In 1995, the Government of Senegal initiated significant reforms in the urban water sector to improve service delivery and increase medium-term storage, production and distribution of water in the capital, Dakar. The reforms consisted of dissolving the State-run water company, Société nationale d'exploitation des eaux du Sénégal (SONEES), and creating a new asset-holding company, Société nationale des eaux du Sénégal (SONES), which owned all the fixed assets for the Government and would function as an independent sector regulator. SONES was created to be a small, financially autonomous unit that would employ qualified staff and would be responsible for investments and setting of tariffs. It was also decided that the production and distribution of water services would be placed in the hands of an operating company run by a private professional operator that would own at least 51 per cent of the water facility, with the other 49 per cent owned by a mixture of Senegalese investors, former employees of the original State-run water company (SONEES) and the State.

This public-private partnership (PPP) has been operating in Dakar since 1996, with Sénégalaise des eaux (SDE), a subsidiary of a major French water company, managing the water system under a 10-year operation and maintenance contract. The terms
of the contract allow the government to fine SDE if it fails to achieve the specific performance targets. These targets include an objective later included in the Millennium Development Goals, which is providing water that meets World Health Organization (WHO) quality standards.

The programme has been largely successful in improving the quality and quantity of water delivery in Dakar. Between 1996 and 2003, water production increased by 18 per cent with the addition of 81,000 new household connections and 400 standpipes. An early dispute over the failure of the public sector to make agreed investments, and ambitious initial technical-efficiency targets, led to renegotiation of the original terms of the contract with the assistance of a third-party consultant. The successful renegotiation had a significant positive impact on the financial health of SDE and underlined the inherent strength of the reformed institutional structure of the Senegalese water sector. The programme is regarded by the World Bank as a model for PPPs in sub-Saharan Africa.

**PROJECT OBJECTIVES**

The Government of Senegal recognized the need for large-scale investment to improve the storage and distribution of water in Dakar and to satisfy the growing demand for water services. With a population of 1 million in the city and over 2.4 million in the entire Dakar metropolitan area, less than 56 per cent of the population was receiving potable water from the existing system. Through institutional reform, the Government’s intent was to improve efficiency and service delivery and establish a long-term, financially viable method for Dakar’s urban water sector. This included an ability to generate sufficient resources to finance part of the required future capital expenditures.

To create an environment that would encourage investment, it was determined that the institutional framework for the Senegalese water sector would be driven by the three basic concepts of accountability, autonomy and incentivization. To ensure transparency, the water sector would be centrally coordinated by an experienced and competent asset owner (a State asset-holding company) and professional private-sector water operations companies would be asked to submit competitive bids for the contract. Government regulation would be limited, without fully relinquishing control. These recommendations were designed to create an environment that would ensure that the public and private partners could cooperate and maximize joint benefits.

Another Government objective was to retain a degree of control over the assets while simultaneously setting up the institutional arrangements for sustainable, well-run and expanding water supply services. It was anticipated that, by creating a PPP, the increases in efficiency generated by the private sector would alleviate the burden on the State of subsidizing the water sector. Through the
improved service delivery, the Government aimed to expand water supply coverage (fig. 1) from 56 per cent to 82 per cent by 2015.

**Project Description**

**Partners**

The original water utility, SONEES, formed by the Government of Senegal in 1983, was unable to exercise full control over planning for the sector, to set tariffs at a sufficient level to recover costs, or to settle unpaid bills with public-sector clients such as government departments and municipalities. In 1994, the Government created a steering committee of the ministers of each government agency concerned with water supply and sanitation to address these growing concerns of the water sector.

The committee concluded that SONEES should be dissolved and that a new State asset-holding company should be formed that would retain the assets and the right to extract the water. It was also recommended that an operating company be created to produce and distribute the water, which would be run by a private professional operator that owned at least 51 per cent of it, with the other 49 per cent to be owned by a mixture of Senegalese investors, former SONEES personnel and the State. The operating company, Sénégalaise des eaux (SDE), was formed in 1995, based on a 51-per cent ownership contract with a major French water company. The main stakeholders in the partnership were the private company, SDE; the National Water Company of Senegal (SONES); the Ministry of Water; the Department of Water Works and Sanitation; and the World Bank. The World Bank provided most of the $300 million required to fund the project.

**Implementation Environment – Legislative and Administrative**

The water utility in Senegal was a private corporation in 1960 when the country gained independence, but it was later nationalized. In 1983, a supervisory public utility, SONEES, was created to monitor water performance contracts. However, owing to lack of adequate autonomy, SONEES faced several problems, including nonpayment by government users, lack of financing and organizational problems. The Government recognized the need for greater managerial autonomy to enhance productivity and operational efficiency and realized that private-sector investment would be
required to improve service delivery.

The World Bank, through its concessional lending window, the International Development Association (IDA), had been providing support to the Senegalese water sector for many years and was prepared to provide credit and expertise for this reform. The Government was not interested in either full divestiture or a long-term concession and wanted to retain control of the assets. This led the Government and the World Bank to investigate other types of contract arrangements that would provide clear incentives to achieve a reduction in the water losses of the water infrastructure through leaks and create an improved system of revenue collection.

In 1994, the steering committee formed by the Government analysed all of the available options to address the weaknesses in the system. A Dutch consulting firm was commissioned to conduct fact-finding missions on the lessons learned from other countries in the region. One objective was to identify an institutional framework for the Senegalese water sector, driven by the three basic concepts of accountability, autonomy and incentivization. The consultant suggested that, to ensure transparency, the sector should be centrally coordinated by an experienced and competent asset owner (a State asset-holding company) and that private-sector water-operations companies should be asked to submit competitive bids for the contract. The consultants also stressed that the sector should not be overly regulated, with excessive government interference and too many conditions placed on the actors. These recommendations were designed to create an environment that would ensure that the public and private partners could cooperate and maximize joint benefits.

At a World Bank-led workshop in July 1994, the steering committee agreed with these recommendations and concluded that the original State utility, SONEES, should be dissolved and that a small, financially autonomous company should be formed to hold the assets on behalf of the State. The new company would also function as an independent regulator of the water sector and be responsible for making planned investments and setting tariffs.

It was also determined that while the State would retain the right to extract water, the production, storage and distribution of water would be run by an operating company controlled by a private professional firm with experience in the management of water systems. While cost recovery and financial sustainability were important factors, the committee also realized the need for a social dimension to the reform and advised creating subsidized “social connections” for low-income, low-volume consumers. The reform has had positive outcomes for the poor, partly due to the incentives to the operator to subsidize connections in low-income neighbourhoods.

The technical subcommittee drew up a list of functions for the new State holding company and the private operator
that included recommendations that compensation of the operator be linked to specific goals for efficiency of the network (measured by reduced unaccounted for water and increased billing and collection efficiency). Another provision was that the private operator also should contribute part of the funding for capital expenditures, while the investment responsibilities would remain a function of the public sector, carried out by a financially autonomous agency, the private sector was guaranteed a reasonable rate of return on these investments.

The committee felt that financial autonomy of the new State holding company would create incentives to design a sustainable investment programme and to lobby the Government for adequate tariff increases. To ensure the success of this arrangement and the autonomy of the agency, it was essential that the new State holding company be a small unit employing qualified staff under conditions that were distinct from the civil service. The agency would have independent contracting authority and would retain the assets and the right to process water for public use.

The National Assembly passed a law implementing the institutional reform of the urban water supply sector in March 1995. The law authorized the creation of the Société nationale des eaux du Sénégal (SONES), to be governed by a 1990 law related to parapublic-sector enterprises. A new operating company that would manage the distribution system and eventually be privatized was also created out of the dissolved SONEES as well as an office to manage urban sanitation. However, it was decided that requiring the private operator to be responsible for the sanitation sector would not be feasible given the poor condition of this system. While this was a controversial decision, the sanitation programme was later strengthened and improved under a separate scheme (although not through a PPP).

The Government also committed to guarantee employment for permanent employees of SONEES. Thus, SONEES employees were divided between the operating company, which retained 1,394 of these staff members, and SONES, which retained 50 to manage strategic development, long-term planning and oversight in the sector.

The success of the reforms and the clearly defined relationship between the stakeholders in the partnership have led the World Bank to promote the Senegal Urban Water Services project as a model to be replicated in other sub-Saharan countries.

Financial Agreement

A major portion of the $300 million invested in the PPP in the Senegalese water sector came from World Bank loans to the Government, but the reform was supported by the strategic use of private finance, both from the private operator (who financed some of the investments) and from local private banks that provided a line of credit to assist SONES with its cash flow.
The financial objectives are clearly defined in the contract, stating that there would be no ongoing operating subsidies from the State, and the only support would be in the form of World Bank financing through its IDA credit lending window. The contract also stated that water tariffs would be increased gradually, set initially at a constant rate but adjusted according to progress in reaching financial equilibrium, and that a "social block" for consumption under 20 cubic metres per 60 days would be subsidized to ensure affordability for low-income households.

A financial model was created to conduct viability studies and to track the progress of the urban water utility. The model used simulated the flow of funds, including (a) funds generated from operations, (b) investments in fixed assets and working capital, (c) new long-term capital raised through new borrowing and equity capital increases, and (d) debt service.

Using the model, a financial scenario was developed, taking into consideration several factors to predict when the system would attain financial equilibrium. The model predicted that if the World Bank-funded investment project went ahead, if network efficiency were improved and if consumer tariffs were increased at a rate of no more than 3 per cent per year, the project would attain financial equilibrium in 2003. This scenario, including the rate of tariff increases, was accepted by all parties and became the "base case" upon which the financial projections were prepared.

The model also allowed the Government to calculate a "ceiling rate" for the price to be offered in a bid by the private operators – a price beyond which private-sector management would be uneconomical. This became a crucial method for evaluating the proposals received in the bidding process.

According to the terms of the contract used in Senegal, the private operator does not have any decision-making role in setting tariffs nor is the fee paid to the contractor based solely on the tariffs to be collected. The operator collects the tariffs, retains a portion of the fee (normally between 50 and 70 per cent) and sends the balance (50 to 30 per cent) to the Government. The Government's portion is used to pay for the investment costs of the system.

**Contract Provisions**

A series of contracts were negotiated between government authorities and the private sector, keeping in mind the Government’s objectives to retain control over the assets.

SONES, as the State asset-holding company, was authorized to manage the sector through a 30-year concession contract signed by the State, represented by the Ministère de l'hydraulique. SONES also signed a sector development contract (*Contrat Plan*) with the Ministry, which outlined its investment obligations (and was included in the Request for Proposals for the private-sector contract). A ten-year affermage contract governing
the operation of the system was signed between three parties: the Republic of Senegal, represented by the Ministère de l’hydraulique, SONES, and a private operating company formed specifically for this purpose, Sénégalaise des eaux (SDE).

The affermage contract is distinct from the concession-type contract in that under the former, the asset owner, in this case SONES, is responsible for all capital investments (or at least the major part since in the Senegal case, SDE has agreed to fund a small portion of the required new investments and recovers this investment through its operating fee). In an affermage contract, the private operator is responsible for collecting the water user fees from the individual customers and will retain for itself an amount specified in the contract, which generally covers its operating costs and agreed upon profit (this accounts for 50 to 70 per cent of the fees collected). The rest of the fees collected is turned over to the Government (the asset owner) for placement in a special capital fund that will be used to pay for capital investments.

This differs from a concession-type contract, where the private operator is fully responsible for the capital investments as well as the operations of the water system. In some concessions, the Government issuing the concession may demand a concession fee payment in compensation for past infrastructure investments that it has made in the water system prior to the start of the concession.

SDE also signed a performance-based contract with SONES that was included as an annex to the affermage contract and took effect on the same date as the affermage contract, for the same ten-year duration. The contract was renewable every five years after the first ten years and contained provisions for review of the performance targets every two years. This contract outlined the responsibilities of SONES, which included ensuring that infrastructure was available to the operator and investments made (including a requirement to prepare a three-year investment programme, adjusted each year, which takes into account the proposals of the operator), the prompt execution of works relating to system investments, the responsibility for obtaining financing for the works and the adjustment of tariffs in accordance with the *Contrat Plan*.

The performance contract also listed the obligations of SDE, which included using the productive capacity of the infrastructure in an optimal manner, maintaining and repairing all infrastructure at its own cost, renewing a minimum of 14,000 metres and 6,000 connections a year and replacing any electromechanical equipment with a value below 15 million CFA ($25,000) and with a lifespan of up to 10 years. SDE was also required to prepare an annual maintenance plan and technical report, to meet WHO standards for water quality, to respond within one hour to breaks in mains (with a maximum of 12 hours to repair the main and restore it to service) and to adhere to a renewal schedule including a requirement to install 17 kilometres of 100 mm ductile iron pipe annually or its equivalent (a table of equivalents was provided).
In addition to these obligations, SDE was also required to supply monthly data to SONES on consumption (fig. 2), billing and collection and to meet performance targets with respect to leakage and collection.

Implementation Metrics

In an open and competitive competition, a major French water company won the bid to operate the Dakar water sector and to create the operating company with the shared ownership described in the contract. The new operating company was officially established on 26 December 1995 as Sénégalaise des eaux (SDE), majority-owned by the French company. The State took a nominal and symbolic 5-per cent share, and former SONEES staff were granted 5 per cent of the shares. The French company owned 57.84 per cent of the remaining 90 per cent, and private Senegalese investors owned 32.16 per cent (instead of the originally planned 51 per cent and 39 per cent).

The contracts also were signed with the following structure. SDE, the private operating company, was responsible for some investments every year. SONES, the State holding company, was responsible for owning sector assets, planning and financing investments (excluding those done by SDE) and monitoring SDE activities. SONES would receive the difference between total consumer tariffs and SDE rates as compensation.

Recognizing the social dimension of the situation in Senegal, the water-sector reforms also created subsidies targeted at low-income users. Three types of subsidies were introduced. First, low-income households would be provided with subsidized connections through the “social connection” programme financed by the Government and World Bank funds. Second, public stand posts would be constructed in areas where there were people without private connections, financed by the Government with funds from the World Bank project, and water would be supplied to these stand posts at low rates. The stand posts would be managed by private operators recruited by SDE in consultation with the local community. Finally, users with low levels of consumption would receive subsidies financed by cross-subsidy between customer categories and delivered through an increasing block tariff (IBT) with a “social tariff” for household consumption less than 20 cubic metres in two months.

The increasing block tariff structure used in Senegal is implemented in the following way: a subsidized “social tariff” for levels of consumption below 20 cubic metres in a 60-day period, regular tariff for consumption over this and a dissua-

Figure 2 | A clean water supply.
sive tariff for consumption over 100 cubic metres per 60 days. The subsidized “social connections” also targets low-income families who are able to obtain water connections at lower rates. SONES regularly receives requests for improving water supply and providing social connections from individuals or elected officials in different quartiers (a political subdivision within Senegal). In September every year, a draft capital improvement plan is prepared for the next three years that indicates the improvements to water supply infrastructure that SDE proposes to make, based on its own assessment as well as from other sources. The proposal identifies each project by name, its location, a general description of the proposed work and the proposed year of implementation. SONES reviews the plan, holds discussions with SDE and takes decisions on which projects are to be implemented and what changes (if any) are to be made to the original proposals. Once an agreement is reached, it becomes part of the contract documents for the next year.

Local officials of the quartiers targeted for social connections are informed of the criteria that are used to judge whether a house is eligible for a social connection and the conditions for ordinary connections. The local official then informs the constituents about the proposal and invites the eligible households to apply for the social connections. SDE sends an inspector to visit the house of each social connection applicant. The inspections are based on defined criteria and conducted objectively, and it is not infrequent for an application to be denied.

SDE normally targets construction of social connections within one month from the time that they are approved and within two weeks for applicants for ordinary connections. However, delays are common and applicants may have to wait for the following year if the quota for connections for the current contract between SDE and SONES is exceeded.

Upon receipt of invoices for the construction of all the connections by SDE, SONES inspects all ordinary connections and a sample of social connections before approving payment. If connections are found that fail to meet the criteria for social connections, they are disapproved for payment by SONES.

**COMMENTARY**

**METHODS FOR OVERCOMING IMPEDIMENTS**

Initially, the Government failed to make agreed investments in the network in a timely fashion. Since the private sector is in charge of operations and maintenance and the public sector is in charge of investment, this arrangement led to some tension and confusion. In addition, the original technical efficiency targets set in the contract were very ambitious, and the failure to reach the efficiency targets had significant implications for the compensation of SDE since these targets were included in the remuneration formula.
However, the contract outlined a dispute resolution procedure that allowed for the use of a “conciliateur”, an objective third-party sector professional to be called in to help settle disputes. A consultant who had been involved in the preparation of the transaction helped SDE and SONES renegotiate the contract in 1998. The successful renegotiation of the targets had a dramatic effect on the financial health of SDE and underlines the maturity and strength of the institutional structure of the reformed Senegalese water sector.

There are, however, other impediments in the sector that have been harder to overcome. Since SONES is staffed by employees passed over for a job in the private firm that was created (SDE), they are earning less than their former colleagues whose employer they are regulating, which has created some resentment and tension in the relationship.

Another challenge lies in the implementation environment and the targeting of subsidies. In order to obtain a subsidized “social connection” in Senegal, an applicant must have title to the land and an existing house must be located on it. In areas where most squatters live, the cost of a plot of land is approximately $500, the equivalent of the GDP per capita for Senegal. The result is that many of those in the most need cannot qualify for the “social connection”. This is a serious issue that has not yet been adequately addressed.

**Key Points of Success or Failure**

The Senegal water services project has been cited by the World Bank, the United Nations Human Settlements Programme (UN-Habitat) and other international agencies as a successful PPP model for sub-Saharan Africa. There were several key factors responsible for the success of the project, including an innovative contract structure, strong political will and flexibility in negotiations when necessary.

The choice of contract structure was crucial to the success of the scheme. The contract model chosen, an affermage, is modified by the addition of strong financial incentives to reduce leakage and improve billing and collection efficiency; it effectively addressed the main weaknesses in the existing system and also ensured that the poverty-alleviation objectives of the Government were taken into consideration. The 10-year contract with SDE ensured that all assets remained with the Government, a political imperative. While the contract did require some contributions to capital expenditures on the part of the private operator, the bulk of the funding came from the World Bank, which bore the major financial risk.

Operations and maintenance functions were clearly defined, leaving little room for disputes, and the incentives outlined in the contract encouraged the operator to produce at optimal capacity while reducing losses and improving bill collection. The case in Senegal demon-
strated that if a private operator takes over operations and is given some responsibility in the planning of the capital expenditure programme, greater emphasis will be placed on the distribution system than water production. In Senegal, where the main problem with the existing system was poorly maintained delivery networks and high levels of leakage, this was an extremely important factor.

According to the contract, the operator was paid on the basis of a water supply rate that did not vary according to the category of connection. The affermage contract chosen used a fixed water supply rate regardless of the type of customer serviced, unlike a concession contract, in which the operator makes his revenues and thus makes his profits directly from the tariffs. Thus, there was no disincentive to install the subsidized “social connections” and the operator was not tempted to divert water supply from customers in lower tariff categories to those in higher ones.

However, there is a significant potential for a financial problem with the Dakar project. There is insufficient revenue collected from water fees to finance the Government’s infrastructure investment fund; thus the capital improvements needed in the water system are not being made to the extent initially agreed by the Government. This is related to a conflict between financial and social objectives for the project in that many poor people are not being connected because of the land title requirement (noted above).

The nature of the contract fostered a partnership between the Government and the private operator to make the water sector financially healthy and viable. When some of the original targets proved to be unattainable by the private operator, the successful renegotiation of the original goals can be considered proof of the strong dispute-resolution procedures outlined in the contract.

The network of contracts created robust relationships and an institutional structure that has endured both a change of Governments and presidents but that may be difficult to realign for any future reform of the institutional framework. As the water sector in Senegal evolves and new institutional structures are considered, the implications of the present structure may emerge. While the contract is largely self-regulating within the framework, the provision for an independent, objective third party provides a helpful method of dispute resolution, as the successful renegotiation of the targets demonstrated.

The use of the World Bank’s cash flow equilibrium model to guide the sector to financial health was an effective innovation, which not only helped decision-makers to analyse the various options available but also helped in the ongoing management of the sector.

The main lessons learned in Senegal can be summarized as follows:

- Political commitment and leadership, stakeholder ownership and public-sector involvement are
crucial to a sustainable reform process and they must be in place prior to starting the process and maintained during implementation. A climate of trust and cooperation built through capacity-building activities and the creation of a collaborative partnership is essential.

- A well-thought-out plan, with sector investments that are planned in parallel with reform of the utility, is essential. Investments may be from external support agencies or from some sources of private-sector finance, if certain conditions are met.

- The Government must remain committed to sector investments and implement them in a timely manner, as delays in rehabilitation and extension works will jeopardize improvements in service, which will in turn hamper efforts to restore customer confidence and payment discipline. Government staff must be provided incentives to ensure that investments take place as planned.

- The State asset-holding company must be institutionally autonomous, professionally competent and have clear financial targets.

- Issues of employment and job security for the utility staff must be addressed in the early stages of the process.

- The form of any contract must be based on the development aims agreed to by all sectors.