

Luanda Urban Water Supply and Sanitation Project

Issues and Options
Related to the
Participation of the
Private Sector (PSP)
in Luanda

February 1997

Coopers
& Lybrand

Coopers & Lybrand L.L.P.
a professional services firm

Coopers & Lybrand Consulting

NOT JUST KNOWLEDGE. KNOW HOW. SM

Issues and Options Related to PSP in Luanda

<

Table of Contents

1. Introduction	2
2. The Current Situation	2
3. Requirements for Reform	4
4. Options for Reform	5
5. The PSP Approach	6
6. Next Steps	7

Appendix I	Description of PSP Options
Appendix II	Sample Listing of PSP Projects Worldwide
Appendix III	Reform Measures
Appendix IV	Examples of PSP Solutions in Africa
Appendix V	Price of Water in Peri-Urban Luanda

1. Introduction

1.1 The purpose of this paper is to assist the Government of Angola in its consideration of private sector participation (PSP) in the provision of water supply and sanitation services to the city of Luanda. It is designed to present the information relevant for decisions needed to dramatically improve the water and sanitation services.

1.2 At this stage, Coopers & Lybrand (C&L) has collected information relating to the water and sanitation sectors in Luanda, and made a preliminary assessment of the situation and the public and private options available for improving service. The preliminary assessment and options are submitted to the Project Steering Committee for its review and discussion.

2. The Current Situation

2.1 *The current water and sanitation services in Luanda are critically inadequate.* Health and sanitary conditions are among the worst in Africa. Dramatic measures are required to improve service to the population to even minimally acceptable standards.

2.2 *The existing water supply infrastructure has seriously deteriorated.* An estimated 1,750,000 people do not receive water from the network. An additional 750,000 receive only intermittent service, subject to regular outages and poor quality.

2.3 *The existing water supply infrastructure has seriously deteriorated.* Water treatment works currently operate at 55% of capacity and the distribution network is in terrible condition. Over half of the water produced is lost through broken water mains and there are over 20,000 illegal connections.

2.4 *The water available to the population poses serious health problems.* Occurrences of diseases, including diarrhea, cholera, typhoid and hepatitis, contribute to one of the highest child mortality rates in the world and one of the highest malaria death rates in urban Africa.

2.5 *Residents of the poorest areas (musseques) of the city pay the most for water.* Studies have shown that areas further from the city center, serviced by private trucks and local vendors, pay up to 190 times more than residents connected to the network (\$16.91/m³ vs. \$.09/m³) (See Appendix 5 for details on water prices).

2.6 *EPAL receives large government subsidies, over 15,132 million Kwanza (\$2.6 million) in 1995.* Despite these large subsidies, service levels are extremely inadequate. This money is not being used to its potential and could be used more effectively elsewhere.

2.7 *Over 75% of the population has no access to sewerage services.* The sewerage network is in critical disrepair, large sections do not function, and the city floods with raw sewage during

rains. Raw sewage discharging directly into the bay creates additional health and environmental problems and will deter any economic development in the bay area.

2.8 *Cesspool and septic tanks service is minimal.* When service does occur, some of the same private trucks which supply drinking water are involved, potentially contaminating water supplies.

2.9 *The population is dissatisfied with the government services.* The residents of Luanda do not feel the government is capable of doing anything to improve water service. Improvement of basic services would improve the credibility of the government.

2.10 Factors contributing to the poor state of water delivery include the following:

- ♦ Luanda's rapid population grown from 560,000 in 1956 to 2,500,000 in 1995 and current annual growth rate of 10%. The civil war led to an influx of inhabitants to Luanda from throughout the country.
- ♦ A lack of financial and technical resources to properly maintain and expand the water production, treatment, distribution and sanitation infrastructure. The water treatment and monitoring process is rendered completely ineffective due to inability to acquire cleansing and testing agents.
- ♦ The responsibilities of the national and municipal government agencies, EPAL and ELISAL for water and sanitation services are not clear. Conflicts between the Ministry of Agriculture, EPAL, private vendors, such as Tecnocarro, and NGOs cause inefficiencies and conflicts, in particular at the Kikuxi plant and illegal giraffas.
- ♦ Political interference in the operations of EPAL has contributed to a mis-allocation of resources. This has resulted in resources being used for low return project and delays in bringing basic service in the poorest areas of the city to acceptable standards.
- ♦ Tariff levels are too low to produce a consistent revenue stream and create disincentives for the efficient use of water in both the commercial and residential sectors.
- ♦ An excessive number of employees (872) at EPAL leads to inefficiency and bureaucratic workflows, as indicated by EPAL's number of employees per 1,000 customers (1.16 versus .6 to .8 in other developing countries) and number of employees per connection (11.6 versus 4-5 in other developing countries).

3. Requirements for Reform

3.1 Rehabilitating the water transmission infrastructure will cost an estimated US \$ 371 million. Rehabilitation of the sewerage network will cost another US \$127.4 million.¹ Expanding the infrastructure to meet the needs of the population will require an even more expensive long-term investment plan.

3.2 The state of crises which exists in the water and sanitation sectors in Luanda *can not* be resolved solely by increasing investment in infrastructure. Comprehensive reform of the sector, in addition to extensive investment, is required in order to significantly improve the situation.

3.3 Effective reform of the sector is only possible via a customized approach, taking into account the specifics of the situation in Luanda and existing legal and regulatory frameworks. The following section presents several major areas which require reform. These steps must be taken regardless of whether or not PSP is involved. A more complete list is found in Appendix III, Table 1.

3.4 Examples of areas which must be addressed for a functional water utility to develop include:

- ♦ *Institutional issues* such as the creation of a strong regulatory entity and the clarification of sector responsibilities must be addressed. New sector legislation must be adopted to create a framework supportive of change, including the establishment of cost-reflective tariffs.
- ♦ *Sector Planning and Management* must be enhanced via development of a water sector management policy. Information collection and processing capabilities must be improved to accurately identify and prioritize projects.
- ♦ *Service Delivery Organizations* need to be significantly strengthened. Strong, autonomous management of water and sanitation utilities and well-trained, motivated staff are prerequisites for significant improvement.
- ♦ *The Physical Infrastructure* needs short-term critical rehabilitation and medium-term expansion in order to meet the needs of the population. Examples of required projects include the installation of more giraffas, extension of the distribution network and an emergency program to renovate existing sewerage lines in the city center.

¹. *Angola: Water Supply and Sanitation of the City of Luanda: Final Report*, SOGREAH Ingénierie, July 1996.

4. Options for Reform

4.1 Reform could be attempted wholly within the public sector or through some combination of public/private efforts. Experience has shown that reform efforts attempted solely by the public sector are ineffective. Public reform measures could include one or more of the following:

- ♦ *An internal reform program.* The government could establish a group of leading individuals from the water organizations to review the needs of the sector and to propose changes, support and investments needs.
- ♦ *A formal organizational strengthening program.* Enhancements to the effectiveness of EPAL and ELISAL through a program of improvements, reforms, new procedures, structural and staff changes and improved training.
- ♦ *External technical assistance.* External assistance could be provided by specialists who could provide for special skills and support of the reform program.
- ♦ *A twinning arrangement.* An arrangement could be established with an experienced and successful utility elsewhere, focusing on a transfer of skills and experience. It would provide for training and specialist management advice and provide opportunities for training abroad.
- ♦ *Increased commercialization of the existing organizations.* The level of commercial autonomy of the existing organizations could be increased by introducing commercial incentives for efficiency and cost-effectiveness.

4.2 If time were not of critical concern and facilities were in significantly better condition, some form of solely public sector reform could be attempted. The problem in Luanda is so immense that immediate progress is needed to improve conditions. Elements of a solely public sector reform plan are not likely to succeed for the following reasons:

- ♦ A government led reform program has been underway for several years in Luanda with no significant success. The creation of another government commission would not lead to an efficient resolution of the issues.
- ♦ EPAL and ELISAL require introduction to and training in the latest technology and management techniques in use by water and sanitation companies throughout the world. The expertise for these skills does not exist in Luanda.
- ♦ External consultants may offer knowledge, but they do not have the incentives to make change happen. Luanda is in critical need of results in the short-term and only invested parties with experience in running efficient utilities will do what it

takes to make change happen.

4.3 The C&L team believes that any attempt to reform the water sector in Luanda without assistance from the private sector will fail. The immensity of the problems and the urgency of immediate reform, as described in section 2, will doom any attempt at incremental change. Our conclusion is based, in part, upon the following observations:

- ♦ *Private Sector Incentive:* The Government is unable to rapidly organize and make required improvements to the system. It simply has no capability nor means to manage the implementation of infrastructure reforms of this magnitude.
- ♦ *Access to Capital:* The Government, without a private sector operator, will in all likelihood, not be able to get funding from international organizations for rehabilitation and expansion of the infrastructure. Private lenders and multilateral credit institutions require the involvement of experienced firms for financing.
- ♦ *Know-How:* The Government does not have experience to internally reform the sector and acquiring the knowledge will take a long time. External specialists may provide some basic training and guidance, but would not ensure performance improvement, as they are not accountable for performance.
- ♦ *Political Interference:* Any option where the utility would remain part of the public sector institutional framework would subject it to inertia against change and individual desires to preserve the status quo.
- ♦ *The immediacy of Change:* The involvement of a private sector company will force change with an urgency which will not exist if the government remains responsible. Issues relating to sector legislation and institutional responsibilities will have to be resolved prior to contracting.

4.4 Our conclusion is further supported by numerous examples of attempted public-sector reform throughout the developed and developing world. Quite clearly, government attempts to dramatically reform services yield limited improvements. In contrast, implementation of private sector participation reform programs has resulted in success stories in countries such as Guinea and Senegal, and in the Ivory Coast which enjoys one of the highest standards of water in West Africa.

5. The PSP Approach

5.1 In recent years considerable attention has been given by both developed and developing countries to improving the performance of public utility organizations by introducing private sector participation (PSP). A number of different forms of PSP have been introduced with considerable success.

5.2 PSP has proven successful in situations similar to Luanda because it addresses many of the causes of poor service. These advantages, as could be realized in Luanda, include the following areas.

- ♦ *Experience in providing quality water and sanitation services.* Luanda would immediately benefit from operators with experience in turning around water and sanitation utilities. Currently, the expertise required for sector reform does not exist in Angola.
- ♦ *Access to specific skills and technologies.* International water operators develop and utilize technologies to improve the delivery of water services. Technology transfer would provide for increases in the standard of living and improvements in the health of the population.
- ♦ *Providing the money to make it happen.* Private sector operators have access to the financing required for capital investments to the Luanda water sector. Their involvement would act as a catalyst for initiating and expediting major reforms.
- ♦ *Private sector management initiative.* The private sector constantly strives to improve efficiency of operations in response to commercial incentives. Current operations at EPAL and ELISAL are limited by political interference and bureaucracy which directly impact service delivery.
- ♦ *Reducing the burden on the public sector.* Current government subsidies could be phased out in order to establish a self-sufficient water and sanitation utility. The resources could be used by Luanda to address other areas.

5.3 A wide variety of PSP initiatives have been introduced in the water and sanitation sectors. These alternatives vary as to the extent of participation of the private sector and to the degree of reform. Some of the major alternatives include:

- ♦ Service Contracts
- ♦ Management contracts
- ♦ Leasing
- ♦ Concessions
- ♦ BOT and BOOT arrangements

Descriptions of some of these alternatives can be found in Appendix I.

5.4 The appropriate form of PSP for the Luanda system will be developed jointly by C&L and the Project Steering Committee. Examples of successful implementation of various forms of contracts have been documented throughout the developed and developing world. A listing of some major PSP project worldwide can be found in Appendix II.

5.5 To better understand PSP as it could relate to Luanda, we have selected several examples from Africa and the Middle East and briefly present the benefits of these projects in Appendix IV.

6. Next Steps

6.1 The next steps in the project call for building upon the information collected to date, by conducting in-depth discussions with the Project Steering Committee and Counterpart Team and identifying additional data and analysis required. These discussions will also serve to introduce key decision-makers to various forms of PSP. The continuation of the project is described below.

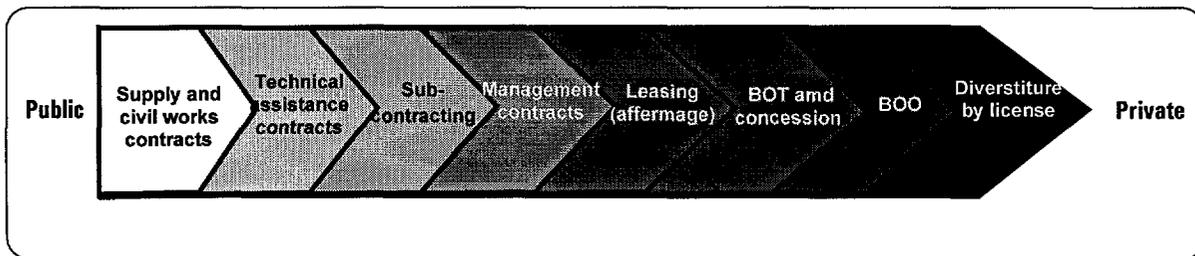
6.2 *A Water and Sanitation Reform Workshop.* After this paper is reviewed by the Project Steering Committee, C&L will hold a workshop to discuss this report and aspects of private sector participation and its potential benefits to Luanda. An important outcome of this workshop will be a decision regarding the form of PSP that will be pursued. For the purposes of discussion, we have included an outline of one potential phased-approach for reform in Appendix II, Table 2.

6.3 *Detailed Data Collection and Analysis.* The information collected to date is not complete. Analyzing and recommending a specific form of PSP will require more information on financial, technical, institutional and legislative issues. C&L will work closely with the Counterpart Team to obtain this information and conduct the required analysis.

6.4 *A PSP model workshop.* Once analysis of data is complete, C&L envisions detailed discussions with the Steering Committee to select and refine the form of PSP desired in the short-term. This may include a study tour to countries that have implemented PSP in the water and sanitation sector.

APPENDIX I
Description of PSP Options

Under the term private sector participation (PSP), there exists a wide range of alternative models of reform. As depicted by the graphic below, alternatives lie on a spectrum, varying by the degree to which the private sector is involved.



The following pages describe several of the arrangements most often seen in developing countries. It should also be understood that variations and combinations of alternatives can be customized to each individual situation in order to meet the needs of the government and the private sector operators.

Service contracts

Description

- 1.1 The public sector utility appoints a private sector contractor to undertake a specific task or to provide specific services. The public sector utility undertakes all other aspects of management and operation.
- 1.2 The public sector remains responsible to government and the consumers for the provision of all the services. The service contractor is responsible to the public utility only for managing the task or services it has contracted to provide, including the management of its own staff who are undertaking the task or services.
- 1.3 The public utility may provide the contractor with relevant facilities and information. Some of the utility's personnel may be transferred to the contractor for the period of the contract.
- 1.4 The contracts could involve technical operations and/or administrative activities. Examples of tasks or services which have been provided under service contracts elsewhere include:
 - meter installation
 - meter reading
 - billing
 - revenue collection
 - laboratory testing
 - vehicle workshop operation
 - maintenance of distribution system
 - emergency repairs
 - equipment rental (including office equipment)
 - works design
 - upgrading or constructing capital works.

Terms and finance

- 1.5 Payments are made by the public sector to the contractor according to the terms of the contract. Different types of payment (eg time charges, lump sums, fixed fee, cost plus) may be appropriate depending on the nature of the tasks or services.
- 1.6 Depending on the service being provided, the payments may include performance-related components. The contract may include penalties for failure by the contractor to achieve specified performance standards.
- 1.7 The public sector remains responsible for the funding of all management, operational and developmental activities. The contractor may be required to finance the provision of the equipment and facilities he needs to undertake the tasks or services.
- 1.8 Service contracts are normally of short duration, say 1 to 5 years.

Risks

- 1.9 All risks related to, for example, demand levels, consumption, revenue collection, investment,

infrastructure development and rehabilitation, etc are borne by the public sector.

Contractor's incentives

- 1.10 The contractor has an incentive to undertake his tasks efficiently so as to maximise his profit. Where there are performance-related payments the contractor will have additional incentives to improve performance.

General features

- 1.11 The private sector expertise, and commercial incentive, is applied to only limited parts of the utility's activities. Although improvements in those activities may result, the impact on overall management efficiency and cost-effectiveness is likely to be limited.
- 1.12 Service contracts are normally only appropriate for local private sector organisations, or for expatriate firms which are already established locally. Thus, the extent to which such service contracts are possible depends to a large extent on the range of suitable private sector organisations which already exist locally and the relevant expertise they could provide.
- 1.13 Awarding a service contract to a local organisation which does not already have the necessary expertise may help to develop local expertise but may not provide the required improvements in the operations of the public utility.
- 1.14 Different private organisations can be contracted to undertake different tasks or services. There may therefore be a number of concurrent service contracts of different scopes and for different periods.

Other comments

- 1.15 Regulatory provisions needed are relatively limited and mainly comprise contract monitoring and contract management functions.
- 1.16 Before establishing each such contract, there should be an assessment that the benefits expected would more than offset the service contractor's fees and expenses.
- 1.17 The institutional framework relating to the utility services is likely to remain unchanged. Some changes in the existing structure of the public sector utility organisation are likely to be needed. Depending on the scope of the contracts, and the extent of the facilities and personnel made available to the contractor, these changes may be limited.
- 1.18 Foreign exchange requirements, if any, are likely to be limited.
- 1.19 Where sufficient capable local private sector organisations exist, there is an opportunity for competitive tendering. Different organisations can be awarded different contracts for equivalent services in different geographical areas.

Management contracts

Management contracts - general

- 2.1 Two main types of management contract could be relevant to a discussion of the options for water supply services in Luanda:
- a management contract for operating and maintaining bulk water supply systems, excluding distribution systems
 - a management contract for operating and maintaining a full system including direct supplies to consumers.
- 2.2 A similar division in sewerage services is possible and similar comments would apply.
- 2.3 The two types of management contract are summarised separately below.
-

Management contract - bulk supply

Description

- 2.4 The public sector appoints a private sector contractor to assume full responsibility for the operation and maintenance of specified bulk supply works. The public sector utility undertakes the operation and maintenance of all distribution activities (and bulk supply works not included in the contract, if any).
- 2.5 The public sector utility remains responsible to government and to consumers for the provision of all the services. The maintenance contractor is responsible to the public sector for the operation and maintenance of the work under the contract.
- 2.6 The public sector utility collects the revenues from the consumers.
- 2.7 For the period of the contract the management contractor takes over the public utility's bulk supply infrastructure, facilities and personnel related to the contracted services. The contractor has freedom for day to day management of the operation and maintenance of the bulk supply system against the performance requirements defined in the contract.

Terms and finance

- 2.8 Payments are made by the public sector to the contractor according to the terms of the contract. The payments often comprise fixed components and variable components. The fixed components comprise a fixed fee or a time-based fee to reflect the costs which are not production-related. The variable components comprise payments proportional to one or more performance measurables, such as the volume of water which is supplied in bulk to distribution centres in accordance with defined supply patterns and quality standards.
- 2.9 The contractor may be required to finance the provision of his own facilities, but he is not expected

- the contractor also normally undertakes revenue collection from consumers on behalf of the public sector.

Terms and finance

- 2.19 The contractor retains from the revenues collected the amounts due to him under the contract. The contractor passes the balance to the public sector.
- 2.20 Payment terms as above, except that a wider range of performance measurables may be used, such as volume of water supplied to consumers in accordance with defined supply patterns and quality standards, reductions in unaccounted-for water, effectiveness of revenue collection, etc.

Risks

- 2.21 As above. If revenues collected are less than the amounts due to the contractor, unless this was due to a failure by the contractor, the contractor receives the balance of the amount due to him from the public sector.

Contractor's incentives

- 2.22 As above. The wider range of performance-related payments provide greater incentives to maximise performance.

Features and comments

- 2.23 As above, except that:

- The scope of the impact on utility services should be wider.
- For the period of the contract, the existing public sector utility organisation will have no, or greatly reduced, operation and management roles. Its management activities will also be greatly reduced, although it is likely to have a regulatory role for the contract. The changes to the organisation may therefore be very large.

to make large investments which could involve long payback periods. The public sector remains responsible for the funding of all management, operational and infrastructure development activities.

2.10 The duration of a management contract is typically about 5 years.

Risks

2.11 All risks related to, for example, demand levels, consumption, revenue collection, investment, infrastructure development and rehabilitation, etc are borne by the public sector.

Contractor's incentives

2.12 The contractor has an incentive for efficiency in all the activities for which he is responsible so as to maximise his profits. The variable production-related payment terms provide additional incentives to maximise productivity.

General features

2.13 Such a management contract provides the opportunity to introduce considerable improvements in a large part of the utility activities. It requires the appointment of a contractor who has expertise in efficient and cost-effective operation and maintenance of equivalent systems, and also experience in making major improvements in existing systems. An expatriate contractor is normally needed.

2.14 Since the commercial risks to be carried by the contractor are limited, this type of PSP may be relatively attractive to potential contractors in circumstances when there are some uncertainties and concerns about stability and security.

Other features

2.15 Regulatory requirements are more comprehensive than for service contracts. However, they are still mainly related to contract monitoring and contract management functions.

2.16 The institutional framework relating to the utility services is likely to remain unchanged. However, a considerable restructuring of the public sector utility will be needed to provide an effective organisation for operation and maintenance of the remainder of the system, for management of the customer interface and for regulation of the management contract.

2.17 The temporary transfer of public sector employees to the management contractor requires decisions to be made on a number of sensitive issues relating to terms and continuity of employment.

Management contract - full system

Description

2.18 As above except:

- the contractor assumes operation and maintenance of the full system including direct supplies to the consumer

Lease contract / affermage

Description

- 3.1 The private sector contractor has a contract with the public sector under which he leases all the infrastructure and facilities required for providing the contracted services. These normally comprise a complete system (in the case of water supply, for example, from source works to consumer connections). The contractor takes over some or all of the public utility's personnel.
- 3.2 The contractor undertakes all the day to day management of the operation and maintenance of the system against performance requirements defined in the contract. These include the return of the infrastructure in good condition at the end of the contract. The contractor is not responsible for providing new infrastructure or for major rehabilitation work.
- 3.3 The contractor is responsible to government and to the consumers for the provision of the contracted services. The contractor undertakes the collection of revenues from consumers.

Terms and finance

- 3.4 The contract normally defines a share of the tariff revenue which is due to the contractor. This share should be at a level which would cover full operating costs and renewal costs for the items included in routine maintenance. The contractor's share will normally be defined in relation to fixed components and variable components. The fixed components comprise a fixed fee or a time-based fee to reflect the costs which are not production-related. The variable components are related to production measurables.
- 3.5 The remaining portion of the tariff revenue is transferred to the public sector.
- 3.6 Lease contracts normally provide for penalties in respect of failures by the contractor to perform as specified.
- 3.7 The contractor is responsible for financing all operations and routine maintenance. The public sector is responsible for financing new infrastructure, including major rehabilitation and replacement of existing infrastructure.
- 3.8 The contract normally provides for routine adjustments to the contractor's share of the tariff on an index-linked basis to protect the contractor against general increases in costs. It is also common in longer contracts to provide for occasional renegotiation of the terms in relation to the actual performance to date: in this way benefits from the improvements achieved can be shared with consumers.
- 3.9 The tariff levels themselves are set or regulated by the public sector.
- 3.10 The duration of a typical lease contract may be 5 to 10 years although longer periods, such as 20 years, are also used.

Risks

3.11 Different degrees of risk may be allocated to the contractor: the risk level may be selected on the basis of an assessment of arrangements which will attract bids from suitable private sector operators. Typically the contractor carries commercial risks relating to, for example, demand levels, consumption, revenue collection, routine maintenance costs, etc

3.12 The public sector carries risks associated with investment in infrastructure development and rehabilitation.

Contractor's incentives

3.13 A lease contract provides an incentive to introduce efficient and cost-effective management of operation and maintenance throughout the utility activities. The variable production-related terms provide additional incentives to maximise productivity.

General features

3.14 A lease contract affects all, or a very large part, of the utility's activities and the impact on service delivery can be marked.

3.15 It requires the appointment of a contractor who has expertise in efficient and cost-effective operation and maintenance of equivalent systems, and also experience in making major improvements in existing systems. An expatriate contractor is normally needed.

Other comments

3.16 A strong regulatory framework is needed.

3.17 Changes are likely to be needed to the overall institutional framework relating to the utility services. It is likely that the existing public utility organisation will be wound up.

3.18 Issues such as terms and continuity of employment for personnel transferred to the contractor need to be defined.

Concession contract

Description

- 4.1 The private sector contractor (the "concessionaire") takes over all the infrastructure and facilities required for providing the contracted services. These normally comprise a complete system (in the case of water supply, from source works to consumer connections). The contractor takes over some or all of the public utility's personnel. The contractor is required to return the infrastructure in good condition at the end of the contract.
- 4.2 In addition to all day to day management of the operation and maintenance of the system against performance requirements defined in the contract, the contractor is responsible for financing and implementing new infrastructure and for major rehabilitation and replacement of existing infrastructure.
- 4.3 The contractor is responsible to government and to the consumers for the provision of the contracted services. The contractor undertakes the collection of revenues from consumers.

Terms and finance

- 4.4 The contractor is remunerated for his services by the revenues collected from the consumers.
- 4.5 The tariff levels are set or regulated by the public sector. The contract provides for routine adjustments to be made to tariff levels to reflect general variations in costs. It normally also provides for occasional renegotiation of the tariffs in relation to the actual performance to date.
- 4.6 Concession contracts normally provide for penalties in respect of failures by the contractor to perform as specified.
- 4.7 A key feature of the concession contract is that private sector funding is used for infrastructure development and rehabilitation. The contract commonly provides that if some capital expenditure has not been fully amortized by the end of the contract, the contractor will be compensated for the outstanding balance.
- 4.8 The duration of a concession contract is typically 15 to 30 years, depending on the period needed to service the loans taken out to cover the investment costs.

Risks

- 4.9 The contractor carries commercial risks relating to, for example, demand levels, consumption, revenue collection, routine maintenance costs, etc. He also carries risks associated with investment in infrastructure development and rehabilitation.

Contractor's incentives

- 4.10 A concession contract, in addition to the incentives provided by a lease contract, includes incentives for cost-effective investment decisions, for tight construction management and for technological innovation. The contractor has a direct incentive to maximise revenue collection.

General features

- 4.11 A concession contract affects all, or a very large part, of the utility's activities and the impact on service delivery can be marked.
- 4.12 It requires the appointment of a contractor who has expertise in efficient and cost-effective operation and maintenance of equivalent systems, experience in making major improvements in existing systems and also has design and construction supervision capacity. To cover the range of expertise required the contractor is often a consortium. An expatriate contractor is normally needed.
- 4.13 In some cases the public sector may undertake to contribute to infrastructure development costs. In these circumstances a predefined element of the charges made to consumers is normally paid to the public sector.

Other comments

- 4.14 A strong regulatory framework is needed.
- 4.15 Changes are likely to be needed to the overall institutional framework relating to the utility services. It is likely that the existing public utility organisation will be wound up.
- 4.16 Issues such as terms and continuity of employment for personnel transferred to the contractor need to be defined.

BOOT contract

Description

- 5.1 In a BOOT (Build-Own-Operate-Transfer) contract a private sector firm or consortium of firms is made responsible for designing, building, operating and maintaining a new system or facility. The contractor owns the new infrastructure until the end of the contract when the ownership is transferred to the public sector. The contractor is also required to ensure that the infrastructure is in good condition at the time of transfer.
- 5.2 The main feature of a BOOT contract is the provision of new infrastructure and the approach is normally associated with large scale and clearly defined components of a system. However, the contractor may also take over the refurbishment, operation and maintenance of some associated existing infrastructure and facilities in a manner equivalent to that of a concession. In water sector BOOT contracts, however, the contractor is not normally required to assume responsibility for existing water distribution or sewerage collector systems.
- 5.3 The contractor is responsible to government for the provision of the contracted services to specified standards. The demands on the system are normally warranted in the contract by the public sector.
- 5.4 In circumstances when the contractor is not responsible for direct services to the consumer, the public sector is usually responsible to the consumers for the provision of the services and for collection of revenues from consumers.

Terms and finance

- 5.5 In cases when the contractor is responsible for only part of a public utility system (in water supply, for example, for the bulk supply works only) the contractor receives from the public sector payments which would normally comprise fixed components and variable (production-related) components. The payments defined in the contract are normally index-linked to protect the contractor against general increases in costs.
- 5.6 If the contractor is responsible for a complete public utility system, including direct services to the consumers, he is likely to be remunerated by the revenues collected from the consumers. In this case provisions for tariff setting are similar to those outlined for concession contracts.
- 5.7 BOOT contracts normally provide for penalties in respect of failures by the contractor to perform as specified.
- 5.8 A key feature of a BOOT contract is that private sector funding is used for the provision of new infrastructure and for rehabilitation. Assuming that the public sector retains responsibility for direct services to the consumers, it will be responsible for the associated funding.
- 5.9 The duration of a BOOT contract is governed by the period needed to service the loans taken for the construction costs and to provide a return to investors in the contract. The period may be in the order of 25 to 30 years.

Risks

- 5.10 In a BOOT contract the contractor is expected to carry substantial risks. These include the risks associated with investment in infrastructure and at least some foreign exchange risks. The long contract period also means that general risks related to possible variations in official attitudes and approach (referred to in Chapter 3) are significant.
- 5.11 Commercial risks relating to, for example, demand levels, consumption, revenue collection, etc, may be carried by the contractor or by the public sector, depending on who is responsible for direct services to the consumers and for revenue collection.

Contractor's incentives

- 5.12 A BOOT contract provides strong incentives to the contractor for cost-effective investment decisions, for tight construction management and for technological innovation, and also for efficient and cost-effective operation and maintenance of the system for which he is responsible.
- 5.13 The allocation of other risks would depend on whether, for example, the contractor is responsible for collecting revenues from consumers.

General features

- 5.14 The main purpose of a BOOT contract is to provide access to private capital for implementing a major infrastructure development programme. BOOT contracts are not normally appropriate if the major emphasis is on rehabilitation and maintenance of existing infrastructure. There has to date been only limited application of the BOOT approach in water sectors internationally.
- 5.15 The BOOT approach may be particularly valuable when there are constraints on the public sector's access to medium and long term borrowing and public sector funding cannot be allocated for needed infrastructure. It is, however, likely that the costs of borrowings using a BOOT approach are higher than would have applied if public sector funding had been used.
- 5.16 A BOOT contract requires the appointment of a contractor generally as described for a concession contract but also with strong financial credibility and, possibly, more emphasis on design and construction skills.

Other comments

- 5.17 As above for concession contracts.
- 5.18 Variants of BOOT contracts are sometimes used. For example, BOT contracts are similar except that ownership of the new assets is formally transferred to the public sector as soon as it has been constructed. In BOO contracts the contractor retains the ownership of the infrastructure at the end of the contract period

APPENDIX II
Sample Listing of PSP Projects Worldwide

Contract Type	Company	Location	Scope
Technical Support	L. des Eaux	Africa South Africa	Water supply and Sanitation
Technical Support	L. des Eaux	Botswana Nigeria Mali Cape Verde Uganda Zambia	Operator Training Institutional Studies Water Resource Development Mains rehabilitation Tariff Development Reorganization HR Development
Technical Support	International Water Ltd.	Pakistan India Malaysia Indonesia Thailand Egypt Africa	Full range of support skills available
Technical Support	Compagnie Generale des Eaux	Africa Djibouti, Morocco, Egypt	Not available
Technical Support	Biwater	Thailand, Bangkok	Leak Detection
Technical Support	Severn Trent International	Mexico City	Utility Management Water Services
Technical Support	Severn Trent International	Africa	Institutional Studies Production of Master plans Tariff Studies
Technical Support	Severn Trent International	India Pakistan	Institutional studies Sewerage Masterplans Tariff Studies
Technical Support	Saur	Turkey (Izmir)	Corporatization and development

Luanda Urban Water Supply and Sanitation Project

Service Contracts	UK Water and Sewerage companies	England and Wales	Mainslaying and repairs Electrical and Mechanical Maintenance Facilities Management Billing and Collection IT Services Major Design and Construction
Service Contracts	L des Eaux	USA	Not Available
Service Contracts	Compagnie Generale des Eaux	USA	Water and wastewater

Luanda Urban Water Supply and Sanitation Project

Management Contracts	L des Eaux	Martinique	Water and wastewater
		French Guyana	
		French Polynesia	
		South Africa	Water and wastewater
		Guinea Bissau	Water and electricity
Management Contracts	Compagnie Generale des Eaux	Australia (Adelaide)	Water and wastewater
		USA (Puerto Rico)	Water and wastewater
Management Contracts	Biwater	Egypt (Cairo)	Operation and maintenance of sewerage pumping stations
		Gambia	Water

Luanda Urban Water Supply and Sanitation Project

Lease Contract/ Affermage	L. des Eaux	France	Water and wastewater services
Lease Contract/ Affermage	L. des Eaux	Czech Republic	Water and wastewater
Lease Contract/ Affermage	Compagnie Generale des Eaux	France	Water and wastewater services
Lease Contract/ Affermage	Compagnie Generale des Eaux	Gambia Madagascar South Africa	Not available
Lease Contract/ Affermage	Saur	France	Water and Wastewater
Lease Contract/ Affermage	Saur	Spain	Water and wastewater
Lease Contract/ Affermage	Saur	Italy	Water and wastewater
Lease Contract/ Affermage	Saur	Poland (Gdansk)	Water
Lease Contract/ Affermage	Saur	Africa (28 countries)	Water and wastewater

Luanda Urban Water Supply and Sanitation Project

Concession	L. des Eaux	New Caledonia	Water and wastewater
Concession	L. des Eaux	Germany (Rostok)	Water and wastewater
Concession	L. des Eaux	Italy	Water supply
Concession	L. des Eaux	Spain	Water and wastewater
Concession	L. des Eaux	China	Water
Concession	L. des Eaux	Macao	Water
Concession	L. des Eaux	Argentina	Water and wastewater
Concession	L. des Eaux	Brazil	Water and wastewater
Concession	L. des Eaux	Morocco	Bulk water supply
Concession	L. des Eaux	South Africa	Water and wastewater
Concession	International Water Ltd.	Mexico	Water and wastewater
Concession	International Water Ltd.	Malaysia	Wastewater
Concession	C. Generale des Eaux	Argentina (Buenos Aires)	Water and wastewater
Concession	C. Generale des Eaux	Argentina (Tocumen)	Water and wastewater
Concession	C. Generale des Eaux	Mexico (Mexico City)	Water
Concession	C. Generale des Eaux	Northern Mexico	Water
Concession	Biwater	Chile (Antofagusta) (Santiago)	Wastewater collection and treatment Water and wastewater
Concession	Biwater	Indonesia	Water treatment works

25

Luanda Urban Water Supply and Sanitation Project

BOO/BOOT	L. des Eaux	China	Water treatment works
BOO/BOOT	L. des Eaux	Malaysia	BOT. water treatment works
BOO/BOOT	L. des Eaux	Australia	BOO. water treatment works
BOO/BOOT	International Water Ltd.	Thailand (Bangkok)	B.O.T. wastewater treatment works
BOO/BOOT	International Water Ltd.	Malaysia	B.O.T. water treatment plant
BOO/BOOT	International Water Ltd.	Australia	B.O.T. water treatment works
BOO/BOOT	International Water Ltd.	Macao	B.O.T. wastewater and sludge treatment plant
BOO/BOOT	Biwater	Chile	BOOT wastewater collection and treatment
BOO/BOOT	Biwater	Malaysia	BOT rural water supply infrastructure
BOO/BOOT	Biwater	Mexico (Puerto Vallarta)	BOOT wastewater treatment plant
BOO/BOOT	Saur	China (Harbin)	BOT water treatment plant
Full Privatization	U.K. Water companies	England and Wales	Provision of water and wastewater services
Full Privatization	L. des Eaux	England	Water and wastewater
Full Privatization	C. Generale des Eaux	England	Water supply
Full Privatization	Saur	England	Water supply

APPENDIX III Reform Measures

Table 1 Outline of Possible Sector Reform Measure

Institutional Framework Issues

Improve institutional structure

- Clarify sector responsibilities and strengthen accountabilities, including the establishment of a high level forum to give status and authority to sector strategies and activities
- Rationalize responsibilities including use of groundwater, control of water production and distribution facilities, overall sanitation planning and Luanda sewerage services
- Establish strong regulatory entity or entities separated from operational responsibilities
- Strengthen decentralization and delegation initiatives.

Introduce necessary legislation

- Establish a water law and an environmental law which conform to an established water management policy and strategy and provide for the overall range of sector reforms
- Allocate clear regulatory responsibilities and provide for effective enforcement
- Resolve the legal uncertainties regarding current decentralization to GPL and of the legal status of EPAL
- Provide for any legal measures required for implementing any chosen PSP arrangement

Government establishes and promotes relevant general policies

- Introduce fully cost-reflective tariffs for water supplies
- Introduce payments for sewerage services
- Require that all users (whether public sector or private) should pay the established tariffs
- Support the use of private sector participation where appropriate
- National policy aspects of other topics referred to above, such as decentralization, application of sector policy and strategy, improved consumer participation, etc.

Sector planning and management

- Develop water sector management policy and strategy for formal government ratification
- Promote and develop coordination between sector organizations (inc., between water and sanitation)
- Strengthen information collection and processing capabilities and sector planning capacities

Service delivery organizations

(Reform measures for such organizations are particularly likely to be affected by the nature and extent of PSP adopted.)

- Provide for strong and autonomous management. Provide for financial responsibility.
- Organizational strengthening including development of systems, procedures and processes (including billing and revenue collection, planning, contract and project management, financial management, etc.)
- Training in management and technical skills.
- Change employment arrangement to attract skilled staff and to provide performance incentives and review.

Infrastructure

- For water supply, to provide improvements throughout the community in the short and medium term, the following should all be undertaken concurrently:
 - refurbishment of existing infrastructure (an initial emergency program followed by other phased works)
 - extension of infrastructure
 - provide more and better distributed giraffas
 - cooperate with suitable NGO-run projects for standpipe and other local supply improvements
- For sewerage:
 - an emergency program involving renovation of the existing sewer infrastructure in the city center
 - a phased program of cleansing and refurbishment of the other existing infrastructure
 - a phased program of extending sewerage

Table 2 Possible Approach to Reform of Service Provision

Basis

- The current problems and constraints are unlikely to be redressed effectively without taking advantage of the benefits of PSP
- It would be difficult to introduce a comprehensive form of PSP in the short term. Reasons for this include:
 - from a private sector operator's point of view, some key risks are too great or unclear
 - from the public sector's point of view, time is needed to analyze the implications, establish the relevant policies and introduce the relevant measures
- Therefore, initially a moderate form of PSP should be introduced for a limited period. This will enable some improvements to be made in the short term. During the initial period the implications and appropriateness of introducing a more comprehensive form of PSP should be considered. This assessment will take account of the experience gained by both the government and the private sector operator during the initial PSP contract.

Approach

- Establish an initial management contract for 3 years (example) to manage operation by EPAL. The contract could require the contractor to:
 - operate, on a performance related payment terms, the Luanda city bulk water supply system and core sections of the existing water distribution system
 - assist EPAL in managing the operation and upgrading of the remainder of the Luanda city distribution system
 - operate the Luanda Sul water supply and sewerage works on lease terms for the period of the management contract
 - renovate and operate, on performance-related payment terms, the key sewer system in the city center
- During the period of the management contract:
 - assess the appropriateness, practicability and the implication of following the maintenance contract with a lease or concession contract for the whole of Luanda city water supply system
 - assess whether or not for later contracts the Luanda Sul works should be operated under a separate contract from that for Luanda city water supply
 - assess the appropriateness and the implication of including some or all of the Luanda city sewerage system in a subsequent PSP arrangement

Other Features

- Appoint expert external assistance to manage the regulation of the initial management contract, to provide training and guidance in regulatory issues, to support the appraisal of subsequent arrangement and to assist the implementation of the necessary measures
- Wider reform measures.

APPENDIX IV
Examples of PSP Solutions

Ivory Coast: Water supply affermage and concessions contracts

Since 1960 water supply in the Ivory Coast has been provided by private enterprises. La Société de Distribution d'Eau de la Cote d'Ivoire (SODECI), is owned jointly by a French Water company, The National Financing Bank, SODECI personnel and private Ivorian stockholders and shares trade on the Abidjan Stock Exchange. SODECI is controlled by a ministerial level water directorate and the relationship has been cited as a model for public-private partnership in the developing world.

Private participation originated under an *affermage* arrangement, but has since evolved into a concession contract, SODECI owns a concession as the sole water distributor in the country (with exception of rural villages). Tariff levels established in the concession contract provide for full cost recovery, including operations, investments and debt service. Tariffs are scaled based on consumption and unaccounted for water is approximately 15%. The 1.4 million inhabitants in Abidjan are serviced through 143,000 connections in an extensive distribution network and enjoy one of the highest standards of water in West Africa.

Guinea: Water supply lease contract

In 1989, responding to a crises situation in the urban water supply sector, the Government of Guinea entered into a 10 year lease contract for water supply to the capital Conakry and 16 other towns. A state-owned national water authority (SONEG) owns the water supply facilities and is responsible for planning and implementation of new investments and for servicing sector debt. The private water management company (SEEG) is responsible for operating and maintaining the water supply facilities, billing consumers and collecting charges. Tariffs were increased gradually to a point where revenues now more than cover operating costs. Revenue shortfall was funded during phase-in by an IDA credit on a declining basis.

During the initial five years of the contract, dramatic improvements in service have been realized, among them:

- ◆ Production capacity increased from 40,000 to 100,000 m³ per day.
- ◆ Connections increased from 12,000 to 30,500
- ◆ Metering increased from 5% to 95%
- ◆ Population with access to safe water increased from 15% to 52%.

As the 10 year lease contract nears termination, consideration is currently underway as to the next form of private sector contract. Additionally, revisions in the implementation of regulatory functions and division of responsibility between SONEG and SEEG are being considered to improve upon the public-private sector partnership.

Gaza: Water supply and sanitation management contract

Following a direct request from the Palestinian Authority in September 1995, a project was initiated to improve the crisis situation facing 900,000 inhabitants in water supply and sanitation in Gaza. A fast-track reform program was initiated to define detailed performance targets and introduce private sector assistance. Close cooperation between consultants, The World Bank and senior Palestinian leaders resulted in the formation of a four year management contract, public solicitation and selection process, negotiation and signing of the contract by July 1996. The initial contract is seen as a first step in a potential migration to a more extensive form of private sector participation by improving the existing service in the short-term and allowing for assessment of the risks and planning for service expansion.

Senegal: Affermage Contract

The government of Senegal has established a public holding company (SONES) and a private operating company (SdE) and implemented an affermage contract for the provision of drinkable water. The contract is part of a larger reform program encompassing new laws and institutional adjustments designed to improve water quality and bring expanded service to poor areas housing 460,000 additional people.

Although water supply in Senegal was handled by a reasonably competent parastatal, private sector participation was deemed necessary to meet short and medium range goals. Among those goals were shortages of production and distribution capacity in the Dakar area (1.96 million inhabitants) requiring heavy immediate investment and the future need for access to private capital to meet long-term demand projection for the region.¹ Neither of these objectives could be adequately met by public management alone.

Togo: Private Sector Solid Waste Disposal

Since 1974, the Private Togolese Refuse Collection Company (SOTEMA) has been collecting and disposing of Lome's municipal waste. Originally established with French technical and financial assistance and granted a one-year renewable contract, the company has maintained responsible disposal standards and established a good record of environmental improvement. The company has grown steadily and profitably and has obtained financing and is considering expanding operations at home and internationally.

¹ "Staff Appraisal Report: Republic of Senegal, Water Sector Project", The World Bank, June 12, 1995.

APPENDIX V
Price of Water in Peri-Urban Luanda

Table 3.1 Results of Price Survey

Highest Priced Bairros (more than 10.00 USD/m ³)		Intermediate Bairros (5.00 - 10.00 USD/m ³)		Least Expensive Bairros (less than 5.00 USD/m ³)	
Bairro	Price USD/m ³	Bairro	Price USD/m ³	Bairro	Price USD/m ³
Rocha Pinto	16.91	Val Saroca	9.36	Mota	3.52
Palanca	14.30	Sector Central	8.70	Bairro Popular	3.09
Golfe	12.73	Ngangula	8.36	Kikolo	2.33
Tala Hadi	12.27	Cazenga	8.18	Rangel	2.15
		San José	7.94	Marcal	1.52
		Mabor	7.79	Zangado	1.52
		Sambizanga	6.33	Boa Esperanca	1.21

Source: Water Supply and Sanitation and its Urban Constraints: Beneficiary Assessment for Luanda, Development Workshop, June 1995.

BEST AVAILABLE COPY