

48730 v1

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

Volume 1: Impact and Lessons Learned

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THE WORLD BANK GROUP



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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

ACKNOWLEDGMENTS

This report was prepared by Messrs: Matar Fall, Lead Water and Sanitation Specialist, Philippe Marin, Sr. Water and Sanitation Specialist, Alain Locussol, Consultant and Richard Verspyck, Consultant. The project team also included Jean Pierre Florentin (Consultant) and Josses Mugabi (Consultant). The authors wish to thank Messrs/Mmes: Frank Bousquet, Carlos Velez, Clemencia Torres, Pete Kolsky, Meike Van Ginneken, Aldo Baietti, Ventura Bengoechea, Eric Dickson, Lorenzo Bertolini, and Jose Frade (EIB) for their valuable inputs and comments.

The authors also wish to thank the following Governments' decision makers and partners from water utilities who provided data for individual country case studies: Messrs/Mmes Fadel Ndaw (Coordinator of the Water and Sanitation Millenium Program – Senegal), Mamdou Dia (Managing Director SdE – Senegal), Harouna Ouibiga (General Manager ONEA – Burkina Faso), Charles Tribeche (ICEA – Technical Auditor ONEA), Seyni Salou (General Manager SPEN – Niger), Maurice Pateta (General Manager SEEN – Niger), Basile Ebah (General Manager SODECI – Côte d'Ivoire), Berthe Ibrahiman (Director of Hydraulics – Côte d'Ivoire), Etienne Dieudonné Ngoubou (Director General Energy and Water Resources – Gabon), François Ombanda (President SEEG – Gabon), Sekou Djiteye, General Manager EDM – Mali) and Mr. Alhousseini (Director of Hydraulics – Mali).

The authors would also like to particularly recognize the preeminent role played by Eustache Ouayoro, Sector Manager AFTU2, who led the quality insurance process and provided valuable inputs and guidance to the task team all along the study, and Abel Mejia, Sector Manager ETWWA, for including this study among the priorities of the Water Anchor knowledge agenda and providing inputs and managerial support.

Special thanks are due to Jyoti Shukla, Program Manager, PPIAF, and the PPIAF team for supporting this study.

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INTRODUCTION

Volume 1 of this Discussion Paper on “Reforming Urban Water Utilities in Western and Central Africa” presents the case of the countries that have experimented with public-private partnerships in this region. It includes an Executive Summary and three chapters.

- Chapter 1 presents the origin and types of the public-private partnerships implemented in the region.
- Chapter 2 includes an analysis of the impact of the public-private partnerships on the water supply service.
- Chapter 3 draws key lessons from this experience.

Eleven case studies are presented in Volume 2, which is divided in two parts:

- Part 1 presents the cases of urban water utilities.
- Part 2 presents the cases of combined power and water utilities.

Notes:

- For countries of the CFA franc zone, figures are usually given in CFA franc (CFAF); in order to provide some reference, 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.
- This discussion paper focuses on utility companies providing water supply and wastewater services in urban areas; it does not document activities of small-scale water and sanitation service providers active in urban areas. Also, it does not cover rural water supply and the role the private sector plays in rural areas.

EXECUTIVE SUMMARY

Western and Central Africa has one of the longest experiences with public-private partnerships (PPPs) in the developing world, both for water supply and for combined power and water supply utilities. Côte d'Ivoire has a successful partnership dating from 1959, and over the last two decades as many as 15 countries (out of 23 in the region) have experimented with PPPs: eight for water supply operations alone¹ and seven for combined power and water supply operations.²

This discussion paper documents the region's experience with PPPs for urban water supply in a comprehensive manner to help inform the current debate about the benefits brought by PPPs, in the context of helping Africa to achieve the Millennium Development Goals (MDG). Eleven PPPs have been studied, and detailed performance indicators are reported for six large cases—Côte d'Ivoire, Senegal, Niger, Mali, Burkina Faso, and Gabon—with at least four years of private operation. Through its successes and failures, the Western and Central African experience offers interesting lessons that other developing countries could reflect upon as they strive to improve the quality of urban water supply services, increase the efficiency of operations, and establish the financial credibility of the sector.

A wide range of PPP schemes have been implemented in the region. Contrary to other parts of the developing world where water PPPs tended to focus on one main model, countries in Western and Central Africa have experimented with the whole spectrum of contractual arrangements:

- Long-term **concessions**, which transfer most of the technical, operational, commercial, and financing risks and responsibilities to the private operator, have been implemented for combined power/water supply utilities in Gabon, Cape Verde, and Mali.
- Medium-term **affermage** contracts, which combine private operation of the service with public financing for developing the infrastructure and involve a sharing of the commercial risk between the public and private partners, have been used for water supply services in Côte d'Ivoire, Senegal, Niger, Guinea, Central African Republic, and Cameroon as well as for combined power/water services in The Gambia.
- Short-term **management contracts** have been implemented mostly in combined power/water supply utilities as in Chad, Guinea Bissau, Sao Tome and Principe as well as in Gabon and Mali as a first step before a concession. One management contract for a national water supply utility was also initiated in 2005 in Ghana.
- The case of Burkina Faso is also presented, although it is not a PPP in the usual sense. The **service contract** with an international private operator did not involve management delegation, but is an interesting example of an alternative performance-based approach for improving the commercial and financial operations of a public water supply utility with the help of the private sector.

A. PPPs in Western and Central Africa: a Mixture of Successes and Failures

Five PPP projects can be broadly considered as successes. In Côte d'Ivoire (water *affermage* dating from 1959, revamped in 1988) and Senegal (water *affermage* dating from 1996) the performance of the PPP has been very satisfactory when measured by indicators of access,

1 Côte d'Ivoire, Senegal, Niger, Burkina Faso, Ghana, Guinea, Central African Republic, and Cameroon.

2 Gabon, Guinea Bissau, Sao Tome and Principe, Cape Verde, The Gambia, Chad, and Mali.

reliability, operational efficiency, financial sustainability, and affordability. In both countries the water supply service is now provided by locally rooted world-class private operators under contract with efficient public partners. Indicators have also improved for the water supply service in Gabon (combined power/water supply concession dating from 1997) and Burkina Faso (water supply public utility with a service contract from 2001–07). The recent PPP in Niger (water supply *affermage* since 2001) also show promising trends in improving the performance of the water supply operations, despite a challenging environment.

Three PPPs can be classified as mixed outcome. In Guinea (water *affermage* from 1989–2001) and in Mali (power/water supply concession from 2000–04), the PPPs are now terminated with the two utilities back to public management, although notable improvements in access and service quality were achieved. In Cape Verde (power/water supply concession since 1999), the private operator is still in place, but the implementation of the PPP has been marred by difficulties, and the contract had to be renegotiated with less risks and responsibilities for the private operator.

Five PPPs failed to significantly expand access to piped water or improve the efficiency of operations, and ended up being either terminated or not renewed. These are in The Gambia (power/water supply *affermage* from 1993–95), Central African Republic (water supply *affermage* from 1991–2001), and in the power/water management contracts in Chad (2000–04), Guinea Bissau (1991–97), and Sao Tome (1993–96). Problems with power production and transmission (The Gambia and Chad), as well as the small size of the customer base (The Gambia, Central African Republic, Guinea Bissau and Sao Tome) affected the financial viability of these contracts.

It is too early to judge the performance of the two recent PPPs in Ghana (water management contract awarded in 2006) and Cameroon (water *affermage* awarded in 2007).

These 15 PPPs represent a combined served population of more than 29 million people. There are large discrepancies in size between PPPs, with the largest by far being the two longstanding in Cote d'Ivoire and Senegal, plus the two more recent ones in Ghana and Cameroon. Many PPPs, and especially those for combined power/water supply, were for small systems. In terms of population served, the two largest categories by far are those countries with successful PPPs (five countries, about 16.5 million, or 56 percent of the total) and those where PPPs are too recent to assess (two countries, about 7.7 million, 26 percent). Taken together, the three countries where PPPs have produced mixed outcome account for only about 2.9 million (10 percent), and the five countries where PPPs have failed for about 2.3 million (8 percent).

Table S1: Summary of the Water PPP Experience in Western and Central Africa

Country	Water PPP			Country	Combined Power/Water PPP		
	Urban Pop.	PPP Type	Comment		Urban Pop.	PPP Type	Comment
Successes							
Côte d'Ivoire	7.5	Aff.	Active	Gabon	0.75	Conc.	Active
Senegal	4.7	Aff.	Active				
Niger	1.8	Aff.	Active				
Burkina Faso	1.8	SC	Active				
Mixed Outcome							
Guinea	1.1	Aff.	Completed	Mali	1.5	Conc.	Terminated
				Cape Verde	0.2	Conc.	Active
Failures							
CAR	0.6	Aff.	Completed	The Gambia	0.3	Aff.	Terminated
				Chad	1.1	MC	Terminated
				Guinea Bissau	0.2	MC	Completed
				Sao Tome	0.1	MC	Completed
Too Early to Judge							
Ghana	4.7	MC	Active				
Cameroon	3.0	Aff.	Active				

Source: Authors' calculations for the size of the urban population for each project (in millions), based on rounded estimates of the actual population served in 2007 or the last year of the PPP.
Aff: affermage; SC: service contract; Conc: concession; MC: management contract.

B. The Performance of PPPs in Western and Central Africa

PPPs have had a positive impact on access expansion, mostly through residential connections. Across the region, access to piped water has been increasing in recent years, with most Western and Central African countries (with the notable exception of Nigeria) making progress towards meeting the MDG objective of halving by 2015 the percentage of the urban population that had no access to safe water in 1990. When considering the “improved access ratio”, which includes access through both residential connections and community standpipes and is the one used by the WHO/UNICEF Joint Monitoring Program, there does not appear to be a clear difference in performance between countries with PPPs and countries with publicly-managed utilities. But only those countries with successful PPPs are making good progress towards increasing direct access to piped water through residential connections. Over the 1990–2004 period access to piped water has been provided to an additional 9.8 million urban residents in the five countries with successful PPPs plus Mali, of which about 6.8 million are through residential connections.

Successful PPPs have improved the reliability of the service. Many public water utilities in the region provide only an intermittent service of water that is not potable, in contrast with the 24/7 service provided by private operators in Abidjan (Côte d'Ivoire) and Dakar (Senegal). Successful

PPPs in Cote d'Ivoire, Gabon, Senegal and Niger have been efficient in reducing water rationing. Better continuity of service has helped to improve the quality of the water distributed, with high percentages of water samples taken at the customers' taps meeting national bacteriological quality standards.

Private operators have achieved significant operational efficiency gains that were eventually passed to customers through lower tariffs. Private operators in Cote d'Ivoire, Senegal, Gabon, Mali and Niger have been able to make significant gains in water losses reduction, bill collection and labor productivity. In the first three cases, they even reached levels of operational efficiency that are comparable to the best run utilities in Western Europe and North America. Several countries that embarked on PPPs in the region already had a policy of recovering most of O&M and capital costs from user charges, albeit inconsistently implemented. In the successful cases, the combinations of efficiency gains and low financing costs have allowed customer tariffs to decrease in constant terms in several cases.

C. Lessons Learned from the Western and Central African PPP Experience

PPPs in combined power/water utilities have faced more problems. Two of the key ideas behind combined power/water operations, whether public or private, are that water operations are too small to justify a separate management and that revenue from power operations can subsidize water operations. In practice though, most combined power/water PPPs in Western and Central Africa have run into early trouble because of power operations, either because of rising fuel costs, antiquated power plants, or difficulties with regulation.

Successful PPPs have been part of well-designed sector reforms. The clarity of sector policies has been important, as has been the compliance by partner governments with their policy commitments. Unbundling the key functions of policy formulation, regulation, financing, asset ownership, and service provision and establishing contractual relations between public and private partners has enhanced the accountability framework within which the various partners have operated. The presence of a private operator has probably been one of the reasons why governments have complied with their commitments to, for example, allow tariff adjustments or pay their water bills. Also, successful PPPs all had well defined cost recovery strategies to ensure the financial sustainability of water supply operations. Finally, successful PPPs have all understood that it was essential to manage unrealistic expectations of an immediate improvement of the service, but have nevertheless "harvested low hanging fruits" to achieve early improvements and build stakeholders' confidence.

Social connection programs for poor urban households have been a major success factor. Social connection programs (as in Côte d'Ivoire since the mid-1970s and later replicated in Senegal, Niger, and Burkina Faso) have been a key feature of most successful PPPs in the region. Small-gauge connections were typically offered to eligible households against the payment of a small portion of the total connection cost. Connection ratios have increased rapidly as a result of these programs and the popular support they generated was essential for the sustainability of the PPPs. Also, the corresponding expansion of the customer base translated into increased revenues and a better absorption of fixed costs, thereby improving the financial viability of the services.

Collecting bills from public accounts has been a recurrent problem. In successful PPPs, private operators have been allowed by their counterpart governments to implement strict disconnection procedures for private customers in arrears—a financially healthy practice that has in general been

well accepted by customers in the region. Nevertheless, serious problems have been encountered when trying to collect bills from public agencies, as private operators are ill-equipped to deal with delinquent accounts owned ultimately by their partner government. The financial sustainability of urban water sectors in Western and Central African countries has often been endangered by the non-payment of water bills by public customers, which typically have represented between 15 and 25 percent of the billing.

Most financing for investment came from donors and cash-flows from tariffs revenues.

Successful PPPs have helped to reduce the cost of financing of infrastructure development by achieving the right mix of cash generation, long-term debt and development grants. Most have contributed large amount cash from tariff revenues to their capital expenditure programs, even in the case of the concessions in Gabon and Mali where private debt has played only a marginal role. They also attracted significant international public financing mostly channeled through governments to the public agencies or asset-holding companies that were responsible for developing the water supply infrastructure. In contrast, PPPs in the region have not produced a major inflow of private capital. Even though the concessionaire in Gabon and the asset-holding company in Senegal have recently been able to secure commercial loans of limited amounts, private partners in PPPs have so far limited themselves to financing only the working capital required.

Affermage contracts appear well adapted to the region and a specific model has gradually emerged.

Overall, the *affermage* arrangement appears to have been the most successful PPP scheme in the region. By leaving the responsibility for setting the customer tariff policy and financing the development of the infrastructure in the hands of the public partner, *affermages* have provided flexibility for moving towards cost recovery in a gradual, socially acceptable manner while allowing governments to access financing at advantageous rates. A Western and Central African *affermage* model seem to have gradually emerged. It typically includes contractual obligations for the private operator to improve operational efficiency (with strong incentives built in the remuneration formula), combined with subsidized connection programs to foster rapid expansion of the customer base and make household connections more affordable for the poor. Substantial amounts of donor funding were made available to support systems rehabilitation and expansion.

Regulation by contract has usually worked better than regulation by “independent” regulator.

Many Western and Central Africa countries where successful PPPs have been implemented have followed the regulation by contract model. Regulatory risks have usually increased where an independent regulator has been created: the regulator’s mandate has often been insufficiently clear, regulatory tools that would have provided some predictably to its operations have seldom existed, and capacity to regulate has often been insufficient. In Western and Central Africa, given the scarcity of qualified professionals and the character of the local political economy, the establishment of an “independent” or even an “autonomous” regulatory agency has arguably added little value to the PPPs.

D. Looking Forward

The Western and Central African experience emphasizes the fact that successful water PPPs are true partnerships.

Successes in providing *sustainable* access to *safe* water have been due as much to the private operators, in improving the quality of the service and increasing the cash flows, as to the public partners in designing and enforcing appropriate policies, providing

financing at affordable conditions, implementing infrastructure development programs and enforcing a sound regulatory environment. To be successful, a PPP requires a commitment from both parties; the fact that some governments have tended to forget their side of the contract and blame the private operator for failure has often been the cause of PPPs' early demise. Strong commitment and hard work by all parties is needed to arrive at a PPP that works for the benefit of the customers and the country's economy.

The most successful PPPs have relied heavily on local private partners and resources. PPPs in Western and Central Africa have always been implemented with the active participation of foreign operators, whether private or public. But in the most successful PPPs of the region the ownership and the management of the private operators have rapidly been transferred to local investors and local managers. SODECI of Côte d'Ivoire and SDE of Senegal are true Ivorian and Senegalese companies and are perceived as such by civil society as a whole.

Can the water PPP experience in Western and Central Africa be replicated elsewhere?

A flexible and resilient regional PPP model seems to have emerged during the last ten years in Western and Central Africa with the improved *afferriages* implemented in Côte d'Ivoire, Senegal and Niger. All of these PPPs include specific features that have been a key to their success, and which decision makers might be interested to ponder upon as they consider PPP as an option for reforming failed water utilities in other parts of the developing world. First, financing was made available to subsidize direct access to the water distribution network for the poor. Second, the private operator was involved in implementing the investment program, even when a large portion was funded by the government. Third, they all pursue a cost recovery policy that allowed the private operator to immediately cover all its operating costs, while the public partner absorbed the financial shocks linked to lumpy investments, in order to protect the affordability of the water supply service. Finally, most successful PPPs relied on regulation by contract: the predictability and acceptance of the regulatory tools put in place are more important than the creation of an independent regulatory agency.

The recent arrival of new operators on the PPP market in the region is a positive sign. For many years PPPs in urban water services in Western and Central Africa involved only a limited number of French private operators. But since 2000, professional operators from other countries have been awarded PPP contracts in Cape Verde, Ghana and Cameroon. The *afferriage* contract for water supply services in Cameroon that was awarded to the public *Office national de l'Eau potable* (ONEP) of Morocco is actually the first example of a true South-South PPP in the region. Not only has a viable contractual model gradually emerged with the "African Afferriage" but the industry is also evolving towards more competition.

CHAPTER 1

ORIGIN AND TYPES OF PUBLIC-PRIVATE PARTNERSHIPS IN WESTERN AND CENTRAL AFRICA

Western and Central Africa has one of the longest experiences with public-private partnerships in the developing world, both for water supply and for combined power and water supply utilities. Though several of these partnerships have failed, several have had a sustained positive impact and are among the most successful in the developing world.

This paper seeks to provide lessons and conclusions based on objective evidence. Up to now, the actual performance of even well known public-private partnerships (PPPs) like those of Côte d'Ivoire and Senegal has never been thoroughly documented, and the experience with some of these partnerships has not been much disseminated beyond the region. To help inform the current debate about the benefits brought by PPPs and the chances Africa has of achieving the Millennium Development Goal (MDG) for water supply, this paper documents the region's PPP experience in water supply in a comprehensive manner using objective data on performance. This approach yields lessons and conclusions that other countries can use as they strive to improve the quality of urban water services and establish the financial viability of their urban water supply sectors.

Eleven PPP cases are reviewed, and detailed performance indicators are provided for six—Côte d'Ivoire, Senegal, Niger, Mali, Burkina Faso, and Gabon—corresponding to the largest projects with more than four years of private operation. The PPPs of Central African Republic, Guinea Bissau, and Sao Tome and Principe are not documented in detail here, both for lack of data and because these were small operations in terms of the number of water connections managed by the private operator. Nigeria stands out as a special case, and discussing the poor performance of its public water utilities reforms goes beyond the scope of this discussion paper.

Outline of the paper. The remainder of this chapter describes the origins and types of PPPs in the region and provides an overview of the partnerships featured in this study. Chapter 2 analyzes the impact of the partnerships, assessing their contributions to the MDG for water—which captures the central challenge for the sector of providing access to safe, reliable, and sustainable water supply—and their performance in raising resources for investment. Chapter 3 reviews the lessons of experience with PPPs across the region. A companion paper presents the eleven individual case studies which were reviewed in details.

A. Origins of PPPs

Public-private partnerships in urban water supply services are not a new concept in Western and Central Africa. Up to the late 1950s/early 1960s, French private operators often provided water supply to better-off residents in several urban centers (as in Senegal, Guinea, Mali, and the Republic of Congo). The private companies either left or were nationalized after countries became independent, but some stayed in place for some time (as in Senegal until the early 1970s). Côte d'Ivoire, a latecomer, awarded a long-term concession for water production and distribution in Abidjan in 1959, a year before it achieved independence. This partnership is still very active, and because of its successes has come to serve as a reference point for many neighboring countries seeking options for improving urban water supply. PPP also has a lengthy track record in Senegal and Gabon, having been active there for more than a decade.

During the 1980s most of the urban water supply in Western and Central Africa was provided by state-owned enterprises, and only a handful provided a reasonable level of service. Apart from Côte d'Ivoire (with a private operator since 1959) and Guinea (under an affermage contract since 1989), most of the water utilities in the region were under public management. Although most were national utilities with country-wide jurisdiction,³ the systems they operated were usually rather small, being limited to the capital city and some of the larger secondary towns, and had low coverage. The technical, commercial, and financial performance of the public water utilities varied, but typically suffered from their limited autonomy with regard to investment decisions and staff recruitment and from inadequate tariff-setting mechanisms. In most countries, water infrastructure had been deteriorating for years, due to lack of maintenance, and the quality of service was worsening with growing water rationing. Under this background, the good performance of the private operator Côte d'Ivoire was a striking exception (Box 1).

Box 1: Côte d'Ivoire: a successful PPP in West Africa that has been in place for decades

Back in 1973, the Ivorian government developed a forward-looking policy for the urban water supply sector, in order to address issues of reliability, financial, and environmental sustainability and affordability of the water service. It was based on six key principles: (i) separation of the ownership of water supply assets from the provision of water supply services; (ii) provision of water supply services by a private company (*Société de Distribution d'Eau de Côte d'Ivoire*—SODECI); (iii) recovery of the full cost of water—expenses for operation and maintenance plus new investment—from user charges; (iv) uniformity of the water tariff level and structure across the entire country; (v) promotion of direct access to and consumption of piped water for low-income households; and (vi) disconnection of customers in arrears.

Between the mid-1970s and the late 1980s the development of the urban water supply sector was spectacular. Water distribution systems were established in many small towns, as the number of urban water supply systems in operation rose from 41 to more than 200. The number of individual water connections quadrupled from 51,000 to 205,000. This development was driven in part by operations in Abidjan, where water could be produced at a fairly low cost and where demand and willingness to pay were high enough to cross-subsidize operations in secondary centers. By the end of the 1980s, half the urban population was served by household water connections.

At the end of the 1980s, SODECI's performance was comparable to that of efficient European water distributors, with continuous (24/7) supply in all centers, universal metering, NRW maintained at about 15 percent, and the bill collection ratio from private customers reaching 98 percent. SODECI, whose shares have been traded on the local stock market since 1978 and whose management was already largely Ivorian, was perceived by both the government and the customers as a true Ivorian company, even if its largest shareholder was (and still is) the French private water distributor *Société d'Aménagement urbain et rural* (SAUR). Also, SODECI's training center helped develop skilful middle managers and professionals, which is a key to good performance in any utility.

Most water utilities focused on providing services to the most affluent urban areas. Although the principle of payment for water consumed was generally well accepted by both governments and customers, only a few utilities were able to recover their operation and maintenance (O&M) costs, let alone capital costs, from user charges. Poorly performing utilities had no capacity

³ In the case of Nigeria, public utilities have a statewide jurisdiction. There was no example of municipal water supply and sewerage operations in the region, unlike in several Eastern and Southern Africa.

to meet growing demand, as their financial viability and capacity to invest suffered from poor operating efficiency—a process which led them to serve mostly wealthy urban dwellers. Though low tariff levels or tariff structures in many countries sought to encourage broad access to piped water, few households in the lower middle income bracket or below could afford the cost of an individual connection. The main beneficiaries of low tariffs were rich households who were already connected, while the utilities lacked revenues to finance system expansion.

In several countries, national utilities had joint responsibility for water and electricity.

One specific feature of the region was that in several French-speaking countries (Mauritania, Mali, Niger, Chad, Benin and Gabon), as well as in The Gambia and Portuguese-speaking countries (Guinea Bissau, Sao Tome), water was supplied by public utility companies that were also responsible for electric power generation, transport, and distribution. The rationale for these combined utilities was the scarcity of trained professionals and technicians, as well as the economies of scale they could generate. Water sales typically represented about 15 percent of the utility's revenues, so that the provision of water services was mostly treated as a side business.

Attempts to reform water utilities under public management proved often frustrating.

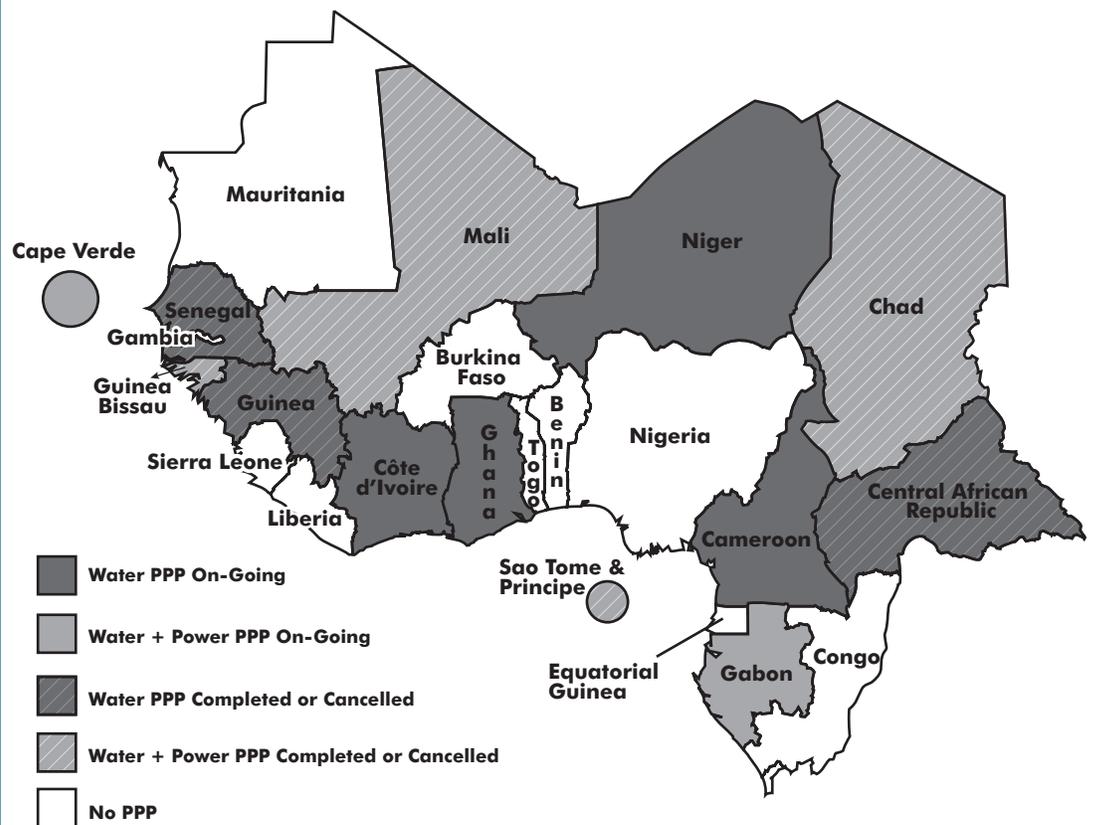
Several approaches were experimented with to improve the performance of public operators, usually with the support of International Financing Institutions (IFIs) and donors. They included technical assistance, twinning, or the signing of performance memoranda of understanding. This had only mixed results:

- *Technical assistance (TA)*. In the 1980s, most donor-supported projects in water supply for the region included sizeable technical assistance components to address the utilities' operational shortcomings. Technical assistance was typically provided by consulting firms or by specialized bilateral agencies. Its outcome has been usually disappointing, depending upon the capacity of the individuals seconded—often recruited for specific contracts—and upon the willingness of the utility's staff to absorb the know-how.
- *Twinning*. Twinning between European and African utilities was implemented in several English-speaking countries as well as in Niger. The rationale was that it would facilitate the coordination of the activities of the various experts involved, as they were all supposed to come from the same utility, and provide for more transfer of more operational know-how than in the case of TA with consulting firms. While twinning arrangements have usually had slightly better results than technical assistance, their limited financial incentives have not always encouraged experienced utilities to second their best staff. They fell short at solving the key problems faced by poorly performing utilities.
- *Program Memoranda of Understanding (MoU, called *contrats plans* in French)*. Performance MoU between a public water utility and its government were first developed in the early 1980s. Typically a performance MoU commits the public utility to implementing specific actions for improving access, quality of service, efficiency of operations, and financial indicators and the government to approving regular tariff adjustments, raising financing for developing the infrastructure, and establishing proper budgeting and payment mechanisms for water bills issued to its agencies. These MoU were often backed by conditionality agreements signed with IFIs. Experience with performance MoU has often been poor, in particular with regard to timely tariff adjustments and payment of water bills by governments. The public parties signatories to the MoU have rarely felt obliged to comply with their written commitments.

Since the mid-1980s, many Western and Central African countries have experimented with PPPs. Since the mid-1980s, no fewer than 15 of the region's 23 countries have sought to improve

their urban water supply service through PPPs (Figure 1). Since the first “new-generation” water PPP began in Guinea in 1989, a regular flow of new contracts has been signed, including recently a management contract for the national water utility in Ghana in 2005, and an *affermage* for the national water utility of Cameroon in 2007. Though in several developing countries, notably in Latin America, the development of water PPPs has been slowed down during the last five years, the pattern of development in Western and Central Africa has been fairly continuous.

Figure 1: PPP Experience in Western and Central Africa



Source: PPI database

Water PPPs have concerned about one third of the urban population of the 23 countries of Western and Central Africa. This proportion goes up to two thirds of the regional urban population if Nigeria is excluded, making an interesting environment to review the impact of such partnerships during the last fifteen years. They have been implemented in countries with urban populations ranging from ten million (Ghana) to fewer than half a million (Cape Verde, The Gambia, Guinea Bissau, Sao Tome and Principe), and per capita gross national income (GNI) in 2004 ranging from US\$4,080 in Gabon to US\$230 in Niger.

Only a few countries have not experimented with PPPs. In a few cases, these were countries where a public service provider has been performing reasonably well (Benin, Togo). Others experienced severe civil disturbances (Congo, Liberia or Sierra Leone). As for Nigeria, it has

considered using PPPs on several occasions, including for the Lagos water supply utility, but no project reached contractual closure.

B. Types of PPPs

PPPs have taken a wide variety of forms in the region. While other regions of the developing world implementing water PPPs for their urban utilities have often tended to focus on one contractual model, governments in Western and Central Africa has experimented with a wide range of options, from performance-based service contracts for improving commercial and financial operations of the public water utility in Burkina Faso to the full concession of the water supply service in Gabon. Table 1 summarizes their basic features and current status.

Table 1: Water PPP Experience in Western and Central Africa (water-only and combined utilities)

Country	Type of PPP	2004 Total Pop. mio	2004 Total Urban Pop. mio.	Pop. Served by PPP (2007 or last year)	2004 GNI per capita (US\$)	Period	Status and Overall Assessment	
Water Supply Utilities								
Côte d'Ivoire	<i>Affermage</i>	17.9	8.0	7.5	770	1959–	Active. Good performance; a PPP reference.	S
Senegal	<i>Affermage</i>	11.4	5.7	4.7	670	1996–	Active. Good performance: a PPP reference.	S
Niger	<i>Affermage</i>	13.5	3.1	1.8	230	2001–	Active. Improved service and efficiency despite difficulties.	S
Burkina Faso	Service	12.8	2.3	1.8	360	2001–	Completed. Improved service and efficiency.	S
Ghana	Man. contract	21.7	10.0	4.7	380	2005–	Active only since 2005.	NA
Guinea	<i>Affermage</i>	9.2	3.3	1.1	460	1989–1998	Completed but not renewed. A few improvements.	M
CAR	<i>Affermage</i>	4.0	1.7	0.6	310	1991–2001	Completed but not renewed. No performance data	F
Cameroon	<i>Affermage</i>	16.0	8.3	3.0	800	2007–	Awarded in 2007. Active only since 2008	NA

Continued on next page

Table 1: Water PPP Experience in Western and Central Africa (water-only and combined utilities) (continued)

Country	Type of PPP	2004 Total Pop. mio	2004 Total Urban Pop. mio.	Pop. Served by PPP (2007 or last year)	2004 GNI per capita (US\$)	Period	Status and Overall Assessment
Combined Power/Water Utilities							
Gabon	Concession	1.4	1.2	0.75	4,080	1993–	Active. Good performance despite recent difficulties. S
Cape Verde	Concession	0.5	0.3	0.2	1,740	1999–	Still active following partial retreat of private operator. Mixed outcome. M
The Gambia	<i>Affermage</i>	1.5	0.4	0.3	270	1993–1995	Early termination following conflict, little/or no improvement. F
Chad	Man. contract	9.4	2.4	1.1	260	2000–2004	Early termination following conflict, little/or no improvement. F
Mali	Concession	13.1	4.3	1.5	360	2001–2005	Private operator has left after sizeable improvements. M
Guinea Bissau	Man. contract	1.5	0.5	0.2	160	1991–1997	Completed but not renewed. No performance data. F
Sao Tome	Man. contract	0.2	0.1	0.1	390	1993–1996	Completed but not renewed. No performance data. F
Total		134.1	51.6	29.3	525		
<p>Notes: Total and urban population: data from WHO/UNICEF MDG Joint Monitoring Program. Served population based on authors' calculation 2007 or last year of activity of PPP; differences with urban population figures are due to low access rates, the fact that PPPs do not cover all urban areas, and different reference years. GNI: data from <i>World Development Report 2005</i>; data in <i>italics</i> from Finfacts, based on World Bank data; average GNI/capita calculated using countries' total populations.</p> <p>S: Success; F: Failure; M: Mixed; NA: Not applicable (ratings based on authors' assessment)</p>							

Burkina Faso implemented a successful performance-based service contract. As the authorities in Burkina Faso were reluctant to transfer the provision of the water supply service to a private operator, they instead corporatized the public water supply utility *Office national de l'Eau et de l'Assainissement* (ONEA) and in 2001–07 involved the private sector through a performance-based service contract focusing on commercial and financial management. The contract is built around performance targets and links the remuneration of the service provider partly to meeting these targets. This approach contrasts with the traditional technical assistance or twinning contracts that have been used in the region during the last 25 years (with mixed results), whereby the private

company obtains a fixed payment for its services. In Burkina Faso's case the definition of clear outputs and products expected from the service contractor have helped achieved good results.

Management contracts have been implemented in several cases, often as a first step towards longer-term PPPs. Management contracts are usually of short duration, and entail only a limited transfer of responsibilities and risks to the private operator.⁴ The public authority remains in charge of financing and implementing investment in rehabilitation and system expansion—a feature that can strongly affect, as in Chad, the private operator's capacity to make sizeable improvements. Authorities in several countries have tended to view the use of management contracts as a transitional arrangement, for those instances where the poor situation of the utility made it too risky for a private operator to come in under an arrangement that involved a larger transfer of responsibilities. Both Gabon and Mali awarded their concession contracts after initial management contracts that had put operations in minimum order and establish reliable baseline data. The same principle was supposed to be followed in Chad, but the PPP experience was terminated early due to conflicts between the public and private parties.

A key feature of the development of water supply PPPs in the region has been the importance of the *affermage* model, which has been successfully implemented in Côte d'Ivoire, Niger, and Senegal and is now being implemented in Cameroon. *Affermages* have been one of the preferred PPP options in France since the mid-1940s and have been prominent in water supply PPPs in Western and Central Africa, unlike in other developing regions. In an *affermage*, a private operator is given responsibility by a public granting authority (PGA), whether a government department or an asset-holding company (AHC), to operate and maintain assets and provide service to customers, including billing and collection; unlike in management contracts, customers are under contract with the operator, not the public authority. *Affermages* are usually granted for a period of ten to fifteen years. The PGA, for its part, retains the ownership of the water supply assets, the responsibility to plan and finance their development, and the authority to set user charges. Unlike in a management contract, the staff in charge of operations is employed by the private operator, not by the public authority. While the PGA bears the financing and foreign exchange risks associated with the capital expenditure program, the private operator takes a share of the commercial risk and some of the foreign exchange risk associated with operating the service. The commercial risk is shared between the private operator and the public authority.⁵

Concession contracts have been implemented mostly for combined power/water operations. While long-term concession contracts with international water companies have been the dominant PPP model in Latin America and East Asia, they have been implemented in Western and Central Africa only in three countries—in Mali, Gabon, and Cape Verde. Concessions transfer all the technical, operational, commercial, and financing risks and responsibilities to the private operator—an approach which was often considered not financially viable and too risky for the region, given prevailing country risks and high poverty rates. The three concessions in Western and Central Africa have all been for combined power/water national utilities, as it was hoped that the larger revenues base would facilitate raising commercial financing for developing infrastructure, and that power operations would cross-subsidize the provision of water.

4 In a management contract: (i) the customer still holds a subscription contract with the public authority that grants the contract; (ii) the public authority owns the cash flows and pays the operator a management fee that typically includes a fixed part and a variable part linked to the operator's technical and commercial performance; and (iii) the staff of the public authority remains employed by the latter.

5 The French word *Affermage* was initially translated in English by "lease contracts," but in fact there are no examples in the region of true lease contracts, whereby the private operator would pay a fixed rental fee to the PGA, rather than share the collected revenues, and thus take an increased commercial risk.

Several of the PPPs in the region have failed, and given the difficult conditions they had to contend with, this should be no surprise. Among the 15 PPPs that have been implemented in Western and Central Africa, only seven (Côte d'Ivoire, Senegal, Niger, Ghana, Cameroon, Gabon and Cape Verde) were still active by 2007. One PPP (Burkina Faso) was completed successfully in 2007, three were not renewed after the completion of initial contracts (Guinea, Guinea Bissau, and Sao Tome) and four were terminated before contract term (The Gambia, CAR, Chad, and Mali). PPPs in the mixed power and water utilities have been particularly problematic, with a much higher rate of PPP cancellation than in the case of water-only utilities. All PPPs for combined power/water utilities have been affected by difficulties with the electricity side of the business, and among the seven that were put in place only two (Gabon and Cape Verde) are still active and have been or are encountering problems.

Water supply-only PPPs have worked well and many are still in place. By late 2007, out of the 10 water supply PPPs five were active: the four *affermage* contracts in Côte d'Ivoire, Senegal, Niger, and Cameroon and the management contract in Ghana; the service contract in Burkina Faso was successfully completed in 2007 and discussions are underway to design a follow-up. As mentioned above three water supply PPPs have been completed but not renewed. None has been terminated early.

The eleven PPP cases reviewed in details in this study are for both combined power and water supply utilities (Gabon, Cape Verde, The Gambia, Chad, Mali) and water supply-only utilities (Cote d'Ivoire, Senegal, Niger, Burkina Faso, Guinea, Ghana). They were selected based on data/information availability, and represent a total served population of about 25 million people, or 85% of the urban population in the region served by private operators at one point in time during the last 15 years in the region. The six PPPs where detailed performance data was collected and analyzed represent a total served population of about 18.5 million (or 63 percent). Those projects not documented at all were either very small PPPs that have been terminated (Central African Republic, Guinea Bissau, Sao Tome—estimated combined population served less than one million), or the one in Cameroon (about 3 million people served) which just started in 2008.

CHAPTER 2

THE IMPACT OF PUBLIC-PRIVATE PARTNERSHIPS ON URBAN WATER SUPPLY SERVICES IN WESTERN AND CENTRAL AFRICA

Successful PPPs in Western and Central Africa have good track records in improving the quality and the reliability of the water service and in extending direct access to piped water to households. Successful PPPs have also helped achieve financial sustainability of the water supply service by generating sufficient revenues from user charges to fully cover operation and maintenance costs, service the debt and contribute cash to capital expenditure programs. Finally, well designed PPPs have succeeded in making water supply service more affordable to low-income households.

Water utilities in Western and Central Africa are faced with multiple challenges. In many countries of the region, the piped water supplied to those fortunate enough to have access to an individual connection or a standpipe is usually intermittent, and the potability of the water can not be guaranteed. The utilities are dependent on transfers from the central government for investments, and their tariff revenues are often not enough to cover their full O&M costs. Poor households have limited capacity to pay, and many can not afford the upfront payment needed to connect to the network. Issues of reliability, sustainability and affordability are therefore of major importance, and must be looked at in parallel with access. PPPs have usually been implemented not only to improve access to piped water but also to enhance the quality of the service provided to the customers, and to increase the efficiency of the operations.

Using the MDG as framework to analyze the contribution of PPPs. The MDG for water sets the target of “halving by 2015 the proportion of people without *sustainable* access to *safe* drinking water and *basic* sanitation in 1990.” While analysis of whether countries are meeting the MDGs for water supply have typically focused on **access** to piped water, the definition actually emphasizes the notion of **sustainable** access to **safe** drinking water. This chapter compares how well countries with and without PPPs have performed since 1990, both in expanding access to water—in terms of the proportion of population with access to improved water sources and with direct access through residential connections—and also in providing **reliable** and **affordable** supplies on a **sustainable** basis.

Grouping countries into categories. Based on data available from the Joint Monitoring Program of WHO/UNICEF, the period of reference for the analysis will be 1990–2004. The analysis of the impact of PPPs on the MDGs across countries is made difficult by the fact that most PPPs were in place for only a portion of this period. In such cases, the contribution of PPPs can only be assessed by looking at yearly data, if and when they are available. To facilitate comparisons, countries have been grouped into six categories:

- **Five countries with long-standing and ongoing PPPs: Côte d’Ivoire, Senegal, Gabon, Niger, Cape Verde.** Only in Côte d’Ivoire was a PPP in place during the whole period considered (1990–2004). In Senegal and Gabon the PPPs have been in place for the last ten years, but in Cape Verde and Niger the PPPs started only in 1999 and 2001, respectively.
- **Two countries with recent PPP initiatives: Ghana and Cameroon,** which have entered into agreements with private operators since 2004 and whose current performance mostly reflects that of public management in earlier years.
- **Burkina Faso,** whose public water utility performance has benefited from the implementation of a service contract with a private operator between 2001 and 2007.

- **Seven countries with terminated PPPs: Guinea, Central African Republic, The Gambia, Chad, Mali, Guinea Bissau, Sao Tome and Principe.** Only in Guinea and Central African Republic were the PPPs in place for about a decade.
- **Seven countries with no PPP experience: Benin, Republic of Congo, Equatorial Guinea, Liberia, Mauritania, Sierra Leone, Togo.**
- **Nigeria**, where no major PPP has been implemented so far and whose large urban population (close to half of the total for the region) sets it aside as a special case.

The comprehensive data derived from the eleven case studies give **a generally positive picture of the performance of PPPs** for helping achieve the MDG.

A. PPPs and Access to Piped Water

All water utilities in the region face an acute challenge to meet exploding demand. Urban population in Western and Central Africa has almost doubled in the last 15 years, increasing by 87 percent between 1990 and 2004 from 68 million to 127 million. A large proportion of the growth is contributed by poor rural migrants who settle in informal areas that are difficult or illegal places for utilities to serve. In this context, even maintaining existing access ratios is difficult.

For access to an improved source of water in urban areas, the region is broadly on track to meet the MDG if Nigeria is excluded. In the region as a whole, the estimated urban population with improved access to piped water (whether through individual connections, community standpipes, or purchases from neighbors who own a connection) has almost doubled since 1990, going up from 51 to 95 million people. Given the growth in urban population, this means that the overall water coverage ratio has remained roughly constant at about 76 percent. If the 2015 MDG target for the coverage ratio is 88 percent,⁶ the ratio should already have reached 83 percent in 2004, assuming a linear progression between 1990 and 2015. The region's poor performance thus far is, however, essentially due to that of Nigeria, where the coverage ratio is reported to have decreased from 80 percent to 67 percent between 1990 and 2004. If Nigeria is excluded from the list of 23 countries, the coverage ratio for access to piped water in the other 22 countries of Western and Central Africa has in fact reached 83 percent.

For direct access to piped water through household connection, some progress has been made but the region is below a "notional" interim target. The urban population with direct access to piped water through residential connections (although not the subject of an MDG target per se) increased from 21 to 36 million during 1990–2004, meaning that the proportion of people with a direct water connection actually decreased from 31 percent to 28 percent. Using a similar approach to that underlying the previous paragraph, the 2015 target for the connection ratio could be estimated at 65 percent⁷ and the 2004 interim target ratio at about 50 percent. Again Nigeria is an outlier, since its connection ratio is reported to have decreased sharply from 32 percent to 15 percent between 1990 and 2004, badly affecting the regional performance. If Nigeria is excluded, the water connection ratio for the other 22 Western and Central African countries appears to have improved, going up from 30 percent in 1990 to 40 percent in 2004, but this sizeable improvement is still well below the interim 2004 target of 50 percent. (Table 4)

⁶ 1990 coverage ratio: 76 percent; 2015 MDG goal: $[76 + (100-76)/2] = 88$ percent.

⁷ 1990 connection ratio: 31 percent; 2015 MDG goal: $[31 + (100-31)/2] = 65$ percent.

Table 4: Coverage and Connection Ratios in Western and Central Africa

	1990			2004			MDG 2015 Targets		MDG 2004 Interim Targets	
	Urban Pop. mio	Cov. Ratio %	Conn. Ratio %	Urban Pop. mio	Cov. Ratio %	Conn. Ratio %	Cov. Ratio %	Conn. Ratio %	Cov. Ratio %	Conn. Ratio %
22 Countries	36.1	72	30	65.3	83	40	86	65	80	49
Nigeria	31.7	80	32	61.8	67	15	90	66	86	51
Total	67.8	76	31	127.1	75	28	88	65	82	50

Source: authors' calculations based on UNICEF/WHO coverage data

Notes: Cov. ratio: coverage ratio, i.e. the proportion of urban population with access to piped water (whether through connections, standpipes, or neighbors' connections); Conn. ratio: connection ratio, i.e. the proportion of urban population with direct access to piped water through residential connections; mio: million.

Grey shading highlights ratios that are below the interim targets. Darker blue shading highlights ratios that appear to be on track.

For the 23 individual countries of the region, classified by categories according to their experience with PPP reform, Table 5 shows the official data from the UNICEF/WHO MDG Joint Monitoring Program (JMP) on coverage and connection ratios in urban areas.

Table 5: Coverage and Connection Ratios in Western and Central African Countries

	WHO/UNICEF JMP Data										MDG Targets							
	1990					2004					Coverage			Connection				
	Pop.	Cov.	Conn.	Pop.	Conn.	Pop.	Cov.	Conn.	Pop.	Pop.	Pop.	Pop.	Pop.	Pop.	Pop.	Pop.		
	Total	Ratio	Pop.	Ratio	Pop.	Total	Ratio	Pop.	Ratio	Pop.	Increase	2015	2004	Increase	2015	2004		
Mio	%	mio	%	mio	mio	%	mio	%	mio	%	%	%	mio	%	%	%		
Long Standing Ongoing PPP																		
Cote d'Ivoire ⁸	5.0	73	3.7	47	2.4	8.0	90	7.2	60	4.8	3.6	197	87	81	2.5	204	74	62
Senegal	3.2	89	2.8	50	1.6	5.7	92	5.2	75	4.3	2.4	184	95	92	2.7	267	75	64
Gabon	0.7	60	0.4	30	0.2	1.2	95	1.1	52	0.6	0.7	271	80	71	0.4	297	65	50
Niger	1.4	62	0.9	19	0.3	3.1	80	2.5	35	1.1	1.6	286	81	73	0.8	408	60	42
Burkina Faso	1.2	61	0.7	24	0.3	2.3	94	2.2	31	0.7	1.4	295	81	72	0.4	248	62	45
Cape Verde	0.2	60	0.1	30	0.1	0.3	86	0.3	41	0.1	0.1	215	80	71	0.1	205	65	50
Sub total	11.7	74	8.6	41	4.8	20.6	90	18.5	56	11.6	9.8	214	87	81	6.8	243	70	57
Recent PPP Initiatives																		
Ghana	5.6	86	4.8	40	2.2	10.0	88	8.8	64	6.4	4.0	183	93	90	4.2	286	70	57
Cameroon	4.7	77	3.6	26	1.2	8.3	86	7.1	25	2.1	3.5	197	89	83	0.9	170	63	47
Sub total	10.3	82	8.4	34	3.5	18.3	87	15.9	46	8.5	7.5	189	91	87	5.0	245	67	52
Long Standing Terminated PPP																		
Guinea	1.6	74	1.2	31	0.5	3.3	78	2.6	28	0.9	1.4	217	87	81	0.4	186	66	50
CAR	1.1	74	0.8	4	0.0	1.7	93	1.6	9	0.2	0.8	194	87	81	0.1	348	52	31
Sub total	2.7	74	2.0	20	0.5	5.0	83	4.2	22	1.1	2.2	208	87	81	0.5	199	60	42
Short Lived Terminated PPP																		
the Gambia	0.3	60	0.2	25	0.1	0.4	95	0.4	39	0.2	0.2	211	80	71	0.1	208	63	46
Chad	1.3	41	0.5	10	0.1	2.4	41	1.0	10	0.2	0.5	185	71	58	0.1	185	55	35
Mali	2.1	50	1.1	8	0.2	4.3	78	3.4	29	1.2	2.3	319	75	64	1.1	742	54	34
Guinea Bissau	0.3	60	0.2	10	0.0	0.5	79	0.4	15	0.1	0.2	219	80	71	0.0	250	55	35
Sao Tome	0.1	60	0.1	20	0.0	0.1	89	0.1	34	0.0	0.0	148	80	71	0.0	170	60	42
Sub total	4.1	49	2.0	10	0.4	7.7	68	5.2	23	1.8	3.2	260	74	63	1.3	414	55	35
No PPP																		
Benin	1.8	73	1.3	18	0.3	3.7	78	2.9	25	0.9	1.6	220	87	81	0.6	285	59	41
Congo	1.2	60	0.7	30	0.4	2.1	84	1.8	49	1.0	1.0	245	80	71	0.7	286	65	50
Equ. Guinea	0.1	12	0.0	10	0.0	0.2	45	0.1	17	0.0	0.1	750	56	37	0.0	340	55	35
Liberia	0.9	85	0.8	21	0.2	1.5	72	1.1	1	0.0	0.3	141	93	89	-0.2	8	61	43
Mauritania	0.9	32	0.3	20	0.2	1.9	59	1.1	32	0.6	0.8	389	66	51	0.4	338	60	42

Continued on next page

8 Data for Côte d'Ivoire were adjusted based on the findings of the case study (Volume 2). The figure reported by the JMP—i.e. that the connection ratio increased by one percentage point only from 47 percent in 1990 to 48 percent in 2004—is not supported by the data collected in the field to document the case. Côte d'Ivoire's social connection program added about 310,000 residential connections between 1990 and 2004, as the total number of connections increased by more than 150 percent, from 210,000 to 550,000. Since the private operator serves all urban centers and the urban population increased by only about 60 percent during this period, the connection ratio must obviously have risen significantly. The case study estimates that the connection ratio of 40 percent in 1990 went up to about 60 percent in 2004, a more credible figure.

Table 5: Coverage and Connection Ratios in Western and Central African Countries (continued)

	WHO/UNICEF JMP Data										MDG Targets							
	1990					2004					Coverage			Connection				
	Pop.	Cov.	Conn.	Pop.	Conn.	Pop.	Cov.	Conn.	Pop.	Increase	2015	2004	Pop.	Increase	2015	2004		
	Total	Ratio	Pop.	Ratio	Pop.	Total	Ratio	Pop.	Ratio	Pop.	mio	%	%	mio	%	%	%	
Sierra Leone	1.2	60	0.7	20	0.2	2.1	75	1.6	30	0.6	0.9	219	80	71	0.4	263	60	42
Togo	1.2	81	1.0	14	0.2	2.2	80	1.8	12	0.3	0.8	181	91	86	0.1	157	57	38
Sub total	7.3	66	4.8	20	1.5	13.7	75	10.3	26	3.5	5.5	214	83	75	2.0	238	60	43
Total																		
w/o Nigeria	36.1	72	25.9	30	10.7	65.3	83	54.1	40	26.4	28.2	209	86	80	15.8	248	65	49
Nigeria	31.7	80	25.4	32	10.1	61.8	67	41.4	15	9.3	16.0	163	90	86	-0.9	91	66	51
with Nigeria	67.8	76	51.2	31	20.8	127.1	75	95.5	28	35.7	44.2	186	88	82	14.9	172	65	50

On track; Slightly off track; Way off track

Source: WHO/UNICEF MDG Joint Monitoring Program

Notes: Cov. ratio: coverage ratio—the proportion of urban population with access to piped water (whether through connections, standpipes, or neighbors' connections). Conn. ratio: connection ratio—the proportion of urban population with direct access to piped water through residential connections. Pop: total urban population.

Population data are country estimates of the total population living in urban areas. They differ from the data on population served presented elsewhere which refers to the estimated size of the population actually served by the private operator under each PPP. Differences stem *inter alia* because of low coverage ratio, the fact that the contractual service area of most PPPs do not cover all urban areas in a given country, and different reference years.

Drawing conclusions at country level from these data must be done cautiously. First, using national water supply coverage and connection data for inter-country comparisons can be misleading. Coverage and connection ratios are calculated based on estimations that can have a large margin of error, especially in a region like Africa where data tracking is not always of good quality. It must also be kept in mind that the MDG JMP relies on self reporting by countries; the quality of reporting varies widely among countries.⁹ Second, analyzing the impact of PPPs from national data can be misleading. Because PPPs typically do not cover all the urban areas within a country, national data on urban coverage and connections do not accurately measure their performance.¹⁰ Access data at the country level supplied to the MDG JMP are likely to be less accurate than those presented in this paper's case studies for the urban areas covered by PPPs. A case in point is Côte d'Ivoire, whose performance in increasing access to household connections seems to be underestimated by the JMP data, as explained in the footnote to Table 5.

For access to an improved water source (i.e. including community fountains), there appear to be no significant difference between countries with PPPs and publicly-managed utilities. When Nigeria is excluded, most countries appear to be broadly on track to meet the MDG targets for the coverage ratio (with their 2004 performance comparable to or better than the 2004 MDG interim

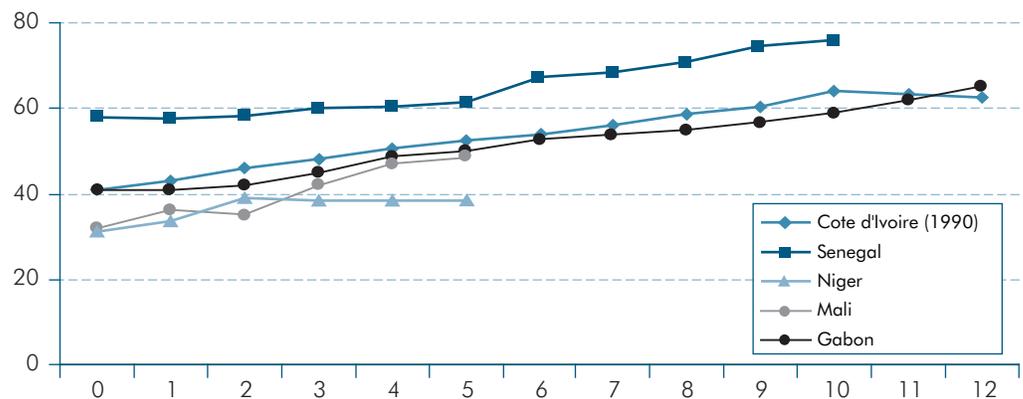
9 The Republic of Congo, for example, reports that its connection ratio increased from 30 percent in 1990 to 49 percent in 2004. This is highly unlikely since it would mean that about 100,000 residential connections would have been built by the public utility to serve an additional 700,000 people, during a period when the country was experiencing major civil unrest and did not receive any significant donor funding for its water sector.

10 In Senegal, for example, many small urban centers are not under the service area of the operator, SDE. The same holds for Gabon, where isolated centers outside the operator SEEG's service area have very low access rates, and Mali, where the utility EDM serves the 16 largest urban centers but none of the small towns. Only in Cote d'Ivoire are most urban centers covered by the private operator.

targets), regardless of their PPP experience. Among those countries without PPP experience, only Liberia is clearly off track, while among those which have experimented with PPPs, only Chad is off track.

For expanding direct access to piped water through residential connections, countries with successful PPPs are the best performers. When looking at the expansion of access through residential connections—a more restrictive and also more reliable criterion for measuring progress—there appears to be a major difference between groups of countries. Côte d’Ivoire, Senegal, and Gabon, which are also the countries with the longest and most successful PPP experience, are the best performers in the region (Figure 2), while the concession in Mali also saw a large increase in the water connection ratio during the five-year tenure of the private operator. In Niger, despite a lower increase of the connection ratio, the number of residential connections rose by 55 percent in five years. The better performance of countries with PPPs can be partly attributed to a more businesslike approach to supplying water. Recognizing that the direct provision of water to identifiable clients is the best way to generate the cash needed to finance O&M and develop the water supply infrastructure, PPPs have greatly increased the connection ratios in the service areas.

Figure 2: Western and Central Africa: Evolution of Connection Ratio under PPPs (percent of urban population with direct access to piped water through residential connections since start of PPP in year 0)

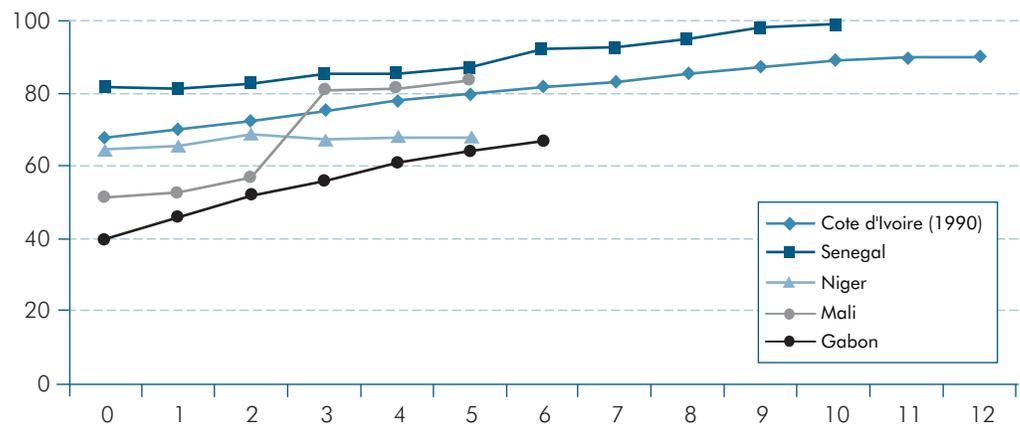


Source: Authors' calculations based on individual case studies, see Volume Two

Most PPPs have expanded access to poor households, both through public standpipes or social connection programs. Figure 3 shows how five PPPs have performed in increasing the improved coverage ratio. The two best performing countries in the region are also the one with the most successful and long standing PPPs. In Senegal, the PPP resulted in an increase of the coverage ratio by 20 percentage points in just ten years, and by 2006, within its service area, access to piped water was almost universal, while 80 percent of the households had their own residential connections. In Côte d’Ivoire, according to data available from the government and SODECI, the PPP was also able to increase the coverage ratio by about 20 percentage points between 1988 and 1998, while the connection ratio evolved from 40 to 62 percent. In both countries, this was achieved through the implementation of subsidy programs to allow poor households to afford connecting to the network. In Niger, about 260 standpipes were installed during the last years to serve poor neighborhoods. Significant progress was also achieved with some PPPs now terminated or expired. In Guinea the PPP initially had good success in expanding

access, as coverage increased from 40 percent to 67 percent between 1989 and 1996. In Mali, during the four years when the PPP was active, the coverage ratio rose from 51 percent to 83 percent in the service area of the concession as more than one thousand community fountains were installed by the concessionaire.¹¹

Figure 3: Western and Central Africa: Evolution of Access to Piped Water under PPPs (percent of urban population with access to piped water through residential connections and shared water points since start of PPP in year 0)



Source: Authors' calculations based on individual case studies, see Volume Two

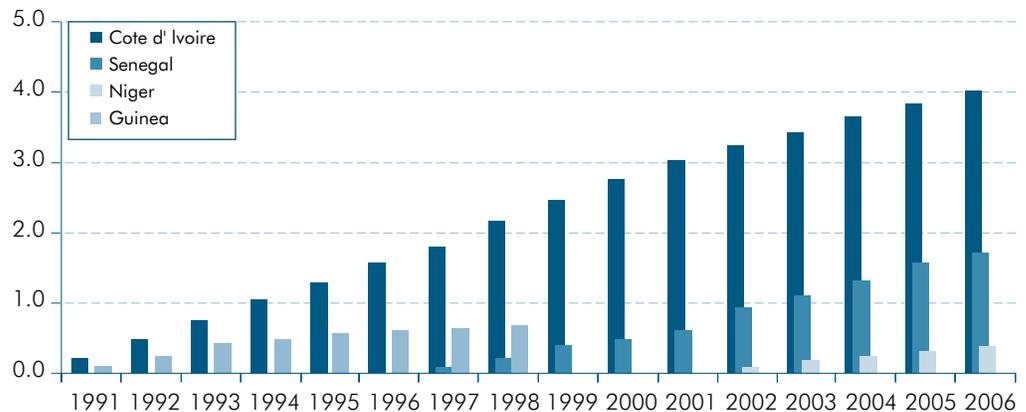
Over the last 15 years (1991–2000), PPPs have provided access to piped water to an additional eight million people in Côte d'Ivoire, Senegal, Niger, Gabon, Guinea, and Mali. These are the six countries which represent the largest PPPs in terms of customer base. Of these eight million, about 70 percent or five million obtained direct access via a residential connection. According to the MDG JMP data, these five million represent about one third of the total population who obtained access to piped water via a residential connection in the region during the last 15 years, a good performance when considering that only in Côte d'Ivoire had a private operator been in place during the whole period. Guinea's contribution, connecting 0.6 million people during the first five years of private operation, is more modest but still notable when one considers that the number of residential connections more than doubled in the first half of the contract. Overall, the major contribution has clearly come from affermage contracts, with Côte d'Ivoire, Guinea, Senegal, and Niger having provided access to piped water to around 6.5 million people during the last 15 years (four million of these being in Côte d'Ivoire since 1990, and 1.8 million in Senegal since 1997) (figure 4).

Many countries with public water utilities still lag behind in providing access to residential connections. Countries whose water utilities remain publicly operated have connection ratios lower than those of countries with PPPs. Ghana is an exception: its water utility has been run by a private operator under a management contract since the end of 2005, but its long-standing good record of raising the connection ratio must be attributed to public management.¹²

11 Gabon is a special case, since the concessionaire is only responsible for providing water supply through connections, while the government has retained responsibility for managing community standpipes.

12 On paper, the public utility of the Republic of Congo has also met the 2004 interim target for the water MDG, but as noted above the reported figure is probably a mistake.

Figure 4: Western and Central Africa: Additional Population Served by Affermages, 1991–2006 (millions)



Source: Authors' calculations based on individual case studies, see Volume Two

Most countries where the PPP reform has failed and have returned to public management are also falling behind. One notable exception is Mali where significant progress was achieved during the presence of the private operator, and the positive trend was maintained after its departure. Burkina Faso, whose public utility is well managed using a performance-based service contract for commercial and financial management, is still currently off track for meeting interim connection ratios. As shown in Table 6, the few countries where a PPP has been in place for several years and is still ongoing are outperforming those that remained under public management.

Table 6: Countries with PPPs are on Track to Achieving the MDG (Summary Findings)

	1990			2004			MDG 2004 Interim Targets		MDG 2015 Targets	
	Urban Pop. Mio	Cov. Ratio %	Conn. Ratio %	Urban Pop. Mio	Cov. Ratio %	Conn. Ratio %	Cov. Ratio %	Conn. Ratio %	Cov. Ratio %	Conn. Ratio %
	LS ongoing PPP	11.7	74	41	20.6	90	56	81	57	87
Recent PPP	10.3	82	34	18.3	87	46	87	52	91	67
LS terminated PPP	2.7	74	20	5.0	83	22	81	42	87	60
SL terminated PPP	4.1	49	10	7.7	68	23	63	35	74	55
Public management	7.3	66	20	13.7	75	26	75	43	83	60
Nigeria	31.7	80	32	61.8	67	15	86	51	90	66

Source: Data for 1990 and 2004 are provided by the WHO/UNICEF MDG Joint Monitoring Program; MDG target estimates for 2004 and 2015 have been made by the authors.

Notes: The table shows the aggregated performance of the various country categories with regard to household connections and access to improved water sources, weighting each country by its population. LS—long standing; SL—short lived.

Darker blue shading highlights indicators that are on track.

Grey shading highlights indicators that are not on track.

B. PPPs and the Reliability, Sustainability and Affordability of the Water Supply Service

Achieving reliability, sustainability and affordability of the water service is as important as expanding access. The above analysis merely measures access to piped water supply infrastructure. But by emphasizing the notion of *sustainable* access to *safe* drinking water, the MDG suggests that achieving reliability and sustainability of service is as important as expanding access. Thus, in monitoring progress towards achieving the MDG in urban water supply, answers to the following questions should also be provided:

- *Reliability of the service:* Is water supplied on a continuous (24/7) basis under a minimum pressure and is its bacteriological quality meeting national standards?
- *Financial sustainability of the service:* Are the systems operated in an efficient manner, so as to keep costs at a low level?
- *Environmental sustainability of the service:* Are water sources exploited and protected so as to avoid depletion and pollution?
- *Affordability of the service:* Have low-income customers been offered access to and minimum consumption of piped water at charges compatible with their revenues?

PPPs and the Reliability of the Service

Successful PPPs have been able to reduce water rationing, and even reestablish continuous service in some cases. Many cities in the region suffer from an intermittent service, with water available for just a few hours per day, some days of the week. The private operator in Abidjan has been providing continuous service for decades, while most public utilities in neighboring countries were experiencing rationing. It is noteworthy that successful PPPs have been able to achieve continuity in water supply service even though the production capacities available to them were limited; for example piped water is distributed on a 24/7 basis in Abidjan and other urban centers of Côte d'Ivoire and in Dakar other urban centers of Senegal at production capacities below 100 liters per capita per day (lpcd).

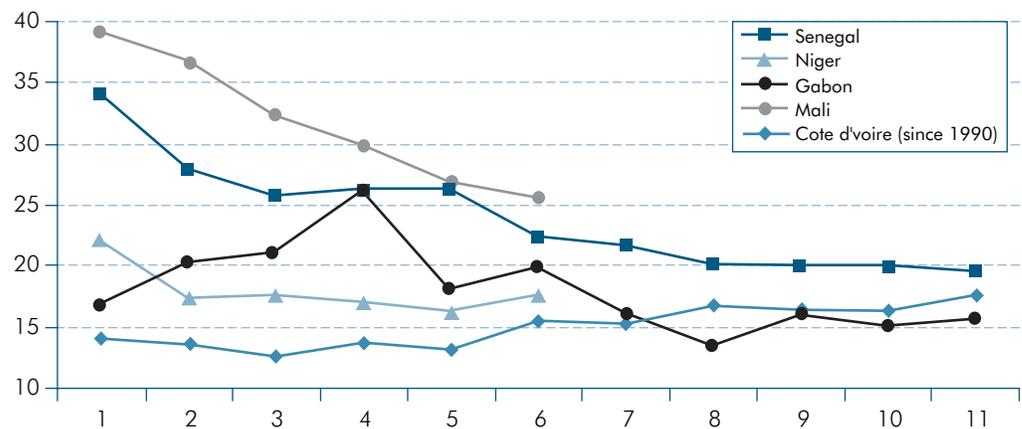
In Western and Central Africa the tap water is safe to drink in very few countries—mostly those in which successful PPPs have been implemented. Taking into account the criterion of whether piped water is actually safe to drink would drastically reduce access figures for many countries. Bacteriological quality can only be guaranteed if the water supply service is continuous. The poor are disproportionately affected, since they cannot afford mitigation equipments such as filters and roof tanks, and tend to live in peripheral areas where the average service pressure of the network is lower. Improvement in service continuity has been accompanied by parallel improvements in potability. In Côte d'Ivoire and Senegal more than 98 percent of the samples taken at customers' taps meet bacteriological standards.

PPPs and the Financial Sustainability of the Service

Operational efficiency is essential for financial sustainability. Improving the quality of the water supply services and improve efficiency of operations directly impacts the financial sustainability of the services by creating a virtuous circle with lower operating costs and higher willingness to pay from customers. This section first analyses how successful PPPs have performed in three key aspects of efficiency: (i) non-revenue water (NRW); (ii) staff productivity; and (iii) bill collection. It then reviews how tariffs have evolved in countries where successful PPPs have been implemented.

Successful PPPs have reduced water losses. Several PPPs have been efficient at reducing the level of non-revenue water (NRW), which combines both physical losses (water lost through leakages) and commercial losses (water supplied but not invoiced to customers). In Gabon and Senegal, the private operator achieved a level of water losses comparable to the best run utilities in Europe and North America. In Côte d'Ivoire, where NRW was maintained at about 15 percent on average nationwide and at 18 percent in Abidjan between the mid-1970s and 1990s, figures have recently increased to 22 and 25 percent respectively, mostly because of the political situation. In the Mali concession which was terminated after five years, a significant reduction in the level of NRW was achieved by the private operator. Among the documented PPPs with at least four years of private operation, only in Guinea and Chad was no visible progress achieved in reducing water losses (Figure 5). The under-performance can be attributed in both cases largely to problems in the execution of the rehabilitation program which remained under the responsibility of the public partner, as well as a lack of contractual incentives in the case of the Guinea *affermage*.

Figure 5: Western and Central Africa: Evolution of Non-Revenue Water under PPPs (percent of production; start of PPP = year 1)

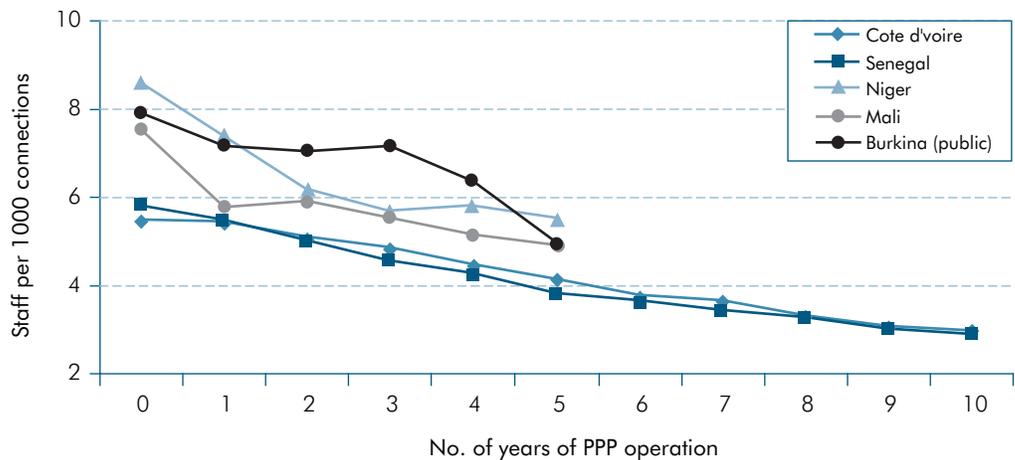


Source: Authors' calculations based on individual case studies, see Volume Two

Successful PPPs have improved labor productivity. Labor is often the highest fixed cost for a water utility, and maintaining an affordable wage bill is essential to ensuring its financial viability. Keeping staff levels higher than is needed raises operational costs and reduces the cash flow available to finance maintenance and development of the infrastructure. Private operators in Côte d'Ivoire, Senegal, Niger, and Mali have significantly reduced their staffing ratios, i.e., the numbers of employees per 1,000 water connections, as they have expanded their customer bases (Figure 6).¹³ The best managed public utility in the region, ONEA of Burkina Faso, has achieved a similar improvement in staff productivity. But since its private partner under the service contract for commercial and financial operations had no responsibility for dealing with staffing levels, this evolution must be entirely attributed to the good public management.

¹³ Gabon does not feature here, as the only staffing data available are for the whole utility including electricity services, but a similar decrease from around 16 to 8 employees per thousand connections was also observed.

Figure 6: Western and Central Africa: Evolution of Staff Productivity under PPPs
(staff per thousand connections; start of PPP = year 0)



Source: Authors' calculations based on individual case studies, see Volume Two

Note: The year of reference (zero) is in each country the year of the start of the PPP, except in Côte d'Ivoire where 1990 was taken as the reference point.

Labor productivity gains have usually been achieved without large-scale staff layoffs.

Contrary to other regions in the developing world where the implementation of water PPPs has often been accompanied by large redundancies, productivity gains in all the successful PPPs analyzed in the region were achieved mostly through the strong growth in customer bases. No massive lay-offs took place, and in the cases of Côte d'Ivoire and Mali the total number of employees even went up over time (see case studies). Guinea, where the PPP was implemented as part of a major national overhaul of state-owned enterprises, is an exception (about 50 percent staff reduction at the water utility).

PPPs have made a large contribution through capacity building and local staff development.

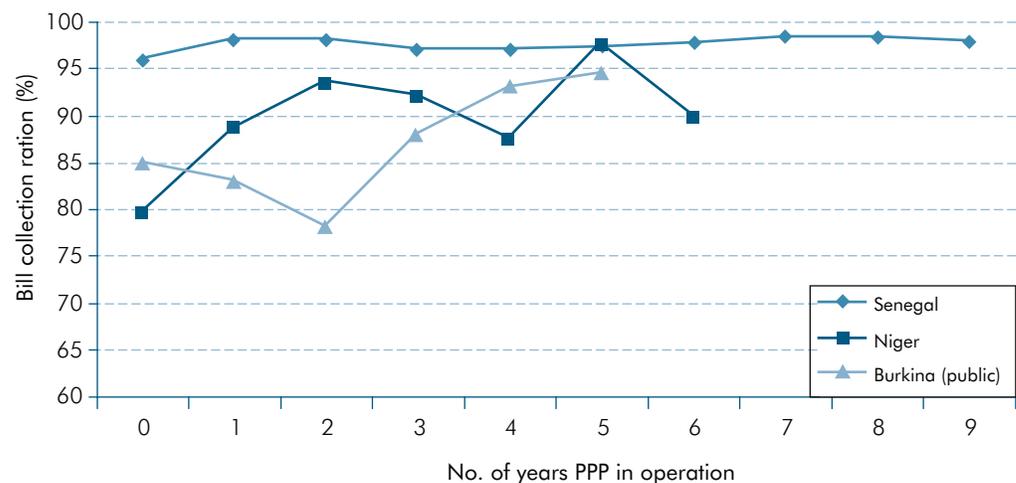
The impact of PPPs on labor goes well beyond the issue of lay-offs and staffing ratios. One of the major contributions of successful PPPs has been in developing the capacity of local staff involved in operations, both through daily interactions and formal training programs. Partnership with foreign experienced private operators has had a positive impact on developing competent African professionals in the countries where the most successful PPPs took place. Foreign private operators have had incentives to replace the expensive but initially needed expatriate staff by less costly local staff. SODECI of Côte d'Ivoire and SDE of Senegal are now world-class ISO 2001-certified water utilities that are managed and staffed by competent local professionals. They are perceived as true Ivorian or Senegalese companies by the governments and the civil society.

In successful PPPs, collection of water bills has improved overall (Figure 7), although dealing with public accounts has remained a challenge.

In Côte d'Ivoire, Senegal, Niger, Burkina Faso, and Gabon the private operators have been able to achieve or maintain high collection ratios of bills issued to private customers. In Senegal since 2004, the private operator has improved marginally the already good collection performance of the previous public management, from 96 percent to 98 percent of the amounts billed to private customers. In Niger, the collection from private customers has been remarkable for one of the world poorest countries, but the overall

performance has been periodically affected by late payment by government agencies. In Burkina Faso the public water utility has kept to the principle that a well-run water utility, whether public or private, must apply sound collection principles, and although the service contractor made no operational decisions, collection is an area where it had a major influence. Still, collection of bills from public accounts has remained a constant challenge in the region, even in the most successful PPPs—an issue that is discussed further in Chapter 3.

Figure 7: Western and Central Africa: Evolution of Bill Collection Ratio under PPPs



Source: Authors' calculations based on individual case studies, see Volume Two

Note: The graph shows the evolution of the collection ratio for the case studies where data were available. For some cases, the collection performance had to be inferred from the number of days of receivables.

PPP and the Environmental Sustainability of the Service

Successful PPPs have helped improve water resource management. Although the environmental sustainability of the water supply service is more affected by the enforcement of policies than by the operation of the service, it can be noticed that successful PPPs have often resulted in improved water resource management. By extending the piped water service to large segments of the urban population and ensuring a continuous (24/7) service, successful PPPs have limited, if not fully eliminated, the need for customers to rely on unregulated exploitation of the local ground water resources in several large cities. A good illustration is the city of Abidjan, where the 24/7 service provided by SODECI has allowed the government to put in place a better control over the use of the underground aquifer.¹⁴ By contrast, in Lagos, where public piped water represents less than 10 percent of the water consumed, the aquifer is tapped in an anarchic manner, resulting in depletion and increased risks of saltwater intrusion.

PPP has not had a visible impact on the protection of water sources against pollution. In Western and Central African countries, sewerage systems are found only in limited areas of larger cities, and treatment of sewage before discharge is largely inexistent. Wastewater collection and treatment is seldom the responsibility of the public agency in charge of the water supply sector. In

¹⁴ Large customers who decided to opt out of the piped water service in the early 1980s to avoid paying the higher tariffs had to obtain a license for drilling boreholes to abstract ground water.

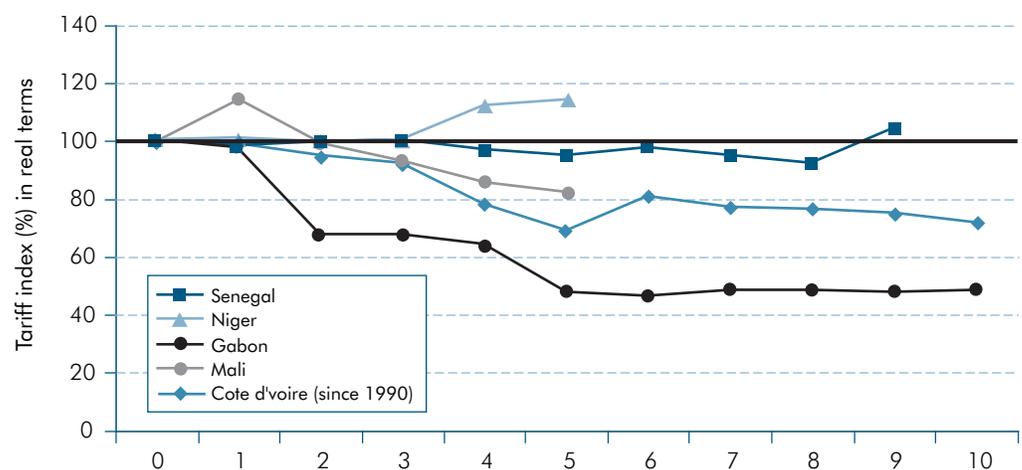
some cases (Senegal, Ghana) the water supply and sanitation sector was restructured as part of the design of the PPP and the responsibility for wastewater collection and treatment was transferred to separate public agencies or local governments. The only example of a PPP in wastewater collection and disposal is in Abidjan, but SODECI's contract for this service is separate from that for water supply. ONEA, the public utility of Burkina Faso, is the only water and sanitation utility in the region to have implemented a comprehensive wastewater management program in the capital city of Ouagadougou, which combines a simplified sewerage system in the center of the city and the promotion of affordable on-site facilities in most of the neighborhoods. Developing wastewater collection and disposal infrastructure that corresponds to customers' demand and willingness to pay, and improving the service, are among the upcoming challenges of the countries where successful water supply PPPs have been implemented.

PPPs and the Affordability of the Service

Water tariffs have usually declined in constant terms in countries with successful PPPs.

In countries that already had a sound cost recovery policy in place when the water service was provided by a public utility (Senegal, Gabon or Burkina Faso), efficiency gains achieved by the PPP have usually been passed to customers, allowing tariffs to remain stable or even decrease over time in constant terms. In Niger, a customer tariff increase of about 15 percent (in constant terms) has taken place since the beginning of the PPP, but the initial tariff level was quite low by regional standards (Figure 8), and the social tariff is still below its pre-PPP level. Among the cases analyzed in details, only in Guinea did significant customer tariff increases take place, but this was the result of a major policy shift from a highly subsidized (with tariff level well below O&M costs) to a financially autonomous service.

Figure 8: Western and Central Africa: Evolution of Customer Tariff Indexes (start of PPP in year 0 = 100)



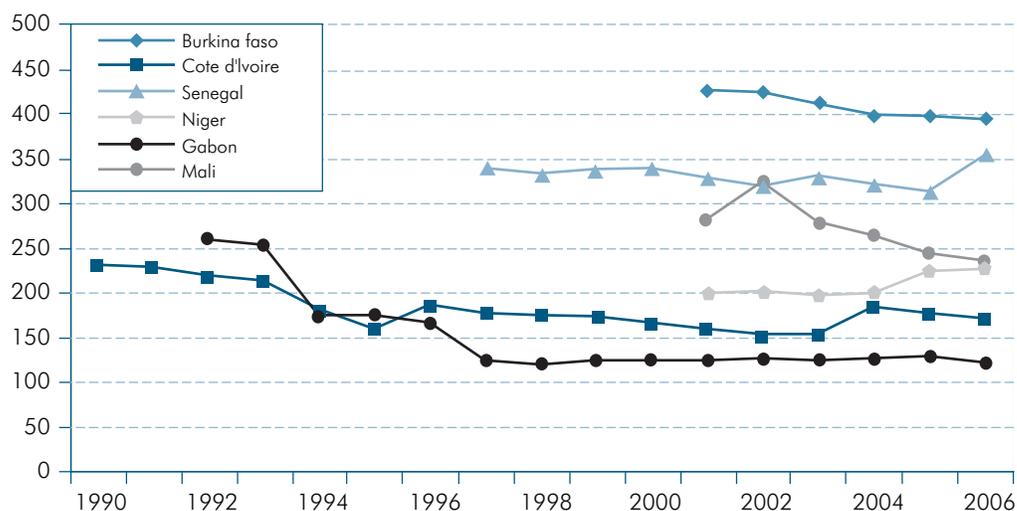
Source: Authors' calculations based on individual case studies, see Volume Two

It is difficult to compare water tariffs among countries as they are influenced by physical circumstances,¹⁵ size of customer bases, average consumption, and the financing conditions

15 For example, while Abidjan has access to a powerful and well protected aquifer in its vicinity, Dakar has to bring most of its water from the Senegal River about 250 km away.

of the capital expenditure programs. Côte d'Ivoire and Gabon have a remarkable record in keeping customer tariffs low and in achieving the largest reductions in tariffs in constant terms, demonstrating that the customers benefited from the efficiency gains achieved by the private operators under the partnership. The country with the highest average customer tariff is Burkina Faso, but this can be largely attributed to the high cost of water production (figure 9).

Figure 9: Western and Central Africa: Evolution of Average Customer Tariffs under PPPs (constant terms since the beginning of the PPP) (CFA Francs/cubic meter CFAF 450 = US\$1.0)



Source: Authors' calculations based on individual case studies, see Volume Two

Social connection programs have made individual connections affordable for many poor families. Social connection programs designed by governments and implemented by private operators have been implemented in Côte d'Ivoire since the mid-1970s and later replicated in Senegal, Niger, Burkina Faso and now Niger. They have promoted direct access to and minimum consumption of piped water by low-income households through subsidized residential connections and a low "lifeline tariff" for the first five or ten m³/month consumed. Small-gauge connections are usually provided in return for the payment of the refundable advance on customers' future water bills (which is due by all new customers), while the payment of the connection fee is waived (between US\$100 and US\$200 in most countries). The amount paid by eligible households typically represented only 15 to 20 percent of the total connection cost, therefore representing a significant subsidy.

Social connection programs have been used to various extents in successful PPPs. In Côte d'Ivoire, the country with the longest social connection experience, 354,000 social connections (or 83 percent of a total of 424,000 new connections) were built between 1988 and 2006. This is a remarkable feat considering that the program was entirely financed through a tariff surcharge paid by already connected customers, without any financial contribution from the government. Elsewhere, social connections programs have been mostly funded by donors programs. In Senegal, 130,000 social connections were built between 1996 and 2006, and a similar scheme is now being implemented for connections to sewers by the public agency responsible for this activity. A more modest program was implemented by the private operator in Niger, leading to 12,000 social connections installed since 2001. In Burkina Faso, the public utility implemented

a social connection program that has created more than 50,000 connections in five years. Apart from Cote d'Ivoire where it was funded through a tariff surcharge paid by already connected customers, the social connection programs in Senegal, Niger and Burkina Faso were all funded through donors programs. In Gabon, where household incomes are higher, no social financing arrangement has been considered so far.¹⁶

PPPs have often implemented tariff structures that promote a minimum “lifeline”

consumption of piped water by poor households, using cross-subsidies from other consumers. This was done through a tariff structure where residential customers consuming less than 6 to 10 m³ per month pay a reduced volumetric tariff, typically 30 to 50 percent of the average tariff (Table 6). The rationale behind this subsidy scheme is that, in the region, poor households with an individual connection usually have one single faucet and no internal plumbing in the house; hence their monthly consumption is limited. There is however concern regarding the efficiency of such a scheme, first because it is not strictly targeted to the poor, and second because it might not reach the poor who live in large extended families under one single roof (their consumption can easily exceed the monthly threshold).

Table 6: Western and Central Africa: Typical Water Budgets of Connected Low-income Customers

		Côte d'Ivoire	Senegal	Niger	Burkina Faso
Average water tariff *	CFAF/m ³	425	513	309	540
	US\$/m ³	0.94	1.14	0.69	1.20
Lower band limit	m ³ /month	6	10	10	10
Lower band	CFAF/m ³	235	191	127	209
	US\$/m ³	0.52	0.42	0.28	0.46
Typical bill for 6m ³ /month	CFAF/month	1,410	1,146	762	1,254
	US\$/month	3.13	2.55	1.69	2.79
Social connection fee ½" pipe	CFAF	18,000	19,000	20,660	30,000
	US\$	40	42.2	45.9	66.7
2004 GNI/capita	US\$/capita	770	670	210	360

Source: Authors' calculations based on individual case studies, see Volume Two
Notes: * including VAT when applicable. US\$1.0 = CFAF 450.

Efforts to improve affordability may not always reach the very poor. A few studies have concluded that the social connection programs in Cote d'Ivoire and Senegal have in fact mostly benefited the “middle class” rather than the poor (Box 3). Indeed, those who benefited from social connections often are families in the middle income quintiles, but their actual spending is still fairly low. In Dakar, Senegal, a 2006 household spending survey indicated per capita figures of US\$1.0 and US\$1.5 for the second and third quintiles—which easily could qualify them as poor. In Cote d'Ivoire, the connection rate was only 38 percent back in 1988, and the social connection

16 In Cameroon where a 10-year affermage contract was initiated in 2008, a US\$10 million subsidized connection program to fund about 50,000 new individual connections was included in the design of the PPP. It is funded with a US\$5 million grant from GPOBA, a multi-donors trust fund that foster access to basic services for the poor through the Output Based Aid (OBA) approach, with co-financing from the assets holding company Camwater and users.

program indeed benefited mostly medium income households living in formal neighborhoods where distribution networks were dense enough to allow the construction of social connections whose length was limited to twelve meters. But many of the poorest households did not seem to be truly interested in a household connection, as suggested by the high rate of disconnection, probably because their irregular revenues could not cover the bulky payments of SODECI's quarterly billing cycles. Though adjustments were made to facilitate payments and reduce fixed charges in the course of the program, by 1992 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 (about 20% of the total installed) had their subscriptions canceled.

Box 3: Difficulties in reaching the very poor: the limitations of social connections programs in Côte d'Ivoire and Senegal

Despite being overall a success, the implementation of the social connection program in Cote d'Ivoire has not been exempt of its share of difficulties. Collignon et al. (1999) found that by 1999 about 35 percent of Abidjan's population was living in under-equipped neighborhoods where density of the water distribution network was low. Even though they could access the social connection program (and avoid paying the connection fee), residents were still asked to contribute to the cost of extending the distribution pipes up to their house. Generally, only those households who could afford such payment, and planned to sell water to unconnected neighbors as a way to recoup the investment could afford this high expense. Another 15 percent of the city's population was living in informal settlements where, because of the lack of official land tenure, SODECI was not allowed to build connections. The Yacoli standpipe promoted by SODECI, designed to automatically deliver a fixed quantity of water against coin payment, was not a great success in under-equipped or informal neighborhoods, because most customers there preferred to buy their water from neighbors. SODECI did not really encourage water retail and only about 1,000 private customers were registered as official retailers; they did not qualify for a social connection, were charged the full tariff, and had to pay a large advance on their monthly water bill. They provided water to neighbors at prices lower than SODECI charged for the use of standpipes. Official retail of water represented no more than one percent of SODECI's sales, and most of the water retail was believed to be done by non-registered retailers, whom SODECI considered illegal and whose service could thus be interrupted. Beyond the densification of distribution networks in under-equipped neighborhoods, Collignon et al. (1999) recommended the following proposals to improve water supply: (i) ease registration conditions of official retailers; (ii) reduce connection cost; and (iii) charge official retailers the tariff that applies to standpipes. Because of the civil disturbance that took place in the early 2000s, not much recent progress has been made on these proposals.

An analysis of the impact of the water reform carried out in Senegal (Boccanfuso, Estache, and Savard 2006) concluded that though access rates had increased, the expansion of the network had not greatly benefited the two poorest quintiles of the population. The conclusions of this analysis may have to be revisited, as it used national poverty profiles that combined urban and rural households, instead of urban poverty profiles. A 2007 review of the impact of the reform on the poor living in Dakar suburbs (Fokus and Senegal-Consult, 2007) concluded that most low-income households had been properly informed of the conditions under which social connections could be obtained, and as a result direct access to piped water increased from 70 percent in 1995 to 85 percent in 2005 in neighborhoods where poor households live, while access through standpipes decreased from 17 percent to 8 percent. Better-off households have benefited as much as lower income ones from Senegal's social connection program. Many households share a connection and as consumption increases, the benefit of the lower tariff band disappears. Also, like Cote d'Ivoire, the operator is not allowed to extend distribution networks to informal neighborhoods, and the water delivered by public standpipes in these neighborhoods ends up being more expensive for poor families than that supplied through household connections in formal neighborhoods.

C. PPPs and the Financing of the Water Supply Infrastructure

The idea that the private sector could be more efficient than the public sector in raising financing for water supply infrastructure became more popular after the privatization of water and sewerage utilities in England and Wales in the early 1990s. In Western and Central Africa, however, PPPs in water supply services have mostly been sought for improving the efficiency of operations and thus increasing internal cash generation, rather than for raising private equity or commercial debt, as there was little appetite from the private sector for direct investment.

PPPs have helped to raise public financing from donors. Since the late 1980s, most of the PPPs for water or combined power and water operations have been implemented in parallel with projects financed by international or bilateral financing agencies (Table 7). For *affermage* and management contracts, financing provided to governments by international and bilateral financial institutions has been on-lent to AHCs on terms compatible with the characteristics of the water supply sector and the cost recovery strategies defined by the individual governments. The largest package of donor funding has been for Senegal, allowing this country to reach the highest level of access in all Sub-Saharan Africa. The country ranked second by size of donor funding is Burkina Faso, where donors have been willing to support a well-run public utility. It may be noted that SONES, Senegal's public AHC, has obtained loans from some of these agencies without sovereign guarantee.

The World Bank Group has been involved in most PPPs in Western and Central Africa, though this is not the only approach it has supported in the region. Before the mid-1980s, the World Bank financed several water supply and sanitation projects in Côte d'Ivoire, the only country in the region with a PPP. The World Bank was then closely associated with promoting PPPs in Guinea in the mid-1980s, and in The Gambia, and later in Senegal and Niger. The International Finance Corporation (IFC) acted as transaction advisor for the Gabon concession. Since 1990 the World Bank has approved 27 IDA Credits for urban water and sanitation in the region, totaling about US\$1,900 million, of which 17 (US\$725 million or 38 percent of the total) have been for projects that included support to PPP among their objectives (this includes Burkina Faso where the utility remained under public management).

Table 7: Western and Central Africa: Sources of Financing to Support PPPs

	Country	Contract Type	Period Documented	Total Invest. US\$ mio	Financing Sources
Long Standing Ongoing PPP					
WS	Côte d'Ivoire	Concession	1989–2006	270	Cash generation
WS	Senegal	<i>Affermage</i>	1996–2006	420	International and bilateral financing agencies, cash generation, private sector
P&WS	Gabon	Concession	1997–2006	175	Cash generation, private sector
WS	Niger	<i>Affermage</i>	2001–2006	103	International and bilateral financing agencies, cash generation, private sector
WS	Burkina Faso	Service	2001–2006	205	International and bilateral financing agencies, cash generation

Continued on next page

Table 7: Western and Central Africa: Sources of Financing to Support PPPs

	Country	Contract Type	Period Documented	Total Invest. US\$ mio	Financing Sources
P&WS	Cape Verde	Concession	2002–2006	na	International and bilateral financing agencies
Recent PPP Initiatives					
WS	Ghana	MC	2006	120	International and bilateral financing agencies
WS	Cameroon	<i>Affermage</i>		na	International and bilateral financing agencies
Long Standing Terminated PPP					
WS	Guinea	<i>Affermage</i>	1989–2001	160	International and bilateral financing agencies, cash generation, private sector
WS	CAR	<i>Affermage</i>	1991–2001	Na	
Short Lived Terminated PPP					
P&WS	The Gambia	<i>Affermage</i>	1993–1995	45	International and bilateral financing agencies
P&WS	Chad	MC	2000–2004	55	International and bilateral financing agencies
P&WS	Mali	Concession	2001–2005	Na	International and bilateral financing agencies, cash generation, private sector
P&WS	Guinea Bissau	MC	1991–1997	Na	
P&WS	Sao Tome	MC	1993–1996	Na	
<p><i>Source:</i> authors' calculations based on WB and governments' data <i>Notes:</i> WS: water supply; P&WS: power and water supply; WB: World Bank; na: not available. <i>International</i> financing agencies active include mostly: The African Development Bank (AfDB), the European Investment Bank (EIB), the International Development Agency (IDA) of the World Bank Group, the West African Development bank (WADB). <i>Bilateral</i> financing agencies include mostly: Agence Française de Développement (AFD of France), Kreditanstalt für Wiederaufbau (KfW of Germany).</p>					

Successful PPPs have contributed significant cash from customer revenues to their Capital expenditure. One significant source of financing for investment in the most successful PPPs has been cash generated from operations, of which a portion was reinvested every year into the development of the infrastructure. In Côte d'Ivoire, the Capital expenditure (Capex) has been almost exclusively financed from cash generation since the contractual revision in the late 1980s. Between 1989 and 2006, about 400 small urban centers and 424,000 individual connections have been added in the PPP service area. But this largely reflects the peculiar situation of this country's water infrastructure in the early 1990s, with large over-capacity in production facilities, which allowed the operator to focus for several years on distribution network extension. In Senegal over the last ten years, about 20 percent of the Capex have been directly financed from the cash generated from operations, the *affermage* contract specifying annual lengths of distribution pipes to be financed and installed by the operator out of its cash-flows. Between 1996 and 2006, the latter has contributed about US\$75 million worth of rehabilitation and extension programs. In Niger

during the last five years, about 15 percent of the capital investment has been financed from cash generation. SEEG, Gabon's concessionaire, has been able to finance most of its Capex entirely from cash generation.

PPPs in the region have not produced a major inflow of private capital. Contrary to other parts of the developing world, most PPPs in Western and Central Africa have been management contracts or leases/affermages that relied on public funding for investment. Concessions were awarded only for three combined water/power utilities in Gabon, Mali and Cape Verde, but in practice most of the Capex was financed through revenues cash-flow, instead of private debt. International operators have taken only limited financial risks, limiting their exposure by providing equity only to fund operating assets and working capital and/or the performance bond they were requested to post.¹⁷ Private equity contributions have been in the range of US\$2 million in Niger's private operator SEEN, US\$3 million in Guinea and US\$15 million for Gabon's SEEG.

Successful PPPs have helped governments borrow on commercial terms. Between 1974 and 1987, the government of Côte d'Ivoire was able to raise commercially about half of the financing needed to extend piped water to more than 200 centers, but the policy of financing expansion exclusively on debt led the sector into financial crisis by the late 1980s. In 1996, Senegal's AHC SONES raised bridge financing from local commercial banks and in 2001, it raised the equivalent of US\$18 million, or 10 percent of its 1996–2006 investment program, without sovereign guarantee to complement financing secured from international or bilateral financing institutions. The good performance of the PPP encouraged decision makers in Senegal to seek commercial financing to further develop the water production/transmission capacity for Dakar, but the project did not follow through.

Private operators' equity exposure has been limited. International and local shareholders of the private operators have taken only limited financial risks, and have limited their exposure by providing equity only to fund operating assets and working capital and/or the performance bond they are requested to post. For example, in Côte d'Ivoire and Senegal, the capital stocks of the private operators SODECI and SNE are only CFAF 4.5 billion and 3.0 billion respectively (about US\$10 million and 6.6 million).¹⁸ These are small figures in comparison to the US\$320 million that the National Water Fund (FNE) invested over 20 years in Côte d'Ivoire or the US\$420 million invested over a decade in Senegal to develop water supply infrastructure. Equity contributions have been in the range of US\$2 million for Niger's private operator SEEN, US\$3 million for Guinea's utility SEG, and US\$15 million for Gabon's SEEG. In Ghana, the performance bond posted by the operator of the management contract was set at US\$3 million, in addition to a refundable advance of US\$0.25 million to the working capital.

17 For example, in Côte d'Ivoire and Senegal, the capital stocks of the private operators SODECI and SNE are only CFAF 4.5 billion and 3.0 billion respectively (about US\$10 million and 6.6 million). These are small figures in comparison to the US\$320 million that the National Water Fund (FNE) invested over 20 years in Côte d'Ivoire or the total of US\$420 million invested over ten years in Senegal to develop water supply infrastructure.

18 SODECI of Côte d'Ivoire has distributed dividends almost every year since its shares began to be traded on the local, then regional, stock market. The return on equity for shareholders, measured as the ratio of the net income per share to the share price has been quite volatile: 12.5 percent in 2000; 3.9 percent in 2001; 0 percent in 2002 and 2003 (as SODECI posted a net loss these two years); 9.2 percent in 2004; 8.4 percent in 2005 and 13.2 percent in 2006.

CHAPTER 3

LESSONS LEARNED FROM PUBLIC-PRIVATE PARTNERSHIPS IN URBAN WATER SUPPLY IN WESTERN AND CENTRAL AFRICA

A flexible and resilient regional PPP model seems to have emerged during the last ten years based on affermage contracts, which combine private operation of the service with public financing for developing the infrastructure and sharing the commercial risk between private and public partners. To apply this or any PPP model successfully depends as much on the contribution of government as on the efforts of the private partner. PPPs have succeeded where governments have been fully committed to reforming their urban water supply sectors, in particular with regard to full recovery of O&M and capital costs from user charges, elimination of interference in the management of companies involved in infrastructure development and service provision, extension of access to modest-income households, and payment of the water bills of public agencies. PPPs have worked better where operators have had strong contractual incentives for increasing efficiency. Finally an important element of success has been the adequacy of a dispute resolution mechanism, and the willingness of all parties to use it effectively.

A. Factors that Influenced the Success or Failure of PPPs?

A Challenging Environment with No Room for Mistakes

Rating the performance of the various elements of PPPs shows there is no room for mistakes. The table in Annex 1 summarizes¹⁹ the ratings of the various PPPs reviewed for various elements of design and implementation, according to a framework based on the “toolkit” for “Approaches to Private Participation in Water Services” (World Bank, 2006). For each element, there is a choice of three ratings: best and good practice, fair, and inadequate. The clear successes—in Côte d’Ivoire, Gabon, and Senegal for example—have no “inadequate” ratings. Niger’s partnership was noted as “fair” only on regulation, and despite early successes, is still vulnerable to problems. Even a limited number of “inadequate” ratings puts a PPP at risk of failing sooner (The Gambia) or later (Chad, Mali, Guinea) no matter how many best-practice ratings are otherwise obtained by this PPP. Cape Verde is the only case in which a project with several elements rated as less than good practice is still in place, but the PPP had to be renegotiated early, leading to a much reduced role of the private operator in the financing of the Capex.

PPPs in Africa may require even more attention during preparation and implementation than in other parts of the world, to limit and mitigate the risks in a fairly challenging region. Poor risk analysis, unclear contract objectives, inadequacy of the capital budget for achieving the PPP objectives, and, especially, unclear regulatory arrangements seem to have been the main design failures. This was especially so in Chad and The Gambia, but also in PPPs not analyzed in detail in this paper that were directly negotiated by private companies in Sao Tome, Guinea Bissau, and the Central African Republic. At the implementation stage, some PPPs suffered from the collective poor performance of all actors—not only of the private operator—and from ineffective dispute-resolution mechanisms. In most cases of failure the shortcomings of the contract for key elements such as the remuneration structure and adjustment were compounded by regulatory weaknesses on the part of the contracting government.

¹⁹ A detailed worksheet rating each sub-element for each PPP is available in the files.

Still, some PPPs in the region have been resilient enough to withstand political instability.

Despite a general perception of relatively high political risk in Western and Central African countries, calls for bids for PPPs for water supply services have always attracted proposals from reputable international operators. One of the most interesting cases is that of Côte d'Ivoire, a country that was considered a model of political stability until 1995 but has since been the subject of two coups d'état in 1999 and 2001, and a rebellion that effectively partitioned the country from 2002 to the present. SODECI and the *Compagnie Ivoirienne d'Electricité*, its sister private electricity utility, have kept providing service to both parts of the country during these troubled times, something unlikely to have happened (at least in the areas ruled by a rebellion against the central government) had the utility been publicly operated.

PPPs in Combined Power/Water Utilities have Faced More Problems

Several of the failed PPPs were for combined power/water utilities. Two of the key ideas behind combined power/water operations, whether public or private, are that water operations are too small to justify a separate management and that revenue from power operations could subsidize water operations. For PPPs, it was thought that this would have the added advantage of providing for a larger revenue base, making the deals more financially viable. However, this has proved in practice to be a "false good idea." Out of the seven combined power and water PPPs that were initiated in the region, only two are still active, in Gabon and Cape Verde—the two countries with a much higher level of economic development and national income per capita than the rest of Western and Central Africa. The joint power/water contracts in The Gambia and Chad were terminated early, and in Mali the strategic partner exited from the national utility. Even the projects still in place in Cape Verde and Gabon have not escaped difficulties. The Cape Verde concession had to be renegotiated with a significant reduction in the involvement of the foreign partner, while the Gabon concession is now facing some difficulties linked to the financing of new power production capacities.

In each of the three power/water concessions, problems have arisen in relation to the electricity side of the arrangement. In most of the power/water PPPs, a large share of the contractual problems have arisen on the electricity side, typically because of conflicts over the need to invest in rehabilitation and expansion of power production capacity in the face of rising oil prices. The main reason for the failure of Mali's power/water concession was the decision by a newly elected government to reduce customer tariffs, and the partners' inability to agree on how to implement the contractual cost recovery arrangements that could accommodate the reduction without upsetting the financial equilibrium of the concession. In Gabon, rising oil costs, hydrology problems, and the need to finance large unanticipated investments in power production capacity for the capital city Libreville upset the economy of the concession. In Cape Verde's power/water concession, rising oil costs upset the financial equilibrium; in order to save the contract a major renegotiation had to take place. One lesson might be that to protect the economic viability of a power/water concession, a clear arrangement must be in place to deal with variations in oil costs, it might be better to leave the responsibility for investment in major lumpy production capacity to the government.²⁰

²⁰ Morocco offers examples of successful combined power/water concessions (in Casablanca, Rabat/Salé and Tangiers/Tétouan) limited to electricity distribution, water distribution, and wastewater collection and treatment. Power generation and transport and bulk water supply remain mostly the responsibility of state-owned suppliers or independent producers. Morocco's concessionaires have access to local commercial debt on conditions compatible with the depreciation periods of the infrastructure.

Affermage Appears to be a Well Adapted PPP Model in the Region

Several PPPs following the affermage model have proved remarkably successful. Among the various PPP models which have been experimented with in the region, *affermage* contracts clearly stand out. The *affermage* in Cote d'Ivoire has been in place for decades, and brought remarkable benefits. The one that started in Senegal in 1996 has allowed the country to achieve the highest access figures of all countries in Sub-Saharan Africa (including South Africa). It was replicated in 2001 in Niger, delivering some promising results despite taking place in a very challenging environment, and now in Cameroon. As for the *affermages* that got canceled, the one in Guinea did bring sizeable benefits although it was not renewed, while the one in The Gambia failed largely due to problems related to the power side of the business.²¹ Both were early attempts, and a model with an allocation of risks well adapted to the conditions of the region seems to have emerged since. It includes strong incentives for the operator to be efficient, while providing significant flexibility and control for the partner government regarding investment and tariff policies.

Affermages give operators a built-in incentive to maximize their profit by reducing O&M costs and increasing collection. Most operating risks are transferred to the private operator, which have strong incentives for improving operating performance through the remuneration structure. The later is directly linked to the following revenues sharing arrangement: (i) customers are billed by the private operator based on the customer tariff (*tarif consommateur* in French) set by the public authority; (ii) the operator retains from its collection an operator tariff (*tarif exploitant* in French), based on the volume of water it has billed, and received payment for; (iii) the difference between the customer tariff and the operator tariff is transferred to the PGA, constituting the owner tariff (*redevance* in French). This arrangement encourages the operator to reduce its costs to maximize its profit—for example by fixing physical leaks to reduce production costs—and to increase its sales, volumes and collection by improving commercial operations and service quality.

Affermages offer flexibility to governments for timing the achievement of full cost recovery. One important advantage of the revenue sharing arrangement provided by an *affermage* is that the operator tariff—which must be high enough to allow the operator to meet its O&M costs and remunerate its equity investment from day one—does not need to be directly linked to the customer tariff. This allows *affermages* to offer great flexibility for governments to set the pace at which the recovery of the full (O&M and capital) costs of water from the customer tariff should be approached over time.

Second-generation affermages may constitute a true African water PPP model. While the French *affermage* model inspired the early *affermage* contracts in the region, a new model has been gradually emerging with the improved *affermages* implemented in Côte d'Ivoire, Senegal, Niger and now Cameroon. These *affermages* have been incorporating a series of modifications to improve the incentives framework and achieve a more efficient allocation of risks. One of the main innovations in Côte d'Ivoire was a social connection program financed out of customer tariff collection—a feature that has been replicated in Senegal, Niger and Cameroon with donors funded programs. The design of the Senegal's *affermage* drew lessons from the problems encountered in Guinea by including contractual targets for NRW levels and collection ratios

21 The *affermage* in CAR was a very small operation with fewer than 5,000 connections, which did not benefit from significant public financing to expand systems – no data could be collected as part of this study.

backed by financial penalties—an approach which was again replicated in Niger and Cameroon. In Côte d'Ivoire, Senegal, Niger and again Cameroon, a portion of the investment program is implemented by the operator, giving more flexibility to rehabilitate and expand the distribution systems without depending entirely on the AHC. One further innovation was introduced in the recently awarded Cameroon *affermage*: the operator's revenue will comprise a combination of a volumetric operator tariff and a fixed monthly fee per customer. This will ensure that its remuneration for small customers in poor neighborhoods (who often consume less than 6 m³ per month) will fully cover the costs of serving them, thereby providing for additional incentive to expand the service to them.

Successful PPPs are Implemented by Local Partners

The identity of the foreign partners is a secondary issue... A large majority of the PPPs in the region involved two large French water distribution companies: SAUR International (in Côte d'Ivoire, Guinea, Senegal, Mali, CAR) and Veolia (in Burkina Faso, Niger, Chad, Gabon). Both reputable water professional operators, these two companies have been associated with successes (Côte d'Ivoire, Senegal, Burkina Faso, Niger, Gabon) as well as with PPPs that failed either rapidly (Mali, Chad) or eventually (Guinea, CAR). The number of foreign partners involved in PPPs in Western and Central Africa has recently increased with the arrival of professional operators from Portugal, the Netherlands, South Africa, and Morocco.

...because successful PPPs involve true local private operators managed by nationals... SODECI of Côte d'Ivoire or SDE of Senegal are now well-established African companies, and perceived as such by governments and customers—something which has been instrumental in their long-standing success. In these two countries, the foreign partners made considerable efforts to develop and promote local management, which has helped considerably to dissipate the perception of foreign involvement in a socially sensitive sector and has increased the acceptability of the PPP. SODECI has presented its “successful African management style” to international audiences since the mid-1980s. Senegal clearly benefited from the Ivorian experience in that respect: the foreign operator maintained only two expatriates in recent years, and since late 2006 the General Manager of SDE is a Senegalese national. At the opposite extreme, Guinea's PPP failed completely to promote local management within its private operator SEEG, which was strongly perceived as a foreign company, run by foreigners, throughout the life of the *affermage* contract. The perception of foreign-managed operator was also strong in Gambia, Chad, and Mali and was one element that led to distrust and early termination of the contracts. This does not apply to Burkina Faso, where expatriates from the service contractors simply hold the positions of deputy managers of the commercial and financial departments, coaching local management without hierarchical responsibilities over ONEA staff.

...and owned by local interests. In Côte d'Ivoire, SODECI's capital became public in 1978 and rapidly became one of the largest companies quoted at the Abidjan stock exchange. The fact that it is owned by hundreds of local shareholders and the company's own staff²² has been crucial in establishing a sustainable partnership between an African government and an African private operator. Shares of the private operators in Senegal, Niger, and Gabon are also held by local partners and by staff. In these countries local minority shareholders play key roles as active Board members. Guinea's failure to foster local private management at SEEG was largely due to the structure of the company's ownership, with a 49 percent minority share held by the government.

²² SODECI's professional partner, SAUR International, only holds 45 percent of the shares.

SEEG's Deputy General Manager, a civil servant appointed by the government, interfered in the management of SEEG's human resources and prevented the international professional partners from selecting Guinean nationals of their own choice and training them for the highest responsibilities in the company.

Successful Partnerships are Part of Well Designed Sector Reforms

Successful PPPs have been designed as part of comprehensive sector reforms that have also much improved the performance of public partners with regard to planning and implementation of system extensions, tariff setting, and monitoring of service quality, as well as mobilizing financial resources. The *Direction de l'Eau*, SODECI's public partner, is in charge of defining the sector policies and monitoring the development of the urban water supply sector in Côte d'Ivoire; the AHCs SONES of Senegal or SPEN of Niger are AHCs that make infrastructure development decisions with the need for maintaining a financial performance that would allow them to raise financing constantly in mind.

A clear accountability framework is important, but so is translating new legislation into action. The clarity of sector policies is important, and one of the advantages of the PPP approach is that it allows for unbundling the key functions of policy formulation, regulation, financing, asset ownership and service provision. It establishes contractual relations between public and private partners which enhances the overall accountability framework of the sector. Guinea, Senegal, Chad, Mali, and Niger all overhauled their legislations to clarify sector policies or regulatory regimes before embarking on such partnerships, but the public entities in charge implemented them with various success. In a review of governance in African water utilities, Estache and Kouassi (2002) concluded that "the main challenges are not in the water sector, as governance issues and weakness of institutions explain a large share in the excess of costs."

Governments must carry out their part of the partnership. Clear statements of responsibility have played an important role in successful PPPs. Documents clarifying the short- and medium-term commitments of the government and of the public agency granting the operation contract seem to have been an important element of the initial success of the PPPs in the region. In Guinea, Senegal, and Niger, performance memoranda of understanding (MoU) clarified the government's commitments, with regard to making funds available to the sector on conditions compatible with its capacity to service debt, and to making timely payment of the water bills of government agencies. Performance MoU have also clarified the commitments of the public granting authority to achieving the agreed-upon service level and financial performance and to implementing capital investments with maximum efficiency. Performance MoU have often been appended to *affermage* contracts to reflect the understanding that the MoU could be opposed in case of dispute. The MoU approach had mostly failed during the 1980s under publicly managed utilities. Its successful use in the initial years of the Guinea *affermage* or in Senegal and Niger has been the best translation of governments' commitment to reform. The presence of a private operator under a contractual framework is probably a key reason why governments have not reneged on their commitments under the MoU in these countries.

Consulting local stakeholders helped to clarify the objectives of PPPs. Considering the use of PPPs for water supply services always leads to an emotional debate. At the design stage, several of the PPPs documented have paid particular attention to consulting with stakeholders, including various government departments, management and staff of the public utility, and the media.

Unlike in other parts of the world, fears about steep tariff increases, massive staff reduction, heavy foreign presence, or exclusion of the poor have been rather limited. Many stakeholders were aware of the quality of service provided by SODECI in Côte d'Ivoire or the progress achieved in Senegal, and the media have usually been fairly supportive of approaches designed to improve the often poor performance of the local public utility. Only in Ghana have opponents succeeded in delaying the original reform, and making the government discard the *affermage* option initially envisaged in favor of a less ambitious management contract.

B. Factors that Influenced the Financial Sustainability in PPPs

Successful PPPs had fairly well defined cost recovery strategies at the design stage of the partnerships. Establishing the financial sustainability of urban water supply operations has been one of the main objectives of the partnerships studied. In the Gabon concession and the Côte d'Ivoire *affermage*, it was clear that the customer tariff needed to be sufficient to cover O&M and capital costs from day one. In the Guinea, Senegal, and Niger *affermages*, the intent to move gradually towards full recovery of O&M and capital costs from user charges was clearly stated in government policy documents and indeed achieved within the timeframes initially envisaged. The same applies to Burkina Faso, where a simple service contract was implemented under public management.

Geographical cross subsidies can help develop piped systems in secondary centers. In all countries, the capital city represented the largest share of the customers and of the revenues, and improving water supply operations there has often been a key for starting a move towards financial sustainability of the sector. Also, because uniform tariff levels and structures usually applied throughout the country, they could be a source of cross subsidies for more expensive operations in secondary centers. A key reason for the success of the development of piped water in Côte d'Ivoire is that water in Abidjan can be produced and distributed at low cost, so that the uniform national tariff resulted in large subsidies to operations in hundreds of secondary centers, where the situation is the opposite. A similar relationship was supposed to develop in Guinea, although demand in Conakry was much lower than in Abidjan. In Senegal, cross subsidies between operations in Dakar, where a large share of the water produced has to be transported over nearly 250 km, and secondary centers are much more limited than in Côte d'Ivoire.

Improving bill collection is essential, but water bills owed by public agencies have been a constant source of conflict. In Western and Central African countries, where billing to public agencies represents 15 to 25 percent of the total billing, water bills owed by public agencies have been a constant source of conflict between private operators and governments. Private operators have usually encountered major difficulties in collecting bills from public accounts, even in the most successful PPPs, as it is almost impossible to cut off public customers. Even in Côte d'Ivoire, this has been a recurrent problem, solved only temporarily by the sector adjustment in the late 1980s. Some countries have introduced special arrangements to mitigate the associated financial risk to water utilities and protect the revenues of private operators and AHCs. Some governments (Senegal, Niger) have upgraded the internal plumbing of public buildings to limit water consumption, established strict budgeting procedures, and enforced monthly payments by their agencies. Under *affermage* contracts, operators have sometimes responded to public agencies' arrears by withholding part of the *redevance* due to the AHCs, creating frictions and a legal risk of breaching the contract.

Successful PPPs are those that have allowed disconnection for non payment. Successful private operators in Côte d'Ivoire and Senegal have been allowed by law to implement strict

disconnection procedures for private customers in arrears—a financially healthy practice that is in fact well accepted by the populations in the region.²³ In Guinea, the fact that the private operator was forbidden to cut off water supplies to private customers in arrears is one of the reason that led to the deterioration of the financial situation of the service and eventual end of the PPP.

Guaranteed foreign exchange rate in CFA countries has probably helped. Even in PPPs where the investment program is financed by the partner government, the operator must still finance operating expenses, such as part of the compensation package of the expatriate staff and imported inputs (chemicals, spare parts, hardware, and software), which are paid in foreign currency, while the operator’s revenues are in local currency only. In the CFA Franc zone the foreign exchange risk is limited as the exchange rate of the CFA Franc to the Euro is fixed, and the difference between inflation rates can easily be taken care of through cost index formula.²⁴ Seven countries in the sample of PPPs reviewed belong to the CFA Franc zone (Burkina Faso, Chad, Cote d’Ivoire, Gabon, Mali, Niger and Senegal), and the PPPs have been successful in five cases. The PPPs in Cape Verde, Ghana, and Guinea—countries with floating local currencies—have faced a higher foreign exchange risk. In Guinea, the risk was mitigated by the external financing of the foreign exchange component of the operator tariff, on a declining basis. In Ghana, the management contract is financed from external sources and thus protected against foreign exchange risk.

Governments should be ready to shoulder at least part of the foreign exchange risk.

As described above, the bulk of financing for new infrastructure has been made available to governments by international and bilateral financing agencies in foreign currencies. The governments have passed on the proceeds of concessionary financing to AHCs in local currency under a mix of grants and debt assessed to be affordable by their repayment capacity. As a consequence, governments have borne most of the foreign exchange risk associated with infrastructure development. Only in Senegal, a CFA Franc country with limited foreign exchange risk has the AHC SONES been able to obtain bilateral agency financing without government guarantees. The concession in Gabon, also a CFA Franc country, has recently borrowed in foreign currency.

Affermages Appear Well Adapted to Move Gradually to Financial Sustainability

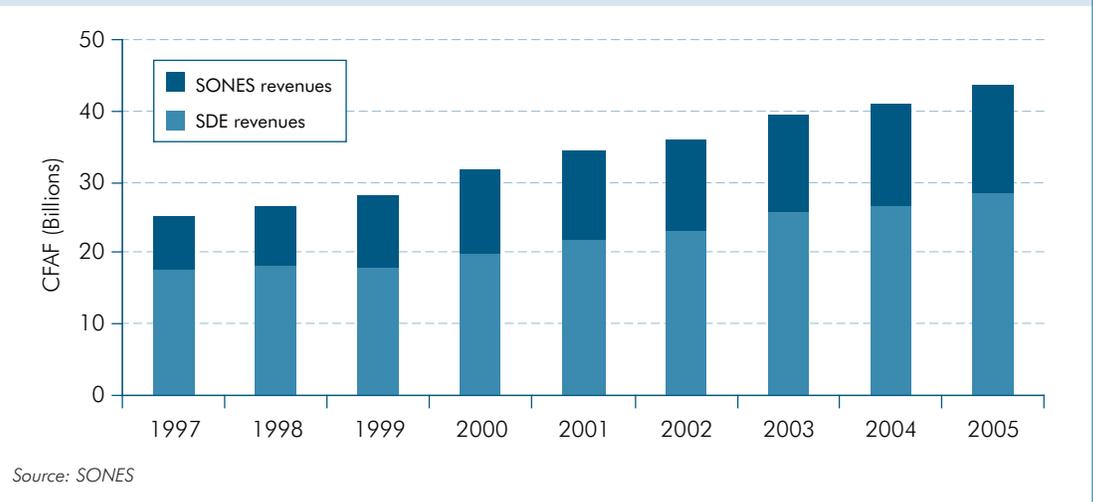
Affermage contracts have eased the transition to full cost recovery. Private operators need to recoup their O&M costs from day one from user charges. By de-linking the operator tariff from the customer tariff, *affermage* contracts give the possibility of complementing the revenues of the private operator through transparent subsidy schemes during a transition period, as was done in Guinea. *Affermage* contracts offer great flexibility to gradually move to full recovery of capital costs from user charges, by allowing governments to adjust financing conditions to match the AHC’s debt servicing capacity. Having public AHCs, rather than operators, absorb the financial shocks of the investment program has usually allowed the water supply service to become reliable and to remain affordable while gradually building its financial sustainability. Figure 10 shows how the distribution of sales revenues between the private operator SDE and the AHC SONES of Senegal since the start of their PPP. Initially most of the revenues from customers went to finance

²³ When disconnected for non-payment, households usually buy their piped water from neighbors.

²⁴ Only the Côte d’Ivoire PPP was active in 1994 when the CFA Franc was devalued by 100 percent, and the 18 percent increase that was granted in the SODECI tariff soon afterwards, followed by a 10 percent increase in the customer tariff, allowed the operator to remain profitable and to finance sector development from the user charges collected.

the O&M costs through the operator tariff. Over time as the customer base built up, more cash could be transferred to the public partner while the average tariff level was going down in constant term thanks to the operational efficiency gains achieved.

Figure 10: Senegal: Distribution of Revenues between the Private Operator (SDE) and the AHC (SONES)



Expanding the customer base has often been a key factor for affermage to achieve financial sustainability. Unlike the successful ones, none of the failed *affermages* included a social connection program to quickly expand the customer base and thereby improve the profitability of operations through increased absorption of fixed costs. Guinea’s *affermage* had a fairly promising start but experienced difficulties in increasing the customer base, since the AHC never established the connection facility that was initially envisaged. The need to increase the tariff and to recover O&M and capital costs from a limited customer base, compounded by lower-than-expected efficiency gain led to frustration of both parties and the termination of the PPP after twelve years.

C. Factors that Influenced the Operational Performance in PPPs

The traditional approach to affermage, without contractual performance targets, has shown some limits in Western and Central Africa. As mentioned earlier, traditional *affermage* contracts usually do not include contractual targets for operational efficiency, such as reducing water losses or improving collection ratios. In Côte d’Ivoire, SODECI’s initial contract based on this traditional approach resulted in good operating performance: NRW remained low, at about 15 percent, collection of private bills was high, at about 98 percent, and staffing was efficient at about three staff per 1,000 connections. Efficiency gains achieved by SODECI to help maximize its profit—through reduction of physical leaks to limit production costs or limitation of staff costs—were passed on to the customer tariff. In Guinea, the *affermage* replicated the Côte d’Ivoire contractual arrangement. But even though SEEG’s foreign private partner was the same as SODECI’s, and SEEG was contractually responsible for maintaining small-diameter pipes and individual connections at its own expense, fixing physical leaks in Conakry made little economic sense to an operator who had access to a fairly large quantity of water that could be produced at low cost. As a result, NRW remained at a mediocre 50 percent throughout the *affermage* contract. SEEG’s bill collection performance also remained poor.

Starting with Senegal, affermage contracts have included contractual performance objectives, evolving into a successful “African Affermage” model with enhanced incentives for efficient operation. The Senegal *affermage* contract was designed based on lessons learned from the Guinea experience. A new formula was introduced to calculate the remuneration of the operator. Instead of simply sharing the collected revenues from tariffs with the AHC SONES (based on the operator and owner tariffs), it is allowed to retain only an amount based on actual production figures corrected by the contractual targets for NRW and bill collection ratios. Under this arrangement, SDE succeeded in improving all performance indicators, even if the contractual NRW target expressed in percent of water production has not been reached; this approach was replicated in the Niger and Cameroon *affermages*.

The good performance of the Burkina Faso service contract was achieved without the private partner having management control. Here the remuneration of the service contractor includes a fixed portion and bonuses and penalties (whose level is assessed by independent technical and financial auditors) to prevent the contract from evolving into a simple technical assistance contract. Despite the typical shortcomings of such service contracts, bill collection from private customers reached about 95 percent after six years. The success of the Burkina’s contract reflects the substantial efforts made to transfer the service contractor’s know-how, as well as the willingness of both parties to collaborate. This is in contrast with the case of the Chad management contract, where the private operator was not able to implement a modern commercial management system over the four-year life of the contract, despite the presence of the same foreign professional partner as in the Burkina Faso service contract.

The Gabon and Mali concessions have exceeded their contractual targets for water operation efficiency. The Gabon concession contract sets performance targets that can be reset every five years—mostly related to coverage and connection ratios and water quality—as well as penalties for non-compliance. Though the contract does not specify NRW or collection ratios to be achieved, all technical and commercial indicators improved between 1997 and 2005 and boosted SEEG’s profit margin. In Mali, the operator EDM broadly met or exceeded the contractual targets for expanding access, and improved its operating performance for the water services; this was not the case for the operational performance in electricity, which was unimpressive.

D. Factors that Influenced the Infrastructure Development in PPPs

If the infrastructure for piped water is not in good shape, a water utility cannot deliver good service. Access to sufficient and timely financing is vitally important for the success of any PPP. And, in the case of management contracts and *affermages*, so is coordination between the public AHC in charge of asset development and the private operator.

Capital investments need to be identified early to match the PPP objectives, and civil works ready to start implementation when the operator mobilizes. The successful PPPs in Senegal, Niger and Burkina Faso were all established as part of comprehensive rehabilitation/extension projects, and capital investment was designed explicitly to help achieve performance objectives (such as continuity of water supply service, access ratios, and NRW reduction). Most of the cases documented show that it is essential that the major construction projects, in particular those for water production and transmission, are well identified during the preparation stage. This did not happen in failed PPPs in The Gambia and Chad, where the design of the capital budget was ill-matched with the PPP objectives. In The Gambia’s joint power/water operation, 85 percent of the revenues were generated from the sale of electricity, but no financing was available for

rehabilitating and extending the power production and distribution infrastructure, in particular to replace a generator that collapsed the day before the operator mobilized. In Chad, the PPP ran into early trouble partly because financing for a new power plant had not been secured on time and the construction contracts that were awarded to inexperienced contractors for a 350 km pipeline and power plant had to be terminated for poor performance.

All the successful PPPs placed special emphasis on investing to expand coverage and the customer base. The successful PPPs rehabilitated and extended secondary and tertiary distribution networks to reach new customers in un-served areas. They also focused on replacing long and inappropriate connections (which are the most common source of physical leaks) with tertiary distribution pipes and shorter connections. The timely implementation of such expansion programs has been a key factor in success because it helped increase operating revenues by enlarging the customer base. In Côte d'Ivoire, SODECI has always been in charge of regular extensions of distribution networks once the trunk infrastructure was installed. When SODECI became responsible for identifying and preparing the capital investment program in the late 1980s, the distribution and connection programs accelerated. In Senegal, Niger, Burkina Faso, and Gabon the investment programs have so far successfully focused on rehabilitating and extending distribution networks, as evidenced by reductions in NRW and increases in the coverage and connection ratios.

Public Assets-Holding Companies (AHCs) have played an important role. Most *affermages* have been introduced in conjunction with the transformation of a public water supply utility into an AHC. Following the financial crisis in the Ivorian water sector in the mid-1980s—mostly related to the inadequate financing strategy of the Government for developing the water supply infrastructure—AHCs were created in Guinea, The Gambia, Senegal, and Niger. The main functions of an AHC are typically to: (i) act as owner of the water supply assets and issue consolidated financial statements of the water operation; (ii) plan, finance, and implement major construction projects; (iii) act as owner of the *affermage* contract; and (iv) promote public acceptance of the reform. In Ghana, the public Ghana Water Company Limited acts de facto as the AHC. Côte d'Ivoire decided not to create an AHC when it reorganized the sector in 1987 and instead transferred most of the investment responsibility to the private operator SODECI.

Some of the AHCs have performed well in raising finance and implementing investment programs. Public AHCs have played a key role in Senegal and Niger, where they were able to implement major investment programs in quite a timely manner overall. The performance of SONES in Senegal has been particularly good, as it also efficiently monitored the performance of the operator while “regulating” the service and customer tariffs, and even succeeded in raising public financing without government guarantee. In Guinea and in The Gambia, the contribution of the AHC was not as positive, and was one of the reasons of the ultimate failures of the PPPs.

Even in PPPs that rely on public funding for investment, operators should play a role in implementing civil works. Experience shows that it is essential that the operator be closely associated with defining and implementing the rehabilitation and extension of the secondary and tertiary distribution networks and with rehabilitating key plants. In Guinea, the AHC's delays in implementing extension programs frustrated the operator, which was encouraged to seek financing for implementing its own projects—with negative consequences for operational performance. In Senegal, initial delays in implementing rehabilitation programs meant that the AHC had to compensate the operator for loss of revenues. To mitigate this risk in Niger, it was decided to

make the private operator responsible for a significant portion of rehabilitation works, as part of its obligations under the *affermage* contract. Giving the operator additional responsibility for designing and implementing extension programs may be desirable to limit coordination problems. However, it is necessary to ensure that the procurement rules that apply to publicly funded projects are well understood and complied with by the private operator.

E. Regulatory Arrangements and the Performance of PPPs

Regulation by contract has been used extensively in Western and Central Africa. Many Western and Central African countries where PPPs have been implemented (including Côte d'Ivoire, Guinea, Senegal, The Gambia and Gabon) have followed the regulation by contract model without a specialized regulation agency. International operators active in Western and Central Africa have usually been comfortable with such an arrangement that has provided sufficient predictability. Because data available at the time of bidding were often inaccurate or incomplete, most contracts included provisions for resetting tariff and/or service obligations. *Affermage* contracts only set the tariff that applies to the operator; there is thus a need for another mechanism for setting the tariff charged to customers. Financial models of water supply operations developed by governments during the design phase of the PPPs and regularly updated during implementation, have successfully been used as regulatory tool. In Senegal for instance, the financial model of SONES' operations available to all bidders for the initial *affermage* contract has later been used to match SONES' Capex and its financing plan to what could be afforded by the excess cash generated by the operator (Box 4.) In countries where they have been used, this approach whereby the financial model of the sector is used as the backbone of economic regulation has provided transparency and predictability, reducing discretionary decisions.

The performance of newly created regulatory bodies has been mixed. While in some countries "independent" regulatory agencies have been created, sometimes years before the mobilization of a private operator (Ghana), the experience has usually not been positive. The regulator's mandate has often been insufficiently clear, regulatory tools that would have provided some predictability to its operations have seldom existed and capacity to regulate has proved hard to build—all resulting in increasing risks for the private partners in an already highly volatile environment. In countries where independent regulators have been created (Mali, Niger, Ghana), major efforts had to be made to ensure that the regulator did not micro-manage the operator (Niger) or did not arbitrarily amend the operator's remuneration (Mali) arrived at after open competition. Apparently the benefits that were sought from the presence of a regulator did not materialize, mainly because it was difficult in the regional context to staff a regulatory agency with competent professionals who could afford to be fair to all parties. Ultimately of course, there must be an independent entity in charge of monitoring the performance of the private operator, and carrying out tariff reviews and other contractual adjustments but this can be achieved through various means. The successful regulation arrangements of Côte d'Ivoire and Senegal suggest that in Western and Central Africa, given the scarcity of qualified professionals and the character of the local political economy, attempting to create an "independent" or even an "autonomous" regulatory agency might not be worth the efforts.

Independent monitoring of performance, as well as the adequacy of a dispute resolution mechanism, and the willingness of all parties to use it effectively, has been a key element of success. Performance monitoring by independent technical auditors (Burkina Faso) or conjointly by the AHC and the private operator (Senegal, Niger) has helped to provide comfort to both

Box 4: Regulatory experiences in Western and Central Africa

Côte d'Ivoire provides a good example of regular tariff resetting under regulation by contract. Contractual revisions were held every four years between the mid-1970s and the late 1980s, in a smooth manner and without the need for a separate regulatory agency. The decisions were based on past and negotiated future operating performance for the SODECI tariff and on the expected debt service for the share of the customer tariff to be transferred to the National Water Fund. This process allowed SODECI to maintain good financial performance, and in particular to distribute dividends to its shareholders, while customers benefited from the operator's efficiency gains through tariff reductions in constant terms.

Nonetheless, the situation had several shortcomings: (i) asymmetry of information tended to favor the operator during negotiations; (ii) the eventual setting of tariff levels and structures by political authorities, rather than by an independent authority; and most importantly (iii) the lack of financial accountability of the public partners, who pushed for over-investment in a depressed macroeconomic context and hence precipitated the debt crisis that hit the sector in the mid-1980s. To address these shortcomings, responsibilities and risks were reallocated between public and private partners as part of the sector reform of the late 1980s. The renegotiation of SODECI's contract by the self-appointed regulator—the Directorate of Major Works (DCGTx)—offers an excellent example of tariff setting through detailed documentation of unit costs and benchmarking of the operator's performance against international best practice. The 20 percent operator and customer tariffs reduction that resulted from this negotiation is probably comparable to what could have been achieved through open competition.

In **Senegal**, the transparent financial model of urban water supply operations that has been used as the main regulatory tool has provided predictability to the private operator and imposed financial discipline on the AHC SONES. It has proven to be an efficient instrument to match sector investments and financing conditions to the revenues from user charges. The urban water sector has been able to recover its O&M and capital costs by the initially agreed date (2003) thanks to the safeguards provided by this model. The same approach was adopted in Niger to restore the financial equilibrium of the sector within five years (2001–06).

parties during implementation. All PPPs have at some time faced disputes that needed to be resolved quickly to the benefit of all parties. In the failed partnerships there was apparently no willingness to come to a mutually acceptable arrangement (The Gambia, Chad) or no clear mediation mechanism (Guinea, Mali). But when conflicts arose in Senegal and Niger, both parties were able to reach an agreement with the assistance of independent mediators who were fully familiar with the contractual arrangement. In Côte d'Ivoire, SODECI's relations with the supervising authority DCGTx may have been somewhat stressed at the end of the 1980s, but both parties were eager to arrive at a reasonable negotiated agreement. The Gabon concession currently faces problems with regard to the financing of new power production facilities; this will be a test of the dispute resolution arrangement in place.

F. Challenges Ahead

Some successful PPPs are at a turning point. SODECI's *affermage*/concession contract has been extended at the end of 2007, but the financial arrangement whereby all investment is financed via customers' surcharges on tariff is reaching its limit, with major investment now required in production. Côte d'Ivoire is investigating options for maintaining a performance record that has been a reference point worldwide. Senegal has recently negotiated a five-year extension of the SDE *affermage* contract until 2011 and is also facing the issue of financing

major production capacity expansion in Dakar. In Burkina Faso, the service contract signed by the public water utility ONEA has been completed at the end of 2007. The Gabon electricity/water concession, hitherto successful, is experiencing some difficulties linked to the financing of power production infrastructure, whose depreciation periods far exceed the duration of the contract.

Transfer of more financing responsibilities to the private partners. While the above countries might wish to further pursue their PPP experience, a logical evolution of the schemes could be to transfer increased financing responsibilities and risks to private partners. Doing so would require detailed consultation with key stakeholders and a detailed analysis of the impact on the customer tariffs. It would also require a thorough review of the existing financial markets and water supply sector structures. Among the options to consider, the following could be investigated: (i) splitting electricity and water operations in countries where these services are still provided by combined utilities; (ii) splitting water production and distribution in countries where cash generation and the local financial markets may not be able to finance major extensions of production schemes on affordable terms; or (iii) splitting operations on a geographical basis in countries where a national monopoly based on cross subsidies may no longer be justified.

Wastewater is likely to become the next challenge. In Western and Central Africa, sewers are currently limited to the central areas of a few large cities. PPPs have so far played almost no role in the collection and disposal of urban wastewater, mostly because sewerage and on-site sanitation is often not under the responsibility of the public authorities in charge of water supply. Provided that these countries succeed raising the financing needed to expand sewerage infrastructure and wastewater treatment facilities in areas where this makes economic and environmental sense, their water supply experience should help them design adapted cost recovery policies and efficient institutional arrangements.

ANNEX 1

Western and Central Africa: What Has Influenced the Success of PPPs?										
	Water Supply Services					Electricity and Water Supply Services				
	Côte d'Ivoire	Senegal	Niger	Guinea	Burkina Faso	Gabon	Cape Verde	The Gambia	Chad	Mali
Type of PPP Arrangement	Conc.	Aff.	Aff.	Aff.	Service	Conc.	Conc.	Aff.	MC	Conc.
	S	S	S	M	S	S	M	F	F	M
Design Stage										
Clarity of sector policy										
Quality of stakeholder consultation										
Quality of willingness-to-pay assessment										
Quality of risk analysis and allocation										
Clarity of contract service objectives										
Availability of financing										
Adequacy of Capex to PPP objectives										
Adequacy of Capex implementation										
Clarity of tariff levels and structures										
Clarity of regulatory arrangement										
Adequacy of other legal documents										
Government and donors' roles										

Continued on next page

Western and Central Africa: What Has Influenced the Success of PPPs? (continued)

Type of PPP Arrangement	Water Supply Services					Electricity and Water Supply Services				
	Côte d'Ivoire	Senegal	Niger	Guinea	Burkina Faso	Gabon	Cape Verde	The Gambia	Chad	Mali
	Conc.	Aff.	Aff.	Aff.	Service	Conc.	Conc.	Aff.	MC	Conc.
	S	S	S	M	S	S	M	F	F	M
Implementation Stage										
Perf. of the government	Best and Good	Best and Good	Best and Good	Inadequate	Best and Good	Best and Good	Best and Good	Inadequate	Inadequate	Best and Good
Perf. of the owner of the contract	Best and Good	Best and Good	Best and Good	Best and Good	Best and Good	Best and Good	Best and Good	Inadequate	Inadequate	Best and Good
Governance of the operator	Best and Good	Best and Good	Best and Good	Inadequate	Best and Good	Best and Good	Best and Good	Fair	Fair	Best and Good
Perf. of the operator	Best and Good	Best and Good	Best and Good	Fair	Best and Good	Best and Good	Best and Good	Fair	Fair	Best and Good
Perf. of the regulatory arrangement	Best and Good	Best and Good	Fair	Best and Good	Best and Good	Best and Good	Fair	Inadequate	Fair	Inadequate
Perf. of dispute resolution mechanism	Best and Good	Best and Good	Best and Good	Inadequate	Best and Good	Best and Good	Best and Good	Inadequate	Inadequate	Inadequate
Government and donors' roles	Best and Good	Best and Good	Best and Good	Fair	Best and Good	Best and Good	Best and Good	Best and Good	Fair	Fair

Legend

- Best and Good
- Fair
- Inadequate

Source: Authors' analysis using the World Bank water PPP toolkit framework
 S: Success; F: Failure; M: Mixed outcome. Capex: capital expenditures; Opex: operating expenditures. Serv: Service contract; Mngt: Management contract; Aff.: *Affermage*; Conc. Concession. Perf.: performance
 On track; Slightly off track; Way off track

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