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view

A Water Scorecard

Setting Performance Targets for Water Utilities

Using data from 246 water utilities in 51 developed and developing countries, this Note highlights the wide variation in performance on key indicators: unaccounted-for water, labor costs, the working ratio, service coverage, water prices and connection costs, and continuity of service. On the basis of the performance of the top 25 percent of developing country utilities, the Note proposes "best practice" targets for developing countries.

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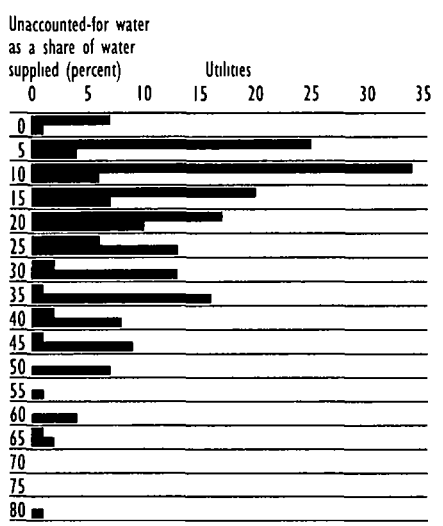
The performance of water utilities can be assessed using four broad measures: efficiency of investment, efficiency of operations and maintenance, financial sustainability, and responsiveness to customers. This Note uses data from the World Bank's Benchmarking Water and Sanitation Utilities database and from the Asian Development Bank to review the performance of a sample of utilities The sample includes utilities in all regions and in countries at all income levels; half (123) are in 44 developing countries. The utilities range from small (serving a population of less than 125,000) to medium (125,000–500,000) and large (more than 500,000), with at least 30 utilities from developing countries and 30 from developed countries in each category.

Efficiency of investment

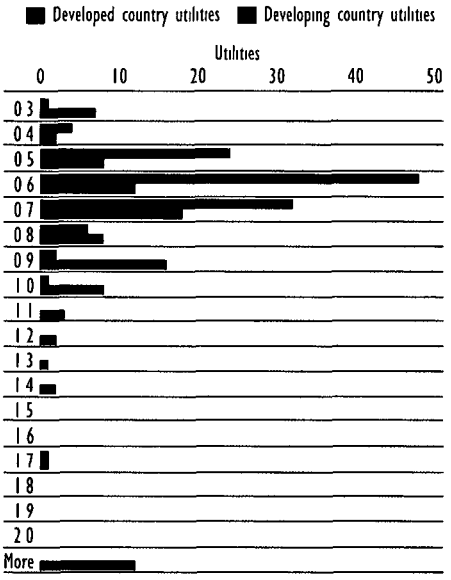
Investment in new assets should occur only when absolutely necessary—and to ensure efficient, long-run operation of existing assets, daily maintenance is critical Maintenance is particularly important for pipe networks, which typically account for 70 percent of asset value but are often neglected in favor of more visible assets. Direct measures of asset maintenance are

Figure 1 Unaccounted-for water



Source Authors' calculations, based on data from World Bank (2001) and McIntosh and Yñiguez (1997)

Figure 2 **Working ratio**



Note See the text for a definition of working ratio
Source Authors' calculations, based on data from World Bank (2001) and McIntosh and Yñiguez (1997)

normally unavailable, so surrogates are needed A crude measure of asset maintenance is unaccounted-for water—the difference between water supplied and water sold as a percentage of water supplied (figure 1) This measure captures not only physical losses but also commercial losses, due to inefficient billing or illegal connections. Thus high levels of unaccounted-for water indicate poor system management and poor commercial practices as well as inadequate pipeline maintenance.

Based on the performance of the top 25 percent of developing country utilities, a target for unaccounted-for water of less than 23 percent is recommended. (The mean for developed countries is 16 percent.) Achieving this target requires reducing both physical and commercial losses

Efficiency of operations and maintenance

Operational efficiency is defined as the lowest-cost use of inputs—labor, energy, water, and materials—in the daily operation of a utility. The most efficient combination of inputs depends in part on local input prices and past capital investment decisions

To measure operational efficiency, analysts use ratios of inputs to outputs One such ratio is staff per 1,000 connections. A high ratio may indicate inefficient use of staff Many developing country utilities report more than 20 staff per 1,000 connections. The mean value for developed country utilities is 2.1 staff

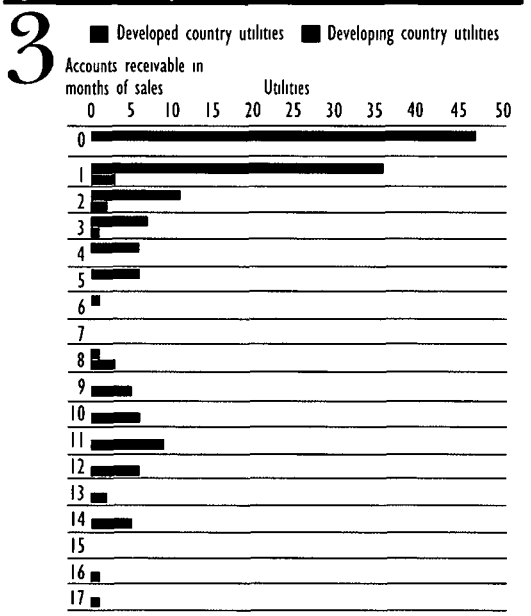
These high ratios in developing countries may mean that single water connections are serving multiple households Or they may reflect loose employment practices, often a result of political interference in the water company's operation. (Recent water sector reforms, such as those in Buenos Aires and Manila, show that utilities can sustain services with significantly fewer employees.) The staff ratios achieved by the top 25 percent of developing country utilities in the sample suggest that a target of 5 or fewer staff per 1,000 connections is achievable.

A second indicator of operational efficiency is staff per 1,000 people served, which eliminates the distortion caused when single water connections serve multiple households This measure too suggests excess labor in developing country utilities. So does a third measure combining wages and staffing to give personnel costs as a share of total operating costs. 29 percent in developed countries and 39 percent in developing countries

Financial sustainability

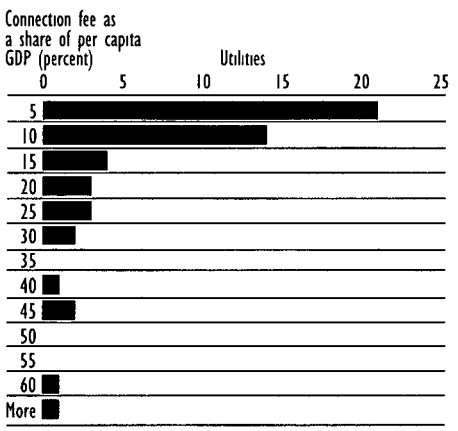
Failure to cover costs leads to underinvestment in assets, weakened operations, and declining

Figure 3 **Collection period**



Source Authors' calculations, based on data from World Bank (2001) and McIntosh and Yñiguez (1997)

Figure 4 Connection fees for developing country utilities



Source Authors' calculations, based on data from World Bank (2001) and McIntosh and Yñiguez (1997)

service quality. Definitions of cost recovery vary, with much debate on issues relating to capital asset values and rates of return on investment.

A simple measure of cost recovery is the working ratio—the ratio of total annual operational expenses, excluding depreciation and debt service, to total annual pretax collections from billing and subsidies A working ratio of more than 1 means that a utility fails to recover even its operating costs from annual revenue, while a ratio of less than 1 means that it covers all operating costs plus some or all of its capital costs The proposed target working ratio for developing country utilities is 0 68, the performance achieved by the top quartile of utilities in developing countries as well as the mean for those in developed countries (figure 2).

Financial sustainability also requires timely collection of payments. A common measure of efficiency in this area is the collection period—accounts receivable as a share of annual revenues, expressed in months of sales (figure 3).

The recommended collection period is 3 months or less. At first glance that target looks ambitious the top quartile of developing country utilities in the sample achieves a performance of 9 7 months. But closer inspection of the results for the top quartile reveals a clear division into clusters, with one group achieving a collection period of 4 months or less, and another a collection period of more than 8 months. The developed country average is 1.8 months.

Responsiveness to customers

Customer focus is assessed on the basis of coverage, affordability, and quality of service

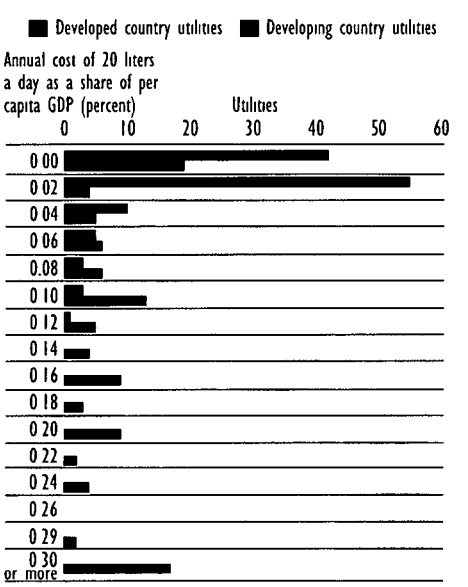
Coverage

In most urban settings a pipe network is the cheapest and most effective means of supplying water—whether through individual house connections or shared yard connections The share of households covered by pipe networks differs significantly between developed and developing country utilities. In developed countries coverage rates exceed 99 percent, and all but two utilities have 100 percent coverage In developing countries coverage rates range from 100 percent to a low of 18 percent For sewerage, the worst coverage rates are even lower. The proposed target is 100 percent coverage with *appropriate levels of service* for each household The top quartile of developing country utilities in the sample have achieved this target.

Affordability

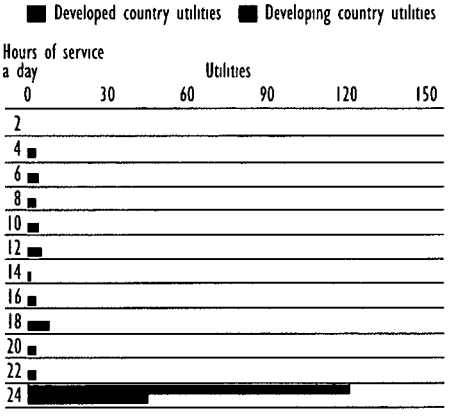
Two indicators of access to new connections are important· the cost of a new connection and the waiting time for a connection No data are available on waiting times, but figures for connection fees, roughly normalized against annual per capita GDP, show that for some of the

Figure 5 Affordability of water



Source Authors' calculations, based on data from World Bank (2001) and McIntosh and Yñiguez (1997)

Figure 6 **Continuity of service**



Source Authors' calculations, based on data from World Bank (2001) and McIntosh and Yñiguez (1997)

developing country utilities the fees are clearly unaffordable (figure 4) In some cases they exceed 60 percent of per capita GDP

The connection fee is often what prevents people from obtaining piped water supplies—once connected, consumers can usually pay their usage fees The data in figure 4 suggest a rule of thumb for connection fees most utilities in developing countries should charge connection fees equivalent to no more than 20 percent of per capita GDP.

Water prices depend in part on local conditions. Because family income, household consumption, and consumers per connection vary considerably among countries, most summary tariff measures (such as average cost per cubic meter) are more useful for comparing utilities within countries than for comparing them across countries A rough measure for comparison across countries, however, is the affordability of the minimum water requirement set by the World Health Organization—the annual cost of 20 liters a day as a share of per capita GDP.

Calculations based on the average tariff for each utility in the sample show that in developed countries customers of the highest quartile of utilities (those charging the highest prices) pay the equivalent of 0.036–0.120 percent of per capita GDP for 20 liters of water a day (figure 5). In developing countries customers of the highest quartile pay more than 0 2 percent of annual per capita GDP These results show the burden on consumers in developing countries and underline the need to cut costs

Quality

The quality of service has several dimensions—water availability, water quality, water pressure, and customer relations. But the only one for which the sample provides sufficient data is water availability, as captured by the continuity of service (hours of service a day). Based on the performance of the top quartile of developing country utilities, the recommended target is 24 hours a day (figure 6).

Conclusion

The indicators and proposed targets capture a broad range of performance measures for utilities. They are not comprehensive More work is needed to provide a more complete assessment of utility performance, expanding the measures to governance and accountability, to capital efficiency, and to better measures of responsiveness to the needs of the poor Still, the key point is that the target indicators covered here are being achieved by 25 percent of developing countries in the data set These targets can be achieved by the rest by strengthening the focus on customers, improving governance, providing incentives for utility managers to lift performance—something they often lack—and finally, if necessary, raising tariffs

References

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