Many countries are weighing urgent reforms to bring safe water supply and sanitation (WSS) services to hundreds of millions of poor city dwellers. Past reforms, unfortunately, have often ignored consumer preferences and perceptions, resulting in overly optimistic projections of the revenue potential of reform projects. When revenues fall short, private partners may seek to renegotiate their contract, resulting in tariff increases and other changes that increase project costs across the board. Such situations can undermine political commitment to reforms in general and to private sector participation (PSP) in particular.

Understanding consumers can help avoid such situations. Different groups of consumers have distinct preferences and perceptions that may influence their decisions about new water systems. Unfortunately, studies of consumers’ water-related preferences are often deferred because collecting data takes time and costs money. Often there is pressure to complete reforms quickly—sometimes to take advantage of a political opportunity—so the necessary research is not done. In other cases, the challenge of increasing efficiency and improving governance may seem so daunting that the specific interventions required to make reform beneficial to the poor may be overlooked or consciously deferred.

Such deferrals are likely complicate matters later; indeed, neglecting the interests of consumers has often derailed the reform process.

Two proposed PSP transactions in Sri Lanka demonstrated that understanding demand and designing a transaction can proceed in parallel. In 2000, the government of Sri Lanka proposed that private operators manage WSS services for the town of Negombo, north of Colombo, and along the strip of the coast stretching between the towns of Kalutara and Galle.

The intention of the government at the time was to attract local private investors, preferably in a consortium with international water companies. The operator would receive a fixed amount for every cubic meter of water sold to customers under a tariff structure set by the government. The 15-year contract contained provisions related to coverage targets, tariff structures, service levels, and subsidies. Most of those provisions were based on assumptions about demand.

The plan was to provide 95 percent of residents, including most of the poor, with a 24-hour supply of in-home piped water of a quality that met national standards. The use of wells and public taps would be phased out. Considerable investment, as well as tariff increases of up to 100 percent, would be required to meet the target and to deliver anticipated returns to the operators. At the time, the monthly tariff for 20 cubic meters of water was only a fraction of the cost of supply. However, fearing political fallout from large tariff increases, the government decided to subsidize the operators. The size of the subsidy was to be determined by the investment required, less any future increases in the tariff.

Households were to pay a connection charge of US$95 for their metered connection to the network. In the Kalutara–Galle coastal strip, the connection charge was to be paid by consumers; in Greater Negombo, it was to be partially subsidized.

The clash between assumptions and reality

As the project advanced, a team working with the government and funded by the World Bank–Netherlands Water Partnership began an investigation into the preferences and perceptions of residents in the service area. We were part of that team. In 2003, we conducted surveys to shed light on the characteristics, service levels, preferences, and willingness to pay of all households in the two service areas. The results suggested that rethinking the PSP transactions would be necessary. Unfortunately, our findings arrived too late to salvage the proposed reform. The government abandoned it in 2004. We had found that many of the assumptions underlying the PSP transactions were flawed, jeopardizing the economic fundamentals of the proposed transactions. Those assumptions are explored below.

The assumption that universal service could be reached

Our survey research indicated that consumer uptake would be less than 50 percent at the proposed connection fee—significantly lower than the anticipated 95 percent. The uptake rate for poor households was even lower: 27 percent in Negombo and 32 percent in the Kalutara–Galle coastal strip (see table 1).

Several factors affected residents’ willingness to connect and pay for piped water. While poverty and cost were key, access to alternatives, location, and perceptions also mattered. Households with greater self-provision options—primarily through private wells—showed lower demand, particularly if they were satisfied with their non-network source. The likelihood that residents who were satisfied with their current source would not connect to the new network undermined the goal of near-universal coverage on which the government’s plans depended. Uptake simulations showed that removing the connection fee would significantly affect households’ willingness to connect. Even so, one simulation in which poor households would pay no connection fee and no monthly consumption charge suggested that some 30 percent of poor, unconnected households would choose not to be connected.

The low potential uptake rates raised questions about the financial viability of the PSP transactions. The government asked for new calculations based on lower demand assumptions. Those calculations suggested that higher operator subsidies and consumer tariffs would be needed.

Nevertheless, slack demand for the proposed piped water services posed a problem for the government because, to the extent the poor opted out of the plan, a growing share of the subsidies needed to sustain the transactions would go to households that did not need them.

<table>
<thead>
<tr>
<th>District</th>
<th>Poor</th>
<th>Nonpoor</th>
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</thead>
<tbody>
<tr>
<td>Greater Negombo</td>
<td>49</td>
<td>64</td>
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<tr>
<td>Connected</td>
<td></td>
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</tr>
<tr>
<td>Unconnected</td>
<td>32</td>
<td>47</td>
</tr>
<tr>
<td>Kalutara–Galle</td>
<td>44</td>
<td>59</td>
</tr>
<tr>
<td>Connected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unconnected</td>
<td>27</td>
<td>42</td>
</tr>
</tbody>
</table>

Table 1. Predicted uptake rates by subgroup under private sector provision, with connection charge of US$95 (percent)
The assumed preference for house connections

Subsequent research showed that the initial assumption—that households favor house connections—did not hold. Nonpoor households were more disposed toward house connections, whereas poor households preferred lower service levels, with price likely a factor.

Our data also showed that creating small networks, or “mini-grids,” might be a good alternative, especially for poor households. Allowing the utility to use household storage tanks could reduce investment costs, especially in areas farther from the current piped network. We also found that 24-hour piped in water was not a perceived necessity in homes already receiving less than 24-hour piped supply, and that—except for the safest level of water (drinkable from the tap)—incremental improvements in drinking water quality were not highly valued.

It was clear that different consumers valued piped water service differently. House connections and mini-grids were preferred to public taps, but the household’s current water supply sources were preferred to all alternatives. The poor were no different from the nonpoor in their preferences for consumption volumes, water quality, safety, and hours of supply.

Assumptions concerning tariffs, subsidies, and connection fees

Water tariffs in 2003–04 were low, even for the poor, who did not limit consumption to the two subsidized blocks of the tariff structure. The average reported monthly water bill of the poor represented less than 1 percent of their household spending, much less than the common rule of thumb of 5 percent.

The government’s models had assumed that the tariff increases required to fund the expansion programs would not affect consumption of piped water. We found, however, that only households that already depended exclusively on piped water were likely to accept the increases, whereas households that had access to other reliable sources of good water were very unlikely to do so, thereby forcing the tariff still higher for those who chose to remain connected. The availability of alternative water sources kept the price of piped water in check, reducing the scope for increasing tariffs.

Nor was the reform structure effective at targeting the poor. The tariff structure during the study period significantly subsidized users of less than 20 cubic meters per month. But with only 28 percent of poor households having a house connection, 72 percent were excluded from subsidies. Meanwhile, as 43 percent of nonpoor households had house connections and consumed an average of only 19 cubic meters per month, significant subsidy resources were being captured by the nonpoor without generating revenues that could be used for cross-subsidies.

The households that received subsidies through the very low tariffs in the lower blocks received a benefit equal to 2.2 percent of monthly income—a significant amount. But altering the tariff structure would be unlikely to improve targeting performance, because the patterns of piped water consumption of the poor and nonpoor were similar, and because so many of the poor were not connected—and would not choose to connect.

We explored other targeting mechanisms and learned that the poor were likely to live farther from urban centers and from piped water networks. We also found little explicit clustering of the poor—many areas showed a mix of poor and nonpoor. This meant that spatial or geographic factors to identify poor and nonpoor customer groups could be only partially successful. Combining geographic and household characteristics to design a subsidy scheme would likely have been effective, but designing and implementing such a scheme would have increased program costs.

Conclusions

Several months after we submitted our conclusions and recommendations, and quite apart from the details of our findings, the general concept of private sector participation in infrastructure ran into political opposition within the central government, and the transactions analyzed here were abandoned.

The fact remains that unsubstantiated assumptions undermined the government’s policy. Our
research cast doubt on the practicality of universal coverage, revealed complexity in consumers’ perceptions of piped water supply (in an environment of attractive alternatives), and questioned the poverty impact of a project that would likely benefit largely the nonpoor. Given the disparity between assumptions and reality, it would have been very difficult to ensure the financial viability of the two contracts.

Although the districts in the proposed service areas are geographically close, they showed substantial diversity in consumption preferences—for example, in willingness to pay for piped water connections. Water supply and sanitation are local services; hence, one-size-fits-all solutions may fail if local differences are not accommodated. Designing a PSP transaction—or any public sector investment—accordingly becomes more complex, because rules of thumb and extrapolations from one place to another cannot be applied without risk of error.

Baseline surveys of demand for services can improve the design of WSS reform projects. Findings can improve the design of subsidies, service levels, and technical standards, strengthening their pro-poor impact and enhancing their acceptability and sustainability. Such studies also help set and monitor progress toward program targets. Often their costs are cited as a disincentive, but they tend to be low in the context of the overall investment and typically are less than the services of the various other advisors required. Overall, they are a small price to pay for ensuring the viability of large, visible investments vital to millions of people.