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# A Transitory Regime

## Water Supply in Conakry, Guinea

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In several ways, the reform introduced to the water sector in Conakry, Guinea, in 1989 under a World Bank–led project was remarkable. It showed that even in a weak institutional environment, where contracts are hard to enforce and political interference is common, private sector participation can improve sector performance. Why did the sector improve as much as it did, and what has inhibited reform?

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## Summary findings

Both consumers and the government benefited from reform of the water system in Conakry, Guinea, whose deterioration since independence had become critical by the mid-1980s. Less than 40 percent of Conakry's population had access to piped water — low even by regional standards — and service was intermittent, at best, for the few who had connections. The public agency in charge of the sector was inefficient, overstaffed, and virtually insolvent.

In several ways, the reform introduced to the sector in 1989 under a World Bank–led project was remarkable. It showed that even in a weak institutional environment, where contracts are hard to enforce and political interference is common, private sector participation can improve sector performance.

Ménard and Clarke discuss the mechanisms that made progress possible and identify factors that inhibit the positive effects of reform.

Water has become very expensive, the number of connections has increased very slowly, and conflicts have developed between SEEG (the private operator) and SONEG (the state agency). Among the underlying problems:

- The lack of strong, stable institutions.
- The lack of an independent agency capable of restraining arbitrary government action, regulating the private operator, and enforcing contractual arrangements.
- The lack of adequate conflict resolution mechanisms for contract disputes.
- Weak administrative capacity.


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# A Transitory Regime:
# Water Supply in Conakry, Guinea

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## 1. Introduction

The performance of Conakry's water system, which had been deteriorating since independence, had become critical by the mid-1980s. The public agency in charge of the sector, the *Enterprise Nationale de Distribution de l'Eau Guinéenne* (DEG) was inefficient, overstaffed and virtually insolvent. Less than 40% of Conakry's population had access to piped water – low even by regional standards — and service was intermittent, at best, for the lucky few with connections. By 1983, residents had to line up at neighbors' connections and standpipes for hours, hoping for service. Many residents used polluted well water as their primary source of drinking water and even more relied upon it as a secondary source when the piped system was not operating. Consequently, water-borne diseases, including cholera and diarrhea, had become a major problem. Further, after disappointing results from previous investment projects, donors, including the World Bank, were becoming frustrated. The poor, and deteriorating, performance of the sector convinced many observers that significant reform was necessary.

In 1989, after several years of discussions and delays, the government signed a lease contract with a majority privately owned enterprise that covered operations and maintenance of all urban water systems in Guinea. A newly created public enterprise was given ownership of sector assets and responsibility for investment. At the same time, a large World Bank-led project, the *Second Water Supply Project*, was approved, allowing for expansion and rehabilitation of the system.

In several ways, the reform was quite remarkable, requiring significant commitments from private investors in an institutional environment that imposed very few limits on arbitrary government action. Guinea was ruled, at that time, by a military government and there was no elected legislature or independent judiciary to restrain the executive. Further, informal constraints, such as traditions of regulatory or bureaucratic independence, were also very weak. The World Bank, which was heavily involved in the design and implementation of the contract, had to implement new internal procedures to handle the arrangement and it was not clear to the partners how well the system would work.

DEG's disastrous performance made the reform desirable. However, in many other countries, sector-specific crises have not been sufficient motivation for private participation in this sector.[1] In Guinea, four additional factors encouraged substantial change. First,

[1] See, for example, the discussion of Lima in Alcazar, Xu and Zuluaga (1999) and Mexico City in Haggarty, Brook and Zuluaga (1999). Further, the performance of the sector in Guinea has been very poor for many years before reform was initiated.

DEG's poor management and performance, rather than less tractable problems such as scarcity or the high cost of raw water, was the main reason for the sector's problems. Consequently, the introduction of private sector participation could be expected to improve the situation. Second, the military government that came to power following the death of President Sekou Touré did not rely heavily upon support from the urban elite who were used to receiving free water. This allowed the government to implement large price increases, allowing tariffs to cover operating expenses and provide a fair return on capital. Third, privatization was consistent with governments philosophy of liberalizing and privatizing the economy, which was demonstrated by the structural adjustment program that the government was implementing in response to the macroeconomic crisis that hit Guinea in the mid-1980s. Finally, bilateral and multilateral donors, who were pushing for reform, had significant leverage, since, in addition to financing the structural adjustment program, they also financed most sector investment.

Although the weak institutional framework did not prevent the private sector from becoming involved in the sector, it has affected the success of reform. In practice, no independent body exists that is able to enforce the contracts between the various parties involved in the sector and the government. Consequently, many useful contract provisions have proven ineffective (e.g., provisions requiring that the government pay its water bill, allowing for international arbitration in the case of dispute between the partners, and enforcing performance targets). Further, in the absence of a neutral party that can mediate disputes and enforce its decisions, disagreements between the different parties have had to be settled at the highest levels of government. These problems have slowed sector development and poisoned relations between the public enterprise, the private operator and the government. For example, one of the main reasons that the price of water has become high is that the collection rate has remained low. This, in turn, is because the government has refused to pay its water bill and because the weak judicial system makes it difficult to collect from private consumers who refuse to pay.

Notwithstanding these problems, the bottom line from this study is that all parties have benefited from reform. On aggregate, increased coverage and improved quality more than compensated consumers for higher prices. Further, government subsidies have been reduced and the foreign investors have made modest, but positive, profits. Under the circumstances, it is unlikely that the public operator, DEG, would have had greater success than the private operator has had – especially given its disastrous record before reform and the poor compliance with provisions in the public enterprise's contract. This shows that even in a weak institutional environment, where contracts are hard to enforce and political interference is common, private sector participation can improve sector performance.

This paper discusses the mechanisms that makes progress possible, even in difficult institutional environments, and identifies factors that inhibit the potentially positive effects of

reform. Section II describes the situation in Guinea before reform. Section III describes the sector crisis at the time of reform. Section IV examines the political economic circumstances that affected the decision and the design of reform. Section V analyzes the contractual arrangement and its implementation. Section VI evaluates the outcome. Section VII goes beyond standard performance measures and presents results from a cost-benefit analysis. Section VIII concludes and discusses options that might improve sector performance.

## 2. Guinea at the Time of Reform

In many ways, the collapse of the water system mirrored a collapse in Guinea's economy, and many of the problems that affected DEG affected the entire public sector. By the time that reform was enacted in 1989, Guinea, with a per capita GDP of US $430, was one of the poorest countries in the world (World Bank, 1990d). Further, life expectancy at birth (43 years) and the infant mortality rate (143 deaths per 1000 births) were both below the average for Sub-Saharan Africa (51 years and 108 deaths per 1000 births). This was not due to a lack of natural resources. In fact, due to its vast mineral wealth and its fertile land, Guinea had been seen as one of the most promising colonies in French West Africa before independence. Instead, Guinea's problems were primarily the result of years of economic mismanagement by the socialist regime led by President Sekou Touré.

Before independence, due to vigorous campaigning by Sekou Touré and the *Parti Démocratique de Guinée* (PDG), which dominated pre-independence politics, Guinea rejected membership of the French Community proposed by General de Gaulle. This prompted an immediate withdrawal of French expatriates and a swift end to technical assistance, budgetary aid, and trade preferences. Since the PDG held the majority of seats in the regional assembly, Sekou Touré automatically became President. He used his position to set up a one-party state, introducing 'African Socialism' and imposing a dictatorship based on personal and clan ties. President Touré's fear of being overthrown – known as the permanent plot – resulted in the arrest, persecution, and torture of any real, or imagined, opponents, which, in turn, led to a mass exodus of Guineans.[2]

The Touré regime's policies led to state domination of the economy and urbanization. Following independence, most enterprises, in both trade and industry, were quickly nationalized and cooperative farms were set up in rural areas. To subsidize urban consumption, the government tried to keep prices of agricultural products low. These policies were sustained by the suppression of private trade and by forcing farmers to sell their produce at prices that, by 1984, were lower than the estimated cost of production

[2] By 1984, it was estimated that as many as 2 million refugees were living in neighboring countries (EIU, 3rd Quarter 1984, p.30), at a time when the population was only about 5 million (World Bank, 1998a).

(Arulpragasam and Sahn, 1997, p.55). The long-term results were predictable. People living in rural areas withdrew from the state by turning to barter, subsistence farming, smuggling and the black market.[3] Meanwhile, agricultural production and exports fell dramatically.[4]

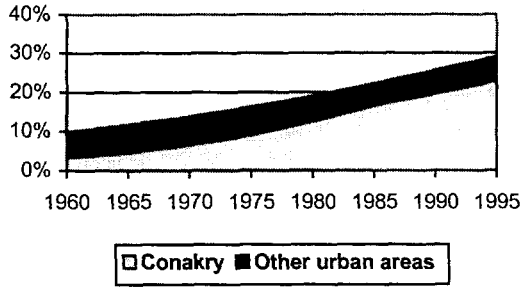


**Figure 1: Percentage of Population Living in Conakry**

*Source*: United Nations (1996) and World Bank (1997b).

These policies also encouraged fast population growth in urban areas. Between 1960 and 1985, Conakry's population grew from around 39,000 (less than 4% of the population) to over 800,000 (almost 16.5% of the population) (see **Figure 1**). Although, the estimated growth rate slowed to around 7% in the late 1980s and early 1990s, it remained fast due to an influx of refugees from neighboring Sierra Leone and Liberia. Rapid population growth, combined with poor urban planning and inadequate investment, quickly overwhelmed Conakry's infrastructure, including its water system.[5]

Despite the strong performance of the partly foreign-owned and run mining sector, the Guinean economy rapidly deteriorated.[6] Rapid expansion of the civil service led to a huge public sector wage bill, even though salaries were falling in real terms.[7] Although wages were supplemented with benefits such as access to goods at official prices, transportation allowances, and access to free piped water, it became nearly impossible to

[3] See Azarya and Chazan (1986) for a discussion of this phenomenon in Guinea.

[4] Whereas agricultural products made up 71% of total exports in 1957, they made up less than 1% of total exports by 1981 (Arulpragasam and Sahn, p.37).

[5] A Center for Privatization study conducted for USAID discusses the state of Conakry's infrastructure in the mid 1980s (Marston et al., 1986, p. 46)

[6] World Bank estimates suggest that 97% of exports were Bauxite or Alumina by the mid-1980s and that about 30% of government revenue came from the mining sector in 1984 (World Bank, 1986). Guinea's stock of disbursed and outstanding debt increased from 25% of GDP in 1975 to 62% of GDP in 1985 and the debt servicing requirement had reached 43% of total exports by 1983 (World Bank, 1990b, p.9).

[7] Although the First Republic did not formally document finances or produce an accurate government budget, it is clear that public finances were in disarray. In the 1970s, public sector employment grew by 7% per year and although civil service wages were frozen between 1965 and 1980, they accounted for between 50 and 60% of government expenditures by the mid-1980s (De Merode, 1994, p. 170).

support a family on a civil servant's salary. Consequently, civil servants turned to corruption and moonlighting to make ends meet.[8]

In addition to increasing the size of the government, these policies also increased the influence of the PDG. Price controls, rationing and control of production greatly increased the potential for patronage, making links to the PDG a way of gaining access to jobs, rations at official prices, education and connections to the water system.[9] Foreign exchange obtained from the sale of cash crops was used to subsidize the consumption of civil servants and party officials, while low subsidized prices for food crops benefited urban consumers. Since both the civil service and the PDG were concentrated in Conakry, President Touré became reliant upon urban areas for support. Although protests in 1978 resulted in modest liberalization, the pace was predictably slow since many of the reforms (e.g., privatization, civil service reductions and price liberalization) would harm his urban supporters.[10]

On March 24, 1984, during preparations for the up-coming meeting of the *Organization for African Unity* (OAU) in Conakry, President Touré had a heart attack, dying two days later. President Touré's notorious fear of plots, especially by potential rivals, meant that there was no clear successor and, therefore, a lengthy power struggle seemed likely. This process, however, was cut short on April 3, when several top army officers, led by Colonel (now General) Lansana Conté, seized power. The new government moved quickly to consolidate power and sweep away the remnants of the Touré regime. The *Parti Démocratique de Guinée (PDG)* and the unions were outlawed, political prisoners were released and Camp Boiro, where President Touré had imprisoned and tortured opponents, was closed. After years of repression, the new regime received

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[8] By 1984, the average salary was estimated to cover only about 25% of the cost of living, even after including the rice rations and other commodities used to supplement salaries (Marston, Thomas and Love, 1986).

[9] Arulpragasam and Sahn (1997, p.11) note that PDG officials "exercised control over everything from employment in state enterprises to access to foreign exchange at official rates."

[10] After the 1978 demonstrations by market women throughout the country, the Touré regime started to tentatively implement reform (see Young, 1982). The protests were sparked by an order to close all village markets, which was intended to give the state-owned cooperatives a monopoly over retail trade and culminated with marches on the presidential palace on August 27 and 28, 1978. Although the women were driven from the palace when the guards opened fire, President Touré quickly rescinded the order that sparked the protest and started liberalizing parts of the economy. By 1983, several enterprises were given operational autonomy (e.g., over employment and pricing), 15% of public sector workers were released (although the policy of guaranteeing employment for graduates was continued) and several business units of public enterprises were disbanded. The government, however, refused to implement several other reforms. Most notably, the government was firmly opposed to realigning the exchange rate, since access to hard currency and imported goods at subsidized rates were among the benefits enjoyed by the high-level civil servants and PDG party members.

widespread support from the public, signaled by huge and festive demonstrations. Because of this goodwill, and because it did not depend upon urban areas for support, the new military government could consider policies to liberalize the economy that had been rejected or delayed by the Touré regime.

## 3. A Badly Needed Reform: Circumstances in the Water Sector

In 1983, while President Touré was still president, a group of international experts was invited into Guinea to evaluate Conakry's water system and to suggest ways of improving sector performance.[11] By this time, sector problems were becoming critical. Despite substantial loans from international donors, coverage was low and many non-connected residents drank polluted water from wells. Because of this, waterborne diseases were the main cause of death for infants and children and there were periodic cholera epidemics. The public enterprise responsible for the sector, the *Enterprise Nationale de Distribution de l'Eau Guinéenne (DEG),* was poorly managed, overstaffed, and practically insolvent. Although the consultant's report suggested several reform options, and despite pressure from international donors and the systems deteriorating performance, the government did not act quickly. It was not until 1989 that the military government that replaced Sekou Touré finally enacted sector reform. In this section of the paper, we describe the situation prior to reform and discuss reasons for the sectors poor performance.

### *3.1 Sector Performance Prior to Reform*

***Sector organization.*** Prior to reform, a public agency, the *Enterprise Nationale de Distribution de l'Eau Guinéenne* (DEG) was responsible for operations, maintenance and investment in Conakry and other urban areas. Theoretically, DEG was an autonomous agency within the Ministry of Natural Resources and Environment (MNRE) and, under its statutes, its board contained representative from several ministries. However, in practice, its board never met and the MNRE treated it as it would any other department (Triche, 1990, p.10). Consequently, DEG had no autonomy and suffered from the same problems that plagued the rest of the civil service during, and following, President Touré's regime. For example, before the military coup that followed President Touré's death, the policy of guaranteeing employment to university graduates meant that DEG, like the rest of the civil service, was extremely overstaffed.

***Water resources.*** Despite the sector's problems, scarcity has never been a major problem in Guinea, which, due to its abundant rainfall, has earned the reputation of being the

[11] The group, which was coordinated by SONEDE (Tunisia) and *Lyonnaise des Eaux* (France), submitted their report in March 1985.

'water tower of Africa'.[12] Although water from the Conakry aquifer is unsuitable for drinking because it is highly polluted, due to the use of pit latrines, and saline, due to proximity to the ocean, a safe source of abundant fresh water is available.[13] The reservoir at Grandes Chutes, which is located about 60km from the city, could produce over 500,000 $m^3$/day (World Bank, 1989). In comparison, DEG's average production in Conakry was only 44,000 $m^3$/day in 1985 (and total production remained at only 68,000 $m^3$/day in 1996).[14] Further, because Grandes Chutes is located 233 meters above sea level, the system can be gravity-fed, reducing the cost of water. Although potential production was high, actual productive capacity was limited by the transmission pipeline from the Grandes Chutes dam, which could carry only 45,000$m^3$/day.

***Low connection rate.*** Despite the abundant water supply, coverage was very low before reform – we estimate that less than 40 percent of the population of the city had access to piped water in 1989.[15] According to data from SEEG, there were 3,100 *legal unbilled* connections for deputies, senior civil servants and DEG employees and 10,200 *billed* connections in 1989. At this time, the population of Conakry was close to one million. In comparison, Abidjan in Côte d'Ivoire, which was about twice the size of Conakry, had over 111,505 connections (SODECI, 1990). Most private connections were a single tap inside a lot or compound – only a small wealthy minority had running water inside their house – usually serving many households (Durany and Morel à l'Huissier, 1994, p.19). According to field interviews, whether a household had a connection depended primarily on personal links (e.g., tribal and family) and fidelity to the Sekou Touré regime. For this reason, a household's capacity to provide water to neighbors rapidly became part of its power, prestige, and control.

Although it is difficult to estimate the exact number, many other Conakry residents had *illegal* connections to the system. In 1992, three years after the private operator took control of the company, Castilia (1993) estimated that there were 4000 *illegal* connections in

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[12] Average annual rainfall in Conakry is about 4.2 meters (World Bank 1990c, p.46). In comparison, annual rainfall in Abidjan is 2.0 meters, in Buenos Aires 1.0 meters, in Mexico City 0.6 meters, in Santiago 0.3 meters and in Lima 0.001 meters (Source: International Station Meteorological Climate Survey, Version 4.0).

[13] World Bank (1989) also notes that the complex geography of the Conakry peninsula makes it difficult to abstract significant amounts of water from boreholes.

[14] Data are from World Bank (1987) and World Bank (1998a). Additional water was available from the Kakimbon well field (7,000$m^3$/day) and Kakloulima Springs (2,000$m^3$/day).

[15] According to data from SEEG, there were about 13,300 legal (billed and unbilled) connections in 1989. In addition, there were 40 operational standpipes in 1989 (World Bank, 1989, p.3). Assuming 27 people per connection (see footnote 61), 1000 people per standpipe (see footnote 61) and population from United Nations (1996), this implies a coverage rate of 38% in 1989. This omits people who obtained water from illegal connections. However, it also does not take into account that service interruptions meant that people with connections had to use water from wells as a secondary water source.

Conakry, compared to 13,371 legal connections.[16] Since a private operator, operating along commercial lines, presumably has greater reason to reduce the number of illegal connections, it is likely there were significantly more illegal connections before reform.

In part, the low connection rate was the result of rapid urban growth due, in part, to policies that encouraged urbanization. Problems related to fast growth were exacerbated by poor urban planning, something that remains a problem today. Service delivery and system expansion were difficult and costly because the poor road network made it difficult to lay pipes and because a relatively small number of potential customers were spread over a wide area. Consequently, even if maintenance had been adequate, Conakry's infrastructure would have been strained far beyond its capacity.

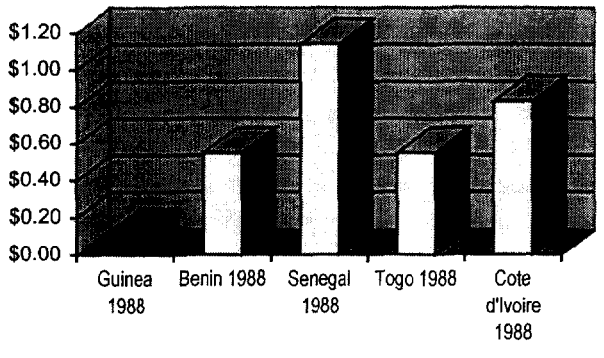


**Figure 2: Price of Water before Reform**

*Source*: World Bank Documents.

***Low tariffs***. Before June 1986, when it was increased to GF 60/m$^3$ ($0.12/m$^3$), the water tariff was GF 10/m$^3$ ($0.02/m$^3$). Even after the increase, the tariff was considerably lower than prices in other West African countries (see **Figure 2**) and far lower than estimates of long-run marginal cost. Based upon DEG's actual expenses and estimates of the optimal level of operating and maintenance costs, World Bank (1987, p 19) estimated that the average incremental cost of water (AIC) was about US$0.25/m$^3$. However, even this might have been somewhat low, given that in 1989, World Bank (1989, p. 20) estimated that the AIC in Conakry was US$0.82/m$^3$.[17] Because of this, it would have been difficult for even an efficient operator to operate and maintain the system at the tariff levels in place before reform. Since, as we discuss below, DEG was

[16] Similarly, Durany and Morel à l'Huissier (1994) estimated that based on the number of household connections SEEG reported that only about one-third of households should have had private connections in 1992, compared to the 45% they observed.

[17] These estimates should be treated with caution due both to the large differences in the estimates and to the poor state of DEG's accounts. However, they indicate that prices would have been too low to cover sector expenses, even if bill collection had been reasonable.

overstaffed, inefficient, and hopeless at billing and collection, there was very little money available for either maintenance or system expansion.

***Low labor productivity.*** By 1984, DEG had 504 employees, a ratio of 34 employees per 1000 connections (World Bank, 1987, p. 38).[18] Even compared to other West African public water utilities this was high – there were 32 and 24 employees per 1000 connections, respectively, in the public utilities in Togo and Benin. The private operator in Côte d'Ivoire, SODECI, had only 9.8 employees per 1000 connections at this time (SODECI, 1986). Further, Guinea's severe financial problems led to a serious decline in civil service salaries, including salaries at DEG, in the 1970s and 1980s. Because of this, DEG employees had little or no incentive to do their job and many would show up at the office only to get their salary, which was often paid in cash.

***Low billing and collection rates.*** In principle, water distribution was metered and consumers were charged according to consumption but, in fact, metering was very rare. Despite a $12 million IDA loan in 1979, which included a component intended to increase the number of connections and the extent of metering, only 5% of connections had a working meter in 1984.[19] Very few private customers willingly paid for water and many were not billed at all. In 1989, nearly one quarter of connections were unregistered (see footnote 15) and even fewer were actually billed – the 1985 consultant report estimated that less than 12% of private users were billed in 1982. For the few customers that were billed, the highly political nature of water prevented DEG from collecting. For example, in 1987, DEG billed customers for approximately GF 800 million, but collected only about GF 100 million (World Bank, 1989). Since the private billing and collection rates were so low, DEG relied upon infrequent payments and subsidies from the Government. However, even this was unreliable, and non-payment by the government often led to conflict with donors.[20]

***Troubled financial state.*** Since DEG did not comply with international accounting standards, did not have audited accounts for most of the 1980s and maintained poor records and data collection standards, it is very difficult to assess DEG's financial performance before reform.[21] However, given that DEG maintained poor commercial habits and that

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[18] Between 1978 and 1984, DEG's workforce increased from 280 to 504 employees (World Bank, 1978, p.65), mirroring similar growth in civil service employment.

[19] In 1979, when the project was appraised, it was planned that 95% of connections would be metered by 1984. The Project Completion Report noted "about 1000 connections were built but no meter could be installed since those supplied under this project were diverted by persons unknown from their intended use" (World Bank, 1987, p. 6). In addition, the project had planned for 7350 new connections.

[20] For example, in the late 1980s, the World Bank waived provisions for a structural adjustment loan that had required the administration settle its water and electricity bills promptly (World Bank, 1990a).

[21] The 1985 consultants' report concluded that because of DEG's poor accounting practices and the non-availability of most relevant data, and because DEG's budget was spread between several different ministries, it

tariffs were set below long run marginal cost, it is not surprising that DEG appears to have had serious financial problems by the time of reform. One indication of this is that, DEG owed over US$4 million in unpaid interest and was over US$14 million in debt by 1984. Another is that, even according to DEG's own accounts, it was losing large amounts of money. In 1988, DEG's total operating revenues (i.e., amount billed) were about GF 938 million ($2.6 million in 1996 dollars) and its total loss (i.e., retained earnings) was GF 805 million ($2.0 million in 1996 dollars). This probably understates DEG's actual losses, since actual collections were significantly lower than billed water sales.

***Poor service and water quality.*** In addition to affecting the coverage rate, DEG's troubled financial state had a large effect on water and service quality. Although it is difficult to find reliable data – DEG did not collect information on service interruptions, water pressure or the time it took to repair breaks – by all accounts, water and service quality were very poor. Since water was often delivered through poorly maintained lead pipes (sometimes to illegal connections) and was not isolated from the environment, it was heavily polluted.[22] Consumers would have to run the water several minutes before it was "clear" enough to appear drinkable. Constant service interruptions meant that even the lucky households with piped water had to use polluted water from wells as secondary source of drinking water.[23] In addition, this meant that residents would have to store water for long periods, often in unhygienic conditions (i.e., open buckets in an expanding city with almost no existing sewerage system).

***Unaccounted for water (UFW).*** Poor maintenance due, in part, to DEG's weak financial position, and the large number of illegal connection, also resulted in high levels of unaccounted for water (UFW). Although the lack of metering, and the more general disarray of the sector, makes it difficult to estimate how high unaccounted-for-water was, most estimates were very high. According to the 1985 audit report, UFW was at least 60% in 1983 – high compared to standards for well-developed systems (between 10 and 20%) or to other water systems in West Africa (see **Figure 10**).[24]

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was impossible to perform an audit. Similarly, in 1989, the World Bank (1989) concluded, "the shortcomings of DEG's accounting systems are such that they largely preclude attempts to observe trends and base forecasts" (p. 19).

[22] Most pipes were either only a few centimeters underground or, particularly for those installed after 1961, above the ground.

[23] In 1992, about 50% of people with access to piped water reported using well water as their primary alternate source of drinking water when the system was not working (Durany and Morel à l'Huissier, 1994)

[24] However, one year later, the World Bank (1987) estimated, more optimistically, that UFW was 39% and, in 1989, World Bank (1989) estimated that UFW was about 35%. Based upon the experience since the private operator completed metering in 1995, the higher estimates seem more likely.

***Alternate water sources.*** In 1992, almost one-fifth of households reported that they got piped water from a neighbor's connection.[25] Alternative sources, such as bottled water, were almost nonexistent. Before reform, state control prevented private initiatives to supply water. But even by 1993, nearly ten years after President Touré's death, less than 1% of households purchased water from vendors and less than 5% purchased water from connected neighbors (Durany and Morel à l'Huissier, 1994, p. 20). Many households used *rainwater* for uses other than drinking (e.g., for washing dishes and bathing), especially during the rainy season. However, it was often stored in unsanitary conditions. Most non-connected residents relied upon neighbors' connections or water from wells. In 1992, 29% of Conakry residents relied upon well water as a secondary their primary source of drinking water and, as noted above, many others used it as a secondary source when the system was not working. Because the sewerage system was also undeveloped, well water was heavily polluted.[26]

***Sewerage.*** Although the sewerage system was (and remains) underdeveloped, it has always been separate from the water supply system.[27] Consequently, the 1989 reform did not have a significant effect on the sector, other than through its indirect effect on water supply. In 1992, 80% of households relied upon (and still rely upon) primitive sewerage facilities in their courtyard. 21% of these facilities are simple unlined pits, 39% are pits lined with cement, and 29% consist of two separate pits – rarely connected to a cesspit (Durany and Morel à l'Huissier, 1994, p.19). Sludge from these pits can leak into the phreatic layer, from which households draw well water for daily activities such as washing dishes and bathing, and can be close to leaking pipes that provide water to households and public fountains.

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[25] Durany and Morel à l'Huissier (1994) found that 18% of households reported that they got their water from a neighbor's connection in 1992, including 5% that paid for it. This survey was conducted before extensive metering.

[26] Although data from the 1980s is not available, it seems plausible that contamination of well water was a serious problem at this time. In 1994, a study of 57 modern and traditional wells found that, on average, there were over 30,000 fecal coliforms/100 ml of well water (Gelinas et al., 1994). In comparison, the bacteriological WHO (World Health Organization) norm is zero fecal coliforms per 100ml of water and an alternate system classifies any water with over 1000 fecal coliforms/100 ml as "seriously pathogenic" (Feachem, 1980). The low connection rate and increasingly common breakdowns, therefore, posed a serious health risk.

[27] Durany and Morel à l'Huissier (1994) found that only about 5-10% of households had latrines connected to the sewerage system in 1992. This is broadly consistent with a study financed by Luxembourg and Japan which estimated that only about 9% of Conakry residents were connected to sewerage (World Bank, 1997a, p.4).

## 4. Political Circumstance Leading to Reform

Given the weak institutional framework and the dire situation of the water system, the reform ended up being quite radical, especially in a sector that is politically sensitive and where full privatization is rare. Operational control of the system was transferred from a state-owned enterprise that was only nominally independent of the government ministry it reported to, to a private-sector company that was owned, and controlled, by foreigners. In addition, significant price increases were planned (over 500% in real terms over a five-year period) and even greater increases were implemented (over 600%). Despite the collapsing system, however, the government took a long time to implement reform. Before reform was finally enacted, six years passed and a change of government took place. In this section of the paper, we discuss why the reform occurred, why it took the form it did, and why it took so long to enact.

### *4.1 Desirability of Reform*

Although the crisis in the water sector made reform highly *desirable*, in many other cases sector-specific crises have failed to motivate significant reform. For example, over the past decade, some parts of downtown Mexico City have sunk two meters due to the overexploitation of groundwater resources. Despite this, the government implemented only a minor reform, which 'failed to improve efficiency, reduce costs, raise revenue or curb waste' (Haggarty, Brook, and Zuluaga, 1999, p. 52). Although problems in Conakry, which were primarily the result of the poor performance of the public operator, were far more tractable than the problems in Mexico City, poor performance alone has often failed to motivate significant reform.[28]

Theoretically, the government could reform the sector in many different ways: however, its practical options were severely constrained. The main problem was if sector performance was to be improved additional funds would be needed to allow the operator to cover its costs and to increase investment. The 1985 audit by SONEDE and Lyonnaise des Eaux estimated that, at that time, US$73 million of investment was needed to increase production capacity and repair and extend the distribution network. Although, in theory, these funds could be obtained in several different ways – for example, through additional borrowing, through increased subsidies or through higher tariffs – in practice, the government had only limited options. Given that the government's finances remained weak at the time of reform, due to the disastrous economic policies of the previous regime, it was clear that the government could not finance the needed investment without help from donors. However, the government's options were further constrained because the

[28] See, for example, Walker et al. (1999) which describes reform efforts in the Honduran water sector. Further, as noted earlier, sector performance in Guinea had been poor for many years before reform.

donors, led by the World Bank, demanded 'full cost recovery' (i.e. setting tariffs to cover operating costs and support sector debt service) (Triche, 1990). To get access to donor funds, the government would therefore have to increase prices significantly. The focus on cost recovery is reflected in the contract signed between the private operator and the government ("contrat d'exploitation"), which did not include numerical targets for increasing the connection rate or reducing UFW.[29] Even the World Bank-supported *Second Water Supply Project* did not include plans for many new connections, especially considering Conakry's fast growth (only 15,000 additional connections by 1994).

The need for support from donors and international organizations, due to the pressure that the macroeconomic difficulties put on public finances, limited the government's options in other ways. Most importantly, the poor performance of the *First Conakry Water Supply and Sanitation Project* convinced the World Bank that significant institutional reform, including some private sector participation, was necessary (World Bank, 1987, p. 23).[30] The government, therefore, found that it would have to accept some form of private sector participation, if it were to receive aid.

Other factors also encouraged private sector participation. The government recognized that reforming DEG without increasing private participation would have been extremely difficult. Even with technical assistance from abroad, entrenched interests and existing corruption would make some tasks, notably bill collection, very difficult if DEG remained in charge of the sector. The decision to allow private sector participation also reinforced the decision to allow the price to increase. Since the government was (and remains) delinquent in paying its utility bill, a private operator would have been wary about relying on government subsidies, especially given the poor state of public finances and the weak institutional environment. Consistent with this observation, the part of the price subsidy that went to the private operator for the first few years following reform was funded through a World Bank loan, rather than from general government revenues.

An additional factor that encouraged private sector participation is that it was consistent with the governments' philosophy of liberalization and privatization. The

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[29] The contract ("contrat d'exploitation"), formally between SONEG operating as a state agency and SEEG as the private operator, signed in April 1989, does not mention any target on these issues, nor does the annex relative to the creation of SEEG or the list of requirements ("cahier des charges") defining responsibilities of the two organizations. Only the "contract" ("contrat de plan") between the government and SONEG, its own agency, defined targets with regard to connections (from 16,400 in 1989 in Conakry to 20,200 in 1992). This did not commit the private operator and there is nothing about UFW in any of these documents.

[30] The World Bank's *Project Completion Report* for this project concluded that 'the shortcomings of the [sector] can be remedied most successfully by a more commercial and entrepreneurial approach, preferably by a degree of privatization" (Triche, 1990).

structural adjustment program that the government implemented in response to the macroeconomic crisis greatly increased the private sector's role in the economy.[31] In this respect, increased private participation in water was part of a larger program to increase the importance of the private sector in the economy.

### *4.2 Feasibility of Reform*

By restricting possible reform options, these constraints threatened the *feasibility* of reform. Price increases and private sector participation would have a significant effect on two powerful groups – the urban elite who were used to not paying the full cost of water and workers who might lose their jobs. Reform would only be possible to the extent that the government could either ignore these groups without threatening its support base or compensate them for their losses.

In practice, neither the urban elite nor public workers were vital supporters of the new military government. The clearest demonstration of this is that, in response to the macroeconomic crisis, the government enacted a structural adjustment program that harmed these groups significantly. Within days of assuming power, the military government announced that it intended to speed up the liberalization process and approached the International Monetary Fund (IMF) and the World Bank to negotiate donor aid.[32] The focus of the proposed reform package was improving the performance of the agricultural sector, reducing the size of the public sector and liberalizing prices and exchange rates.[33] The stress on agricultural production, which would initially benefit rural areas, was a marked contrast to the Touré regime's policy of favoring its urban constituents.[34]

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[31] In 1986, when the government's privatization program began, there were 131 state-owned enterprises. By the end of 1988, 20 had been privatized and 68 had been liquidated (World Bank, 1990b, p.20).

[32] However, formal negotiations with the IMF did not begin for several months. The new government had arrested an IMF official connected to the Touré regime who had been in Conakry for President Touré's funeral and the IMF refused to negotiate until he had been released.

[33] This was consistent with the kinds of policies that the IMF and the World Bank were promoting in Africa at that time. See World Bank (1994a) for a description of structural adjustment in Africa during this period and Clapp (1994) for a discussion of Guinea's structural adjustment program.

[34] The government's policy of promoting agricultural and rural development was made clear to the population. President Conté made several announcements stressing that one of the regime's main goals was to boost agricultural production. In his 1985 New Year speech, he stressed the importance of the agricultural sector and noted several steps that could be taken to improve performance (Clapp, 1996, p. 62). On April 3, 1985, in a speech on the first anniversary of the coup, President Conté announced that the main priorities were boosting agricultural performance and improving communications. (Economist Intelligence Unit, Second Quarter 1995, p.8). This is consistent with documents produced for the 1987 Consultative Group Meeting with international donors that notes that improving agricultural production, through the

The new government began initiating its agenda several months after coming to power. Prices were liberalized, the overvalued exchange rate was realigned, the state-owned marketing boards and stores were closed and many state-owned enterprises were privatized or liquidated. Although in the medium-term it was hoped that structural adjustment would benefit all Guineans, it was clear that these reforms would cause significant short-term pain for many urban residents. Price increases for agricultural products and the realignment of the overvalued exchange rate were expected to benefit agricultural producers, but would hurt urban workers used to subsidized prices for food and imported goods. This would be especially acute for higher-level officials who had better access to goods at official prices – the same group who had access to free or low-cost water.[35]

The structural adjustment program, which resulted in a large number of layoffs, also harmed public sector employees. Employment in state-owned enterprises fell from 17,111 in early 1986 to 2,000 by the end of 1989 and civil service employment fell from 70,989 in early 1986 to 51,000 by the end of 1990.[36] These reductions were painful for many Conakry residents, since despite the massive layoffs, 24% of employed workers (and 30% of employed male workers) in Conakry worked in public sector in 1990 (Arulpragasam and Sahn, p. 123). Considering that public sector employment was considerably larger in 1985, these job losses were clearly painful, especially since the poorly developed private sector was not to be able to quickly absorb laid-off workers.[37]

In contrast, urban water reform would not have a large effect on the main groups that the government relied upon for support. The army, who were the most important supporters of the government, would be largely unaffected by reform.[38] Further, rural consumers, who were expected to be the main beneficiaries of structural adjustment, did

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liberalization of the sector, was one of the key objectives of the Economic and Financial Recovery Program (Republic of Guinea, 1987).

[35] Arulpragasam and Sahn (1997, p. 65) note, before structural adjustment, that over half of high-level officials in Conakry purchased their entire rice ration at subsidized official prices. In contrast, only 15% of low-level officials and 16% of small-scale merchants could do this.

[36] Data from World Bank (1990b, p.21) and De Merode (1994, p. 171).

[37] Based upon a survey conducted in 1990-91, Mills and Sahn (1997) estimated that nearly half of laid-off civil servants had not found a job (in either the formal or the informal sectors) after four years.

[38] Even if the army did not pay its water bill, it would take an extremely brave private operator to agree to cut water off to army barracks or the Ministry of Defense in a weak institutional environment. In practice, the army was largely unaffected by the entire structural adjustment program. In January 1985, when the government took the first step towards reducing civil service employment by ordering all civil servants older than 55 or with more than 30 years of service to retire, it announced that the army would no longer be considered part of the public sector. The reason for this was to shield it from any cuts in public sector employment (EIU Quarter 1 1985, p15). In fact, the size of the army had been increased to 15,000 persons by 1989 and soldiers were awarded a 15% pay increase at the time of the announcement.

not have access to piped water and, therefore, reform would mainly affect them through its effect on government finances.

Although water sector reform would be painful for many DEG employees and customers, it is important to note that some members of these groups would benefit from reform. First, the government's, and DEG's, weak financial position meant that employees could often not rely upon receiving wages in a timely manner. The DEG employees who found jobs in the new private enterprise might therefore benefit from reform. Similarly, although current DEG customers would have to pay (considerably) higher prices, they would benefit from improved service and water quality. Consequently, not all DEG employees and current customers could be counted as potential losers.

The government also took steps to reduce opposition from current DEG customers and employees. First, the government, with support from the World Bank, agreed to subsidize prices during the early years of reform. Although price increases were implemented immediately, they were far smaller than would be needed to cover sector costs. Second, the Government, again with World Bank support, compensated DEG employees who were not selected for jobs at SEEG or SONEG.[39] Of 504 DEG employees, 40 were hired by SONEG, 250 by SEEG, and 30 qualified for other civil service positions (Triche, 1990, p. 16). Additional persons retired or moved to other jobs in the formal sector. Remaining employees were offered basic equipment and special training, organized and monitored by the Compagnie Generale des Eaux, to help them create and develop cooperatives specializing in public works.[40] Notwithstanding severe tension, this made reform acceptable to most employees.[41]

### *4.3 Contractual Options*

Within the general framework of increased prices and private sector participation, the government had several options. The March 1985 consultant report considered possibilities ranging from a management contract to full privatization. In the end, the government

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[39] The selection process was through a series of objective tests (initially managed by the World Bank) that were "supplemented" with recommendations from former managers at DEG. The subjective evaluations raised serious concerns about objectivity. The same procedure was used to decide on civil services layoffs in the broader program of job cuts.

[40] It seems that there were strong pressures from the concerned ministries to have one single cooperative grouping all former employees. It is not clear why. One explanation proposed by a former employee is that the government wanted to minimize the equipment to be provided to laid-off workers.

[41] However, results have proven to be more ambiguous than was originally hoped. Only 87 former employees took advantage of the initial training. Eight years later, only two very small cooperatives are operational. Both SONEG and SEEG are unionized (CNTG at SONEG; USTG and ONSLG at SEEG), although unions do not seem to have much influence.

decided on a mixed scheme with a public enterprise owning and developing infrastructure and a mixed company, dominated by the private sector, in charge of operating the system. It chose this, rather than full privatization for several reasons. First, it was thought that private enterprises might not be willing to invest in the development of infrastructure. Although the current government was committed to reform, the political situation was unstable: several coups had been attempted and civil unrest was pressuring the government to become more democratic. Further, although Guinea was (and still is) trying to increase the competence and independence of the judiciary, the judiciary was (and remains) weak and heavily dependent upon the executive.[42] Because of this, and because of the weak system of property rights, the judiciary had a very poor record of enforcing private contracts.[43] Under these circumstances, investment in long-lived and non-transferable assets was thought too risky for many private firms. Finally, foreign ownership of assets would have been controversial and might have led to greater unrest. For these reasons, the government adopted a scheme that would involve little private investment.

### *4.4 The Long Delay before the Reform Was Enacted*

Although radical reform eventually occurred, it was not implemented until six years after the initial studies and five years after the change in government. Overall, it is not surprising that the Touré regime did not implement significant reform. Unlike the military government that replaced it, the Touré regime was highly dependent upon the two groups that would be harmed by reform (see Section II.1). Any reform that resulted in increased prices, especially of the magnitude actually implemented, and layoffs would harm the regime's main support base and, therefore, would have been hardly feasible.

In contrast, the five-year lag following the change of government reflects the slow pace of structural adjustment and, more generally, political instability in the early years of the new regime. A major coup attempt less than a year after President Conté came to power showed that the new government could not entirely ignore the welfare of Conakry residents.[44] Following the attempt, the Economist Intelligence Unit noted (3rd Quarter 1985, p12):

> "At the same time, however, [President Conté and his colleagues] are well aware that much of the population of Conakry, which proved loyal to the government at

[42] The Government is currently developing a new system of institutions, laws protecting rights and contract laws, largely inspired by the French system and it intends to put an administration in place to fully implement these laws. However, even now, the system is mainly theoretical and largely incomplete.

[43] A 1996 bill, approved by the Government, that would have allowed SEEG to sue consumers who do not pay their bill, was rejected by Parliament. This might not be surprising since, in interviews, several sources noted that it is thought that most deputies do not pay their utility bills.

[44] This also made the government aware that it could not take the support of the army for granted.

the time of the coup (or at least resistant to the blandishments of Traoré), will suffer a drop in living standards as a result of the key reforms being proposed."

Consequently, sensitive reforms that would harm urban residents, such as realigning the exchange rate and civil service employment reductions, were approached cautiously.[45] After years of repression and shifting policies under the Touré regime, it was going to take some time for adjustment to result in increased agricultural production and improved welfare in rural areas. Since President Touré was very careful about making sure that rivals could not build effective power bases while he remained president, the new military leaders were unable to build support before taking power. Consequently, while the new leaders were forging a coalition, they remained heavily reliant on the military and on general goodwill conferred to them for ending President Touré's more repressive policies. Since the benefits of structural adjustment would take a reasonable time to materialize, it is not surprising that the new government was careful about implementing reforms, including water reform, that could initiate protests.

## 5. Contract Design and Implementation of Reform

Water reform was finally adopted in 1989. World Bank requirements meant that the private partner had to be selected through international bidding. Six companies initially expressed interest: SONEDE (Tunisia), TEAME (UK), Lyonnaise des Eaux (France), SAUR (France), SAGER and Compagnie Generale des Eaux (re-named VIVENDI, also from France). Two of the bidders dropped out during the process and the four remaining companies combined to form two competing consortia. A joint venture led by SAUR, with the participation of Compagnie Generale des Eaux, submitted the lower bid, which was 30% below the consultant evaluation. SAUR quickly confirmed its leadership in the newly formed company with the help of experts from Cote d'Ivoire, where SAUR had been successfully involved in the water sector for nearly 30 years (see Ménard and Clarke, 2000).

New contracts were formally signed in 1989 and were supported by the World Bank coordinated *Second Water Supply Project.* This $102.6 million project included a $40 million loan from the World Bank on concessional IDA terms, a $23 million loan from the African Development Bank, and $8.6 million from the Government of Guinea and SONEG.[46]

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[45] For example, the exchange rate was not realigned until January 1986; public sector retrenchment did not begin in earnest until the same time; and the consumer price for rice was not fully liberalized until 1987. Clapp (1996, p. 62) notes "[President] Conté's desire to keep both urban dwellers and farmers content ultimately delayed the adoption of a coherent reform program'.

[46] The original estimate of the cost of the project was US $102.6 million (World Bank, 1989). However, the Japanese government later added an additional US $5.6 million. (World Bank, 1997a). Changes in the SDR-US$ exchange rate meant that actual expenditures were US $105.6 million. In practice, the contribution of the individual partners varied slightly from the original estimates (See World Bank, 1997a,

The project originally included $57.9 million for expansion of the Conakry water supply system and $4.1 million for rehabilitation of existing facilities.[47]

*5.1 Sector Organization Following Reform.*

As part of the reform, two enterprises were created: Société Nationale des Eaux de Guinée (**SONEG**) and Société d'Exploitation des Eaux de Guinée (**SEEG**). The reform involved a set of three contracts: one between the Government and SONEG ("Contrat plan"); one between SONEG and SEEG (the lease contract), and one between SEEG and its international shareholders (a "Technical assistance" contract). In addition, there are contracts between SEEG and its customers, i.e., users of the water system. Although we will discuss all contracts, we focus our attention on the lease contract between SEEG and SONEG, which introduced private participation into the sector.

p.18 for final estimates). The World Bank loan, from the International Development Agency (IDA), was on standard IDA terms (50 years at a 0.75% interest rate).

[47] Actual expenditures on these components were considerably higher – $84.9 million on expansion and $9.0 million on rehabilitation (World Bank, 1997a, p.17).

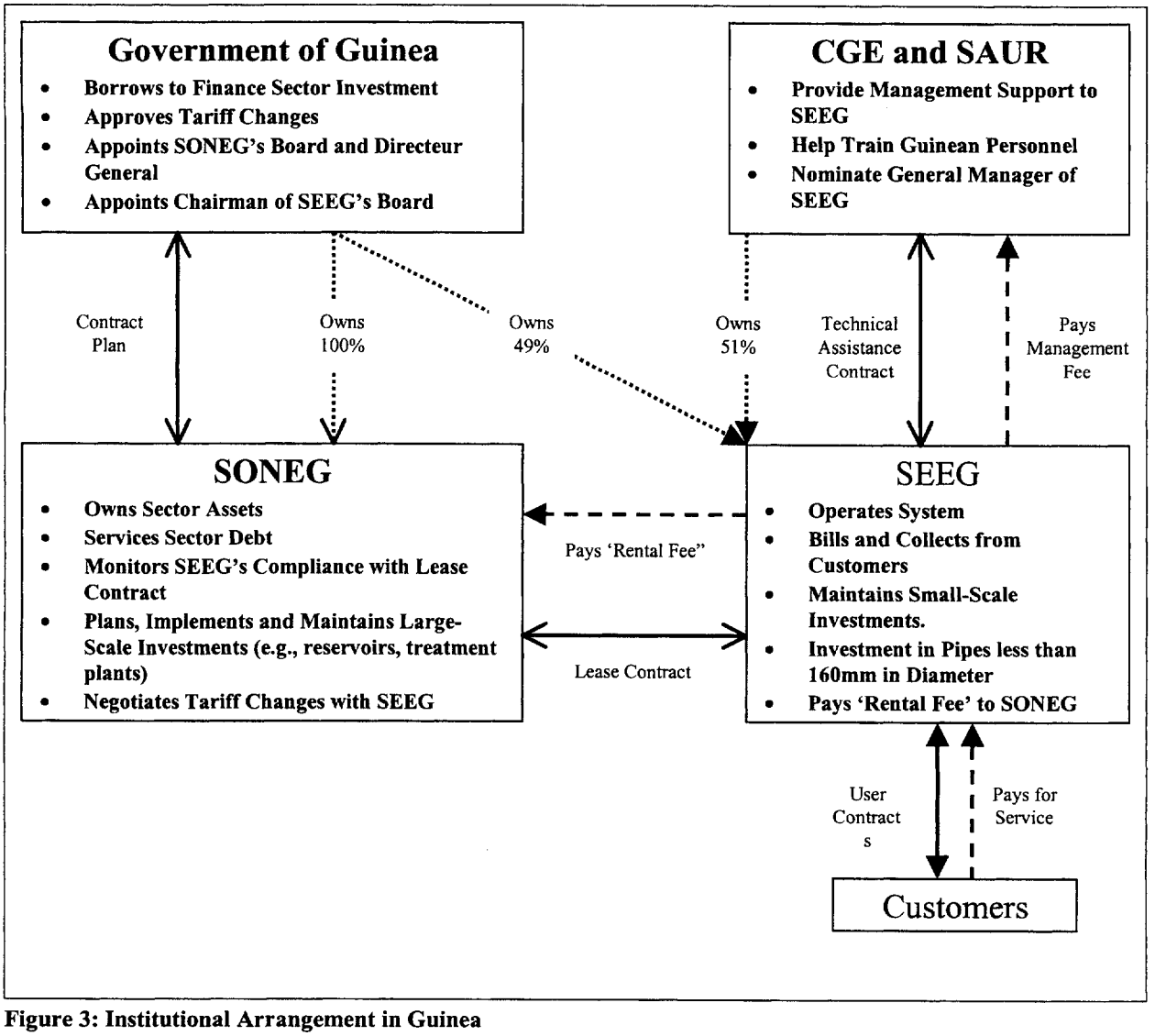


**Figure 3: Institutional Arrangement in Guinea**

*Two firms involved.* **Figure 3** shows sector organization and the pattern of ownership of the two enterprises, SONEG and SEEG. SONEG is a small (44 employees in 1997), entirely state owned government agency, which reports to a board of directors and to the Ministry of Natural Resources and Energy. Formally, the relationship between SONEG and the government is monitored through a contract, the "contrat plan". At the time of reform, that contract defined rules governing the determination of tariffs (see below), and committed the government to pay its bill regularly. It was also the only contract that defined specific targets, namely, the increase of connections, from an estimated 16,400 in 1989 to 20,200 in 1992.

The lease contract defines the responsibilities of SONEG and SEEG. SONEG owns sector assets and is responsible for planning, projecting and managing infrastructure, sector accounting, managing funds from the 'rental fee' and donors to pay for new investment and service sector debt. Since its expenses are covered by the "rental fees" paid to it by SEEG, formally, it is financially independent (i.e., SEEG pays SONEG a percentage of collections to cover SONEG's operating costs, finance investment and service debt). It is also responsible for supervising most large-scale investment (e.g., reservoirs and transmission pipelines) and for the construction and maintenance of the primary distribution network (i.e., pipes more than 160 mm in diameter). One significant restriction, however, is that SONEG cannot finance investment through borrowing; this is the responsibility of the government. Although SONEG is formally an independent agency, its board is under direct Government control, with members appointed by different ministries.[48] Its staff, including its Directeur Général, is also appointed by the government. Political incentives, therefore, tends to prevail over economic ones. SONEG is further constrained by its reliance upon foreign suppliers (including SAUR, the leading shareholder in SEEG) for many of its needs.

SEEG, which is 49% state-owned and 51% privately owned, has a ten-year lease contract with SONEG. SEEG is in charge of the distribution and commercialization of water, including building and maintaining the secondary and tertiary distribution networks (i.e., pipes under 160mm in diameter); metering, billing and collecting; and paying the rental fee to SONEG. As we noted above, the private owners are two French companies, SAUR (a subsidiary of Groupe BOUYGUES, a French company heavily involved in public works), which has the leadership in this arrangement, and Compagnie Generale des Eaux (CGE, now Vivendi). In addition to the lease contract, the two French partners signed a "technical assistance contract" with SEEG to provide managerial support, technical assistance and financial expertise, and to help train Guinean personnel.[49] As their contribution to SEEG, SAUR and CGE provided 51% of the initial US $3 million of capital. For its contribution, the Government donated equipment and infrastructure from DEG and, through SONEG, took responsibility for accumulated sector debt.

***Overlapping responsibilities.*** Notwithstanding the presence of five government-appointed representatives on its eleven member Board, SEEG appears, for the most part, to act like a private company. The private owners are responsible for nominating the General Manager, while the government is responsible for choosing the Chairman of the Board.

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[48] At time of reform, in 1989, the 11 members of the Board were appointed by 10 different ministries.

[49] This contract between SEEG and the foreign owners specified conditions under which the foreign companies provided home-office support for day-to-day management problems, selection of expatriate staff and audits of procedures. Remuneration was set at 2% of SEEG's revenues (World Bank, 1989, p. 9). The contract is protected by a confidentiality clause for five years after the end of the contract, which was for two years but renewable (and it has actually been renewed).

Several factors increase SEEG's autonomy from government pressure. First, the foreign management's close ties to SEEG's international owners significantly reduce the Government's influence. In addition, the contractual arrangement, which puts SEEG in charge of bill collection, gives SEEG direct control over the financial resources it needs to operate.

The division of investment responsibilities between the two agencies has led to significant problems, with the two agencies blaming each other for delays and disagreements. The different priorities and constraints that the two agencies face are part of the problem. Because SONEG tends to be more concerned with social and political goals, while SEEG has commercial goals, they often disagree on priorities concerning network expansion. Further, SONEG, as a public agency, has to follow public procedures when making investments, for example, awarding large investment contracts through bidding. SONEG's processes are often slow and costly, and provide opportunities for public interference, corruption, and delay. In contrast, SEEG, as a private company, has much greater flexibility and, consequently, SEEG tries to go over SONEG's head, developing infrastructure beyond its contractual responsibilities. Although the contract explicitly prohibits SEEG from doing this, once it is done, the situation is irreversible. For example, when the Caisse Française de Développement provided SEEG with substantial aid to develop new infrastructure (without bidding and ignoring the clause that makes SONEG responsible for such projects), there was very little that SONEG could do. Further, despite SEEG's role in investment, SEEG assumes almost no investment-related risk – loans for infrastructure are the responsibility of the Government.

***Institutional impediments.*** Implementation of the contract between SONEG and SEEG has been made more difficult by low administrative capability and the absence of an independent judiciary. This has meant that there is no impartial body that is able to constrain arbitrary action by the government and credibly enforce contracts provisions. For example, recognizing that SEEG could apply pressure to SONEG by refusing to pass SONEG the rental fee, provisions in the contract allow SONEG to seize a deposit paid by SEEG if this occurs. However, implementation of this clause has been difficult due to political interference by the government. For example, in 1991, when the government stopped paying a large part of its water bill (see **Figure 6**), SEEG, which still had to pay workers and suppliers, found itself in a difficult financial position. In response, SEEG stopped passing SONEG the rental fee on the money it was collecting from the private sector, formally a breach of contract. This, in turn, imposed a significant burden on SONEG, threatening its capacity to pay employees, reimburse international lenders and continue with investment. However, when SONEG threatened to impose the penalty, SEEG, backed by its international owners, argued that the delay was due to non-payment by the government and government representatives forced SONEG to back down. Ultimately, under pressure from international donors who made settlement a condition for credit effectiveness for the

*Third Water Supply and Sanitation Project*, SEEG and SONEG significantly reduced their cross-debts on September 26, 1996.[50]

This episode demonstrates that contract provisions designed to prevent certain government action will not be useful, unless there is an independent body that can enforce the contract and prevent the government from taking retaliatory action. Although the lease contract explicitly allowed SEEG to cut water to government entities that were more than four months late with payments, SEEG was unwilling to actually cut off water to ***any*** agencies of the Central Government. In part, SEEG's unwillingness reflected its concerns about its relationship with the government, since the central government has significant power over SEEG in many ways.[51] For example, at that time, SEEG was trying to get the government to pass a law that would allow it to force collection for non-payment by private parties and to approve price increases larger than had been originally planned. In addition, SEEG's decision not to cut off agencies of the central government might reflect the direct influence the Government has over SEEG through its representation on SEEG's board.

***Dispute resolution.*** Another effect that weak institutions have on outcomes is the apparent failure of several mechanisms directed at dispute resolution. First, the government, which owns 49% of SEEG, has representatives on the boards of both SEEG and SONEG. It was hoped that this would improve coordination between the two enterprises. In fact, it did the opposite by introducing ambiguity about whether the contract was open to repeated re-negotiation, rather than being a final firm contract between the two parties. Second, the arrangement allowed the two parties to appeal to the judiciary in Guinea and, ultimately to an international institution, the *Centre International pour le Règlement des Différends Relatifs aux Investissements (CIRDI)*, in cases of major dispute. The clause was intended to reassure foreign investors concerned about the lack of institutional constraints on arbitrary government action (e.g., the weak judiciary). In practice, however, this clause is almost purely symbolic. It is not possible to solve everyday disputes and disagreements through an international forum and, since turning to international arbitration would suggest major failure to foreign investors and international organizations, it is difficult to use for even major disputes. Further, in the absence of an independent judiciary, it is unclear how CIRDI could force the government to comply with it decisions, if it ruled against it.

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[50] Before September 1996, cross debts were about GF 4 billion. This was reduced to GF 660 million that the government owes to SEEG and GF 608 million that SEEG owes to SONEG. To a large degree, since SEEG was owed money by the government and owed money to SONEG, a government agency, this was an accounting exercise, with the result that the government was re-paying SONEG, a public agency. Once the World Bank approved the *Third Water Supply and Sanitation Project*, cross-debts began to accumulate again.

[51] In contrast, SEEG has been willing to cut water to local government agencies, which have significantly less power over SEEG (e.g., local agencies play no part in price reviews).

In practice, therefore, problems are largely solved though informal negotiations between top managers – making the persons in charge crucial – or through political interference (e.g., when SONEG tried to impose the penalty for not paying it the rental fee). Political interference, however, is costly. First, it introduces many biases and can result in delayed, and unpredictable, outcomes. Second, as noted above, these problems have poisoned relations between SEEG and SONEG, making it more difficult for the two companies to work together.[52]

### *5.2 Regulation: Some Major Inefficiencies*

Clearly, water reform is more likely to succeed if an efficient and credible regulatory entity is developed, with the capacity to force the partners to fulfill their commitments. This has not happened in Guinea. In the absence of an independent regulator, the efficient running of the system depends on the set of contracts and their implementation. As we have shown, the arrangement is plagued with several problems. SONEG, who is officially responsible for monitoring SEEG, does not appear able to do this due both to its lack of autonomy and to information asymmetries between SONEG and SEEG. SONEG's lack of autonomy means that major decisions and conflicts go to the cabinet of the Ministry of Natural Resources and even to the President of the Republic. Consequently, the government has significant discretionary power that is only partly counterbalanced by the influence of international lenders and the efficient lobbying of the powerful international companies that own SEEG.

This discretionary power can create uncertainty for SEEG, since SONEG's plans and their implementation depend upon political decisions made by the government. Since SONEG plans, contracts, and monitors the development of the primary network, SEEG has to rely upon SONEG to do this before it can develop the secondary network. This creates two sources of risk for SEEG. First, there is the risk that the government will divert SONEG's rental fee to fund other, non-sector related, spending. This could mean that needed investment in the primary network is not performed. Second, there is uncertainty related to the bureaucratic process that approves SONEG's investment program. The government can use bureaucratic delays to improve its bargaining position or disguise other motives. This encourages SEEG to make investments that should be made by SONEG (e.g., in the primary network) and to skirt rules (e.g., by splitting large investment into several small parts to avoid public control).

However, in the presence of weak regulation, information asymmetries can also work in SEEG's favor. For example, since the distribution network includes some lead pipes installed in the 1950's and some newly installed PCV pipes, maintenance costs are difficult to

[52] Relations did improve after SEEG's management was replaced in 1997.

observe. Since SEEG is responsible for maintaining the secondary network, it could potentially overstate these costs. This is made easier because most maintenance inputs are imported. An additional problem is that SEEG can also bid on constructions contracts. Since it does not produce separate accounts for its separate functions (e.g., those that should be regulated and those that are not), it is difficult to assess the profitability of the lease contract.[53] These informational asymmetries have been aggravated by SEEG's refusal to provide SONEG with the reports and information, including the separate accounts, which the contract requires.

*5.3 Prices*

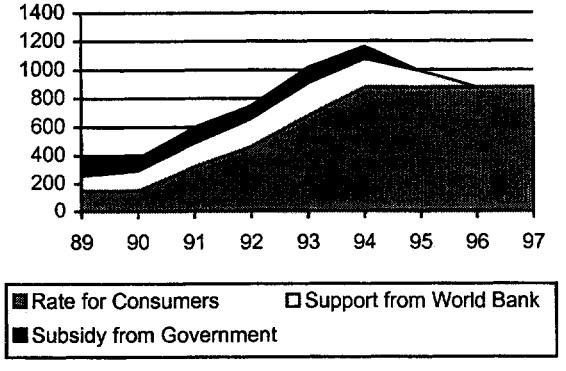


**Figure 4: Consumer Rates and Subsidies from World Bank and Government**

*Source*: SONEG.

As noted above, one of the major goals of reform was to make the sector financially self-sufficient within six years (including servicing sector debt, financing some portion of investment and paying a fair return on SONEG and SEEG's capital). Since, as noted in subsection II.2, prices were thought to be below long-run marginal cost, large tariff increases were necessary. Recognizing that this would be difficult to do for political reasons, the government agreed to heavily subsidize prices for six years following reform through the World Bank credit. Consumer tariffs were immediately increased to 150 FG/$m^3$ in 1989 (about \$0.25/$m^3$) to cover local currency costs, including the local currency operating costs of SONEG. However, the foreign currency costs (e.g., for imported equipment and supplies) were covered by proceeds from a World Bank loan and the government continued to service part of sector debt.[54] These subsidies slowly declined until 1995, by which time the consumer tariff was supposed to cover all costs (see **Figure 4**). It was thought that this would imply an average price to consumers of

[53] For example, in the U.K., the private water utilities produce separate accounts for regulated and unregulated businesses

[54] The World Bank contributed US \$16.9 million to subsidize the scheme. The subsidy was described as 'support for the rehabilitation of sector operations' in World Bank documents and was designed as support for the institutional building that was needed to implement the lease contract. The original appraisal was for \$15.4 million, but the final sum ended up being somewhat higher (World Bank, 1998a, p 17).

660 FG/m$^3$ in 1995, which would fall to 566 FG/m$^3$ in 1998 (Triche, 1990). In practice, prices have been considerably higher.

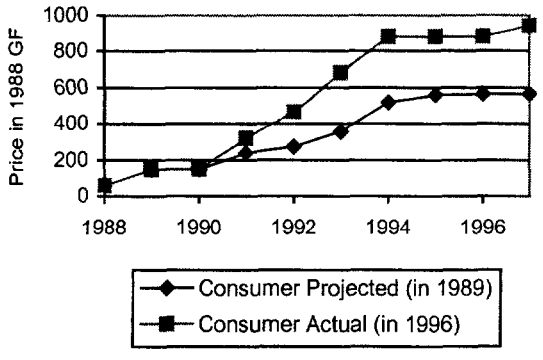


**Figure 5: Actual and Projected Prices in Guinea**

*Source*: SONEG (Actual) and World Bank (1989) (Projected)

Prices are regularly revised, in accordance with a cost index formula. In addition, SEEG has to renegotiate its rate with SONEG and the government every four years, based on an informal cost plus formula.[55] The renegotiations were intended to give SEEG an incentive to cut costs, since between negotiations, cost reductions would go directly into SEEG's pockets, while allowing consumers to share in these benefits in the medium-term. Although there was initially some concern that the government would not increase tariffs enough to "ensure sound sector development" (World Bank, 1989, p. 30), this has not been a problem in practice. In fact, prices have been allowed to increase far more quickly than originally planned. By 1996, the average tariff had reached 880 FG/m$^3$, compared to an expected price of GNF 660/m$^3$. The difference between actual and projected tariffs was not the result of higher than anticipated inflation. **Figure 5** shows that the price has grew faster in real terms than originally projected.[56]

At the end of 1997, the minimum bimonthly payment for service was 13500 FG (about US$13). This fixed payment included payment for the first 20 cubic meters of water and has to be paid in full whether the household consumed the whole 20 m$^3$ or not.[57] The price of water between 20 and 60 cubic meters was 850 FG/m$^3$ and the price above 60 cubic meters was 925 FG/m$^3$. In addition, it costs 90,000 FG (about US$90 in 1996) to be connected to the system. Given that the average income of a high public servant was only about 150,000 FG (about US$150 in 1996) a month, these amounts are quite substantial. In field interviews, even relatively wealthy persons claimed that the high prices make it almost impossible for them to afford connections, especially because of the deeply embedded social

[55] A clause of the lease contract also opens the possibility of renegotiation if there are "significant" variations in taxes and "redevances", i.e., when government decisions significantly affects tariffs.

[56] Projected price is deflated by 1988 forecasts of the CPI from World Bank files and the actual price is deflated by the actual CPI.

[57] A similar pricing scheme is used in Côte d'Ivoire. The price schedule is flatter in Guinea, so that tariffs for small consumers, mostly low-income households, are significantly higher.

custom of providing free water to family and neighbors. Possible reasons for the high price are discussed in the next section.

## 6. Effect of Reform on Sector Performance.

Despite the problems with conflict resolution and overlapping responsibilities, there is no doubt that reform resulted in a significant improvement in sector performance. However, given the disastrous performance before reform, the results have not been as dramatic as was originally hoped and significant scope for future improvement remains. In this section, we analyze the mixed results and suggest some explanations.

### *6.1 Improved Performance along Many Dimensions*

***Increased investment.*** Although it was hoped that the sector could become self-supporting in the medium term through increases in tariffs, funds for investment and rehabilitation were needed immediately. Consequently, international donors, led by the World Bank, agreed to finance a large investment project), the *Second Water Supply Project.* The project had four main investment components.

i. US $4 million to support SONEG, including technical assistance, consultants, training and equipment.

ii. US $4 million to rehabilitate existing facilities.

iii. US $1 million to provide consultants' service for studies of secondary centers and to design a training program for staff laid-off from DEG.

iv. US $58 million to expand the Conakry water system, including increasing the capacity of the pipeline between Grandes Chutes and Conakry, the addition of a new treatment plant and extension of the distribution network (including 15,000 new connections).[58]

The new pipeline from Grande Chutes dramatically increased potential water production, from 54,000 $m^3$/day in 1988 to 100,000 $m^3$/day by the end of 1993 (World Bank, 1998a). Actual production has been far lower that this – average daily production was 60,345 $m^3$/day in Conakry in 1996. However, even this reflects the extremely high

[58] An addition US $21 million was included for contingencies (Word Bank, 1989).

rate of UFW, since average billed consumption was only 30,255 $m^3$/day.[59] Consequently, if SEEG and SONEG could reduce the rate of UFW to around 20% (i.e., the rate in Abidjan), current productive capacity should adequately service needs in the near-term, even if the number of connections increases significantly.

***Increased connection rate.*** Although the number of (legal) connections increased after the lease was implemented, the increase was slower than anticipated and coverage remains low.[60] By 1997, there were about 31,000 connections in Guinea, including about 25,000 connections in Conakry (population of about 1.7 million).[61] In comparison, there were close to 180,000 connections for 2.7 million inhabitants in Abidjan, Côte d'Ivoire (SODECI, 1996). The low connection rate reflects economic, technical and institutional factors. First, as discussed in detail below, many residents cannot (or will not) pay for water due its high price. In 1994, it was estimated that nearly 12,000 connections were inactive due to non-payment (Brook Cowen, 1996). Since the private collection rate was still around 60% in mid-1997, meaning connections will continue to be cut-off, and the price remains high preventing the reactivation of inactive connections, this number is probably still quite high. Second, Conakry's chaotic, unplanned and out-of-control development, which has been aggravated by the large and sudden inflow of refugees from civil wars in neighboring Liberia and Sierra Leone, has made expanding the network technically difficult.[62] Finally, disagreements between SEEG and SONEG, which are responsible for complimentary portions of investment, also slowed system expansion.

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[59] Average daily production and billing do not vary greatly over the year – in 1996, the maximum average daily production and billed consumption for any two-month period was 61,693 $m^3$ (April-May) and 31,962 $m^3$ (June-July).

[60] Under the Second Water Supply Project, 15,000 connections were planned (nationwide) by 1995. By mid-1997, only 11,000 of these connections had actually been implemented.

[61] According to data from SEEG, there were about 25,000 private connections in Conakry at the end of 1997, compared to 13,300 in 1989. In addition, there were about 130 standpipes in 1997 – there were 40 operational standpipes in 1989 (World Bank, 1989, p.3), 35 new standpipes were built between 1989 and 1996 and 55 standpipes rehabilitated by 1996 (World Bank, 1998a, p.25). According to a UNDP-World Bank survey from 1992, approximately 27 people used each connection including family, neighbors, etc. (Durany and Morel à l'Huissier, 1994, p.19). This might overestimate the number of people with access to piped water – the technical director of SONEG suggested that only about 15 persons used each connection in 1997. One plausible reason for the difference is that the UNDP survey was completed before metering became common, and metering might have reduced supply of free water to neighbors. Using the higher number (27 people per connection), an estimate of 1000 people per standpipe based upon the average number of people per standpipe in 1992 (Durany and Morel à l'Huissier, 1994) and population figures from United Nations (1996), the coverage rate was 48% in 1997. Preliminary evidence suggests that growth of connections accelerated in 1998. Number of connections from data provided by SEEG and population estimate from United Nations (1996).

[62] Although serious effort was made in the 1980's to organize the development of new districts, these seem to have been abandoned.

***Increased number of standpipes.*** Although the number of *standpipes* has increased, they remain uncommon – there were about 130 standpipes in Conakry in 1997, although not all were active. This translates to 9,050 non-connected residents per standpipe.[63] During field interviews, SEEG officials stated that SEEG does not want to manage standpipes, arguing that the widespread belief that water from standpipes should be free damages their relations with users if the company tries to charge for usage. Consequently, although SEEG installs standpipes when asked by a *Commune* (municipal government), it does not manage them. Instead, the Commune and SEEG jointly select a manager, who collects user charges that he pays to SEEG. SEEG then returns a share of this money to the *Commune* to cover access charges and employee benefits. In practice, managers are often unable to resist pressure for free water from neighbors and are sometimes corrupt. Consequently, they end up collecting little money from users, leaving the municipal government to foot the bill. If the commune does not pay, SEEG can, and does, cut the standpipes off.

The low connection rate means that water-related health problems remain a major issue due to the large number of customers who consume unsafe water from illegal connections and contaminated wells. These difficulties are confirmed by data on sickness traditionally related to unsafe water and inadequate sewerage, particularly those of group 1, which remain the main source of mortality (in decreasing order: malaria, diarrhea, hepatitis A, poliomyelitis, and skin diseases).[64] Gélinas et al. (1996) suggest that the use of piped water, rather than well water, would reduce the incidence of water-borne diseases (p. 2017).

***Improved water and service quality.*** Although it is difficult to find data, almost everyone agreed that the water and service quality improved dramatically following reform. For example, the manager at the local *Coca-Cola* bottler noted that while the water was muddy and discolored until several years after the reform, regular tests confirm that it now meets the standards imposed by their international headquarters. The *Organization for Consumer Protection* in Conakry rates water quality as excellent and notes that it can be consumed as delivered (World Bank, 1998a, p.31). Similarly, a 1994 study, which measured chemical and bacteriological contamination in piped and well water in Conakry, concluded that piped water "was found to comply with WHO norms for drinking water" (Gélinas et al. 1996, p. 2017).

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[63] In comparison, the rate is about 1,650 non-connected residents per standpipe in Abidjan, Côte d'Ivoire.

[64] For example, a cholera epidemic in 1994 resulted in 675 deaths, including 330 in Conakry (World Bank, 1997a).

The reform has also resulted in improved customer service. To make it easier to complain, apply for new connections, notify SEEG about needed repairs and pay bills, SEEG divided Conakry into three districts, each with its own director. Conakry's poor infrastructure, heavy traffic and appalling public transportation makes this especially valuable. SEEG also took steps to make it easier to respond to breaks and perform needed repairs. For example, SEEG invested in light equipment (e.g., motorcycles) so that they could collect bills more efficiently and respond more quickly to repair requests. SEEG's detailed computerized map of the network and final connections (excessively detailed according to some experts who consider the system overdeveloped and over-subsidized) make it easier to locate disruptions. Delays for new connections are reasonable, although consumers complain about SEEG's policy of waiting until a large group of consumers pay deposits before expanding the network. Similarly, although some individuals complain about delays getting repairs done, most agree that this is not a major problem.

***Rapid metering.*** Following reform, SEEG rapidly metered households, businesses, and the administration. Before reform, despite metering projects funded by the World Bank and other international donors, only about 5% of customers had working meters. By 1996, 98% of private customers were metered and 100% of administration connections were metered.

One effect of metering was to reduce the amount of water billed to the government. Before metering, in 1990 (the first full year of private operation), estimated government consumption was close to 7.5 million $m^3$ of water. In 1996, measured government consumption was about 3.6 million $m^3$. Most of the decline was probably because government consumption was overestimated before metering and because responsibility for consumption from standpipes was transferred from the central, to municipal, governments.[65] However, it appears that the government consumption continued to decline even after metering was complete in 1995, suggesting that the government is reducing its consumption.[66] Before 1989, billing was centralized by the government and, therefore, there was little incentive for any individual agency within the government to use water efficiently (even if metered). This changed following the reform and now each agency is responsible for its own water bill. Although this gives individual agencies an incentive to take steps to use water more sparingly (e.g., reporting breaks and leaks more quickly), non-payment weakens incentives.

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[65] For the first few years following reform, the central government was responsible for running and paying for consumption from standpipes and water from standpipes was free.

[66] 86% of public consumption was metered in 1984 and 100% was metered in 1995. Government consumption declined from 4,771,000 $m^3$ in 1995 to 3,551,000 $m^3$ in 1996.

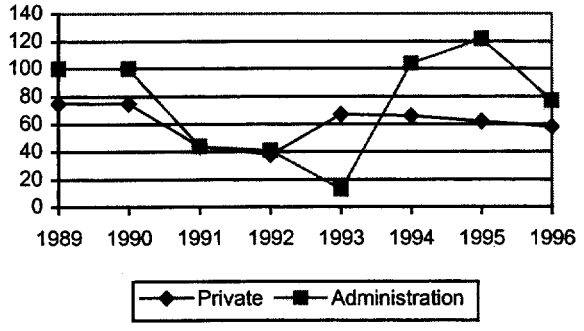


**Figure 6: Collection Rate** (as % of Amount Billed)

*Note*: The collection rate can exceed 100% if unpaid bills from previous years are paid in current year.
*Source*: SEEG.

***Improved bill collection from private consumers.*** Although bill collection from private consumers improved significantly after reform, it remains low compared to other privately operated systems (e.g., the private collection rate is 98% in Abidjan, Côte d'Ivoire). Further, as the price to consumers increased, the collection rate fell – from 75% of the amount billed in 1989-90 to under 50% in 1991-1992. It recovered in 1993 and remained at around 60% through 1996 (See **Figure 6**). SEEG can, and does, cut off customers who do not pay their bills for three consecutive months.[67] SEEG also discontinued the practice of allowing high-level civil servants and deputies to have unbilled connections (although this does not mean that they actually pay their bills!)

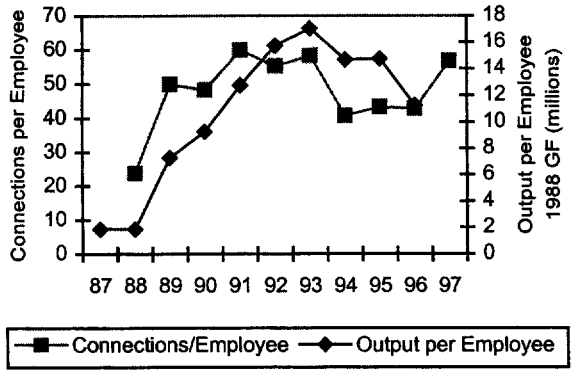


**Figure 7: Indicators of Labor Productivity for SEEG and SONEG**

*Note*: The number of employees includes employees of both SEEG and SONEG following reform.

***Higher labor and total factor productivity.*** Another improvement is that productivity increased following reform. Figure 7 shows two partial productivity indicators for labor – connections per workers and output per worker. The quick improvement was primarily due to the large reduction in the number of workers that immediately followed reform. After this, connections per employees failed to increase significantly and actually dropped between 1994 and 1996. The increase in 1997 was due to a large increase in the

[67] Field interviews with households, businesses and local administrations confirm that SEEG does do this consistently, although its implementation may raise sporadic protests.

number of connections that year (23,435 in 1996 compared to about 31,000 in 1997). The second measure of productivity is output per employee. This measure also increased immediately following reform, due to the large reduction in labor force, then declined, although at a slower pace, after 1993 [68]

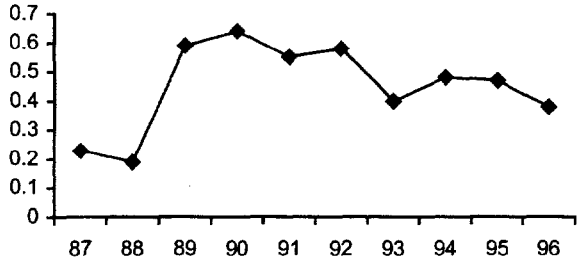


**Figure 8: Total Factor Productivity for SEEG and SONEG**

*Note*: Measures of TFP include inputs from both SEEG and SONEG.

Total factor productivity also increased at the time of reform. However, since this time, TFP has also slowly declined (although it remains considerably higher than before reform). The most noticeable decline was the large drop in 1993. This is due to the large increase in fixed capital due to investment in production facilities. Since a large part of productive capacity remained unused by the end of 1997, due to the slow development of the distribution network, total factor productivity should increase as the distribution network expands.

***Improved financial situation***. Given the improvements in billing, collection and productivity and the large increases in tariffs, it is not surprising that the sector's financial situation improved dramatically following reform, despite a drop in subsidies. Whereas DEG was losing large amounts before reform, SEEG quickly became profitable. By 1996, SEEG's profits reached GF 3.2 billion ($3.2 million in 1996 dollars). The increase in SEEG's accounting profits after 1993 coincided with a decrease in the 'rental fee' that SEEG paid to SONEG. Although the average consumer rate remained at GF 880 between 1994 and 1996, the share of the tariff that SEEG paid to SONEG fell from GF 527 in 1994 to GF 370 in 1996.

[68] The difference in the two indicators is probably primarily due to the large increase in 'miscellaneous'. Although water sales increased relatively slowly following reform, revenues from construction and other works related to the water sector increased more quickly. Consequently, output per employee continued to perform better.

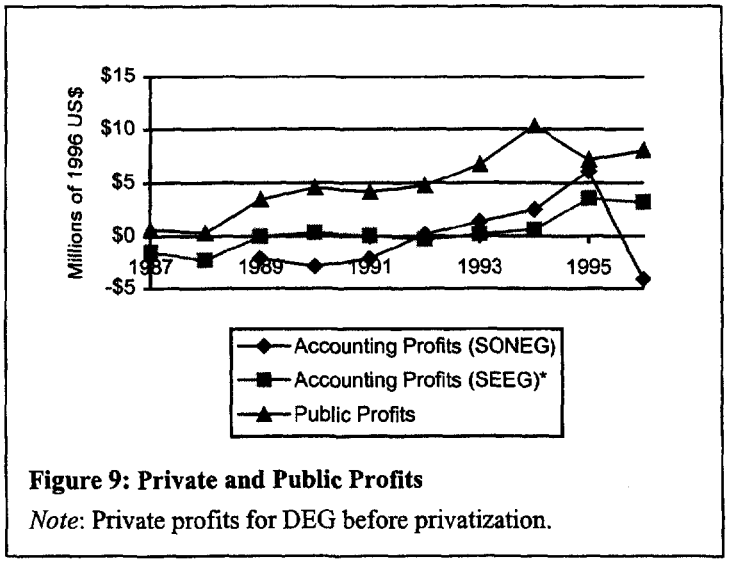


**Figure 9: Private and Public Profits**

*Note*: Private profits for DEG before privatization.

In 1989-90, SONEG lost about $2.8 million (see Figure 9). After slowly improving through 1995, SONEG's operating profit became negative (-$4.1 million) once more in 1996. The decline is due to the sharp drop in the 'rental fee' that SEEG paid to SONEG and the end of the subsidy that the government paid SONEG for debt service (GF 88/m$^3$ in 1994). Although SONEG appeared profitable in 1995, this was due to a large increase in non-operating income (from GF 396,000 in 1994 to GF 9.6 billion in 1995). Without this, SONEG would have shown losses of close to $3.7 million in 1995. Figure 9 also shows 'public profits' since reform, which include returns to debt-holders (i.e., interest payments), to the government (i.e., net taxes), depreciation and omits the opportunity cost of both SEEG's and SONEG's working capital.[69] Public profits, which were only slightly greater than zero under public ownership, increased in magnitude following reform.

### *6.2 Challenges that Remain*

Although sector performance has improved along most dimensions, several challenges remain. First, as noted in the previous section, although performance has improved, many of the changes have been quite modest, especially considering the poor initial performance of the sector. For example, although the coverage rate has increased despite rapid population growth, it has increased more slowly than originally projected and remains far below the coverage rate in the top performing countries in the regions (e.g., Côte d'Ivoire). Similarly, total factor and labor productivity did not increase significantly after the first year and the private collection rate, although improved, remains low. Second, two other performance indicators, unaccounted for water (UFW) and the public collection rate remain poor. The thing that most people complained about, however, was the high price of water. As noted earlier, although it is difficult to compare prices across cases, tariffs are quite high in Guinea compared to the other case studies. In this

[69] Depreciation is included to avoid the use of accountants' rates. See Galal et al. (1994) and Jones et al. (1991) for a full description.

subsection, we discuss these final issues: unaccounted for water, public collection and reasons for the high prices.

***Unaccounted for water.*** As noted in Section II, estimates of UFW varied considerably before reform. By 1996, when metering was complete, UFW stood at about 48% (World Bank, 1998a).[70] Although it is difficult to say whether UFW has improved, it is high compared to either international standards (between 10 and 20%) or to other systems in West Africa (See Figure 10). Several factors contribute to the high rate of UFW. First, although it is very difficult to estimate the number of illegal connections accurately, it appears to be a large problem, especially in sections of the city where the old pipes are buried only a few inches underground. This makes it easy to connect to the system illegally and means that the pipes are easily broken (e.g., by heavy vehicles). Officials from SEEG note that it is very difficult, in the existing institutional environment, to prosecute persons with illegal connections and, therefore, other than cutting the connections off, the company can do little to deter this behavior. Second, overlapping lots and interlaced households, especially in the older parts of the city, can make it difficult to interrupt water supply and control connections. Finally, poor maintenance and ancient infrastructure also contributes to the UFW problem.

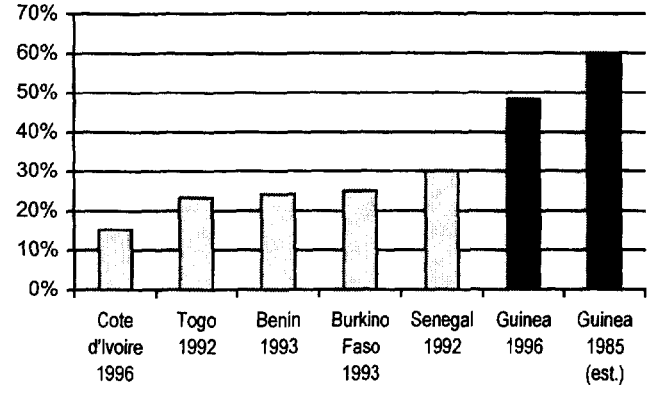


**Figure 10: Unaccounted for Water**

*Source*: World Bank.

One of the causes of the high rate of UFW is that SEEG, which is responsible for a substantial share of maintenance, has little incentive to reduce UFW. The expansion of the Grande Chutes pipeline means that potential production outstrips both consumption and actual production. Consequently, SEEG can continue to increase the number of connections without reducing UFW. Moreover, SEEG pays the rental fee to SONEG based on bills collected, not on water produced and delivered by SONEG. Since SEEG does not pay for raw water and does not lose sales due to UFW, it has little if any incentive to reduce it.

[70] 95% of connections were metered by 1996 and, therefore, it is easier to estimate UFW accurately.

Some experts argue that reducing UFW is not that important in Conakry, considering the considerable resources available and the high cost of a significant rehabilitation program. Although SEEG's accounts are not detailed enough for precise estimates, since the system is gravity-fed and most costs (e.g., provisioning and debt service) do not depend upon the quantity of water provided, short run marginal costs are probably quite low. For this reason, it is probably not efficient in strict economic terms to spend significant amounts reducing UFW. Although with hindsight it might be argued that the productive capacity added under the Second Water Project could have been delayed if UFW had been reduced, this was not clear when the project was proposed. UFW was thought to be considerably lower before metering was complete and, therefore, consumption was thought to be close to productive capacity.[71]

Despite these arguments, the high rate of unaccounted for water might be costly in other ways. First, UFW can be a source of pollution and disease, especially where drainage is poor. Water obtained through illegal connections is poor quality, especially when stored in unsanitary conditions, and leaky pipes can affect water quality through the entire system. Second, it is hard to convince people of the long run economic cost of water (and, therefore, the necessity of paying for it) when they know that large amounts are simply being wasted (especially when the leaks are quite visible). Finally, the high rate reflects other problems in the system – most notably, the poor quality of the infrastructure and the inability, or at least unwillingness, of the population to pay current prices.

***Public collection rate.*** Another problem that faces the sector is the low collection rate from the public sector. Although the private operator's is not to blame – the collection rate was low before reform and a private operator can do little to force an unwilling government to pay in a weak institutional environment – this has clearly been a problem. For the first two years of the lease, under donor pressure, the government paid its bill regularly (See **Figure 6**). However, in 1991 the government collection rate fell to less than 50%, and then dropped further, to close to 10%, in 1993. Since the government accounted for about 30% of sales – and more before 1996 – this has been a significant problem for the private operator. Large fixed costs are passed on to a small number of private consumers who actually pay their bills, increasing the price significantly (see below).

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[71] Before reform, productive capacity was about 54,000 $m^3$/day (World Bank, 1989). In 1996, by which time metering was complete, billed consumption was only about 30,255 $m^3$/day. This would leave some space for UFW and for seasonal variation in consumption (which is quite low in Guinea) without increasing productive capacity. However, because the estimate of UFW was too low, it was unclear at the time of reform that actual consumption was that low. Further, it was hoped that the number of connections would grow faster that they actually did.

***The high price of water.*** The most common complaint during field interviews was that the price of water was too high.[72] In general, it is very difficult to compare prices across countries. First, tariff schemes vary greatly across countries – for example, it is hard to compare prices in countries that are fully metered with those where customers pay lump-sum tariffs. Second, the cost of providing water also varies greatly between countries. For example, whereas the water system in Conakry is gravity fed, water in Mexico City has to be pumped from a source that is 140 kilometers away and 1000 meters below the city. On the other hand, Conakry's system is far smaller and less dense than the systems in the other case studies, increasing costs in Conakry. Finally, water systems are often heavily subsidized (often in non-transparent ways), making comparisons even more difficult. Unlike systems in many other developing countries, Conakry's system provides sufficient revenues to cover operations and maintenance and service sector debt. Finally, since prices are adjusted infrequently, and the devaluation rate in many African countries is extremely fast, it often difficult to compare prices in US dollars at a single point in time. With these provisos, however, prices in Guinea do appear high, especially when compared to the Latin American case studies (see **Figure 11**).

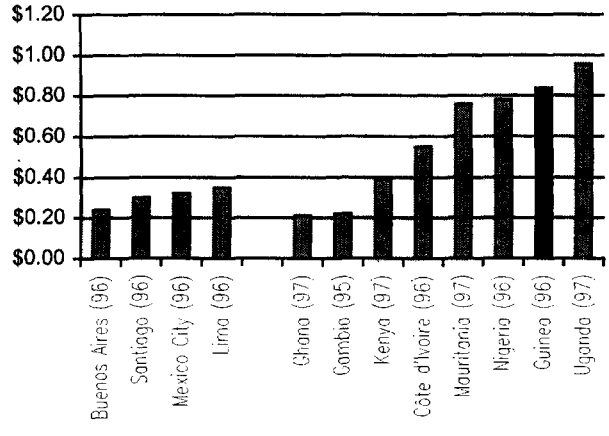


**Figure 11: Average Price Per Cubic Meter Billed in Africa and Latin America**

*Source*: Ménard and Shirley (2000) and World Bank files.

When compared to other African countries, prices in Guinea remain higher than average, although not completely unreasonable (see **Figure 11**). One final point is that the tariff for low-income consumers in Guinea is high compared to tariffs for similar consumers in other countries. For example, although the average tariff in the mid-1990s was higher in Uganda than in Guinea ($0.96 vs. $0.84), the metered tariff for domestic users was lower in Uganda than the 'social' tariff for low-income users in Guinea($0.57 vs. $0.64).[73]

[72] Similarly, the organization for consumer protection wrote "living standards in Guinea make it impossible to pay the price charged by SEEG" (World Bank, 1998, p.32)

[73] Data for Uganda is for 1995 from Dinar and Subramanian (1997).

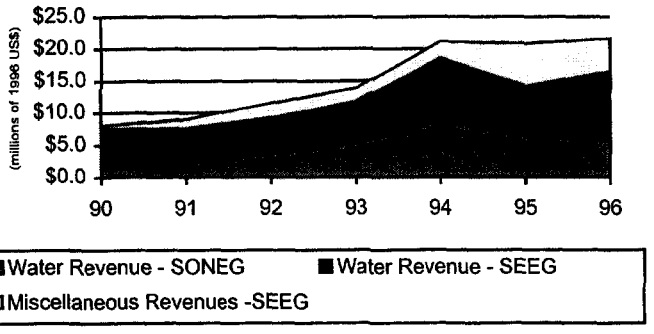


**Figure 12: Revenues for Water Sales and 'Other'** (million 1996 US$)

*Note*: Revenue from water sales includes connection charges.
*Source*: SONEG.

In general, it is hard to assess why prices are higher in Guinea than in other African and Latin American countries. Figure 12 show the division of both revenues from water sales and total revenues for the post reform period. SEEG receives a greater share of both total revenues and water revenues than SONEG (about 65% of water revenues and about 74% of total revenues in 1996). Since SONEG finances most of its activities through grants and loans, this is not surprising (see Clarke, Ménard, and Zuluaga, 2000).

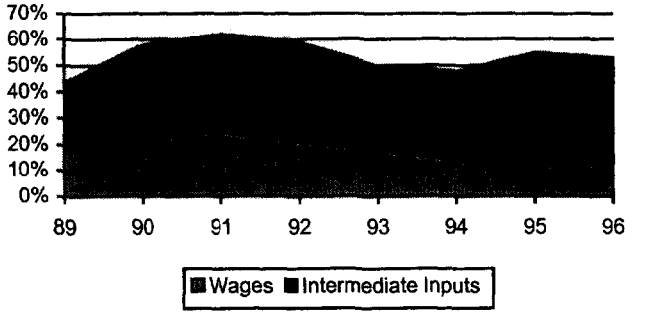


**Figure 13: Wages and Intermediate Inputs** (as % of total revenues)

*Note*: Includes wages, intermediate inputs and revenues for SEEG and SONEG.
*Source*: SONEG.

Expenditures on wages and intermediate inputs, for SEEG and SONEG combined, consumed between 48 percent and 62 percent of total revenue between 1989 and 1996. Since SEEG is far larger than SONEG (500 employees at SEEG compared to 44 at SONEG in 1997), expenditures on wages and intermediate inputs are primarily expenditures by SEEG. In 1996, SEEG accounted for 90% of total wage expenditures and 87% of expenditures on intermediate inputs. According to field interviews, the salaries for the five expatriate managers at SEEG accounted for about 15% of expenditures on wages and salaries in 1994-1995 (i.e., only about 1.6% of total revenues). Consequently, they are clearly not the main cause of the high price of water.

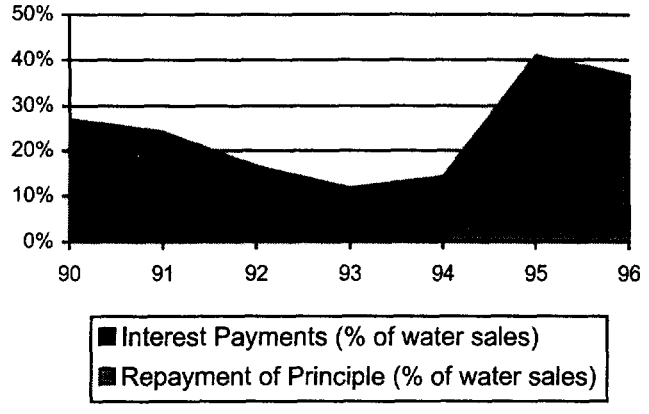


**Figure 14: Interest Payments and Debt Service** (as percentage of revenue from water sales)

*Note*: Includes revenues from water sales and connection charges (i.e., excludes 'miscellaneous' revenues for SEEG). Between 1990 and 1995, interest payments include expenditures on debt service by the government.
*Source*: SONEG and authors' calculations.

By 1996, interest payments and repayment of principle consumed, respectively, about 17% and 19% of revenues from water sales. We compare interest payments and the repayment of principle with revenues from water sales, rather than total revenues, because these payments are made by SONEG, which receives revenue only from water sales. Between 1990 and 1996, interest payments on sector debt increased from about $2.0 to $2.8 million (in 1996 US$).[74] Since 1996, principal repayment on loans from the *Second Water Supply Project* has increased and new loans have been taken out under the *Third Water Supply and Sanitation Project*. Consequently, interest payments and principal repayment was projected to increase significantly after 1996 – SONEG projected that interest and principal repayment would increase by 226 percent by 2005. Consequently, without large increases in coverage or prices, the share of revenue consumed by debt service is likely to grow.

[74] Note that the estimate for 1990 includes debt service expenditures by the government between 1990 and 1995,since it subsidized debt service payment over this period (see below). Consequently, actual payments by SONEG were considerably lower between 1990 and 1995.

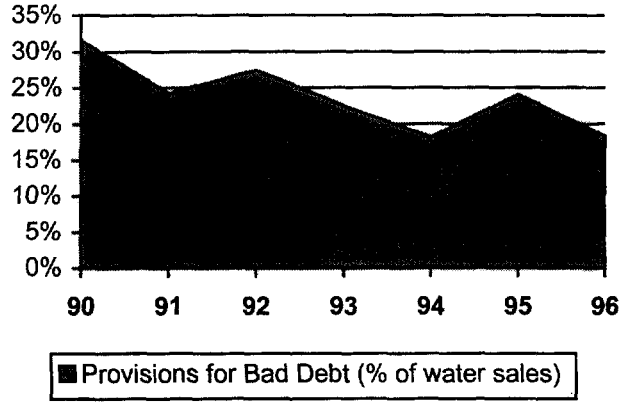


**Figure 15: Provisions for Bad Debts** (as % of water sales).

*Note*: Includes revenues and provisions by both SEEG and SONEG. Revenues include connection charges (i.e., they exclude 'miscellaneous' revenues).
*Source*: SONEG.

As discussed in the previous section, both public and private collection rates, although higher than they were before privatization, have been consistently quite low. Consequently, provisions for bad debt consume a large portion of revenue. In 1996, provisioning for bad loans cost SEEG and SONEG about $3.0 million (in 1996 US$) – about 18.4% of revenue from water sales. In comparison, for SODECI in Côte d'Ivoire provisions for bad debt accounted for only about 2.8% of (pre-tax) revenues. Improving billing, through both improving government payment and making it easier for SEEG to collect from non-paying private customers, would allow SEEG to reduce prices quite substantially.

Given that the government accounts for a significant part of the non-payment problem, one way to ensure lower prices would be for the government to pays its water bill in a timely manner. Similarly, legal reform that makes it easier for SEEG to prosecute people who connect illegally, or who refuse to pay their water bill, would also reduce financial pressure on the two water companies. A bill presented by the government to that effect, under pressures from international donors, was killed by the Parliament in 1996. This event illustrates the importance of political pressure on pricing and collection issues, even when private sector is involved.

## 7. Welfare Effects of Reform

This section presents a brief description of results from a cost-benefit analysis based upon the methodology in Jones et al. (1991) and Galal et al. (1994). In the analysis, we compare the actual performance of the sector following reform (the 'actual' scenario) with expected performance if the reform had not taken place (the 'counterfactual' scenario) for the ten years following reform.[75] Clarke, Menard and Zuluaga (2000) present a

[75] We analyze performance for ten years after the reform for comparability with the other case studies and because the original lease contract was only for ten years, providing a natural break for the analysis.

complete description of the welfare analysis, including data deficiencies, other problems and a sensitivity analysis.

We believe that the results in this section present a conservative estimate of the benefits of the reform for two reasons. First, we are not able to assess the potentially large benefits to consumers from improved service and water quality since it is very difficult to value these gains. Second, the counterfactual relies heavily upon DEG's pre-privatization accounts. Since the unaudited accounts probably overstate DEG's success, we are likely to overestimate performance in the counterfactual scenario and, therefore, underestimate the gains from reform. For example, since we are using DEG's profit and loss statement, which records transactions as billed, we implicitly assume that DEG would have actually collected (or provisioned for) the amount billed. However, DEG had a very poor collection record and provisioning appears inadequate. Since we rely upon these figures to construct the counterfactual, and because we omit the gains from improved quality, the estimated gains from reform should be seen as a lower bound on its likely effect.

We estimate consumer surplus for three categories of demand: water supplied to private consumers, water supplied to the government, and connection fees.[76] Although, under ideal circumstances, we would like a finer breakdown for demand, this is impossible because neither revenue nor volume of water billed was broken down more finely. Since neither SEEG nor DEG was responsible for providing sewerage services, we do not include sewerage in this partial equilibrium analysis. The main category of consumption is water consumed by private (i.e., non-government) consumers. We assume a high price elasticity of demand (-0.6), although, in practice, the results are similar for a large range of price elasticities.[77] The second category of revenues is revenue from government consumption.

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Because of this, there is a two-year 'projection period' for which we use preliminary and estimated data (1997 and 1998). In practice, the discount factors applied after 1998 would make future years relatively unimportant. The projection period is described more fully Clarke, Ménard and Zuluaga (2000), which also presents results making alternative assumptions about projections.

[76] For the final category of "miscellaneous" revenues, we do not calculate consumer surplus. Before 1989, 'miscellaneous' revenue is 'works invoiced' in DEG's accounts. After 1989, most 'miscellaneous' revenue probably comes from the construction of water infrastructure performed by SEEG on behalf of SONEG. If SEEG and SONEG were a single company, the company would not receive any revenue from 'construction' (other than for the connection fee) and, therefore, this would not appear as separate source of revenue. For comparability with the counterfactual, therefore, we do not calculate consumer surplus for this category. Further, since this is a 'catch-all' category, it would be difficult to make assumptions regarding excess demand and price elasticity of demand.

[77] To compute consumer surplus we follow the methodology outlined in Shirley, Xu and Zuluaga (1999). The most important assumptions that we make are about excess demand and the price elasticity of demand. We assume that there was no excess demand in 1998. This seems reasonable, given that only 10% of Conakry residents indicated they would be willing to pay the cost of a service connection and most said they would not be willing to pay the average consumer tariff (World Bank, 1997). We use this, along with an assumed demand elasticity, to calculate the demand curve in 1998. In the other years, we simply shift

The final part is connection fees. Following Galal et al. (1994), we subtract connections fees from consumer surplus for water consumption. The implicit assumption is that consumers gain utility from water usage, not from the connection itself. Hence, potential consumers compare the net present value of consumer surplus from usage with the connection fee and the stream of tariff payments.

### *7.1 Differences between Actual and Counterfactual Scenarios*

In this case study, the counterfactual scenario differs from the actual scenario in the following ways. First, we assume that the World Bank supported Second Water Project would not have been approved and that, therefore, investment would have remained low. Second, we assume that labor productivity would remain poor. Third, we assume that the large price increases that followed reform would not have been implemented. Finally, given the above assumptions, we assume that the government would have increased subsidies to cover DEG's operating losses on a cash-flow basis. This final assumption is necessary given the second and third assumptions.

***Investment.*** The assumption that the World Bank would not have approved the second water project without some degree of private sector participation is supported by World Bank documents and discussions with World Bank staff involved in the project. Since most investment was supported through donor funding, we assume, therefore, that DEG would only perform sufficient investment to maintain assets (i.e., that investment would be equal to real depreciation). Because of this, there is no output growth in the counterfactual scenario. This is consistent with two observations. First, since average daily production in Conakry was about 45,000$m^3$/day and maximum average production was estimated to be 54,000$m^3$, it appears that little system expansion would be possible in

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demand by population growth. Abdala (1997) reports a range of price elasticities for water demand in developing countries, mostly between –0.2 and –0.6. However, none are for Africa and most are presumably for connected consumers. These might not be appropriate for Guinea since much of the change in demand in Guinea is presumably due to decisions by customers who choose to connect (disconnect) when prices are lowered (raised). The World Bank Water Demand Research Team (1993, p.54) reports that their elasticities for willingness to connect to an improved source of water with respect to the average monthly bill were surprisingly large in rural areas. They estimate elasticities of –0.7 and –0.4 for willingness to use public taps in Zimbabwe and Kenya and elasticities of –1.5, -0.7 and –0.7 for willingness to use private connections in India, Brazil and Pakistan. The experience with reform in Guinea suggests that the elasticity for willingness to connect in urban areas of Guinea might also be large. In 1994, Brook-Cowen (1996) reports that nearly 12,000 connections were inactive due to non-payment (compared to about 20,000 active connections). Further, World Bank (1998, p. 5) reports that consumers refusing to re-connect after being disconnected from the system for non-payment continued to be a problem after 1995. One plausible reason for this is that urban consumers have easy access to water from wells for much of the year. In Clarke, Ménard and Zuluaga (2000), we present results for a range of elasticities and making different assumptions about excess demand.

Conakry without upgrading productive capacity.[78] However, the expansion of the production capacity would not have been possible at the observed level of investment in the late 1980s.[79] Second, between the end of the First Water Project (1984) and the start of the second water project (1989), there was little or no system expansion.[80] Since assumed investment under the counterfactual is slightly lower than the observed average investment in 1987 and 1988, the assumption of no expansion seems generous.[81]

***Productivity.*** In the welfare analysis, we assume that the improved productivity observed following reform was a result of the reform. This seems reasonable, since there is little evidence of increased productivity before reform. Although poor data quality makes it difficult to assess factor productivity accurately prior to 1989, estimated consumption and the number of connections were falling and the number of staff was steady in the mid 1980s, suggesting labor productivity was falling.

***Prices.*** We assume that the large price increases observed following reform were contingent on reform. This is reasonable for several reasons. First, given DEG's poor collection performance when prices were low, it seems unlikely that DEG would have been able to collect billed amounts if prices were raised. Second, it seems unlikely that consumers would have borne the price increases without corresponding improvements in quality, which would have required additional investment. Finally, in the actual scenario, the private operator has an incentive to push the government and SONEG for price increases. This motivation would have been missing under public ownership. In fact, most increases in the 1970s and 1980s appear to have been implemented only under donor pressure. Consequently, under the counterfactual scenario of continued public ownership, with no additional donor funds for investments, we assume that prices would have stayed constant in real terms at the 1988 tariff rate.

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[78] Pre-reform data is for 1984 – the last year before reform that reliable data is available (World Bank, 1987, p. 38). Maximum capacity was 60,000$m^3$/day, but this could not be maintained as an average level of production (World Bank, 1989, p. 45).

[79] World Bank (1989) reports that the estimated cost of the transmission pipes from Grandes Chutes to Conakry and the additional treatment plant to treat the water was US$38.8 million (of US$57.9 million in total investments in Conakry). However, actual costs were probably higher since total expenditures on planned investments in Conakry were US$84.9 million (rather than US$57.9 million). Total investment by DEG averaged $4.7 million in 1987 and 1988 and much of this would be required for maintenance etc.

[80] Between 1984 and 1988, in Conakry, registered connections fell from 11,167 to about 10,200 and active standpipes fell from 112 to 40, while (nationally) estimated consumption fell from 12.83 million $m^3$/year to 10.89 million $m^3$/year. Connection data from World Bank (1987, p. 38) and World Bank (1989, p. 33) and standpipe data from World Bank (1987, p.38) and World Bank (1989, p. 3). Consumption data from World Bank (1987, p. 38) and World Bank (1989).

[81] This is also consistent with assumptions in World Bank documents about sector growth if the Second Water Supply Project had not occurred.

***Subsidies.*** Before reform, even after the large subsidies DEG received from the Government, DEG was losing large amounts of money. These large losses would not have been sustainable without additional borrowing or an infusion of capital from the government (i.e., an increase in the subsidy). DEG's financial position was too weak to borrow significant amounts from private capital markets and donors such as the World Bank generally do not lend money to finance operating losses. Therefore, we assume that the government would have increased the subsidy to make the company's cash flow close to zero. In the counterfactual scenario, therefore, subsidies increase from $3.15 million in 1988 to $4.4 million in 1996 (in 1996 US$). This assumption means that subsidies are slightly lower in the counterfactual scenario than in the actual scenario through 1992.[82] After 1992, subsidies stabilize at about $4.4 million in the counterfactual scenario, whereas they drop to zero in the actual scenario.[83]

### *7.2 Welfare Impact*

Table 1 presents results from the welfare analysis. Under the scenario described above, the total welfare gain was over $33 million (in 1996 dollars). Most of this accrued to domestic parties. Even ignoring the presumably large gains due to improvements in service and water quality, private consumers benefited considerably from reform. Although the large price increase might have reduced the utility of connected customers, especially those disconnected for non-payment, this appears to have been more than offset by gains accruing to new consumers.

The government benefited considerably in fiscal terms, although the increased price of water meant that the government lost consumer surplus. The reason that the government lost consumer surplus, while private consumers gained is that private consumption increased considerably between 1989 and 1996, while government consumption dropped. That is, since government consumption was not rationed before reform, government consumers did not benefit from expanded coverage. It is important to note that the loss in consumer surplus to the government is calculated based upon the assumption that the government pays its water bill (in time and in full). Since this has not been the case, the 'true' price of water to government is likely to be considerably less than the assumed price

[82] In the actual scenario, the government subsidized sector operations in two ways. First, it paid a declining share of debt service for the first five years following reform. In addition, the World Bank provided a loan that was used to subsidize a declining share of the tariff (i.e. to subsidize SEEG's operating expenses). Since this money was provided through a loan guaranteed by the government, we treat this as a government subsidy to SEEG in our analysis.

[83] It appears that the level of subsidies that are envisioned under the counterfactual scenario would be feasible for the government in the medium term. In 1987, the subsidy was equivalent to about 1% of government consumption. Under the counterfactual scenario, this subsidy increases to only 1.6% of government consumption by 1996.

in this study. Foreign buyers benefited modestly from reform, although their gain was small compared to the gain that accrued to consumers and to the government.

In Clarke, Ménard and Zuluaga (2000), we present additional results making other assumptions in the actual and counterfactual scenarios (e.g., about elasticities and excess demand). In practice, the results were not highly sensitive to the different assumptions and were similar to the results here (at least) qualitatively.

**Table 1: Winners and Losers from Reform in First Ten Years of Reform**

| | *Total gain (millions 1996 US$)* | *Per capita gain (1996 US$)* | *Gain (as % of 1988 output)* |
|---|---|---|---|
| ***Total*** | ***$33.2*** | ***$6.12*** | ***126.6%*** |
| **Total Domestic** | **$29.3** | **$5.41** | **111.9%** |
| Government | $9.8 | $1.81 | 37.4% |
| *Fiscal Effect* | *$17.6* | *$3.25* | *67.2%* |
| *Government Consumer Surplus* | *-$7.8* | *-$1.44* | *-29.8%* |
| Consumers | $19.5 | $3.60 | 74.5% |
| **Foreign Buyers** | **$3.9** | **$0.71** | **14.7%** |

## 8. Conclusion

Our cost-benefit analysis suggests that overall both consumers and the government gained from reform. The most notable achievement is that government subsidies have been sharply reduced, with revenues now covering the operational expenditures of both SEEG and SONEG and, for the most part, debt service. However, consumers have also benefited. Although the increase in the number of connections has been slower than anticipated and, therefore, coverage remains low, it has increased faster than it would have under continued public ownership. Further, the quality of both water and service have improved considerably – safe drinking water is now available 24-hours a day, seven days a week. In summary, there is little doubt that the situation is better than it would have been under any reasonable counterfactual with continued public ownership.

However, there have been some problems, e.g., water has become very expensive, the number of connections has increased very slowly, and conflicts have developed between SEEG and SONEG. Our analysis strongly suggests that the fundamental cause of these problems is *the lack of strong and stable institutions*, the effect of which is amplified by a set of contracts *without adequate mechanisms for solving disputes among the parties involved.* Although progress has been made towards strengthening parliament and the judiciary, there

are few effective checks and balances on the executive. In particular, the judiciary lacks expertise and constitutional support, particularly in implementing contracts and protecting property rights. Consequently, there is no independent authority to monitor the lease contract effectively or to make sure that the partners meet their goals and obligations. Because of this, the private operator does not have adequate incentives, disputes have not been resolved, and regulation has been weak. In what follows, we summarize the main problems and we indicate directions for improving the contractual arrangement.

***High prices.*** As noted in Ménard and Shirley (1999), prices in Guinea are far higher than in any of the other case studies in this project as well as in neighboring countries, notwithstanding abundant water resources. There are several possible reasons for this. First, as noted by several experts during field interviews, the system is smaller than the other systems, meaning that it might not benefit from economies of scale. Moreover, because connections are spread over a large area, the network is not very dense, increasing the capital cost of providing service. However, this is not the only reason for high prices – operating costs are also higher than in the other case studies.[84] This is somewhat surprising since the system is gravity-fed and raw water is readily available.

Another factor that has led to high prices is that, although SEEG has improved collection and billing, the improvements have been smaller than originally hoped. Collection rates for both the administration and the private sector are low and the high rate of UFW suggests that theft and illegal connections are still significant problems. In 1996, less than 33% of the water that was produced was actually paid for, making higher prices necessary for those consumers who do pay. The most important action that the government could take would be to pay its own water bill. However, the Government could also encourage Parliament to pass the measure allowing SEEG to collect from non-payers – the earlier rejection of this bill has almost certainly contributed to the low collection rate. The final cause is weak regulation. World Bank (1998a) reports that audits revealed that misapplication of the formulas that adjust prices in response to cost changes resulted in overvalued tariffs. Because of this, and the informal price negotiations between SEEG and the Government, the private operator receives far greater compensation than originally anticipated.[85] Although this is due, in part, to a lack of administrative capacity at SONEG, SEEG has failed to provide the information to SONEG that is required under the contract. This suggests that steps should be taken to strengthen SONEG and to increase SEEG's compliance with reporting requirements. However, as discussed below, other steps to reduce information asymmetries may also be helpful.

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[84] Operating costs per connection and per cubic meter of water produced are both higher than in the other case studies.

[85] In Guinea, the lease contractor rate – the part of the tariff paid to SEEG – was supposed to be 214 GF/$m^3$ (in current GF) in 1993. In practice, it turned out to be 448 GF/$m^3$.

***Low connection rate.*** The second problem, the slow expansion of the system, is the result of both the high price and institutional problems. World Bank (1997a, p. 13) reports that although 75% of households expressed a strong interest in individual connections, only 10% of these households were willing to pay the full cost of being connected. Further, most were not willing to pay the average consumer rate of GF 880/$m^3$. However, if the connection fee was subsidized, so that the price was GF 40,000 (about $37 in 1997) and they paid the social tariff (GF 680/$m^3$), most households indicated that they would be willing to connect. This suggests that a more vigorous 'social connection' program, similar to the program in Côte d'Ivoire, could successfully increase the connection rate. Consistent with this, support for 'social connections' by bilateral donors appears to have successfully increased the number of connections in 1997 and 1998. Between 1989 and 1996, only about 10,000 connections were added nationally. In comparison, nearly 8000 connections were added in 1997 alone. However, this is not the only reason for the slow system expansion. In addition, disagreements between SEEG and SONEG have made it difficult for the two parties to coordinate their investment plans, slowing expansion. In the absence of a credible dispute resolution mechanism, these disagreements have seriously damaged the relationship between the two entities and have taken a significant amount of time and effort to resolve. Although several apparently useful clauses intended to reduce this were included in the contract, in the absence of a credible body to interpret and enforce them, the clauses have been almost impossible to implement.

***Coordination and disputes.*** Several steps could be taken to reduce coordination problems, and resulting disagreements, between SONEG and SEEG. Many local officials believe that imposing strict deadlines on SONEG regarding investment could increase expansion without giving too much discretionary power to SEEG. However, given the weak administrative capacity and institutions in Guinea, it is unclear whether these rules could be enforced. In fact, because transaction costs are lower for the private operator, in many cases, it may often be economically and socially reasonable to give greater discretion to SEEG regarding investments. This would also improve SEEG's incentives regarding system expansion. However, it could also increase the capacity for SEEG to capture rent. Increasing expertise at SONEG would help reducing this risk.[86]

The private operator could be motivated to take greater initiative if its responsibilities were increased. For example, it should be responsible for day-to-day investment decisions for both the primary and secondary networks. Simultaneously, its autonomy should be increased by allowing it to borrow more easily. Expected results should be specified in the contract, for example, by fixing precise goals for connections. By taking daily investment decision away from it, SONEG would be able to focus on long

[86] Abidjan provides an example with that regard (see Menard and Clarke, 2000).

term planning and on monitoring SEEG. For such a solution to work efficiently, SONEG would need to acquire greater autonomy and expertise. Taking into consideration the institutional endowment of Guinea, this likely involves greater commitment from international donors. Although a concession may not be possible in Guinea, moving towards a system similar to the one in Côte d'Ivoire (see Ménard and Clarke, 2000), where most investment decisions are made by the private operator, would probably improve sector performance.

More immediate steps could also be taken. In particular, one cause of the problems noted above is that different ministries with diverging views interfere with both SEEG and SONEG, creating confusion and resulting in arbitrary decision-making. At the very least, SEEG and SONEG should have boards that are independent from short-term government policy and from each other. Further, SONEG, which is a public agency, should depend on only one Ministry or regulating agency.

Steps could also be taken to reduce information asymmetries. The traditional way of doing this is through using *bidding* procedures to allocate contracts or introducing *yardstick competition.* However, in Guinea, these devices are likely to be only partially effective. Although bidding was used in 1989, only two consortia actually submitted bids. Given the lack of an independent judiciary able to enforce contracts and the dearth of information on the actual situation – about all that was known was that the system was collapsing – this was not surprising. This lack of interest severely limits the government's capacity to pressure the winner with subsequent rounds of bidding. Further, two of the three international companies with a significant presence in Africa – SAUR and Vivendi (Generale des Eaux) – are already partners in SEEG. Finally, although information regarding the system has improved, SEEG clearly has a significant information advantage over any potential competitors in the next round of bidding. However, this asymmetry can be reduced by contractually obliging SEEG to reveal more information and by building up expertise at SONEG.

Another problem with bidding is that the weak institutional environment in Guinea makes informal re-negotiation of contract provisions possible. This severely reduces the information that bidding provides (i.e., the enterprises participating in the bidding have no reason to submit bids based upon estimates of the cost of producing water since they know they can re-negotiate the price afterwards). This has been a constant problem in water sector and particularly in cases (e.g., Guinea and Argentina) in which bidding was conducted over prices.

***Yardstick competition*** is almost impossible, since Conakry is far larger than any other city in Guinea, making comparisons difficult. Unbundling the system geographically (i.e., dividing Conakry into several areas managed by different companies) could allow a regulator to compare some aspects of the performance of different companies. This solution was

adopted in Mexico, with unconvincing results so far (see Brook Cowen and Haggarty, 1999) and, more successfully, in cities like Paris. Although, this deserves serious consideration in Guinea, the small system and the relatively low number of international companies likely to bid on these contracts would make it difficult to implement efficiently.

In conclusion, although the lease has been successful in some ways, the actual improvements have not been as large as it was hoped they would. The main problems have been weak administrative capacity and the lack of an independent agency capable of restraining arbitrary government action, regulating the private operator and enforcing the contractual arrangement. Although these problems ultimately require long-term solutions, we have outlined several steps that could be taken more immediately. Among these, building expertise at the micro institutional level, (e.g., within SONEG) is likely the key to rapid improvement.

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