wsp
water and
sanitation program

The Water and Sanitation Program is an international partnership for improving water and sanitation sector policies, practices, and capacities to serve poor people

May 2006

Field Note

Urban Water Sector in South Asia

Benchmarking Performance

Measuring and monitoring performance of utilities is critical to improving the quality of water supply and sanitation services. Benchmarking is emerging as an important tool that policymakers and service providers can use to improve performance, support institutional reform, enhance accountability to consumers, and ultimately, improve services.

In most urban areas in South Asia piped water is available for only a few hours in a day and wastewater is disposed off without adequate treatment.

Executive Summary

The urban water sector in South Asia continues to perform poorly with regard to the availability, quality, and equity of services. Though official records show an increase in access to infrastructure, access to reliable, sustainable, and affordable water and sanitation services remains poor. The poor quality of services could in large part be ascribed to inefficient and financially weak service providers whose performance on important parameters falls significantly short of internationally accepted best practices. A significant and sustained improvement in performance of urban water utilities is thus critical to improving services. However, limited availability of reliable performance information across the region presents a significant challenge to any performance improvement and institutional reform.

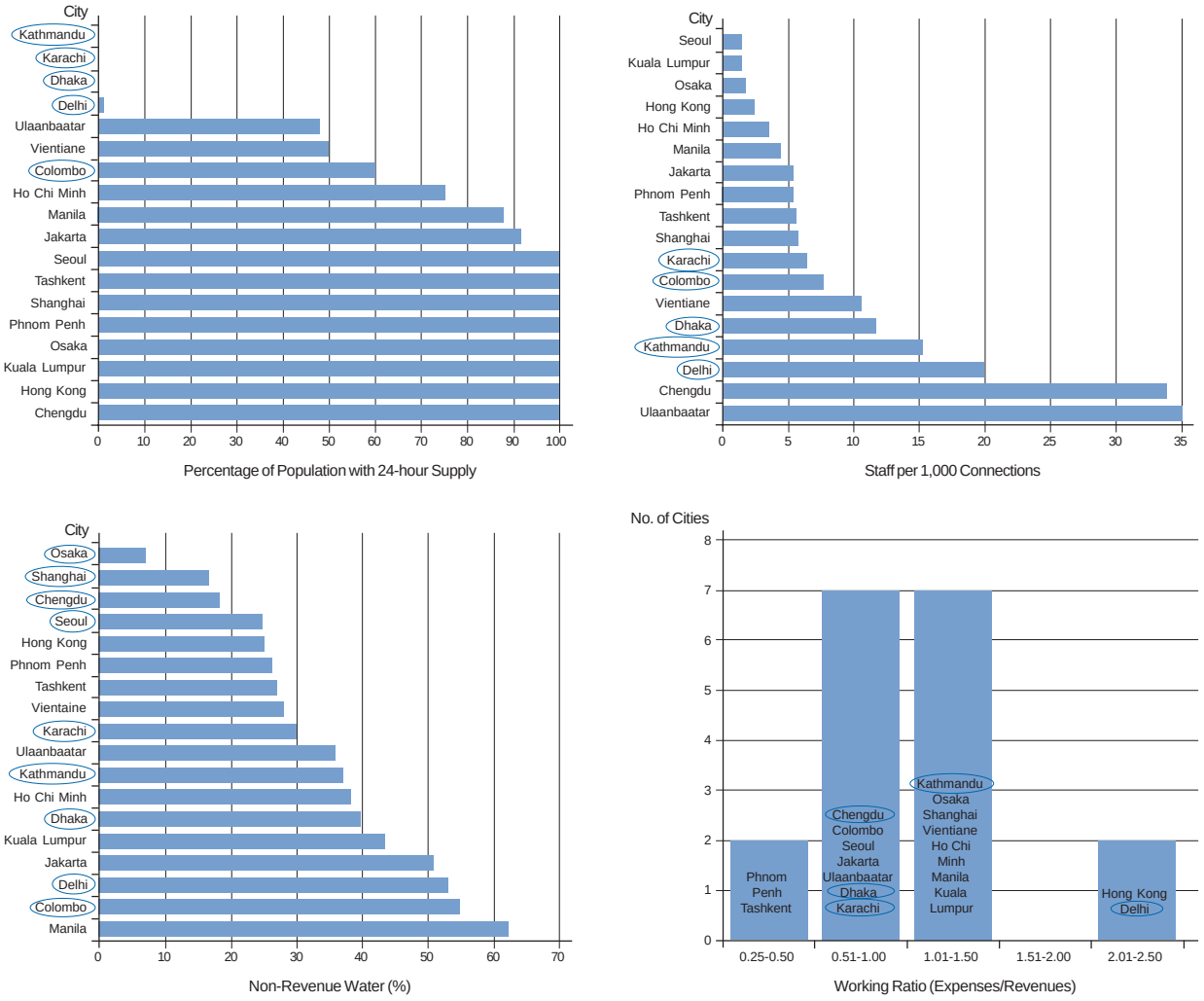
Measuring and monitoring performance and using that to build capacity is critical to the development of the sector and benchmarking of service providers is emerging as an important tool to achieve the same. To promote sustainable performance improvement in the urban water sector across South Asia, Water and Sanitation Program-South Asia is supporting the development of performance measurement and benchmarking programs in India, Pakistan and Bangladesh. This note summarizes the initial experience of one such benchmarking initiative in India. The findings, despite the many problems in getting reliable data, broadly confirm the perilous state of the sector in India. The note also spells out some issues that could be relevant for the design of similar programs elsewhere. Also examined are the key aspects of the sustainability of a benchmarking program and the emerging experience in a few developing countries.

The urban water sector in South Asia continues to be plagued with severe deficiencies with regard to availability, quality, and equity of services. Though access to infrastructure is increasing according to official records, access to reliable, sustainable, and affordable water and sanitation services remains poor. In most urban areas piped water is available for only a few hours in a day and wastewater is disposed off without adequate treatment. Many cities do not even recover their operation and maintenance costs from user charges and survive on large amounts of government support. Consumers, even connected by a piped network, often spend large sums of money on expensive and unsafe alternatives to cope with the poor quality of services. Finally, the impact of poor services is the severest on the poor who are often not connected to the formal network (and thus are not benefited by subsidies that the service providers receive) and for whom the coping costs are the most significant as a proportion of household earnings.

Performance Improvement is the Key

Poor service delivery could largely be ascribed to inefficient and financially weak service providers

Figure 1: Performance of South Asian cities on key parameters



Source: Asian Development Bank. 2004. 'Water for Asian Cities'.

that continue to operate without sufficient autonomy, the right incentives, and the necessary accountability to consumers. As Figure 1 clearly shows, major South Asian cities fare poorly compared to other cities in Asia on important performance parameters such as availability of water, non-revenue water (NRW) and staff efficiency. A significant and sustained improvement in performance of urban water utilities is critical to improving services. To match international best standards, the urban water sector in South Asia needs to better its performance across the

Limited availability of reliable performance information across the region presents a significant challenge to any performance improvement and institutional reform.

spectrum—operations and maintenance, quality of service provision, financial health, management systems, and governance.

Lack of Reliable Information is a Big Constraint

Limited availability of reliable performance information across the region presents a significant challenge to any performance improvement and institutional reform. At present, only a few utilities are able to provide even a limited set of performance statistics and there is no comprehensive assessment of sector performance by which inter-utility comparisons can be made.

Need for Measuring and Monitoring Performance

Thus, measuring and monitoring performance and using that to build sector capacity is critical to the development of the sector in South Asia. Benchmarking of service providers is emerging as an important tool for performance monitoring and improvement that can play a significant role in the sector as a vehicle for institutional strengthening. As some international experiences suggest, benchmarking on a sustainable basis can help utilities in identifying performance gaps and effecting improvements through sharing of information and best practices, ultimately resulting in better water and sanitation services to the people.

Benchmarking Urban Water Sector Performance in South Asia

Water and Sanitation Program-South Asia (WSP-SA) has joined hands with governments and local partners to promote sustainable performance improvement in the urban water sector across South Asia. As part of this, WSP-SA is supporting the development of performance measurement and benchmarking programs in India, Pakistan and Bangladesh.

In Pakistan, as part of the overall urban water and sanitation sector reform, WSP-SA is assisting the Government of Punjab in introducing and institutionalizing performance monitoring and benchmarking in five water and sanitation agencies of the province. In Bangladesh, WSP-SA is assisting the Government of Bangladesh to establish and mainstream the benchmarking process as an effective management tool for (a) monitoring the sector and using the performance indicators as a rational basis for fiscal flows to the municipalities; and (b) sector agencies to support the municipalities to formulate performance improvement plans.

In India, WSP-SA has been promoting the practice of performance monitoring and benchmarking in partnership with government and key stakeholders. This note summarizes the initial experience of one such benchmarking initiative in India. It starts with an overview of the benchmarking concept, its

application in the water sector, and some international experiences. It then describes in detail Phase I of the project in India—the process, methodology, and the initial findings. The findings, despite the many problems in getting reliable data, broadly confirm the perilous state of the sector in India. Based on the experience of WSP-SA, the note also spells out some issues that could be relevant for the design of similar programs elsewhere. Finally, the note examines the key aspects of the sustainability of a benchmarking program and the emerging experience in a few developing countries in this regard. It concludes that for benchmarking to translate into performance improvement on the ground, it needs to be (a) pursued as part of an overall performance improvement framework; (b) undertaken on a regular basis through a sustainable institutional arrangement; and (c) underpinned by appropriate incentives that encourage utilities to collect and report reliable performance data on a regular basis.

Benchmarking and its Application in the Water Sector

Benchmarking may be defined as a systematic search for industry best practices and operating procedures that lead to superior performance, and then adapting these to improve the performance of one's own organization[1]. At the heart of benchmarking lies a fundamental question: How can I learn from others to improve my performance? Thus, simply put, benchmarking involves regularly measuring one's own performance, comparing it to peers, competitors or industry leaders, identifying and prioritizing key areas for improvement, searching for best operating practices in these areas and suitably adapting such practices through measures that improve one's own performance.

The important word to note here is 'regular'—benchmarking is not a one-time exercise, rather it's a tool for continuous performance improvement that yields benefits when done systematically over a period of time. Benchmarking is now widely used across the public and private sectors for a variety of objectives including efficiency improvements in systems and processes, optimizing costs, organizational restructuring, among others, ultimately enhancing the quality of services or outputs that are delivered to the customer.

Types of Benchmarking

Generally speaking, there are two approaches to benchmarking: ***metric*** and ***process***. ***Metric benchmarking*** is a quantitative comparative assessment using standard performance indicators

[1] American Water Works Association (AWWA).

Performance indicators provide the key information needed to define the efficiency and effectiveness of the delivery of services by a utility.

that enables utilities to *track internal performance* over time, *compare* this *performance* against that of similar utilities, and *establish target levels* of performance.

Process benchmarking involves first identifying specific work procedures to be improved through a step-by-step 'process mapping', and then locating external examples of excellence for standard setting and possible emulation. In metric benchmarking the performance gaps and desired levels can be identified, whilst in process benchmarking a roadmap for achieving the required improvement can be laid out by looking at best practices in the sector. Thus, metric and process benchmarking complement each other in an overall performance improvement program.

Performance Indicators

Performance indicators provide the key information needed to define the efficiency and effectiveness of the delivery of services by a utility. A performance indicator is thus a quantitative (and in some cases qualitative) measure of a particular aspect of a utility's performance or standard of service. Performance indicators may be used to compare performance historically or against some pre-defined target. Standard performance indicators may be used by a wide range of stakeholders in evaluating the performance of the utility, including the internal evaluation within the utility as well. Trends in these indicators with time may show historically improving or deteriorating performance in time for remedial measures to be taken before major problems occur in service delivery. Thus, performance indicators can be used (a) for internal evaluation exclusively within the utility; (b) in a metric benchmarking framework amongst a group of utilities where a common set of indicators and definitions are adopted by the group members; (c) as part of a regulatory framework for monitoring and reporting; (d) as part of contractual agreements between utilities and the private sector; and (e) for providing public access to general baseline statistics.

Benchmarking in the Water Sector

Inter-utility performance comparison is needed in the water sector because the sector offers limited scope for direct competition. Within the sector a number of utilities are more progressive and perform better than others but the absence of any systematic comparative mechanism may prevent the sharing of best practices across the industry. Also, the increasing all-round emphasis on transparency, accountability, and efficiency in the provision of these monopolistic services necessitates assessment systems that are consistent, comparable, and transparent. Benchmarking, in this case, can be a tool to understand the relative performance of the water utilities, to identify the potential for improvement, and to

help inform the debate with various stakeholders. It can be used as a vehicle for institutional strengthening and also as a tool to assist water regulators in performance of their tasks. In case of public utilities, benchmarking ultimately empowers a broad section of society to ask why one service provider has achieved demonstrably better performance than another.

Whom Does it Help?

A well-designed benchmarking program can assist a number of stakeholders in the delivery of water services including:

- **Utility managers and employees**, to identify areas for improvement and prepare action plans.
- **Governments**, to monitor and adjust sector policies and programs.
- **Regulators**, to ensure that customers get value, and that providers have incentives to perform.
- **Civil society and NGOs**, to raise public opinion in an informed way.
- **Private investors and lenders**, to identify viable markets and opportunities for creating value.

- **Customers or consumers**, to get better levels of service.

However, benchmarking is useful only as one of the tools of an overall performance improvement strategy. The result of a benchmarking project is a better definition of the areas of improvement. Hence, the success of any benchmarking system depends on the effective use of the results as part of the overall decisionmaking process.

International Experience

Globally, the water sector acknowledges the importance of benchmarking for performance improvement. Prominent initiatives in this area on a regional or global

While the philosophy of benchmarking as a tool for monitoring the performance of utilities is well understood, effective implementation is vital to its success.

Box 1: Some regional and international benchmarking initiatives

The Asian Development Bank (ADB) has played a pioneering role in developing, compiling, and analyzing comparative performance statistics for water utilities across Asia. **ADB *Water Utilities Data Books*** (1993 and 1997) and *Water in Asian Cities 2004* published as part of regional technical assistance projects, provide a broad perspective of water utility services to stakeholders and for utilities to use as benchmarks to measure their own performance. These feature water utility and city profiles by water supply data and indicators, regional profiles for inter-utility comparison and sector profiles containing summary of results (http://www.adb.org).

IBNET, the International Benchmarking Network for Water and Sanitation Utilities, was started to link performance information from utilities around the world and to provide support to new and existing benchmarking schemes. The initiative was started by the World Bank in the late 1990s when it developed a suite of software tools and guidance documents to help utilities compile and share performance information. IBNET facilitates the sharing of cost and performance information between utilities and between countries by creating a network of linked websites, through global partnership efforts. The development of IBNET is now supported by the DfID and the World Bank (www.ib-net.org).

The Water Utility Partnership for Capacity Building in Africa (WUP) was launched in 1996 to help the water sector in Africa improve its performance and achieve economically and environmentally sustainable service delivery. WUP has started a project called the 'Service Providers' Performance Indicators and Benchmarking Network (SPBNET)' to provide utilities with sustainable arrangements for compiling and sharing performance data and to develop an understanding of how the data can be used for benchmarking. During the first year, 21 utilities from 15 countries provided their performance information and the results were published by WUP. The project was then extended to cover the rest of the utilities in Africa. Specific activities include development of a software package for use in performance data analysis, collection of performance data from utilities, production of a data bank on the performance of utilities in Africa, and training of utilities personnel on benchmarking and its application to the sector. Currently, there is a database of the performance of 110 utilities from 40 countries in Africa (www.wupafrica.org).

Scandinavian Six-City Project: In 1995, the six cities' group in Scandinavian countries (Copenhagen, Gothenburg, Helsinki, Malmo, Oslo, and Stockholm) initiated the development of a coherent performance benchmarking system for water and wastewater services. The group developed a set of performance indicators that may be considered a standardized reference language necessary for making consistent system comparisons. Annual benchmarking exercises are carried out and the results presented in two forms, as a summary to the Managing Directors of the utilities and in more detail to the operational staff. Comparative performance between the six utilities and trends looking back five years are also highlighted. Metric benchmarking processes have also been supplemented by process benchmarking whereby differences in performance between the organizations are investigated (http://www.vaverket.goteborg.se).

SEAWUN (South East Asian Water Utilities Network) was established in 2002 with ADB support, with the objective of helping the member utilities improve their performance in the delivery of water supply and sanitation services for all. SEAWUN is establishing a benchmarking program that aims to link water utilities in South East Asia in a regional benchmarking network. SEAWUN has recently implemented the Internet-based system for benchmarking with data from 47 water utilities from seven countries (http://www.seawun.org/benchmarking).

International Water Association (IWA) is an international association connecting the broad community of water professionals around the globe. One of the focus activities of IWA is to promote performance monitoring and benchmarking in the water sector. IWA set up the 'Task Force on Performance Indicators' and the 'Task Force on Benchmarking' with the objective of developing commonly understood and generally accepted performance indicators that provide decisionmakers with an overall perception of the utility performance as a sound basis for making strategic choices. IWA has published two manuals on 'Best Practice Performance Indicators' for water and wastewater services. These publications provide guidelines for the establishment of a management tool for water supply utilities based on the use of performance indicators. IWA also supports utilities or industry associations in setting up benchmarking systems (http://www.iwahq.org.uk).

basis include the Asian Development Bank's *Water Utilities Data Book*, the International Benchmarking Network (IBNET) supported by the World Bank and DfID, the Water Utilities Partnership (WUP) in Africa, the South East Asian Water Utilities Network (SEAWUN), the Scandinavian six-city project, and so on. Initiatives at the country level include the ones in the United Kingdom, South Africa, Australia, Indonesia, Brazil, Vietnam, and the Philippines, amongst many others (see Box 1). Performance benchmarking has become a standard practice in the regulated water utilities of England and Wales and Australia with considerable success.

Barriers to Benchmarking

While the philosophy of benchmarking as a tool for monitoring the performance of utilities is well understood, effective implementation is vital to its success. A number of constraints can limit the development of effective benchmarking practices. Benchmarking is a data-intensive exercise that aims to bring together a large number of different entities on a common platform. However, these entities may be following varying operating practices and will undoubtedly be run in different financial and institutional environments. Some of the common constraints that could be faced are:

- Difficulties in agreeing on a set of performance indicators and their definitions.
- Limitations in the availability and reliability of data, or considerable variation between utilities.
- Comparisons between utilities being influenced by the different operating environment that each one faces.
- Variations in the usefulness of an indicator, and also the likelihood of it being monitored, across utilities.
- Lack of appropriate incentives and accountability for the various utilities to collect and report reliable performance data on a regular basis.

Developing effective and sustainable benchmarking practices requires a common commitment to overcome these constraints.

Benchmarking Urban Water Utilities in India

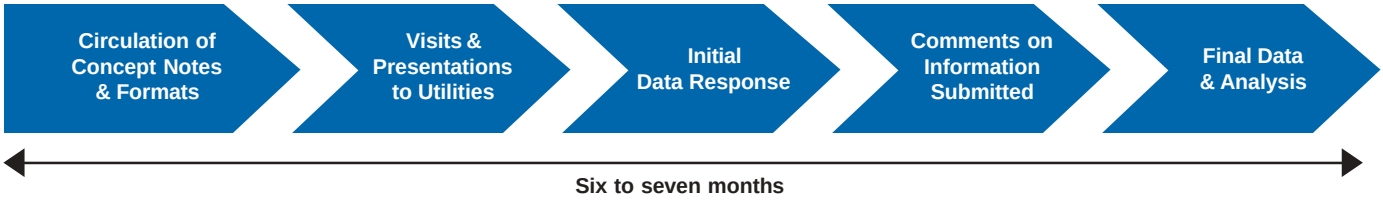
As part of its urban work program, the Water and Sanitation Program-South Asia (WSP-SA) is undertaking a project on Benchmarking Urban Water Utilities in partnership with the Ministry of Urban Development (MoUD), Government of India (GoI). The project was conceptualized in response to the government's request for better baseline data on the urban water sector in India. The project aims to:

- Create awareness about the concept of benchmarking and its benefits for the water sector.
- Establish a set of relevant, useful, and commonly understood performance indicators for the water sector in the regional context.
- Collect and analyze data from a diverse sample of urban centers to identify performance trends and key issues.
- Promote and embed the practice of performance monitoring and benchmarking in water utilities for improving sector performance.

Key local partners were identified as the participating utilities: MoUD (GoI), state governments, and the Indian Water Works Association (IWWA). WSP-SA has adopted a demand-driven participatory approach to benchmarking where the emphasis is on first making utilities or governments appreciate the concept and its benefits,

The project was received positively by most of the utilities and the discussions led to some important insights into utility operations, existing management information systems, and the relevance of the chosen performance indicators.

Figure 2: Phase I methodology



evolve a consensus on the approach to be followed, and then encourage them to actively collaborate with other utilities in building a sustainable benchmarking network.

Project Structure

The project is being undertaken in two Phases. Phase I, which was completed in early 2005, involved creating awareness, developing the methodology, as well as collecting and analyzing data for an initial sample of utilities in India. It has enabled insights on the relevance of the concept and its interest amongst utilities in India, suitable methods to collect and analyze data in the absence of readily-available information, and the various institutional models that could be explored for long-term benchmarking considering the diversity in sector structure and operating environment across India. Building on Phase I, the work in Phase II aims at working with a selected set of utilities to collect fresh data, scaling up the exercise to promote the concept amongst a larger number of utilities across India through targeted dissemination and advocacy, and working with governments and local partners in the sector to prepare a roll-out plan for more extensive and continuous benchmarking in future.

Phase I: Initial Development and Testing of Methodology

Overall Approach and Methodology: As part of Phase I of the project, WSP-SA met key officials of 15 major water utilities across India to create awareness about the concept and its benefits, discuss data definitions and performance indicators, design a suitable data collection instrument and collect relevant data. The initial data submissions from the utilities were checked for quality and consistency, and detailed comments were sent to them. After revisions and clarifications, the modified data so received from the utilities was used for the purpose of analysis. It must be noted here that no independent auditing of data was carried out. It took around six to seven months for the entire process. The overall methodology is shown in Figure 2.

The underlying objectives behind this methodology were to effectively communicate the program objectives, promote ownership of the project by the utilities, and work collectively to achieve consensus on performance indicators and data formats. The project was received positively by most of the utilities and the discussions led to some important insights into utility operations, existing management information systems, and the relevance of the chosen performance indicators.

Performance Indicators: For performance indicators and data collection, the World Bank Benchmarking Start Up Kit was used as the basic template, with some modifications to suit the national and regional WSS context. The toolkit measures a utility's performance on technical, service delivery, financial, commercial, and organizational aspects. This has been done through 10 core indicators (shown in Figure 3) and 28 individual indicators across the core categories. Two important indicators that could not be measured in Phase I relate to

quality of water and customer satisfaction. These are proposed to be suitably included in Phase II of the project.

The Sample: As shown in Figures 4 and 5, at the end of Phase I, performance data had been collected from 13 utilities covering 23 cities and towns across India with a total population of around 50 million. It must be noted that a larger number of utilities were approached to ensure a representative mix out of which some chose not to participate or did not respond in time. Though this did affect the sample somewhat, the final set still had utilities from all over the country representing a wide mix of institutional structures, population sizes, and geographical spread. Another point to note here is that some of the state level agencies (Punjab Water Supply and Sewerage Board and PHED, Rajasthan) provided data for many towns served by them; the final sample thus has five towns each from these two states. As the figures show, though this made the final sample not comparable on some parameters, the intent in Phase I was to cover a fair spread of cities in terms of size and institutional structure so as to appreciate the differences in operating procedures, organizational capacities, and the resulting difficulties in data collection. The final sample had a

Figure 3: Core performance indicators

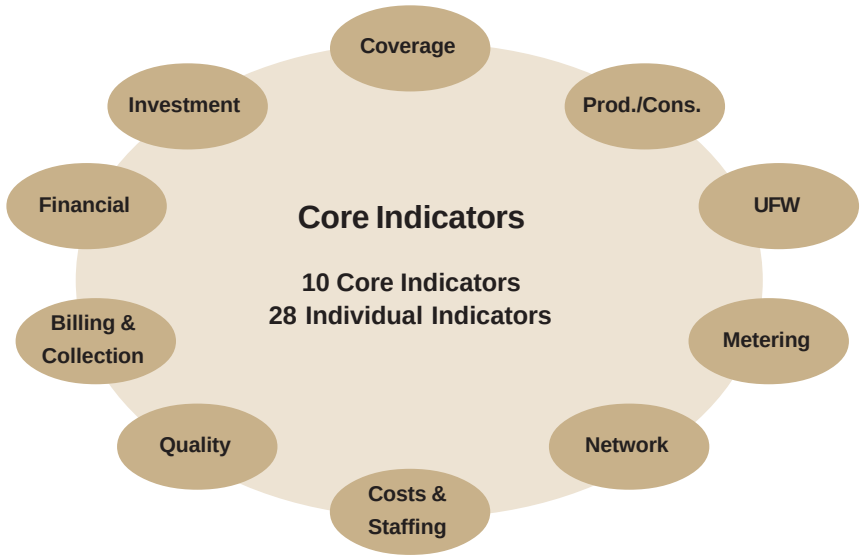


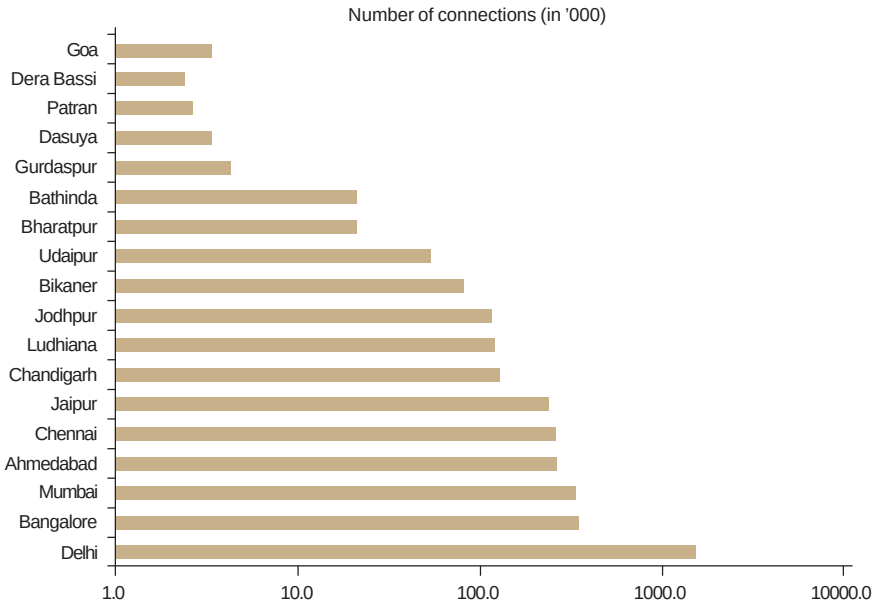
Figure 4: The sample

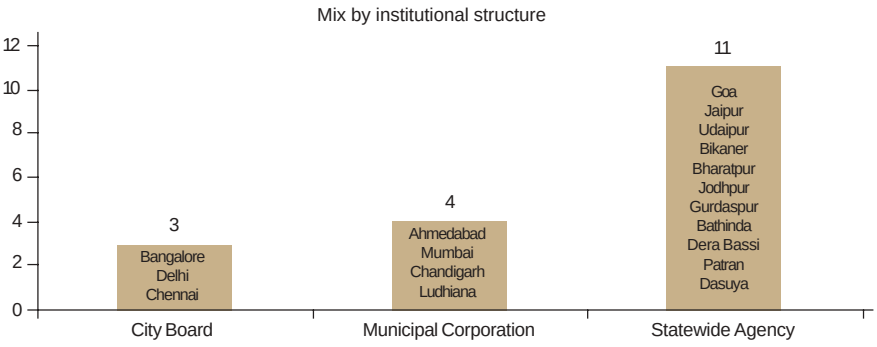
Data Collection
- Punjab (Bathinda, Dera Bassi, Gurdaspur)
- Rajasthan (Jaipur, Udaipur, Jodhpur, Bikaner, Bharatpur, Ajmer, Kota) • Tamil Nadu (TWAD)
- Chandigarh • Delhi • Ahmedabad • Kolkata
- Mumbai • Hyderabad • Goa • Bangalore • Chennai

For Goa, average of seven schemes treated as one

A large number of utilities were approached to ensure a representative mix of institutional structures, population sizes, and geographical spread.

Figure 5: Final sample—Key characteristics





fair mix of five large cities (>250,000 connections), six medium cities (50,000-250,000 connections) and seven small towns (<50,000 connections).

Dissemination Workshop: A national workshop on 'Benchmarking Urban Water Utilities' was organized in October 2004 by WSP-SA in partnership with the MoUD, GoI, in New Delhi to conclude Phase I of the project. The workshop brought together over 100 representatives from more than 15 utilities, GoI, Indian Water Works Association, World Bank, WSP, consumer organizations, and domestic and international water sector experts on a common platform. Key findings of Phase I were shared at the workshop, the methodology was discussed and reviewed, and the participants were encouraged to think beyond quantitative comparisons as to how such data could be used for process improvements and also about an appropriate model for putting in place a sustainable benchmarking program at the national level. The workshop was successful and drew enthusiastic participation from all stakeholders.

Analysis: On account of poor quality of information and non-conformity with formats from some of the utilities, the final data analysis was carried out for only 18 of the 23 cities and towns for which data was collected. The analysis was carried out along two lines:

- Comparison of overall sample average with international benchmarks[2] on selected indicators.
- Detailed analysis within the sample for all the indicators.

Some of the key preliminary findings from the analysis are described on the following pages.

[2] Tynan, Nicola, and Bill Kingdom. April 2002. 'A Water Scorecard: Setting Performance Targets for Water Utilities'. Public Policy Journal, Issue 242. World Bank.

Phase I findings: Performance vis-à-vis international benchmarks

The first set of analysis was carried out by comparing the average of the Phase I sample with respect to international benchmarks on some key indicators. As mentioned earlier, the international benchmarks used for this purpose were taken from an analysis, done by the World Bank in 2002, of performance data of water utilities worldwide. This study involved analysis of data from 246 water utilities in 51 developed and developing countries. Half of these utilities (123) were in 44 developing countries. The best practice benchmarks were derived on the basis of mean of the performance data of (a) all developed country utilities; and (b) top 25 percent of developing country utilities.

The performance of the Phase I sample was compared to these international benchmarks for the following indicators: UFW, Salary Costs, Staff Per Thousand Connections, Water Availability, Collection Efficiency, and Working Ratio. Figures 6.1–6.3 show the comparisons for three of these indicators:

- **Availability**: Average hours per day of water supply; simple measure of service quality.
- **Unaccounted for Water (UFW)**: Difference between the volume of water produced and water consumed expressed as a percentage of water produced; indicative of the efficiency of the system and quality of its management.
- **Working Ratio**: Ratio of annual operating expenses (excluding depreciation and debt service) to annual operating revenues; indicative of cost recovery and financial sustainability.

As the figures show, in all three areas, the average performance of Indian utilities covered in the Phase I sample is much poorer than those of developed country utilities as well as the top 25 percent of developing country utilities. Comparisons on other indicators such as staff and collection efficiency reveal a similar picture. Also, in case of UFW, though the sample average of 23 percent may seem to be reasonable when compared to international benchmarks, it must be noted that very low levels of functional metering—both bulk and consumer end—reduces these numbers to estimates at best.

Figure 6.1: Availability (hours/day)

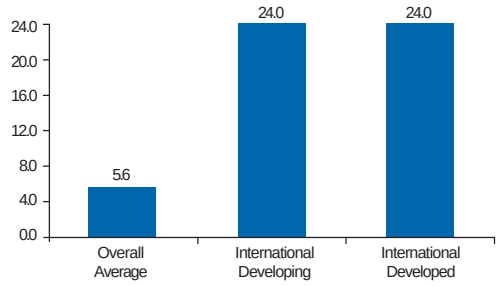


Figure 6.2: UFW (%)

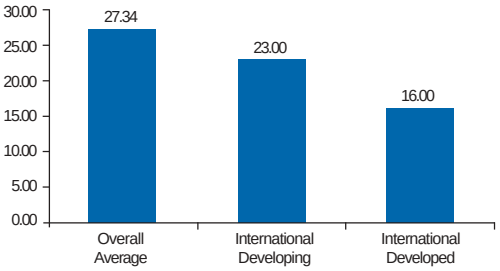
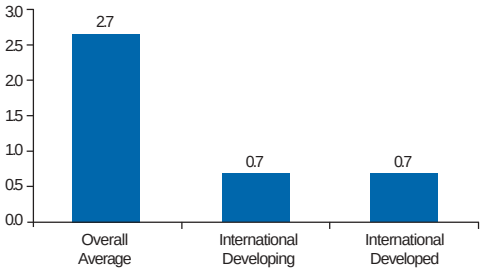


Figure 6.3: Working ratio



The sample analysis throws up a lot of issues regarding definitions, quality and reliability of information, problems in measurement, comparability, and interpretation of results.

Phase I findings: Sample analysis

The second set of analysis was carried out to identify the performance trends within the sample of 18 cities and towns. For this purpose, for each performance indicator, the individual performance of all the cities and towns were plotted and ranked vis-à-vis the sample average. Figures 7.1–7.3 show these comparisons for some of the key indicators: Water Coverage, Sewerage Coverage, UFW & NRW, Staff Per Thousand Connections, Water Availability, and Working Ratio. In these figures, indicator values for different cities or towns are plotted around the sample average, which is shown by a blue bar. Cities above the blue bar are higher than average for the particular indicator whereas those below are lower than average.

The sample analysis throws up a lot of interesting findings. It also throws up a lot of issues regarding definitions, quality and reliability of information, problems in measurement, comparability, and interpretation of results. The results on water coverage indicate that most of the cities have more than 80 percent coverage. However, a closer inspection of the results shows that the basis of arriving at these numbers in most cases is a supply or infrastructure-driven interpretation of coverage by utilities. In reality, there are wide variances between reported coverage by utilities and the percentage of population actually having access to reliable and good quality services. The results on sewerage coverage are worse as they indicate that even by this definition most of the cities (including metros such as Mumbai and Delhi) report very poor sewerage coverage.

Figure 7.3 shows the estimates of UFW and NRW reported by cities. The overall bar indicates the NRW and the blue portion indicates the UFW with the difference (in lighter brown) showing free supplies or unbilled authorized consumption. These numbers were a matter of significant debate at the Phase I workshop as for almost all the cities, there isn't sufficient functional metering—bulk or distribution—to calculate volumes, and hence losses, with any comfortable degree of accuracy. These have been arrived at using some assumptions (like pump ratings and number of hours of pumping, among others) and are at best rough estimates. These indicate that most utilities don't even have a realistic idea of what they are producing and what is eventually reaching the consumer. It highlights the need for adequate metering and more reliable measurement of flows since water lost is revenue lost and, as Figures 7.4–7.6 show, most of these utilities are also in poor financial health.

Figure 7.1: Water coverage (%)

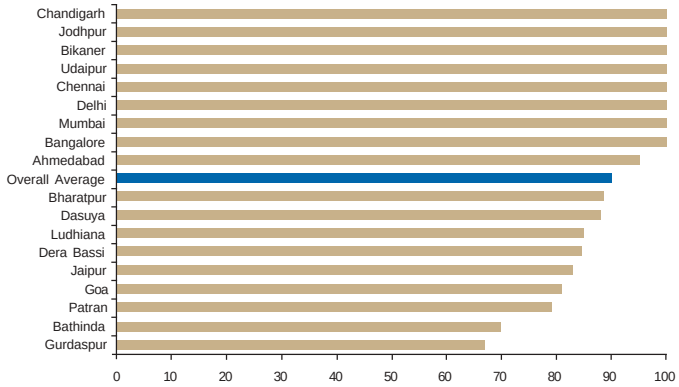


Figure 7.2: Sewerage coverage (%)

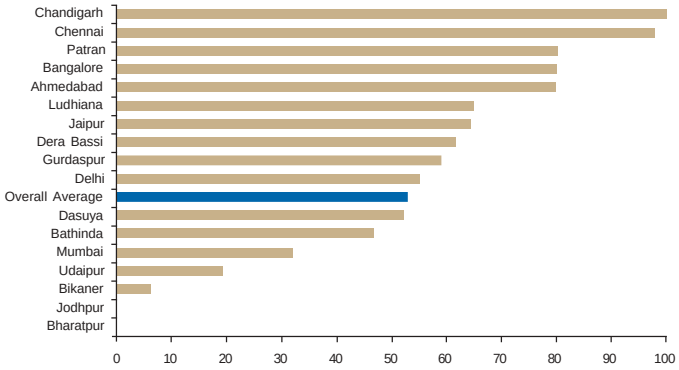
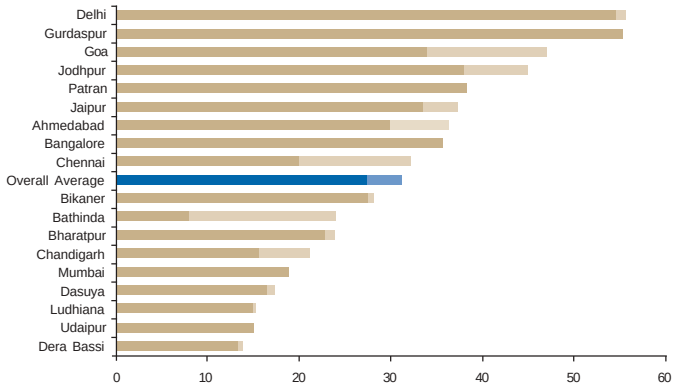


Figure 7.3: UFW and NRW (%)



Phase I findings: Sample analysis

The second set of indicators for the sample analysis (Figures 7.4–7.6) show how these utilities perform on three critical aspects: Staff efficiency, availability of water supply and financial health.

Figure 7.4 shows the comparison for staff ratio measured in terms of full time staff employed by the utility per thousand connections served. While the ratio is dependent on local operating conditions and staffing policies (thus giving rise to issues in comparison), it does give a broad indication of how efficiently staffed a particular utility is. For most of the well-performing utilities in developed countries, the best practice benchmark for this ratio is <5. As the figure shows, most of the utilities covered in Phase I have very high staffing ratios (with the average around 12), indicative of possible overstaffing or inefficient mix of staff. Metro cities such as Delhi and Chennai report very poor ratios (more than 15 and 20, respectively). However, it is important to note that standalone comparisons on this ratio may sometimes be misleading and it is best to analyze this in conjunction with staff costs to get a complete picture on staff efficiency. This is particularly the case where a single connection serves multiple consumers or households, for example, in high-rise apartment blocks. Utilities with a large number of such connections could have an unusually high staff per connection ratio, which does not give the true picture. For instance, this is the case in Mumbai, and that is why it has not been included in the comparison in Figure 7.4.

The second indicator on average daily water availability is a very simple measure of quality of service delivery. Most cities in the sample report very low hours of water supply per day; consumers in Bangalore and Chennai receive water every alternate or third day (Figure 7.5). As noted earlier, the overall sample average stands at a poor 5.6 hours a day compared to the international best practice of 24-hour supply. Interestingly, many of these cities report very high per capita water supply (>200 LPCD), which doesn't translate into more hours of supply, indicative of the fact that the real issue lies in efficient management of available water rather than more raw water availability.

Figure 7.6 on working ratios points to the degree of cost recovery by utilities. A ratio >1 indicates that the utility is not able to cover its operating costs through revenues and has to rely on government support or subsidies. In the Phase I sample, only three cities report an operating surplus while all the others are not recovering their operating costs. The overall average of the sample stands at a poor 2.7, indicative of the fact that the current state of operations in many cities may not be financially sustainable.

Figure 7.4: Staff per 1000 connections

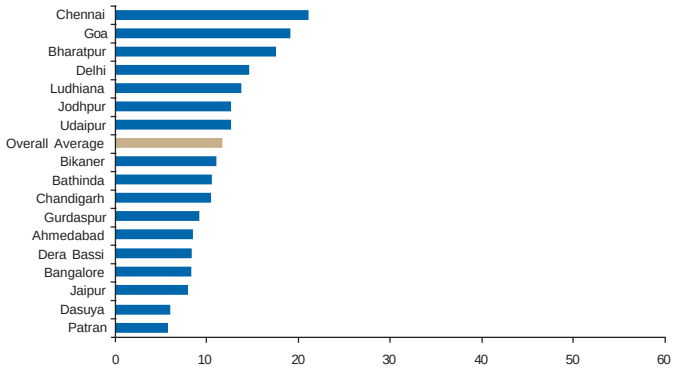


Figure 7.5: Availability (hours/day)

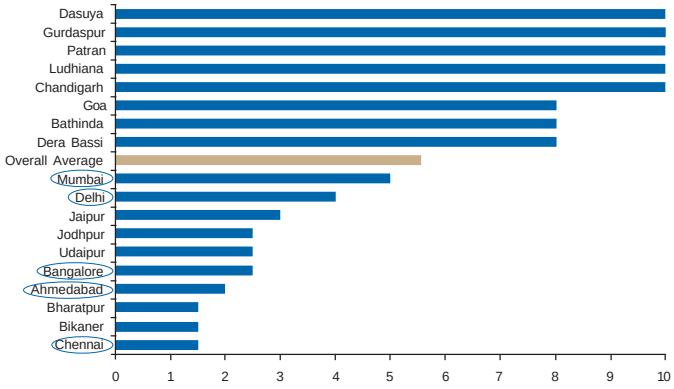
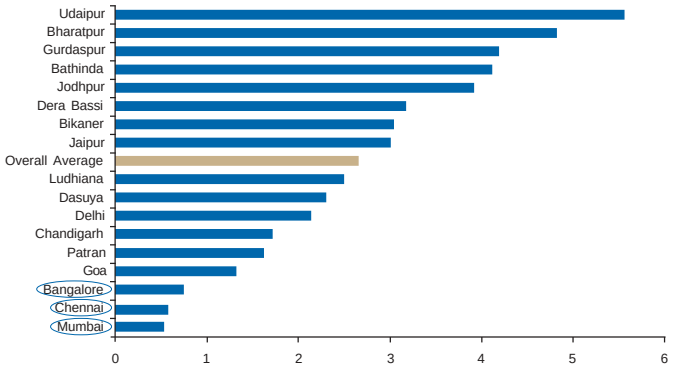


Figure 7.6: Working ratio



There are many issues that could be faced in the development of a benchmarking program; these need to be resolved through common commitment and understanding between participating utilities.

Table 1: Key issues and possible solutions

Key Issues	Likely Difficulties	Possible Solutions
METHODOLOGY		
Choice of Indicators and Definitions	■ Difficulties in arriving on a universally accepted set of indicators	■ Choose number and type of indicators carefully based on relevance and usefulness to a broad majority of utilities, ease of understanding and measurability, their likelihood to be monitored, and so on ■ Customize global indicators to suit the local context while, at the same time, retaining the flexibility to allow international comparisons ■ Communicate indicators and their definitions to utilities clearly
Data Collection	■ Availability and reliability of data can be limited	■ Communicate indicator definitions, interpretations and their calculation to utilities clearly ■ Devise methods to arrive at broad indicators within the existing data constraints ■ Include robust quality assurance mechanisms to grade the reliability and accuracy of data ■ Improve accounting practices and put in place incentives for utilities to collect and report accurate data
Analysis and Comparability	■ Issues in disaggregation and ring fencing can hinder analysis ■ Comparisons can be influenced by different operating environments	■ Group utilities in comparable sub-sets based on some key parameters—size, region, natural conditions, institutional structure, and so on ■ Define adequate qualifications or explanatory factors to reflect the true picture of standard indicators ■ Better accounting practices could help in disaggregation and ring fencing as well
DEMAND AND SUSTAINABILITY		
Awareness and Demand	■ Creating awareness and critical mass	■ Communicate concepts and benefits to all stakeholders clearly ■ Share international experiences ■ Ensure targeted advocacy and training
Institutionalization	■ How can demand be sustained? ■ Who are the right partners at the national, state, and utility level? ■ Choice of institutional model	■ Put in place an incentive or regulatory framework to encourage utilities to collect, monitor, and report reliable data as part of an overall performance-linked funding plan ■ Ensure utility buy-in and involvement, which is critical ■ Encourage capacity-building of utilities (especially training of staff)
Financing	■ How can long-term financial sustainability be ensured?	■ Organize initial funding support, which is necessary to launch the program, create awareness, build capacity, and reach a critical mass; possible sources—central or state governments, donors, industry associations, among others ■ Have utility contributions or subscriptions once the process takes off and is better appreciated ■ Have financial commitment and ownership from utilities, which is essential for any program to be self-sustainable in the long run
Use of Results	■ How can the information be used? ■ How does it translate into performance improvement?	■ Use benchmarking as only one of the tools of an overall performance improvement strategy ■ Move from metric to process benchmarking once datasets start getting generated regularly ■ Recognize benchmarking as a means and not the end

Box 2: Phase I—Summary of findings and emerging trends

The international comparisons clearly indicate that the utilities need to make significant improvements in operating efficiency, staff management, financial health, and service delivery. While confirming this, the detailed sample analysis brought to the fore other underlying issues:

- Reported coverage versus actual access to services.
- Very low bulk and functional consumer metering reducing the production, consumption, as well as UFW/NRW data to rough estimates.
- Problems of scale and staff capacity in small towns.
- Absence of wastewater treatment in many cities.
- Low hours of water supply a day in most metro cities despite high per capita volumes.
- Poor record-keeping and complaint management.
- Inappropriate and distorted tariff structures with high level of cross-subsidies.
- Difficulties in ring fencing for state level agencies to give accurate or comparable information.

Phase I: Key Design and Implementation Issues

As mentioned earlier, there are many issues that could be faced in the development of a benchmarking program; these need to be resolved through common commitment and understanding between participating utilities. These issues could relate to the process or methodology to be adopted for benchmarking and, more critically, on sustaining and institutionalizing such a program on a regular basis. Based on the limited experience in Phase I and the feedback received from a range of stakeholders at the workshop, Table 1 highlights some of the key issues that emerged and their possible solutions, which could help inform the design of any future benchmarking program. A lot of these issues are interlinked.

Way Forward

Building on Phase I experience, WSP proposes to expand and improve the benchmarking program in India in Phase II. The focus here will be three-fold:

- Increasing awareness and reach through targeted dissemination and advocacy.
- Improving the quality of data and analysis working with selected utilities.
- Working with government(s) and key stakeholders to look at concrete ways of institutionalizing the practice of performance monitoring and benchmarking in the WSS sector in India.

The two key things from the perspective of sustainability of a benchmarking program are the institutional model chosen for housing the network and long term financial sustainability.

Beyond Numbers: Towards Sustainable Performance Improvement

As mentioned earlier, one of the key objectives of this WSP-SA initiative is to promote the practice of performance monitoring and benchmarking amongst utilities on a sustainable basis, as improvements can result only if benchmarking is done regularly over a period of time to identify performance gaps and address them. However, there could be many difficulties in doing so, **primary amongst them being lack of awareness, poor data collection and measurement systems, and absence of any incentives for the utilities to improve performance**. Some of these issues that emerged in Phase I of the project have been highlighted earlier.

The two key things from the perspective of sustainability of a benchmarking program are the **institutional model** chosen for housing the network and long term **financial sustainability**. Even though these could be very different depending on the local context on national benchmarking programs in Indonesia (See Box 3) and Brazil (See Box 4 on page 20), it is possible to draw some broad conclusions.

Box 3: Water utility benchmarking in Indonesia

Background: In Indonesia, the development of a benchmarking program for WSS utilities was conceived as part of World Bank support to the sector. The key local partner for developing this program was PERPAMSI, the professional association of Water Utilities (called PDAMs) in Indonesia. This was based on the understanding that comparative performance information will tremendously benefit the water utilities to function more effectively and efficiently. PERPAMSI focuses its vision and mission statement on supporting more efficient operation of PDAMs in order to improve services and, for the same reasons, has been developing the **PDAM Benchmarking System** as a management tool for the utilities and as a source of reliable information to other stakeholders for a variety of purposes.

Development: PERPAMSI has been involved with the development of the benchmarking system since 2001 with financial support from the World Bank. The first project was part of a sector loan and executed through BAPPENAS, the Ministry of National Planning. This program was known as PDAM Benchmarking System Part 1 (BMS1) and consisted of raw data collection of 85 Water Utilities on 41 indicators. Due to problems with data collection, data verification, and analysis, a follow-up project—PDAM Benchmarking System part 2 (BMS2)—was developed, again with World Bank support (PPIAF) but this time as a grant directly for PERPAMSI. The program started in September 2002 with a team of consultants and supporting staff from PERPAMSI. It was completed in November 2003 when PERPAMSI took over the complete responsibility of the PDAM Benchmarking System.

Methodology and Process: The number of key performance indicators has now been reduced to 29, divided into 10 primary and 19 supporting indicators. Seventy-nine PDAMs have now joined this program, all submitting data for the past three years. Computer programs have been developed in Microsoft Excel and Access to facilitate data entry, extensive data validation, data analysis, and reporting. Data is verified after intensive consultation with the local team established in each of the participating PDAMs.

Products and Outputs: At present, the key products of the PDAM Benchmarking System include a performance report of about 80 PDAMs across Indonesia; PDAM peer group reports based on water resources, number of connections, number of employees and geography; a PDAM ranking, and so on.

Institutional Model: Since November 2003, PERPAMSI has taken over full responsibility of the PDAM Benchmarking System, providing staff, office facilities, and consumables. There are benchmarking teams in each of the PDAMs, which collect data at the utility level. A Provincial Benchmarking Team works with all the utilities at the province level to prepare this data. This is then submitted to a Central Benchmarking Team in Jakarta, which does the overall coordination, analysis, preparation of reports, dissemination, and monitoring. For ensuring sustainability of the program, PERPAMSI has developed a vision, mission, goals and sustainability strategies for the benchmarking program—the focus being on reliable information and performance improvement by PDAMs.

Financial Sustainability: In order to reach financial sustainability the program included intensive marketing with water utilities and other key stakeholders (owners, legislators, among others). This resulted in a positive response from almost all participating utilities, who agreed to pay Rp 10 per month per connection as BMS joining fee (on average 0.05 percent of the monthly water bill). This corresponds to an annual cost of US $150 for a company with 10,000 connections. In addition to this, PERPAMSI will charge a fee for other stakeholders requesting the BMS information. PERPAMSI plans to expand the number of participating PDAMs from 79 to 180 by the end of 2006. This will not only improve the financial position of the program, but also provide sufficient information to do reliable analyses and peer group studies.

Note: Adapted from www.perpamsi.org and presentations by Werner Brenner, Advisor, PERPAMSI, at World Bank Water Week 2005 and SEAWUN Convention, Hanoi (2005).

If one looks at a few international examples of existing benchmarking programs (or under development), they could broadly be classified under the following categories:

- Benchmarking driven by *'Regulatory Requirements'* (United Kingdom, Australia, among others).
- Benchmarking driven by *'Performance-linked fiscal transfers'* (Brazil).
- Benchmarking *'Wrapped in a Donor Program or Loan'* with performance-linked credit (Vietnam).
- Industry association-led programs that are *'self-regulatory'* in nature, again, supported by donor agencies in many cases (Indonesia, WUP-Africa, SEAWUN, among others).

Of the above, benchmarking as a regulatory requirement is quite limited and exists mostly in a few developed countries where there are well-developed regulatory frameworks in place. In most developing countries, such programs fall in the last three categories with overlaps in many cases as the start or initial push has been in the form of donor-led or supported programs that have subsequently graduated to industry- or government-owned or formalized regulatory programs. For example, the benchmarking program in Brazil—though driven by the national government and used for channeling funds to the utilities or local bodies—started as part of a World Bank loan. The industry-run self-financed program in Indonesia (by PERPAMSI) started as part of the World Bank-PPIAF support to the sector. Even in cases where benchmarking or performance reporting is a regulatory requirement, the process tends to be coordinated and managed by the industry itself, such as the Water Services Association of Australia (WSAA).

In many developing countries, such exercises that started as part of a donor program are relatively new and are just beginning to show results as well as associated challenges. The initial stage (typically two or three years) has mostly been donor-supported focusing on issues of creating awareness amongst key stakeholders about the potential benefits of the concept, developing and testing the methodology, advocacy and capacity-building or training of utilities, and evolving a consensus on the appropriate institutional model and incentive framework for sustaining such initiatives. Since the quality of information systems (and as a result, of the data that comes out initially) are poor in most cases, a lot of efforts in the initial stage are on teething issues such as improving the quality of data as utilities tend to move up the learning curve and better quality assurance mechanisms can be designed with experience. Even in cases where regulatory compulsions or hard budget constraints drive such programs, issues with respect to availability and quality of data remain of particular concern in the initial stages and need to be comprehensively addressed over time to be effective.

These experiences suggest some broad conclusions regarding the initial phase of such benchmarking programs:

- Need for initial support (funding and capacity) from government or donors.
- Use of this phase for consensus on methodology, process, and improvement of data.
- Use of this phase to achieve a critical mass in terms of awareness, data samples to show the underlying problems of quality and monitoring, initial results that demonstrate potential benefits and trigger introspection and interest.
- Use of this phase for advocacy, training, and capacity-building.

Box 4: SNIS—National information system on water and sanitation in Brazil

Background: SNIS is a national information system covering water supply and sanitation services since 1995 and solid waste management services since 2002. It is managed by the federal government and gathers operational, financial, managerial, accounting, and quality data of these services. The main objectives behind the development of SNIS as part of the sector modernization project were to (a) contribute to planning and development of public policy, build allocation criteria for public resources, and support regulatory practices at the federal and state level; and (b) encourage reform and efficiency improvement of services, carry out performance evaluation and benchmarking at the Municipal level.

Development: In 1994, the federal government decided to build an information system about water and sanitation services in Brazil by collecting data from all regional companies and a sample from municipal utilities. In response, SNIS was conceived and developed by PMSS—Water Sector Modernization Program financed by the World Bank. PMSS is affiliated to the National Secretariat of Environmental Water and Sanitation (SNSA) in the Ministry of the Cities (MCIDADES). After an initial consolidation period supported by the World Bank, the operations were transferred to a permanent government unit supported by the government and water and sanitation providers.

Methodology and Process: The guiding priorities for the design of SNIS were to have national coverage of only urban areas, get data at the municipal level, and ensure portability with other government databases. The underlying principle was to have a gradual evolution (continuity more important than quick expansion) and every year reach a higher level in technology, enlarging service providers' sample and dataset. Prepared by a team of technicians and consultants hired by PMSS, SNIS collects information through a software called Coleta. The utilities report information through this software and send to PMSS. SNIS's team undertakes two levels of consistency analyses. As soon as utilities start to fill electronic forms, the software starts the consistency analysis according to past data and parameters for the sector. After SNIS receives the information, a team of consultants undertakes another consistency analysis. Approximately, 77 indicators are calculated. Before the Diagnostics of Water and Sanitation Services is issued, SNIS sends a preliminary version to utilities for comments. In 2001, 260 providers supplied data to SNIS: 26 regional providers, 4 microregional and 230 local. These providers serve 4,134 municipalities and cover 91.8 percent of the urban population. Since 1995, SNIS has been improving its data. Every year new providers are included in the sample; new information is collected and new indicators are calculated.

Products and Outputs: The Diagnostics of Water and Sanitation Services is a product of SNIS containing all the above data, which has been issued annually since 1995. Besides the information, the Diagnostics presents a brief description of the methodology used to collect and treat data, as well as some preliminary analysis about the provider's performance in order to illustrate how the information can be used. For easy reference, SNIS also produces a CD with data collected for all the years since 1995.

Institutional Model: SNIS is a federally run program housed in the National Secretariat of Environmental Water and Sanitation, Ministry of Cities. The participation by utilities is voluntary. However, since the federal government utilizes the information in the evaluation of funding requests presented by service providers (SNIS says that service providers must supply data to the system as a condition to access credit and loans from the federal government), it could be assumed that this acts as an incentive or condition for the utilities to collect and provide data.

Financial Sustainability: It is difficult to draw inferences on financial sustainability in this case on the basis of available information. As mentioned earlier, the program was supported by the World Bank in its initial stages and subsequently transferred to the federal government. The current financing mechanism is not clear though the SNIS site mentions that the program is supported by the federal government and service providers (and it could be assumed that the government is the major contributor as the program is housed there).

Note: Adapted from www.snis.gov.br and a presentation by Marcos Montenegro, Head of the Department for Development and Technical Cooperation, Government of Brazil, at the World Bank Water Week 2005.

Conclusion

A well-run water utility is essential to people's lives. Only the most efficient and financially viable utilities are able to respond to the challenges of urban growth and pressures on service delivery. An effective benchmarking exercise can help understand the relative performance of water utilities, identify the potential for improvement, and help inform the debate with various stakeholders. Benchmarking, when used to its full potential, is likely to emerge as a key tool for water utility managers, policymakers, and citizens in the future. Given the state of services in South Asia and the existing challenges, benchmarking could play a key role in improving delivery of urban water services.

Furthermore, a successful long-term benchmarking program could go a long way in addressing two critical issues in the urban water sector, those of (a) management and regulation of utility performance in the absence of well-established regulatory frameworks; and (b) generation of reliable information as a tool for improved accountability and institutional reform. To result in performance improvements and other benefits, however, it is imperative that benchmarking initiatives are sustainable and carried out as part of an overall performance improvement framework. More specifically, for such initiatives to be a lasting success, they need to have:

- Ownership and commitment by utilities (institutional and financial) underpinned by an appropriate incentive framework.
- A robust organization to design, coordinate, and implement the benchmarking program.
- Technical support and capacity-building for utilities to appreciate and implement the concept.

Photo credit: WSP-SA/Guy Stubbs

ABOUT THE SERIES:

WSP Field Notes describe and analyze projects and activities in water and sanitation that provide lessons for sector leaders, administrators, and individuals tackling the water and sanitation challenges in urban and rural areas. The criteria for selection of stories included in this series are large-scale impact, demonstrable sustainability, good cost recovery, replicable conditions, and leadership.

References

1. Kingdom, William, and Vijay Jagannathan. March 2001. Utility Benchmarking, Viewpoint, The World Bank (www.worldbank.org/html/fpd/notes).
2. Tynan, Nicola, and Bill Kingdom. April 2002. 'A Water Scorecard: Setting Performance Targets for Water Utilities'. Public Policy Journal, Issue 242. The World Bank. (www.worldbank.org/html/fpd/notes).
3. World Bank's Benchmarking Water and Sanitation Utilities Project and the Benchmarking Start-Up Toolkit (http://www.worldbank.org/html/fpd/water/topics/bench_network.html; http://www.ib-net.org/wb/bench_network.asp).
4. Taito Delana. July 2002. Pacific Water Association, Performance Benchmarking for Pacific Water Utilities. (http://www.sopac.org/Secretariat/Programmes/H2O/3rd_world_water_forum/downloads).
5. Asian Development Bank. 1997. Second Water Utilities Data Book, Asian and Pacific Region.
6. Proceedings of the Workshop on Benchmarking Urban Water Utilities. October 2004. Water and Sanitation Program-South Asia. New Delhi.
7. Benchmarking Urban Water Utilities: Phase I—Preliminary Findings. October 2004. Water and Sanitation Program-South Asia.
8. Performance Indicators for Water Supply Services. 2002. IWA Manual of Best Practice, International Water Association.
9. Performance Indicators for Wastewater Services. 2003. IWA Manual of Best Practice, International Water Association.
10. Process Benchmarking in Water Industry. 2002. IWA Manual of Best Practice, International Water Association.
11. Yniguez, Cesar E. October 2004. 'Benchmarking Experiences in Asia'. Workshop on Benchmarking Urban Water Utilities in South Asia, Water and Sanitation Program-South Asia. New Delhi.
12. Performance Benchmarking—A Powerful Management Tool for Water and Wastewater Utilities; Peter Stahre, Malmo Water and Wastewater and Jan Adamsson, Aqua-Tech Consult, Juteskarsgatan, Sweden (http://www.vaverket.goteborg.se/prod/va/dalis2.nsfvyFilArkivPerformance%20benchmaking.pdf/$file/Performance%20benchmaking.pdf).
13. Benchmarking the Urban Water Sector in Vietnam, The World Bank (http://www.worldbank.org.vn/publication/benchmarking03e.pdf) and (www.ausaid.gov.au/business/publications/incentives/vietnam_water.pdf).
14. www.perpamsi.org
15. www.snis.gov.br
16. www.ib-net.org
17. www.seawun.org
18. www.wupafrica.org
19. www.wsaa.asn.au

Water and Sanitation Program-South Asia
The World Bank
55 Lodi Estate, New Delhi 110 003
India

Phone: (91-11) 24690488, 24690489
Fax: (91-11) 24628250
E-mail: wspsa@worldbank.org
Website: www.wsp.org

May 2006

WSP MISSION:
To help the poor gain sustained access to improved water and sanitation services.

WSP FUNDING PARTNERS:
The Governments of Australia, Belgium, Canada, Denmark, Germany, Italy, Japan, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, and the United Kingdom, the United Nations Development Programme, and The World Bank.

AusAID provides WSP-SA programatic support.

AUTHOR:
Anupam Sharma

ACKNOWLEDGMENTS:
The author would like to acknowledge the valuable peer review provided by William Kingdom, Catherine Revels, Deepak Sanan, and Anup Wadhawan.

Editor: Anjali Sen Gupta
Pictures by: Indo-USAID (FIRE-D) Project, India; WSP-SA/Guy Stubbs
Created by: Roots Advertising Services Pvt Ltd
Printed at: Thomson Press (India) Ltd.