



European Benchmarking Co-operation

Learning from International Best Practices



2011 WATER & WASTEWATER BENCHMARK

The European Benchmarking Co-operation (EBC)

The European Benchmarking Co-operation (EBC) is a not-for-profit partnership of four European national water associations: DANVA (DK), FIWA (FIN), Norsk Vann (N) and Vewin (NL). On behalf of the partners, Vewin coordinates the programme. For Germany, Aquabench acts as a regional EBC-hub.

The University of Graz holds the same position for Austria.

The mission of EBC is to provide a learning platform for all interested European water utilities. Since 2007, EBC annually organises benchmarking exercises.

Participation is on a voluntary basis.

The EBC programme is aligned with the IWA & AWWA benchmarking framework and applies the IWA Performance Indicator System. This provides a standard for exchanges with other initiatives.

What does EBC's benchmarking programme offer?

EBC offers a learning-orientated utility improvement programme. It consists of two consecutive steps: performance assessment and performance improvement. To serve both large and small utilities, experienced and less experienced ones, EBC has developed a Performance Assessment Model with three different levels of detail: basic, standard and advanced.

Whereas the basic level investigates elementary statistics and -performance indicators, the advanced level offers quite detailed indicators for deeper analysis. Participants can choose the benchmarking level that matches their aspirations and availability of internal information.

Five key performance areas are analysed to provide a balanced view on utilities' performance:

- Water quality
- Reliability
- Service quality
- Sustainability
- Finance & Efficiency

To secure the high-quality standard of the programme, the EBC benchmarking team and the participating utilities closely work together on data collection, data quality control and data reporting. In the performance improvement step, utilities meet their peers in the annual workshop where they exchange knowledge and best practices in technology, management and operations. Last but not least, EBC encourages utilities to prepare Performance Improvement Plans for the implementation of improvement actions.

Learning from International Best Practices

Table of contents

Foreword	4
Introduction	6
Drinking water performance comparisons	10
Good practices snapshots	16
● Oasen:	18
Ice Pigging for improved network cleaning	
● Eau de Paris: Efficient real-time and differed time tools and methods for leakage detection in the city of Paris	20
● Services Industriels de Genève: Optimising pump energy - Storage Reservoirs Management software tool (SRM)	22
Wastewater performance comparisons	26
Participants' experiences	
● Canal de Isabel II: EBC is the right programme to promote partnership between companies	31
● Aquanet SA: Key to successful participation is proper organisation of data collection	32
● Thames Water: True value is not in the data, but in the exchange of experiences	33
Endnotes	35
Colophon	36

Foreword

In 2011 EBC organised its fifth international benchmarking exercise for water & wastewater services. 45 utilities from 19 different countries joined the exercise, 10% more than the year before.

Over the past few years we have experienced that demand in the sector for benchmarking is growing. Benchmarking, as a management tool for performance improvement, is a real must today. It helps utility management in creating an effective, sustainable and efficient service, in responding to the foreseen harder economic situation and in contributing to the new EU-strategy of resource efficiency.

Still, despite of EBC's and several other initiatives, many utilities are not yet involved in any benchmarking effort at all. The EBC-partners actively encourage water utilities, no matter their size, type of activities or stage of development, to join the growing network of organisations that wish to move forward by learning from each other. Reaching these utilities, especially in less developed regions, however requires additional efforts and (financial) support.

Mission: Performance Improvement

Since the start, the EBC-programme has developed in line with the new IWA/AWWA-benchmarking framework, recognising that efforts should focus on the final goal of benchmarking: improving the service. Next to providing extra added value in the assessment stage, we are increasingly focussing on better facilitating the performance improvement stage.

In the 2011 EBC benchmarking workshop in Oslo, a record number of 70 representatives from participating utilities gathered to exchange leading practices and innovations, which clearly illustrates the demand for improvement actions.

Taking the programme to the next level

Over the past few years EBC has developed from a cross-border benchmarking pilot into a professional, international benchmarking programme with annual exercises and a growing number of participants. The programme is self-financed, thanks to the early joiners.

The EBC-programme could develop successfully because of its close link to its initiators. This however also limits the possibilities for further developing the programme and enlarging the network. Now that the programme has shown its viability, it is time to take it to a next level.

The EBC-partners aim to position EBC more independently, but at the same time maintaining ownership and governance close to the industry. This way, the efforts taken by EBC can even be more focused on the core task of facilitating performance improvement. Also, it better enables external funding of activities.

2012 promises to be a challenging benchmarking year, again!

Theo Schmitz,
Association of Dutch Water Companies (Vewin)

Carl-Emil Larsen,
Danish Water and Wastewater Association (DANVA)

Osmo Seppälä,
Finnish Water Utility Association (FIWA)

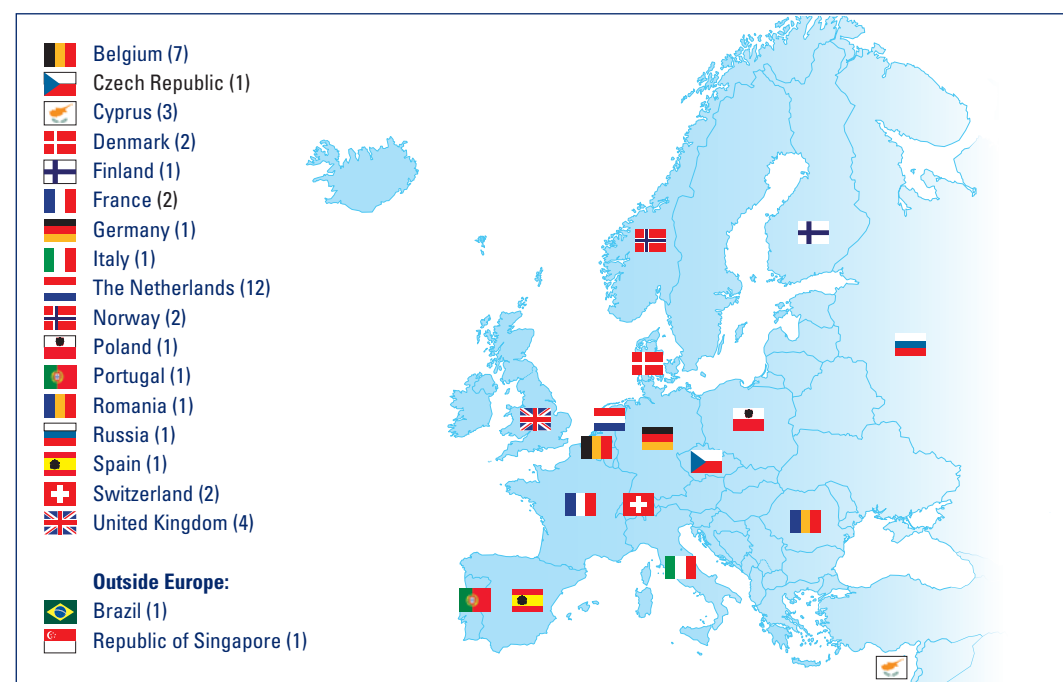
Einar Melheim,
Norwegian Water (Norsk Vann)

Introduction

EBC's international benchmarking exercise 2011

In 2011 the European Benchmarking Cooperation (EBC) organised its fifth annual international benchmarking exercise for water- and wastewater services. A total of 45 utilities from 19 countries participated. The 2011 exercise analysed data of the year 2010. The project was coordinated by Vewin (Association of Dutch Water Companies) and supported by Accenture.

45 Participants from 19 countries



The 2011 benchmarking process

Registration for the exercise started early 2011. Parallel to the IWA PI2011 benchmarking conference in Valencia, Spain in March 2011, EBC organised an orientation workshop for potential new participants. Registered utilities could collect and submit their data to the EBC coordination office until July 2011 through a dedicated, secured website. In order to secure data quality, the EBC-team carefully checked the reported company data by comparing it with data provided in previous exercises, published annual reports and results of peer companies. When inconsistencies were found, companies were asked to correct or validate their data if necessary. In the beginning of September 2011 a draft report was sent to all participating utilities,

providing information about the performance in the five areas analysed in EBC's assessment model: water quality, reliability, service quality, sustainability and finance & efficiency.

Workshop: Most essential part of the process

In October 2011, the preliminary results of the performance assessment part were discussed in a two day workshop hosted by Oslo kommune VAV (Oslo water and wastewater utility). Over 70 representatives of participating utilities gathered in Holmenkollen Park Hotel to learn from the results of the performance comparisons and to exchange best practices and innovations.



Fourteen sessions on best practices and specific topics were held, where participants could share their experiences. Topics ranged from sustainability to customer service and asset management. Also, a training on improving Learning, Collaboration and Knowledge Management within water utilities was carried out by Accenture. Last but not least, Oslo kommune VAV offered site visits to their innovative water treatment plant Oset and wastewater treatment plant Bekkelaget.

Learning from best practices and innovations

After the workshop participants had a last opportunity to correct their submitted data. In November 2011 the final company reports showing the selected set of key performance indicators for both drinking water and wastewater services were sent to each participant. Participating utilities have the possibility to generate additional graphs on every EBC performance indicator and context information variable through the online reporting tool at www.waterbenchmark.org. These graphs can be individually tailored by selecting a range of years, peer-groups, and filtering results with other specific criteria. In this way, the analysis best matches participants' individual needs.

The benchmarking workshop and the reports provide utility management with essential information for further internal discussions about the company's performance and in this way, it helps utilities to develop improvement actions according to their own priorities.



DRINKING WATER

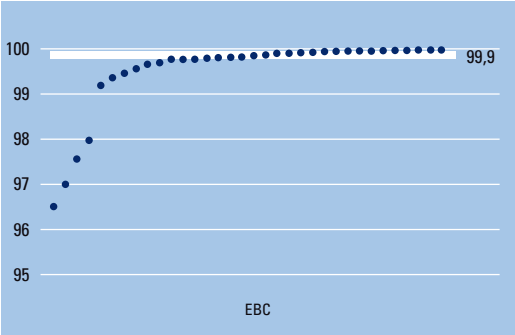
Drinking water performance comparisons

This section provides an overview of the performance comparisons of the 2011 benchmarking exercise for drinking water services. Data is compared on these services specifically. Measures, costs and income of other services participants may provide are excluded. In EBC’s assessment model, the performance indicators are categorised into five areas: water quality, reliability, service quality, sustainability and finance & efficiency. This publication only shows a sample of the 139 available performance indicators for the drinking water service. As the group of participating companies in the 2011 exercise is different from that in 2010, this year’s results cannot be compared with those of last year at group level. In the individual company reports however companies can track changes in both their own as well as their peers’ performance.

Water quality test conformance is high

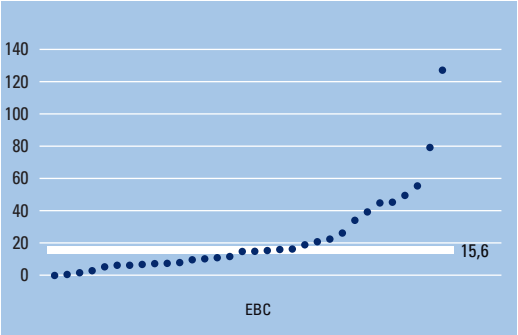
Undisputable, quality is the most important aspect of drinking water. The public must be able to trust the tap water at all times, as they consume it on a daily basis. To assess the quality of the drinking water, EBC investigates if water quality tests comply with national regulatory standards. Standards can differ between countries and as a result, if two companies both score 99% compliance, their absolute water quality can differ. Nevertheless, because most of the participating utilities originate from Europe, where national standards are based on the European Drinking Water Directive, or tend to it, variation in standards is limited. The performance on water quality within the EBC group is very good. Most companies have a test compliance score of 99% or higher. It should be noted that a non-compliant test does not necessarily mean an imminent health risk to the user: I) it may be a test on non-hazardous flaw (such as brown-coloured water) and II) regulatory standards are usually set much higher than the levels at which health risks occur.

Figure 1: Quality of supplied water (%)



According to the programme’s Code of Conduct performance comparisons in this report do not show participants’ names. Note that the number of data points vary per figure, because not all participating utilities have submitted a full dataset.

Figure 2: Mains failures (No./100km)



Reliability is good, yet there is room for improvement

From a customers’ point of view, reliability is very important. Customers expect a continuous supply of clean and safe drinking water. A useful indicator to measure performance on reliability is mains failures. Mains failures are breaks and leakages of mains pipes, valves and fittings leading to interruption or low-pressure supply. The median amount of mains failures is around 16 failures per 100 km mains, per year. However there are substantial differences within the group.

Companies in the EBC group apply different strategies to increase the reliability of their network. These consist both of programmes to decrease the number of mains failures as well as to increase the detection rate of them. The first is achieved by rehabilitating the network as well as adjusting water pressure. Faster leak detection can be realised by real time measuring of flows and pressure in the system. Note that increasing the detection of leaks will increase the number of mains failures, but still improves reliability as service to customers is improved and fewer water is lost. Therefore in the EBC programme, reliability is also measured by distribution losses and customer minutes lost due to unplanned interruptions, not only on mains failures.

Service quality: Under 2 complaints per 1000 inhabitants

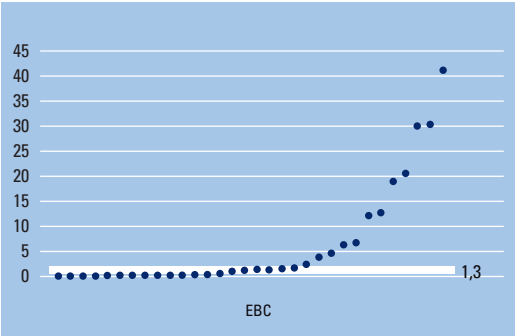
On several occasions a customer comes in contact with the local utility: when consumption is measured, through billing, a change of address or when a service interruption occurs. If the service of a utility is not up to the required standards of the customer, customers can file a

complaint. Therefore the number of complaints is an indicator for the service quality, where a low number of complaints can be a signal of good service.

This report shows the figures for service complaints. These include complaints about the quality, delivery and continuity of water. Billing complaints are excluded. The median value is around 1,3 complaints per 1000 connected properties a year. This means that only a very small part of the customers is displeased with the service.

Note that there are utilities that systematically report a higher number of complaints. This does not necessarily mean that their service is of a lower quality. Cultural differences can also play a role in the number of complaints reported.

Figure 3: Service complaints per connected property (complaints/1000 properties)



In order to reduce the number of complaints, companies strive to reduce service interruptions and improve water quality and supply pressure. Improvements in customer service are therefore related to improved reliability. Companies also attempt to improve their customer service and communication when interruptions do occur.

Sustainability offers room for improvement

Sustainability is one of the key issues on almost every company’s agenda. The EBC programme assesses the sustainability of the water service using the Triple Bottom Line approach. In this approach EBC investigates the social, environmental and economic dimensions of sustainability.

Social sustainability: Median share of water bill in disposable household income less than 0,6%

EBC measures the social sustainability of the drinking water services by assessing how affordable the cost of the service is for the consumers. This is expressed as the share of the water bill in the disposable household income¹⁾. The advantage of this method, above comparing average charges per household directly, is that it accounts for differences in wealth between countries.

EBC observes that the median of the share of the water bill is just below 0,6% of the disposable income. Only few utilities score over 1%.

Figure 4: Share of water bill in disposable household income (%)

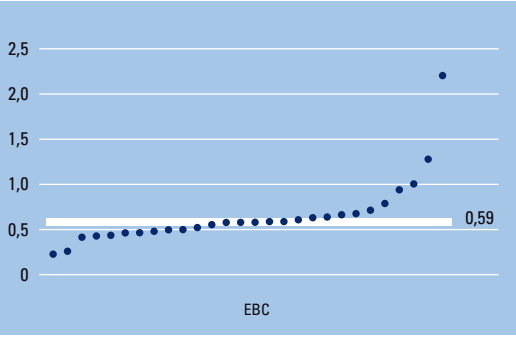
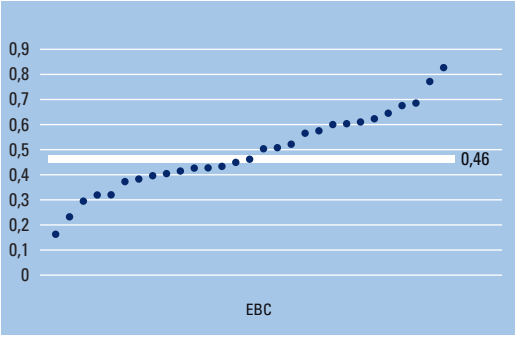


Figure 5: Electricity use per m³ water produced (kWh/m³) Environmental sustainability:



Median electricity use per m³ produced less than 0,5 kWh

EBC benchmarks environmental sustainability through a set of performance indicators, including electricity use for water production, energy recovery, inefficiency of use of water resources and the reuse of treatment residuals.

In this publication we focus on the results for electricity consumption. We measure the electricity used by pumps in the abstraction, treatment and distribution of water, per m³ that is produced. The results depend on the efficiency of the pumps, but also on the type of water being used as well as elevation differences in the service area. The median electricity consumption for pumping is 0,46 kWh per m³ water produced.

Reducing energy consumption is an important topic for most companies in the EBC-group and different initiatives are being deployed for this, for instance by optimising network

pressure, introducing different pressure zones or by replacing pumps. Another option, depending on local circumstances, is to generate energy with turbines in transmission lines or by installing micro turbines in the distribution network.

Economic sustainability: Median total cost by sales coverage ratio around 1,0

The economic sustainability of the service is also assessed by a set of parameters. These include the standardised network age, the degree of rehabilitation of the network, the equity ratio and the cost by sales coverage ratio. In this publication we focus on the latter. The costs by sales coverage ratio measures if the charges to customers are sufficient to cover the costs of the service. If the ratio falls below 1, companies will have to rely on other sources of income (e.g. subsidies or income from other activities) or ultimately rely on their reserves. On the long run this makes the service less sustainable. With a median of 1,04 the cost by sales coverage ratio of most companies is sustainable. The cost coverage can be improved by either increasing drinking water prices or reducing the cost. Both costs and prices are benchmarked in the fifth and final performance area, finance and efficiency.

This report focuses on the charges for drinking water. An important indicator is the price of drinking water, which is calculated by dividing the total direct revenues by the sold volume. Note that in practice many utilities have a tariff structure with a fixed connection fee and a variable rate per unit sold and as a result the price per m³ a household actually pays will often depend on their consumption. The median price of water is € 1,24 per m³.

Higher prices usually occur in countries with a higher wealth. Therefore if we correct the prices for differences in purchasing power, the differences between companies become smaller. An example of a specific cost reducing improvement action is operating pumps in such a way that they run at the time of the day when energy prices are relatively low. In many cases, cost reductions are achieved as secondary effects of programmes to improve performance in other areas. Faster detection of leaks for instance, will not only increase a company’s reliability, but will also reduce the costs associated with the leakage of treated water.

Figure 6: Total cost by sales coverage ratio ()

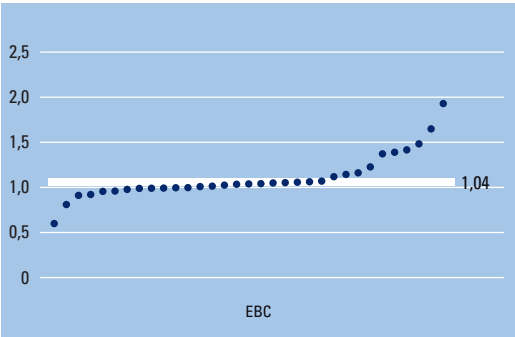
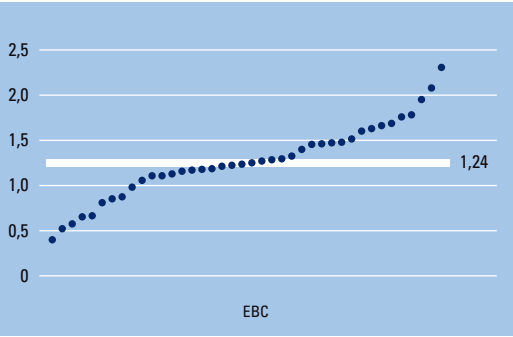


Figure 7: Average water charges for direct consumption (€/m³)



Finance & Efficiency: Median price is € 1,24 per m³

In the EBC-framework an extensive set of performance indicators is used to assess the finance & efficiency of the service. This set includes indicators for charges²⁾, total costs³⁾ and personnel intensity.

GOOD PRACTICES



Oasen:

Ice Pigging for improved network cleaning

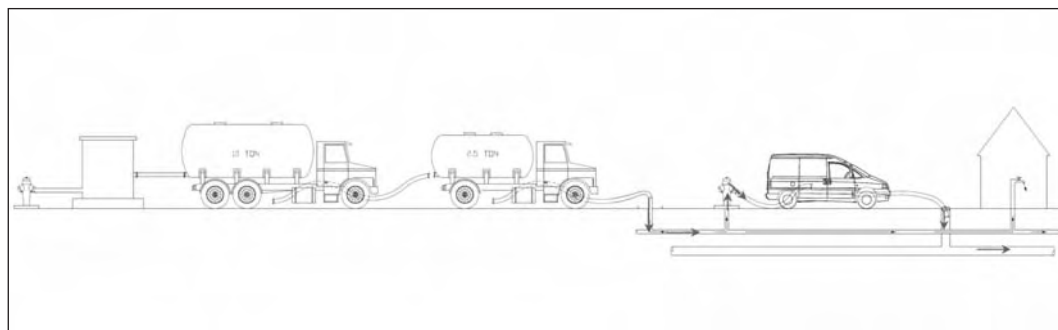
In this section EBC shows a few examples of good practices, as identified in the 2011 benchmarking exercise. In the Oslo workshop these practices were presented by representatives of participating utilities to learn from each other.

Bas Bouwman, Oasen, The Netherlands



Since 2008, customers in the cities Hendrik Ido Ambacht and Zwijndrecht experience pressure drops at their taps and clogging of water meters. Unfortunately, conventional cleaning methods did not solve this problem adequately. Oasen decided to use the innovative ice pigging method to target this specific problem. Ice pigging comes down to flushing the network with a mixture of ice crystals and water, "wiping" material from the inner surfaces of pipelines. Approximately 100 km of Oasen's PVC water mains with a diameter between 63 and 200 mm was thoroughly cleaned this way.

The operating principles of ice pigging



From left to right: production of ice slurry in Zwijndrecht, transport and injection of the ice slurry by a specialized lorry, injection of ice slurry via a hydrant, ejection of used ice slurry and removed material via a hydrant, specialised truck for collecting measurements and direct discharge into the sewer.

Effectiveness

Reliable information about the effectiveness of the method was provided by visual inspection inside the pipelines prior to and after the execution of ice pigging, using a specialized camera. As can be seen from the illustration below, deposits on the inner surface of the pipeline have been removed completely.

Effects of ice pigging.

Camera inspection in a 110 mm PVC pipeline before (left) and after ice pigging (right)



Conclusions

After a successful demo in November 2010, Oasen decided to apply the technique of ice pigging on a full scale and clean 100 km of water mains in the municipality of Zwijndrecht. Up-scaling from a pilot demo to a full scale project appeared to be more complicated than expected. Technical problems with the ice production facility and the poor technical condition of valves in the network caused more delays than calculated prior to carrying out the work.

Although the project proceeded slower than expected, the results of the cleaning were good. Ice pigging proved to be a good and hygienic technique to clean pipes, removing deposits and biofilm from the pipe wall surface, especially in situations where conventional flushing does not provide a solution. Visual inspections show that after ice pigging the pipes were thoroughly clean. A final evaluation of the project has yet to be made.

Eau de Paris:

Efficient real-time and differed time tools and methods for leakage detection in the city of Paris

Bérengère Sixta, Eau de Paris, Paris, France



Paris doubles its number of inhabitants during day time from 2 to 4 million, with an average drinking water consumption of 550.000 m³/day. In order to achieve its objectives of providing adequate quantity and quality, Eau de Paris (EdP) swiftly equipped a leading-edge Command- and Control System (CCS) for network operations and -supervision purposes. Thanks to the information captured by the CCS for several years, EdP has developed tools for leakage detection with real time analysis. The information is centralized in the Control and Command Centre.

From the beginning of 2010, EdP is the single operator for the production and distribution of water for Paris city. This enabled the company to integrate information into the CCS from an additional hundred flow meters that are dedicated to district metering areas (DMA) that were previously operated by other distribution operators. Since the former distribution operators deployed automatic meter reading (AMR) on the 93.000 customer's meters in Paris in 2009, the information from these meters is now transmitted to the CCS once a day. All this information is compiled and analysed to detect leakages in the network.

Real-time and differed time leakage detection

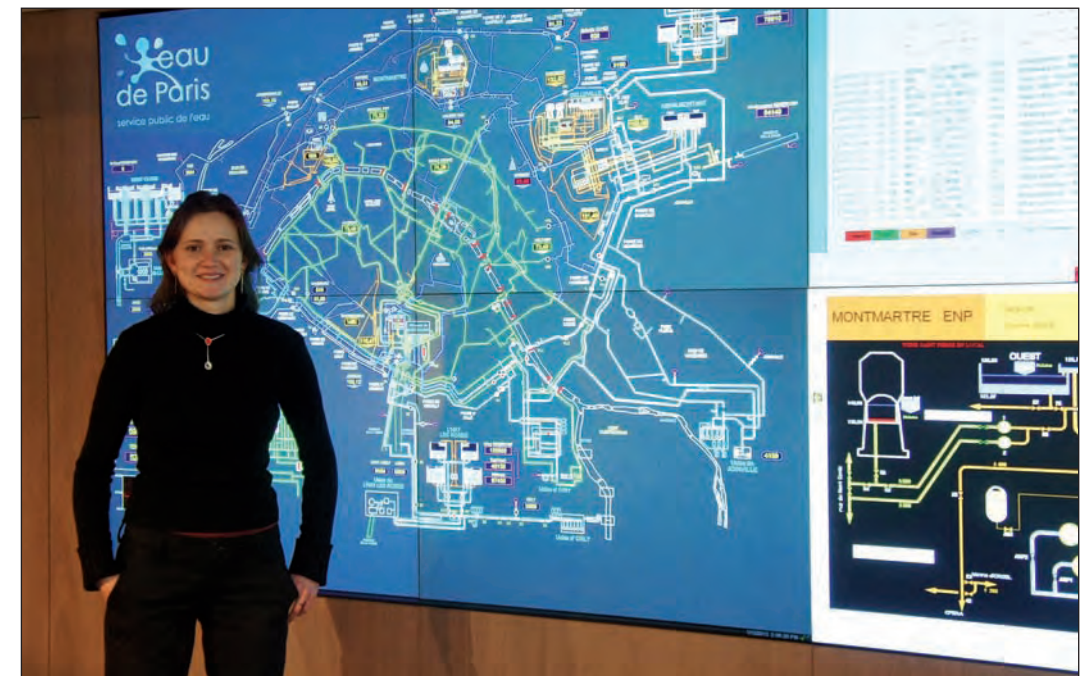
In order to achieve and maintain a constant water pressure in the network, this has been divided into sub-networks depending on ground elevation. These sub-networks are separated by valves. The pressure in the sub-networks is controlled by remote control valves and by a SCADA system including 15.000 information points, 200 flow meter points and 120 pressure levels. Since the flow in the constant-pressurised sub-networks is related to actual consumption, the information captured allows shaping typical consumption curves that are used for leakage detection.

By real-time monitoring of the pressure in a sub-network, a large drop in pressure would indicate a pipe break. The real-time flow is also compared with the typical consumption

curves shaped with historical data. The detection sensitivity of this method is limited to important breaks (up to 500 m³/h).

Progressive leakage is detected by short differed time detection tools. The water distributed in the network is analysed from a macroscopic vision towards a microscopic vision, from networks to sub-networks. Daily consumption in these different zones is calculated from flow meters. Usually all the areas present similar trends. Increasing difference between two linked areas indicates an abnormality which can either be result from leakage or exceptional consumption like the refilling of a municipal swimming pool. These analyses allow the detection of small anomalies such as progressive leakage.

Command and Control Centre of Eau de Paris



Outlook

The next step, which is currently being implemented, is to compare the inflow in an area with the outflow measured by the buildings meters and transmitted by AMR. Differences between these two curves can only be explained by consumption not measured by AMR, free authorized consumption or leakage either on public or private networks.

Services Industriels de Genève:

Optimising pump energy – Storage Reservoirs Management software tool

Magaly Piguet & Jan Cox, Drinking Water Department at SIG (Geneva Utility), Geneva.



In 2010, SIG took the opportunity of the replacement of its Supervisory Control and Data Acquisition system (SCADA) at the control centre to develop and implement a new programme called Storage Reservoirs Management (SRM). The aim of this programme is to optimise pump operations, depending on energy pricing and operating constraints. The functionality of the SRM, which takes into account the hourly variations of price, also allows SIG to choose the optimal energy tariff, based on spot prices.

Optimizing pump energy

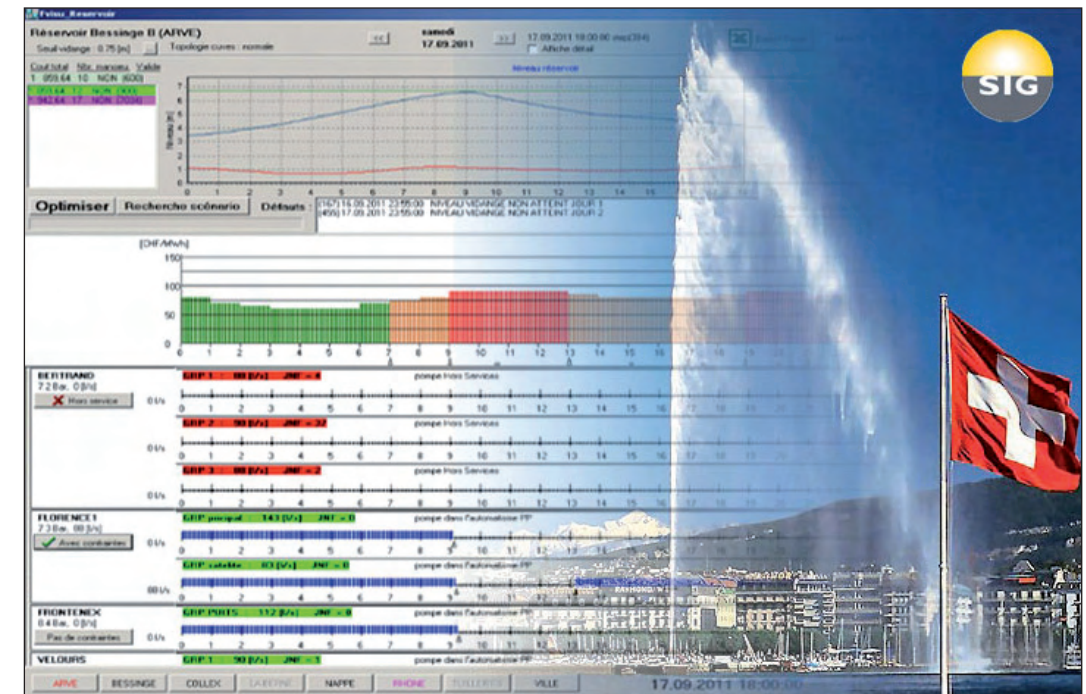
The software tool SRM is based on a simulation of SIG's entire drinking water network including all the facilities (reservoirs, stations, pumps and valves). The model calculates the evolution of the level of the reservoirs, the flow and pressure of the stations and the consumption of customers during a 3 day simulation. At the initialisation of SRM, the forecast of the customer consumption is updated (by running a specific programme "Customer Forecast Consumption") and the real time operating data is downloaded from the control centre. Then, a generator and optimiser of scenarios produce all possible scenarios. Each single scenario is considered, accepted, noted and scored from best to worst according to the price, the number of manoeuvres and compliance with the operational constraints. Successive runs of the simulation guide its search to select the best pumping plan.

Storage Reservoirs Management software tool

This programme is used as a semi-real time tool. Once a day, the operator runs the SRM programme. The programme allows him to add his expert knowledge by changing the pumping plan, after which he instantly sees the impact of his changes and is therefore able to make the right decisions. The operator approves the pumping plans and then transfers

them, along with the envelope (curves used as guide to further monitor the level of the reservoir), to the SCADA in the control centre.

Another programme "Follow-up of the pumping plans", which is integrated in the SCADA system, runs the lists of pumping instructions downloaded from the SRM programme and continuously monitors the pumping plans.



Conclusions

For both new and experienced operators, this tool allows to facilitate and accelerate training on the drinking water system. It also allows us to improve our knowledge of our drinking water system and can be used as a simulator to assess the feasibility of future projects.



WASTEWATER

Wastewater performance comparisons

This section presents an overview of the performance comparisons of the 2011 benchmarking exercise for wastewater services. For wastewater, EBC assesses the same performance areas as for drinking water: wastewater quality, reliability, service quality, sustainability and finance & efficiency.

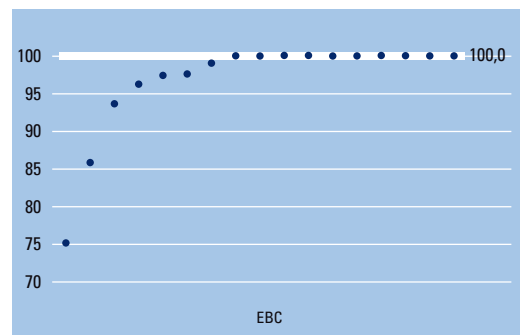
Data is gathered on the wastewater activities specifically. This means that measures and costs of other services a participant may provide (including drinking water) are excluded. The performance indicators shown in this section are only a subset of the available 123 indicators.

Wastewater Quality:
Compliance with discharge consents very high

The sewage that a utility collects needs to be treated before discharging it into the receiving water courses. To minimize the negative impact on the environment, every company has to comply with established (local) discharge consents.

An important indicator for the quality of the treated wastewater is therefore the compliance with these discharge consents. With a median score of a 100%, we notice that most of the participating utilities meet their requirements. Note that the regulatory consents of treated wastewater discharges vary between countries and even locally.

Figure 8: Wastewater treatment plant compliance with discharge consents (%)

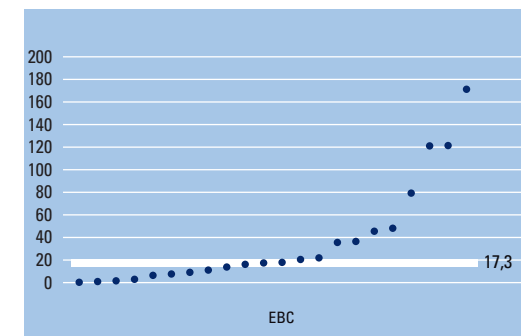


Reliability: Number of sewer blockages shows high spread within the EBC group

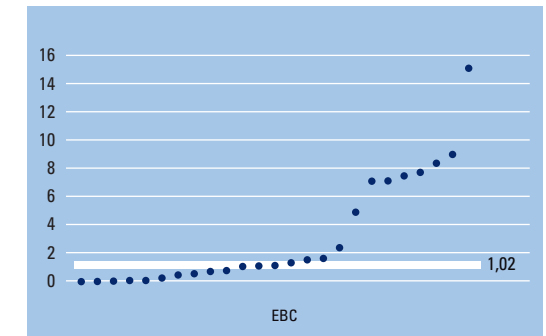
Sewer blockages are an indicator to measure the reliability of the sewer system.

The median number of blockages in the EBC group is 17 per 100 km of sewer. However there are large differences within the group, which indicates that there is room for improvement in this area. Within the EBC group we see that companies strive to increase the detection rate of blockages, so that they can be solved before they create problems for the customers. As a result, the number of blockages detected might go up, but eventually this should improve the service quality of the company.

**Figure 9: Sewer blockages
(No./100 km sewer)**



**Figure 10: Total complaints
(No./1000 inhabitants)**



Service quality: Just over 1 complaint per 1000 inhabitants

As for drinking water, the service quality of the wastewater service is measured by the number of complaints a company receives. Complaints are related to the following categories:

- Blockages
- Flooding
- Pollution
- Odour
- Rodents
- Customer account
- Other

The median number of complaints is just above 1 per 1000 inhabitants and the majority of these are related to blockages. We note that the number of complaints for wastewater is

slightly lower than for drinking water. Besides actual performance differences, an explanation for this could be that failures in the pressurised drinking water system usually have a much more direct impact on the service than failures in the gravity based sewer system. Also, a failure in a drinking water main generally speaking affects a much larger number of customers than a blockage in the sewer system. Several companies in the EBC group strive to detect blockages before they lead to problems for consumers. As a result they expect to see a decrease in complaints related to blockages and flooding in the upcoming years.

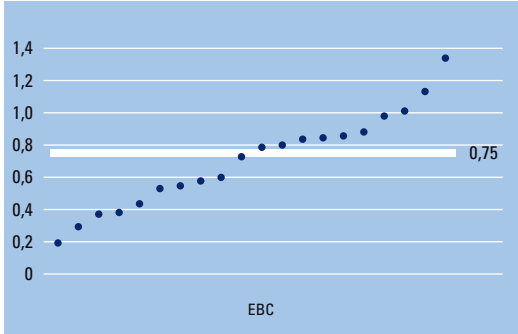
Sustainability: Different initiatives to increase sustainability are being implemented

Just like with drinking water, wastewater services are benchmarked on three sustainability dimensions: social, environmental and economic sustainability (Triple Bottom Line approach).

Social sustainability: Median share of wastewater bill in disposable household income less than 0,8%

The EBC-programme measures social sustainability by calculating the share of the wastewater bill in the disposable household income. This indicates how affordable the wastewater service is to the customer while accounting for differences in wealth between countries. Most utilities' bills span around 0,8% of the disposable household income. This implies that the (median) costs for water- and wastewater services together account for less than 1,5% of the disposable household income.

Figure 11: Share of wastewater bill in disposable household income (%)



Environmental sustainability: Median energy consumption less than 40kWh per p.e. served, large focus on energy generation

Environmental sustainability can be measured by different indicators, for instance the electricity used for and generated from treating wastewater, the percentage of the sludge generated in the treatment process that is utilized in a sustainable way or the frequency of use of overflow devices to surface water. Here we show the results for the energy consumption of the wastewater treatment plants. The median consumption is 35,5 kWh per population equivalent served by the plant. The consumption can differ depending on the level of treatment, which in turn depends on the local discharge consents that specific plants face.

Figure 12: Wastewater treatment plant energy consumption (kWh/p.e. served by WWTP)

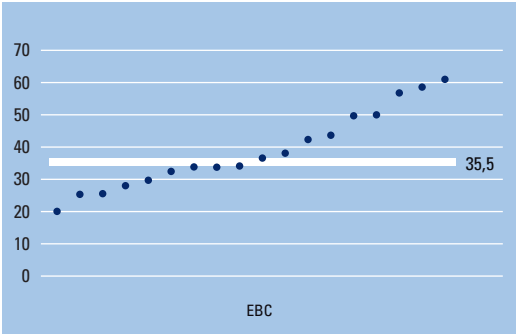
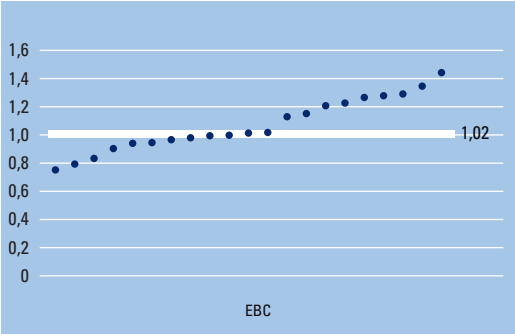


Figure 13: Total cost service coverage ratio ()



Where the treatment of wastewater consumes energy, it also offers the possibility to generate energy from the sludge that is produced. The feasibility and result depend on local factors like the plant size and the energy prices of standard sources. The majority of the EBC participants produces biogas that is used for cogenerating electricity. The median production of cogenerated electricity is around 5,5 kWh per population equivalent served by the treatment plant.

Economic sustainability: Median cost service coverage ratio around 1,0

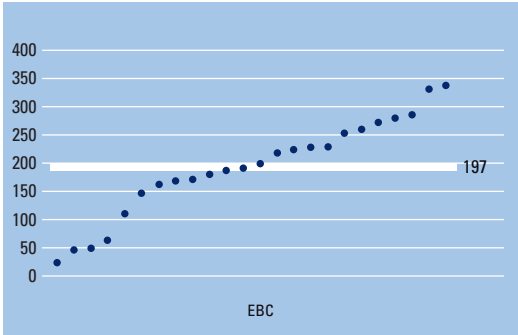
The most important measure for economic sustainability in EBC's assessment model is the total cost by sales coverage ratio. With this ratio, one can identify if a utility is able to recover its costs from its sales revenues. These revenues consist of all charges to the customers for the collection, transport and treatment of wastewater. A ratio score below 1 indicates that the costs are larger than the sales revenues and as a result the service is not economically

sustainable without subsidies or other sources of revenue. When a company has a score above 1, it generates a surplus that can be used for future investments or dividend payments to its shareholders. The median cost service coverage ratio is 1,02.

Finance & Efficiency: Charges per property are around € 200, with a large spread between utilities

When comparing average charges per property between the participants in the benchmarking exercise, we find substantial differences. The median charges⁴⁾ are just under € 200 per property per year. In Figure 11 we saw how this translates into affordability, taking into account differences in households' disposable income.

Figure 14: Average charges per connected property (€/property)



Several initiatives that are deployed by the utilities aim to reduce costs. For instance, utilities make their customers aware of what they should and should not discharge into the sewer in order to reduce the number of blockages as well as decrease the effort needed to treat the wastewater. This in turn should lead to a decrease in costs.

Participants' experiences

**Canal de Isabel II:
EBC is the right programme to promote
partnership between companies**



**Ignacio Lozano,
Canal de Isabel II, Madrid, Spain**

At the 2011 Oslo workshop, the benchmarking coordinators of both Canal de Isabel II (ES) and Aquanet (PL) were awarded Benchmarking Coordinator of the Year for excellence in coordinating the benchmarking activities in their utility. Ignacio Lozano shares his experiences with us.

“Canal de Isabel II is responsible for water and wastewater services in Madrid region and has participated in the EBC programme for the last 2 years. Our main concerns are to guarantee future water supply and to protect and improve the environment. We participate in the EBC programme, since we feel this is the right programme to promote partnership between companies and allows us to identify and learn from best practices of other companies. Furthermore all the data submitted is kept within the group, which allows us to learn within a safe environment.

For us the most valuable part of the programme is the workshop. This allows us to meet the other companies and get to know their frameworks. We are now able to identify the performance indicators we want to improve on. The next step is to talk to companies that are performing well in these areas and determine which of their best practices can be implemented in our own company. We are also very interested in the three task groups on sustainability, asset management and water losses that were initiated within EBC this year. We have three tips for other companies to improve their benchmarking experience. First you need to make sure that you have the support of your company before entering the benchmark. Secondly determine how EBC's performance indicators relate to your company and identify the drivers that determine performance. Finally try to assure reliable collection of data. Note that this is a continuous process and do not expect this to be perfect in the first year!”

Aquanet SA: Key to successful participation is proper organisation of data collection



Leszek Krynski,
Aquanet SA, Poznan, Poland

Aquanet SA is the water and wastewater utility in Poznan, Poland. Their benchmark coordinator, Leszek Krynski, was awarded as one of the two benchmarking coordinators of the year. We asked him to share his experiences with the programme.

"There were three important reasons for us to join a benchmarking programme. We want to increase our operational and cost efficiency, improve the quality of our services and develop a philosophy of constant performance improvement within the company. We chose the EBC programme in particular because at that time there was no local Polish programme and we feel the EBC is the leading organisation in international benchmarking programmes.

Participation in the programme has allowed us to exchange best practices and experiences with companies from across Europe. We are currently considering which best practices we can implement in our own company. Furthermore the EBC programme allows us to provide our Board of Directors with regular information on possible improvement areas. Also the workshop provides good opportunities for personal development of the benchmark coordinators.

The key to successful participation in the programme is good organisation of the work. I provide my colleagues with clear manuals (in their own language) and forms to ease data collection. I also try to engage them and make them responsible for providing the data on time. Furthermore I created tools which allow me to compare the data with that of the previous years before I submit it. This helps us to minimize errors in the data."

Thames Water: True value is not in the data, but in the exchange of experiences



Richard Tidswell,
Thames Water, London, United Kingdom

Thames Water is the UK's largest water and sewerage company, supplying 8,8 million people and providing wastewater services to 14 million across a region covering 5,000 square miles covering London and the Thames Valley. In 2011 they participated in the EBC benchmarking exercise for the first time. We asked Richard Tidswell why Thames Water joined the programme and how they experienced participating.

"At Thames Water, we see performance improvement as a continuous process. We are interested in benchmarking to identify areas for improvement and to enable us to build on our current skills and capabilities. There are two important reasons for us to join the EBC programme. First of all OFWAT, the economic regulator for water and wastewater activities in England & Wales, is reducing the amount of performance data companies need to provide for their reports. As a result we have less data to compare ourselves with the other UK companies. Secondly the EBC provides us with the opportunity to learn from international as well as UK companies. After participating in the 2011 exercise, we have a broader understanding of the environment in which the other companies operate and of their characteristics. Although the companies differ, the challenges they face in for instance sustainability, water scarcity and asset management are the same. Before we joined the programme, we were a bit sceptical on how much the data could actually tell us. Now we realise that the true value is not so much in the data, but in the exchange of experiences on common challenges. Furthermore the programme not only showed us where we were underperforming, but also reassured us that we are doing well in certain areas.

The largest problem we faced during the programme was underestimating the time it took to collect the data. We felt that most variables were known to us, however in many cases there were small differences in the definitions, which needed to be analysed. Furthermore it took time to convince the business of the value in participating. It is important to realise that with this programme you really get what you put into it. If you spent more time gathering and verifying your data, you will get better comparisons in return. However you should also realise the limitations of the data; on its own it cannot tell you everything. You should use it to start conversations with the other participants as the real value is in exchanging experiences."

Endnotes

- 1) **Share of (waste)water bill in disposable household income** is the percentage that the average (waste)water charges per property represents of the calculated household disposable income. The household disposable income is the amount of income left to a household after taxes have been paid, available for spending and saving. EBC's source for the calculation of household disposable income is Eurostat. It is calculated as the product of the mean equivalised net income (household income per adult equivalent) and the average number of adult equivalents per household.
- 2) **Average water charges** in EBC are calculated by dividing a company's revenues (direct revenues, residential, non-residential, or revenues from exported water), by the number of m³ of authorized consumption, connected properties, or exported water (direct, residential or non-residential respectively).
- 3) **The total costs** are the sum of capital and running costs. Capital costs are defined as net interest plus depreciation, while running costs include personnel costs plus operational costs (external services, energy costs, purchased merchandises, leasing and rentals, levies and fees, exceptional earnings/losses, other operating costs). Subsidies that support operational costs are a part of exceptional earnings/losses.
- 4) **Average wastewater charges** in EBC are calculated by dividing a company's revenue (fees for collecting, transporting and treating the wastewater), by the number of properties connected to the sewer system managed by the utility (in apartment buildings, each household/property is counted separately).

Colophon

European Benchmarking Co-operation

C/o Vewin

Sir Winston Churchilllaan 273

2288 EA Rijswijk

The Netherlands

Tel. +31 (0)70 414 47 50

www.waterbenchmark.org

Contact

administrator@waterbenchmark.org

Printer

De Swart

Design

studio@arnogeels.nl (The Hague)

Participants 2011 exercise

Belgium

- Aquafin NV
- Intercommunale des Eaux du Centre du Brabant Wallon (IECBW)
- PIDPA
- Société Publique de la Gestion de l'Eau (SPGE)
- Société Wallonne des Eaux (SWDE)
- Vivaqua
- Vlaamse Maatschappij voor Watervoorziening (VMW)

Brazil

- Companhia de Saneamento Básico do Estado de São Paulo (Sabesp)

Czech Republic

- North Moravian Water Works and Sewerage Ostrava (aqualia SmVaK Ostrava)

Cyprus

- Water Board of Larnaca
- Water Board of Lemesos
- Water Board of Nicosia

Denmark

- Københavns Energi
- VCS Denmark

Finland

- Porvoo Water

France

- Eau de Paris
- Le Service Technique de l'Eau et de l'Assainissement de Paris (STEA)

Germany

- Hamburg Wasser

Italy

- Società Metropolitana Acque Torino S.p.A. (SMAT)

The Netherlands

- Brabant Water
- Dunea
- Evides
- Gemeente Rotterdam
- Gemeente Utrecht
- Oasen
- PWN Waterleidingbedrijf Noord-Holland
- Vitens
- Waterbedrijf Groningen
- Waterleidingmaatschappij Drenthe (WMD)
- Waterleiding Maatschappij Limburg (WML)
- Waternet

Norway

- Oslo kommune VAV
- Sandnes kommune, Kommunalteknikk

Poland

- Aquanet S.A.

Portugal

- Empresa Portuguesa das Águas Livres, S.A. (EPAL)

Republic of Singapore

- Singapore's national water agency (PUB)

Romania

- S.C. Apaserv Satu Mare S.A.

Russia

- MSUE Mosvodokanal

Spain

- Canal de Isabel II

Switzerland

- ERZ Stadt Zurich
- Services Industriels de Genève (SIG)

United Kingdom

- Scottish Water
- Severn Trent Water
- Thames Water Utilities Limited
- Yorkshire Water

