

Output-Based Aid in Water Lessons in Implementation from a Pilot in Paraguay

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Paraguay's *aguateros*—small private water companies—form an important part of the water sector, serving about 9 percent of the total population (or about 17 percent of those with piped water supply). But until recently they operated only in urban areas, where water resources are abundant and they could choose customers based on their ability to pay the full costs of providing service. A new World Bank-funded initiative seeks to attract *aguateros* and construction firms active in the water sector to unserved rural areas and small towns by providing an output-based aid subsidy, awarded through competitive bidding. The initiative is the first attempt anywhere to apply this approach to rural and small-town water sector investment. This Note reviews the early lessons.

In the late 1990s water and sanitation officials in Paraguay, together with the World Bank, began to consider the most cost-effective way to expand water service coverage. The government first looked to its national water and sewerage utility (Empresa de Servicios Sanitarios del Paraguay, or ESSAP), responsible for urban areas, and its rural water agency (Dirección General de Salud Ambiental, or SENASA).

The urban national utility offers piped water to less than 40 percent of households in its service area, defined as cities and towns with populations of more than 10,000. Constrained by heavy debt service obligations, ESSAP is unlikely to be able to serve as a vehicle for expanding service to Paraguay's unconnected periurban communities anytime soon.

SENASA, responsible for providing water and sanitation service to rural communities with fewer than

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10,000 inhabitants, has reached about 37 percent of that population segment (or about 18 percent of households nationwide). In the process it has created more than 1,000 water users associations, which assume responsibility for service provision in their community. SENASA theoretically contributes only 40 percent of the cost of constructing systems in larger communities and about 82 percent in small settlements. But the actual subsidies it provides are far larger, since communities often fail to make agreed cash contributions or to service their debt.

SENASA, in considering the water users associations as a vehicle for expanding service, recognized that many found it difficult to charge tariffs recovering full costs. As a result, reliance on public financing remained high. Public subsidies for rural water and sanitation systems have amounted to an estimated US\$300–400 per connection. At the current level of public financing, Paraguay would need more than 20 years to reach 85 percent coverage in rural areas.

Alongside the two public entities, small private providers known as *aguateros* supply water to about 500,000 people in periurban areas, mainly in the greater metropolitan region of Asunción. *Aguateros* have constructed piped water supply systems over the past 20 years with no public financing. Indeed, many have not registered as businesses, operating as part of Paraguay's active informal sector. Paraguay's *aguateros* have an average age of about 12 years, while the oldest have been operating for more than 20. Their systems average around 300 connections, but some have as many as 3,000.¹

Altogether, *aguateros* serve around 9 percent of Paraguay's population—or about 17 percent of all Paraguayans with piped water supply. In some depart-

¹ Consorcio Asociación Euroestudios-Hidrocontrol, "Revisión de la Estrategia de SENASA, Informe Final" (SENASA, Asunción, Paraguay, 2001).

ments *aguateros* provide water for more people than the two public entities combined.

A 2002 survey of 1,000 households served by *aguateros* found that 90 percent were satisfied with the service and 75 percent were unwilling to pay more for better service.² The overall customer satisfaction with lower rates and a somewhat lower level of service led to a conclusion that, subject to suitable groundwater conditions, *aguateros* represented a viable alternative for expanding service into periurban areas.

The output-based aid pilot

Given the constraints of the state water utility and the traditional water users association model, Paraguayan officials concluded that private providers would be the best means of reaching unserved communities and rapidly expanding rural coverage. SENASA agreed to implement a pilot output-based aid program to attract *aguateros* and local construction companies to small towns, large villages, and periurban communities (box 1). The program was to be implemented in several phases so that lessons could be incorporated along the way.

Still, several questions remained:

- *Quality and scope of service.* What service quality and characteristics would be required?
- *Incentive structure and subsidy design.* How could private providers be enticed to serve the targeted communities with a mandate for universal or near-universal access? If public subsidies were needed, how could they be structured so as to minimize the cost to the government and the community while maximizing the likelihood of sustainable service?
- *Bidding process and variable.* How would the bidding be structured, and what variable would it be based on?
- *Legal, regulatory, and contractual framework.* Given the water sector's legal structure, who would have regulatory responsibility for tariffs and service quality? How would that responsibility be reflected in contracts?

Quality and scope of service

To meet the minimum requirements of safe, reliable service, it was decided that the private operators would

² The survey was designed with a 95 percent confidence interval and 3 percent margin of error.

Box 1 Minimum subsidy bidding in output-based aid schemes

Over the past decade several Latin American governments have sought to induce private operators to make socially desirable—though not always financially viable—investments in rural areas by offering one-time subsidies covering part of the capital costs. The private operators recover the rest of their costs through user tariffs. To minimize costs, governments use competitive bidding based on the minimum subsidy offered. Chile pioneered this approach in telecommunications in 1994–95. Several low-income countries (Colombia, Guatemala, Peru) have followed suit, extending the approach to such sectors as transport, rural electricity, and water and sanitation.

In parallel, development agencies such as the World Bank began to explore ways to move from financing *inputs* (typically, physical assets) to financing *outputs* (services provided or results achieved) to ensure the best use of public funds while achieving development objectives. They devised a subsidy approach—output-based aid—using public funds to reimburse private operators for part of their investment after they demonstrate that they have delivered the service contracted for. The reimbursement method may range from cash paid per connection out of an offshore escrow account (as in Guatemala's rural electrification program) to vouchers given to consumers for use as payment to private operators.

be contracted to build water networks that included a borehole, a system for disinfection, an elevated or pressurized ground storage tank, and a distribution system with household connections. Meters could be installed at the discretion of the operator unless a customer requested one. Standards for water quality, pressure, and hours of service would be set out in a contract between the community and the operator. Perhaps most important, the operator would be required to connect any household within the defined service area that requested a connection and paid the fee.

Incentive structure and subsidy design

In the first phase of the pilot it was determined that a per-connection subsidy would be needed to attract operators to the four participating communities. To as-

sure SENASA that the subsidy costs would be less than the traditional cost to the state of rural water supply systems, the subsidy was fixed at US\$150 for each connection up to the maximum number of connections set for each community’s service area. This subsidy was less than the current theoretical one of about US\$200 per connection and far less than the actual subsidies that SENASA paid in some communities. Tariffs for metered and unmetered connections were set in agreement with the communities and incorporated into the bidding documents.

Bidding process and variable

Private operators would be invited to bid on the fee they would charge users up front to connect to their system. The bidder that was both responsive to the technical requirements and offered the lowest connection fee would be declared the winner. Once selected, operators could charge users for the connection fee in installments at a defined interest rate. Operators would recover their costs from the connection subsidy (paid by SENASA) and the connection charge and tariff (both paid by users). Each town would have the right to reject the winning bid if it considered the connection fee too high.

The lowest bid emerging from the first round of competition was extremely competitive, committing the winning consortium—two construction companies and an aguatero—to build systems in all four towns at US\$200–217 per connection (table 1). The commitment from the towns ranged from US\$50 to US\$67 per connection. To make it easier for poor residents to pay, the winning consortium hired them during construction (mostly to dig pipe trenches), paying them with

cash and with vouchers to reduce their connection fee. In addition, many residents opted to pay the connection fee in installments at a “social” interest rate not to exceed 24 percent a year (with payments in guaraníes).

The success of the first round of bidding showed SENASA that there would be enough competition for the right to build the systems. That allowed the bidding in the second phase to be structured so that towns would not have to assume the risk, with the bidding variable changed from the connection charge paid by users to the connection subsidy. Connection charges as well as tariffs were negotiated by SENASA and the water users association for the participating towns and incorporated into the bidding process. The maximum connection subsidy that bidders could request was capped to prevent excessive costs to the state.

Legal and regulatory framework

Paraguay’s water sector law of 2000 assigns the right to operate water supply systems to the executive branch of government, which may delegate it to municipalities or departmental governments. Service provision by the private sector and water users associations is regulated through 10-year permits in systems of less than 2,000 connections (around 10,000 people) and concessions of up to 30 years in larger systems. Permits can be awarded through simple bidding procedures, while concessions require national (or international) competitive bidding.

Regulations adopted in October 2002 match tariffs to different service levels to allow for differences in the characteristics of service providers. At the minimum service level the regulations require that water meet chemical and bacteriological safety standards. Failure

Table 1 The bidding process

	Phase 1	Phase 2
Fixed components	Subsidy to private operator of US\$150 per connection Tariffs paid by users	Per-connection charge of US\$80 for households and US\$112 for businesses and institutions Tariffs paid by users
Bidding variable	Connection charge to users	Connection subsidy from the government
Winning bid	User connection charge of US\$50–67 per connection	Investment subsidy of US\$196 per connection
Party assuming risk of uncompetitive bid	Community	Government
Preliminary design provided in bidding documents?	No ^a	Yes ^b

^a Bidding documents specified simple borehole, disinfection, storage, and single-settlement distribution system.

^b Preliminary design specified surface water intake, filtration and disinfection systems, elevated and ground storage tanks, and multisettlement distribution system.

to comply with the standards can trigger the suspension of a permit in addition to penalties.

Contractual arrangements

Under the terms of the pilot and the water sector law, communities (through the water users associations) contract private operators to build and operate water supply systems in their area under 10-year permits. SENASA manages the construction phase and acts as an arbitrator between the community and the operator during the operation phase. Supporting this structure is a triangle of mutual obligations set out in contracts governing the relationships between the three parties:

- *SENASA and the operator.* This contract, based on the standard World Bank bidding document for small works, governs the construction phase (defining the technical standards, supervision, subsidy, guarantees, and the like). In the first phase of the pilot all subsidy payments (apart from an advance) were withheld until the operator had demonstrated that it had successfully provided the connections, forcing the private sector to mobilize most of the construction financing. In the second phase shares of the total subsidy payment will be released as the operator completes components of the system. Given the difficulties small construction companies face in mobilizing investment capital, this staggered release of payments should allow greater competition for contracts.
- *SENASA and the water users association.* This contract sets out SENASA's agreement to provide a subsidy for system construction once the water users association has signed the concession contract with the operator.

- *Operator and the water users association.* This simple concession contract defines the service area and sets coverage targets. It also provides the operator with exclusivity in this area, defines water and service quality standards and penalties for noncompliance, provides adjustment formulas for tariffs and fees, and establishes compensation for early termination of the contract.

To ensure that the water users associations understand their obligations as signatories to the two contracts, a local institute has been providing training in contract administration.

Results

The contract for the first phase (4 systems) was awarded in August 2002. A legal dispute between the community and an aguatero holding an operating permit for part of the service area identified for one of the systems required one community in the first package to be replaced. All four systems are now in operation. The response from the communities that have received service has been overwhelmingly positive thanks to the rapid progress from concept to construction, all without up-front cash contributions from the communities. Under the second phase, bids for an integrated 2000-connection system supplying the towns of Nanawa, Puerto Falcon and Beteretecue outside of Asuncion, were received in late February, 2004. The contract was awarded in August, 2004 and system construction is near completion. A third OBA contract (for the town of Capitan Bado-Mariscal López in the Department of Amambay with 2,000 connections) was awarded in December, 2004; construction is advancing satisfactorily.

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