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## Rural Water Service

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*This case study is part of a series reviewing business models for private companies providing infrastructure services to rural customers in developing countries. The case studies assess factors driving the performance of private companies in a variety of rural contexts and sectors and under diverse legal and regulatory arrangements. The objective is to identify lessons that can inform the design of private rural infrastructure schemes. The primary funding for this series came from the Public-Private Infrastructure Advisory Facility, a multidonor technical assistance fund. The World Bank task team for the case studies was Alan Townsend, Clive Harris, Lorenzo Bertolini, Michael Schur, Juan Navas-Sabater, and John Newstead.*



### Is a Private National Operator a Viable Business Model?

**In Côte d'Ivoire and Senegal water service is provided by privately operated national water utilities operating under enhanced lease contracts. While the national operators have performed relatively well within their service areas, their ability to expand service to rural areas has been limited. This Note focuses on the key factors shaping rural service expansion: reliance on cross-subsidies, the limited transfer of commercial risk to the private sector, and the lack of competition for serving new population centers beyond the utilities' existing areas of exclusivity. It compares the national model with those of more decentralized service provision for rural areas.**

Société de distribution d'eau de la Côte d'Ivoire (SODECI), a subsidiary of the French water company SAUR, has been operating in Côte d'Ivoire since the country's independence in 1960 (box 1). Sénégalaise des eaux (SDE), also a subsidiary of SAUR, has been present in Senegal only since 1996, following a comprehensive sector reform. Both companies are national operators with exclusive service areas and serve a large number of secondary towns, thanks to a long-established system of cross-subsidization.<sup>1</sup> But outside the service areas managed by these private operators, the rollout of rural water service has lagged.

Both companies operate under comparable affermage contracts, with limited responsibility for investment. In Côte d'Ivoire SODECI has in theory had more control over investment since

the renegotiation of its contract in 1987 than it would under a traditional affermage contract. SODECI is responsible for drafting a five-year investment plan, managing a special fund for investments in service expansion (financed by a dedicated surcharge on water tariffs), and carrying out most investments (although any investment above a certain threshold is supposed to be tendered). In practice, however, the company estimates that the Water Ministry, which is ultimately responsible for strategic investment decisions in the sector, approves only about 50 percent of its proposed investments.

In recent years, amid social tensions stirred by a coup in 1999, the system's performance has started to decline from previously enviable levels. Losses now stand at an average of 23 percent of water production (compared with a 15 percent

**Box Forming national utilities****1****Côte d'Ivoire**

Société de distribution d'eau de la Côte d'Ivoire (SODECI) began its operations in Côte d'Ivoire's capital, Abidjan, and a few other major towns. Later its responsibilities were extended to the entire national territory, including maintenance services in rural areas.

In 1987 SODECI renegotiated its contractual arrangements with the government and signed a 20-year concession contract. Its responsibilities in rural areas were terminated and transferred to rural communities, while the government kept investment responsibilities in those areas.

But SODECI's service area is continuously expanding. It now includes 583 centers, reflecting growth of more than 50 percent since contract renegotiation in 1987. The size of these centers ranges from a few thousand inhabitants to 3 million in Abidjan. (The population of Côte d'Ivoire is around 14.8 million, and just over 50 percent is urban.)

**Senegal**

By contrast, in Senegal the water utility's geographic coverage grew during times of public ownership. Although a private operator was in place at independence in 1960, water services were nationalized in 1971 and transferred to a national company responsible for serving the main urban centers, Société

nationale d'exploitation des eaux du Sénégal (SONEES). Sector reform became necessary as SONEES faced financial difficulties and heavy investments were required to address Dakar's long-term supply problems.

In 1996 private sector participation was introduced through a 10-year affermage contract between the government and Sénégalaise des eaux (SDE). An asset holding company, Société nationale des eaux du Sénégal (SONES), was set up to own the assets and carry out investments in the urban water sector under a concession contract with the government. The Senegalese contract is an "enhanced" affermage contract, giving SDE responsibility for maintenance and some well-specified investments in rehabilitation (17 kilometers of network, 6,000 connections, and 14,000 water meters every year).

At the time the contract was signed the SONES-SDE service area included 56 urban centers and 100 villages along the main pipeline routes, and it has not expanded since. These centers are usually larger than those in Côte d'Ivoire, reflecting the higher threshold for adding new population centers to the network. In Senegal the threshold is close to 10,000 inhabitants, while that in Côte d'Ivoire is 3,000 (although there are exceptions in both countries, with incorporation often depending on administrative status or political factors). In Senegal just over 50 percent of the population of 9.8 million is rural.

contractual target), and a third of the production centers, many of them in the interior, no longer meet the World Health Organization's water quality standards. The government has not applied sanctions to SODECI for failing to meet its (rather loosely defined) contractual targets, acknowledging that the failure to invest is as much its responsibility as that of the private operator. Total sales revenue and profitability have also recently stagnated and declined.

In Senegal funds for investment are channeled through Société nationale des eaux du Sénégal (SONES), the asset holding company, which has also received abundant funding from international donors in recent years. SONES also monitors SDE's contract, and although SDE's contractual responsibilities for investments have led to some misunderstandings, they are much better specified than in Côte d'Ivoire. These responsibilities—added to a set of contractual performance indicators with clearly defined targets and corresponding financial incentives and sanctions—have focused SDE's incentives more on improving performance

within the existing service area than on expanding services beyond it.

This approach has yielded improved operations. Leakage was cut from 31 percent to 22 percent (although the 15 percent contractual target seems difficult to reach), and bill collection improved dramatically, to 97 percent. A big part of this was the success in persuading government institutions to pay their bills. By contrast, in Côte d'Ivoire low payment rates by government institutions remain one of the main obstacles to moving to a full concession. In both countries, however, there is a high rate of disconnection for nonpayment (about 10 percent of connections in Senegal and 20 percent in parts of Côte d'Ivoire). Although the performance measures in Senegal are based on averages across the service area, performance appears comparable in all centers regardless of size and location.

**What drives rural performance?**

The factors most affecting the expansion of service into rural areas are the design of cross-subsidized tariffs, the degree of risk transfer to

the private sector, and the extent of competition for serving new population centers.

### **Cross-subsidization**

In both countries regional cross-subsidization was the main financial instrument for supporting rural expansion. In the Francophone legal tradition fundamental principles of public service call for treating users equally across the national territory, including charging a single tariff. This principle was applied in both countries so that rural consumers pay the same price for water service as urban consumers, regardless of the costs they impose on the system. In addition, both countries have adopted a social tariff (the lowest block of an increasing-block tariff structure), and secondary centers appear to account for a larger share of the consumers paying the social tariff than do the capital cities.<sup>2</sup>

In Côte d'Ivoire none of the centers served outside the capital city would be profitable on its own, and all these centers are financed through surpluses generated in Abidjan. In 2001 Abidjan accounted for 48 percent of connections, 65 percent of sales revenue, and only 52 percent of production costs. Water production costs are lower in Abidjan largely because it sits on a large aquifer and abstracted groundwater requires less treatment, while most of the secondary centers use plentiful (though not very clean) surface waters, which are more expensive to treat.

In Senegal, determining who wins and who loses from cross-subsidization is much more difficult because of the lack of an analytical cost accounting system. Although Dakar and its region accounted for 57 percent of connections and 72 percent of sales revenue in 2001, water costs are likely to be substantially higher in this region than elsewhere because its water source is 150 kilometers away.

No new municipal centers have been added to the service area in Senegal since privatization. A qualitative review suggests that some secondary towns and rural areas might be cross-subsidizing urban centers and would be better off with a local, autonomous supply system than with service by the national operator. And unless new centers know how much subsidy they will receive, they might be reluctant to be incor-

porated into the service area for fear that they will pay more than they need to.

### **Transfer of commercial risk**

Both countries transfer limited commercial risk to the private sector. Under both contracts the private operator receives a fixed payment for each cubic meter of water sold, regardless of the tariff at which it was sold. At the margin, such arrangements have strong pro-poor properties because the private operator receives the same remuneration for water sold at the social tariff as for water sold at the much higher industrial tariff, even though the costs of the service may differ. These properties benefit customers in peri-urban areas and secondary centers, which account for the largest shares of social tariff customers. In the long term, however, such pro-poor properties are undermined by the fact that the fixed remuneration per cubic meter is calculated on the basis of an average tariff. If the share of social tariff customers increases, the average tariff will fall and so will the private operator's remuneration.

Such contractual arrangements also run the risk of undermining the long-term sustainability of the sector. Under these arrangements the difference between sales revenue and the total remuneration of the private operator goes back to the asset holder for future investments. If sales revenue declines because of a rising proportion of social tariff customers, fewer funds will be available for investment.

### **Competition for serving new centers**

Differences between the two countries in the potential for cross-subsidization, in control over investment policies, and in incentive structures have led to different results from government efforts to expand service in rural areas. Both have experimented with village water committees, which are supposed to manage and operate the local water infrastructure. And both are turning to the national utility to provide service in villages that have outgrown community management. But in Côte d'Ivoire community water service has not proved very successful. About 20 percent of village wells are out of service, and 40 percent of village water committees are not functioning. Villagers often have great difficulties in

financing their required contribution to investment costs, and installations are poorly maintained. Since any village with more than 3,000 inhabitants is eligible to be included in SODECI's service area and since there is a track record of new centers being regularly incorporated, many villages prefer to wait for incorporation rather than invest in their own facilities. That Abidjan's customers largely subsidize SODECI's service contributes to that preference.

By contrast, in Senegal community water services has been more dynamic, with some villages financing all the initial investments (mostly through migrant associations). This could be because in Senegal the water utility has less of a track record of expanding its service area and because scarcer water sources mean greater incentives for communities to organize supply. A pilot project run by the French bilateral aid agency, Agence française de développement (AFD), is trying to lift some of the biggest barriers to greater development of these local solutions. It is granting an explicit legal status to village water committees (allowing them to open a bank account and get credit) and organizing a clear system for service delegation, which could lead to the emergence of local small-scale private providers. These solutions have been met with great enthusiasm by small towns that may be eligible for incorporation into the SONES-SDE service area but would prefer controlling their water service through a local solution. The knowledge that local solutions may be less expensive may also contribute to this attitude. Even so, these towns simply prefer a local solution, which they see as a way to build local capacity and community control. Indeed, some would even prefer to pay higher tariffs if the benefits could be redistributed to other community activities.

As water service is increasingly decentralized, competition for new markets and access to subsidy funds could be taken further—to limit the de facto monopoly granted to national utilities over the management of funds from cross-subsidization. For example, small-scale providers could compete for contracts with the main operator and receive subsidies from a water sector development fund, perhaps on the basis of output-based performance. National utilities would retain many competitive advan-

tages because of their technical expertise and economies of scale, but competition for subsidies would force them to demonstrate those advantages more actively.

### Conclusion

Results in Côte d'Ivoire and Senegal suggest that a private national utility can provide water service to small population centers through cross-subsidization. But the present arrangements in these countries have shown limited potential for improving service provision or ensuring its sustainability in rural areas. Transferring greater risk to the private sector would sharpen private companies' incentives to expand access and would also improve sustainability by relieving the pressure on stretched government funds. Moreover, with support by a strong, committed government, introducing competition from small local operators with targeted subsidies could help promote transparency and foster the expansion of service in rural areas.

### Note

1. As the term is used here, a *national utility* is national in the sense that it operates all over the country but without a universal access obligation. Within its service area the utility has exclusivity, and as its service area expands, so does its exclusivity. Beyond the national utility's service area, competition is permitted.

2. In Côte d'Ivoire the social tariff covers consumption up to 18 cubic meters, at US\$0.22 per cubic meter. In 2001, 21 percent of consumption was billed at this tariff in Abidjan and 35 percent in the regions. In Senegal the social tariff covers consumption up to 20 cubic meters, at US\$0.23 per cubic meter. Both countries subsidize the cost of connection for consumers eligible for the social tariff (90 percent in Côte d'Ivoire and 100 percent in Senegal).

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