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Reforming Urban Water Utilities in Western and Central Africa: Experiences with Public-Private Partnerships

Volume 2: Case Studies

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PPIAF
PUBLIC-PRIVATE INFRASTRUCTURE ADVISORY FACILITY

ACRONYMS AND ABBREVIATIONS

AFD	<i>Agence française de Développement</i>
AHC	Asset-Holding Company
Capex	Capital expenditures
CAR	Central African Republic
CFAF	African Financial Community franc
CGES	<i>Compagnie générale des Eaux du Sénégal</i>
CIE	<i>Compagnie ivoirienne d'Electricité</i>
CREE	<i>Commission de Régulation de l'Eau et de l'Electricité (Mali)</i>
DCGTx	<i>Direction centrale des grands Travaux (Directorate of Major Works, Côte d'Ivoire)</i>
DE	<i>Direction de l'Eau (Côte d'Ivoire)</i>
DEG	<i>Entreprise nationale de Distribution des Eaux de Guinée</i>
EDF	<i>Electricité de France</i>
EDM	<i>Electricité du Mali</i>
EDP	<i>Eletricidade de Portugal</i>
EECI	<i>Energie électrique de Côte d'Ivoire</i>
FDE	<i>Fonds de Développement de l'Eau (Côte d'Ivoire)</i>
FNA	<i>Fonds national de l'Assainissement (Côte d'Ivoire)</i>
FNE	<i>Fonds national de l'Eau (Côte d'Ivoire)</i>
FNH	<i>Fonds national de l'Hydraulique (Côte d'Ivoire)</i>
GNI	Gross National Index
GUC	Gambia Utility Company
GWCL	Ghana Water Company Limited
GWh	Gigawatt hour
IFI	International Financial Institutions
ISO	International Standards Organization
KfW	<i>Kreditanstalt für Wiederaufbau</i>
Lpcd	Liter per capita/day
LSDP	Letter of sector development policy
m ³	Cubic meter
MDG	Millennium Development Goal
MoU	Memorandum of understanding
MSG	Management Services Ghana
NRW	Non-revenue water
ONAS	<i>Office national de l'Assainissement (Sénégal)</i>
ONEA	<i>Office national de l'Eau et de l'Assainissement (Burkina Faso)</i>
Opex	Operating and maintenance expenditures
PGA	Public Granting Authority
PPP	Public-private partnership
PURC	Public Utility Regulatory Commission (Ghana)
SAUR	<i>Société d'Aménagement urbain et rural (France)</i>
SDE	<i>Sénégalaise des Eaux</i>
SEEG	<i>Société d'Eau et d'Electricité du Gabon</i>
SEEG	<i>Société d'Exploitation des Eaux de Guinée</i>
SEEN	<i>Société d'Exploitation des Eaux du Niger</i>
SNE	<i>Société nationale de l'Eau (Niger)</i>
SODECI	<i>Société de Distribution d'Eau de Côte d'Ivoire</i>
SONEES	<i>Société nationale d'Exploitation des Eaux du Sénégal</i>

SONEG	<i>Société nationale des Eaux de Guinée</i>
SONES	<i>Société nationale des Eaux du Sénégal</i>
SPEN	<i>Société de Patrimoine des Eaux du Niger</i>
SSA	Sub-Saharan Africa
TA	Technical Assistance
UHCG	Utility Holding Corporation of The Gambia
WSS	Water supply and sanitation

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INTRODUCTION

Volume 2 of this Discussion Paper on “Reforming Urban Water Utilities in Western and Central Africa” presents 11 cases of public-private partnerships in urban water utilities in this region.

Part 1 presents the cases of urban water utilities and is divided in four sections:

- Successful partnerships still in place: Côte d’Ivoire, Senegal and Niger;
- A partnership in early phases of implementation: Ghana;
- A partnership that eventually failed: Guinea; and
- A successful partnership without management delegation: Burkina Faso.

Part 2 presents the cases of combined power and water utilities and is divided in three sections:

- A successful partnerships still in place: Gabon;
- A partnership still in place but with mixed results: Cape Verde; and
- Partnerships that were terminated: The Gambia, Chad and Mali.

The origin and types and types of public-private partnerships in Western and Central Africa, their impact on urban water supply services and the lessons learned are presented in Volume 1.

Note: for countries of the CFA franc zone, figures are usually given in CFA franc (CFAF); the equivalent in US dollars is calculated using an exchange rate of CFAF 450 = US\$1.00 that applied in 2007, although the latter has fluctuated significantly during the periods documented in the various cases studied.

PART 1 PUBLIC-PRIVATE PARTNERSHIPS IN WATER UTILITIES

A. Successful Partnerships Still in Place

The Côte d'Ivoire Hybrid Affermage/Concession (since 1959): Almost 50 Years of Successful Partnership between Government and a Private Operator

The longest continuous PPP experience in Western and Central Africa started in October 1959 in Côte d'Ivoire, when a medium-sized French water company (*Société d'Aménagement urbain et rural*—SAUR) was awarded a concession contract by the municipality of Abidjan. In 2006, the private operator SODECI was supplying water to about 7.5 million people living in some 620 urban centers. With almost 50 years of water PPP experience, Côte d'Ivoire offers many lessons for other developing countries.

Early years (1959–73). SAUR started operating the Abidjan concession in 1960 (the year Côte d'Ivoire became independent) through a new Ivorian company named *Société de Distribution d'Eau de Côte d'Ivoire* (SODECI). At that time the city had a population of 160,000 and fewer than 4,000 water accounts. In the following years, SODECI emerged as the operator of reference for water supply services in the country. Its performance compared very well to that of existing public water providers in other Ivorian cities and towns, namely municipal water departments and the public electricity utility (*Energie électrique de Côte d'Ivoire*—EECI) which itself operated 30 water distribution networks. Many municipalities, seeing the service improvements achieved in the capital city, gradually delegated their water supply services to SODECI. By 1972, SODECI had 34,000 customers in Abidjan plus ten other urban centers.

The National Water and Sanitation Program (1974–87). In 1973, the government decided to take over the development of the water supply and sanitation (WSS) sector, which was previously the responsibility of municipal governments, and set itself the following goals to be achieved by 1980: (i) rehabilitate and construct distribution networks in all *préfectures* and *sous-préfectures*; (ii) equip all villages of more than 100 people with safe water points; and (iii) expand access to sewerage and drainage services in Abidjan. The National Water and Sanitation Program was to be executed jointly by two sets of public agencies:

- The autonomous department of water supply (*Service autonome de l'Hydraulique*—SAH¹) under the Ministry of Planning, responsible for programming and executing investments; and
- The National Water Fund (*Fonds national de l'Hydraulique*—FNH) and the National Sanitation Fund (*Fonds national de l'Assainissement*—FNA) which were created in the Autonomous Debt Agency (*Caisse autonome d'Amortissement*—CAA) under the Ministry of Economy and Finance and were responsible for financing investments.

Expanding the scope of private sector participation. At a time when other African governments were nationalizing private water utilities (in Senegal, Mauritania, Madagascar etc.), the Ivorian government took the opposite route and expanded SODECI's role by vesting the company with the responsibility for operating and maintaining all water supply facilities in the country under an *affermage* contract, and also of operating and maintaining sewerage and drainage networks in Abidjan under a service contract. The government opted for: (i) a single national water tariff (with

1 SAH was replaced in 1979 by the Directorate of Water (DE), under the Ministry of Public Works and Transportation (MTPT).

an increasing block structure), to allow cross-subsidization between the cheap and abundant water resources of Abidjan and the more expensive services in secondary cities and towns (and the rural services, which were initially provided free of charge); and (ii) full cost recovery of operating and capital expenses at the national level, as the WSS sector was intended to become financially autonomous. The customer tariff (identical in all consumption blocks) was set to cover SODECI's O&M costs, and included surcharges to provide revenues for transfer to FNH and FNA to finance the sector's debt service and contribute to capital investments.

Initial success. Until 1983 the national program was quite successful. More than US\$400 million was invested in urban and rural water and sanitation schemes, which almost doubled their coverage from 34 percent of the country's population in 1974 to 63 percent in 1983. By the latter year, more than 200 urban centers were served by piped water systems, and about three million people in 7,200 villages (66 percent of the rural population) benefited from boreholes and modern wells fitted with hand pumps. SODECI's operating performance reached exemplary levels by international standards, with NRW lower than 15 percent and a bill collection rate of 98 percent. The company's management had gradually been transferred to Ivorian nationals, and in 1978, with the listing on the Abidjan stock exchange, 48 percent of its equity shifted to nationals. Strong economic growth, combined with the country's solid creditworthiness, had helped the national agencies in charge of system expansion to borrow US\$372 million. Of this debt, 48 percent was borrowed on commercial conditions from private banks and the Central Regional Bank (*Banque centrale des Etats d'Afrique de l'Ouest*—BCEAO); 34 percent from donors on IBRD conditions; and only 18 percent on softer conditions (from the European Union and the German KfW). The contribution made by the national budget was minimal.

By 1983, the sector showed signs of strain. SODECI's financial position remained healthy, but FNH revenues had become progressively insufficient to cover the debt service of the sector. In reaction, FNH raised its surcharge markedly for commercial and industrial consumers. But an economic slowdown resulting from the decreasing prices of cocoa and coffee (Côte d'Ivoire's main exports), combined with industrial consumers' efforts to save water in the face of rising prices, brought down the volume of water consumption, hastening the deterioration of FNH's finances. Bridge financing from the Central Regional Bank temporarily improved the situation, but it became clear that the sector's revenues could not be raised to a level consistent with financial equilibrium and customers' willingness to pay.

Why public investment went out of control. The fragmentation of investment-related responsibilities between SAH's successor company the Directorate of Water (*Direction de l'Eau*—DE), and FNH had led to a lack of financial accountability and to the accumulation of large cross-debts among SODECI, FNH, CAA, and the Treasury that had not been properly monitored by the government. In addition, most of the urban water projects had been over-designed by the national public agency in charge: they were based on over-optimistic consumption forecasts, and gave excessive priority to building production facilities rather than to expanding distribution networks—which would have enlarged the customer base and hence augmented the sector's revenues. An exhaustive survey of rural water points also showed that more than 35 percent of these were not functioning, and that most villages were not paying the annual maintenance fee of CFA 55,000 (about US\$125) that had been established in 1981.

In search of reform: how to make the PPP evolve? By 1984 all actors and partners agreed on the need to reshuffle sector responsibilities and to adjust to the new context of slow economic growth. However, the nature and the scope of the reform took time to decide on. The government

requested the support of the World Bank, which initially favored consolidating all investment responsibilities in a public asset-holding company (AHC). This solution was rejected by the Ivorian President, who disliked the idea of creating another public agency at a time when most of the country's public sector was in crisis. Instead he preferred to increase the involvement of the private sector in WSS services. The World Bank then contemplated an ambitious financial restructuring of the sector through a leveraged buy-out scheme—whereby SODECI would have acquired the sector's assets and assumed the associated sector debts—but the size of the financial transaction eventually deterred SODECI. In January 1987, the Ivorian President appointed the Directorate of Major Works (*Direction centrale des grands Travaux*—DCGTx) as the body responsible for further preparing the reform and as the Bank's interlocutor for sector adjustment operations in the water supply sector.

A reform to ensure efficiency and development of access. The objectives of the reform as stated by the government were: to ensure economic efficiency and to relieve the pressure on public finances; give priority to the development of access; establish tariff policies that would not cause undue hardship to consumers; restore the availability of basic services in rural areas; and preserve the sustainability of investments in urban sanitation. The reform was based on (i) an increased role for the private sector and a full renegotiation of the contractual arrangements; (ii) financial restructuring and settling cross-debts; (iii) a more efficient tariff structure. DCGTx was mandated to renegotiate a new contract with SODECI.

The new contract with SODECI. The negotiations with SODECI were completed in October 1987 with the signing of a new contract that gave additional responsibilities to the private operator.² SODECI was now responsible for managing most of the capital investment (under ex post supervision by DCGTx) in urban water supply through a Water Development Fund (*Fonds de Développement de l'Eau*—FDE) that was replenished by a portion of the collected billings (Box 1). SODECI's remuneration for O&M was decreased by 20 percent as part of the renegotiation. SODECI reduced its staff by about 300 people in 1988,³ and the cost savings were partly passed to consumers and partly allocated to FDE. It was agreed that there was no need to increase water production capacities in the medium

Box 1: Achieving Financial Self Reliance: Côte d'Ivoire's Water Development Fund

Côte d'Ivoire's Water Development Fund (FDE) is managed by SODECI under the supervision of the Ministry of Economic Infrastructure (DHH). The Fund receives the proceeds of a surcharge on water rates and finances the bulk of capital expenses for urban water supply. The FDE surcharge increased from CFAF 28/m³ in 1988 to CFAF 121/m³ in 2004, then amounting to more than 30 percent of the average customer tariff. About CFAF 93 billion (more than US\$200 million) have accrued to the FDE since 1988 and have been spent mainly on social connections (42 percent of FDE expenditures), expanding distribution networks (27 percent), and renewal work (12 percent). SODECI has the contractual responsibility for building connections, whose costs have been negotiated by DCGTx, and has also received most of the works contracts. Its unit prices compare quite favorably with those observed elsewhere in the region.

The FDE mechanism allowed the sector to develop access at a faster pace than during Côte d'Ivoire's earlier "golden years," without requiring either external financing or government subsidies. This degree of financial independence is unique in the region.

² The contract became effective in July 1988.

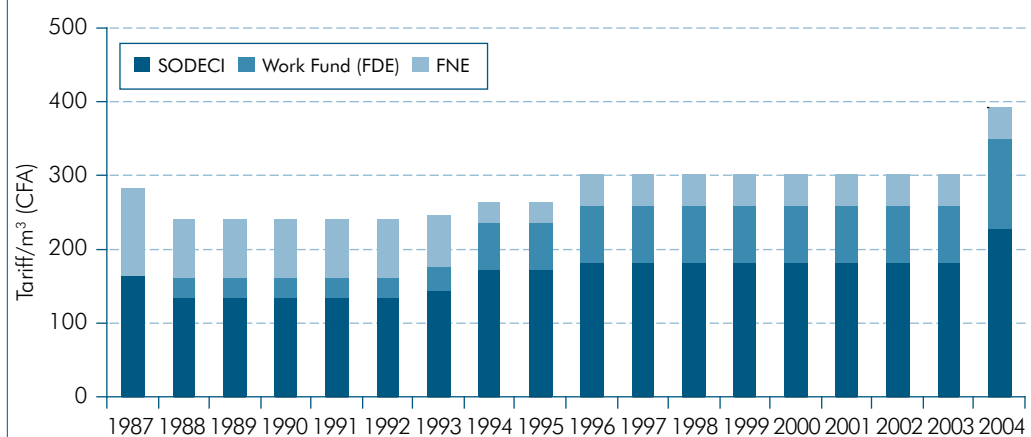
³ The reduction mainly affected staff involved in rural water supply operations, responsibility for which had been transferred to communities as a result of the sector adjustment.

term. New investment was all redirected away from building production capacity towards expanding the customer base, and FDE was expected to focus on (i) expanding the social connection program; (ii) renewing equipment; and (iii) expanding the distribution networks. In addition, SODECI was relieved of its responsibilities in rural water supply, which were shifted to village users' associations.

From uncontrolled debt to 100 percent self-financing. To restore the financial sustainability of the sector, the government proceeded to (i) reschedule the long-term debt⁴ over a 15-year period (to avoid putting undue pressure on the consumer tariff); (ii) settle all cross-debts; and (iii) consolidate FNH and FNA into a single entity, the National Water Fund (*Fonds national de l'Eau*—FNE), whose main function was to service the sector debt, without being involved in investment planning and programming. The financial credibility of the sector was still low and all actors wanted to avoid a resurgence of uncontrolled debt. The existence of the separate Water Development Fund (FDE), managed by SODECI, warranted that future capital spending would match the sector's capacity to fund investments. Thus the development of the Ivorian water supply sector had to rely almost entirely on cash generation from customer revenues. Since 1988, donor financing has amounted to less than CFA10 billion or about US\$20 million. In addition, because the FDE funds were collected by SODECI and not transferred to public entities, they were immune from falling into a possible morass of cross-debts between the public actors, and from being invested in large civil works that made little sense from an operational point of view.

Regulation. The preparation of the reform had shifted the regulatory responsibilities of the technical ministry in charge of water supply to DCGTx. The latter proved effective in negotiating the new SODECI contract.⁵ Key elements of the Directorate's success here were its own capacity, the weight of the presidential mandate given to DCGTx's General Manager, and the private operator's belief that the government would resort to competitive bidding if the negotiations failed. This put pressure on SODECI to negotiate a positive outcome. After the reform, the operator tariff was regulated by contract while a pragmatic approach was taken for the customer tariff, in order to reconcile socio-political goals with the need to make room for the FDE surcharge.

Figure 1: Côte d'Ivoire: Evolution of Components of the Customer Tariff



Sources: DE and SODECI.

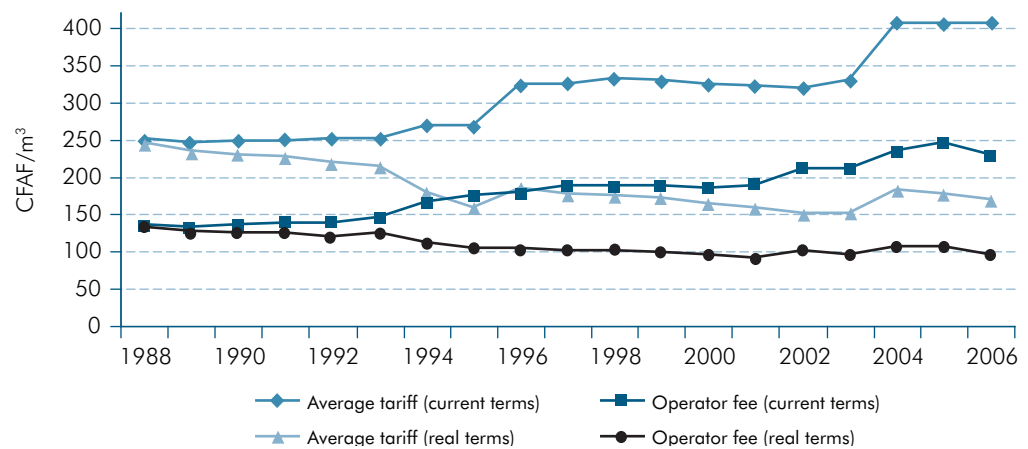
4 Actually, the government had been the borrower of the domestic and external debt of the WSS sector and on-lent the funds to FNH and FNA.

5 DCGTx replicated the same performance in the sole-source negotiations for the electricity *affermage*, which the government decided to contract in 1991 to an affiliate of SODECI's parent company, CIE (*Compagnie ivoirienne d'Electricité*).

of objectives was satisfactorily achieved during the first ten years, as witnessed by another successful renegotiation of SODECI's remuneration after the 1994 devaluation of the CFA franc, and the substantial increase in the share of the FDE surcharge in the average consumer tariff, which was facilitated by the decrease in the debt service paid by the sector (Figure 1).

Customer tariff levels have declined in real terms. Since 1974, the contractual revisions of SODECI's tariff (and the customer tariff) had been based on an agreed schedule of costs and consumption forecasts that was designed to take stock of the expansion of services in new urban centers. Until the 1987 reform, the bulk of the commercial risk was borne by FNH/FNA, because the contract provided that SODECI was to be compensated for any gap between forecast and actual water consumption. The new contract shifted the commercial risk to SODECI and provided for subsequent tariff revisions to take place every five years, based on SODECI's sales forecasts. A revision took place in 1996 but the revision due in 2001 did not materialize, even though SODECI and the Ministry of Economic Infrastructure had agreed on the level of the operator's tariff. In 2002 however, the government authorized SODECI to deduct an amount equivalent to the agreed new fee from the proceeds of the FDE surcharge. The customer and SODECI tariffs were eventually officially revised in 2004. SODECI's share of the average tariff has increased slightly (from 53 percent to 57 percent), but in real terms, SODECI's remuneration per m³ sold decreased by 27 percent between 1988 and 2005 (Figure 2). This is a remarkable result, achieved while all investment in the sector was gradually becoming self financed, without any public borrowing, much as if the private operator had been operating under a concession.

Figure 2: Côte d'Ivoire: Evolution of Average Customer Tariff and Operator Tariff

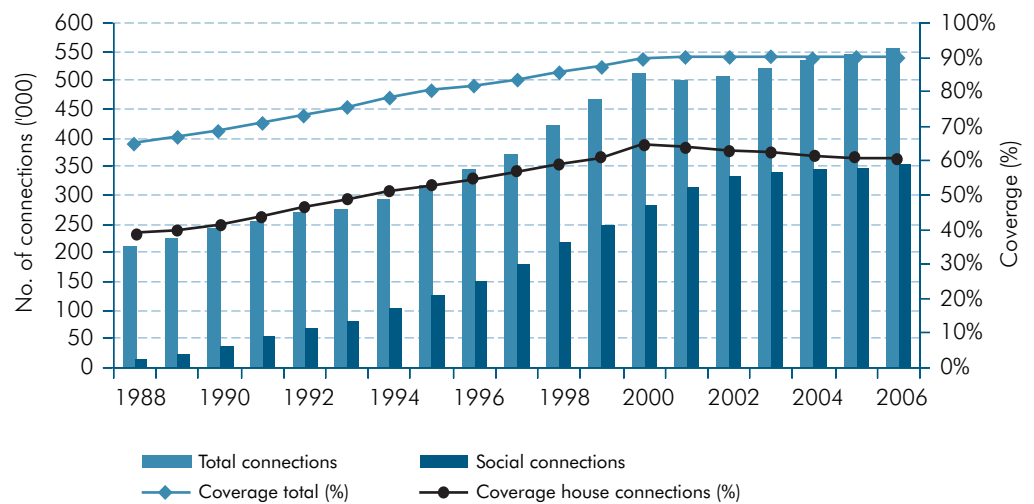


Sources: DE and SODECI.

Remarkable results in a difficult national context. The objectives of Côte d'Ivoire's reform, i.e., to further develop access and restore the financial sustainability of the sector, have been achieved. This outcome is all the more remarkable given the swings that took place in the country's macroeconomic and political situations, with (i) five years of deep recession (1988–1993), ending with the CFA franc devaluation of January 1994; (ii) seven years of strong economic growth (1994–2001), the latter years being marked by political unrest; and (iii) five years of stagnation and deep crises (2002 to date) with an effective partition of the country between government and rebel-held areas.

Access has improved very significantly. The results of promoting access to piped water for the urban population have been remarkable. Between 1988 and 2006, overall access to piped water increased from 65 percent to 90 percent of the urban population (Figure 3). The customer base more than doubled, with the number of billed customer accounts increasing from 213,000 to 554,000, half of them in Abidjan. Of the 424,000 new connections built, 83 percent were installed as part of the social connection program.

Figure 3: Côte d'Ivoire: Evolution of Number of Connections and Coverage and Connection Ratios



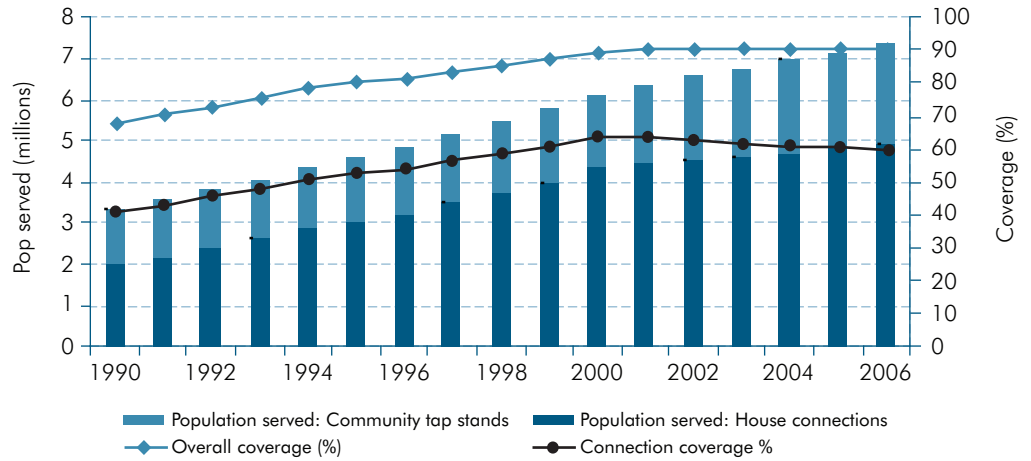
Sources: DE and SODECLI and authors' estimates.

Population served with piped water has greatly increased. The private operator has provided piped water service to an estimated four million people, with almost three million gaining access via a household connection (Figure 4), in large part due to the social connection program. It is noteworthy though that the expansion of access has stagnated since 2000 and the start of the de facto partition of the country.

Reliability. Continuous water service (24/7) had been the norm until 2002; at that date SODECLI was able to achieve continuity with average production of 84 liters per capita per day (lpcd) in Abidjan and 40 lpcd in secondary centers. In 2001 SODECLI became the first African utility to obtain an ISO 2001 quality certification, and it has maintained this subsequently. However, the civil unrest that led to the country's partition has resulted in poorer service in secondary centers in the north of the country as well as in remote neighborhoods of larger urban centers.

Efficiency. Until 2000, SODECLI maintained or slightly improved the outstanding level of commercial performance it had achieved in the 1980s (NRW of 15 percent and bill collection ratio of 98 percent from private customers). Later the NRW ratio rose somewhat (Figure 5), as a consequence of a drastic reduction of the minimum consumption charge, which had earlier helped to boost commercial efficiency, and more importantly, the civil unrest which made meter reading difficult in some areas of Abidjan and prevented effective billing in the rebel-controlled areas. However, when looking at water losses per connection, the level in 2006 was the same as in 1988 and still compares well with good international standards, showing that SODECLI

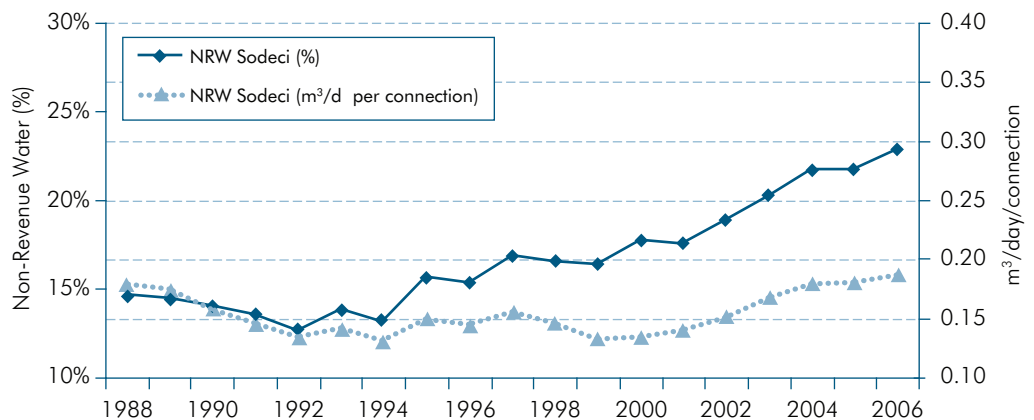
Figure 4: Côte d'Ivoire: Evolution of Population Served and Water Coverage Ratio



Sources: DE and SODECI.

has been able to keep its operations running properly despite a very difficult situation in the country.

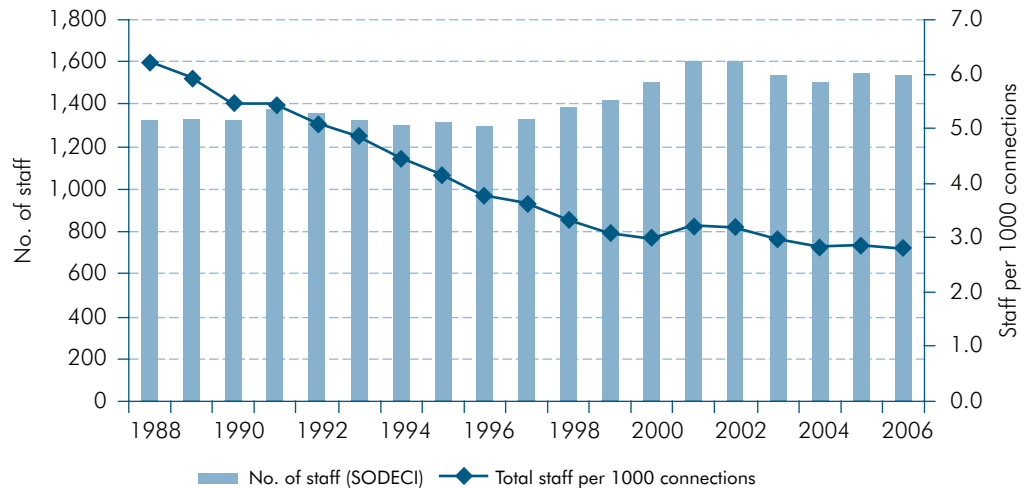
Figure 5: Côte d'Ivoire: Evolution of Non-Revenue Water



Sources: DE and SODECI.

Labor productivity. Staff productivity has more than doubled over the contract period (Figure 6). This was achieved without major staff layoffs, after the dismissal of around 300 employees who had been dedicated to rural services (as noted above, this responsibility was transferred to village users' associations as part of the 1987 renegotiation). The number of staff has increased from 1,320 in 1998 to 1,540 in 2006.

Figure 6: Côte d'Ivoire: Evolution of Staffing and Labor Productivity



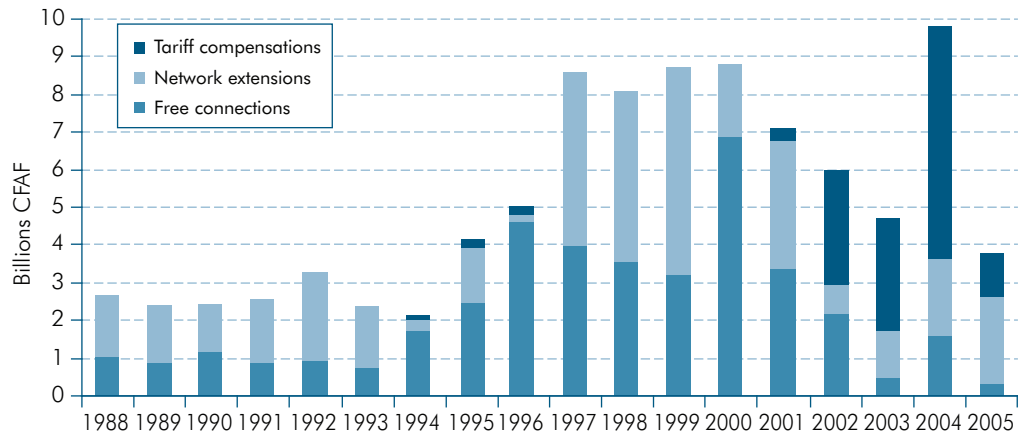
Sources: DE and SODECI.

Financial sustainability. After 1988, the sector quickly emerged from the quasi-bankruptcy that had marked the end of the previous institutional setting. The new financing strategy proved that a long period of expanding access to piped water could be sustained almost without external support. Until 2001 most of the investment (from the FDE) went into the social connection program and network extension. However, since 2001 a growing portion of FDE funds has been used to compensate the private operator for losses sustained as a result of the civil unrest situation (Figure 7). The expansion of the system now seems to have reached its maximum, based on existing production capacity, so that the sector will again require substantial investments in production capacity and renewal of production facilities. These will probably call for external financing. The sector has enough financial credibility to attract such support based on its current flow of billing revenues, but the long period of civil unrest has prevented this support from materializing thus far.

Public arrears. The payment performance of public customers has remained problematic and has been closely linked to the country's macroeconomic performance. The settlement of cross-debts at the beginning of the contract brought temporary relief, but the liquidity problems of the Treasury before the 1994 devaluation sent public arrears up again to record levels (Figure 8). The situation improved markedly afterwards, when for the first time in many years the share of public customers in total water consumption decreased (from more than 25 percent in 1988 to less than 18 percent in 1998). Public arrears started to build up again afterwards but the agreement to resort to the FDE to fund those arrears solved the liquidity issue. External grants from the European Union also provided budgetary support to offset the losses in rebel areas and maintain water services there.

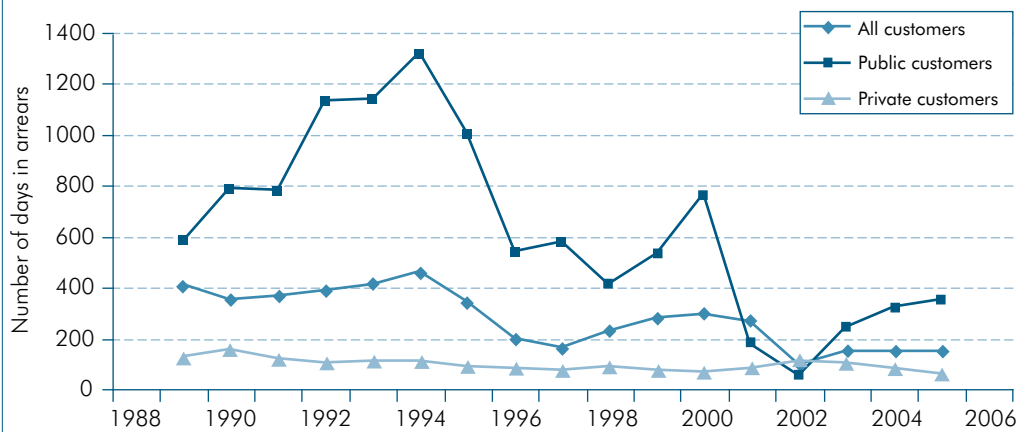
As revamped in 1988, Côte d'Ivoire's social connections program provided connections free of charge to qualifying urban households. Though the reform of the tariff structure in the same year substantially reduced the water tariff in the "social" band, the reduction mostly benefited medium-income households, because at that time few if any poor ones had connections. The redesign of the social connections program was a true success; the program reflected the government's willingness to: (i) develop direct access to piped water; and (ii) mitigate the negative

Figure 7: Côte d'Ivoire: Breakdown of FDE Capital Expenditures



Sources: DE and SODECI.

Figure 8: Côte d'Ivoire: Evolution of Bill Collection Efficiency



Sources: DE and SODECI.

impact of the banded tariff structure on the many households that shared a service connection.⁶ Eligibility criteria for the program were quite broad (connection diameter of 15 mm, and no more than four water points in the lodging unit). Qualifying households could obtain a connection free of charge against the payment of a refundable deposit equivalent to US\$35. Before the reform, beneficiaries of the social connection program had had to pay a quarterly fee of about US\$1. The number of social connections built annually increased from 10,000 in 1988 to more than 35,000 in 1998 (the last year without political unrest). In 2002, the Water Directorate instructed SODECI

⁶ The banded tariff structure provides a low tariff for domestic consumption below five m³ per month; for a household of six this represents a consumption of about 30 lpcd; most households that had benefited from a social connection limit their consumption to this level. If the connection is shared by several households (courtyard connection), consumption above the initial five m³ per month is billed at the regular customer tariff.

to restrict the program to owner-occupied compounds, which quickly brought down the rate of new connections to about 5,000 per year in 2003–06.

Even with free connections, the program could not solve all the programs of access to safe water for poor households. The social connection program was very successful but it also found that many poor households were not truly interested in a household connection, because they did not have sufficiently regular incomes to make the payments required by SODECI's quarterly billing cycle. Adjustments were made to facilitate payments and reduce fixed charges in the course of the program, but by 2002 the disconnection rate had reached about 15 percent (reflecting customers' moves, as well as cutoffs for nonpayment) and ultimately as many as 70,000 of the social connections had their subscriptions canceled. The overall result of the social connection program largely justifies it, but it is clear that reaching poorer strata of the urban population requires urban policy measures that cannot be fulfilled by the WSS sector alone.⁷

Next steps and perspectives. Côte d'Ivoire's PPP has been remarkably resilient in the face of a difficult situation in the country. The WSS sector is now facing new challenges, particularly the revamping of the water production facilities and also the expansion of the urban sanitation services, and these will require probably revisiting the financing strategy with some injection of public funds. It is likely that a renegotiation of the partnership contract will take place very soon, as SODECI is perceived as the obvious partner.

The Senegal Affirmage (since 1996): A Success Story Building on Lessons Learned

PPP is not a new concept in Senegal; until 1971, a private operator⁸ was in charge of water supply in urban centers under a concession contract with the government. Senegal designed its reforms after a careful review of the PPP experience in neighboring countries and in close partnership with donors. The reform has been successful in improving access, quality of service and efficiency of operations and in making the water supply sector self financing. Its experience offers much to learn for other countries struggling with the reform of their urban water sectors.

Establishment of national public utility, SONEES. When the private operator was nationalized in 1971, it was replaced by the state-owned enterprise *Société nationale d'Exploitation des Eaux du Sénégal* (SONEES), which became responsible for water supply and wastewater services in 49 urban centers, including the capital city Dakar.⁹ The respective responsibilities of the government and SONEES, in particular with regard to the financing and implementation of the capital expenditure program, were specified in a performance MoU signed in 1983, which also clarified the cost recovery strategy and committed the government and municipalities to pay their water bills on time.

A reasonably well performing public utility. In 1996, about 81 percent of the then-urban population of 3.5 million had access to piped water: 58 percent through 217,000 individual connections and 23 percent through 2,750 public standpipes. The remaining 19 percent relied on neighbors or vendors. With NRW of about 31 percent, and a staffing ratio of 5.7 employees per thousand water connections, SONEES was efficient by regional standards. But limited production capacity in Dakar resulted in intermittent supply: water was only available 16 hours per day, on

7 For example, Collignon et al. (1999) have shown that the major constraints on serving the urban poor are linked to the legal status of marginal urban neighborhoods (*quartiers précaires*) and that the solutions might be to develop neighbor re-sales and neighborhood small operators.

8 *Compagnie générale des Eaux du Sénégal* (CGES), part of the French group, *Compagnie générale des Eaux*, now Veolia.

9 In 1996, the urban population was about 3.5 million; by 2006 it had reached 4.6 million, of whom about 2.5 million were in the greater Dakar area.

average, and its bacteriological quality was thereby uncertain. At that time, Dakar relied mostly on coastal aquifers, which were at risk of being contaminated by sea water, but were much less expensive to operate than the *Lac de Guiers* surface water scheme that required treatment, pumping, and transport over a distance of 240 km. Farmers located along the long *Lac de Guiers* transmission line were using about 11 percent of the Dakar total water production for irrigation and were charged a very low tariff. The situation in the other urban centers was less problematic, but considerable investment was needed to meet future water demand.

A deteriorating financial situation. While the technical performance of SONEES was rather good, its financial situation was gradually becoming unsustainable. Water sales in Dakar were stagnating and tariffs were too low to cover O&M costs. Government agencies and municipalities, which together accounted for about 20 percent of the billing, seldom paid their bills.¹⁰ The situation was worsened by the 100 percent devaluation of the CFA franc that took place in 1994. The 30 percent tariff adjustment granted that year did not offset the increased weight of imported goods and debt service, and SONEES' operating deficit reached US\$2.5 million equivalent. Short of cash, SONEES started to delay payment of its electricity bills and debt service. Investment in the urban water sector came to a standstill, as traditional financiers disengaged.

Designing a reform that builds on regional experience. In 1994, the government engaged in a comprehensive reform aimed at improving the quality of service and achieving full cost recovery from user charges. A steering committee explored reform options after assessing sector weaknesses and reviewing the PPP experiences in neighboring Côte d'Ivoire, Guinea, and The Gambia. Several workshops helped to build a broad consensus on key issues and the best ways to address them. The committee proposed to: (i) replace SONEES with an autonomous public asset holding company (AHC) *Société nationale des Eaux du Sénégal* (SONES) that would play the role of owner of the fixed assets and be responsible developing the water supply infrastructure; (ii) subcontract the provision of the water service to a locally incorporated private operator that would be funded and managed by a professional water distributor under a ten-year *affermage* contract; and (iii) entrust wastewater operations to a new autonomous public agency, *Office national de l'Assainissement* (ONAS). The steering committee also recommended that the staff of these three bodies be recruited from among existing SONEES staff. Although Senegal's 1994 Labor Code allowed the private operator to lay off staff, no redundancy plan was contemplated. A detailed financial forecast, based on realistic capital expenditures, financing terms, efficiency gains, and tariff increases not exceeding an average of 3 percent per year in real terms, concluded that the urban water supply sector would be able to fully recover its O&M and capital costs from collected user charges by 2003.

An intensive communication campaign was directed towards customers and SONEES staff, and the proposed scheme attracted no major opposition. Four pre-qualified professional companies were invited early in 1995 to comment on a draft bidding document for the *affermage* contract, which was distributed later that year. Two of these four companies submitted responsive technical proposals and were allowed to submit financial bids. In October 1995, the *affermage* contract was awarded to a French operator,¹¹ whose bid for the operator tariff was only about 60 percent of the average customer tariff being charged by SONEES. The private operator *Sénégalaise des Eaux* (SDE) was incorporated late in 1995 with an initial capital of CFA 3 billion (US\$6.7 million equivalent) with the international operator holding 57.8 percent of the shares, local private investors 32.2 percent,¹² SDE staff 5 percent, and the government 5 percent. SDE mobilized in April 1996.

¹⁰ 96 percent of the amounts billed to private customers were collected.

¹¹ SAUR International.

¹² SDE's local shareholders are mostly Senegalese construction firms.

Contractual arrangement. Four different contracts clarify the roles and responsibilities of the various actors: (i) a 30-year concession contract granted by the government transfers accords SONES the full responsibility for providing the water service in its service area;¹³ (ii) a ten-year program MoU between the government and SONES outlines SONES' service coverage obligations and the government's commitment to make available financing to develop infrastructure and to allow tariff adjustments to meet SONES' agreed financial objectives; (iii) a ten-year *affermage* contract between the government, SONES, and SDE specifies the conditions under which SONES' assets are to be operated and maintained and the service to customers is to be provided by the SDE; and (iv) a ten-year performance contract between SONES and SDE complements the *affermage* contract and specifies SDE's performance targets, financial incentives, and responsibilities for rehabilitating water supply distribution networks.

Under the *affermage* contract SONES focuses mostly on infrastructure development and sector financial management. The design of this arrangement built on the Ivorian and Guinean experiences. It however addresses the shortcomings identified during the reviews of the PPP in those countries by introducing features that eventually proved to be a key to the success of Senegal's scheme:

- The performance contract attached to the *affermage* contract sets contractual performance targets to be achieved for specific parameters, in particular NRW and bill collection (Box 2).
- The operator is required to finance out of the cash generated from operations, and implement, a portion of the rehabilitation program, aimed at achieving the above performance targets.
- The customer tariff and its two components—the operator tariff and the payment to SONES—are set in reference to a financial model of SONES' operations.

Regulation by contract, using the sector financial model as the backbone of tariff resetting. The *affermage* contract and its associated performance contract regulate SDE's remuneration and performance. The backbone of the regulatory framework is a detailed financial model of SONES' operations, which was first developed during for selecting of the operator. It is now used to reset the customer tariff, the capital expenditure program (Capex) and its financing conditions and is regularly updated to reflect the evolution of its inputs. As SDE's remuneration resulted from a competitive process and the principles for resetting the customer tariff were agreed upon in the program MoU, an independent regulatory body was not perceived as being needed. However, a monitoring committee made up of representatives of the government, SONES, and SDE was established to oversee the implementation of the contractual arrangements and run the financial model in a "full partnership spirit."

A pragmatic regulatory framework that has worked well for ten years. Independent mediators, acceptable to all parties, have been employed when difficult issues have arisen, such as, for example, the need for resetting the NRW baseline initially specified in the bidding document in 1998.¹⁴ So far, this regulatory process has been implemented smoothly and all parties have executed their contractual obligations. The government has allowed timely tariff adjustment and caused timely payment of water bills by its agencies and municipalities. SONES has raised the financing needed to develop water supply infrastructure while gradually moving towards full cost recovery. SDE has significantly increased the efficiency of its operations and the

¹³ SONES service area includes 49 urban centers, including Dakar. Water supply in the large city of Touba is independently operated. Water supply operations in several small towns are still under public management.

¹⁴ The renegotiation resulted in financial compensation of about US\$9 million to SDE. NRW was estimated at 27 percent in the *affermage* contract when SDE took over operations in 1996; subsequent joint monitoring revealed that the real figure was 31.5 percent.

Box 2: Senegal: incorporating specific incentives for operational efficiency in an *affermage* contract

The Senegal *affermage* contract contains some elements of a concession contract, in the sense that it transfers to the operator the responsibility for financing and implementing part of the program for rehabilitating and extending distribution networks. Each year the operator is required to rehabilitate 17 km of pipe (equivalent diameter 100 mm ductile iron), replace 14,000 water meters and 6,000 water connections, and renew electromechanical equipment with a value below US\$25.00. This increases the chance of achieving the performance objectives set in the contract and in particular of halving water losses from 30 percent to 15 percent over a five-year period. SDE has successfully financed and implemented this investment program largely on the basis of cash generated from revenues.

The Senegal *affermage* contract departs from a traditional *affermage* scheme. Instead of being remunerated directly on the operator tariff (volumetric operator's fee multiplied by the quantity of water billed and collected), the operator's remuneration is based on the quantity of water produced (not sold) corrected by predetermined annual targets for NRW and bill collection. If the operator does not achieve these targets, a penalty, equivalent to the difference between the actual rate and the target rate, applies. Since 1996, SDE has been able to reach the contractual collection rate of 98 percent, but it has been less successful in achieving the contractual 15 percent NRW ratio, although it's achieved rate of about 19 percent is still satisfactory by regional standards. SDE has paid the contractual penalty without arguing. The principle of performance-based payments has never been questioned by either party.

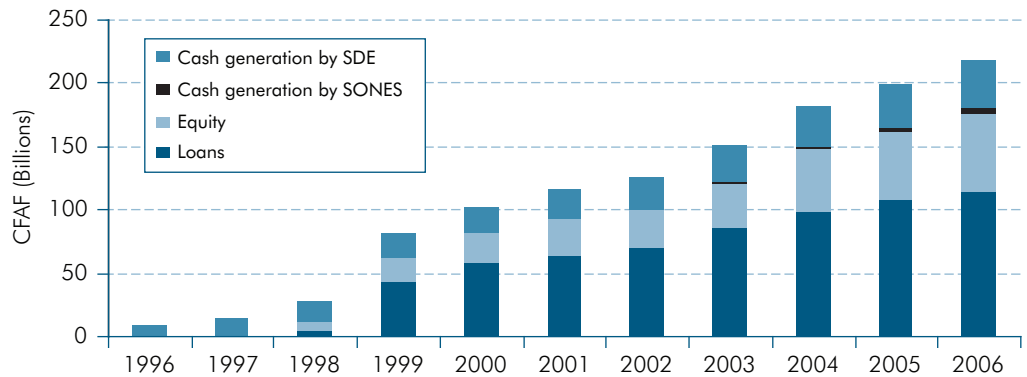
quality of its service to customers. A five-year extension of the *affermage* contract was successfully negotiated in 2006 by the government, SONES, and SDE under the auspices of the monitoring committee.

Capital investments to support the sector reform. The government's commitment to a credible reform attracted a positive response from traditional financiers of urban water in Senegal.¹⁵ In 1996, US\$290 million (of which US\$100 million was from the World Bank) was raised to support the development of the urban water and sanitation sector. In 2001, the successful implementation of the reform helped attract an additional US\$225 million for water and sanitation both from traditional donors (of which US\$125 million was from the World Bank) and from Senegalese commercial banks. Out of the US\$420 million invested in the urban water sector between 1996 and 2006, 81 percent or US\$340 million were provided by external financiers at an average interest rate of 3.5 percent and a repayment period of 20 years; the remainder was passed on to SONES as grants and/or equity by the government (Figure 9). World Bank and African Development Bank loans to the government have been on-lent to SONES, but other financing, totaling about US\$300 million, has been provided directly to SONES without a sovereign guarantee. SDE has contributed 17 percent of the Capex, or US\$72 million, from cash generated from operations; SONES has contributed about 2 percent.

Access. Between 1996 and 2006: (i) access to piped water in urban areas increased from around 80 percent to almost universal coverage; (ii) the household connection ratio increased from 58 percent to 76 percent and is now the highest in sub-Saharan Africa (excluding South Africa and Namibia); (iii) the number of billed domestic accounts increased from 217,000 to 375,000 (out

¹⁵ World Bank, Agence française de Développement (AFD), Germany (KfW), European Investment Bank, Banque Ouest Africaine de Développement, Nordic Development Fund, African Development Bank, Banque Arabe pour le Développement économique en Afrique.

Figure 9: Senegal: Capital Expenditure Financing Plan

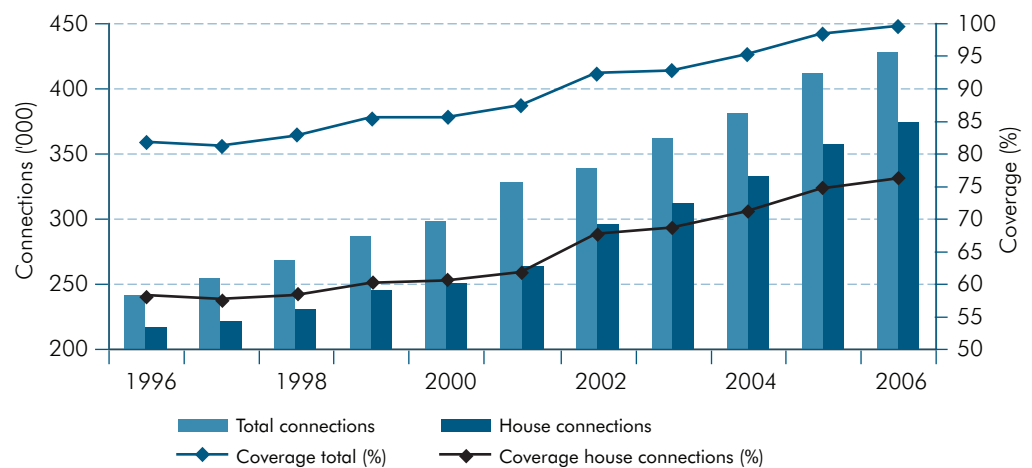


Source: SONES (cumulative figures).

of 241,000 and 428,000 total accounts respectively); (iv) 129,000 connections, or 75 percent of the total 172,000¹⁶ new connections built, have been installed as part of the social connection program (Figure 10, Figure 11 and Box 3). Senegal now enjoys the highest rate of access to piped water in urban areas of all Sub-Saharan Africa.

Population served. An estimated 1.7 million people have gained access in urban areas to piped water since the PPP started in 1996 (Figure 12). This is an increase of more than 50 percent over

Figure 10: Senegal: Trends in Coverage and Connection Ratios

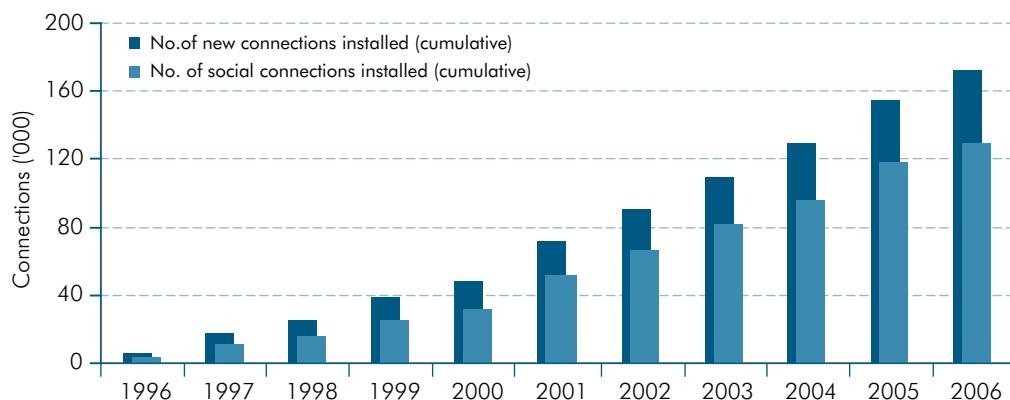


Sources: SONES, SDE, and authors' estimates.

Note: To estimate the connection and coverage ratios, an average of ten people per connection and 300 people per public water point have been used.

¹⁶ Between 1996 and 2006 the number of new connections built increased by 172,000 while the number of accounts increased by 187,000 (from 241,000 to 428,000); the difference corresponds to accounts that been regularized.

Figure 11: Senegal: Evolution of Number of Connections

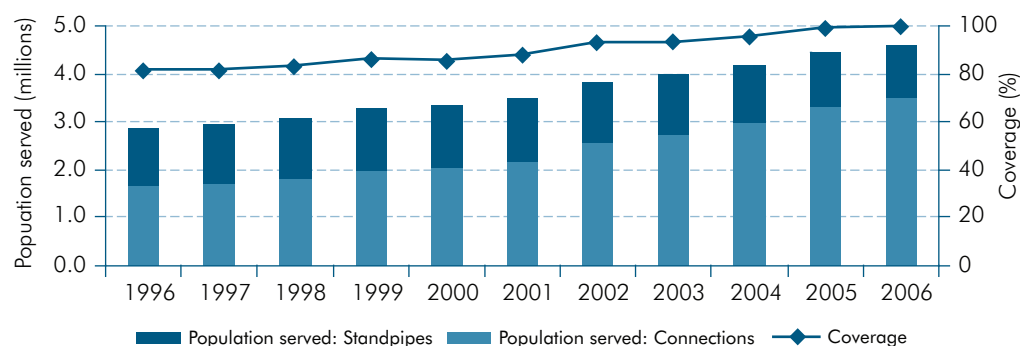


Sources: SONES and SDE.

Box 3: Senegal: Providing Subsidized Access to Piped Water

Senegal decided to replicate Côte d'Ivoire experience where it was demonstrated that providing low-cost connections was critical for extending direct access to piped water by low-income families. Under the Social Connection Program, financed by the World Bank, and repaid through the customer tariff, qualifying households can obtain a connection free of charge against the payment of a refundable deposit equivalent to US\$40, or less than 30 percent of the previous charge of about US\$15. SONES processes connection requests on a first-come first-served basis, but areas planned for network densification get priority. The only criterion used for assessing eligibility is the geographical location. Customers located in Dakar's low-income neighborhoods and all customers located in secondary urban centers are eligible for a social connection. Connections are built by SDE using agreed unit prices. Between 1996 and 2006, the program has financed the construction of about 130,000 residential connections. A similar program has been developed for sewerage connections by ONAS; more than 30,000 such connections have been built to date.

Figure 12: Senegal: Evolution of Population Served and Water Coverage



Sources: SONES and SDE.

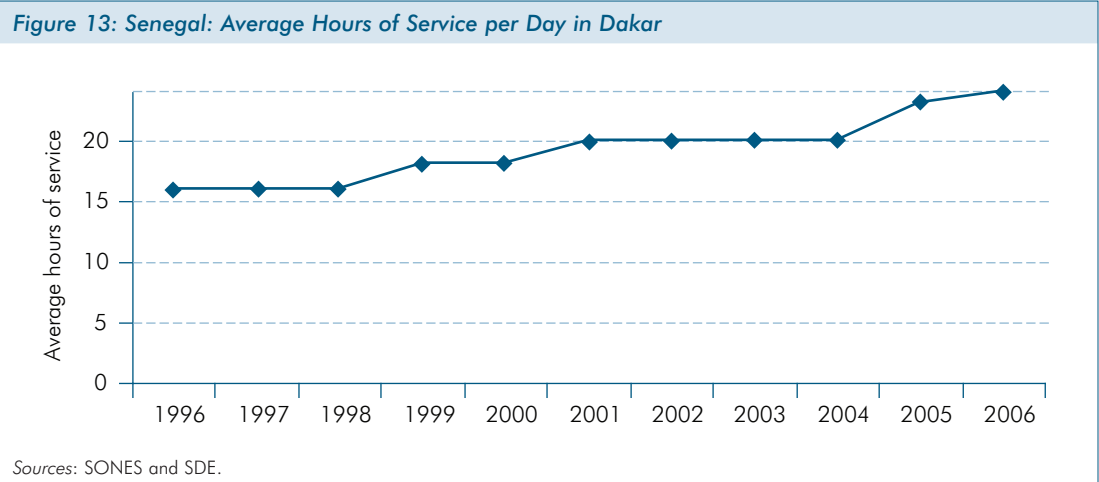
the former customer base. Most of the gains were achieved because of the social connection program and benefitted poor households.

Reliability of the water service has improved with the PPP. Though in 1996 the water service was intermittent in Dakar and several other towns, water is now available on a 24/7 basis in all urban centers of SONES' service area (Figure 13), as a result of a 31 percent increase in production capacity and the implementation of NRW reduction programs. Because the customer tariff reflects the actual cost of service provision and because SDE applies strict commercial procedures, customers have adjusted their level of consumption to reduce waste. Average consumption is now 62 lpcd nationwide and 75 lpcd in Dakar. More than 98 percent of water samples meet water quality standards.

Significant reduction in water losses, but contractual target still not achieved. Between 1996 and 2006, NRW decreased from 31.5 percent to 19 percent, a significant reduction, and a level that compares well with efficient water utilities in Western Europe and North America. Yet, the contractual target of 15 percent after five years of operation has not been achieved. SDE has probably made the calculation, that paying the contractual penalty was less expensive than investing to reduce NRW by an additional four percentage points. The reason why the contractual target was set at 15 percent in SDE's performance contract is not clear. It seems in retrospect that it would have made more sense to set the target for water losses not based on a percentage of production, but rather on the volume lost per connection or km of distribution pipes, which would have better reflected the significant modifications that occurred on the network during that period.¹⁷ When measured with these two indicators, NRW has decreased in ten years from 42 m³/day/connection to 18 m³/day/connection (67 percent), and from 15.3 m³/day/km to 9.2 m³/day/km (40 percent).

Bill collection. When SDE took over, the collection of bills was already at 96 percent for all categories of customers. Since then, it has been improved marginally to 98 percent.

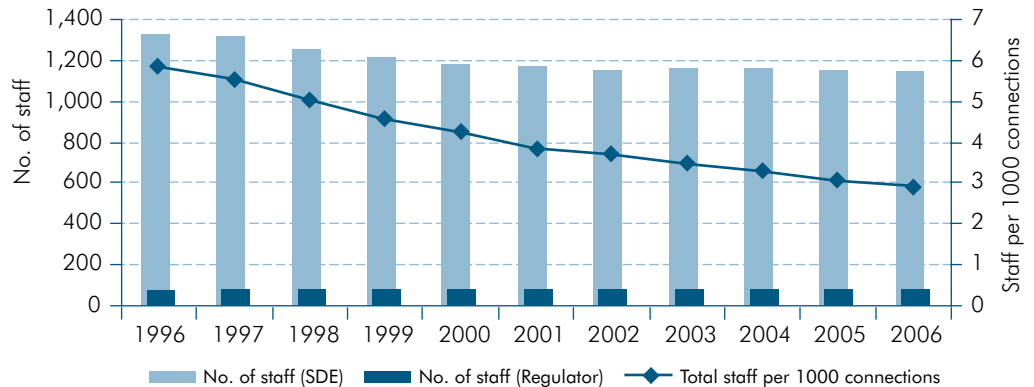
Labor productivity. Staff productivity has doubled, from 5.8 employees per thousand connections in 1996 to 2.8 in 2006 (Figure 14). This was achieved without a massive layoff, and the number



¹⁷ Physical losses are largely dependent on the number of connections (where, typically, 70 percent of the leaks are located) and the length of distribution pipes rather than to the volume of water injected in the distribution system.

of staff gradually decreased by less than 10 percent during the first four years of the contract. By 2006 all SDE managers were Senegalese nationals, with only three expatriates.

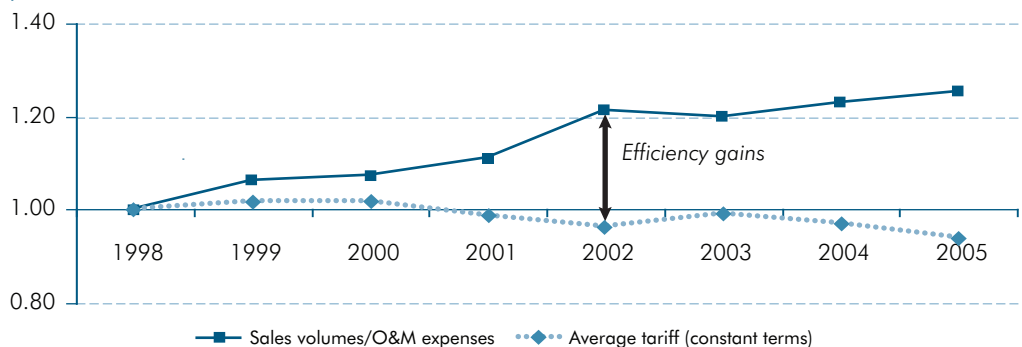
Figure 14: Senegal: Staffing Levels and Productivity



Sources: SONES and SDE.

Between 1998 and 2005, the total efficiency gain achieved by the PPP can be estimated at 32 percent. While the ratio of sales revenues (collected) to operating costs improved by 25 percent from 1.23 to 1.54, the average customer tariff (net of VAT) expressed in constant 1998 terms decreased by 6 percent.¹⁸ During the same period the operator tariff expressed in constant 1998 terms decreased by 12 percent. The efficiency gains that were achieved during that period are illustrated in Figure 15.

Figure 15: Senegal: Efficiency Gains Attributable to Private Operator

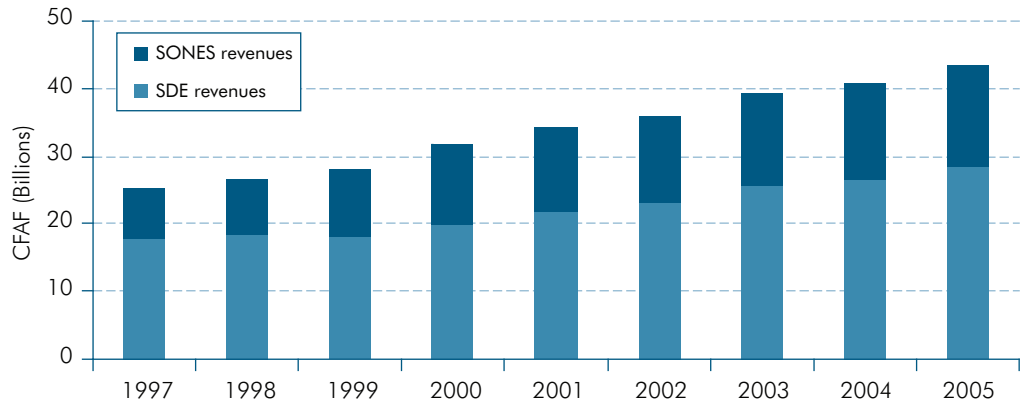


Sources: authors' calculations based on SONES and SDE data.

Increasing cash flows transferred to SONES. As a result of efficiency gains achieved by SDE, SONES's revenues gradually increased from 17.7 billion CFA (about US\$40 million) in 1997 to 28.5 billion CFA (more than US\$60 million) by 2005 (Figure 16).

¹⁸ The 1998 average tariff was CFAF 334 (US\$73) per m³; the average inflation rate is assumed to have been 3 percent per year.

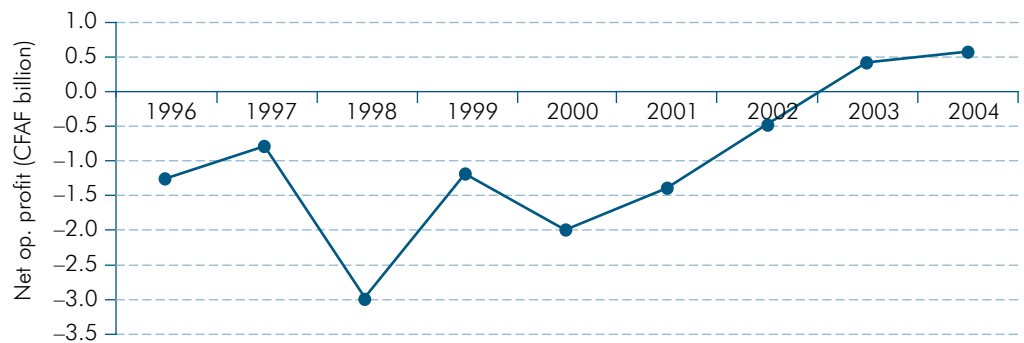
Figure 16: Senegal: Distribution of Revenues between Private Operator and Asset Holding Company



Source: SONES

Financial sustainability. By 2003, SONES was able to depreciate its fixed assets, cover its financing costs and to generate an average net profit of about US\$1 million per year, which it used to contribute, albeit modestly, to its Capex (Figure 17). By 2006, SONES' operations had become entirely self-financed.

Figure 17: Senegal: SONES Net Operating Profits



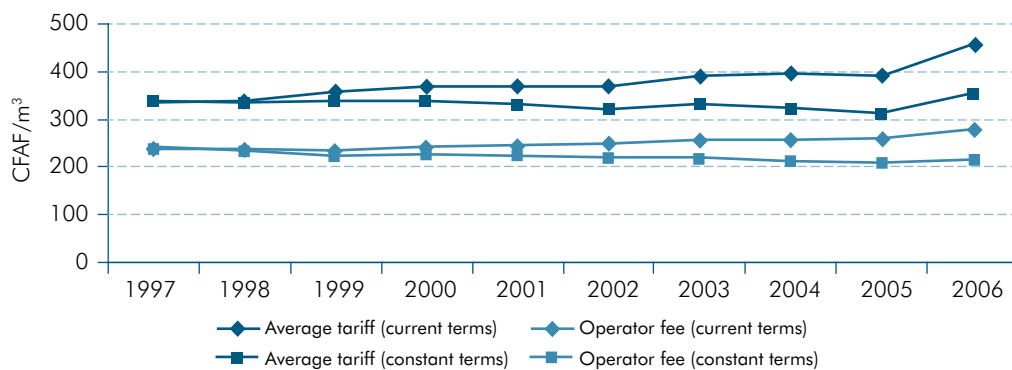
Source: SONES.

Affordability. Between 1997 and 2005 the average customer tariff decreased by 4 percent in constant 1997 terms (Figure 18) and the tariff that applies to residential customers consuming less than five m³ per month¹⁹ decreased by 12 percent.

Customer feedback: SONES and SDE have continuously monitored customer feedback and consulted consumer associations on issues such as the quality of service, tariff structure, and cross-subsidies. A recent investment climate assessment showed that 85 percent of Senegal's urban population is satisfied with the quality of water services—a rate well above the satisfaction rate for

¹⁹ 5 m³/month correspond to an average consumption of 16 lpcd for an average household of 1.

Figure 18: Senegal: Evolution of Customer Tariff and Operator Tariff



Sources: SONES and SDE.

electricity supply (still in public hands) and telecommunication services (privatized). SDE is now one of the most respected companies in Senegal, and in August 2001 it obtained an ISO 2001 quality certification that it has subsequently maintained.

The Niger Affermage (since 2001): A Partnership that Works in a Very Poor Country

With a per capita gross national income (GNI) of US\$230 equivalent, Niger is one of the poorest countries in the world. Nevertheless, during the last five years, it has met with some success in reforming its urban water supply sector based on a PPP that involves a reputable international operator, and initiated the gradual recovery of the O&M and capital costs of the water supply service from user charges. Niger’s partnership uses the *affermage* model that Senegal had adopted five years earlier.

A poorly performing sector and a failed MoU approach. Until 2001, Niger’s national public water utility *Société nationale de l’Eau* (SNE) was in charge of supplying water in 51 urban centers including Niamey, the capital city. SNE’s bylaw (*Cahier des Clauses et Conditions générales*) clarified the relationship between the government and SNE, while a short-term performance MoU defined SNE’s objectives and the government’s obligations. Unfortunately Niger’s experience typified the failure of the use of MoU to secure improvements: none of the public agents felt any need to comply with its contractual obligations. After 13 years of operation, none of SNE’s performance objectives had been achieved and none of the provisions of the MoU had been enforced. The government interfered in SNE’s day-to-day operations, SNE’s management team changed nine times between 1989 and 1998, no clear cost recovery policy was implemented, and government agencies (which represented about 25 percent of water sales) seldom paid their water bills.

Access rates and operating efficiency. In 2001, out of a total urban population of 1.9 million served by SNE (of which about 0.65 million were in Niamey) 64 percent had access to piped water through 58,300 connections (31 percent) and 2,500 standpipes (33 percent). This represented only about a quarter of the size of the systems in Senegal when the *affermage* was initiated there in 1996. The relatively low connection ratio reflected the limited development of

tertiary distribution pipes, lengthy administrative procedures, and connection fees (equivalent to about US\$240) that were beyond most families' reach. NRW at about 22 percent was reasonable by regional standards, but staffing at 8.3 employees per 1,000 connections was relatively high.

Low customer tariff by regional standards. Between 1987 and 2000, the government had approved only two tariff adjustments, of which one came soon after the 1994 100 percent devaluation of the CFA franc. At an average of CFA 200/m³ (US\$0.44/m³), Niger's tariff in 2001 was one of the lowest in the region and insufficient to cover SNE's O&M costs. The tariff structure needed to be adjusted to reflect actual consumption patterns and the assessed ability to pay of various categories of customers. SNE collected only 60 percent of the bills it issued and in 2000 its accounts receivable exceeded 18 months of billing. Government agencies had accumulated arrears of about US\$12 million, equivalent to 125 percent of SNE's annual revenues. SNE's financial management was weak and audits were regularly qualified for lack of complete information.

The 2001 reform. In 1999, a special government task force²⁰ was asked to initiate the privatization of twelve of Niger's state-owned enterprises, including SNE. The main objectives of the urban water supply sector reform were to reduce operating costs by increasing the efficiency of operations, introduce commercially oriented management, expand service coverage, and achieve financial autonomy over the medium term. After a consultation with stakeholders that took place in 1999, it was agreed to opt for an *affermage* arrangement similar to the one successfully implemented in Senegal. The government was to retain responsibility for defining policies, setting tariffs to achieve full cost recovery, and managing water resources. SNE was to be transformed into a publicly owned AHC, *Société de Patrimoine des Eaux du Niger* (SPEN), and to subcontract the provision of the service to a private professional operator, *Société d'Exploitation des Eaux du Niger* (SEEN). SPEN was created in August 2000 to take over asset ownership and infrastructure development, service the debt, monitor service quality, and develop public awareness on the objectives and expected outcomes of the sector reform. SPEN was given full autonomy for managing the sector as part of a ten-year concession granted by the government. Also, the government and SPEN entered into a renewable three-year performance MoU outlining SPEN's short-term service coverage objectives and investment obligations and the government's commitments to raise financing, approve tariff adjustments, and pay its water bills. A major departure from the Senegal model was the creation of a multi-sector regulatory agency (*Agence de Régulation Multisectorielle*—ARM) which was to oversee the contract.

An improved *affermage* contract. The *affermage* contract between the government, SPEN, and SEEN gave SEEN the exclusive right to provide water services in SPEN's service area for the ten-year period, in an arrangement largely inspired by that of Senegal. A ten-year performance contract between SPEN and SEEN complemented the *affermage* contract and set SEEN technical and commercial performance obligations, financial incentives or penalties, and responsibilities with regard to the rehabilitation of water systems. Below are some features specific to this PPP:

- *Rehabilitation and social connection programs:* because the timely rehabilitation of water distribution networks and connection of new customers directly affected SEEN's performance and revenues, SEEN was made responsible for financing, out of cash generated from operations, the replacement of 64 km of water distribution pipes in the initial five-year period

20 CCPP: *Cellule de Coordination du Programme de Privatisation*, under the Ministry of Privatization.

and for implementing the social connections and standpipes program financed by SPEN through donors' loans.²¹

- *Non-revenue water*: it was recognized during the design phase of the contract that the baseline NRW figure could not be accurately estimated. Since properly measuring the evolution of NRW was essential for calculating SEEN's remuneration, it was agreed that it would be established only after one year of operation, jointly with SPEN.
- *Government water bills*: to limit the risk of further accumulating arrears by the public agencies, the Treasury agreed to make automatic monthly payments of about US\$3 million to SEEN and to reconcile bills with advance payments once a year. The internal plumbing of government buildings was refurbished to limit water consumption. SEEN was allowed to disconnect financially autonomous public agencies whose water bills were in arrears.
- *Regulatory agency*: ARM was to oversee the implementation of the various contracts, including the performance MoU between the government and SPEN and the *affermage* contract between SPEN and SEEN.

A two-stage bidding process was launched in June 2000 for selecting the operator. Four companies submitted a technical bid but only two were allowed to submit a financial bid on the operator tariff. The process was completed in January 2001 with the selection of a French operator²² who offered the lowest operator tariff of CFA190/m³, or 96 percent of the average customer tariff then in force. SEEN was incorporated in March 2001 with initial capital of US\$2 million equivalent, owned 52 percent by the international operator, 34 percent by local private investors,²³ 9 percent by SEEN's staff, and 5 percent by the government. SEEN mobilized in June 2001. The reform and successful mobilization of a professional operator attracted a positive response from external financiers,²⁴ who agreed to contribute 85 percent of the cost of a US\$103 million Water Sector Project. Except for the above-mentioned limited rehabilitation of distribution networks financed and implemented by SEEN, all construction activities under this project were to be managed by SPEN as AHC.

Access. Between 2001 and 2006, access to piped water increased from 64 percent to 68 percent in SPEN's service area (Figure 19). The investment program in these first five years was focused on rehabilitating deteriorated systems. Though this increase might seem modest, Niger's population growth rate has been among the highest in the world, and during these five years the population in SNE's service area grew by about 20 percent from 1.9 million to more than 2.3 million. An additional 375,000 people gained access to piped water, mostly through individual connection for which Niger had a very low access rate even by regional standards. The proportion of people with direct access through a residential connection increased from 31 percent to 38 percent, as the number of residential connections increased by 55 percent from 58,300 to 90,200. About 12,000 of those connections were for poor households through a subsidized connection program. By 2006, average consumption was about 42 lpcd for the 51 centers and 50 lpcd for Niamey.

Reliability. Significant progress was made in reducing water rationing. The average number of hours of service has increased, going up in Niamey from 18 to 21 hours between 2001 and 2007. Water is now available on a continuous (24/7) basis in most urban centers and areas of Niamey, as a result of a 34 percent increase in the water production capacity and associated

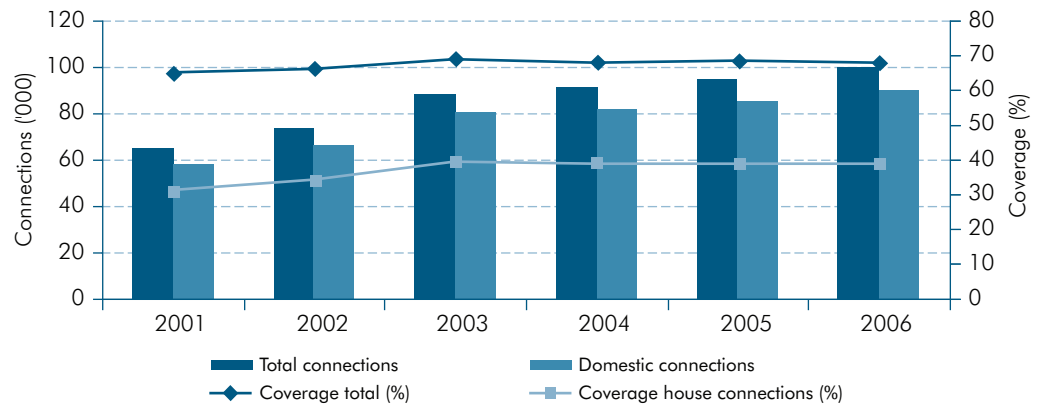
21 The cash generated from operations is the sole source of counterpart funds for the external financing of the rehabilitation and extension program that is implemented in parallel to the *affermage* contract.

22 Veolia.

23 SEEN's main local shareholder is the main local financial services group.

24 World Bank; Agence française de Développement (AFD); Banque Ouest Africaine de Développement (BOAD); China.

Figure 19: Niger: Trends in Coverage and Connection Ratios



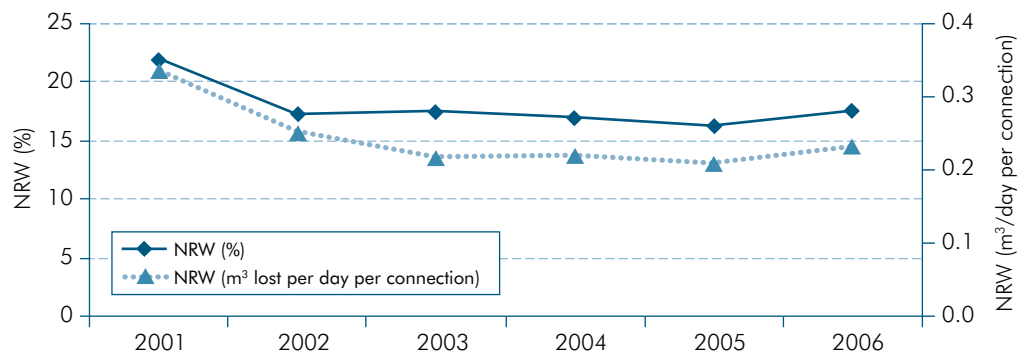
Sources: SPEN, SEEN, and authors' estimates.

Note: For benchmarking purposes, connection and coverage ratios are estimated on the basis of ten people served per connection and 300 people served per public water point—which are the ratios generally used for SSA. Improved access figures would have been closer to WHO estimates for Niger (80 percent coverage) if the number of people per family had been adjusted to reflect Niger's high fertility rate and growing rural exodus.

reduced losses. Water quality has improved notably, with 98 percent of samples now complying with bacteriological standards.

Water losses. NRW has declined from 22 percent to about 17 percent in five years or from 3 to 2 m³/day per connection (Figure 20), which compare favorably with international standards.

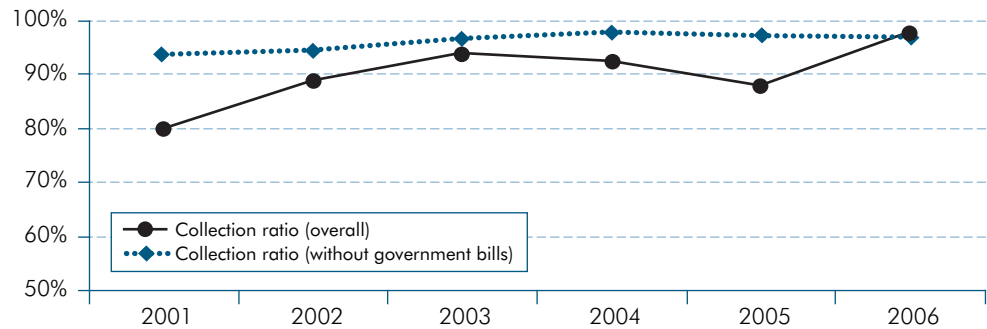
Figure 20: Niger: Evolution of Water Losses



Sources: SPEN and SEEN

Collection ratio. The bill collection ratio increased by 18 percentage points between 2001 and 2006, from 79.6 percent to 97.6 percent (Figure 21), largely due to the special effort made to reduce arrears from government agencies. By 2006 the collection rate from government agencies was about the same as from private customers.

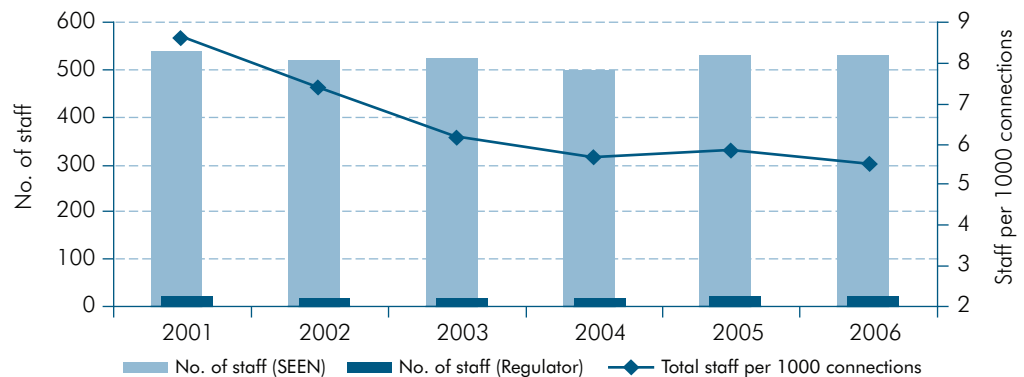
Figure 21: Niger: Evolution of Bill Collection Ratio



Sources: SPEN and SEEN

Labor productivity. Between 2001 and 2006, staff productivity improved from 8 to 5.2 staff per 1,000 connections (Figure 22), a performance achieved without any layoff program. SEEN staff remained stable at about 535, of whom only three are expatriates. When SEEN mobilized salaries were increased by 20 percent and SEEN employees now receive salaries higher than the standards for civil servants.

Figure 22: Niger: Evolution of SEEN Staffing and Labor Productivity



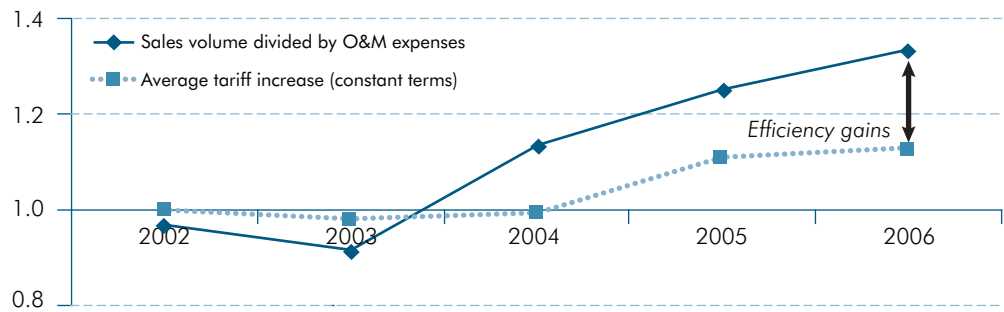
Sources: SPEN and SEEN

Operational efficiency. Between 2002 and 2006, the total efficiency gain under the PPP can be estimated at about 20 percent: the ratio of sales volumes (collected) to operating expenses improved by 33 percent from 8 to 1.2 while the customer tariff (expressed in 2002 constant terms) increased only by 13 percent (Figure 23).

Financial viability. As of 2006, only five years after the beginning of the reform, the sector was able to recover its O&M costs, service its debt and contribute to its Capex from the user charges, and no longer relied on government subsidies. SPEN revenues increased from US\$3 million in 2001 to US\$3.8 million in 2006; in 2006, SPEN generated a gross operating profit of US\$5 million.

Between 2001 and 2006, 15 percent of the Capex was financed from cash generated from operations (3 percent by SPEN and 12 percent by SEEN).

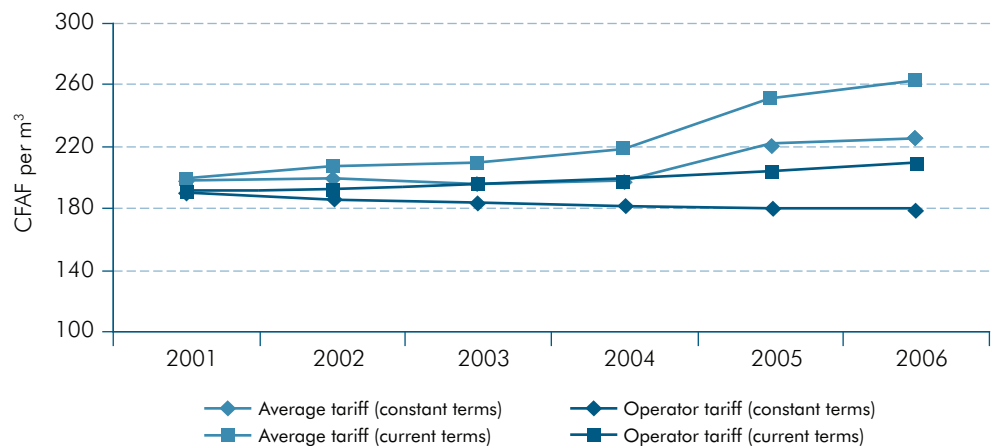
Figure 23: Niger: Efficiency Gains Attributable to Private Operator



Sources: SPEN and SEEN

Affordability. Between 2001 and 2006, 36 percent of the new residential connections were provided to low-income households through the social connection program financed by SPEN. During this period, the average tariff increased by 30 percent in current terms (Figure 24), but care was taken to soften the impact of this increase on low income customers, in particular during the customer tariff adjustment of 2005: the tariff that applies to consumption below 5m³/month increased only by 13 percent in current terms since the beginning of the PPP. By comparison, SEEN tariff increased only by 5 percent in current terms.

Figure 24: Niger: Evolution of Customer Tariff and Operator Tariff



Sources: SPEN and SEEN.

The PPP is still a fragile arrangement:

- **Government payment:** Despite the Treasury's monthly payments to SEEN to limit the growth of government agencies' arrears, total arrears had reached about US\$3.8 million equivalent at

the end of 2006. Arrears were cleared in March 2007 to meet a condition attached to a World Bank financing, but poor payment by government agencies is likely to remain a recurrent issue.

- *Regulation*: The creation of the regulator ARM was initially considered a breakthrough in a region where PPP had hitherto been implemented without independent regulators. Since becoming operational in 2003, ARM, however, has attempted several times to micro-manage SEEN and some disputes, such as the role of SEEN's international partner in the implementation of the *affermage* contract had to be arbitrated by the Supreme Court. Even if ARM now seems to have a better understanding of the role of a regulator, it is unclear whether it has yet been able to contribute effectively as a credible independent party, for instance to help address the issues of government timely payments or the value added tax between SEEN and SPEN.

B. A Partnership in Early Phases of Implementation

The Ghana Management Contract (since 2006): 15 Years of Consensus Building

Ghana offers the only current example of a PPP for water in an English-speaking country in Western and Central Africa. Groups ideologically opposed to PPP for water supply have been more vocal in Ghana than in neighboring French-speaking countries and have succeeded in delaying a process aimed at improving the quality of service and efficiency of operations. The government backed away from replicating the *affermage* scheme that had been successfully implemented in Côte d'Ivoire and Senegal. Rather, in 2005 the government awarded a management contract that transfers less risk and responsibility to the private partner.

An inefficient public water utility, although access was good by regional standards. Like many regional public utilities, the national water utility Ghana Water and Sewerage Corporation (GWSC) faced growing difficulties in providing adequate piped water service to about 200 urban centers and large villages. The corporation suffered from poor operational efficiencies, evidenced by high staffing and NRW ratios. Inadequate tariffs and poor bill collection from customers impaired the financial situation and led to a reduction in sector investment. Nonetheless, the level of coverage offered by the public utility was good by regional standards, with improved access standing at 88 percent in 2004. Access to piped water through an individual connection had significantly increased since 1990, up from 40 percent in 1990 to 64 percent by 2004 (according to WHO/UNICEF JMP data).

Strong opposition to PPPs delayed sector reform. PPP options for urban water supply and sewerage, with the main objectives of improving service and making GWSC a viable business, have been discussed in Ghana since the early 1990s. In 1995, a scheme was proposed that was similar to those successfully implemented in neighboring Côte d'Ivoire since the late 1950s, Guinea since the late 1980s, and Senegal since the mid-1990s. It would have included the split the operations of GWSC into two geographically separate operations,²⁵ to allow performance benchmarking, and the subcontracting of the provision of the service to two professional operators that would be selected after international competition with the framework of medium-term *affermage* contracts. The proposal came under attack by local and foreign groups who were ideologically opposed to private provision of water services. An unsolicited proposal from a private investor trying to directly negotiate a build, own, operate, and transfer (BOOT) agreement to increase water production capacity in Accra further complicated the situation. The

²⁵ Covering, respectively, 27 systems and 3.6 million people, and 73 systems and 4.0 million people.

proposed *affermage* scheme was put on hold pending clarifications on the BOOT and to give stakeholders more time to reach an agreement. In the meantime the independent multi-sector Public Utility Regulatory Commission (PURC) was created, GWSC was transformed into the Ghana Water Company Limited (GWCL) with service responsibility for 80 urban centers only, and the responsibility for water supply operations in smaller centers and wastewater operations was transferred to local governments. As the reform of the water supply service stalled, traditional donors to the sector put most of their activities on hold.

Intensive stakeholder consultation. A Questions and Answers note was prepared in 2003 to address key stakeholders' main concerns and clarify the objectives of a proposed Water Sector Restructuring Project to be supported by the World Bank (to increase operational efficiency through a PPP and attract donor financing for a large rehabilitation program). After a consensus was reached with most local stakeholders on the need to involve the private sector, the government and GWCL prepared a Contract Framework Paper to seek feedback from international water operators and agree on main contract clauses. The option that was selected involved a lower level of transfer of responsibilities than under the previously-envisaged *affermage* contract. A five-year management contract would be awarded competitively for operating the water service in 80 cities, with agreed targets for water quality, NRW, and collection. Management fees would be mostly financed from a World Bank credit, and bonuses and penalties would apply depending on the performance of the private operator. The World Bank would in parallel finance a large rehabilitation/extension program to be implemented mainly by GWCL (with a small part implemented by the operator), as well as a sizeable voluntary retirement program for excess staff. The parties agreed that the management contract could evolve into an *affermage* contract after five years, with the operator being entirely remunerated from user charges collected thereafter, but that the incumbent operator would then be required to compete in an open tender.

New players in PPP contracts. A joint venture of two publicly owned water operators from South Africa and the Netherlands²⁶ was selected after open competition on the lowest management fee, winning against a French private operator. These two water companies are newcomers in the field of delegated management of water services outside their home countries. Perhaps the combination of a management contract and a guaranteed external source of financing for the management fees helped to attract interest from these public operators willing to export their know-how without having to take much of the risk associated with providing water services. Since the operator mobilized only at the beginning of 2006, it is too early to assess the performance or impact of this management contract.

C. A Partnership with mixed results that was Not Renewed

The Guinea *Affermage* (1989–2000): The First Public-Private Partnership Supported by the World Bank

Guinea's was the first PPP supported by the World Bank. The process started in the mid-1980s and the *affermage* contract²⁷ was signed in 1989. Guinea's ambitious objective of recovering the

²⁶ Rand Water of South Africa and Vitens of the Netherlands. Although publicly owned, the operating consortium must be regarded as a "private" operator since it is operating outside its own jurisdiction and country, and is regarded as a purely private agent in Ghana.

²⁷ As already mentioned, when the Guinea PPP scheme was designed the French words *affermage* and *redevance* were translated by "lease contract" and "rental fee," creating some confusion on the nature of the contractual arrangement. The Guinea PPP was a true *affermage* based on a sharing of collected user charges and not a lease based on the payment of a fixed rental fee.

full cost of water from user charges was achieved, but despite initial progress in extending access to new customers the contract ran into problems and the quality of service did not improve as initially envisaged. After twelve years of implementation, no agreement could be reached on a PPP that could have corrected the shortcomings of the original design.

A bankrupt water service. In the early 1980s, the water service provided by *Entreprise nationale de Distribution des Eaux de Guinée* (DEG) in Conakry (a city of about one million people) and nine secondary centers (with a combined population of 380,000) was very poor. Technical assistance provided by two professional operators²⁸ under the Conakry Water Supply and Sanitation project supported by the World Bank between 1978 and 1985 proved to be largely a waste of money. Water was distributed intermittently, its bacteriological quality was poor, physical leaks were pervasive, the number of illegal connections was high, commercial and accounting procedures were nonexistent, the staff was demoralized, and DEG relied entirely on government subsidies to survive.

The government approached the World Bank for help in establishing a water PPP. The government approached the World Bank as early as 1983 to investigate options for involving the private sector in supplying water. After the change of political regime in 1984 and the replacement of the overvalued local currency by a floating Guinean franc, the World Bank noted that Guinea's water sector, despite many weaknesses, offered favorable conditions for a PPP on a pilot basis. The government was committed to reforming urban water supply using this approach, and international water operators were eager to experiment with what could become a growing business for them in developing countries. Other donors expressed willingness to finance infrastructure extension if a credible arrangement could be put in place to improve the performance of the service.

Splitting ownership of assets and provision of service. After a long consensus building process among stakeholders, it was agreed to reorganize the institutional framework as follows:

- DEG would be transformed into a public AHC, *Société nationale des Eaux de Guinée* (SONEG) that would own the water supply fixed assets and take responsibility for their development.
- SONEG would subcontract the operation of the water service to a locally incorporated private operator *Société d'Exploitation des Eaux de Guinée* (SEEG), owned and managed by international professional partners, within the framework of a ten-year *affermage* contract.
- SEEG would collect the customer tariff set by SONEG, retain an agreed share as the operator tariff and pay SONEG the difference between the customer and operator tariffs as the rental fee.
- The operator tariff would result from competitive tendering, and be set high enough to cover all O&M costs and other costs of the operator. It would be protected against inflation and renegotiated every four years on the basis of actual past performance and future performance targets.
- The customer tariff would be set to allow SONEG to service its long-term debt and contribute cash to its capital expenditure program from the rental fee.
- A performance memorandum of understanding (MoU) between the government and SONEG would commit the government to making financing available to SONEG for capital spending and a gradual move towards full cost recovery, to paying government agencies' water bills on time, and to allowing regular adjustments of the customer tariff.

²⁸ *Société lyonnaise des Eaux* (now Suez) of France and SONEDE of Tunisia.

Asset holding company and financial incentives. The above arrangement drew extensively on the Côte d'Ivoire model described above, but with some innovations, particularly on the "owner" side of the *affermage* contract:

- Establishing an AHC was a major departure from the Côte d'Ivoire scheme. Given the financial crisis that Côte d'Ivoire's urban water sector faced in the late 1980s, it was felt in Guinea that a financially autonomous AHC, one that would be required to issue financial statements in keeping with commercial practice, would pursue more cautious financing policies than would a simple ministerial department.
- The performance MoU was meant to ensure full ownership of the reform by both the government and SONEG.
- The PPP contract was modeled broadly after the standard French *affermage* contract. The parties believed that the financial incentives created by transferring the operational and commercial risks to SEEG and by setting the operator tariff for a four-year period would encourage the operator to maximize its profit by repairing physical leaks to limit its production costs, improving billing and collection to increase cash revenues, and training local managers to replace expensive expatriates. In Côte d'Ivoire, SODECI's excellent performance was achieved through similar incentive principles.

Transparent support to the customer tariff. It was estimated that to cover the full cost of water, the customer tariff should be set at about GF400/m³ (equivalent to US\$80/m³), much higher than the GF60/m³ that applied before the mobilization of SONEG and SEEG. It was agreed to implement a gradual move towards full cost recovery:

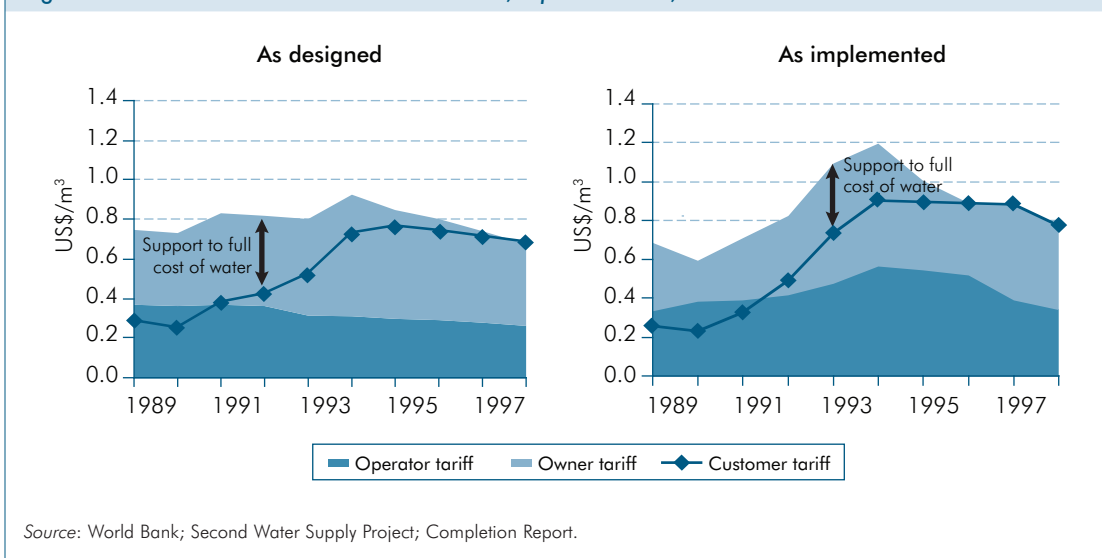
- *Initial customer tariff:* The customer tariff would immediately be raised to GF150/m³, a level sufficient to cover SEEG's operating expenses in local currency and make a limited cash contribution to SONEG's capital budget.
- *Support to the operator tariff:* The government would obtain funds (from the World Bank) to finance 100 percent of the foreign exchange component of the operator tariff²⁹ for four years, and a gradually decreasing share of these costs for six years, so that after ten years the operator tariff would be fully covered by collections from customers. This support was to be paid on the basis of the actual collection of water bills by SEEG, so that the operator would obtain the operator tariff indicated in its bid for each cubic meter of water billed and collected. This can be thought of as a first example of output-based assistance financing.
- *Support to the rental fee:* The government would service 100 percent of SONEG's debt for two years and then gradually decrease its support so that the debt would become fully serviced by SONEG after six years.
- *Regular customer tariff increases:* The government would agree, in the performance MoU, to approve customer tariff increases to make up for its decreasing financial support.

The two parts of Figure 25 show how this cost sharing arrangement was designed and how it was implemented. Full cost recovery from the customer tariff after ten years was an ambitious objective, but it was achieved faster than initially expected.

Mobilization of the operator. An open bidding was organized among pre-qualified international companies, based on the lowest operator tariff. Two bids were received from joint ventures of

29 To cover the cost of expatriate staff, technical assistance from the international shareholders, and imports of chemicals and spare parts.

Figure 25: Guinea: Evolution of Customer Tariff, Operator Tariff, and Owner Tariff



French companies.³⁰ The winning bid, at GF195/m³ (US\$39/m³), of which 56 percent would be in foreign exchange, was about 30 percent below the consultant’s estimates and 15 percent below the other bid. SONEG and SEEG mobilized in mid-1989. SONEG was fully owned by the government; 51 percent of SEEG’s initial capital of US\$3.0 million was held by the two international operators and 49 percent by the government, as the local private sector was found not to be in a position to invest. A management contract valued at 2 percent of SEEG’s revenue was agreed between SEEG and its international professional shareholders.

A few early successes. The above reforms attracted significant donor financing for increasing water production capacity for Conakry, including the doubling of the *Grandes Chutes* 80 km transmission line. Between 1989 and 1996, about 385 km of distribution pipes and 11,200 new connections were built, respectively 25 percent more and 25 percent less than had been envisaged.³¹ During the first three years of operation, when SEEG was managed by an experienced utility team, operating procedures were drafted, a commercial system was installed, and SEEG staff was intensively trained. Between 1989 and 1996, billed connections more than doubled, from about 10,200 to about 23,500³² (a figure that includes about 2,000 regularized existing connections), and the coverage ratio increased from 40 percent to 67 percent, resulting in an estimated additional 0.6 million people accessing piped water. The reform achieved a continuous (24/7) supply of water in Conakry, with much improved bacteriological quality. Customer satisfaction was high, as evidenced by surveys carried out in 1997 by the independent Organization for Consumer Protection. The metering ratio reached 100 percent in 1996, and between 1989 and 1996 staff productivity almost doubled from 30 to 14 staff/1,000 connections.

But low efficiency gains threatened the financial objective of the reform. The reform was less successful in improving key performance indicators such as NRW and bill collection ratios.

30 The lower bid was submitted by a joint venture of SAUR and *Compagnie générale des Eaux* of France (now Veolia); the other bid was submitted by a joint venture of *Société lyonnaise des Eaux* (now Suez) and SOGEA of France.
 31 The ratio of 30 connections per km of distribution pipe is consistent with densities in similar African cities.
 32 Short of the 28,500 initially targeted, however.

One main cause was that the financial incentives built into the SEEG *affermage* contract proved insufficient and failed to work as anticipated:

- *Non-revenue water*: between 1989 and 1996, NRW remained high, at slightly below 50 percent.³³ Although the *affermage* contract mandated SEEG to maintain (and thus fix the leaks in) small diameter pipes and individual connections, where a large proportion of the physical leaks are typically located, undertaking such task at its own expense made little economic sense for SEEG within the context of a ten-year *affermage* contract since large quantities of water at low production costs were available.³⁴
- *Collection ratio*: SEEG's collection performance was also unimpressive: between 1989 and 1996, it remained at an average of about 68 percent of the amounts owed. Unusually, collection from public agencies, at 80 percent, was higher than the average, while the collection from private customers stood at only 60 percent, in particular because the National Assembly rejected legislation that was designed to facilitate cut-off in case of non-payment of water bills.
- *Staff costs*: SEEG experienced difficulties in shifting its management from expatriates to local staff, a move that had been key to SODECI's success in Côte d'Ivoire. Part of the difficulty stemmed from the detrimental role played by the minority shareholder (the government) whose representatives tended to interfere in human resource management decisions.
- *Mixing operational and construction activities*: SEEG's poor performance in improving operating efficiency is partly explained by the fact that, after a few years of operation, its senior management came to focus more on construction than on operations, contrary to the spirit and terms of the *affermage* contract, which limited SEEG's construction activities to individual connections and the replacement of leaky pipes. SEEG, somewhat frustrated by SONEG's slow rehabilitation and extension of the Conakry distribution network, arranged bilateral financing for construction contracts to be awarded on a sole-source basis to itself. This arrangement resulted in a more efficient implementation of investment in water distribution but it also led to the neglect of O&M and commercial activities.

Weak regulatory environment. The contractual renegotiations of the operator tariff (the first of which took place in 1993) were carried out in a way that merely transferred operational inefficiencies to the customer tariff, instead of putting pressure on the private operator to improve. The renegotiations also missed the chance to address the shortcomings of the design of the contract, in particular by setting contractual NRW and collection objectives to be achieved during the coming four-year period.³⁵

High customer tariff and slow development of the piped water service. In 1996, after the support to the tariff had been discontinued, the customer tariff had risen to US\$90/m³ equivalent, a fairly high level by regional standards. Meanwhile, the customer base was not expanding as anticipated. SONEG had opted to delay creation of a financing mechanism for social connections until commercial operations and production capacity had improved, but it did not change its connection policy once these conditions had been broadly met. The high connection charge proved an impediment to increasing the coverage ratio. It meant that most of the population could not legally benefit from direct access to piped water and created an incentive for families to build illegal connections.

33 Initial NRW figures are merely a guesstimate in the absence of bulk and individual metering.

34 Also, SONEG's rehabilitation of the secondary and tertiary distribution networks suffered from initial delays.

35 Data provided by SEEG on its operations were not always available to support balanced negotiations.

Failed negotiations for an extension of the affermage. Financing for a Third Water Supply and Sanitation Project was approved by the World Bank in 1997 despite concerns over the lack of improvement in operational performance. SONEG and SEEG began negotiating an extension of the *affermage* contract in mid-1998. The draft new contract proposed by SEEG addressed most of the shortcomings identified above: (i) the minimum 20 m³/month billing basis was to be replaced by billing on actual consumption, so as to reduce the water bills of small customers; (ii) the cost of new connections was to be heavily subsidized by a connection fund and billed as a minimum fee; (iii) a development fund, to be managed by SEEG, was to finance the construction of 1,500 km of tertiary distribution pipes to serve an additional 100,000 connections; and (iv) SEEG was to enter into a performance contract with SONEG to clarify its performance targets. Negotiations got stuck, however, on the automatic indexation to be applied to the operator tariff. After 30 months during which SEEG's contract was regularly extended, its international shareholders decided to leave and sold their shares to the government for a token early in 2001.

Back to square one. Soon afterwards, the government merged SONEG and SEEG into *Société des Eaux de Guinée* (SEG), a public water utility that remained without clear legal status until mid-2003. Despite delays in finding a sustainable solution to improve operations, the World Bank approved a supplemental financing for the Guinea Third Water Supply and Sanitation Project despite the absence of a credible operator. This project eventually added 240 km of distribution pipes and increased the number of active connections in the country to about 70,000. But, between 1999 and 2005 the quality of water supply service steadily declined. Intermittent supply was becoming the norm as it was before 1988, and resulted in major water rationing and growing water losses in Conakry. SEG's financial viability declined as the result of a freeze on the customer tariff between 1997 and 2005 at GF 940/m³ that did not translate into any improvement of the collection ratio. In 2005 SEG, whose debt to the Ministry of Finance had already been cancelled, was generating an operating deficit and was close to bankruptcy. SEG has not been able to cope with fast growing demand in recent years, and data from the WHO/UNICEF Joint Monitoring Program indicates that access to piped water through an individual connection actually went down when compared with the start of the PPP, going from 31 percent 1990 to 28 percent by 2004.

D. A Partnership with a Private Operator but without Formal Management Delegation

The Burkina Faso Service Contract (2001–07)

Burkina Faso has implemented a service contract focusing only on the commercial and financial activities of its corporatized public water utility, without management delegation to the private partner. Unlike the traditional technical assistance and twinning arrangements that failed so many times during the last 25 years in Western and Central Africa, this service contract is performance-based, meaning that a portion of the service contractor's revenue depends on the utility fulfilling its contractual objectives of service and efficiency improvement.

A water stressed situation. At the end of the 1990s, the state-owned utility *Office national de l'Eau et de l'Assainissement* (ONEA) was providing water supply and sanitation in 40 urban centers to about 65,000 customers, of whom 35,000 lived in the capital city Ouagadougou (1.2 million people). Water resources available to Ouagadougou were insufficient to meet demand and the service was intermittent during the dry season. A major project to improve water supply in the capital was proposed. It involved the construction of an earth dam, with a capacity of

65,000 m³ per day, at Ziga, 50 km away, plus the rehabilitation and extension of the distribution network. The total cost of this investment was estimated at about US\$200 million, equivalent to about ten times the revenues of ONEA.

The cost recovery challenge. To make the project financially viable, ONEA had to double its customer base in just six years and to substantially improve its performance. While potential donors to this large project recommended an *affermage* contract, similar to that implemented in Senegal, the government had misgivings about transferring management of its national water utility to a private operator. Instead it chose to use a performance-based service contract with a consortium, combining a professional water operator and a financial management specialist to focus on improving ONEA's commercial and financial operations. A two-stage bidding process was organized in 2000 and the contract was awarded in 2001 to a consortium led by Veolia³⁶ for an initial period of five years; it was later extended by 18 months until December 2007.

Main features of the service contract. The service contract required the contractor to: (i) provide "services" by seconding two full-time specialists to act as deputy managers of ONEA's commercial and financial departments³⁷ as well as providing short-term back office support, subject to ONEA's approval; and (ii) deliver about 25 well identified "products," at a fixed price for each and according to an agreed timetable. Products included setting up a new accounting system and corresponding operational financial modules, establishing ONEA's annual financial statements, and defining and implementing new commercial management procedures. The service contractor was paid a fixed monthly fee for "services" to which a bonus or a penalty applied depending upon ONEA's performance on specific parameters. One of the key performance indicators was the collection of bills from private customers. The bonus/penalty system was based on 5 percent of the sector revenues, corrected by annual bill collection target ratios that were set in the contract.

Independent audits. Each year independent experts audited the execution of the service contract to evaluate the progress made by the service contractor in delivering products and review the calculation of performance indicators and of the bonus/penalty. The auditors also monitored the execution of the program memorandum of understanding (MoU) that the government and ONEA agreed under the corporatization framework. This MoU clarified ONEA's commitments with regard to service improvement, and the government's commitments on tariff adjustment, availability of financing, and payment of public agencies' water bills.

Cost and financing. For a period of five years, the cost of the service contract was about US\$5.3 million, of which two thirds is for "services" and one third for "products." In addition, US\$3.5 million were made available under an Operating Investment Fund (OIF) that the service contractor used to procure computer equipment and water meters, and to finance a pilot connection program, training sessions, and various other activities subject to ONEA's previous approval. This feature allowed flexibility for the service contractor to look for opportunities to make early improvements. A US\$200 million investment program financed by eleven donors was carried out in parallel by ONEA. The financing for the service fees, products, and the OIF came from an IDA credit.

³⁶ The contract was awarded to the consortium of *Compagnie générale des Eaux* (now Veolia) with Mazard et Guérard (France); the other bid was submitted by Ondéo (now Suez) and Price Waterhouse Coopers (France).

³⁷ Although the contract gives these seconded staff "full operational responsibility for the concerned departments."

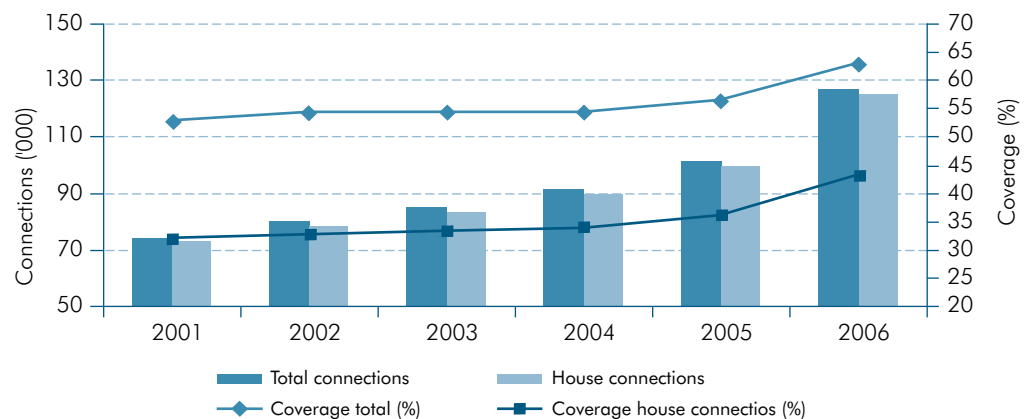
Achievements so far. The service contract can be credited for the following improvements in ONEA's commercial and financial management:

- ONEA's financial management capacity has been strengthened: financial procedures have been prepared and implemented, and quality certification has been applied for.
- ONEA's commercial software has been significantly improved,³⁸ and the productivity of the staff of the Commercial Department has risen four-fold in six years.
- Client satisfaction with commercial services has steadily increased.
- ONEA staff at all levels in the Commercial and Financial Departments have been trained.

The projects supported by donors and the service contract have helped ONEA to expand access and improve its operating efficiency and profits. Between 2001 and 2006:

- Access to piped water increased from 53 percent to 63 percent of the urban population in ONEA service area, providing an additional 600,000 people with access to clean water (Figure 26). Direct access through household connections improved from 32 percent to 43 percent, while the total number of connections increased by 70 percent, from 74,400 to 127,30.

Figure 26: Burkina Faso: Evolution of Coverage and Connection Ratios



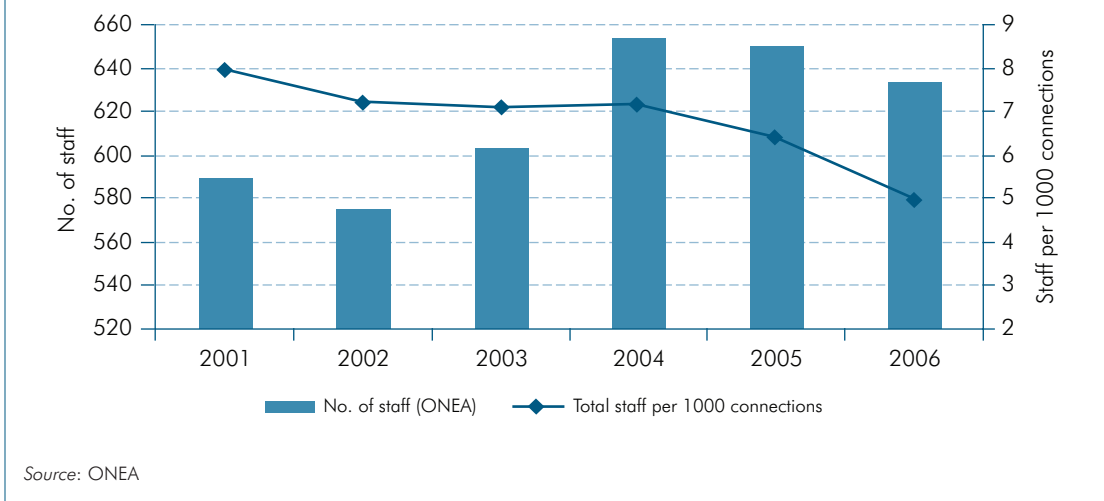
Sources: ONEA and authors' estimates.

Note: The coverage and connection ratios are estimated on the basis of ten people per connection and 300 people per public water point.

- Water became available on a continuous 24/7 basis in Ouagadougou and staff productivity improved by 60 percent, from seven to five staff per 1,000 connections (Figure 27). Water losses decreased from 5.5 m³/km/day to 4.8 m³/km/day in 2006 (Figure 28). While physical losses rose slightly in 2002, as a result of additional water from the Ziga dam and thus higher pressures in the distribution network, commercial losses fell significantly as a result of the actions taken under the service contract.

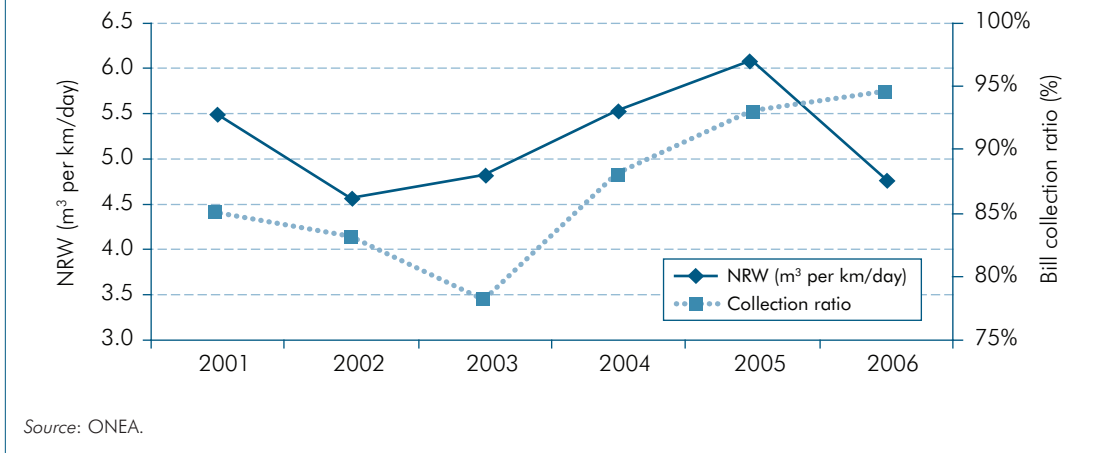
³⁸ The service contractor initially concluded that ONEA's commercial software was not secure or reliable enough for the agency to meet its contractual objectives, and recommended its replacement. ONEA eventually agreed with this proposal, but the new software has yet to be procured and installed.

Figure 27: Burkina Faso: Evolution of ONEA Staff Productivity



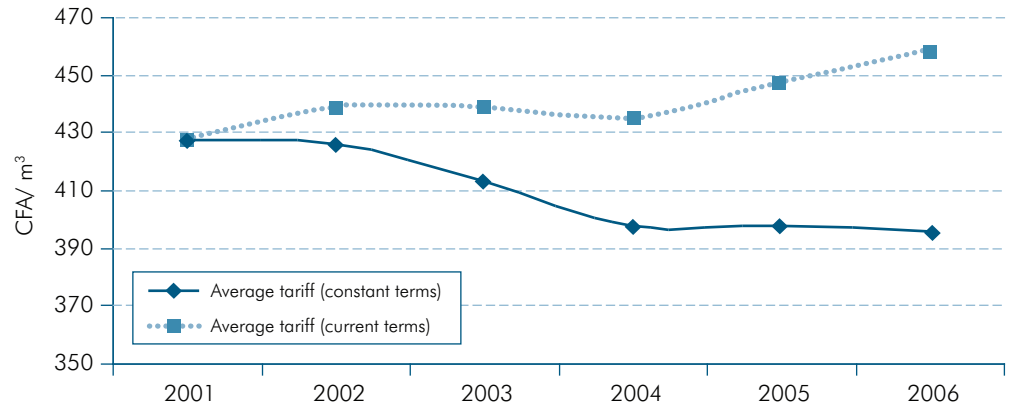
- Collection of bills from private customers—one of the main performance indicators in the service contract—increased from 85 percent to 94.5 percent (Figure 28), but the collection from central government agencies, about which the service contractor could do nothing, has not improved. Bills issued to central government agencies have eventually been paid, albeit after significant delays. Payment by local governments has been poor and is likely to remain so, as long as the coercive measures provided for in the performance MoU are not implemented.

Figure 28: Burkina Faso: Evolution of Water Losses and Bill Collection Efficiency



- ONEA has consistently turned a profit during the period 2001–06, with the net operating profit standing at around US\$2 million for 2006. The utility has been able to recover its O&M costs and depreciation from collected user charges and its cash situation improved from CFAF 3 billion (25 percent of sales) in 2001 to CFAF 6 billion (30 percent of sales) in 2006.
- During that period the average customer tariff in constant terms (excluding VAT) decreased by 7 percent (Figure 29), but, at around US\$80 per m³ on average, it remained high by the standards of neighboring countries because of the physical conditions and the still-limited customer base.

Figure 29: Burkina Faso: Evolution of the Customer Tariff



Source: ONEA.

Why has this service contract worked? Even though the service contractor did not in practice have much control over ONEA's activities, the fact that its remuneration partly depended on ONEA meeting certain performance improvement targets seemed to have allowed the service contract to work fairly well. The service contractor has effectively coached ONEA management (using a non-hierarchical manner) on what needed to be done to achieve improvements, and has avoided the conflict situations that have developed in some of the other PPPs in the region. After initial clarifications that the service contractor's personnel would act more as advisors than deputy directors, the two parties were able to develop a very cooperative atmosphere. More generally, the efficient public management of ONEA must be credited for this good performance. The service contract was completed by December 2007, and ONEA has continued to perform well.

PART 2

PUBLIC-PRIVATE PARTNERSHIPS IN COMBINED POWER AND WATER UTILITIES

A. Successful Partnerships

The Gabon Concession (since 1997): The First “True” Private Water Concession in Sub-Saharan Africa

Gabon offers one of the few examples of “true” private concessions of water supply services, combined with electricity services, in Sub-Saharan Africa. Gabon is a relatively small country by population size, with around 1.4 million inhabitants in 2007, of whom about 0.6 million live in the capital city Libreville. It is much richer than the other countries in the region, thanks to oil revenues, and has a GNI per capita of more than US\$4,000 per year. The 20-year concession, granted in 1997, has so far been fairly successful in extending service to new customers and improving the efficiency of operations, despite a recent conflict between the government and private operator over the financing of much needed additional capacity for power production.

A small operation. In the mid-1980s, Gabon’s national public electricity and water supply utility, *Société d’Exploitation des Eaux de Gabon* (SEEG) had about 60,000 electricity customers and 30,000 water customers located in 34 cities and towns. SEEG served 29 centers with water. Operations in Libreville represented 65 percent of electricity sales and 70 percent of water sales. The electricity and water services that SEEG provided were of acceptable quality, but between 1985 and 1992, the utility accumulated losses of CFAF 48 billion (US\$95 million)—almost equivalent to its annual turnover of around CFAF 50 billion (US\$100 million). SEEG’s financial situation was jeopardized by large arrears accumulated by government agencies; by 1992 these arrears had mounted to CFAF 32 billion (US\$64 million), making up the bulk of SEEG’s total accounts payable of CFAF 35 billion (US\$70 million). SEEG stopped investing in asset expansion in the mid-1980s, and between 1985 and 1992, its sales of electricity and water grew only by 9 percent and 1.6 percent per year. At the end of 1992, its coverage ratio was stagnating and SEEG was on the verge of bankruptcy.

First step: short-term management contract (1993–97). As part of a wide-ranging privatization program, the government decided to privatize SEEG to achieve four main objectives: (i) increase service coverage, which was low considering the per capita revenue of the country; (ii) improve service quality, which had started deteriorating; and (iii) limit the public financing directed to the sector while avoiding major tariff increases. In 1993, as a first step, the government awarded a four-year management contract to SOCAGI, a consortium of French and Canadian operators,³⁹ to help restore the public utility’s performance. At the same time the production, transport, and distribution of electric power and drinking water were declared “public services” to be administered by the Ministry of Mines and Energy and SEEG was granted a long-term “concession” with the exclusive right to deliver the services and develop the infrastructure within its service area. In parallel to this reform, SEEG’s losses were written off through an equity injection by the government and its public accounts receivable and payable were compensated.

Performance under the management contract. SEEG’s operational performance improved under the management contract. The staffing ratio fell from 23 to 15 employees per 1,000 connections, but the level of NRW was not reduced significantly. Because of limited investment

³⁹ The consortium includes *Electricité de France*, *Lyonnaise des Eaux* (now Suez) and Hydro-Québec International.

by the government, coverage and revenue stagnated. Nevertheless (and despite the 100 percent devaluation of the CFAF in 1994, whose effect on SEEG was somewhat mitigated by a 15 percent tariff increase), SEEG's operating margins rose from 22 percent to 37 percent between 1993 and 1996, and SEEG was even able to post a modest profit in 1996. This was even though SEEG was still having difficulty collecting its bills from government agencies (by 1996 these had reached the equivalent of 11.4 months of sales).

Second step in PPP reform: award of a long-term concession. The government decided to replace the management contract with a 20-year concession, which would, in fact, be the first combined water and electricity concession contract in Sub-Saharan Africa. The government contracted the International Finance Corporation (IFC) as transaction advisor for this innovative initiative, and called for bids in October 1996. Four companies were pre-qualified⁴⁰ and eventually a French operator⁴¹ was awarded the contract, against the incumbent consortium, on the basis of a decrease of 17.25 percent⁴² from the prevailing customer tariff. The operator mobilized in 1997, less than a year after the process started. A share purchase agreement for SEEG specified a capital increase of US\$15 million to be financed by the private operator and the following shareholding structure: 51 percent to be held by the professional operator, 20 percent to be reserved for institutional investors in a future public offering, 21 percent to be eventually offered to the Gabonese public, 8 percent reserved for SEEG employees, and one golden share to the State. SEEG's financial restructuring also included the capitalization of existing government advances and carry-forward losses, a settlement of government arrears, a protocol for future payments of government bills, and the transfer of SEEG's long-term debts to the government.

Key features of the concession contract. The concessionaire is fully responsible for financing investment, except for new power generation plants with a capacity bigger than 10 megawatts, which were to be developed under independent power production licenses to be granted by the government. The concession covers electricity and water supply services in the three major cities⁴³ and 29 isolated centers for a total population of 850,000 (about 60 percent of the country's total). The concession is basically regulated by contract, with the Ministry of Energy and Water Resources doing the supervision assisted by external experts. Performance targets are adjusted every five years and penalties are imposed for non-compliance. The contract includes quarterly tariff adjustments for inflation, and a price-cap mechanism to share productivity gains with consumers. The key contractual targets for water services are: (i) to build piped water systems in 30 isolated centers; (ii) to increase water coverage via household connections from 49 percent to 70 percent of the population in 2015 in Libreville and from 33 percent to 60 percent in other centers; and (iii) to meet World Health Organization standards for drinking water.

Contractual evolution of the concession. By mutual agreement, the concession was amended in 2002 to extend its service area to a state mining company, and in 2003–04 to update the cost index formula⁴⁴ and clarify responsibilities with regard to asset renewal. As the government experienced difficulties in developing additional power plants bigger than 10 megawatts, SEEG had to finance the construction of thermal power production projects from its own revenues. This, together with skyrocketing fuel prices, badly affected the financial equilibrium of the concession. It led to another amendment in 2006 that introduced the concept of "structuring investments,"

40 *Compagnie générale des Eaux* (France), of the Vivendi Group, now Veolia, in partnership with ESBI (Ireland); *Compagnie lyonnaise des Eaux* (France); SAUR (France); and Tractebel (Belgium).

41 Vivendi, now Veolia.

42 *Lyonnaise des Eaux* proposed a reduction of 11.5 percent, and SAUR of 5.8 percent (Tractebel desisted).

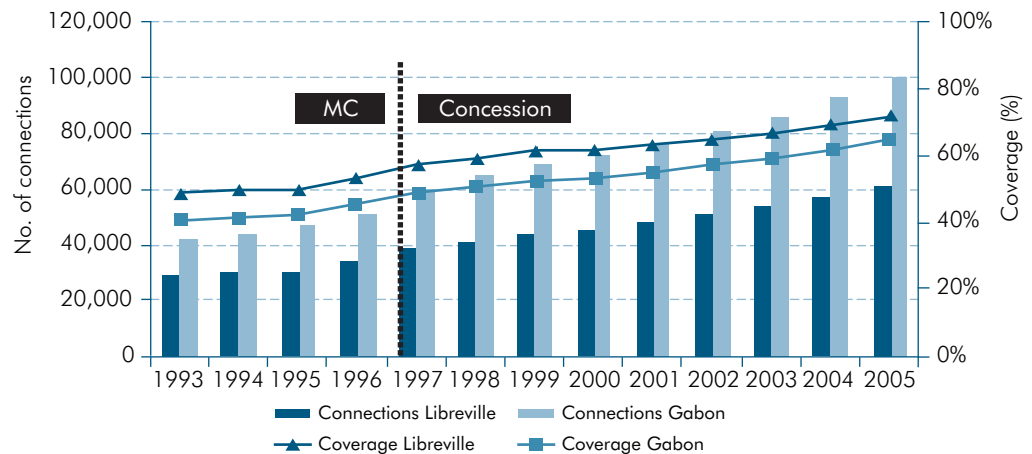
43 Libreville, Franceville, and Port Gentil.

44 To better reflect the cost of fuel in Libreville, where hitherto electricity was mostly of hydraulic origin.

under which the government could finance capital expenditures for large investments with a long asset life.

Access and service improvement under the concessionaire. The first ten years of the concession were a success, with coverage and sales reaching levels well above initial forecasts, satisfactory operating and financial performance, and a customer tariff that declined in real terms. By 2005, SEEG was serving about 170,000 electricity customers and 100,000 water customers, respectively 80 percent and almost 100 percent more than in 1996, implying an average annual increase of 7 percent over the decade (Figure 30). Almost 300,000 people have gained access to piped water since the concession was awarded, up from 435,000 served in 1997. Except in some isolated centers, the water coverage ratio (household connections) achieved is well above contractual targets and indeed the country’s 2015 targets for coverage have already been met. Coverage via household connections rose from 45 percent to 65 percent between 1996 and 2006, and access to an improved water source is now almost universal in the concession area. Between 1997 and 2007, water consumption grew by 60 percent, thanks to the growth in the customer base. To meet demand, SEEG had to undertake important investments to expand water production capacity—which rose from 153,000 to 228,000 m³/day—as well as to extend its distribution networks from 1,200 km to 1,690 km. The quality of the water service also improved and the average turbidity index of water fell from 2.5 to below 1.⁴⁵

Figure 30: Gabon: Evolution of Water Coverage and Number of Connections

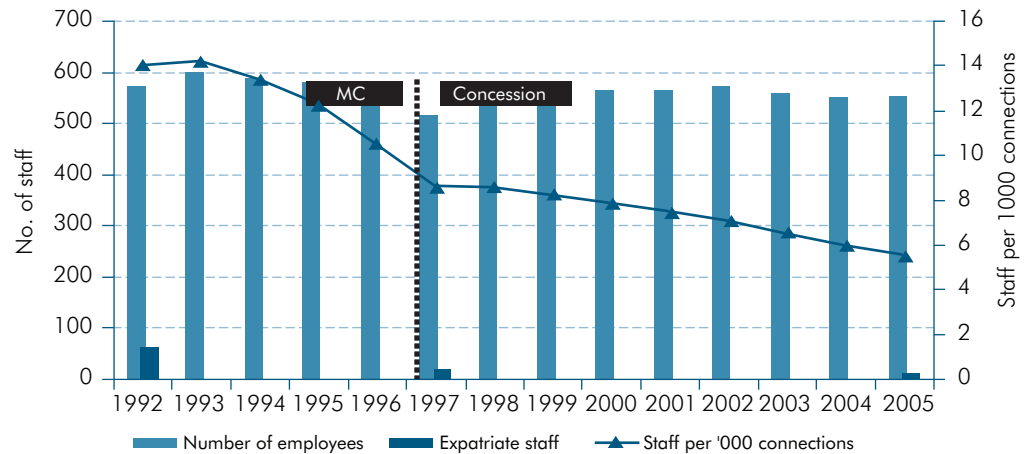


Sources: SEEG and authors’ calculations.

Labor productivity. Between 1997 and 2005, SEEG’s number of staff remained constant at 1,475 (compared with 1,950 in 1981), meaning that the private concessionaire did not implement any layoffs. In the meantime, the number of expatriate staff was reduced from 21 to 12 (compared with up to 100 when the company was publicly managed and used many foreign experts under resident contracts). Since 1997, staff productivity has improved from 15 to 6.5 employees per 1,000 (power and water) connections (Figure 31). Labor costs have been stable at about 22 percent of total O&M costs, with a salary increase granted in 2002–03 and a rise in the average qualification level of SEEG’s staff.

45 Before 1996, this index often peaked above 5. The WHO standard is < 5 for a single sample and 1 on average.

Figure 31: Gabon: Evolution of Staffing Ratio (Water and Electricity)

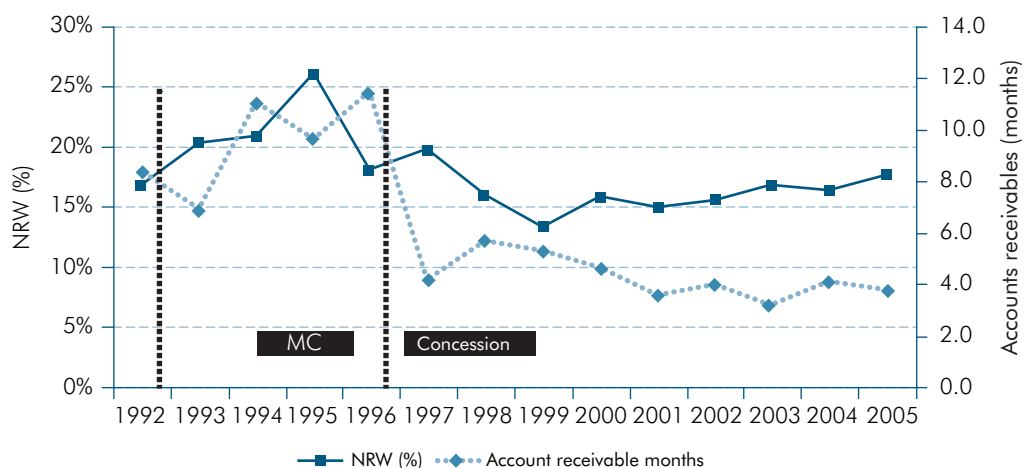


Source: SEEG.

Note: The staffing ratio is calculated on the basis of the total number of electricity and water connections, and thus cannot be compared with that calculated for water supply utilities.

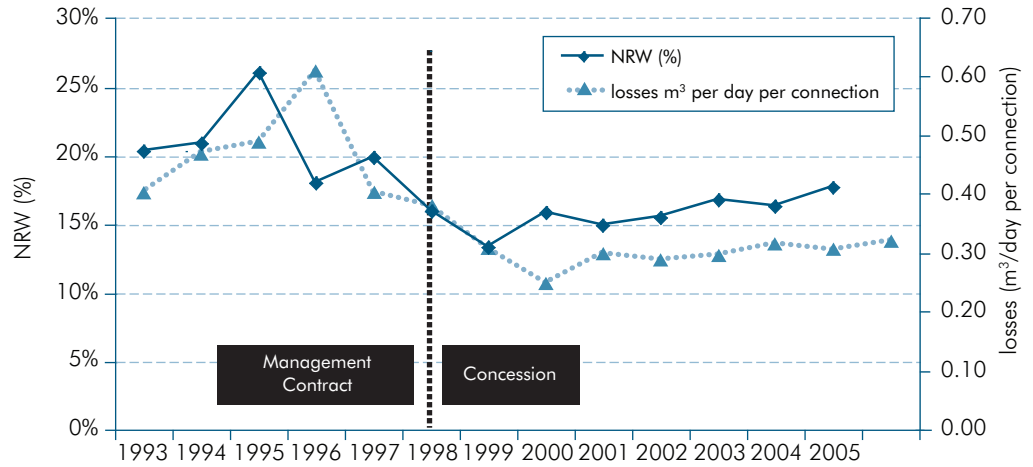
Water losses and collection rate. NRW was reduced markedly during the first three years of the concession, from 18 percent to 13 percent (Figure 32). By 2005 NRW stood at 16 percent and 3 m³ lost per day per connection (Figure 33), which is a remarkable figure comparable with international best practice. The concessionaire has been very efficient in reducing the large arrears that SEEG had been experiencing; within the first year, it drastically reduced the accounts receivable from 12 to 4 months of revenues, and has maintained that level ever since.

Figure 32: Gabon: Evolution of Water Losses and Bill Collection Efficiency under Management Contract and Concession



Source: SEEG

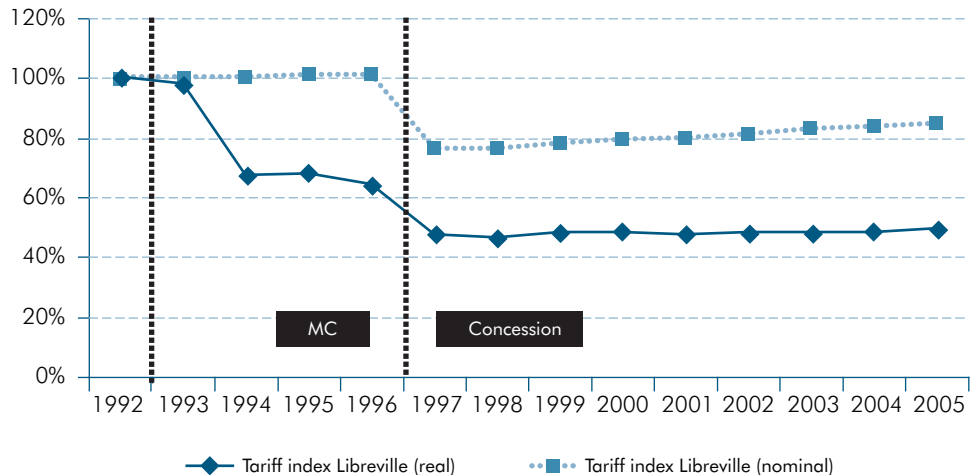
Figure 33: Gabon: Evolution of Water Losses Per Connection under Management Contract and Concession



Source: SEEG.

Tariffs and affordability. The 17.25 percent tariff decrease that resulted from the bidding process was implemented when the private partners in the concession mobilized in 1997. Between 1997 and 2005, contractual automatic adjustments led to a 12 percent increase in the water tariff in constant terms. Thus in 2005 the water tariff was still below its 1997 level both in nominal and real terms (Figure 34). According to an independent survey, in 2004 the water bill represented 2 percent of the average household budget, and 3.7 percent of the budget of households in the poorest income quintile. Both proportions are well within the WHO threshold of 5 percent. The cost of a new water connection, including a meter, of CFAF 80,500 (US\$178) represents about 60 percent of the monthly income of non-connected households in the poorest quintile. No social connection program has been considered.

Figure 34: Gabon: Evolution of Average Customer Tariff Index under Management Contract and Concession



Source: SEEG.

Cross subsidies from electricity to water were limited, according to an analytic accounting review carried out in 2003. Electricity operations that year contributed only about 2 percent to the operating margin of the water business. This means that, contrary to expectations, the water side of the concession had achieved financial viability on its own, even though water supply has a higher capital requirement than electricity operations. Gabon's water services have in fact grown faster than its electricity services since the start of the concession. It must be nonetheless mentioned that in Gabon, combining electricity and water seems to have had numerous advantages, including scale economies and operating efficiency, sharing of marketing and computer departments, and common central management.

Financial performance. Growing reliance on thermal sources to generate power for Libreville caused SEEG's operating margins to drop from 37 percent to 26 percent between 1997 and 2000. Most of SEEG's power generation comes from dams, and in the following years, 2001–2003, good hydrology allowed SEEG to improve its financial performance, but by 2005 the increasing share of thermal generation, combined with skyrocketing oil prices,⁴⁶ caused the operating margin to drop to only 18 percent. The company also experienced renewed difficulties in bill collection from government agencies after 2003. In this context, profit margins—which had significantly increased from minus 1 percent in 1997 to 14 percent in 2003—fell back to 1 percent in 2004 and 2005. Dividends paid to private shareholders averaged 22 percent of the share face value, corresponding to an overall 7.9 percent return on equity between 1997 and 2006.

SEEG's financial situation at the end of 2005. Between 1997 and 2005, SEEG undertook an extensive investment program valued at CFAF 88 billion (about US\$195 million), for both water and electricity, financed entirely by the cash flow generated from operations. As the government did not develop new power generation capacities under independent power production schemes, SEEG had to finance additional generation plants, but these investments were not enough to avoid a degradation of electricity services in Libreville. SEEG has experienced cash difficulties in recent years and was forced to borrow from commercial banks for the first time in 2005.

A series of events have recently put a strain on the concession. Since 2006, SEEG has had serious difficulty meeting electricity demand, especially in Libreville, due to low dam levels, resulting in load shadings and the need to rent expensive additional generators. Production costs were further increased by a 25 percent rise in oil prices following the introduction of a new tax. In addition, SEEG was facing the possibility of an income tax adjustment and had to provision a significant amount for this in 2006. The Ministry of Energy and Water Resources recently filed a claim for load shadings that would result in penalties to be paid by SEEG, and in response, SEEG invoked the contractual clause on economic upheavals, arguing that recent events had endangered the economy of the concession. A negotiation process has been initiated to resolve the current technical and financial difficulties. SEEG borrowed CFAF 20 billion (US\$44 million) in 2006 on commercial terms⁴⁷ to finance its capital investments, but the possibility of securing financing on concessionary terms, with a guarantee of the government for "structuring investments" including power generation, is currently being considered. By late 2007 active discussions were taking place between the government and the concessionaire to find a solution to the growing financial crisis.

⁴⁶ Between 2000 and 2005, prices of fuel oil increased by 100 percent in Libreville and gas oil by 50 percent.

⁴⁷ No grace period, seven years' duration, 8.5 percent interest rate.

B. Partnerships still in Place but with Mixed Results

The Cape Verde Concession (since 1999): Partial Retreat of the Private Operator

Cape Verde, with a population of about 500,000—55 percent of whom live in urban centers—is spread over nine islands and is one of the countries with the lowest per capita quantities of water available in Africa. As rainfall has sharply decreased over the last decades, about 75 percent of the drinking water produced by the national water utility now comes from desalination plants. The Cape Verde PPP is categorized in this study as a concession, although in practice it is based on a mix of public and private financing. The implementation of the concession has been plagued by several difficulties, leading to a significant renegotiation and the partial exit of the private operator.

Scarce water resources. Cape Verde's GNI per capita is around US\$1,700 per year, second only to that of Gabon within the region. Despite the scarcity of natural water resources, in 2000 about 75 percent of the population had access to piped water (higher than the average of 64 percent for Sub-Saharan Africa). But considering the country's per capita income level, the coverage ratio was quite low: only 25 percent of urban residents were served by household connections (much less than half the proportion in neighboring but poorer Senegal at that time). In 2003, Cape Verde's largest electricity and water services provider, Electra, served about 22,500 water connections in four islands, concentrating most of its activity in the two main cities of Praia and Mindelo, and producing about 4 million m³ of water per year. The 16 municipalities not served by Electra had their own municipal water departments and managed 7,500 water connections, for a production of 1.1 million m³ per year.

A far-reaching reform program. In the early 1990s, the country's economic development, and especially tourism, was constrained by poor infrastructure services. Insufficient production capacities and poor maintenance of networks resulted in increasing power and water outages. In 1993, the government began the divestiture of state-owned enterprises in telecommunications, transport, electricity, and water supply and sanitation, with the major objective of improving the availability and quality of infrastructure services. It was not until 1999 that new electricity and water laws allowed the granting of concessions for power and water services.

A concession with partial ownership divestiture. The government privatized the national water and electricity utility Electra in 1999. Assets previously owned by participating municipalities were transferred to Electra in exchange for a 12.5 percent share in its equity. A consortium of two Portuguese investors,⁴⁸ selected after open competition, took a 51 percent share in Electra's capital and was granted a 36-year concession for (i) power transmission and distribution on a national basis; (ii) water supply in a limited number of islands and urban centers; and (iii) sanitation services in Praia. The concessionaire was also required to provide an additional 5,000 m³/day water production capacity for Praia within twelve months of the start of its contract. While Electra was being privatized, eleven municipalities created autonomous water utilities in areas not covered by the concession. The National Institute of Water Resources Management (*Instituto nacional de Gestão de Recursos Hídricos – INGRH*) is responsible for assigning water rights and monitoring water quality and the Economic Regulatory Agency (*Agencia de Regulamentação Economica – ARE*) is responsible for setting electricity, water, and sanitation tariffs.

Early stress, followed by financial restructuring. Electra's financial situation has constantly deteriorated since the start of the concession in 1999. Deficiencies in the price regulation

48 EDP: *Electricidade de Portugal SA* and IPE-Aguas de Portugal SGPS, SA.

arrangements are largely to blame, as tariffs were not adjusted to reflect changes in the cost of electricity production. For instance, when the cost of fuel rose sharply between 2000 and 2002, its share of Electra's total revenues swelled from 57 percent to 84 percent, yet tariffs were not adjusted to reflect the increase. Electra's operating profit fell from 16 percent of its revenue in 1999 to minus 27 percent in 2002. The utility's cash situation also suffered from the accumulation of arrears from government and residential customers. In 2003, the government and the private shareholders of Electra negotiated a restructuring. This included recapitalizing Electra, indexing tariffs on fuel and other operating costs, implementing an investment program aimed at improving power and water production capacities with partial public funding, and liquidating through compensation the operating deficit that had resulted from the arrears accumulated over the four-year life of the concession.

A reduced shareholding of the private operator in Electra. In 2003, as a result of the contract renegotiation the average water tariff was raised by 37 percent (and the average electricity tariff by 21 percent). These increases, together with the commissioning of new power production capacities, enabled Electra to achieve an operating profit in 2006. The government and Electra also reached agreement on compensation for arrears. In 2006 the private operator reduced its shareholding in Electra to 34 percent, while the government of Cape Verde took 51 percent and the participating municipalities 15 percent.

Mixed performance and an unclear future. The performance of the PPP in Cape Verde has been affected by the fact that it has been under financial strain for most of its existence. The limited data available suggests that it has brought sizeable benefits in access to piped water. The connection ratios in the two larger cities, Praia and Mindelo, which represent more than 80 percent of Electra's customer base, rose from 22 percent and 51 percent respectively in 2000, to 47 percent and 61 percent in 2006. The total number of water connections operated by Electra went up from 16,500 to 27,000 in the same period. This has helped to raise the national figure for urban access to piped water via household connections from an estimated 25 percent to 35 percent over six years. Coverage in Praia and Mindelo is now significantly higher than the national average. At the same time, access to the sewerage system in Praia (which is also managed by Electra) went up from 8 percent to 15 percent. However, the figures for NRW are not positive, with NRW remaining stable in Praia at around 30 percent and increasing from 24 percent to 33 percent in Mindelo between 2000 and 2006. With the recent financial restructuring of Electra and reduction in shareholding of the private operator, the future of this PPP is not clear.

C. Partnerships That Were Terminated

The Gambia Affermage (1993–95): An Early but Short-lived PPP Attempt

The Gambia's PPP was one of the first in the region and was largely modeled after the Guinea *affermage*. Almost immediately after the takeover, the private operator's performance began to be affected by conflicts regarding its remuneration structure, which became compounded with power generation problems that the contract had not anticipated. The *affermage* was terminated only 18 months after mobilization of the operator, amid much argument between the two parties. Since the partnership was too short to have a sizeable impact, this analysis focuses on the causes of the early cancellation.

A very small operation. In the mid-1980s, the combined power/water utility Gambia Utility Company (GUC) served about 300,000 people in the greater Banjul area through 10,300

electricity and 6,400 water connections, and about 25,000 people in secondary cities through 1,600 electricity and fewer than 500 water connections. Sewers were limited to the Banjul tourist area. Because its distribution lines and transformers were overloaded, GUC had a restrictive policy on new electricity connections, and water production shortages led GUC to ration distribution during dry seasons. In 1986, GUC's annual revenues at about US\$7.5 million were insufficient to cover operating expenses. Banjul represented 95 percent of GUC's turnover, of which 80 percent came from electricity sales. About 55 percent of the revenues were used to buy diesel fuel. In 1986, the World Bank approved a US\$7 million IDA credit to support a project aimed at improving water and electricity services in Gambia's cities and building GUC's financial viability. The project, initially valued at about US\$20 million, ended up costing US\$45 million,⁴⁹ of which US\$36 million was for water supply in Banjul.

The reform process. GUC had benefited from German bilateral assistance since the early 1980s. After a twinning arrangement between GUC and a professional operator from the UK had been considered, the government requested assistance for introducing a private operator into GUC through a scheme similar to Guinea's. In 1992, GUC was transformed into the Utility Holding Corporation of The Gambia (UHCG), which was to own the facilities and take responsibility for their development. The new corporation launched a bidding process to select a professional operator under a ten-year *affermage* contract. A joint venture of Danish and French⁵⁰ companies was identified as preferred partner, but in the end only the French company invested in and managed the locally incorporated Management Services Gambia (MSG), which started operations in July 1993, just a day after one of the four Banjul power generators collapsed.

Early conflict on the sharing of the customer tariffs. The *affermage* contract specified that the average operator tariffs to be retained by MSG had to be modulated according to banded customer tariff structures to be set by UHCG. This was a major departure from the standard remuneration scheme in *affermage* contracts, in which the operator tariff is typically independent of the customer tariff structure. Although the MSG partners were certainly aware of this provision when signing the contract, they later argued that they should retain the average operator tariffs indicated in their bid for each kWh or m³ billed and collected, regardless of the tariff charged to customers. For example, because the water customer tariff of US\$24/m³ for domestic consumption below 20 m³ per month was lower than the average operator tariff of US\$37/m³ MSG was losing money for each cubic meter supplied to a category of customer that represented a major share of the accounts.

Rapid deterioration of relations between partners. Relations deteriorated rapidly between the private operator—frustrated by UHCG's inability to deliver infrastructure and in particular increase the power production capacity in Banjul—and the government, which was unhappy with the slow pace of service improvement and the disagreement over the sharing of tariff revenues. In late 1994, the World Bank agreed to sponsor a facilitation workshop to improve relations between the two parties and address their many claims. But before this could start, the private operator was notified in February 1995 of the unilateral termination of the *affermage* contract. A few days later, a one-year service contract was signed on a sole-source basis with another private consortium. UHCG and MSG's majority shareholder sought an amicable settlement, which was eventually reached late in 1995.

49 Initially to be co-financed with the European Development Fund, the African Development Fund, the Islamic Development Bank, but eventually co-financed with the European Development Fund, the African Development Fund, the European Investment Bank, and the Austrian Government.

50 BWSC of Denmark and SOGEA of France; construction (primarily pipe-laying) was SOGEA's main activity, although the company at that time was part of *Générale des Eaux* (now Veolia).

Still looking for reform options. No sizeable improvement was made under the short-term service contract that had replaced MSG, and UHCG was finally replaced by the National Water and Electricity Company (NAWEC) as the national public utility in charge of the former GUC operations. In 2004, NAWEC provided electricity and water service to about 30 percent and 40 percent respectively of the Banjul population, with coverage ratios that were no different from those of ten years earlier, when the *affermage* was awarded. Between 2001 and 2003, NAWEC accumulated losses equivalent to 40 percent of its turnover (around US\$14.5 million in 2004). The government has still been investigating PPP options for NAWEC, and in 2005, the International Monetary Fund indicated that the delay in privatizing NAWEC was a stumbling block to the country's development. As a first step to resuming the program to incorporate private sector participation, The Gambia has recently created a multi-sector Public Utilities Regulatory Authority.

The Chad Management Contract (2000–04): An Aborted PPP with an Innovative Gradual Scheme

The Chad water and electricity PPP was signed in 2000, at a time when Senegal's was already showing positive results. Because Chad's small customer base and dilapidated infrastructure were not conducive to an *affermage* contract, an innovative approach was proposed based on the concept of an "evolutionary PPP contract" with a gradual transfer of risks to the private partner. The PPP started as a management contract that was intended to evolve into an *affermage* and eventually into a concession. The PPP failed, however, in its early phase, after only limited risks and responsibilities had been transferred to the private operator. As in Gambia, the failure was mainly due to difficulties in addressing power generation and transmission issues, and to a rapid deterioration of the relationship between the government and its private partner.

A landlocked country. In 1999, Chad's state-owned power/water utility *Société tchadienne d'Eau et d'Electricité* (STEE) served about 15,000 electricity customers and 21,000 water customers in the capital city N'Djamena and eight secondary centers (serving about 1.1 million people), and had an annual revenue of around US\$19 million. Electricity sales supplied 85 percent of STEE's revenues, and N'Djamena represented the bulk of electricity and water consumption. More than 30 percent of STEE's billing was to government agencies. Electricity was generated by thermal plants running on imported fuel that was transported by road over long distances from Nigeria and Cameroon. Despite having one of the highest electricity tariffs in the world (at US\$42/kWh),⁵¹ the power and water sectors were bankrupt, with poorly maintained infrastructure, inefficient management, rampant governance problems, and large arrears.

Forward-looking legislation. Electricity and water laws passed in 1999 confirmed the withdrawal of the government from daily utility operations to concentrate on policy, regulation, and development issues. The laws rescinded the STEE monopoly over production, transmission, and distribution, and allowed independent power or water production as well as PPPs in the delivery of services. A regulatory body was to be created to set user charges that should cover the full costs of services. The new framework also created a Power Development Fund and a National Water Fund to finance extension and major maintenance of the infrastructure, to be replenished from external donors and petroleum revenues.

An innovative PPP approach based on the concept of "evolutionary contract." In January 2000, the government and STEE entered a 30-year PPP contract with a consortium of a French

⁵¹ For the purpose of comparisons: electricity in Chad is 7.5 times more expensive than in Ghana and 80 percent more than in landlocked Burkina Faso

water operator and German power operator⁵² that was designed around a gradual transfer of risks and responsibilities to the private partners, to take effect as electricity and water operations established their profitability. For the first phase, a 30-year concession of the electricity and water supply service was granted to STEE, which would remain a state-owned utility headed by an administrator appointed by the government, but would be managed by the private consortium. Under this management contract arrangement, the private consortium was paid a fixed management fee plus a bonus linked to performance, and enjoyed autonomy in day-to-day operations. In the planned second phase, the consortium was to incorporate a local operating company and sign an *affermage* contract with STEE. In the third phase, the consortium was to take a majority share in STEE and assume full responsibility for operating the services and financing the extension of infrastructure. The underlying assumptions for establishing STEE on a sound financial footing and allowing a move towards the second phase were linked to progress in electricity services, notably the rehabilitation of the N'Djamena power production capacity.

Disappointing performance under the management contract. Based on data available in STEE annual reports, limited extensions of the electricity and water distribution networks were accomplished between 1999 and 2002, raising the number of electricity customers from 14,800 to 16,300 and of water customers from 21,200 to 24,100. Sales increased from 54 to 64.3 million kWh and from 7.4 to 7.6 million m³. But efficiency seems to have worsened: electricity losses increased from 36.4 percent to 47 and NRW from 43 to 56 percent. In 2002, STEE generated cash revenue from only 33 percent and 28 percent of the electricity and water produced respectively.⁵³ This was a lower figure than the 34 percent and 32 percent that had been achieved in 1999 under public management. STEE's cash position was extremely weak as a result of high fuel costs and poor payment by government agencies, and while the presence of the private operator clearly brought no sizeable benefits for the population in terms of performance, it is difficult to conclude whether this was the fault of the private consortium, the government, or both (Box 4). In particular it must be kept in mind that under a management contract it is the government, and not the private partner, that remains in charge of financing system expansion and rehabilitation and carrying out civil works. The timely execution of an emergency investment program is a key to making any improvement in service when starting with infrastructure as badly deteriorated as in Chad.

The management contract arrangement was terminated in mid-2004, after less than four years of operation. As of mid-2006, STEE still was faced with expensive fuel supplies. STEE's operations, which had been affected by the suspension of all World Bank financed projects in the country in 2005,⁵⁴ suffered from two changes of its management team, poor commercial procedures, and erratic bill payment by government agencies. The situation seems to have deteriorated further since the departure of the private operator and STEE's cash situation remains as fragile as ever.

The Mali Concession (since 2000): Good Performance for Water Services, but a Concession was Probably too Ambitious for an IDA Country

In 2000, Mali awarded the concession of the electricity and water supply services in urban areas to a private operator that included an international professional partner and other investors. In its early years the concession achieved notable improvements in water access and service quality. But the concession soon ran into trouble when discretionary decisions taken by the regulator, eager to reduce

52 Vivendi, now Veolia, (France) and Dietsmann (Germany).

53 Taking into account physical and commercial losses and the bill collection ratio.

54 Due to a major conflict between donors, led by the World Bank, and the Chad government over the management and allocation of future oil revenues, which donors wanted to be earmarked in priority to fund poverty reduction projects.

Box 4: Chad Management Contract: Views Differed on the Reasons for Poor Performance

The government's point of view. In February 2004, a parliamentary commission argued that the financial crisis STEE faced was the result of the manager's disregard of its contractual obligations. According to the commission, the quality of service had stagnated or declined as evidenced by recurrent load shedding, increased fuel consumption, and poor commercial performance. The commission also concluded that the government had a net positive balance with STEE.

The private operator's point of view. The argument on the operator's side centered largely on the fact that STEE's revenue basis had been affected by major delays in extending N'Djamena power generation capacity, while STEE's cash situation had been affected by imports of fuel at very high cost and by large arrears on government electricity and water bills.

In March 2004, the construction of the Farcha power plant, initially scheduled to be commissioned late in 2002, had not yet started: the government successively cancelled the contracts for the construction of this plant (June 2001) and the pipeline from the Sedigui oil field (November 2002) that had been awarded before signing the contract with the operator. In addition, the company to whom a turnkey contract had been awarded for a power plant in N'Djamena unilaterally cancelled its contract in March 2003. Two donors' meetings (organized in November 2000, soon after mobilization of the operator, and February 2001) were inconclusive, as doubts were expressed about the capacity of the contractors selected for the Farcha and Sedigui projects to deliver on time. As STEE's cash situation was rapidly deteriorating, the government called for a third donor conference in July 2001. In August 2002, the World Bank approved a US\$55 million IDA credit for a Critical Electricity and Water Services Project aimed at securing the delivery of basic electricity and water supply and preventing the collapse of the systems, particularly in N'Djamena; reducing the costs of electricity and water supply services; and supporting increased private sector participation in these sectors. The credit, which became effective in March 2003, was to finance among other components the management fee, STEE's fuel supply, and the completion of the Farcha power plant.

utility tariffs to meet one of the campaign objectives of a newly elected government, endangered its financial equilibrium. Despite the withdrawal of the international professional partner in 2005, the Mali PPP has had some positive effects on the quality of service, evolution of the overall accountability framework, and understanding of issues related to financing of infrastructure development.

Electricité du Mali (EDM), the state-owned electricity and water utility, was established in 1961 to serve the main urban areas of Mali, a largely rural country. Its weak commercial and technical performance did not improve with the 1989 signing of a performance memorandum of understanding (MoU) with the government. EDM lacked financial resources for investing and was unable to keep pace with the growing demand for electricity and water as rural migrants flooded into Mali's cities. As a consequence, power outages and intermittent water supply were frequent and resulted in high costs to the national economy. In addition, the water supply activities in EDM played a secondary role to electricity supply. In 1990, the urban water connection ratio was extremely low, at less than 10 percent.

Early failure of PPP under a management contract. Given the institutional and operational weakness of EDM, in 1995 the Malian government and its financiers agreed on the need for EDM to enter into a four-year management contract to improve its performance. The management contract was signed with a consortium led by a French operator.⁵⁵ The contract was supported

⁵⁵ The consortium included SAUR International of France, Hydro-Québec International of Canada, *Electricité de France* (EDF), and CRC-Cogéma of France

and financed by the World Bank, *Agence française de Développement* (AFD), and the Canadian Agency for International Development CIDA. Very soon, however, its implementation faced major challenges as the various parties to the contract developed different readings of their obligations. Not only did the working relationship between the management team and EDM's Board of Directors become distant; even the various members of the consortium had difficulty agreeing on the proper course of action. In addition, the government proved reluctant to implement the agreed tariff policy, which was necessary to improve EDM's financial situation. The contract was terminated by mutual agreement in March 1998.

Quick move to a concession, with electricity to subsidize water expansion. The government quickly reacted to this disappointing outcome and convened a donors' meeting in mid-April 1998 to clarify that it was still committed to putting in place a viable PPP for EDM, to applying adequate electricity and water tariff policies (including a schedule of tariff increases over the 1998–2002 period), and to arranging for the timely payment of the utility bills issued to its agencies. A Water Law and an Electricity Law were enacted in March 2000, together with a law creating an independent water and electricity regulatory agency, the *Commission de Régulation de l'Eau et de l'Electricité* (CREE). The PPP scheme was to involve the sale of 60 percent of EDM's shares to a strategic private partner, together with the signing of two separate 20-year concession agreements for water services and for electricity services. The electricity concession covered 76 urban centers whereas the water contract covered only 17.⁵⁶ International private operators reacted favorably to the proposed concession scheme, even though the scheme implied that significant financing would have to be raised on the market for a large investment program in a poor country. Four firms or joint ventures were pre-qualified, but two bids were rejected for non-compliance. The winning consortium was led by SAUR International of France and Industrial Promotion Services (IPS), part of the Aga Khan group.⁵⁷ The concession contracts were signed in November 2000.

Objectives, targets, and expectations. The objectives of the PPP reform were to (i) restore and improve service delivery; (ii) improve efficiency and reduce costs; and (iii) promote a rapid expansion of services. The concession contracts set mandatory targets for the third objective: the development of access to services, measured by the number of customers and the volumes of electricity and water sales over the life of the contract. The basic performance indicators—billing and collection efficiency, staff productivity—were to be monitored, but were not linked to specific and binding targets. Expectations were high that the private partners would inject important financial resources into the electricity and water sectors. The contracts mentioned an estimated level of investment of about CFAF 360 billion (about US\$800 million) over the 20-year concession period, of which CFAF 134 billion (about US\$300 million) would be during the first five years. The contracts stipulated that non-compliance with the investment plans could not result in penalties as long as targets on the number of service connections were met.

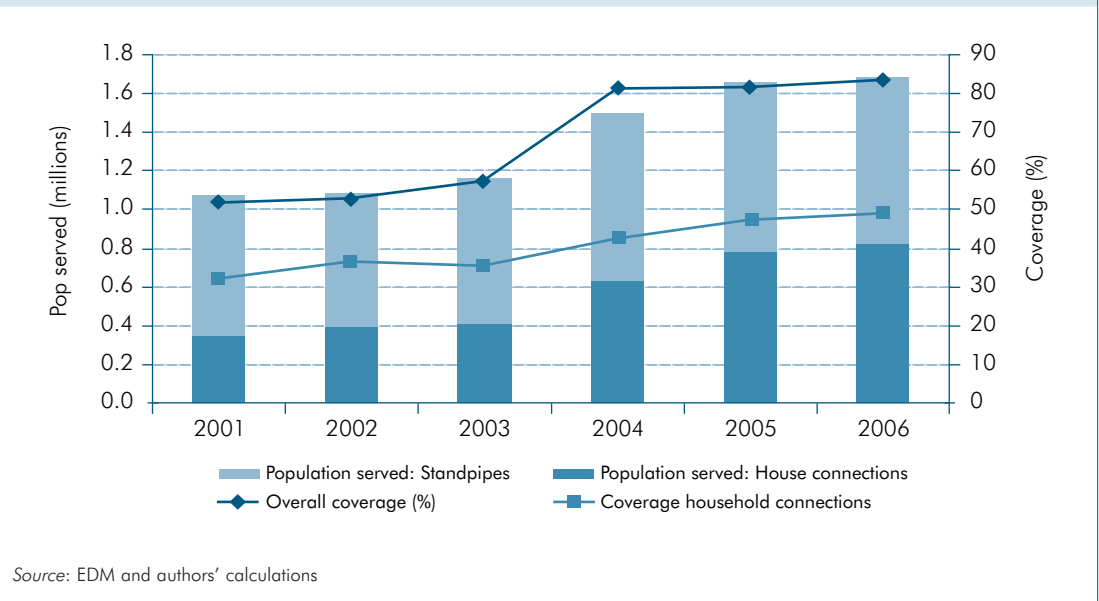
Expansion in water coverage has been significant. More than 600,000 people in the areas covered by the contract gained access to piped water in just four years, with the population served rising from one million to more than 1.6 million between 2001 and 2005 (Figure 35). The number of water customers in 2005 (93,700, corresponding to a 67 percent increase from five years earlier) and the water volumes sold (47.3 million m³) exceeded the contractual targets (82,800 customers and 41 million m³). A significant reduction in connection fees had allowed more families

⁵⁶ Community or independent private providers managed those not supplied by EDM.

⁵⁷ The sole criterion for awarding the contract was the price offered for purchasing 60 percent of the equity of the new company. SAUR/IPS' bid amounted to CFAF 14.2 billion (equivalent to about US\$30 million), well above the CFAF4.2 billion offered by the other bidder AES/Sirocco.

to afford a household connection. Water coverage within the contractual areas rose spectacularly, increasing from 52 percent in 2001 to 81 percent in 2005 for improved access. Coverage by household connections went up from 36 percent to 47 percent and that via community standpipes from 20 percent to 34 percent. The number of household connections increased by half (from around 60,000 in 2001 to 92,000 in 2005) and the number of community standpipes more than doubled, from around 1,000 to 2,400 (with a major effort made in 2004).

Figure 35: Mali: Evolution of Population Served by Private Operator and Water Coverage



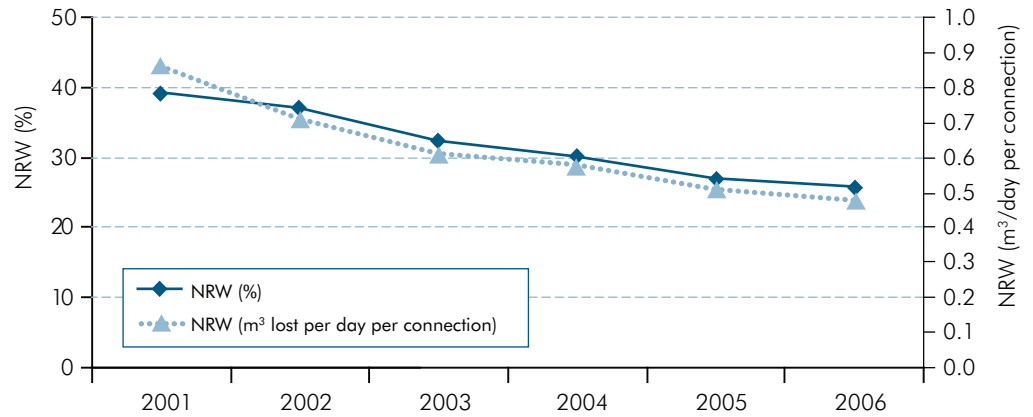
Sizeable improvements in the efficiency of water services. The performance of the water operations under private management was very satisfactory. The NRW level decreased from 41 percent to 27 percent in the first four years, an even better performance than that achieved in Senegal. Water losses measured fell from 7 to 45 m³/day/connection (Figure 36). Staff productivity also improved markedly, from 9.5 to 6.0 staff/1,000 customers (water services only) as the customer base expanded, and no layoff of employees took place⁵⁸ (Figure 37).

But the performance in electricity services lagged behind. The performance on the electricity side was less satisfactory. The number of connections (160,600 in 2005) increased as expected, but the volume of sales and the network efficiency remained below expectations. This was mainly attributable to the insufficient level of investment, which itself resulted from the government's erratic implementation of the tariff policy and regulation as explained below.

Early institutional and financial challenges. Fundamental disagreements emerged as early as 2001, as parties had different understandings of their contractual obligations. The initial main area of contention was the formula for adjusting the electricity tariff, but soon tariff levels, compensation, and the pace of investments were also to become contentious issues. Every periodic exercise of tariff adjustment became intricate and resulted in intense negotiations between the parties. Tremendous time was spent in exchanging heated correspondence. Consultants

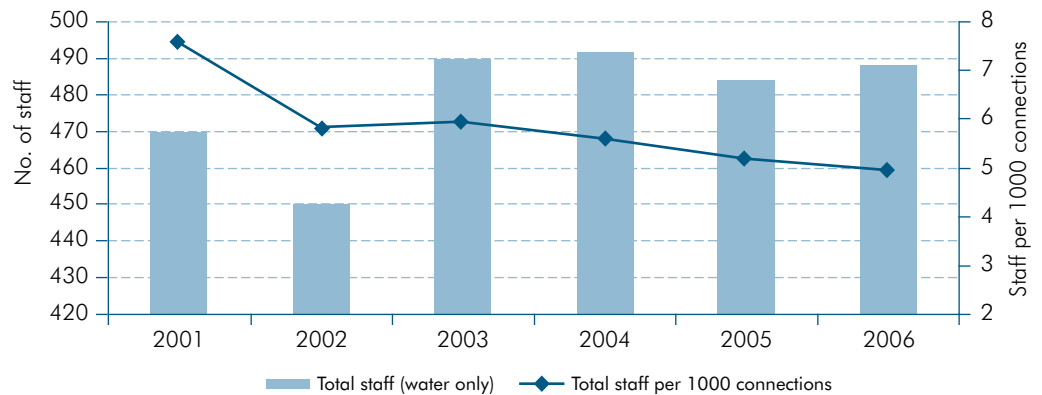
⁵⁸ A small reduction of 20 staff in 2002 was followed by a net increase of 40 staff in 2003.

Figure 36: Mali: Evolution of Water Losses



Source: EDM

Figure 37: Mali: Evolution of Staffing and Labor Productivity (Water Only)



Source: EDM

were hired by each party to document main arguments and workshops were organized to bridge differences. Somehow, the parties still managed to find ways to keep the concession contracts going, but the relationship was characterized by a growing lack of trust and goodwill.

Regulatory shortcomings and confusion. Several design features of the PPP led to this situation. First, some clauses of the contracts, such as the indexation formula, were poorly written and ambiguous. Second and more importantly, the regulatory framework contained ambiguities on the very nature of the regulatory regime. The application of the contractual clauses was questioned by the regulatory agency CREE, based on its discretionary power. CREE had not been set up in advance of the transaction and became operational only in 2002, at a time when a climate of conflict had already been established. It lacked expertise and acted not as an independent broker between the parties but as an agent of the government.⁵⁹

59 This approach was legitimate as long as the contractual clauses were respected and CREE played a supervisory and enforcement role, but it became a problem once the agency started to exercise discretionary power.

A new national government brought conflicting priorities. The flaws of the original design were compounded by political changes. The national elections brought a new government to power in 2003, which had made utility tariff reductions one of its campaign priorities. The private operator had contractual targets to expand coverage with private financing, which were supported by a rise in the tariff level that was previously agreed upon. This meant that any tariff reduction had to be adjusted somewhat to maintain financial equilibrium, either by reducing targets or providing public grants for a portion of investment. Private operators have sometimes been criticized for renegotiating tariff increases soon after signing a PPP contract, but in Mali the reverse occurred, with government pushing for tariff reduction just two years after the contract had started and with the concessionaire having already made significant investment.

Worsening relationships between the parties over tariff reduction requests. The initial discussion revolved around customer tariff reductions of 10 percent to be compensated by government subsidies and fiscal exemptions on fuel taxes, but then CREE started to increase pressure on the concessionaire. It carried out a reassessment of fuel consumption by thermal power plants and of the consumption of chemicals by water treatment plants, arguing that further tariff adjustments could be done without compensation. EDM complained that the uncertain tariff environment undermined its financial viability and conveyed the wrong signals to potential financiers, thus preventing further expansion of services. The decision of the regulatory agency in May 2004 to further reduce electricity and water tariffs without compensation created a crisis of confidence in the arrangement. This prompted the parties to consider formal renegotiations of the concession contracts with donor assistance. They used an independent facilitator,⁶⁰ as proposed by the World Bank, and signed a protocol stipulating the scope and deadline for completing the renegotiations. After ten months of discussions, the parties were considering an *affermage* model for both sectors. This would have solved the problem of customer tariff and financing of expansion, leaving the government free to set tariffs as it wanted, while maintaining the operational improvement that had been brought by the private operator. However, progress was slow on the issues of payment of government agencies' arrears and of compensation for the past tariff reduction. The parties could not reach agreement on the terms of reference for an audit of the performance of the concessionaire or on a shared economic and financial model.

Unrealistic investment proposals to donors. A major issue for transforming the concession into an *affermage* scheme was the need to raise financing on concessionary terms from donors for the whole of the investment program. The 2005–2010 program (US\$383 million) that was submitted by the government went well beyond the overall country envelopes of bilateral and multilateral donors and did not demonstrate that it was based on least-cost options. The donors insisted on the need to make the investment program more realistic and to show its consistency with the financial equilibrium of the sectors.

The epilogue on the renegotiations. Difficulties persisted after the July 2005 round of renegotiations. The World Bank and AFD in a joint note issued in August 2005 reiterated to the parties the importance of getting the fundamentals right and the need to audit the 2004 accounts in order to clear the way for future contractual arrangements. The joint note received no formal follow up but the parties had several closed technical meetings (without the appointed facilitator of

⁶⁰ Back in October 2004, the protocol of renegotiations was supposed to come to closure by March 31, 2005, with the possibility of extension. It was extended until June 30, 2005. The parties did not agree on the terms of the next extension. SAUR/IPS's preference was to have a commitment from the government on a schedule of payment of its arrears and some promise on the 2004 request of compensation to provide some comfort to its stakeholders. The government indicated that the original protocol was not linked to these issues and the extension should not cover them.

the renegotiations and/or donors) and agreed privately on an amicable separation. On October 14, 2005, SAUR International sold its shares to its junior partner IPS, which in turn sold many of them back to the government. The government became the majority shareholder in EDM with 66 percent of the shares, 34 percent remaining with IPS. SAUR/IPS and the government signed a protocol stipulating that all disputes were over.

Continuation of the EDM concession arrangement with minority private shareholding. Since 2006, EDM has been a company organized under private law, with IPS being present with a minority shareholding. Unlike in Cape Verde, where the foreign professional operator remained even though under a minority shareholding, EDM no longer has any professional operator. Latest data suggest that the managers appointed by the government have been efficient and maintained performance levels achieved under private management. EDM is fully corporatized and is operating under a sound contractual framework that fosters accountability. Interestingly the population has also become more demanding (Hibou and Vallée, 2007), having seen what could be achieved during the four years of private operation, and this is certainly putting pressure on the public management of EDM to perform. It is too early to conclude whether the new arrangement will prove sustainable. The government has indicated that it may eventually search for a new strategic private operator, and is working on a transition period of about three years, at which time a new private partner could be interested again in EDM.

Was Mali's electricity and water concession a failure? Although the outcome of the reform was clearly not what the various parties (government, investors, donors) had initially expected, the PPP experience has not been altogether negative. The introduction of a private operator strongly affected the behavior of the various national stakeholders. The conflict over tariffs did much to educate government officials on the fundamental trade-offs between tariff and investment levels which, when hidden, result in poor decision-making. The population also became more demanding, fostering demands from customer groups to be more involved in issues related to the sector. With the transfer of know-how that took place during the first four years, the presence of a private operator helped to improve the viability of the corporatized public utility now in place. Given that at least in water services the private operator achieved a tangible improvement for the population, one might argue that the water PPP experience in Mali was not really a failure. Certainly it provides a good case for sector practitioners to expand their thinking as to what is the best way to involve professional operators in developing countries.

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