China is the most booming market in the world,’ Frérot points out. ‘Even if this booming market is attracting more and more players, we will have a chance to continue our growth, probably at the same rate we enjoyed during the last five years. Every year, year on year, you could have two or three new cities which decide to follow the PPP model way – two or three cities with one or two million inhabitants... For five years we have won between two and four contracts each year. We hope to continue at the same speed, not especially quicker, but at least at the same speed, and for that we could reach about 50-60 million new

inhabitants in ten years.’

Furthermore, Frérot sees benefits in the way the Chinese market operates. One feature of the market is that the leaders of local authorities tend to be relatively young. ‘The political body of the Chinese cities, even the big cities, is quite young,’ he says. ‘A mayor is classically less than 50. They are well trained, sometimes out of the country, and they are challenged by their government on what they are able to do in the city and the speed they are able to do it.’

‘Certainly they know what they want,’ he says, speaking generally of the public authorities. ‘To know it, sometimes they think for a long time, but when they have decided what they want, things are clear, things go quickly, and there are few risks of a blockage to go the way they decided.’ This applies

then when authorities decide to use the PPP model. ‘We don’t have the difficulties we could have in a lot of other countries, so it is rather an easy country for us to work in. Of course we have to wait for the decision of the public authority – it could take time –

***‘Of course we have to wait for the decision of the public authority – it could take time – but when the decision is taken, things are simple and quick. Probably it is the sole case around the world which is like that.’***

but when the decision is taken, things are simple and quick. Probably it is the sole case around the world which is like that. ●

**Veolia Water in China**

Place	Contract start	Description	Duration	Population
Tianjin	1997	Renovation and operation of drinking water production facility	20 years	1.85 million
Chenghu	1998	Build, operate and maintain a drinking water facility	18 years	2.66 million
Zhuhai	2002	Construction and O&M for two wastewater plants	30 years	330,000
Baoji	2002	Renovation, enlargement and operation of two drinking water plants	23 years	600,000
Bailonggang	2002	Construction of China’s largest wastewater plants (Veolia Water Solutions & Technologies)		
Pudong, Shanghai	2002	Water production, distribution and customer services	50 years	2.6 million
Lugouqiao, Beijing	2003	Wastewater facility O&M	20 years	270,000
Qingdao	2003	Wastewater plant construction; O&M of two plants	25 years	820,000
Michelin, Shanghai	2003	Water and wastewater services at a tyre manufacturing facility	15 years	
Shenzhen	2004	Water production, distribution, customer relations, and wastewater collection and treatment	50 years	2.61 million
Beiyuan	2004	Wastewater construction and operation near the Beijing Olympic village	23 years	Under construction
Zunyi	2004	Renovation of two drinking water plants	35 years	Under construction
Hohhot	2004	Drinking water plant renovation and operation	30 years	1 million
Weinan	2004	Drinking water plant renovation and operation	22 years	210,000
Urumqui	2005	Wastewater facility modernisation and operation	23 years	1.14 million
Handan	2005	Wastewater facility construction and operation	25 years	Under construction
Changzhou	2005	Water production, distribution and customer relations	30 years	1.1 million
Kunming	2005	Water production, distribution and customer relations	30 years	2.5 million
Beijing Sinopec	2006	Yanshan industrial wastewater site operation	25 years	
Liuzhou	2006	Water production, distribution and customer relations	30 years	1.0 million