

Contracting out

water and sanitation services

Contracting out

water and sanitation services

Volume 2

Case studies and analysis of Service and Management Contracts in Developing Countries

*Edited by Kevin Sansom, Richard Franceys,
Javier Morales-Reyes & Cyrus Njiru*



Water, Engineering and Development Centre
Loughborough University
2003



Water, Engineering and Development Centre
Loughborough University
Leicestershire
LE11 3TU UK



Institute of Water and Environment
Cranfield University
Silsoe, Bedford
MK45 4DT UK

Produced as part of a WEDC/IWE partnership

Published by WEDC

ISBN Paperback 1 84380 013 6

Sansom, K.R., Franceys, R.W.A., Morales-Reyes, J. I. and Njiru, C. (eds.) (2003)
Contracting Out Water and Sanitation Services – Volume 2:
Case Studies and analysis of Service and Management Contracts in Developing Countries

WEDC, Loughborough University, UK.

A reference copy of this publication is also available online at:
<http://www.lboro.ac.uk/wedc/publications/cowss1.htm>

Any part of this publication, including the illustrations (except items taken from other publications where the authors do not hold copyright) may be copied, reproduced or adapted to meet local needs, without permission from the author/s or publisher, provided the parts reproduced are distributed free, or at cost and not for commercial ends, and the source is fully acknowledged as given below. Please send copies of any materials in which text or illustrations have been used to WEDC Publications at the address given above.

This document is an output from a project funded by the UK
Department for International Development (DFID)
for the benefit of low-income countries.
The views expressed are not necessarily those of DFID.

About the Editors

The Water, Engineering and Development Centre (WEDC) at Loughborough University is a leading institution concerned with education, training, research, and consultancy relating to the planning, provision, and management of infrastructure for development in low- and middle-income countries.

Kevin Sansom is a Programme Manager at WEDC, specialising in management and institutional development with particular interests in: urban and rural water and sanitation services, utilities management, policy formulation, public private partnerships, services for the poor, facilitating change, and participatory training and research. Other research projects he is co-ordinating include 'Strategic marketing for *all* urban water consumers' and 'Optimised management of small town watsan services'. He has also taken a key role on capacity building programmes in India and Africa. Previously he was a Project Co-ordination Manager for a large DFID funded integrated rural water supply project in Maharashtra, India.

Richard Franceys is Senior Lecturer in Water and Sanitation Management at Cranfield University, Silsoe, having previously been Director of the Water MBA programme at IHE, Delft, The Netherlands. He has investigated Public Private Partnerships over a number of years, looking at the major concessions in Buenos Aires and Manila and their relationships to government and NGOs as they seek to serve all customers, including service to the poor. He has also researched the role of small and medium enterprises in secondary towns and the importance of national private sector involvement as in this study on contracting-out of water services. He is a member of the Central Customer Services Committee of Ofwat, the UK water regulator.

Javier I. Morales-Reyes is completing research on the management and process development of public-private contracts in Mexico. He has been a research associate for WEDC and is currently the director of FINAGUA SC, a consultancy firm advising on water services management, the development of public private partnerships processes and project finance and planning. He has previously worked for public institutions and municipal water utilities, development banks including the national development bank BANOBRAS and the World Bank, as well as private firms. He also has experience in rural development and the implementation of participatory projects.

Cyrus Njiru is a Chartered Civil Engineer and a Chartered Water and Environmental Manager. He studied at the Universities of Nairobi (Kenya), IHE Delft (The Netherlands), UMIST and IDPM, Manchester University (both in the UK). He also studies Public Private Partnerships in Washington (USA). Now based at WEDC, Loughborough University in the UK, he is currently involved in research, training and consultancy relating to the planning, provision and management of infrastructure services. Before

joining WEDC, Cyrus gained considerable practical experience in infrastructure development and management, having held senior engineering and management positions in the water sector in Africa for over 16 years. He also gained considerable experience in contracts, having worked closely with consultants, contractors, the public sector and international lending institutions.

Acknowledgements

The valuable assistance and contributions of engineers, managers and consultants from around the world has enabled the editors to assemble a diverse and interesting collection of contracting out case studies on the water sector in low- and middle-income countries, that have been included in Volume 2 of this publication.

We would particularly like to thank the other co-authors of the case studies including Greg Weatherdon, Silver Mugisha, Vijay Gawade and Widi Hastuti. We also appreciate the assistance of the World Bank, the Water and Sanitation Program in Delhi and Nairobi, as well as Bernard Collignon and Mehra Metha. Their articles contributed to the development of case studies that enabled us to capture more of the diversity of the contracting out experiences in the water sector.

We would also like to extend our thanks to DFID for funding this work and to DFID's staff and Ian Curtis in particular, who have been supportive, despite delays and problems associated with data collection.

Numerous water utilities, government departments, municipalities and private operators around the world gave up valuable time in assisting with our field work and providing information, for which the editors are grateful.

List of boxes

Box 1.1.	UK customer committee on privatisation	10
Box 1.2.	Advantages and disadvantages of contracting out	22
Box 1.3.	Outsourcing quotations	22
Box 2.1.	Mexico City service/management contract structure	79
Box 2.2.	Summary of incentives and penalties for the Puebla contract.....	94
Box 2.3.	Port-Au-Prince independent service provider chain	107
Box 2.4.	Ajmer pipelines contract: Incentive and penalty clauses.....	152
Box 2.5.	Liquidated damages at Redhills Water Treatment Plant, Chennai	158
Box 2.6.	TeTemghar: Potential areas for improvements to the contract	166
Box 2.7.	Employees claiming they are employed by the principal employer	167
Box 2.8.	Penalty clause on Maharashtra multi-village scheme contract	175
Box 2.9.	Once monopolistic water utilities are becoming competitive; Is yours?	209
Box 2.10.	From design to discharge: New partnerships in water and sewer system.....	210
Box 2.11.	Southeast water purification plant, Houston, Texas	212
Box 2.12.	Selling out city hall, profits for big business, secrets from taxpayers	213

List of figures

Figure 1.1.	Basic modes of water sector organisation	4
Figure 1.2.	Announced W&S PPP's cumulative	17
Figure 1.3.	Proportion of positive answers related to PSP	17
Figure 1.4.	Proportion of 715 reported PPPs by region	18
Figure 1.5.	Perceptual map of out-sourcing	23
Figure 2.1.	EMOS impact of crisis and efficiency trend	46
Figure 2.2.	Chile reward-penalty factor curves	58
Figure 2.3.	The Mexico cases location, population and water consumption	67
Figure 2.4.	Investment trends and sources of capital in the water sector	69
Figure 2.5.	Profile of water supply revenue. Selected towns in Mexico	71
Figure 2.6.	Institutional responsibilities before and after 1992	76
Figure 2.7.	Mexico DF services contract - household consumption after metering	85
Figure 2.8.	Historic consumption for Delegacion Miguel Hidalgo within Zone D	85
Figure 2.9.	Map of Trinidad	102
Figure 2.10.	Trinidad team structure	104
Figure 2.11.	Water services in Port-Au-Prince shanty towns	108
Figure 2.12.	TARGET KRIP Billings vs Achieved	119
Figure 2.13.	Target UFW (%) vs Achieved	119
Figure 2.14.	KRIP collections	120
Figure 2.15.	Target CE (%) vs Achieved	120
Figure 2.16.	Arrears reduction (June 1997 - October 1999)	121
Figure 2.17.	Kampala area debt portfolio	122
Figure 2.18.	Kampala financial indicators (1992 to 1999)	122
Figure 2.19.	Johannesburg organisational structure	137
Figure 2.20.	Ushrika co-operative water infrastructure responsibilities	145

List of tables

Table 1.1.	Responsibilities for the public and private sector for each contract type	6
Table 1.2.	Population and wealth	11
Table 1.3.	PPPs for different scenarios	16
Table 1.4.	Types of PPP contracts	18
Table 1.5.	PPP contracts by activity	19
Table 1.6.	Agreement with category A guiding principles - preparation/process	26
Table 1.7.	Agreement with category B guiding principles - payment aspect	26
Table 1.8.	Agreement with category C guiding principles - partnership aspect	27
Table 2.1.	EMOS trends from 1994 to 1998	45
Table 2.2.	EMOS data and trends	46
Table 2.3.	Increasing personnel efficiency and effectiveness – meter reading	50
Table 2.4.	Incentives (and fines) for non-reading of meters (new contract only)	50
Table 2.5.	Bidding structure – meters	52
Table 2.6.	Specialities contracts and combinations	54
Table 2.7.	Network maintenance contract - penalties	55
Table 2.8.	Efficiency vs Penalty Factor	57
Table 2.9.	Monthly average statistics of services performed and analysis	59
Table 2.10.	Water production and revenue collection of selected cities in Mexico	66
Table 2.11.	Population and WATSAN coverage in Mexico	68
Table 2.12.	Average water tariff trend 1994 to 1998	70
Table 2.13.	Comparative indicators of selected towns in Mexico by 1998	71
Table 2.14.	Water sources and total average consumption for valley of Mexico	74
Table 2.15.	Water consumption in municipalities within Mexico City	74
Table 2.16.	The companies, partners and number of connections	78
Table 2.17.	Trend of tariff collections within the contract (reported by CADF)	81
Table 2.18.	Key contract outputs for all zones, as reported by DDF	82
Table 2.19.	Completed contract tasks (Zone D)	83
Table 2.20.	Key stages of Puebla PPPs from 1991 to 2000	92
Table 2.21.	Key stages of Aguascalientes PPPs from 1989 to 1999	95
Table 2.22.	The long process in Aguascalientes of the evolving contracts:	98
Table 2.23.	Some key achievements of the IOA in Trinidad and Tobago	105
Table 2.24.	Service levels of watsan utilities in selected African cities	110
Table 2.25.	Accounted-for-water and collection efficiency in African utilities	112
Table 2.26.	Arrears status with KRIP (in billion Ushs)	121
Table 2.27.	Chennai service and management contracts	157
Table 2.28.	CIDCO water sector contract details	159
Table 2.29.	Summary of selected Hyderabad service contracts	162
Table 2.30.	Agreed financial projections for the 80 village scheme	171
Table 2.31.	Out-contracted tasks in four selected PDAMs	180
Table 2.32.	Tender process and responsible parties: Preparatory activities	182
Table 2.33.	Tender process and responsible parties: The bidding process	183
Table 2.34.	Comparing out-contracting and in-house execution for fee collection ...	187
Table 2.35.	Cost comparison results of conducting the service in 1998	190
Table 2.36.	UFW analysis in PDAM Bekasi	191
Table 2.37.	Comparing out-contracting and in-house execution for meter reading ...	191
Table 2.38.	Comparing out-contracting and in-house information technology	194
Table 2.39.	Labour costs comparison analysis	196
Table 2.40.	Comparing out-contracting and in-house - for vehicle maintenance	197
Table 2.41.	Summary of the four out-contracting cases performance	198
Table 2.42.	Contracting - out arrangements in 4 Indonesian PDAMs	199

Table A.1.	Analysis of service and management contracts in Latin America: Category A - Guiding principles Category A: preparation/process	218
Table A.2.	Analysis of service and management contracts in Latin America: Category B - Guiding principles Category B: payment aspects	219
Table A.3.	Analysis of service and management contracts in Latin America: Category C - Guiding principles Category C: partnership aspects	220
Table A.4.	Analysis of service and management contracts in India: Category A - Guiding principles Category A: preparation/process	221
Table A.5.	Analysis of service and management contracts in India: Category B - Guiding principles Category B: payment aspects	222
Table A.6.	Analysis of service and management contracts in India: Category C - Guiding principles Category C: partnership aspects	223
Table A.7.	Analysis of service and management contracts in Africa: Category A - Guiding principles Category A: preparation/process	224
Table A.8.	Analysis of service and management contracts in Africa: Category B - Guiding principles Category B: payment aspects	225
Table A.9.	Analysis of service and management contracts in Africa: Category C - Guiding principles Category C: partnership aspects	226

Contents

About the Editors	v
Acknowledgements	vii
List of boxes	viii
List of figures	viii
List of tables	ix

Part 1 1

Overview and contract analyses

1.1	Introduction	1
1.2	Water sector PPP overview	2
1.2.1	Definitions of Public Private Partnerships	3
1.2.2	Independent water and sanitation providers (small scale)	7
1.2.3	Community contracting	7
1.2.4	Large scale Public Private Partnerships	8
1.2.5	UK water and sanitation privatisation	9
1.2.6	Compulsory competitive tendering	13
1.2.7	Differentiating institutional needs in the sector	15
1.2.8	Present use of PPP in water and sanitation around the world	15
1.2.9	The emerging trends	19
1.3	Overview to contracting out and outsourcing	20
1.3.1	Benefits and costs, advantages and disadvantages	20
1.4	Guiding principles for contracting out water and sanitation services	23
1.4.1	Category A: Guiding principles for contract preparation	24
1.4.2	Category B: Guiding principles for payment aspects	24
1.4.3	Category C: Guiding principles for partnership aspects	25
1.5	Contract analysis	25
1.6	Analysis of service and management contracts: Regional summaries	26
1.7	Trends in contract development	28
1.7.1	General trends	28
1.7.2	Trends in Latin America	29
1.7.3	Trends in India	30
1.7.4	Trends in Africa	31
1.7.5	Community/co-operative management of services	31
1.8	Conclusions	32
1.9	References	34

Part 2 37

Contracting out case studies

2.1	Introduction to the case studies	37
2.1.1	Chile service and management contracts	37
2.1.2	Mexico contracts	37
2.1.3	Trinidad and Tobago management contract	38

2.1.4	Serving the poor in Haiti	38
2.1.5	African case studies	38
2.1.6	India case studies	38
2.1.7	Indonesian contracting out cases	39
2.1.8	USA contracting out cases	39
2.2	Case studies from Chile	40
2.2.1	The process of contracting-out	40
2.2.2	Services contracts: main lessons and strengths	41
2.2.3	Characteristics of the Chile service contracts	42
2.2.4	The research context	44
2.2.5	EMOS - Empresa Metropolitana de Obras Sanitarias	45
2.2.6	EMOS network maintenance contract	53
2.2.7	Empresa de Servicios Sanitarios el Libertador - ESSEL	56
2.2.8	The contractors	62
2.2.9	ICSA - services contracts	63
2.2.10	Conclusion	63
2.2.11	References	64
2.3	Case studies from Mexico	65
2.3.1	Overview of the Mexican case studies	65
2.3.2	The Mexican water sector	67
2.3.3	The Mexico federal district service/management contract	73
2.3.4	Contract development and implementation	75
2.3.5	The Puebla management contract	90
2.3.6	The Aguascalientes management contract	95
2.3.7	Conclusions: Key lessons learnt in Mexico	97
2.3.8	References	100
2.4	Trinidad and Tobago management contract: 1996 to 1999	102
2.4.1	Background: Prior to the contract	102
2.4.2	Introducing the management contract	103
2.4.3	Contract implementation	104
2.4.4	Performance/achievements	104
2.4.5	End of the contract	105
2.4.6	Concluding comments	105
2.4.7	References	106
2.5	Serving the poor in Haiti	107
2.6	Case studies from Africa	110
2.6.1	National Water and Sewerage Corporation, Uganda	114
2.6.2	Malindi O&M and billing service contract, Kenya.	126
2.6.3	Malindi O&M and billing management contract, Kenya.	132
2.6.4	Johannesburg water management contract, South Africa	136
2.6.5	Tonga management contract in Durban, S. Africa	142
2.6.6	Co-operative management of water in Kibera, Nairobi	144
2.7	Indian case studies	147
2.7.1	Sector overview	147
2.7.2	Recent large PPP initiatives	147
2.7.3	Contracting out using service and management contracts	149
2.7.4	References	150
2.7.5	Ajmer for O&M of bulk water supply in Rajasthan	151
2.7.6	Chennai Metro Water Supply and Sewerage Board	154

2.7.7	CIDCO, New Bombay service/management contracts	159
2.7.8	Hyderabad Metro Water Board contracts	161
2.7.9	Temghar Water Works service contract, Maharashtra	165
2.7.10	Multi-village piped water schemes in Maharashtra	169
2.8	Indonesia contracting-out cases	177
2.8.1	Summary	177
2.8.2	Contracting-out in Indonesian water companies	178
2.8.3	Fees collection service in PDAM Tirtanadi, Medan	186
2.8.4	Meter reading service in PDAM Kabupaten Bekasi	189
2.8.5	Information technology in PDAM Kabupaten Tangerang	192
2.8.6	Vehicle maintenance in PDAM Kabupaten Bandung	195
2.8.7	Summary	197
2.9	Case studies from USA	201
2.10	References	214

Appendix 1

A.1	Table A.1 to Table A.9 - World-wide contract analysis	217
------------	--	------------

Glossary

Part 1

Overview and contract analyses

1.1 Introduction

The water and sanitation sector world-wide has begun a process of reform. Governments are reluctantly accepting that the institutional approach that was appropriate in the initial stages of development that is government acting as comprehensive direct provider, is unlikely to reach the desired level of performance. First approaches to reform have included commercialisation, corporatisation and decentralisation. These attempts at institutional development have generally not succeeded in challenging the entrenched producer interests and have failed to improve the effectiveness or efficiency of service delivery. There is therefore growing interest in whether the private sector, in partnership with the public sector, can assist in moving to the next level of quality of service. There is also concern that the reform process must address the needs of the unserved poor, particularly in urban areas

This study focuses on one aspect of involving the private sector, contracting out of specific aspects or components of services. Service contracts and Management contracts are two of the most common forms of Public Private Partnership (PPP) being used in the water and sanitation sector around the world today. Yet because they are often developed locally there is very limited reporting of the experiences and lessons learnt from such contracts. The purpose of this document is to redress this imbalance and enable greater use of this tool, particularly in Middle and Low Income Countries (MLICs). It can be argued that contracting out does not actually represent a Public Private Partnership, in that a simple contract does not include any element of partnership and would better be described under the earlier terminology of PSP, Private Sector Participation. Whilst the case studies include examples that are clearly not operating as partnerships, the overall research indicates that even simple contracts benefit from an inclusive, partnering approach.

More complex PPP arrangements such as Lease, Concessions and BOTs, reportedly offer substantial benefits, perhaps because of the increased opportunity for partnership, provided that the local conditions and institutional environment are conducive. There are many towns and cities in MLICs, however, where the local conditions are not yet suitable for such PPP arrangements, or where there may be a lack of willingness to implement these options or where there may be limited private sector capacity. Service and Management contracts between a water service provider and a private contractor or operator, appear to be simpler to implement with the potential to deliver substantial

benefits. This is particularly so when allied with good commercial practices by the utilities and the contractors, with a continuing understanding of the need for an effective partnership.

The contract analyses and case studies from around the world included in this document are intended to determine whether that potential for benefits is being delivered in practice and to draw out key lessons both for the local and international reader. The key questions addressed in this study are therefore:

- ‘Where and how is contracting out being undertaken in the water sector and by whom?’
- Is contracting out delivering benefits through improved efficiency and effectiveness?
- ‘How can the use of contracting out be further enhanced to deliver improved water and sanitation service provision in MLICs?’

In the pursuit of answers to these questions, many of the case studies and contract analyses openly explore both the areas for improvement as well as the many successful aspects. In many of the case studies the local context is outlined because contracting out is not a solution itself. Rather it is complementary to other initiatives, such as commercialization, decentralisation and even complex PPPs.

Derived from the case studies and the literature, the ‘Guidance Notes on Contracting out Water and Sanitation Services’ are contained in a separate, companion volume 1 by Sansom et al., 2003.

The target audience for the study includes managers, engineers, policy makers and support staff, who are considering contracting out water sector services, or who are wishing to explore ways of making improvements to current contracts. This can be done by learning lessons from the case studies within the reader’s own region, or by finding examples of good practice as well as approaches to avoid, from other countries.

Part 1 provides an overview of the sector and the need for change and discusses the role of PPP generally in the reform process. Part 1 then continues with a focus on the role of contracting out in improving service delivery, concluding with an analysis of the contracts. Part 2 contains the water sector case studies from which the analysis is derived, with cases from Latin America, Asia and Africa. It is recommended that the reader refers to section 2.1.1 - the introduction to the case studies, in order to select which cases are of most interest.

1.2 Water sector PPP overview

Urban water and sanitation sector organisations are facing difficulties in meeting the challenge of providing adequate services for the fast growing populations in the cities and towns in MLICs. Generally they deliver water of poor quality for only a few hours per day, often to the higher income inhabitants only whilst failing to collect the inadequate tariffs which do not reflect the investment costs or the operating costs inflated by over-staffing. In Africa the proportion of households with in-house water connections is typically 15 - 40%, while in South Asia the average number of hours of water supply is typically 1 to 8 hours a day.

Some improvements in commercial orientation, cost recovery and customer care have been achieved by many water utilities through institutional development and decentralisation programmes. But there are concerns about the current pace of change and the prospects of meeting the increasing demands for better services. Now many governments and external support agencies believe the way forward is through some variation of Public Private Partnerships.

Improved service coverage is desperately required as well as improved service quality to those who are fortunate enough to already have a connection. With up to a quarter of the population of the urban areas (half in some cities) living in informal or illegal housing areas and these areas representing the fastest growing segment of the fast growing cities the state faces reach challenge to meet the needs of all its citizens.

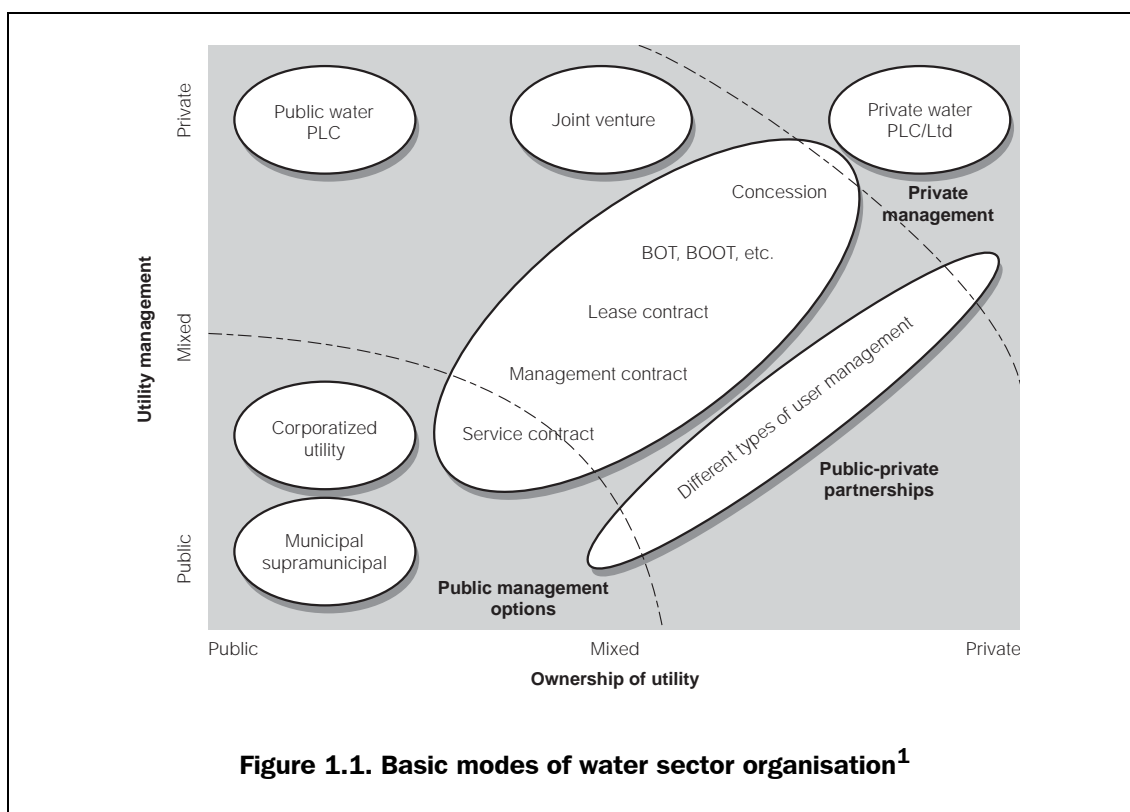
To fill the present service provision gap many consumers already use the private sector, the small-scale, independent providers (SSIPs). The challenge is to use the skills and entrepreneurship of many levels of the private sector in effective partnership with universal service obligation of the public sector.

1.2.1 Definitions of Public Private Partnerships

A wide variety of options are already being used within the 'spectrum' of public private partnerships, with little correlation between, for example, wealth and institutional approach which tends to be seen in the power sector. This suggests that there may well be no 'correct' answer for watsan institutions and that every country will have to go through a process of determining which combination of PPP approaches best suits their political, socio-economic and water resources environment. The diagram shown overleaf (Figure 1.1, Blokland *et al.*, 1999), demonstrates the range of private sector options available to the world, many being variations on the patterns described below. The main change across the spectrum is the degree of private capital being introduced and therefore the length of the contract required to obtain the necessary pay back and the necessary return on capital.

Selection of the appropriate type of contract for the provision of water and sanitation services needs to carefully be thought through, based on good information. Public Private Partnership contracts for water sector service provision have been conveniently categorised into a number of different types of contract or PPP options that are briefly described below in order of increasing scope and complexity. It is necessary to understand the range of options to see where contracting out can be used to best advantage. Specific contracts can also be developed with features from two or more of the options discussed with, for example, service contracts being used within a concession.

Service contracts, a focus of this study, are the simplest form of PSP whereby the public authority (though not necessarily the public) retains overall responsibility for operation and maintenance of the system, except for the specific system components that are contracted out. The contractor's responsibility is limited to managing its own personnel and services efficiently. Typically, service contracts are used for maintenance of components such as pumping stations and meter reading. Payment is usually on a lump sum basis dependent on achieving certain agreed targets. A typical contract duration is anywhere between six months to 3 years. Almost all countries have experience of these



1. Source: Blokland et al. (1999)

types of contracts in other contexts but they may not always have been recognised to be valuable as a separate policy option for the water sector. There is evidence of Service Contracts being used in the sector in 46 middle and low-income countries.

One variation on the Service Contract type is the ***'labour only' contract*** where the contractor essentially provides a specified number of staff for a specific purpose to a public authority who maintain overall responsibility for providing the service. The precise number and skill profile of the contract staff is usually specified by the public authority. The contractor is in effect acting as a contract staff agency. Under such a contract it is difficult to set performance standards, because the public authority makes the management decisions. It is generally only possible to replace unsatisfactory staff. This type of arrangement has been widely used, for example, in the Indian water sector.

Emphasising the spectrum of PPP possibilities, it is often difficult to distinguish any dividing line between some types of service contracts and some management contracts.

Management contracts are generally a more comprehensive arrangement, where the public authority transfers responsibility to a private contractor for the management of a range of activities such as the O&M of a water supply distribution system or major sub-system. Remuneration is usually based on a tendered fee. Those contracts that also have an incentive based component, using parameters such as volume of water produced or improvements in bill collection rates, are generally believed to be more successful. The public authority usually finances working and investment capital and determines cost recovery policies. Management contracts are often seen as a useful first step towards more complex PPP arrangements such as Leases or Concessions. A typical contract duration is

for 3 to 5 years and occasionally up to 15 years. Countries with these type of contracts include: Uganda, South Africa, Mexico, Kenya and India. Two common forms of organisational arrangements for Management contracts are as follows:

A joint public/private company - a new company is established for the purposes of the operation of the contract with staff and resources being provided both from the government/utility and the private operator. This encourages shared ownership and hopefully shared benefits. This type of contract is generally used for a large scale management contract, e.g. the previous contract in Trinidad and Tobago.

Delegated management to a private operator - entails the public authority handing over the responsibility for O&M of a full range of activities such as O&M of a distribution system and/or billing and collection, to a private Operator, e.g. Tongaat, South Africa and Malindi in Kenya.

Community/co-operative management contracts occur where a community or user group manages some aspect of water or sanitation service provision, in collaboration with a utility. For example, in an urban environment the community group may manage part of the tertiary water distribution water network and cost recovery from consumers in a defined area, while they pay the utility for the bulk supply of water. There may or may not be a written contract and in some cases the community group may take-over the management of assets. Countries with these types of contracts include; Haiti, Kenya and India.

Lease contracts, also known as Affermage, are used where a private operator or lessor rents the facilities from a public authority and is responsible for operating and maintaining a complete system and collecting the tariffs. The lessor effectively buys the rights to the income stream from the utility's operations and thus assumes a significant share of the commercial risk associated with those operations. The lessor generally provides the working capital and the public authority deals with the capital investment. The duration of a Lease contract can be from 5 to 15 years. Countries with these types of contracts include: France, Guinea Poland and Senegal.

BOT contracts, (Build, operate and transfer - with variations such as BOOT: build, own, operate, transfer; BOO: build, own and operate; DBFO: design, build, finance and operate; and ROT: rehabilitate, operate and transfer) are a form of concession whereby a private firm or consortium agrees to finance, construct, operate and maintain a facility for a specific period, before transferring the facility to a Government or other public body. BOT arrangements are attractive for new plants that require large amounts of finance, for example, large water treatment plants, but they are not suitable for water distribution or wastewater collection systems. The contract period is normally greater than 20 years, sufficient for the private contractor to pay off loans and achieve a return on investment. These contracts often require high tariffs and/or subsidies to meet the BOT operator's costs, with the government utility remaining responsible for paying the private contractor. Countries with these types of contracts include Brazil, Malaysia, Mexico and China.

Concession contracts tend to be more comprehensive in scope, where the private sector company takes on full responsibility not only for operating and maintaining the utility's assets, but also for investments to enhance and extend these assets, usually for a whole city. Formally asset ownership remains with the Government but in effect, the private sector assumes complete control for the contract period. Frequently the concessions are

bid according to price - the bidder who proposes to operate the utility and meet the specific investment and performance targets, for the lowest tariff, wins the concession. Alternatively the contract may be let according to the promised degree of service coverage within a specified time. The contract, which is usually over a period of 25 - 30 years, sets out the main performance targets, particularly for quality of supply and service coverage as well as arrangements for arbitration of disputes between the project partners. Concessions generally require tariffs to be at a level at the start of the contract to meet the full costs of service provision, and because of the inevitable changes in circumstances require some mechanism for economic regulation to adjust tariffs during the concession. The private operator generally had the responsibility to collect tariffs directly from customers in order to generate its own revenue. Countries with these types of contracts include: Argentina, Philippines, France and Malaysia.

In practice many contracts often have a number of features from the different types of contract listed above. It is for this reason that in the contract analysis and case studies in this document, we refer to 'contracting out using service/management contracts' as a broader category for the shorter duration and simpler contracts, which generally do not include substantial investment funding. The other broad category is the 'complex PPP contracts' such as Lease, BOTs and Concessions, which tend to be of a longer duration and require more preparation time and transaction costs, but can lead to substantial benefits in the right environment.

Table 1.1 highlights the typical allocation of responsibilities between the public and private sector for the different contract options. The 'Basic modes of water sector organisation' in Figure 1.1 shows the continuum of increasing private sector management and increasing ownership of the utility, for the different types of contracts. For more information on the requirements and potential benefits of the different types of contracts refer to the *'Toolkits for Private Participation in Water and Sanitation'* The World Bank, Washington DC, 1997.

Table 1.1. Responsibilities for the public and private sector for each contract type

Contract Type	Asset Ownership	Operation and Maintenance	Capital Investment	Commercial Risk	Typical Duration
Service contracts	Public	Public and private	Public	Public	1 to 3 years
Management contracts	Public	Private	Public	Public	3 to 5 years
Lease contract	Public	Private	Public	Shared	8 to 10 years
Concession	Public	Private	Private	Private	25 to 30 years
BOT	Public and private	Private	Private	Private	15 to 25 years
Digestive (e.g. UK)	Private or private and public	Private	Private	Private	

1.2.2 Independent water and sanitation providers (small scale)

Much of this document describes the process of government agencies and utilities contracting-out significant packages of work to established service provider contractors. However, in low and middle-income countries these contractors are often not present. What have developed are the small-scale, independent providers who have grown to fill the gaps left by the utilities. This informal out-sourcing of, for example, pit latrine and septic tank emptying, water distribution and vending from tankers and even small scale groundwater abstraction with piped distribution is a vital resource to be included in any planning.

Described in detail in the recent work of Bernard Collignon and Marc Vezina in Africa (2000) and Tova Maria Solo in Latin America, the researchers found that ‘small enterprises often account for a larger share of the market than do incumbent utilities. They are also well placed to complement and even compete with trunk concessions and public companies in tailoring services to the poor’ (Solo, 1999).

In some circumstances, the independent water and sanitation providers can be seen as informal service contractors, taking on a particular task that the direct service provider has failed to deliver. At the end of the PPP spectrum they can sometimes be perceived as informal concessionaries, investing in service provision and delivering that service in exchange for revenue from customers, complete with monopoly rights acquired within the local power structure.

Any promotion of formal contracting-out should recognise the small scale independent providers (SSIPs) as a resource to be used, particularly to promote competition amongst potential contractors. And particularly to provide local employment, a vital component of poverty alleviation.

1.2.3 Community contracting

Communities also have the potential to act as direct providers of water and sanitation services. The DFID sponsored research into Community Initiatives in Urban Infrastructure (Cotton *et al.*, 1998) detailed the potential that communities have to act as small scale contractors in construction and service provision.

They focused in their investigations on ‘community partnered’ construction contracts but these could as easily be out-sourcing contracts from a utility, for example, water distribution and meter reading by communities.

The researchers found in their analysis of 390 micro contracts that ‘the final price for community partnered works is lower than that for the conventional tender contract system’ by approximately 10%. However they also found that community contracts take 90% longer than anticipated as against conventional contracts taking 50% longer. With regard to quality of work, although difficult to measure, Sri Lankan experience reported improved quality and there were no reported cases of the quality of work being worse with community partnering. However, there was often disagreement as to what was an appropriate level of quality to aim at, with government client engineers sticking with their standard specifications and communities wishing to promote what they perceived as sustainable.

The researchers did find considerable transaction costs involved in the community approach with either NGO facilitators or government staff having to invest significant amounts of time during the development of the participation process. But there were also wider benefits of development in that the approach can be seen as a means to enable empowerment and greater control to households and community groups with employment opportunities. This leads directly to income generation within the community and small enterprise development as local micro-contractors develop in addition to increased business for local building material suppliers.

Community groups acting as micro-contractors must also be considered as a potential resource for outsourcing.

1.2.4 Large scale Public Private Partnerships

To give a more complete overview of the PPP spectrum and recognising the role that contracting out had in serving the private or semi-private direct providers it is necessary to consider briefly the large scale PPPs.

Investigating three main patterns of public private partnerships (and using a wide definition of the term) in Europe, the Netherlands benefits from private companies operating under private company law with public (government) ownership of the shares (non-tradable). The 'Public Water PLC', developed to achieve economies of scale by serving up to ten local government areas, performs well with a high degree of technical effectiveness. The model had achieved full coverage of water, albeit at a fairly high cost, and rarely has to make any returns to shareholders. However, there is a growing concern for efficiency as well as effectiveness and many of the Dutch water companies use contracting out to complement their own skills. Braadbaart (1999) describes how WLF Water Supply Company, serving around 200,000 connections in the northernmost part of the Netherlands, has out-sourced about sixty percent of water meter maintenance and a substantial part of the plant and vehicle workshop. Service contracts appear to be a way of enhancing efficiency and effectiveness without challenging the overall position of the incumbent direct providers.

As with all institutional models there are variations on the theme of private companies, public ownership. Dutch wastewater, traditionally managed by separate government boards with members directly elected by customers, is now, for one region, tentatively considering a large Design, Finance, Build and Operate (DBFO) contract for wastewater treatment. Tentative, because this is the sort of complex PPP which worries people, giving away control of 'our water'. Though, as in the Netherlands, several countries do seem prepared to risk PPPs in sanitation before water as 'it is not so critical.'

But it is this sort of 'privatization' that the French have benefited from for over one hundred years. In the majority of cases local government owns the fixed assets and one of the three major private companies takes full responsibility to operate the systems, as in a lease contract. More recently companies have also had to invest (or to manage the investment of) significant amounts in new works through concessions, after years of under-investment. As in the Dutch example there is a pattern of aggregating with one PPP contract serving several municipalities. The price in France is similar to that charged in the Netherlands, though it had to increase by 60% in the six years until 1997, and to achieve adequate waste-water treatment coverage (aiming for 65% in 2005) there is a

form of subsidy from all water customers (GWR, 1998). Prices in communes with PPP are reportedly higher than those without, but there is no information as to what extent standards are correspondingly higher.

It is the French pattern that is now being promoted around the world and properly forms the background for this paper's discussions, as opposed to the English and Welsh divestiture which sits at the extreme of the PPP spectrum.

1.2.5 UK water and sanitation privatisation

The fashion for 'privatisation' in all things started in the United Kingdom in the early 1980's, and although remaining remarkably unpopular, reached the already consolidated water sector in 1989. One notable advisor strongly recommended to the British government the use of the French approach, that is retaining the fixed assets in government ownership. But this was rejected in order to remove the future funding requirements from the Public Sector. So the industry was sold to private share-holders (at a discount), in a process known as divestiture. One of the main justifications for divestiture was that the private companies would be able to meet their needs for capital through the stock market. The newly private companies have in fact, until recently, been able to fund much of their new capital works from their cash flow, generated by the rapidly increasing tariffs. And they have managed to make most impressive profits at the same time (12% return on capital when borrowing at perhaps 7% with 20%-40% gearing), a level significantly higher than France and the Netherlands, though interestingly at a very similar overall price until the 1999 price reduction.

The new private managers (though they were in reality the old public managers with new incentives) achieved a remarkable turn around in an industry that had tried its best but had been plagued by under-investment for several generations. Since privatisation service improvements can be summarised as follows:

- security of supply is up (population subject to hose pipe bans: 41% 1990/91; 0% 1999/00),
- quality of water is up (99.8% of around 2.8 million tests met the required standards 1999/00, with number failing at one tenth of 1992 total, (DWI, 2000),
- leakage is down (by 31% since 1992/93),
- pollution is dramatically diminished, companies are prosecuted and fined for failures,
- service quality is better than ever (billing contacts not responded to within 10 working days down from 31% in 1990/91 to 1.5% in 1990/00)
- and now even disconnections are banned,
- over \$60 billion has been invested since privatisation.

A genuinely positive experience, though many have been amazed at the size of the profits, an average of \$70 per person operating profit on turnover of \$194 per person in 1998/99. This follows the 40% average real price increase since privatisation (all UK figures derived from Ofwat Company Reports unless specified).

To limit the possible abuse of the monopoly position in providing this basic need, England and Wales introduced three regulators - the Drinking Water Inspectorate, the Environment Agency and the Office of Water Services, Ofwat. Ofwat's Director sets the prices and decides upon the investments and castigates companies for poor leakage records and even measures how long it takes the companies to answer the telephone to their customers. Ofwat is also responsible for another valuable aspect of regulation, the customer representatives on the Customer Service Committees. The summarised responses of colleagues on the Central CSC are in Box 1.1.

Box 1.1. UK customer committee on privatisation¹

Privatisation has been: 'a move forward; by and large, a good job done; standard of service is unbelievably better; a two edged sword; not totally convinced by privatisation; the basic concept is good, they were in a state of disrepair; but costs have risen disproportionately; the companies were sold off too cheap; the original price setting was wrong, the first price review got it wrong, now we hope it is right. Water and sewerage bills have increased above the rate of inflation. A bigger percentage of household income has gone on water, because of the costs of the capital expenditure programme, but also to support high profits and dividends. One CSC recommendation: 'try and sort out regulation first, otherwise you are always learning as you go along'

1. Source: Comments by Members of Ofwat Central Customer Services Committee, January 2000

In the UK, regulation has gone a stage further with 'competition' for benefits from the three regulators. This has been experienced in the recently completed five yearly price review (reducing prices by an average of 12.3% whilst delivering \$5 billion per year for capital investment and the environment) as the different regulators battled to show how much they were delivering for their various 'constituencies'. Not particularly edifying, but effective - for it is competition that draws the real benefits out of the private sector, just as it draws it from the regulators. Privatisation, regulation and competition are the complementary strands of PPP. In more conventional competition terms, from the beginning of March 2000 new water contractors in England and Wales have had the right to access other contractors pipe networks to supply customers ('common carriage'). Competition is rightly moving on beyond simple comparative competition, however valuable that has also been.

One of the key aspects of contracting out is the potential for competition between service providers due to the shorter contract duration and the absence of any monopoly.

To date in UK, competition has delivered eight 'inset appointments' (out of a possible 500) whereby customers using more than 250 megalitres per year can appoint a different contractor to supply them. With the threshold being reduced to 100 megalitres per year an additional 1,500 customers will become eligible (Ofwat, 2000a).

Following the 1999 price review which reasonably reduced the target cost of capital, water companies have begun to explore other patterns of PPP with consideration of separating fixed assets into a mutual company, owned by customers. This is financed by debt with the original equity financed company acting as operator having the expectation to renew any such contract in open competition. One such approach has now been

implemented with Glas Cymru, the Welsh water provider retaining the operating license as a not-for-profit, non shareholder organisation whilst contracting out responsibilities for asset management and operation to one private operator (United Utilities) with customer relations contracted out to another (Thames). Perhaps the English model is tending back towards the 'French approach' but with the incorporation of large-scale contracting out.

Privatisation demands profits for shareholders that have taken the risk of investing. One of the main claims for privatisation has been that it delivers the required new capital to the sector. It is not clear whether any significant new money is coming into the sector, most PPP's have only a small equity contribution. But privatisation is undoubtedly unlocking access to sources of finance that the world had begun to restrict. What remains a constant is that in the end the customer pays. PPP has the advantage of making this reality more obvious though that is not always what governments intend.

What does this European experience have to say to the rest of the world? Remembering that even in the UK, Scotland and Northern Ireland have rejected 'privatization' - though they are experimenting with alternative Public Private Partnerships of the BOT variety. And remembering that the rest of the world has a very different economic situation with very different investment potential - it is much easier to make any institutional model work when it is possible to invest one's way out of the problem. The Modern Equivalent Asset Value of the English and Welsh fixed assets is \$2,000 for water, \$3,760 for sewerage per person and the privatised industry is continuing to invest at \$100 per person per year.

Table 1.2. Population and wealth¹

	High income	Upper middle income	Lower middle income	Low income
Population, million (WDR, 1999)	885	588	908	3,515
GNP per person (WDR, 1999)	\$25,510	\$4,860	\$1,710	\$520
Affordable watsan investment per person per generation at 5% of income (includes for O&M)	\$7,420	\$1,480	\$520	\$160

1. Source: Franceys, 2000

For the three and a half billion people in the low-income countries affordability for water and sanitation is extremely restricted. Without necessarily understanding the full implications of these levels of affordability, demonstrated in Table 1.2, the wider world appears to like the French model of privatization but often allied with the English model of regulation. It is not possible to have privatization of a monopoly without some form of regulation - something now also being acknowledged in France where it had been assumed that competition for renewal of contracts served the purpose (GWR, 2000).

But improving efficiency and effectiveness through the use of smaller scale PPPs, that is through Service and Management contracts, avoids some of the demands of the complexity illustrated in the discussion above. Thus making those benefits more easily replicable in countries with less sophisticated governance capability. Service contracts do not require economic regulation as a separate government department and all the consequent needs for customer committees as the client is directly responsible for contract monitoring. However, contracting out requires companies to deliver only working capital with long term investments remaining the responsibility of the overall direct provider. Contracting out therefore cannot solve the challenge of capital investment.

The privatised water companies in England and Wales recognise the specific advantages of service contracts. In the water utilities, outsourcing has become so normal as to be unremarkable and usually unreported. There are service contracts for delivering programmes of new investment as well as contracts for water quality monitoring and customer call centres and meter installation and leak repairs. In fact for everything that the private direct provider does not consider a 'core competence.'

However, the regulator has had to take steps to ensure a competitive market in the supply of these services. The newly privatised utilities saw the need early on to diversify their activities away from their core, regulated, business. The obvious move for most was to buy companies in related businesses that the utilities understood, for example engineering consultancy, process plant manufacturers, sewer relining contractors. Having bought the companies it was natural for the utilities to use their own in-group contractors. However, from the viewpoint of the regulator (as well as their competitors), this might not necessarily have delivered the most efficient and effective contractor to do the work. As the potential problem became more apparent the regulator, OFWAT, had to undertake studies as to the extent of any difficulties and now the companies have to report on an annual basis as to the extent of their use of related group companies. Ofwat's transfer pricing guideline, Regulatory Accounting Guideline 5 'helps companies comply with their duty to trade at arm's length. It sets out procedures and industry best practice for trading with associated companies (associates) - that is, other companies within the same group. It ensures that the Appointed business pays a fair price for services and products received from associates and that common costs are allocated appropriately between the Appointed business and associates' (Ofwat, 2000b).

Of the 24 water companies only one (Cambridge) reported no trade with group companies. For the other private operators the industry total in 1999-00 was £707.4m, representing 10% of appointed business, varying from a high of 23% to a low of 1% trade within the group. Eleven companies were reported as having satisfactory compliance the guidelines, a sign of the difficulty of ensuring open competition in out-contracting. There is no information available as to the extent of overall out-contracting, though for example, Severn Trent Water report 19% of operating expenditure in year ended 2000 as paid to hired, contracted services and associated companies of which 20% went to the associated companies (Severn Trent Water, 2000).

Service contracting does not require detailed supervision and regulation compared with a monopoly supplier of a basic need. But there remains the need for some level of oversight to limit abuse through transfer pricing within a group or letting of small, 'unnoticed' contracts to friends and relatives at a non-competitive price.

1.2.6 Compulsory competitive tendering

PPP experience from the United Kingdom which is perhaps of more relevance to this study than the whole-scale divestiture of the water comes from the local government sector. Water and sanitation often remains a municipal responsibility in many middle and low-income countries. In local government in UK what was called 'Compulsory Competitive Tendering' (CCT) became a powerful tool to promote change.

'The major expansion of contracting and competitive tendering followed the Local Government Act 1988, which required local authorities to subject a range of manual services to competitive tender. If the local authority (through its own direct labour force) won the right to provide the services then it had to do so on a quasi-contractual basis, operating an internal trading account, which could not be cross-subsidised, and had to meet started targets that were set by central government. The services that were initially covered by the act were refuse collection, street cleaning, building cleaning, catering, vehicle maintenance, grounds maintenance and leisure management.' By 1993 32% of the contracts were being won by the private sector, but this only represented 17% by value as the contractors tended to pick up the smaller contracts and in local authorities where the authorities were seen to be more in favour of this approach. (Walsh, 1995).

Not everything worked perfectly. Davis and Walker (1997) explain how with the compulsory nature of contracting, local authorities had to put activities out to tender whatever their particular view of the merits. There was a significant rise in the proportion of the work inspected - an average of 24% before competition rising to 42% after competition was introduced which could be seen as an improvement or as an additional cost. They also discovered that 'the possibilities for opportunistic behaviour abound' whereby contractors tried to maximise their profits.

A 1997 study (Austin Mayhead) found that 'annual cost savings under the second round of tendering (about 9%) were greater than those achieved at the first round (about 6.5%), although a third of the contracts, in particular smaller contracts, record no savings. The costs of tendering, where recorded, are low and reduce annual savings by a small amount only. Average annual client side costs are below 5% of contract value and are, on average, 4% lower than at the first round of tendering.'

Competition had increased through the two periods with an average of 16 organisations applying for a tender questionnaire, compared to less than 11 at the first round, and three and a half submitted a tender, compared to just less than three at the first round.

'Most Authorities believe that the quality of CCT services has improved since the first round of tendering. Three-quarters said that CCT has resulted in clearer and more comprehensive service specifications and two-thirds thought it had resulted in a closer reflection on customer needs. Over 80% of direct service organisations expressed certainty that they were continuing to improve their operational efficiency' (ibid.).

Although CCT appeared 'to have, in most cases, helped to improve the quality of services and reduce the cost of provision, only a minority of Authorities (11%) were supportive of the compulsory element. Almost a third of Authorities said they would not undertake competitive tendering of services should compulsion be removed.'

In 1996, compulsory competition was subsequently extended to professional services such as engineering, law, finance, personnel, housing management and computer services. One writer suggested that 'in UK local government, standards of integrity are high. There is a remarkable lack of corruption. It should be remembered that of the few cases of serious corruption, a high proportion have been connected with tendering and award of contracts. In extending CCT there is a risk of magnifying the worst of local government while dismantling the best.' (Simpson, 1995)

The bid for taking over the budget-making function at South Oxford for a fee of £28,000 follows an in-house tender for £15,000 (highest external bid £75,000) and includes rates for additional work priced between £220 per hour for a partner to £45 per hour for an assistant manager. Extra work on the rejected in-house bid was at a flat rate of £20 per hour. (The Independent, p5, 16 August, 1991)

With a new government came a review of the CCT process and the belief that the benefits of compulsory competitive tendering, 'because they were imposed or seen in isolation from other measures..have been offset by a tendency to discourage local ownership and responsibility.' 'Under CCT, service quality has often been neglected and efficiency gains have been uneven and uncertain, and it has proved inflexible in practice. There have been significant costs for employees, often leading to high staff turnover and the demoralisation of those expected to provide quality services. Compulsion has also bred antagonism, so that neither local authorities nor private sector suppliers have been able to realise the benefits that flow from a health partnership.' (DETR, 1998)

The new government therefore removed the compulsory element and launched an initiative called 'Best Value.' This approach emphasised that 'achieving Best Value is not just about economy and efficiency but also about effectiveness and the quality of local services. There is no presumption that services must be privatised..but there is no reason why services should be delivered directly if other more efficient means are available. What matters is what works. Competition will continue to be an important management tool.(ibid.).

By 1999 the government was promoting 'Best Value' as a community strategy within a performance management framework, emphasising the importance of partnership. The approach requires each local authority to Challenge (why and how a service is being provided); secure Comparison with the performance of others across a range of relevant indicators. Consult local taxpayers, service users, partners and the wider business community; and consider fair Competition as a means of securing efficient and effective services. (DETR, 1999)

There have been a range of further government initiatives in UK with regard to provision of public services which are of less direct relevance to this study but which can be seen to represent variations on the same theme. These have included Comparative Yardstick Competitions, emphasising the use of performance tables ('league tables'). Also the Next Steps initiative, turning government departments into autonomous units with their own business plans, the Private Finance Initiative (PFI) involving the use of private capital and transfer of risk to the private sector, particularly with regard to design and build overruns but also to demand risk. All of these approaches have begun to take notice of the need for Project Partnering, partnerships and relational contracting, trying to maximise the benefits of competition as well as trust.

1.2.7 Differentiating institutional needs in the sector

To begin to adapt these international experiences to the needs of middle and low-income countries, 'scanning globally, reinventing locally', it is helpful to segment the target markets such that PPPs can be appropriately differentiated.

Table 1.3 on page 16 summarises the different target groups, the most likely technological solution and the resulting potential PPP option. Although not shown in the Table there is potential to upgrade discreet household technologies to networked facilities in the longer term which would lead to a change in the most suitable PPP options. Based on the population categories in lower-income countries and the number of unserved, the potential for 'reaching the unreached' through improved water and sanitation systems and improved PSP in the delivery and management of those systems is also estimated.

This is the context in which it is necessary to consider the broader issues of contracting-out. Much of what follows tends to focus upon the particular advantages of PPPs in the metropolitan urban areas, because of the inherent bias in both reporting and research in those areas. However, this research has as its ultimate objective to facilitate service to the poor and we try to recognise this differentiation and the potential for reaching the unreached in the analysis and case studies.

1.2.8 Present use of PPP in water and sanitation around the world

The starting point of the contracting out research is to discover where and how it is being used in the world. Necessarily this has meant understanding the range of PPPs being used as there is often an understandably fine dividing line, if they can be divided at all, between the different types of PPP contracts described earlier. It seems that the world is making its choices for PPP as illustrated by the following data taken from over 700 contracts detailed in the researchers' 'PPP Database'. The database, derived from a questionnaire and published sources, contains reported PPPs since 1989. The focus is on contracts from Middle and Low-Income Countries (MLIC).

The rate of growth in major PPP contracts shown in Figure 1.2, demonstrates that these Public Private Partnerships are now increasingly accepted. However, not all of these announced PPPs are delivering benefits with 18% still in the planning stage and 7% postponed or cancelled. The figures up to 2001 do show a steady increase in major PPPs, interrupted only by the East Asia financial crisis of 1998. In 2002 there has been a decrease in the number of major international PPPs due to the reluctance of international operators to take on large commercial and investment risks.

From a detailed survey of 112 water sector institutions in 43 mainly MLICs in 1997, 38% of respondents indicated that their organization was using some form of PPP in water and sanitation service provision (Figure 1.3). While 53% are considering using PPP in the future. This indicates widespread willingness to use some form of contracting out of services.

The regions where the reported PPPs are being used (see Figure 1.4 on page 18) underestimates Europe where significant out-contracting is so normal as to be unrepeatable (and where only limited data is available from France) but demonstrates the predominance of Latin America, the richest of the MLIC regions. However, even in South Asia, one of the most resistant of all regions to ideas of private sector involvement, the role of service contracts is increasingly recognized.

Table 1.3. PPPs for different scenarios¹

			Water		Sanitation
	Potential for reaching the unreached	Tech./cost bias towards:	Institutional bias towards:	Tech./cost bias towards:	Institutional bias towards:
Rural	High for water; Very high for sanitation	Discreet household and community technologies	CBO, NGO, Mini contractor, supplier and service contract support to household and community management	On-plot sanitation	Household provision through private sector supply and construction
Secondary towns	Very high	Individual connections and point sources	CBO, NGO, Mini contractor, services contractors and leasing support to commercialised municipality management contracts or publicly owned private companies	On-plot sanitation	Household provision through private sector supply and construction and emptying
Peri-urban	High for water; Very high for sanitation	Distribution of bulk water supply through point sources	CBO, NGO, Mini contractor support and services contracts to commercialised or PSP municipality/ utility management contract, lease or concession	On-plot sanitation, communal toilets	Household provision through private sector supply and construction and emptying; CBO, NGO, Mini contractor, supplier and service contract support to communal toilets
Urban metros (and secondary towns in higher income countries)	Medium	Individual connections	Services contracts, management contracts, leases or concessions under municipal oversight and regulation and BOT's to commercialised municipality management or publicly owned private companies	On-plot sanitation, on site sanitation, sewerage	Household provision through private sector supply and construction and emptying or sewerage with services contracts, management contracts, leasing or concessions under municipal oversight and regulation
Metro core	Limited	Individual connections	Management contracts, leasing or concessions under municipal regulation or services contracts and BOT's to commercialised municipality management	Sewerage	Services contracts, management contracts, leasing or concessions under municipal oversight and regulation
Industrial zones	Limited	Industrial connections	BOT	Sewerage	BOT

1. Source: Franceys, 1997

The regions where the reported PPPs are being used (Figure 1.4) underestimates Europe where significant out-contracting is so normal as to be unreportable (and where only limited data is available from France) but demonstrates the predominance of Latin

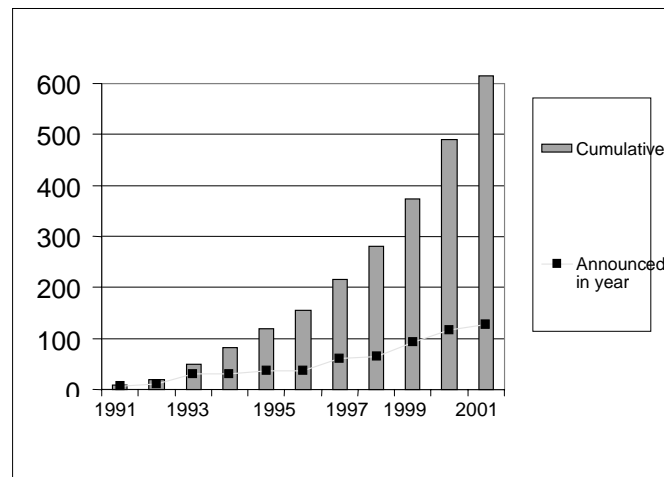


Figure 1.2. Announced W&S PPP's cumulative

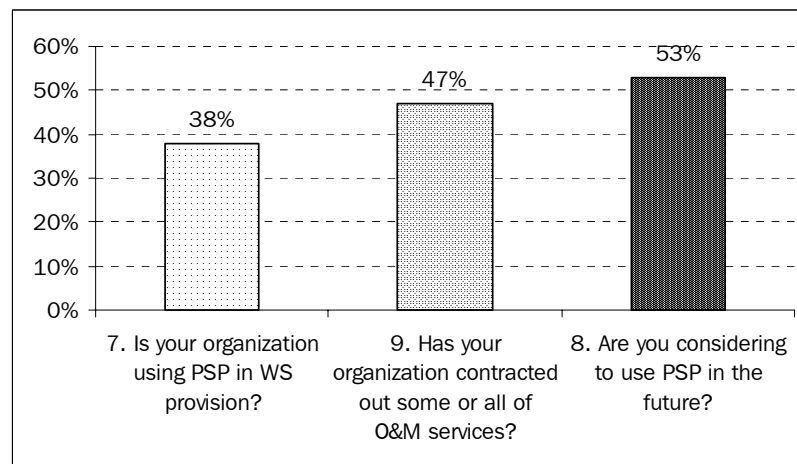


Figure 1.3. Proportion of positive answers related to PSP

America, the richest of the MLIC regions. However, even in South Asia, one of the most resistant of all regions to ideas of private sector involvement, the role of service contracts is increasingly recognized.

The types of contract (Table 1.4) shows an almost equal split in MLICs between the services and management contracts that do not require private investment (over and above working capital) and the major PPPs. Both approaches have an important role to play. Services contracts may be seen as an excellent opportunity for national contractors to begin to build up expertise in the sector before taking on more demanding roles entailed in other types of contracts. Management contracts give the opportunity to begin to sort out

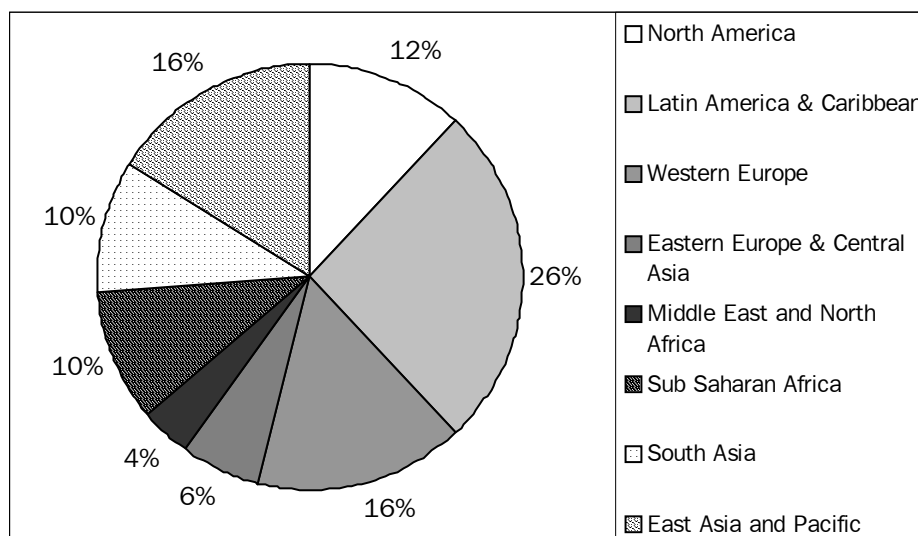


Figure 1.4. Proportion of 715 reported PPPs by region

the problems and gather key management information, before committing to a long-term contract, that are likely to be renegotiated as soon as the concessionaire begins to discover the actual condition of the assets.

Table 1.4. Types of PPP contracts

	Total reported	MLIC operation (by number)	HIC operating (by number)
Services Contract	885	588	908
Management Contract	\$25,510	\$4,860	\$1,710
Lease	\$7,420	\$1,480	\$520
Enhanced Lease	1%	2%	1%
Rehabilitate, Operate, Transfer (ROT)	1%	2%	0%
Build, Operate, Transfer (BOT)	22%	23%	12%
Build, Own, Operate (BOO)	2%	0%	7%
Concession	16%	18%	7%
Partial Divestiture	6%	5%	5%
Divestiture	3%	1%	7%
Purchase	7%	1%	31%

By activity, water supply contracts are most popular (of the operating contracts which specify activity), refer to Table 1.5. The MLIC contracts for water treatment and waste water treatment might be seen to represent governments 'trying out' PPP, without 'privatization' needing to enter public awareness.

Table 1.5. PPP contracts by activity

	MLIC operating (by number)	HLIC operating (by number)
Water	34%	31%
Water Treatment	17%	10%
Water and Sanitation	27%	24%
Waste Water Treatment	18%	29%
Water Treatment and Waste Water Treatment	1%	2%
Sewerage and Waste Water Treatment	2%	4%
Sewerage	0%	0%

Seventy per cent of the operating PPPs requiring capital expenditure, such as BOTs and Concessions, have international contractors involved. And almost two thirds of those contractors originate from one country, France. Clearly their long involvement in PPPs has given French companies a significant comparative advantage. The British were expected to raise the competitive stakes but within their one quarter share by number of PPPs, they are generally focussing on the safer markets of Europe and North America.

An important question arising from this data is the extent to which the undoubted improvements in the large PPPs are really a function of privatization or foreignisation?' The extent of foreign involvement suggests that for major PPPs the answer is foreignization, which appears to need about 1% (by staff numbers) of expensive expatriates (\$250,000 per annum) to deliver a 'world class' water supply. This might provide a limit to the size of city that can be served by a foreign PPP.

1.2.9 The emerging trends

Case studies from around the world show that the new international PPPs are generally delivering most of the desired benefits - if it is accepted that employment generation is not a core competence of a water authority and if we are prepared for the profits of a monopoly supplier of basic needs using fairly simplistic technology to flow from the poorer countries to the rich.

Public Private Partnerships are this generation's way of moving forward. PPPs are effective where regulation, competition and foreignization are included. The question is; how can this expertise be stretched to include the secondary towns and cities in Middle and Low-Income countries? How to ensure that the benefits reach the poor and how to ensure adequate provision when it is not the world's best water multinationals that are providing the service?

Analysis of the PPP database and comparison against world gazetteers suggests that in the 433 cities larger than 750,000 in the world, 90 (20%) are currently served by PPPs. In the '40,000' smaller cities and towns there are approximately 2,350 PPPs, that is 6%.

The international contractors will be unable to bridge much more than a part of that gap. It is necessary therefore to support new national contractors by actively promoting the use of more limited service and management contracts in order to develop national small and medium enterprise expertise, as well as providing the necessary competition. In addition it is worthwhile developing the capacity of the 'Small Scale Water and Sanitation Providers' where they are already active.

Development in the water sector can be transformational, as is the case with a concession contract for the management of a city's water and sewerage services, or it can be more incremental. Contracting out services through service contracts, along with commercially and customer orientated approaches, is an effective strategy. It can be done gradually as part of a learning approach and is therefore, potentially more acceptable to the various key stake holders such as staff, unions and politicians.

1.3 Overview to contracting out and outsourcing

'Companies in the utilities industries are increasingly turning to 'contracting out' or 'outsourcing' to meet their business needs.' For example, according to research conducted by Chartwell (1999), nineteen per cent of utilities (high-income countries, not only water) out source their metering functions while an even larger number of sales (energy) and delivery companies rely on an outside provider to handle some portion of their billing operations. Utilities are turning to outsourcing these vital business functions in an effort to control operating costs.

As an example from a middle-income country, in Chile 'there now exist effective incentives for efficiency: the public companies wish to prove that they can be effective and profitable and the private operators, small as they are, provide some yardstick comparison. One consequence has been an explosion in the contracting out of many operational activities by all the companies. The companies have sub-contracted a very wide variety of activities, including the operation, management and capital investment of whole systems, as well as maintenance of all aspects of the networks, meter reading and billing. Contracting out has reduced the numbers of workers per connection, for example in EMOS, there were 2.04 employees per 1,000 connections in 1993, which indicates a labour productivity about three times the regional average' (Lee, 1998).

Not every experience has been so positive as shown by the following quote: 'But outsourcing has also been a disaster', added Noriega, who ran for Governor in 1996. 'There's been cases in which PRASA (Puerto Rico Aqueduct and Sewers Authority) work brigades have had to redo work that private contractors did not do right' (PSIRU, 1999). It has to be recognised that there are costs associated with involving the private sector as well as benefits.

1.3.1 Benefits and costs, advantages and disadvantages

Keefer (1998), in the context of investigating contracting out as an opportunity for public sector reform in transition economies, explains the potential for several important benefits. 'These include;

- lower costs
- higher quality and greater innovation
- the encouragement of small-scale businesses, which can often easily supply contracted out services.'

However, he emphasises that 'none of these benefits are guaranteed. Profit maximizing contractors may minimize their costs by reducing quality in ways that are difficult for the government to verify. Monopoly private providers facing no threat of competition may innovate less. Poor contract management by the government and insufficient competition in the market may deny government most of the cost benefits of contracting out.'

'At the same time, contracting out incurs costs, particularly the transaction costs of designing, overseeing and enforcing contracts. Transaction costs arise, first, from the need to specify the expectations and obligations of both sides in the event of different foreseeable contingencies; second, from the need to encourage adequate contractor effort towards achieving outcomes that are difficult to observe and verify; and, third, from the need to structure renegotiation processes in the event that unforeseen contingencies arise.'

'Nevertheless, the cost savings attained in OECD countries are sufficiently striking so as to justify serious consideration of contracting out across a wider range of government functions and settings' (Keefer, 1998). The advantages and disadvantages of contracting out according to Lorenzen are summarised in Box 1.2.

'Outsourcing has evolved over the past few years from a purely tactical, cost-cutting move to a strategic business tool. During this evolution, the benefits and rewards of outsourcing become increasingly evident, for both the buyer and the provider (Out-sourcing Institute, 1998).'

Some key quotations by Oates on understanding the essence of outsourcing are included in Box 1.3. The real benefit of outsourcing is to acquire 'best practices' through partnering rather than just cost savings through competitive contracting. In MLICs where there are limited best practice organizations to use, or a lack of contractors to use for competitive purposes, there is a need to promote best practice by strategies such as:

- benchmarking with similar utilities
- regularly sharing of experiences with the both public and private sector
- using international standards
- developing sample performance based contracts
- developing an enabling environments for private enterprises
- documenting and disseminating experiences.

Box 1.2. Advantages and disadvantages of contracting out¹

Advantages:

- Can be cost effective if there is true competition, prudent procurement procedures and qualified supervision.
- Puts pressure on the direct labour organization to improve its efficiency.
- Gives the local authority more flexibility to cope with seasonal variations and other changes in the scale of O&M program and respond based on needs rather than based on manpower and equipment at hand.
- May reduce the authority's management burden, personnel administration and training
- Can limit the authority's needs for new capital investment in maintenance and equipment.
- Can develop useful benchmarks in terms of cost and performance of O&M tasks.
- May provide special skills and innovative methods of work and management.
- Can help develop the local contracting industry, particularly small scale entrepreneurs

Disadvantages:

- Is not cost effective if local contracting industry is not truly competitive.
- Demands qualified preparation of tender documents and close and qualified supervision.
- May stimulate fraud and corruption in the procurement process and during supervision.
- May displease civil servants and consequently meet resistance from unions.
- May result in delays if procurement procedures are cumbersome which is often the case in local authorities in developing countries.
- Increase vulnerability to non-completion of works due to contractors' financial problems, strikes among contractors' personnel etc.
- May lower quality of service to the public because contractors may tend to be less sensitive to the authority's objectives and public demands than civil servants.
- Acceptance of low bids may lead to inferior quality of work.
- Does not provide hands-on experience in the direct labour force so that in-house capabilities may deteriorate.

1. Source: Lorentzen (1998)

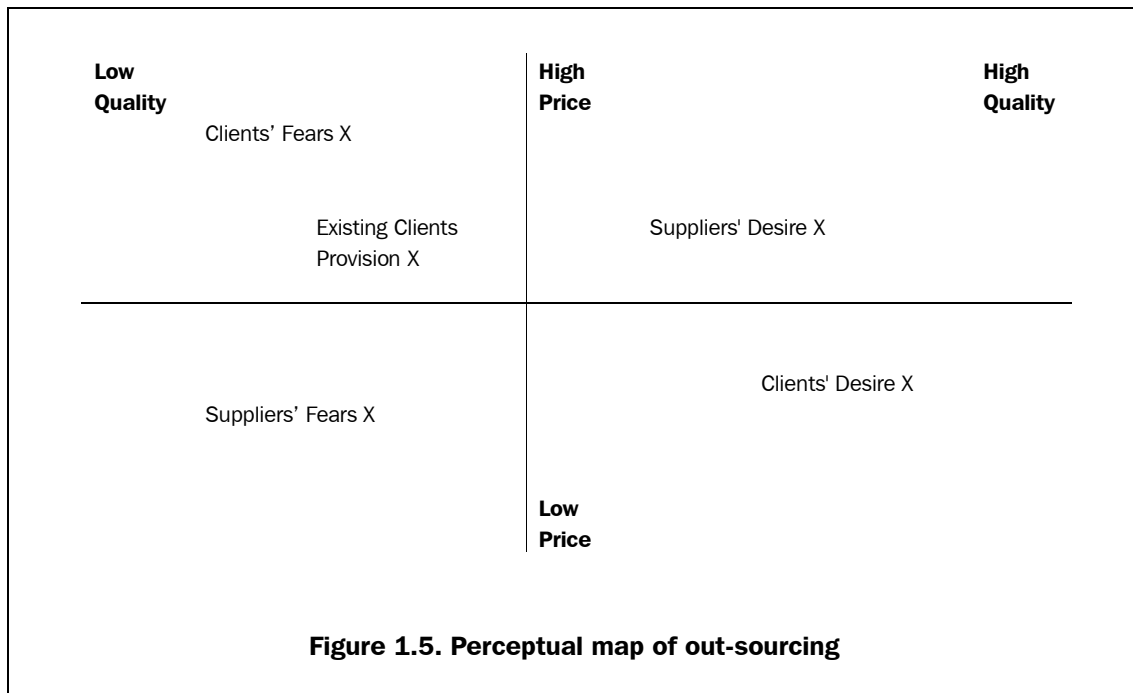
Box 1.3. Outsourcing quotations¹

- 'The biggest single failure by clients is to continue to exercise the detailed management control they exercised before outsourcing was put in place - a duplication of effort.
- 'The client's role should be one of hands-off auditing at intervals established as optimum at the start of the contract. Also established should be the deliverables....'
- It requires some finesse to out source a complete business function with its staff and assets to a third party and still retain a measure of control over the outcome.'
- Recognizing that an agreement with a supplier can build that supplier's competitive advantage - i.e. recognising that there is a developmental side... hence the win win ideal'
- 'Outsourcing is only worth doing well. If you aren't going to do it well, then don't do it at all. There are so many downsides to it.'

1. Source: (Dates, 1998)

Lardner emphasises 'that for an outsourcing deal to work it is just as important for the customer or client to adopt the right attitude as it is for the supplier to meet the client's needs. 'If we are going to ask some extremely rigorous things of our suppliers we should stand in a mirror and impose the same standards on ourselves. We as the client have to go through a bit of a metamorphosis too.'

Figure 1.5 shows how expectations and fears can differ between the supplier and the client concerning price and quality. It is therefore necessary for the client to be explicit about the levels of quality required and to adopt a collaborative approach that will enable a win win situation for both parties.



1.4 Guiding principles for contracting out water and sanitation services

If the management of contracts for water and sanitation services with private companies is to be more beneficial for all parties, a key area for improvement is the contents of those contracts. The Latham report - Constructing the Team, (1994), sets out 13 key principles for developing an effective and fair modern contract. The Latham report focuses particularly on the construction industry, whereas contracting out the provision of services for the water sector presents additional challenges.

Building on the Latham concepts, 22 guiding principles have been developed that address specific key issues related to effective contracts for service provision in the water sector in developing countries. The guiding principles have been categorized under three key contract aspects:

- Contract preparation/process
- Payment aspects

- Partnership aspects.

The specific principles under these three categories are set out below.

1.4.1 Category A: Guiding principles for contract preparation

- Contracts should be suitably packaged in order to make business sense and attract capable operators.
- The service to be contracted out should be clearly defined and specified in the contract documents, preferably with a definition of the precise outputs expected from the contracted services.
- The procedure for tendering and contract award should be transparent and clearly stated prior to the invitation of bids.
- The bidding process should include an assessment of the tenderer's capability to achieve the project objectives and this should be described in the tender documents.
- Risks should be identified and allocated to the party best able to manage, estimate and carry the risk.
- The conditions of contract should be comprehensive and include references to relevant legislation.
- Contracts should be in an easily comprehensible language with guidance notes where necessary.
- Key service provision and cost recovery problems should be identified and addressed either within or outside the contract.
- Political acceptance and goodwill for the contract should be secured from the key stake holders.

1.4.2 Category B: Guiding principles for payment aspects

- Appropriate incentives to encourage successful performance (against carefully chosen indicators and targets that relate to the contract's objectives) should be included in the contract. Redundant incentives (success incentives that are not achievable) should be avoided.
- Appropriate penalties to discourage poor performance (against carefully chosen indicators and targets that relate to the contract's objectives) should be included in the contract.
- Flexible means of payment should be included in the contract such as a management fee, competitive schedule of rates, mobilization payments plus incentives and penalty clauses.
- The payment process should be specified in the contract including interim payments, the period within which payments should be made and adjustments for inflation (where necessary). There should be provision for delays in payments and method of

compensation (such as interest) for the delays, including interruption of work or termination of the contract.

- Open-book accounting for contracted services is desirable as a means of improving transparency and is an aid to resolving disputes.
- Appropriate guarantees for the client should be agreed and clearly specified in the contract.
- Appropriate guarantees for the contractor/operator should be agreed and clearly specified in the contract.

1.4.3 Category C: Guiding principles for partnership aspects

- The method of financing the contract should be clearly specified.
- The contract documents should clearly define roles and duties of all involved. The organization system for implementation of the contract should be specified. There should be separation of roles of Contract Administrator (representing the client), Project Manager (representing the operator) and an independent Adjudicator.
- The contract documents should reflect a specific duty requiring both parties to deal fairly with each other with shared financial motivation and a general presumption to achieve "win win" solutions to problems which may arise during the course of the contract.
- The contractor should have autonomy over his own personnel, although minimum requirements for key staff may be stated (such as minimum qualifications and experience).
- A speedy method of dispute resolution should be clearly set out in the contract documents and an impartial adjudicator acceptable to both parties specified.
- Provisions for the client's monitoring and evaluation should be included in the contract.

The above guiding principles are discussed further in volume 1 - the *Contracting Out Water and Sanitation Services - Guidance Notes* by Sansom et al, 2003.

1.5 Contract analysis

Regional summaries of contract analyses using the 22 guiding principles are set out in Tables 5 to 7. These are based on the analyses of individual contracts from Latin America, India and Africa, which is summarised in Appendix 1. The purpose of the analysis is to highlight good practice and areas for improvement. While the analysis is subjective to some degree, the people analysing the contracts have a good understanding of the local context, which has been borne in mind when determining the level of compliance.

1.6 Analysis of service and management contracts: Regional summaries

Table 1.6 to Table 1.8 are a summary of the individual contract analyses that are set out in the tables in Appendix 1.

Table 1.6. Agreement with category A guiding principles - preparation/process

	1. Attractive to capable operators	2. Suitable specification and outputs	3. Clear tendering procedure	4. Means of assessment of tenderer's capability is specified	5. Suitable identification and allocation of risks	6. Comprehensive conditions of contract	7. Comprehensive language	8. Addressing key problems	9. Political acceptance
Chile contracts	High	High	High	High	Low	High	High	Medium	High
Mexico contracts	Medium	Medium	Medium	High	Medium	High	High	Medium	Medium
Indian contracts	High	Low	High	High	Low	High	High	Low	High
African contracts	High	Low	Low	High	Medium	High	High	Medium	High

Table 1.7. Agreement with category B guiding principles - payment aspect¹

Regions	1. Suitable incentive clauses	2. Suitable penalty clauses	3. Flexible means of payment	4. Clearly specified payment process	5. Open book accounting	6. Guarantees for client	7. Guarantees for the contractor
Chile contracts	Low	High	High	High	High	High	High
Mexico contracts	Medium	High	Medium	High	Low	High	Low
Indian contracts	Low	Medium	High	Medium	Low	High	Low
African contracts	Low	Low	High	High	Medium	High	High

1. **Note:** 65 to 100% of guiding principles substantially agreed with equates to: High
 35 to 65% of guiding principles substantially agreed with equates to: Medium
 0 to 35% of guiding principles substantially agreed with equates to: Low

Table 1.8. Agreement with category C guiding principles - partnership aspect¹

Regions	1. Means of financing contract clearly stated	2. Clear definition of roles and duties	3. Win-win situation for both parties	4. Operator has adequate autonomy over their personnel	5. Impartial dispute adjudication	6. Provision for monitoring and evaluation	1. Means of financing contract clearly stated
Chile contracts	High	High	High	Medium	Low	High	High
Mexico contracts	Medium	Low	High	High	Medium	High	Medium
Indian contracts	High	Medium	Medium	Medium	Low	High	High
African contracts	High	Low	Medium	Medium	High	Medium	High

1. **Note:** 65 to 100% of guiding principles substantially agreed with equates to: High
 35 to 65% of guiding principles substantially agreed with equates to: Medium
 0 to 35% of guiding principles substantially agreed with equates to: Low

1.7 Trends in contract development

1.7.1 General trends

An examination of Tables 5 to 7 and Appendix 1 reveals that there is considerable scope for improving aspects of many service and management contracts for the water sector. Issues that would benefit from specific attention under the 3 main categories and received low and medium levels of compliance (particularly in India and Africa) are as follows:

Contract preparation/process

- Clear and suitable specifications including a description of the contract outputs
- Suitable identification and allocation of the risks
- Addressing key sector problems either within or outside the contract

Payment aspects

- Suitable incentive/penalty clauses
- Open book accounting
- Guarantees for the contractor or operator

Partnership aspects

- Clear definition of roles and duties
- Both parties dealing fairly with each other seeking win win solutions to problems
- Impartial dispute adjudication

Seeking improvements in these areas needs to be done in the local context, preferably as part of an ongoing dialogue between public and private partners. Lessons in addressing some of these issues are included in the case studies in the forthcoming sections.

One encouraging trend, is that utilities who have let different contracts for a number of years, learn lessons from those existing/old contracts, which are then incorporated into subsequent improved service/management contracts for new programmes of work. This is demonstrated by better adherence to the guiding principles in the newer contracts, as is shown in Appendices 1 to 3. This is 'learning by doing' and emphasizes the value of experimenting with contracting out, but building on lessons learnt elsewhere to avoid 'reinventing the wheel'. Specific examples of cities and utilities who have improved the design of their more recent contracts compared to their older ones, are set out below:

- Chennai Metro Water and Sewerage Board (CMWSB), India
- Malindi - National Water Conservation and Pipe Corporation (NWCP), Kenya

- Durban Metro Water Board, South Africa
- Santiago and Rancagua in Chile
- Management contracts at different utilities in Mexico.

Another lesson to be drawn from the individual contract analyses in the Appendices is that those utilities who have a good commercial orientation and have ongoing partnerships with the private sector such as those in Chile, Durban and Chennai, tend to develop effective contracts.

1.7.2 Trends in Latin America

Chile pioneered contracting-out for the water sector in Latin American Countries (LAC). They have specialized in service contracts since 1977 and their experience has influenced LAC and other countries. The rest of LAC cases have occurred in the last decade (1990s), with most contracts related to complex options such as concessions and BOT's. The LAC Contracting Out experience is analysed here through some relevant Chile cases and four Mexican cases.

Some of the main incentives to Contracting out in Chile was the urgent need to gain flexibility and effective outputs from personnel in order to improve overall efficiency, as part of their commercialization process. This has been supported by the authorities together with adequate legislation.

In general, the start of the process was characterized by simple contracts assigned directly to former employees, eventually, they were developed with the ongoing experience to end up on some highly detailed and supervised contracts. Indicators derived from previous contract performance evaluation are been used to improve contracts.

Chile contracts generally achieved high compliance levels with the guiding principles under the three categories, although there were the following areas for improvement identified:

- **Category A:** A lack of suitable identification and allocation of risks, especially noticeable in the simplest contracts. (Documents tend to assume knowledge which new company with limited experience may not have).
- **Category B:** Contracts lacked positive incentives; the trend to include them started in 1999.
- **Category C:** Contracts are weak in relation to alternative arbitration to solve disputes. Nevertheless, the experience has shown that it may not be required for the smaller simpler contracts, where tasks paid by unit cost, contracts are short term, with detailed supervision.

The experience in Mexico started with two management contracts (1989), which soon developed into to Concession contracts (Can Cun and Aguascalientes). These first two contracts were quickly developed and awarded so they tend to have lower evaluations

against the principles. The main incentives to develop the contracts were to ease investments on urgent works and to facilitate project developments with private sector involvement.

The other two contracts are from a second generation of service/management contracts - Mexico City (1993) and Puebla (1997). Both are still running, the first can be evaluated as successful and the second, although very well developed in technical terms, is failing to give results after 3 years.

Mexico contracts received in general a medium compliance level in the contract analysis under the three categories. The following areas for improvement have been identified:

- **Category A:** Shows that the preparation and bidding process still needs to be developed with better preliminary studies, risk assessment and transparency.
- **Category B:** Contracts are weak on specifying the sources and amount of funding. The availability of financial information could also improve. In addition the guarantees for the contractor are still low. Clear and defined financial planning should be implemented with balanced guarantees.
- **Category C:** Implementation and decision making processes tend to be a complex and not a clear issue, which eventually bring disputes and program delays. Some improvements can be made in developing balanced win win situations which help to improve the partnerships.

1.7.3 Trends in India

India has a tradition of letting service/management contracts in the urban water sector. More than 43 contracts identified as part of this research that have been implemented or under development in recent years. The often cited reason for letting contracts in India is to reduce the number of staff directly employed by the utility/municipality. This is in part due to State Governments placing restrictions on new posts. While this objective is worthwhile, it is not enough in itself, particularly when the contract provisions state the precise numbers of staff to be employed by the contractor, which is common in the older generation of contracts. This inhibits the contractor's ability to innovate. There is a clear need to increase the utilization of the management capabilities of the private sector to improve both the effectiveness and efficiency of services.

An encouraging sign is that the more recent contracts have a better evaluation rating i.e. show better adherence to the guiding principles than the older contracts, in places such as Chennai and Maharashtra. This reveals a process of learning lessons for improved contract design.

However, the wording of many contracts reveal a certain lack of trust in the private sector by the water supply departments, and this inhibits progress. A strategy for resolving this problem would include encouraging larger more capable contractors to manage services in the sector and developing more output based contracts with appropriate penalty and incentive clauses, so that win win situations can emerge.

The contract design issues that require particular attention in India are similar to the list given in the section on General Trends above. The inclusion of appropriate incentive/penalty clauses and provisions for impartial adjudication would make future contracts more attractive to capable contractors.

The regional summary in Table 5. shows a high rating for political acceptance in India. This is true for many of the contracts analysed, but where authorities have sought more substantial and complex PPPs such as BOTs, most initiatives have failed to develop into contracts. This is due to a variety of reasons, including lack of political support, which are briefly discussed in the section on Indian contracting out case studies.

1.7.4 Trends in Africa

There are at least 40 service/management contracts under development or implemented in the African water sector that have been identified as part of this research, which demonstrates the general readiness to utilize the private sector in service provision amongst utilities and governments on this continent. A number of countries in Western Africa have also implemented more complex arrangements such as Lease contracts in the water sector. While many countries in Eastern and Southern Africa such as Uganda, Tanzania, Mozambique and South Africa are now developing more complex contracts with the encouragement of the World Bank and others. PPPs are seen by many governments as the best way of bringing about substantial service improvement in the water sector.

Lease, BOT and Concession contracts entail significant risks as well as offering good potential benefits. So utilities and governments would be wise to also consider the use of service and management contracts alongside commercialization of the sector, as an alternative strategy, if only in the short to medium term. More extensive use of service and management contracts also offers improved scope for the development of local contractors/operators to avoid the total reliance on international operators.

The analysis of the limited number of African service/management contracts in Appendix 1 reveals that clear tendering procedures have not been apparent. This is due to the fact that many of these contracts have been negotiated with a single operator who has come forward with a proposal for improvement, so there was no tendering process. While this form of PPP can be beneficial for both parties, it can also lead to the need to revise the contract later, particularly where it favours the operator, as has happened in Kampala and Tongaat. Open tendering offers increased benefits arising from competition and will hopefully be more prevalent in Africa in the future.

The other areas for improvement in contract design requiring particular attention in Africa are similar to those outlined in the General Trends section above. More specific lessons from the implementation of service and management contracts in Africa are contained in the case studies section of this document.

1.7.5 Community/co-operative management of services

When a utility or water department are considering contracting out water and/or sanitation services, they would usually seek to use capable private contractors. In some cases, however, there are distinct advantages in contracting out to, or working with community groups/co-operatives for the provision of services. It is a means by which a utility can contribute to government poverty reduction strategies.

In Part 2 there are four brief case studies of successful examples of community management of aspects of water service provision, and these are:

- **Haiti:** Management of water distribution and the collection of water charges by user associations in Port-Au Prince shanty towns
- **Kenya:** Management of some water distribution pipes and water kiosks by a local CBO in Kibera informal settlement in Nairobi
- **India:** A sustainable community managed 4 village piped water scheme in Kolhapur, Maharashtra
- **India:** Collection of water charges from customers by community based groups for the City and Industrial Development Corporation (CIDCO) in New Bombay.

Such examples of water utilities or municipalities effectively collaborating with community groups/co-operatives for the provision of services are not particularly widespread. This is somewhat surprising given the problems utilities have in supplying water in informal settlements. Further research work is required to clarify the barriers to such partnerships, as well as in-country development work to provide better incentives for utilities to serve poorer communities.

1.8 Conclusions

The objective of this study is to contribute to raising the well being of rural and urban poor through cost effective, improved water supply and sanitation, by the determination of which watsan institutions (MLIC) are contracting-out what range of services with what declared benefits by which contract approach. Dissemination of findings are intended to encourage further use of contracting-out (utilising/enabling NGO and SME development) for improved, cheaper service to consumers.

The results of the study show that a wide variety of activities, of business processes, are being contracted out in the water and sanitation sector in a wide range of countries. Even in countries where there is strong political resistance to more complex PPPs, contracting out is seen as relatively acceptable.

Overall, the studies demonstrate that contracting out generally delivers better quality services at lower cost, with competition for the market being a vital driver to reduce costs. Because of this competition and subsequent normal contract monitoring there has not been any requirement for specialised regulation of public private partnerships. However some of the cases show that benefits are not being obtained, usually through lack of competition at the initial stages.

Concluding quotes

'The issue is not public versus private sector superiority, but rather it is the superiority of competition versus monopoly.' (Andrisani and Hakim, 2000)

'Remember that it is competition, not the magic of the private sector, that makes contracting so effective.' (Eggers and O'Leary, 1995)

'Outsourcing is a collaborative relationship that has to be worked on' (McFarlan and Nolan, quoted in Eggers 1998, p25)

'The contractor should be considered a strategic partner and given incentives to innovate, improve, and deliver a better customer service' (Eggers, 1998)

'Establishing a trust relationship requires structuring the right risks, rewards, benefits and opportunities in the early stages of the contract negotiation stage.' (Eggers, 1998)

The issue is not public versus private. It is competition versus monopoly. (John Moffit, quoted in Osborne and Gaebler, 1992)

'Outsourcing is here to stay; it constitutes a genuinely new approach to business. It is not driven primarily by costs. Instead it is a fundamental part of the universal search for more effective performance' (PA Consulting Group 1996 in Johnson, 1997)

'Outsourcing and management contracts might offer ways to improve service and efficiency without transfer of ownership.' (MacMurry, 1993)

'The real difficulties in managing successful outsourcing arrangements lie elsewhere: in specifying the relationship, creating the mutual trust which alone makes it workable, and coping with unexpected shocks.' (Martin, 2001)

The efficiency gains achieved through contracting out tend to make clients (governments) 'greedy' for even more, often without realising the client's duty in any partnership to ensure 'win win' solutions. Contracting out requires good clients if it is to deliver in the long term. As clients demand more benefits from contracting out, usually whilst continuing to ignore their own gross inefficiencies, it is usually the private labour force that pays the price. Contracting out can lead to labour only contracts, competing on wage levels and the degree of deskilling.

In a number of water utilities labour policies have been contributing to inefficiencies in service provision. Management is unnecessarily constrained by over powerful labour unions and labour legislation, working to the detriment of customer service, contracting out can begin to redress the balance. By making public sector staff more aware of the alternative models of service provision unreasonable demands can be ameliorated.

Contracting out is leading to an enhancement in the capacity of national small and medium enterprises. In this way it can minimise the impact of 'foreignisation' seen at various levels in the more complex PPPs. These smaller enterprises potentially have a particular role to play in serving the secondary towns which are too expensive for the complex/international PPPs.

Successful contracting out requires, like all management techniques, good clients and good, value-adding contractors. It can be a vital tool, but it is not a short cut and is unlikely to cut through 'the political ties' that bind normal service provision and can therefore be of only limited value if that is the primary constraint. It can however, be used by management to demonstrate the potential for improvement. Contracting out is likely to be of most value as water companies become more efficient, effective and sophisticated in their management - i.e. after the process has started, after some momentum for change has been achieved. Contracting out is not, as a single reform activity, delivering significant

institutional change. Successful contracting out is a function of being a successful enterprise, not a direct route to becoming one. Any optimisation of process makes those processes more vulnerable to failure - better services through contracting out also lead to higher risks of failure through contractor default, government over (or under) monitoring/regulation, government greed and general corrupt practices.

The reduction in costs and the subsequent overall improvement in efficiency of the government utilities have not delivered significant improvement in services to the poor in the case studies investigated. Increased efficiency is a necessary but not sufficient requirement for broadening service coverage.

Overall, we find that contracting out is part of the process of reform, necessary but not sufficient. The process of setting up a contracted out service, of discovering what that service is actually costing under government direct provision is almost as much a benefit as the service contract itself. In that contracting out is only an extension of what is already being done - photo-copier maintenance for example is rarely an in-house competence - there is little reason for reasonable management or staff to fear it. There are many opportunities to be derived from contracting out as well as a limited number of threats. Contracting out therefore is a 'next step' solution, not surprisingly incapable of solving all a utilities' challenges, but certainly promising enhancement in many areas of service provision. All water and sanitation utilities should consider the 'Contracting out Decision Tree' and the accompanying 'Guidance Notes' in the first volume of this study. All water and sanitation utilities should also investigate how to contract out non-core services through Public Private Partnerships.

1.9 References

Andrisani P and Hakim S, (2000) *'Making Government Work: Lessons Learned from America's Governors and Mayors'*, Rowan and Littlefield, New York

Austin Mayhead, (1997) *'CCT and Local Authority Blue-collar Services'*, Department for the Environment, Transport and the Regions, London

Blokland, M., Braadbaart, O., Schwartz, K. (1999) *'Private Business, Public Owners'*, VROM, The Hague.

Braadbaart, O, (1999), *'Make or buy? Out-contracting strategies in the Dutch Water Industry'*, in Utility Operations and Maintenance, unpublished course handbook, IHE, Delft, The Netherlands

Chartwell (1999) *'Utilities Outsourcing Study'*, www.Chartwellinc.com

Collignon, B., Vezina, M. (2000) *'Independent Water and Sanitation Providers in African Cities'*, Water and Sanitation Programme, World Bank, Washington DC.

Cotton, A. P., Sohail, M., Taylor, W. K. (1998) *'Community Initiatives on Urban Infrastructure'*, WEDC, Loughborough University, UK.

Davis H and Walker B, (1997) *'Trust-based relationships in Local Government Contracting'*, Public Money and Management, October-December 1997, CIPFA, London

DETR, (1998) *'The need for change'*, Department for the Environment, Transport and the Regions, London

DETR, (1999) *'Implementing Best Value - A Consultation paper on Draft Guidance'*, Department for the Environment, Transport and the Regions, London

DWI (2000) *'Annual Report 2000'*, Drinking Water Inspectorate, London

Eggers, W D., (1998) *'Competitive Neutrality'*, Reason Public Policy Institute, March 1998, Los Angeles

Eggers W. D., and O'Leary, J., (1995) *Revolution at the Roots*, Reason Public Policy Institute, Los Angeles

Franceys R. W.A., (1997) *Private waters - a bias to the poor*, Water Resources Paper, DFID, London

Franceys R. W.A., (2000) *Water and Public Private Partnerships*, Presentation to Second World Water Forum, 20 March 2000, The Hague

GWR (1998) *'Why the French drink wine'*, Global Water Report Issue 54, Financial Times, 11 September 1998, London

GWR (1997) quoting *'Haut Conseil du Secteur Public'*, Global Water Report Issue 87, Financial Times, 14 January 2000, London

Johnson, M., (1997) *'Outsourcingin brief'*, Butterworth Heinemann, Oxford

Keefer, P. (1998) *'Contracting out: an opportunity for public sector reform and private sector development in transition economies'*, Finance and Private Sector Development, World Bank.

Latham Report (1994) *'Constructing the team (principles for developing a modern contract)'*, HMSO, UK

Lee, T. R. (1998) *'Improving the management of water supply and sanitation systems in Latin America'*, ECLAC.

Lorentzen J., (1998) *Overview of Issues and Strategic Options in Operations and Maintenance, analysis and Synthesis Report, Draft*, UNCHS/Habitat Support Program for Urban Management, Nairobi

MacMurry T., (1993) *Rethinking privatization*, The McKinsey Quarterly, 1993 Number 1, pp 35-46

Martin, P., (2001) *The technological evolution*, Financial Times, 23 December 2001, London

Oates, D. (1998) *'Outsourcing and the Virtual Organization'*, Century Business.

Osborne, D., and Gaebler, T., (1992) *Reinventing Government - How the Entrepreneurial Spirit is transforming the public sector*, Plume Penguin, New York

Ofwat, general. Ofwat Company Reports for a number of years are available at www.ofwat.gov.uk

Ofwat (2000a) *The Current State of Market Competition*, Ofwat, Birmingham

Ofwat, (2000b) *Financial performance and expenditure of the water companies in England and Wales*, 1999-2000 Report, July 2000, Birmingham

Outsourcing Institute (1998) *'Survey of Current and Potential Outsourcing End-Users'*, The Outsourcing Institute

PSIRU (1999) *'Problems for Vivendi Water contract in Puerto Rico'*, PSIRU website 3553, psiru.org accessed 16/08/99

Severn Trent Water, (2000) *Annual Report and Accounts*, Severn Trent plc, Birmingham

Simpson B, (1995) *CCT for engineering and technical services - an appraisal*, Civil Engineering, 108, pp28-32, Institution of Civil Engineers, London

Solo, T. M., (1998) *Competition in Water and Sanitation: The Role of Small-Scale Entrepreneurs*, World Bank Public Policy for the Private Sector Paper 165, December, 1998, World Bank, Washington DC

Walsh K, (1995) *Public Services and Market Mechanisms*, Macmillan, London

WDR (1999), *World Development Report 1998-1999*, World Bank, Washington DC

World Bank (1997) *'Toolkits for Private Participation in Water and Sanitation'*, World Bank, Washington DC.

Part 2

Contracting out case studies

2.1 Introduction to the case studies

The case studies presented in Part 2 have generally been developed with a local partner, or they are situated in a region where the author(s) are very familiar. In addition, many of the cases include a summary of the local sector context. This is because the successes and problems experienced on the contracts should not be considered in isolation. Indeed the local sector environment has a substantial bearing both on the effectiveness of the contract and any lessons learnt from the study.

Some of the key aspects addressed by each case study are highlighted below to aid the reader in choosing which case studies to focus on:

2.1.1 Chile service and management contracts

Contracting out of using Service contracts has been an important tool in the Chile UWSS in enhancing efficiency and effectiveness. The case studies include: the process of contracting out, details of savings made, incentive and penalty clauses, discussion of specific contracts with EMOS and ESSEL, as well as the Contractor's perspectives.

2.1.2 Mexico contracts

An overview of the Mexican water sector and the general PPP trends is provided. Specific case studies are provided on the following:

- **The Mexico City DF service/management contracts** are examined in some detail, including the complex institutional context. The city has been divided into 4 contract zones to encourage competition amongst the operators for specified tasks. They have also adopted an incremental process of gathering information and step-wise improvements, which is embedded in the contract structure. This approach could usefully be adopted elsewhere.
- **The Puebla contracts** case studies highlights how PPP has developed over the years and the development of a recent Management contract. A copy of the penalty and incentive clauses are included.
- **The Aguascalientes** case study briefly describes how the initial water services management contract contributed to the implementation of the more complex Concession contract.

2.1.3 Trinidad and Tobago management contract

A detailed study of the implementation of this water services contract is provided from the operator's perspective with key lessons highlighted.

2.1.4 Serving the poor in Haiti

A successful example of an effective partnership between the utility and user associations in delivering water services to informal settlements, including good cost recovery.

2.1.5 African case studies

Following a brief sector overview for Africa, six case studies are presented:

1. **The KRIP Kampala management contract in Uganda for O&M** and billing is assessed including the reasons for its development and a detailed appraisal of its achievements and areas for improvement. A brief history of the development of the client National Water and Sewerage Corporation is also provided.
2. and 3. **The Malindi service and management contracts in Kenya** are examined through two case studies of O&M and billing, showing the gradual development of more output based contracts and the key lessons learnt in the Kenyan context.
3. **Johannesburg water management contract** – a brief case study of this large management contract for water services in Johannesburg, which commenced in 2001. Aspects covered include: the recent institutional changes, the bidding process, roles and responsibilities and proposed incentives.
4. **The Tongaat management contract in Durban, South Africa** is briefly examined including the implementation achievements and areas for improvement. More recent PPP initiatives are also discussed.
5. **Serving the poor: The Kibera Co-operative Arrangement in Nairobi, Kenya** between the city council and a CBO (Ushirika), highlights how partnerships with community groups can lead to improved service provision to informal settlements.

2.1.6 India case studies

Following a brief sector overview for India, a number of case studies are presented:

1. **Ajmer bulk water supply service contracts in Rajasthan** are examples of successful contracting out of water services. The pipeline contract in particular has interesting penalty and incentive clauses that have contributed to better services.
2. **Chennai Metropolitan Water Supply and Sewerage Board** has experimented with contracting out for various tasks including: sewage pumping stations, water tankers, sewage and water treatment plants. The process of improvement in contracting out and the perceived savings are highlighted, as well as an example of a penalty clause on a more recent contract.
3. **The City and Industrial Development Corporation (CIDCO) in New Bombay** has been unique in India in terms of successfully contracting out O&M of water distribution and billing in an urban setting. Brief details of the contracts and perceived savings are included.
4. **Hyderabad Metropolitan Water Supply and Sewerage Board** has been using contracting out in a limited way until recently. Brief details of its contracts are

provided together with a more detailed assessment of PPP for a new wastewater treatment plant.

5. **The Temghar water works service contract in Maharashtra** has been operating satisfactorily for a number of years. The case study explores some labour problems that have been experienced, as well as ways in which the scope of the contract could be increased to maximize benefits.
6. **Management options for Maharashtra multi-village piped water schemes** are examined considering the feasibility of Contracting out, for the following cases:
 - Asodha - Bhadli 8 village scheme (limited management inputs)
 - Jalgaon 80 village scheme (with more commercialized management)
 - Khatwal, Satara 13 village scheme Service contract
 - Kolhapur 4 village community managed scheme
 - Development of a model management contract.

2.1.7 Indonesian contracting out cases

Service contracts in Indonesia are reviewed including: Government strategies in PSP for water supply services, Fees collection contracts in Medan, Information technology in Bekasi, Vehicle maintenance in PDAM Kabupaten Bandung and concluding comments.

2.1.8 USA contracting out cases

Cases from the USA are included here because the level of decentralization in the USA, reportedly 54,000 individual water provision entities and 16,000 sewerage entities, the degree of under provision: '740,000 people lacked access to potable water in 1999'. In addition, the limited nature of private involvement: 'some 80% of the population is served by municipally owned and operated water companies' (Owen, 2000). It is also an approach that has traditionally received substantial subsidies from central government which are now being restricted. The attempts of the sector to 'reinvent itself', particularly with regard to contracting out, are therefore a useful complement to the other studies.

2.2 Case studies from Chile

Javier Morales-Reyes and Richard Franceys

Urban water supply and sanitation in Chile have undergone a series of significant institutional developments in recent years. Effective corporatization, with a regulator installed in 1989, predated the subsequent (recent and on-going) divestiture of ownership to private companies. Meeting of social welfare objectives to ensure adequate access of water and sanitation for the poor was achieved through local municipality payments of water bills for the registered poor, rather than through the more usual cross-subsidies.

As part of the process of institutional development, the main companies have used 'contracting-out' or 'out-sourcing' as a significant tool to enhance efficiency and effectiveness. One study suggested that outsourcing represented about half of one utilities' (Santiago de Chile) operating budget (World Bank, 1997), which would be a very significant amount. Following a field visit Blokland describes EMOS' contracting-out at around 20% of the value of all operational activities (Blokland *et al.*, 1999). Because of this reported extent of out-contracting, the DFID supported research programme into 'Contracting-Out Of Services For Water And Sanitation' (KAR 6574) undertook field research in two main urban centres in Chile in 1999. The researcher, Javier Morales-Reyes, investigated the available documentation and contracts and interviewed managers in the water companies (prior to their divestiture), the regulator (SISS) as well as some of the enterprises who are undertaking service contracts.

2.2.1 The process of contracting-out

By the end of 1997, a total of 45 water companies in Chile were serving 3.17 million customers out of the total Chilean population of 17.72 millions. The companies are classified by size in four categories: large (only EMOS); medium size (ESSEL and ESVAL); small (e.g. Aguas Cordillera) and 'others'. They serve respectively 36%, 45.4%, 18.1% and 0.6% of the total customers.

A significant proportion of the water industry's commercial activities and basic operation and maintenance of network services are contracted-out. This outsourcing is believed to be the most developed, best-structured and efficient use of contracting-out in low and middle-income countries.

The examples investigated in this study (May 1999) come from EMOS (Empresa Metropolitana de Obras Sanitarias) which serves the metropolitan area of Greater Santiago, ESSEL (Empresa de Servicios Sanitarios el Libertador) which serves the Sixth Region south west of Santiago, and some of their main contractors. It also looks at Aguasquinta, a concessionaire of ESVAL (Empresa de Obras Sanitarias de Valparaíso).

In Chile, there have been three main phases in the development of out-contracting:

Phase one: transference-creation (1977 to 1985 approximately)

The first period was characterized by a process of relatively simple contracts (or agreements) which were mostly entered into without any bidding. It was a learning period, marked by the transfer of activities to former employees, based on presumed unit prices. Respondents stated that the reason for developing contracting-out was the desire by

central government for increased monitoring and control of the companies. This arose out of the need to reduce costs and particularly to reduce the number of personnel employed by the companies. In addition there was a need for flexibility because bureaucratic procedures were limiting efficiency, especially with regard to labour matters. As a direct result, it was found that contracting-out facilitated the motivation and efficiency of the former employees.

Phase two: the specification - price bidding and penalty driven contracts (1985-1995)

During this period, the increased experience and knowledge of the out-contracted services resulting from the fairly simple arrangements made during the first phase promoted the development and inclusion of detailed performance requirements within the contracts. These were generally driven by the threat of penalties. In the middle of the period, formal bidding procedures were included in the larger contracts as a means of reducing costs. EMOS and ESVAL led the way. Some of the simpler contracts still closely resembled labour contracts though the water companies had to intervene to avoid the high turnover of contractor's personnel.

Phase three: competition and incentives (1995 to 1999)

In the most recent period, efficiency has increased again because of the revised structure of the contracts and the approach to bidding which has promoted further competition. One common method has been to divide up the areas to be covered as well as allowing new contracts to develop. In addition there has been a trend towards contracts that provide incentives for improved performance rather than penalties for failing to meet requirements.

2.2.2 Services contracts: main lessons and strengths

Efficiency and effectiveness gains

A major characteristic of contracting-out is the enhancement of efficiency which allows the water company to deliver more effective water and sanitation coverage.

Analysis shows that EMOS has continuously improved its overall performance indicators such that during the past 5 to 6 years:

- operational efficiency (water sold /water produced) increased by 2.3% from an already high base of 73% in 1994
- full coverage for water supply was maintained and sewerage coverage was increased
- investment increased 16% by 1998, even though a severe drought had been experienced
- water consumption per capita was reduced by 8%
- simultaneously the operational cost was reduced by 1% (compared to service growth).

The improvements in EMOS were supported by the out-contracted services and their own efficiency gains. Significant efficiency achievements are reported to be:

PART 2: CONTRACTING OUT CASE STUDIES

- 11% reduction of costs and 10% reduction of personnel in the meter-reading contract over a 10 year span
- 20% reduction of costs in the meter supply and maintenance contract over a 6 year period
- 25-30% reduction of costs estimated for the meter installation contract during a 20 year span
- 20% reduction of costs estimated for the system network maintenance and repair contract over a 5 year period.

Overall, the Planning Manager of EMOS estimates that by comparison with EMOS itself providing the services, contracts overall were providing a saving of 25%. Clearly this figure is difficult to quantify as many out-sourced activities have been functioning for more than ten years but this represents the perception of management.

ESSEL has also utilized contracting-out and by 1998 was still creating new outsourcing agreements, ultimately leading to formal contracts. Basic indicators show even more contrast than those for EMOS. In the past six years operational efficiency increased by 10 % (water sold /water produced), coverage for water supply increased from 97% to 99.6% and sewerage coverage increased from 71% to 77.6%. Most notably investment increased by 78%. Again these improvements were supported by the out-contracted services efficiency gains:

- 19% estimated cost reduction for the disconnection/reconnection contract during a 4 year-span, plus an expected additional 7% by including women in the work teams
- 20% reduction of cost for the meter supply contract during a three year period (1997 to 1999)
- 50% reduction of cost for meter installation cost during a three year period (1997 to 1999)
- 10% estimated reduction of cost for the personnel supply contract
- 30-50% reduction of costs in the smaller single contractors agreements.

Similarly, another of the companies studied, Aguasquinta, reports an efficiency gain over the seven year period (1993 to 1999) of 23%, partly due to out-sourcing.

2.2.3 Characteristics of the Chile service contracts

Competition

Whenever possible competition within a service contract has been promoted by dividing the area or services to be managed. The alternative has been to encourage more frequent bidding through shorter contracts. EMOS has attempted to promote competition within each bid by inviting new tenders and either dividing the area covered by the two contracts

(e.g. meter-reading, network O&M) or alternatively by splitting the quantity and type of product provided (meter replacement and maintenance). Both of these have brought a considerable efficiency improvement.

Performance incentives

The development of performance incentives has been an important characteristic of the Chile experience. Two contracts (within the sample of EMOS and ESSEL) which began in 1998 included specific performance incentives with rewards for positive results.

Minimum personnel requirements

Although responsibility for personnel rests with the service contractor, the water companies have found it necessary to specify minimum requirements, for example: worker experience, minimum wage, incentives, penalties and workload. This became necessary to counteract a high turnover of personnel with an associated decline of efficiency during the initial contracts.

Specialization and partnership

During the first and second phases most of the contracts were extended for a subsequent period. The contract periods now range from one to three years. Although the number of qualified service suppliers is still low, some of these have already become highly specialized and have developed a strong partnership with the water companies.

It appears there are two possible reasons for this partnership. Firstly because the company's personnel had built up links with the contractors over a long time. Secondly, it has enabled the contractor to both continue to provide good quality work and make a reasonable profit. This last aspect has discouraged competition from both local contractors who are comparative novices and potentially more expensive foreign contractors.

Trust and confidence

The process of pre-qualification for contractors and letting of contracts has been carefully developed such that the out-contractors now trust the process. There are at least three factors that support this confidence:

- the stable well-regulated framework of the water companies (and commercial deals in general in Chile)
- the growth of confidence over time, based on satisfactory experience
- the more general confidence held by the public employee, whose post is a matter of pride and prestige rather than an opportunity to obtain individual advantages (the latter still being common in many Latin American and Caribbean countries).

These three factors also feed into the confidence that the private service companies have in the (then) public ones for within the contracts there is no guarantee of remuneration except for the contract itself.

The desire for win-win solutions and employee development

Generally, during the initial development of small service contracts, there is a desire by the company to gain flexibility and reduce costs. In addition there is an understanding of the need to support employees who want change and who then, in return, are motivated to work more effectively. There has been a general trend for both EMOS and ESSEL to support and train their own employees to become external, independent and motivated contractors. Careful note should also be taken of the beneficial effects of increasing the number of women involved in the teams and also the development of customer service procedures (i.e. providing effective/useful information).

Weaknesses

The service contractors can feel that the pressures to reduce costs are too high and this discourages them firstly from taking risks and secondly from continuing to participate. This was particularly noticeable in the case of EMOS. Its power, size and self-developed contract forms have had two effects. Firstly, EMOS dominates the contractors and secondly, it tended to result in the over-regulation of the services market. A further weakness is that it is difficult for companies to withdraw from their contractual obligations. They have to wait for the contract to expire as neither prices or conditions are renegotiable prior to a subsequent bid. This puts the service contractors in the position of having to try and stimulate a bid before contract expiration if they are not satisfied. The only alternative is to lose their performance bond.

2.2.4 The research context

Within the sample of service contracts considered here there was some difficulty in collecting accurate performance data. The companies do not have any comparative analysis of cost and benefits between contracting-out and in-house operations, nor do they have comparative data of specific contracts across time. Any available data has proven to be difficult to validate with, for example, one interviewee commenting that they do not have the resources to keep track of the contract indicators and benefits. A further problem is that the archives themselves have in some instances been contracted-out, which means that access to the data is limited. As a result contract managers who wish to have the time and resources to plan, monitor and evaluate their contracts are only able to make inferences from the companies' overall indicators.

In May 1999, the date of this study, there were general elections pending in January 2000 and the political climate was becoming increasingly sensitive. There was generalised discontent within the population as the country was experiencing high unemployment and still suffering the effects of the deep recession that had already lasted 12 years. In view of this unpromising economic situation a change in government towards the centre-left was anticipated.

In addition, a new law which dealt with water regulation was being approved and the water companies' divestiture was scheduled. The first company to be sold was ESVAL. This was to be followed by the two companies investigated in this case study, EMOS and ESSEL. As a consequence, during the research interviews there was an excessive workload for employees, particularly within EMOS. There was a sense of urgency related to other matters and a general level of anxiety about job security making it difficult to access hard data. It was especially difficult to get interviews and samples of contract documents in EMOS. The Operations and Maintenance Manager explained how they had to be particularly careful because of the imminent privatization. Further, those who were

critical of the partial divestiture of water companies were fearful of potential problems which might accompany privatization. For evidence they pointed to the problems faced by the main electricity company (the first big infrastructure privatization of the country) which had not been able to cope with the 1997 drought due to poor planning and lack of investment.

These factors need to be recognised in reading the following case studies.

2.2.5 EMOS - Empresa Metropolitana de Obras Sanitarias

EMOS is substantially larger than other water companies in Chile. It supplies 36.5% of the country's clients and 32% of water services bills of the country. Further it serves more than five million people in the metropolitan area of Santiago, the capital of Chile. With economies of scale in its favour, in recent years the company had grown consistently. Its priorities had been towards providing full service coverage, operational and commercial efficiency, quality and savings, rather than profits. It should be noted that both investment and profits were reduced during the 1997 drought. Table 2.1 and Figure 2.1 enumerate the overview. Growth in coverage had kept pace with the population increase of 14%, though income had increased only by 3.8%. This implies that efficiency was not gained through higher costs for the consumer. This conclusion is also supported by the operating cost which can be seen to have increased less (13.3%) than the system growth (14%) (EMOS, 1998). This latter information may imply an overall cost efficiency gain of 0.85% that is partly related to the services outsourcing (contracting-out) analysed in this report.

Of necessity, efficiency gains are related to the impact of other direct indicators. For example, the 13% reduction in personnel can be due either to increased management efficiency or contracting-out or a combination of the two. The water consumption per connection decreased by 8.3% which implies a greater physical system efficiency since the supply was kept at 100% and 24 hours per day. This is corroborated from the 2% reduction in bursts per kilometre during the same period.

Table 2.1. EMOS trends from 1994 to 1998

Variations of basic indicators from 1994 to 1998 in the metropolitan area served by EMOS	% variation from 1994 to December 1998
Increase in water connections	14.22%
Operating cost	13.36%
Calculated overall cost efficiency gain	0.85%
Operating efficiency (water consumed/produced)	2.30%
Revenue	3.82%
Water consumption per connection	-8.31%
Personnel	-13.01%

A comparison of performance trends in EMOS is illustrated in Figure 2.1. It shows another view of how efficiency is maintained in a crisis, the drought of 1997. To do this, EMOS reduced both direct investment and profits. However, despite doing this EMOS began to see a recovery when water was available (see investment and profit 1997 to 1998).

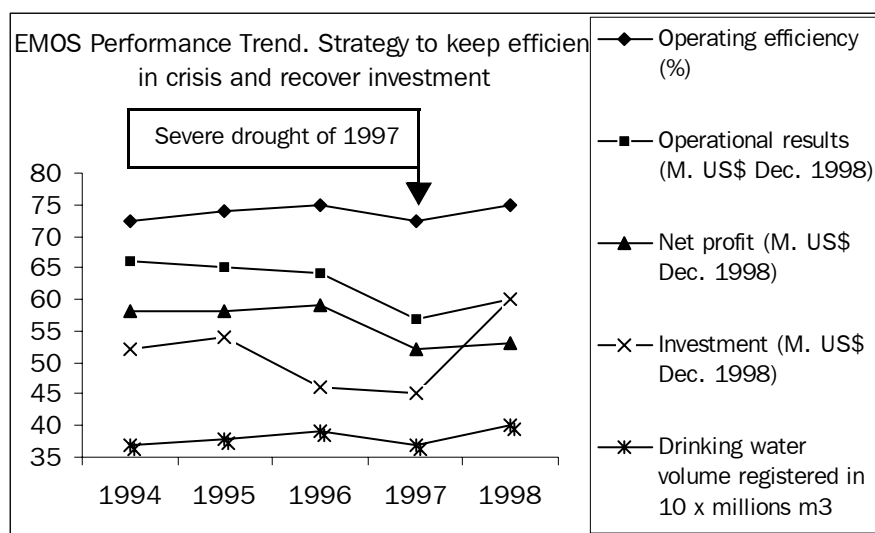


Figure 2.1. EMOS impact of crisis and efficiency trend

Table 2.2. EMOS data and trends

Year	1994	1995	1996	1997	1998	Trend 1994 to 1998 in %
Operational results (M US\$ Dec.1998)	66	65	64	57	60	-8.9%
Net profit (M.US\$, Dec.1998)	58	58	58	52	53	-8.7%
Operating efficiency (%)	73	74	75	73	75	2.3%
Investment (M. US\$ Dec.1998)	52	54	46	45	60	16.6%
Drinking water volume measured in million m ³	370	380	390	370	400	7.0%

As commented earlier, the company maintained its profitability and return on capital (10%) even during the crisis caused by the drought. If the trends of reduced consumption, higher physical and cost efficiency are maintained during 1999 to 2001, it can be suggested that the water crisis of 1997 was an incentive to promote better institutional and consumer water culture.

In the course of this research it was clear that there was a real pressure on employees towards greater personnel efficiency, greater costs reduction and the preparation of reports to present to the company. However, this drive for efficiency was not always apparent in other aspects of the company with employees commenting on the opening by EMOS of a new building for executive offices.

Contracting-out

The services which EMOS selected to contract-out tended to be ones that did not have core, strategic functions within the company. In analyzing the contracting-out alternatives, the planning department stated that they contract-out when the following four criteria apply:

- when the service contractors exist (although they acknowledge that, during the creation of the first contracts, EMOS helped to develop the service providers)
- when the activity is in a mature state (knowledge of the service, what to do and how to do it etc.)
- when the activity is standardised (it is a commodity)
- when there is a low cost or reduced risk exit strategy.

The risks attached to contracting-out are limited by stipulating at least two contractors per service. There is also another important criterion: 'to gain flexibility'. Sometimes, this is even more important than cost, for example the customer care contract, where EMOS has a lower cost than the contractors.

In addition EMOS is currently considering a complete out-contracted package for tariff collection because all four criteria applied and greater flexibility was needed.

The major contracts EMOS has developed are for:

- meter installation or meter change.
- network maintenance
- meter-reading.
- billing
- delivering of bills
- service cut and replacement.
- customer service information
- archives

In addition, at that time, EMOS was also considering contracting-out wastewater treatment development.

It was reported that the first three of the above contracts are the most important in terms of size. They were developed with consideration to the impact on the company and the competition and incentives that had been promoted. For example, in 1999, approximately 76% of workers in the commercial activities were out-contracted with 250 (out of the total 1,050) remaining in the company. EMOS employees control the planning, management, development and supervision of the activities contracted out.

Contracting-out procedures

The process involved in contracting-out is well established in Chile, although details may vary between companies. It begins with some filtering procedures. The first filter is the pre-qualification of service contractors. The conditions and terms are publicized and the documents (description and pro-forma questionnaires) are sold to interested parties. The bidding documents include a careful technical description of the contract's scope and objectives, the payment conditions and the legislative framework.

The basic requirements for contractors are that they have sufficient financial capacity related to the contract amount and evidence of previous experience in similar contracts, although this may be related to other services such as electricity or gas. In EMOS' case, the requisite qualifications are carefully specified and evaluated. For example, in the meter reading contract, *experience*, *past contracts compliance* and *financial capacity* is weighted 0.3, 0.4 and 0.3 respectively and each concept may have the following scoring: 1 = insufficient (which implies the elimination of the company), 2 = regular, 3 = more than regular and 4 = good. Once the companies have completed the specified questionnaires a limited number of companies are allowed to proceed to the bidding stage, based on the scores obtained.

With pre-qualification completed the contractors prepare their offers. The winner is not necessarily the one with the lowest offer, but the one who best meets the predetermined requirements. There are both technical and economic aspects with a 0.6 and 0.4 weighting respectively.

The client requests a guarantee (usually from a bank) of approximately 150% of the monthly cost of the service (in the case of commercial contracts) and approximately 15% of the contract amount in the case of maintenance and repair. With few exceptions, all contracts and costs are related to Unidades de Fomento (UF – a monetary unit which is updated daily with reference to the inflation index), particularly with regard to the financial evaluation of contractors and guarantees.

Each contract described below has been analyzed according to an 'ideal framework' developed as part of this research programme - see Appendix 1 for details of the analysis of all the contracts.

EMOS meter reading contract

Meter reading is one of the most important commercial contracts. It is also considered one of the most advanced in terms of its precise requirements regarding procedures, regulation and supervision, efficiency gains during the total contract span and most recently, the inclusion of incentives.

By 1999 the task of meter reading had been contracted-out for more than 15 years. The same contractors had held the contracts for the previous nine years. The total number of readings per month were over one million (1,135,000), undertaken with 142 meter readers, destined to be reduced to 129 from mid 1999 on.

In 1990 an important phase of the contract was reached when EMOS established the maximum number of meter readings per employee. As a result it was calculated that every employee should read a minimum of 8,000 meters per month.

Bidding for the contract took place again in May 1999, but this time with more advanced specifications. Details of performance were specified which incorporated the increased efficiency gains of previous periods. EMOS states that 99% of connections were metered. The new contract stipulated that 1,135,000 meters were to be read each month, an increase of nearly 22% on the March 1998 figure of 1,102,246 meters.

The cost of the service prior to the new bid was estimated to be approximately CH\$62 millions per month (US\$128,000 – May 1999: CH\$485 equivalent to US\$1). This took into consideration a unit cost of CH\$55/reading (US\$0.11). In total, this contract value represented approximately 25% of the monthly commercial budget.

The two-year duration contracts (which could be extended annually) are divided between two areas, though not necessarily with two different contractors as EMOS retains the right to decide whether to use two contractors, one for each area or to give sole responsibility to one contractor.

EMOS also maintains the right to cancel the contract at any time without giving a specific reason. By contrast, the contractor may only cancel when the contract period expires. Both parties are committed to a 60 day advance notification period. Guarantee performance bonds are set as stated in Section “Contracting out procedure” above.

There is a margin for error which may be accepted for each season of the year. This has been set using historical data.

A minimum wage for employees is specified, in addition to which bonuses and incentives are expected. EMOS maintains the right to approve or reject any employee at any time.

The monitoring of the contract utilizes three main indicators: the errors factor, the minimum number of personnel, and the non-reading factor. The errors are those that EMOS detects through an analysis of the reading, changes on 'bills' and by the daily field supervision. This latter item has also been contracted-out. The percentage of errors per month is calculated by a formula which includes fines which can not be avoided. Each error has a fine of 50 readings deducted for diameters less than or equal to 25mm, with one thousand readings deducted for errors in readings for larger diameter connections. The contract running from 1990 to May 1999 had a range of error of 3.1 - 4.2% (a maximum of approximately 300 to 500 errors per month). The redesigned contracts to start in July 1999 reduced the range to 2.9-3.6% (approximately 200 to 300 errors per month). Table 2.3 shows the process involved in creating the specific contract details and the measurement of the first two indicators.

Table 2.3. Increasing personnel efficiency and effectiveness – meter reading

Phase	Indicator	Result
Before 1990	No minimum personnel requirement. Most reading and register carried out by hand. No error percentage measured	Many errors due to new contracts and manual readings. Up to 20,000 errors/month. Inefficiency was attributed to excess personnel rotation
From 1990 to early 1999.	Calculation of the minimum personnel required was based on a 7hr shift at 400 readings/day equivalent to 8,000 per month. Increase and complete digital register of reading with codes for each type of situation.	Personnel rotation decreased to 1-2 per month. Initially errors ranged 3.1 - 4.2 % (300-500 errors). By 1999 this had decreased to within the range 2.9 of 3.6%
After July 1999 - new contract.	Calculation of the minimum number of personnel required was based on a 7 hr shift at 440 readings/day equivalent to 8,800 per month	The maximum error accepted is between 2.9 to 3.6%. An incentive of +15 readings is paid, provided that the error rating is between 2.1 to 2.9%

At the end of the first phase, with the improved penalty-based contract, there was a substantial measurable improvement in performance. The errors were apparently reduced by a magnitude of 40 times, that is from 20,000 to 500. However, some of the data in this period is imprecise and unreliable.

In the second phase an improvement of 11% over the first phase was achieved. The average readings error percentage was in the range 3.65% to 3.25%. In addition, the cost of the contract was expected to be reduced by a further 10% because of the estimated increase in the number of meters to be read by each employee.

One of the contractors, ICSA Services, describes how they reduced the cost of the contract by 8% from 1997 to 1999. However, their concern was that the continuing pressure to reduce costs was such that they were considering having to withdraw from the contract.

Another important measure of performance is the percentage of meters that are not read. The most frequent reasons given for this are that the house was 'found to be closed although occupied', the house was 'unoccupied', 'inability to access' the house and lastly, the 'house could not be found'. The Table 2.4 details the calculation of this factor and what incentives are given.

Table 2.4. Incentives (and fines) for non-reading of meters (new contract only)

Base	Range met	Incentive
Standard of: 3.8% for April to November	3.6 – 3.8 %	TWO more readings paid.
	3.6 - 3 %	FIVE more readings paid.
Fine:	If more than 3.8 %	ONE reading charged
Standard of: 4.5% for December to March.	4.3 – 4.5 %	TWO more readings paid.
	4.3 – 3.7 %	FIVE more readings paid.
Fine:	If more than 4.5 %	ONE reading charged

There are higher incentives offered for the months of March and November, particularly with regard to 'closed but occupied houses' when the average household consumption is 40 m³/month or more. This actively encourages meter-readers to think laterally in order to minimise non-readings.

There are specified incentives for employees, which are added to the basic minimum wage. Thus there is the basic wage of CH\$110,000/month (US\$227) which is equal to CH\$12.5/reading plus a bonus for good performance plus an incentive. The largest incentive offered is to detect and report illegal connections or bypasses. These incentives are calculated as being equivalent to 1,500 readings (CH\$18,750/detection), equivalent to 17% of the basic salary. This amount is doubled for illegal connections by larger consumers. The incentives are paid directly by EMOS to the employee involved and this has the effect of a further incentive because there is no risk of the worker not receiving it.

In Appendix 1 an analysis of the preparation process and the contract is given. The meter reading contract meets all the suggested criteria for the preparation phase. However, although the incentives and penalties are clearly indicated, the contract was adjusted in 1999 to include the latest efficiency gains.

With regard to the conditions of payment the contract is well developed. The contractor's guarantee is the contract itself which seems to be sufficient to the contractor because of their trust in the employer and the legislation that backs up contractual arrangements. Open book accounting is neither stipulated nor necessary, because contracts are managed and adjusted by the bid cost per meter read and inflation. With respect to partnership conditions, the autonomy of personnel is, as mentioned before, partially under the control of EMOS.

In overview, this contract is essential to the company. It is well co-ordinated, as there are core activities for both EMOS and the contractor. For EMOS this includes planning, scheduling and analyzing the daily operations and for the contractor, it includes verifying, executing, reporting and correcting errors.

Over the last 10 years there has been an increase in efficiency through an 11% reduction of costs and 10% reduction of personnel. This improvement has necessarily effected the global efficiency of EMOSs main indicators. The number of employees/thousand connections has decreased from 1.01 in 1994 to 0.76 in 1998. This is an efficiency increase of 25%.

Specific incentives for personnel are included. As discussed earlier these include a basic competitive salary and good incentives. This design of salary is essential as it facilitates the reduction of errors and also personnel turnover. Further it has helped to consolidate the initial private company and assisted in the creation of new ones, because the cost of personnel is both monitored and ensured by the company itself. Interestingly, authorization or dismissal of workers must still be approved or ordered by EMOS.

Incentives and penalties are clearly indicated on the contract. However, when, as at present, the contract is developing in a new phase it may be harder for new contractors to assess the risks involved in their undertaking.

Of its type, this contract is considered to be one of the most advanced in Chile for its level of process detail. According to the meter-reading manager and the area director it is also the most in advanced in EMOS.

EMOS supply and maintenance of meters contract

The supply and maintenance of meters is another significant out-sourced contract. By 1994 only 5% of consumption was measured by magnetic meters. At the end of the first year after magnetic meters were installed, EMOS research showed that the increase in precision was equivalent to billing increases of between 5-6%. As a result the contract was formalized to change and install approximately 5,000 meters per month.

By 1999 the contract had three main activities:

- meter exchange (from volumetric to magnetic) - the contractor was permitted to keep the volumetric meter
- meter renewal - this involved the transformation of a volumetric meter to a magnetic one, but the original casing would be reused
- meter maintenance.

Each service was provided by a different contractors: Schlumberger (Chilean company) with 70% of the contract, Lautaro with 20% and Tavira (ABB Kent) with 10%. Each was responsible for one type of meter and undertook, as a minimum, meter exchange and maintenance. The initial contract that ran from 1994 to 1999 was an annual renewable contract. At this point the contract was renegotiated, as one of the companies was able to offering meter renewals more cheaply than exchange.

In 1998 to 1999 the efficiency gain in this contract was reduced when Lautaro Company proposed and began the installation of transformed meters. The mobilization of the company led to a new bid that was prepared during 1999. The resultant bid was designed so that the other companies also had to reduce their costs because of Lautaro's results, or alternatively they had to include meter renewal as well. The bid structure was as Table 2.5:

Table 2.5. Bidding structure – meters

Service	a) Meter exchange	b) Maintenance	c) Renewal
Specifications for bid	Payment equal to the lowest bid of the product minus 1/12	Price to bid	Price to bid
Estimated result	At least 8.3% saving for new meters		Renewal resulting in 21% saving

In May 1999 the total meter exchange cost was CH\$13,564.00 (US\$28) and the renewal cost CH\$10,773.00 (US\$22) per meter. As the majority of the work lay in the renewal of meters, EMOS estimated an overall efficiency approaching 20%.

This is an important contract for EMOS, representing one of the core areas of its business (providing the critical basic measurement of sales) and valued at approximately 37% (US\$4 to 5 million per year) of the total annual budget within the commercial area. It has been particularly beneficial because it has promoted competition between the services contractors leading to lower costs, increased quality and the incentive to innovate, for example the development of meter transformation.

Consequently the contract is carefully monitored by EMOS in terms of quality control, regulatory issues and performance evaluation, a value to the entire country because due to EMOS' experience, size and resources, their research and norms concerning meters and equipment are utilized throughout the whole of the Chilean water industry.

The specific meter change and installation contract complements the meter supply contract. Whilst similar to a labour contract and smaller by contrast to others in the commercial area, it has been retained for 20 years by the same contractor. This is a local family enterprise headed by Marcelino Carrazco. The main reason for this according to the contract manager is because of Carrazco's leadership. During the entire period, Carrazco has maintained the two important principles of quality of service and low profit. He has gained considerable expertise with time and has developed a successful company with a reliable level of income.

In 1995, as with other service contracts, there was an attempt to divide the contract between two companies. As the other bid offer was essentially the same as Carrazco's (CH\$834 / US\$1.73 per service), EMOS decided to go ahead with the division.

During the first three months, the new contractor's group lost money due to the constant penalties which arose largely from their lack of experience. The situation resulted in EMOS laying down an ultimatum - a final month to deliver better service. The contractor invested more money and re-contracted experienced personnel. This reversed the trend and they were able to keep the contract for one year. However, at the end of this period they did not want to continue with the same price and persuaded EMOS to re-open bidding. Their subsequent offer was almost double their previous one. However, the Carrazco family put in a bid for the same unit cost as before and regained the full contract again.

It is difficult to measure efficiency gains in this contract as both the current and historical costs seem to be about the lowest possible in the commercial arena. It implies that the contractor improved efficiency by adapting the company to the original service cost. The relative efficiency can be calculated by considering the experience of the last bid. Carrazco's competitors did not consider it possible to reduce their bid. It was double their initial offer, even though they had, by then, had experience as operators. This means that the Carrazcos are working at 50% less than other possible competitors.

2.2.6 EMOS network maintenance contract

For EMOS, which depends on water delivery and sewage collection for its income, the network maintenance contract is another important service contract in terms of cost, complexity and necessary supervision. The contract itself requires a large set of documents, detailed instructions and, where necessary, severe penalties. Monitoring of

the contract is undertaken by another contractor who acts as an external supervisor. One drawback of the contract is that it was heavily penalty driven and managers were only just considering how to include performance incentives.

In 1999 the average value of the contract was CH\$5,500 million (US\$12 million), based on unit cost and estimated volumes. The contract, for which contractors have to provide a 24 hour service, 365 days per year, covers the following services:

- maintenance and repair of the water and sewerage network, including connections and related works
- disconnection and reconnection of services
- network renewal (yet to commence)
- new connections (in bulk) (yet to commence).

One particular characteristic of this contract is its subdivision into the three specialities: maintenance contract, renewal contract and new services. The first two are specific for Zones 1 and 2, and the third for another classification of Zones A, B, C and D. In addition, there are predetermined combinations on which the bidders can develop their proposals. These combinations are outlined in the Table 2.6:

Table 2.6. Specialities contracts and combinations

Abbreviation	Contract	Zone	Combinations
MC1	Maintenance contract	Zone 1	MC1+RC1 MC2+RC2 MC1+NSCA+NSCB MC1+RC1+NSCA+NSCB MC2+NSCC+NSCD MC2+RC2+NSCC+NSCD
MC2	Maintenance contract	Zone 2	
RC1	Renewal contract	Zone 1	
RC2	Renewal contract	Zone 2	
NSCA	New services contract	Zone A	
NSCB	New services contract	Zone B	
NSCC	New services contract	Zone C	
NSCD	New services contract	Zone D	

The purpose of these combinations appears to be to increase effectiveness, control and supervision and also to make combinations of contractors and zones to increase availability and decrease associated risks. In the recent past three contractors (Copergo, Solari and Captagua) have performed these activities. The most recent contract was for a three-year period, signed in 1997. Although the contract seems to be the most demanding in terms of contractor characteristics and guarantees, the market has already developed, in this case with six bidders in competition during 1997

Financial, time and performance guarantees are particularly strong in this contract. During the registration period, the contractors are required to have a financial guarantee of approximately 15% of the total contract amount. This is linked to the amount of the combination of zones they are bidding for. The guarantee includes a 20% reduction of the balance of any other active contracts the contractors have at the time of bidding. If the contract is broken by the contractor this guarantee will be paid in the form of a fine.

The time guarantees are for conventional tasks. The work has to be completed within a maximum of 4 days, but more urgent work will have a tighter timeframe for completion.

The work performance criteria apply for each type of task, based on EMOS experience.

There is a compensation payable by EMOS for invoices which fall below the pre-estimated amount per zone (UF5,000 for Zone 1 and UF3,000 for Zone 2), averaged over 3 months. This is calculated as 12% of the difference between the minimum amount and the average.

As mentioned in the introduction, penalties drive the performance and the contractor's response, see Table 2.7. There is a penalty for each contract task, including even, for example, the use of identity credentials and transit warnings on site.

Table 2.7. Network maintenance contract - penalties

Cause	Value
Ordinary work delayed from that specified in the work order.	2% of order value, with a minimum fine of US\$3/day.
Delay between the working period	Possible cancellation and fine of 20% plus US\$1 per day
Urgent work delayed from that specified in the work order.	20% of order value, plus US\$1/day, (also if delayed to handle in the report of the work done).
Supervisory report of unsatisfactory work	2% of order value per day of an active unsatisfactory report.

The contractors have had difficulties due to EMOS re-structuring. The contract was signed when the EMOS departmental organization combined water and sewerage services. Soon after, EMOS created two departments and, as explained by one of the managers, this brought problems with the contractors having to deal with two departmental heads.

It was not possible to collect data on cost and time variations for this contract. However, the planning department manager suggested that an estimation of contracted-out services in general was a cost saving of 25%.

This is a well developed contract which has standardized requirements, procedures and execution methodology. As a result it may be possible to utilize these ideas elsewhere, especially in regard to unaccounted for water which is a considerable problem in many low and middle income countries.

The precision of the tasks and areas to be covered imply a wide and detailed knowledge of the systems as well as of the costs and indicators to monitor. These necessarily come from experience personnel have acquired through the contract, but the supervisory precision and capacity (for both the services contractor and for EMOS) should be highlighted because it also requires investment and quality, a necessity which is often misunderstood in water utilities.

The contract has clearly brought considerable improvements as the EMOS performance indicators show. However, the contracts could potentially become too tight for the contractors, particularly if they become unable to see any benefits for themselves.

2.2.7 Empresa de Servicios Sanitarios el Libertador - ESSEL

Empresa de Servicios Sanitarios el Libertador S.A. (ESSEL) serves the Sixth Region. It is located southwest of Santiago and has an extended area that includes eight administrative areas and 36 localities (urban and rural). Rancagua is the regional (state) capital where the majority of the population lives. ESSEL was the third company to be privatized, but is only the fifth biggest water company with 4.4% of the country clients. It is substantially smaller than EMOS with a return on fixed assets, which is half as much, although it currently has increasing profits. By contrast it has 50% more employees per connection and 50% higher costs per connection. This comparison with EMOS may demonstrate the result of economies of scale from a metropolitan capital to a small town with extended rural areas. Nevertheless, the performance figures and trends of ESSEL are impressive (Appendix 1, ESSEL data).

ESSEL, like EMOS has also contracted-out a variety of services. Those to be discussed in this study are:

- disconnection and reconnection of services
- tariff collection
- meter supply and installation
- plumbing support to clients
- personnel supply
- customer service
- transportation of water samples
- maintenance of septic tanks
- network repair (when works exceed ESSEL capacity)
- meter-reading

ESSEL disconnection and reconnection contract

The most important contract is reportedly 'disconnection and reconnection', in terms of its development of strategy and structure and with regard to its positive impact on the company.

The importance of this contract can be highlighted by considering the evaluation of results, competition and incentives in the last few years. Particularly relevant is the inclusion in 1999 of an incentive formula which rewards good performance. This has been put in alongside the penalty clauses that have been traditionally found in this and other similar contracts.

The contract has an ‘Incentive-penalty algorithm’ which states that disconnection and reconnection be considered as a single unit. In effect there are four sections that must be completed. Firstly, the submission of the notice for disconnection. If the bill is not paid after this warning then the customer is disconnected, following which the customer must pay outstanding debts before the service can be reconnected. ESSEL will only pay the contractor for the connection work after all parts are completed. As a result the service contractor is compelled to follow up all services where there is non-payment involved, to report anomalies, to cut the supply again, especially if it has been illegally reconnected and to encourage the customer to pay in order to have the services restored. The formulae and incentive-penalty factors that apply only to the small-services (96.3% of connections in the region are domestic) are as follows:

‘The efficiency of the service will be rewarded or penalized by increasing or reducing the united value contracted, in accordance to the criterion:

Efficiency index of the small cut =E.I.M.C. where:

$$\text{E.I.M.C.} = \frac{\text{N}^{\circ} \text{ of small replacements executed per month}}{\text{Small cut services executed per month, Minus N}^{\circ} \text{ of small cut-notices paid.}} \times 100$$

Then, the efficiency’s resultant factor will be obtained as shown in Table 2.8:’

Table 2.8. Efficiency vs Penalty Factor

Efficiency segment %	Reward - Penalty Factor		
	Year 1	Year 2	Year 3
0.0 – 25.0	0.80	0.70	0.60
25.0 – 40.0	0.90	0.80	0.70
40.0 – 50.0	1.00	0.90	0.80
50.0 – 60.0	1.04	1.00	0.90
60.0 – 70.0	1.08	1.04	1.00
	1.12	1.08	1.04
	1.16	1.12	1.08
	1.20	1.15	1.10
The resultant efficiencies will be rounded to one decimal place only			

Example: Small cut-service executed = 1,800

Small cut-notice paid = 100

Small replacements executed = 950

E.I.M.C.=950 / 1,700 = 55.9%

Resulting payment: 950 disconnections and reconnections, multiplied by the 1.04 factor obtained from table (Year 1), according to the price contracted.

The factors therefore, follow a curve per year, with variations on time to include the learning curve efficiency. These are shown in Figure 2.2..

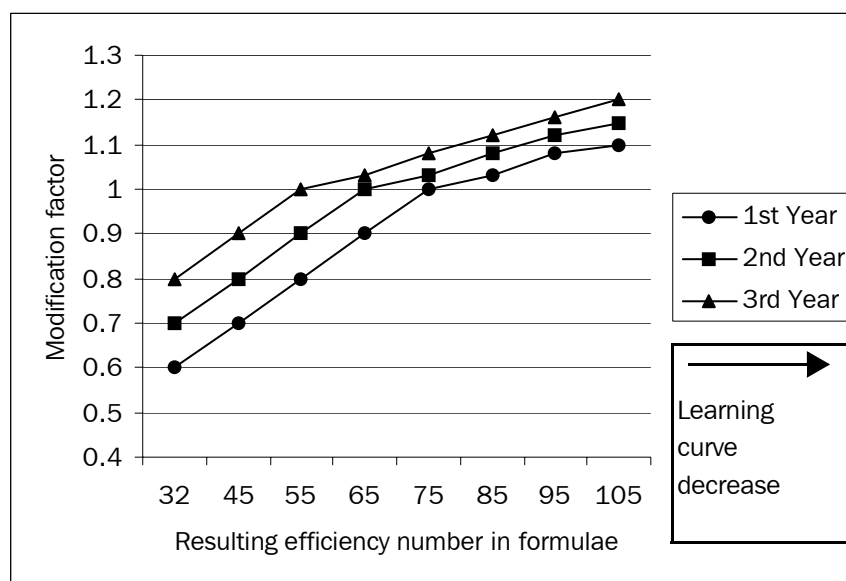


Figure 2.2. Chile reward-penalty factor curves

Historically the service has cost approximately CH\$70-80 million/year (US\$150,000-\$170,000). As well as the payment given when the service of reconnection is complete, there is an additional payment possible. This occurs when the contractor manages to encourage the client to pay the outstanding bill on the same day that the disconnection notice is delivered. In these cases the payment is 15% of the full service cost. Further the contractor is paid a pre-set daily average when ESSEL does not provide work. The exception to this being *force majeure*, for example a hurricane.

One of the main purposes of the contract is to ensure the submission of the disconnection notice to customers before disconnection is effected. This results in 60% of the population paying their outstanding bills. The number of services shown above corresponds to those that were stated during bidding and the completed contract for 1999. However, interviewees mentioned that there was a substantial disparity. Disconnection orders stood at around 16,000/year, which is approx. 40% more than stated in the documents ($945 \times 12 = 1340/\text{yr}$). If the figure of 16,000 is used then the contract is valued at approximately CH\$75 million (US\$156,000)

The calculations in Table 2.9 show that the expected average figures for the new contract, given a total customer base of 133,000, are as follows: is connection notices = 7% of the population, but only 2.86% are actually executed from which 2.3% are reconnected. Therefore there are expectations to reach 0.56% of non-payers, or 99.44% of commercial efficiency (collected/ billed) on average. The incentives included in the formula are expected to facilitate these gains. By 1999 the bill collection efficiency figure reported was 98.7%, which is very good relative to the Latin America and Caribbean range of 23% to 98%.

Table 2.9. Monthly average statistics of services performed¹ and analysis

	Number in Rangagua	Number in other towns.	
Small disconnection-notices submitted	1 800	480	
Small disconnection-services executed	750	150	
Small reconnections executed	650	80	
	3 200	710	
Major disconnection-notices submitted	100		
Major disconnection-services executed	45		
Major reconnections executed	30		
	175		
	Totals	Relative %	% /Total customers
Disconnections submitted	2 380		7.21%
Disconnections executed	945	40%	2.86%
Reconnections executed	760	80%	2.30%
	4 085		
Total customers in 1998 (ESSEL Report 1998)			33 000

1. The number of services shown corresponds to those stated in the bidding and contract for 1999.

ESSEL carried out a one month research program to ascertain the customer response if a more sensitive approach was used in the process of disconnection. This involved sending a warning letter with an extra payment period included prior to the final disconnection notice. In addition they looked at changing the composition of the work-team sent out with the notice. They tested the effect of sending a team of a man and a woman as opposed to the previous male-only composition. The analysis of the responses showed a 14% increase in payment when the 'experimental' combination was used. The largest increase was found to be amongst the least affluent customers. As a result, both the new measures were considered for the 1999 contract.

With the exception of the initial characteristics analyzed above, the remainder of the contract contents and structure is simpler and smaller than the EMOS equivalent. For ESSEL there is only one contractor (or one area to be covered), therefore competition is only developed through bidding. The most recent contract has a three year period. This is in contrast to the previous pattern begun in April 1994 which had a two year renewable pattern and continued over three sessions until ESSEL established an acceptable way of improving it.

The high performance of this particular contract has influenced the maintenance of the average indicators of ESSEL. Of note is the average commercial efficiency of 96.5% in the period 1997 to 1998. From their own calculations, ESSEL managers suggest that the

contract improvements made at the beginning of 1999 will result in an efficiency increase of 38%. In other words, there will be 38% less clients who have their services disconnected. This is reflected in the anticipated cost of the contract. If one then applies conservative measures to these figures it is possible to suggest potential savings. Firstly one can anticipate that the latest efficiency gain is half of that anticipated by the managers (i.e. 19%) by pushing the contract price down and including the incentive curves, which forces improvement each year. Secondly, a potential 7% improvement, half of the predicted 14%, by establishing a two-tiered warning system prior to disconnection and the use of teams.

ESSEL meter supply and installation contract

This contract has similarities with the one used by EMOS, for example ESSEL is also replacing volumetric meters with magnetic ones. However, the process and the contract appear simpler although no less beneficial. Initially ESSEL did not open the contract to competitive bidding. Two suppliers provided meters and ESSEL could only reduce the cost by negotiation by 4.5% during the period. When ESSEL finally introduced competitive bidding they achieved a 20% reduction in cost. There was a similar situation when EMOS introduced Tavira as a new contractor. There was a 3% gain because they ensured more efficient payment to suppliers and they were able to achieve a 50% reduction in meter installation costs.

ESSEL personnel supply contract

To support the staffing of the customer service centre, ESSEL has a labour contract for personnel supply, developed to gain flexibility. The customer service centre was redesigned in 1998 with modern equipment to serve this most important function of a water company. By December 1998 it was dealing with approximately 1,500 calls per month.

The personnel supply contract was developed considering ESVALs experience. Initially, they had problems with a contractor who exploited employees. However, he was replaced and minimum requirements for labour were introduced.

ESSEL 'Movil-mac' service contract

'Movil-mac' is a plumbing service that was developed in 1997 to support customers in the supervision, repair and maintenance of in-house installations. This was an original idea devised by ESSEL personnel. Its basic tasks are to assist in leakage control, improve the 'water and environmental awareness' of customers and to communicate a user-friendly image.

Initially, this ESSEL-based service was designed for domestic users who make up the majority of the client-base. There was a monthly fee of US\$4.2 charged to repair visible fittings. However, it was found that both requirements and problems were greater than expected. As a result some of the more complex cases were out-contracted and the service also expanded to include the spare parts required by customers as well. By this time the real cost of the service had increased four-fold over the original estimate. Therefore the domestic users service was restructured to include a budget, and also to be performed with client approval. Finally, the service was contracted out to institutional users, such as, industry and commerce on a monthly basis, who consider it a success. For example, in 1998, on average, seven tasks per day were performed with 90% of the clients giving an evaluation ranging from 'good' to 'very good' service.

ESSELs problem with the 'Movil-mac' contract concerned its personnel. There was a lack of commitment and motivation together with the organizational problems that arose in trying to create a more flexible, customer oriented system. As a result a Personnel Contract was created. Under the terms of the contract ESSEL pays only the cost of personnel. The contractor is responsible for all requirements pertaining to labour, including training and supervision.

There is not yet sufficient data to allow a calculation of the improvements created as a result of the personnel contract. However, by mid-1999 the contract managers estimated that improvements would be in the region of 10-15%

ESSEL small contractors agreements

ESSEL has established agreements with small contractors so as to keep developing the out-sourced activities. These accords are in the simple form of legal agreements which are less formal than contracts. There are no bidding phases and their details are much simpler than the contracts analyzed so far in this report. However, for institutions who are beginning the process of contracting-out they contain items of interest. The most formal version of this type was the 'collection of tariffs agreement'.

Other cases discussed here were ascertained through verbal accounts. Their potential benefit is to illustrate, how simple and relatively straightforward an outsourcing service can be to devise. They also illustrate the processes all contracts had in the initial phase.

ESSEL tariff collection agreement

The collection of tariffs is subject to a formal agreement which delegates 80% of the collection of payments. ESSEL only pays the contractor when the bill is collected and transferred to the ESSEL account at a unit cost of CH\$43/unit (US\$0.10). The contract has a two-year span subject to renewal. The contract is relatively simple. It includes basic direct penalties related to timings and quantities, but no incentives. Once again, ESSELs intention is to increase flexibility. At the time of the fieldwork there was no available data on comparative costs or efficiency.

ESSEL pressure measurement agreement

A former employee, Tomás Durán, started the pressure measurement agreement in August 1998. Its stated aim is to measure water pressures in any system which lacks macro-meters or where no telemetry is available. According to ESSEL the cost in August 1998 was approximately CH\$1,000 (US\$2) per measurement. Duran agreed to undertake the pressure measurements for half this cost and has thus far been successful in his undertaking. He achieves this by working with a taxi driver who agrees to provide economically-priced transport after normal working hours. This provides for ESSEL a simple, inexpensive partnership arrangement which can be invaluable for preventing a burst pipe. As an illustration, interviewees reported a case of ESVALs where Viña del Mar lost its water supply because the principal water-main burst due to high pressure.

Other agreements which were discussed included the Septic Tanks Maintenance Programme and the agreement for Grass-Cutting at water treatment plants. Both of these have seen several attempts at designing agreements to create an effective service. The septic tanks maintenance agreement has made good progress since the most recent agreement was signed. In the new conditions, the previous driver became self-employed, with ESSEL setting him up with a truck and the appropriate training. He took on this role

even though he was being asked to do twice as many trips for only 60% of his previous salary. This salary-cut did not deter him. By 1999 he had already purchased a second truck. Similarly, in the grass-cutting agreement, the latest contract was negotiated to reduce the number of personnel from 12 to 8 workers.

2.2.8 The contractors

Much of this study has focused on the views of the water companies, the developers and employers of service contractors. This section will discuss the views of some of the contractors who were interviewed with regard to their contracts and the processes involved with delivering quality services at a profit.

AGUASQUINTA - ESVAL management contract with investment

The management contract considered here is handled by ESVAL (Empresa de Obras Sanitarias de Valparaíso). ESVAL was the first water company to be privatized in Chile and it had been the researchers' intention to include this company in the study. However, such was the workload of ESVALs staff at the time of the fieldwork that it was not possible to arrange any meetings. There was documentation available which together with the contractors' comments suggested that ESVAL and EMOS use similar types of service contracts.

Aguasquinta is a Chilquinta company which holds the ESVAL management contract. It serves the southern tourist coast which lies within ESVALs area. The management contract began in 1992 and was signed in 1993. The commitment was to provide full services by 1996. By 1999 they had invested CH\$40 million dollars and also out-contracted most non-strategic activities. These included water production, installation and maintenance of the network and all commercial services.

The contractor believed that their contract with ESVAL was unusual in its format and not particularly clear. Many attempts had been made to improve it, but some major underlying issues were left unchanged. Although this was a management contract it did involve investment by Aguasquinta. However, not being the owner of the assets, Aguasquinta was unable to offer any guarantee to lenders and therefore could only finance their activities from their own shareholders' risk capital. This created additional pressure on the managers to create efficiency gains by improving their performance and thereby reducing their running costs.

Another problem that arose was due to the changes in the management and ownership of ESVAL. Each change had different requirements. At the time of the interview, there were again new owners following the major privatization where a group of Spanish owners together with the Chilean company ENERSIS (Energy Company) bought the majority of ESVAL shares.

Aguasquinta managed their own operations, which involved 95% to 98% of the collected tariffs, a range due to the variations inherent in a tourist area. There has been a reported total efficiency increase of 23% with additional benefits from enhanced coverage and investment. Operational efficiency has increased from 57% to 72% and commercial efficiency from 90% to 97%. In view of these improvements the contract has been considered a success to ESVAL.

SCHLUMBERGER - meters and services contracts

Schlumberger (CCMSA Compañía Chilena de Medidores, SA) is the biggest meter manufacturer in Chile. It became involved with meter reading in 1990 after winning the EMOS Zone 1 meter-reading contract and then the ESVAL contract in 1992.

There were two contrasting complaints about the contract in general that arose during the interview with Hector Vargas, the manager of this company. Firstly, the contracts are still controlled by budgetary and political approval and this leads to potentially inefficient responses. Secondly, Vargas argued that the contract was very specific and this limited the contractors' flexibility. This is ironic since this report indicates that water companies want to gain flexibility with this type of contract. He commented further that they are in the business of services because the holding company wants to be an integrated service provision company not because the services (reading meters) are profitable.

2.2.9 ICSA - services contracts

'ICSA Servicios' (Ingenieros Consultores Sociedad Anonima) are part of the ICSA company which as a consultant has been involved in the development of the water sector in Chile.

ICSA Servicios are involved in meter-reading, new connections, maintenance and disconnection and reconnection contracts for EMOS. They also have contracts for ESVAL and MAIPU (another water company - see Appendix 1).

These contractors had strong opinions about the restrictions which EMOS placed on its contracts. Further they viewed the profit level as marginal which resulted in the business being a risky venture. In their most recent bid with EMOS they reduced their price by 8%. Their decision to reduce it was due to the internal efficiency gains possible with the introduction of new modern communications and information technology. In addition, the electricity companies (many of the service contractors have 'grown out of' the electricity companies) have become involved with competing for the contracts. For example, SELEC an electricity company won an ESVAL billing contract when they offered a 20% reduction from the previous contract which had been provided by a service company within the water industry.

AGUASCORDILLERA - concession

This company, formerly 'Lo Barnechea', has a concession from EMOS to serve a low density, high-income area of Santiago. They subcontract all possible non-core services such that up to 35% of their operating expenses are payments for out-sourced contracts. Due to the competence of the large water companies in utilizing the services providers and their economies of scale, Aguascordillera on occasion has to offer incentives of up to 100% in additional payment to services contractors (relative to EMOS contracts) as, for example, in the meter-reading contract. Ironically, Aguascordillera's water tariff is lower than that of EMOS, one of the main problems they are facing, and they are now trying to solve this through negotiations with the Regulator.

2.2.10 Conclusion

Services contracts have developed in Chile as a means to reduce employee numbers and to increase efficiency. The case studies show how this has been successfully achieved as the contracts have evolved from assumed price contracts to competitively bid contracts

with established contractors complete with penalties and now incentives. The challenge now appears to be to ensure that the contractors are sufficiently remunerated to encourage them to continue increasing their efficiency and effectiveness.

2.2.11 References

Blokland, M., Braadbaar, O., Schwartz, K. Ed. (1999) *'Private Business, Public Owners. Government Shareholdings in Water Companies'*, VROM, The Hague.

EMOS (1998) Annual Report. *Empresa Metropolitana de Obras Sanitarias S.A. Santiago. Chile.*

ESSEL (1998) Annual Report. *Empresa de Servicios Sanitarios Del Libertador S.A. Rancagua. Chile.*

World Bank (1997) *'Toolkits for Private Participation in Water and Sanitation'*, World bank, Washington DC.

2.3 Case studies from Mexico

Javier I. Morales-Reyes, Kevin Sansom and Richard Franceys

Despite the financial crisis that Mexico experienced in the 1990s, contracting-out using a variety of service and management contracts won growing acceptance and has had an effective part to play in the Mexican urban water and sanitation (WATSAN) sector. Public Private Partnerships (PPP) in Mexico have generally been a wide society participation and awareness, additional to the increase of private sector involvement and specific services improvement.

This article examines three cases studies of public private partnerships (PPP)¹ in Mexico centred on service and management contracts in the urban water sector. These are:

- Mexico City Service/Management contracts
- Puebla Management contract
- Aguascalientes Management contract

2.3.1 Overview of the Mexican case studies

The recent trend for the increase of private involvement in Mexico developed during the 1990s can be classified under four main headings:

- a) service/management contracts that led to concessions;
- b) build, operate and transfer (BOOT) contracts for wastewater treatment,
- c) public-private investment and operation contracts (a modification of previous BOOT contracts; henceforth called PPIBOOTs)² and,
- d) the most recent management contracts.

Table 2.10 and see Figure 2.3 on page 67 show the location, size and main indicators of the three case studies focus of this article as well as two other significant cases of public-private partnerships (Navojoa and Torreón) and another two of publicly managed water service (Tijuana and León). It is worth noting that the two cases of publicly managed water service have a better-cost recovery and efficiency than those in which service is provided through PPPs. This illustrates that effective commercial management can be provided in the public sector at least up to generate the minimum capital required for maintenance and urgent investment.

Private sector involvement was sought to address unaccounted for water (UFW) and cost recovery in situations in which there was a higher awareness of and willingness to tackle the problem of ineffective water service. This is the case of Mexico City, where the subsidy over a decade was above US\$1/m³. This was also the case of Aguascalientes, which is one of the two oldest cases of a concession³. According to CNA data, in 1998

1. Although there have been well-publicised concession and BOT contracts, this paper focuses on service and management contracts within the urban water and sanitation sector.

2. Investment sources are federal government subsidies (30-40%), a Development Bank loan (+/-30%) and private capital (30-35%), the last two guaranteed by the federal funds 'participaciones' that corresponds to the municipality.

3. The other case is the city of Cancún, located in the southeastern provincial state of Quintana Roo.

Aguascalientes had a low recovery income per cubic meter supplied of 0.10 US\$/m³. More recently, PPP efforts have been concentrated in Puebla and Navojoa, where income per cubic meter is as low as US\$0.06 and US\$0.05 respectively.

Running since 1993, the Federal District of Mexico city case is the most substantial experience in service contracts dealing with core activities of water provision in the country. With a population of nearly 18 million, Mexico City is the largest metropolitan area in the country. Mexico's Federal District (D.F. - *Distrito Federal*) is the base of federal government, and represents half of the metropolitan area of Mexico City. By 1990 the system's infrastructure and operation required huge subsidies, which made it economically inefficient. The service/management contract was foreseen as one of the steps to tackle the problem.

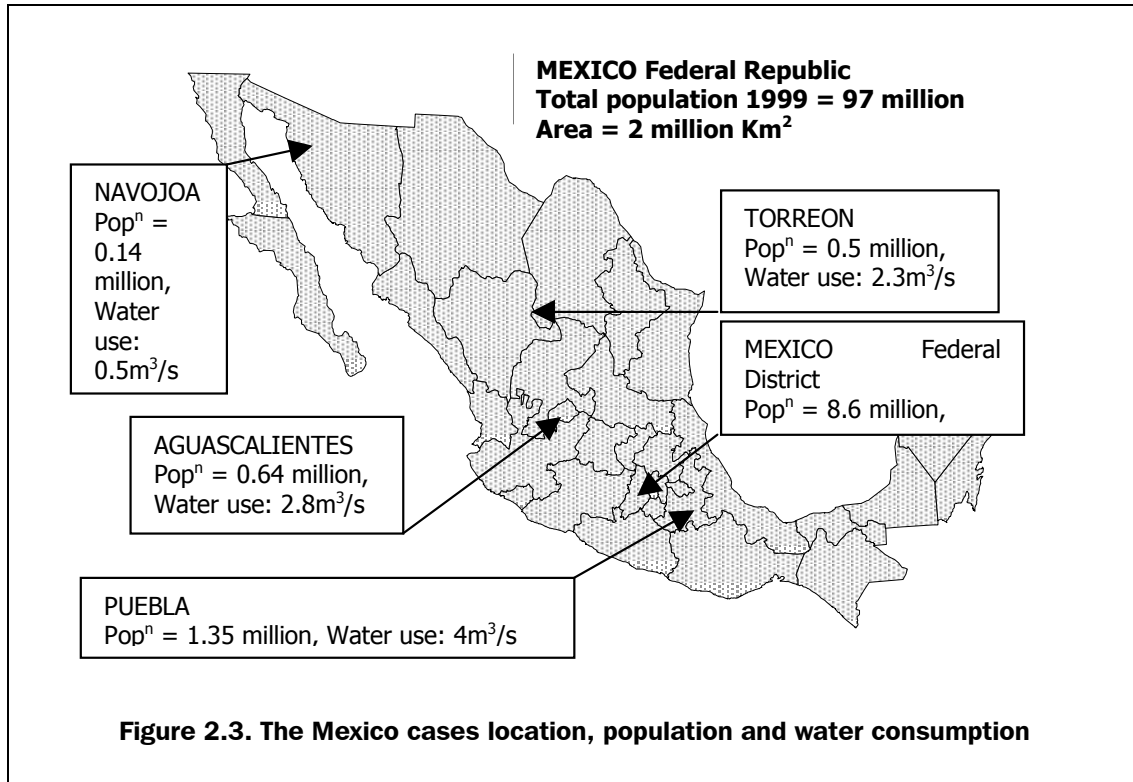
Table 2.10. Water production and revenue collection of selected cities in Mexico¹

COMPARATIVE INDICATORS OF MEXICAN SELECTED TOWNS IN 1998				
TOWNS, contract classification and public body type.	Population in millions	Production in m ³ /s of water	REVENUE in pesos /m ³	REVENUE in US dollars \$/m ³
Mexico City DF - services contract since 1994, with public management.	8.60	40.380	1.92	0.22
Puebla – management contract since 1998, managed by public semi-autonomous utility.	1.35	4.034	0.57	0.06
Navojoa - management-concession contract since 1997 with public regulator.	0.14	0.505	0.42	0.05
Aguascalientes - management contract 1989, concession since 1993, with public regulator.	0.64	2.820	0.94	0.10
Torreon - PPIBOOT (public-private investment BOOT) with public semi autonomous utility	0.50	2.290	1.62	0.18
Leon - BOOT with public autonomous utility	1.10	2.452	2.20	0.24
Tijuana - public autonomous utility	0.80	3.200	4.30	0.48

1. Sources: Research data, INEGI and CADF. Note: Water data in Mexico lacks precision and is not updated regularly. Since water production is often estimated from none or partial macro metering or out of date measurements, these data need to be read with caution"

The Public Private Partnership for the city of Puebla, an important industrial centre and the capital city of the provincial state of the same name (located to the southeast of Mexico City), also illustrates the role of management contracts. As indicated above, here too water revenue was very low, hence the urgency for change. Since the early 1990s the city of Puebla tried to introduce private sector participation. However, it was not until 1997 that a management contract was signed to update, operate and maintain the administrative functions or 'Sistema comercial'. The contract is part of a large regional development project called 'Angelopolis'. The stated long-term objective of this project is to improve and sustain water and sanitation services in state's capital and in surrounding municipalities that share common sources of water.

Aguascalientes is the capital of a small provincial state of the same name located in central Mexico. This city also used to have a poorly maintained and highly inefficient water service system. After nine years of the concession contract, however, the average revenue per cubic metre remains low. As already mentioned, the city was at the forefront of concession contracts in Mexico. It started a management contract in 1989. Therefore, a case study of the initial management contract of Aguascalientes is examined here as a useful step towards the concession contract..



2.3.2 The Mexican water sector

Population and coverage

By the end of 1999, Mexico's total population reached 97.4 million, of which, 74% were living in urban areas. From 1994 to 1999 the population increased at an average rate of 2% (but at 2.8% in urban areas). According to official data, the growth in service coverage for water and sewerage services in Mexico is slightly higher than population growth.

Overall coverage averages 87% for urban and rural water supply and 73% coverage for sewerage (see Table 2.11). This means that still there are at least 12.7 million people to be served with an improved water service. In comparison to other countries in Latin America (with the exception of Chile and Argentina), the figures show a fairly good coverage. However, on the whole water quality is perceived by the customer as poor. Safe, constant drinking water is not readily available, many people in urban municipalities and in rural areas do not trust water quality for drinking purposes, so they spend more resources to boil the water supplied (in rural areas) or buy expensive bottled water or from vendors (in urban areas).

Municipalities or areas where piped water service is intermittent (*'tandeado'*) are numerous though not reflected in the coverage figures. In those situations, household members have to fill their own storage tanks when the service is supplied. Water tankers usually supply peri-urban and rural areas. For instance, in 1993 it was estimated that 20% of the population in the city of Puebla was supplied water in this way (Angelopolis, 1993). Furthermore, the disposal of waste water (especially in the poorest peri-urban and rural areas) is inadequate or non-existent.

Table 2.11. Population and WATSAN coverage in Mexico

Population and WATSAN services in MEXICO	1995	1996	1997	1998	1999
Total population (thousands)	91,158	92,730	94,277	95,796	97,361
Water supply coverage in %	84.8%	84.9%	85.8%	86.4%	87.0%
Sewerage coverage in %	72.0%	72.4%	72.4%	72.4%	73.0%
Rural population represents 26 % of total.					
Water supply coverage in %	60.9%	62.1%	63.4%	64.4%	66.0%
Sewerage coverage in %	29.5%	30.6%	31.3%	32.0%	33.0%
URBAN population represents 74 % of total.					
Water supply coverage in %	92.5%	93.1%	93.9%	94.3%	95.0%
Sewerage coverage in %	87.4%	87.5%	87.2%	86.9%	87.0%

Water and sanitation investment

CNA classifies the investment in the sector in four types: the federal government investment allocated by the treasury and through national programmes; the investment drawn from provincial states and municipal governments' budgets; loans, and finally, that accrued from the internal revenue of the municipal department or the water organizations that provide the service. Throughout the 1990s, there was a decrease in the total investment in the sector in both rural and urban areas.

As shown in Figure 2.4, federal government subsidies to investment decreased by more than 50% towards the end of the decade (from an approximately 450 M.US\$ from 1991 to 1994 to about 200 million for the 1995 to 1999 period). Public investment made by provincial state and municipal governments experienced a sharper decline (from nearly 250 M. US\$ in 1991 to 1994 to less than 100 M US\$ in the 1995 to 1999 period). Still, most of the investment made in the decade came from government subsidies (50% from the federal government, and 25% from provincial state and municipal governments). The increase in the cash generated by municipal utilities (including water utilities) during 1991 to 1995 was lost in 1995 to 1996, and the slight 1997 recovery was short lived. On average, investment from internal revenue represented only 6% of total investment during the 1991 to 1999 period.

Following the declining trend in investment, by 1999 credit (or borrowing) had almost vanished. Unfortunately, that trend continued in 2000. Considering the period shown in Figure 2.4, from 1991 to 1999 the total investment was reduced by 73%.

Because of the uncertainty generated by the presidential election (held in July of 2000) followed by the election of a president from an opposition political party, most investments in the sector came to a halt. It is also worth noting that most of the investment in 1998-1999 was concentrated in the urban areas of four regions. Since investment tends to respond to emergencies and specific projects (one of which is the Puebla case), the uneven distribution of investment has been quite common..

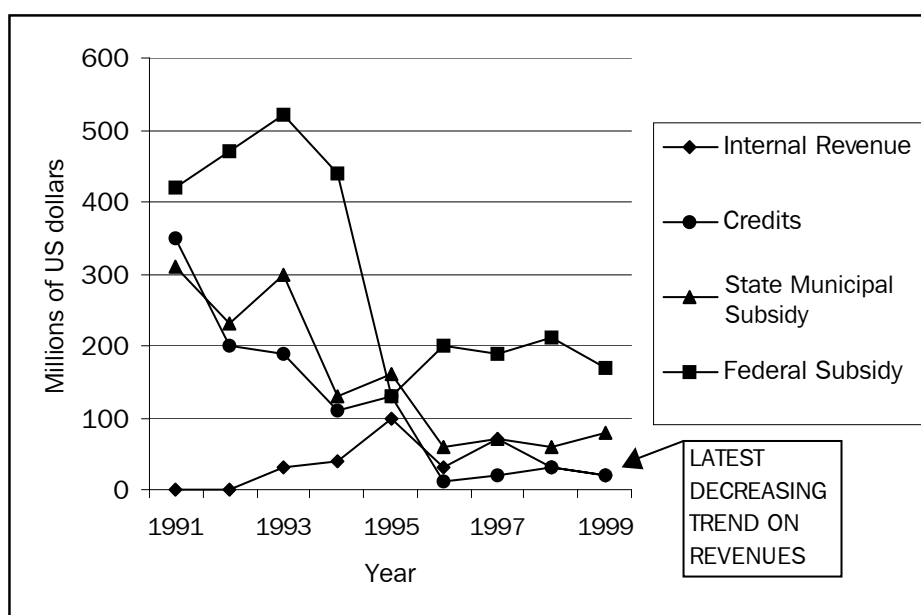


Figure 2.4. Investment trends and sources of capital in the water sector¹

1. Source: adapted from CNA annual reports

The financial crises suffered in the last decade also had a major impact on health conditions (mostly of the poorest citizens) related to lack of access to safe drinking water and minimum sanitation conditions. By the end of 1998 less than 16% of the total domestic wastewater was treated (Morales-Reyes *et al.*, 1998) and most of the untreated waste water is used directly for irrigation purposes or discharged to water courses which resources are reused downstream. A researcher noted that “Gastro-enteric diseases are the second major cause for child mortality” (Tortajada, 1991). To obtain investment funds to improve services, either in the form of government subsidies or loans is generally a difficult and complicated procedure for municipalities.

Mexican water utilities: Commercial aspects

The financial performance of Mexican urban water utilities was greatly hampered by the 1994 to 1995 financial crisis. Based on a sample of 66 metropolitan areas, Table 2.12 shows the average water tariffs in Mexico between 1994 to 1998 (Banobras, 1998). Domestic tariffs in the period decreased by 60% in real terms. As a result, the launching of water sector development initiatives (including PPP initiatives) also suffered.

Table 2.12. Average water tariff trend 1994 to 1998¹

1994 to 1998 Nominal increase compared with real (after inflation of 253% correction)					
User type	Nominal (current) average tariff in 1994	1994 tariff to 1998 value	Nominal (current) average tariff in 1998	Nominal increase	Resulting decrease in real terms
Domestic	0.73	1.85	1.16	58.9%	-60%
Commercial	1.75	4.44	3.33	90.3%	-33%
Industrial	2.1	5.33	4.03	91.9%	-32%

1. After nominal tariff from BANOBRAS (1998), CNA (1994)

Table 2.13 shows the variations in performance of urban areas according to key commercial management indicators. The PPP case studies of Mexico City (DF), Puebla and Aguascalientes are included. The data suggest that PPP options are pursued when public water utilities experience problems. This was indeed the case of Aguascalientes. Note the relative low total efficiency of Mexico DF in comparison to the northern cities of Tijuana, Juárez and Monterrey. Mexico DF also has the highest number of employees per connection amounting to twice the country's average.

Monterrey Tijuana and Juarez are included as contrasting figures since they are some of the most efficient public utilities. Amongst other positive issues, they have been able to maintain continuity and commercial orientation resulting in good collection efficiency hence better total efficiency⁴. The bottom of Table 2.13 shows the average indicators of the 66 town sample, which gives a reliable figure for the country urban areas⁵.

To further illustrate the impact of the low collection figure for Aguascalientes shown in Table 2.10 (where the net revenue by 1998 per unit of water produced is only \$0.10 US/m³ 1998), see Figure 2.5 on page 71 shows the total revenue trend in constant values and compares Aguascalientes with other relevant cases such as Puebla, Mexico DF and Monterrey.

Note that Aguascalientes reduced its water revenue almost by half (with in the first –1993 to 1996 and the revised 1996 to 1999 concession contract), although it seems to start a recovery in 1999. This was partly due to the financial crisis but also the resistance of customers and authorities to tariff increases. In fact, the municipality requested a reduction of the tariff by 10% in 1997 due to political reasons. Other factors that

4. Total efficiency is the product of the operative efficiency and the commercial efficiency expressed in percentages (see formulas in Table 19).

5. It is worth to remind that the sources of BANOBRAS (as a development bank) are the water utilities as for CNA data (see note on Table 16). Nevertheless the data does not necessarily coincide,

Table 2.13. Comparative indicators of selected towns in Mexico by 1998¹

	Town	Operative efficiency (w. paid /w. produced in m ³)	Commercial efficiency (bills collected/billed)	Total efficiency (%)	Employees / 1000 connections	Consumption in litres / person-day (water produced)	Domestic tariff (minimum range) (m ³)	Minimum domestic tariff (cost in US dollars/m ³)
1	DISTRITO FEDERAL	63%	60%	38%	10.1	336	0 - 10	0.11
2	PUEBLA	52%	75%	39%	3.3	194	0 - 10	0.17
3	TORREON	47%	86%	40%	4.5	364	0 - 10	0.25
4	NAVOJOA	35%	52%	18%	3.8	306		
5	AGUAS-CALIENTES	50%	85%	43%	5.3	390	0 - 40	0.22
10	GUADALAJARA	57%	76%	44%	2.8	222	0 - 19	0.14
6	JUAREZ	77%	82%	63%	5.5	343	0 - 23	0.11
7	TIJUANA	72%	97%	70%	4.8	235	0 - 5	0.36
8	MONTERREY	67%	96%	65%	4.7	265	0 - 6	0.05
9	LEON	51%	99%	50%	3.9	189	0 - 14	0.20
Average results from the 66 towns		52%	75%	39%	5.7	312		

1. Tariff in US dollars. Exchange rate: 1 US dollars = 9.25 pesos Based on data from Banobras (1998)(b)

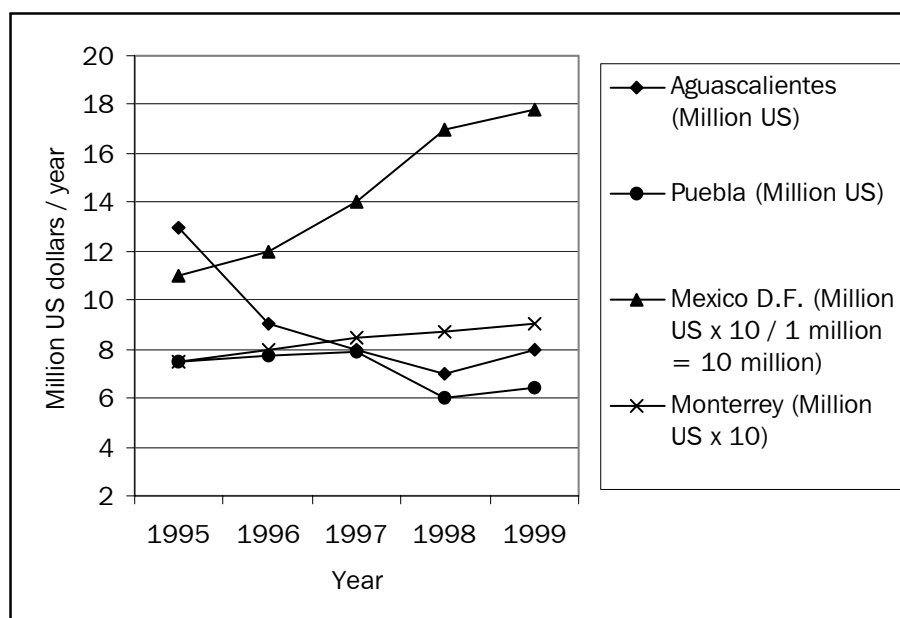


Figure 2.5. Profile of water supply revenue. Selected towns in Mexico
(Million US from 1995 constant pesos)¹

1. Source: Base data from CAN (1999), CADF

contributed to poor commercial management were the permanent negotiations between the parties derived from the crisis in 1995, the poor developed regulation instruments, the slow improvement on UFW and collection efficiency.

Puebla also shows that they were not able to increase the collection in real terms corroborating the low recovery per m³ produced showed Figure 2.3. By contrast to these cases, Mexico DF in the capital city, where Service contracts are in operation, has an overall positive trend of increasing revenues.

Public Private Partnership (PPP) trends in Mexico

Privately managed water services in Mexico are not new. For many years (mainly in small towns and private residential developments), water service was privately managed. But gradually water companies were sold to or taken over by government.

The recent trend for the increase of private involvement in Mexico developed during the early 1990s. Five main periods represent the development of the PPPs:

- **1989 to 1992:** Aguascalientes and Cancun started with management contracts that were assigned with no tendering process. In subsequent years, in each case the contracts developed into full concessions. The contract conditions have undergone several revisions. In both cases the service/management contracts that led to concessions were promoted mainly by the private companies.
- **1991 to 1994:** A strong effort to increase local experience in the operation of systems coupled with the mobilization of public and private resources to improve water management in the Valley of Mexico led to the first formal service/management contracts for Mexico City. As a result of these contracts, four international operators initiated business operations in the country as partners of big Mexican construction companies.
- **1992 to 1995:** During this period there were numerous attempts to develop secondary treatment of domestic wastewater via BOTs and BOOTs contracts. With the exception of the cases of the cities of Puerto Vallarta in the state of Jalisco, Toluca in the state of Mexico, and those of northern states Chihuahua and Monterrey, most attempts failed mainly due to the financial crisis. Project over-design along with a lack of awareness of the cost of domestic sewerage and waste water secondary treatment also contributed to that result.
- **1996 to date:** A second attempt to improve wastewater treatment via BOTs and BOOTs. This time reducing the quality to primary treatment (depending on the final reuse of treated water) and financed with a mix of resources: federal subsidy, loans and private equity. The development of these public-private investment BOOT (PPIBOOTs) contracts, has contributed to improvements in bidding procedures and transparency, contractual guarantees, dispute resolution and partnership development. Several projects are running such as Cd. Obregon, San Luis Potosi, Cd. Juarez, Puebla, Culiacán, Leon and Torreón.
- **1997 to date:** The most recent period is characterized by a second effort to increase involvement of PPP in operations through service and management contracts (after Mexico City contracts). For example, the Puebla management contract aims to

improve billing and collection as well as customer services for the water utility. Two management-lease contracts have commenced in the two small northern towns of Navojoa and Nogales. Torreón and other medium utilities also tried to develop service contracts to increase its efficiency on billing, collection and network operation and maintenance, but unions leaders have been continuously opposed to the contracts. However, there are talks between the managers, the board of directors and private companies to seek bigger contracts, such as management contracts or joint venture (e.g. the city of Saltillo in the northern state of Coahuila).

2.3.3 The Mexico federal district service/management contract

Due to the rapid growth that the metropolitan area of the Valley of Mexico (Mexico City in general) experienced in the second half of the twentieth century, coupled with its huge size and high altitude (2,200 Meters above sea level), Mexico City faces unique problems in most infrastructure related issues. By far the biggest metropolitan area in the country, Mexico City comprises the Federal District (Mexico DF, which contains nearly half of city's population), and few municipalities belonging to the provincial state of Mexico that surround the Federal District to the west, north and east.

As shown in Table 2.14, the Valley of Mexico is supplied by several water sources. Traditionally, the underground aquifer was the main source of supply, but over-exploitation has caused the settling of several areas and risky sinking of heavy structures. Additionally, the increased industrialization and lack of water treatment has increased the risk of pollution of the aquifer. Today the aquifer still contributes to approximately half of the metropolitan water supply. The remaining comes mainly from two external sources in adjacent river basins. Because water is pumped through an elevation of a thousand metres above sea level and transported through over 100 kilometres, bringing water from external sources requires high investments and operational costs.

Table 2.14 also shows total water consumption from each source and distinguishes the higher proportions used by Mexico DF ($40.38 \text{ m}^3/\text{s}$) as compared to those consumed by the urban municipalities of the state of Mexico that belong to the metropolitan area ($26.62 \text{ m}^3/\text{s}$) this cause that the average supply per capita in the DF is 40% higher than for the adjacent municipalities, this figures are shown in Table 2.15. There are also considerable differences within the municipalities, for instance, the relatively poor municipalities located to the east receive less water than those well-off located the west, which are also closer to the water source⁶.

The valley absorbs the biggest water sector subsidies in the country basically due to the expensive transmission systems required to supply the metro area. The total subsidy that the city received in 1999 from bulk supply (now including water rights calculation and the other sources) is estimated in US\$250 million per year (that represents 1.5 times the total investment in the county in the same year,⁷ In addition to this permanent subsidy from bulk supply, there has been also a subsidy in the O&M of the distribution system (secondary network) and the huge sewerage systems that drains the valley.

6. Naucalpan, an industrialised 'Delegacion' located in the west has almost the double compared to Nicolás Romero in the east.

7. The figures shown do not include capital costs which were also invested with treasury funds.

Table 2.14. Water sources and total average consumption for valley of Mexico

Sources of water	Urban municipalities of the State of Mexico (m ³ /s) (1)	Distrito Federal (m ³ /s) (2)	Metropolitan MEXICO CITY (m ³ /s) (1+2)
Transmission from underground water State of Mexico (PAI)	4.31	10.69	15.00
Transmission from surface water State of Mexico (Cutzamala)	4.91	9.99	14.90
Extracted from aquifer in the Valley of Mexico	15.40	19.00	34.40
Springs	2.00	0.70	2.70
TOTAL =	26.62	40.38	67.00

Table 2.15. Water consumption in municipalities within Mexico City¹

PER CAPITA CONSUMPTION IN D.F. AND NEIGHBOURING MUNICIPALITIES WITHIN THE URBAN AREA OF MEXICO CITY. (Litres/person per day 1999)			
Area	Volume produced (Thousand m ³ /año)	People served (millions)	Per capita consumption (Litres - person / day)
Naucalpan ² (west of MAMC ³)	99	0.635	427
Ecatepec (east of MAMC)	127	1.424	244
Nicolás Romero (east of MAMC)	12	0.159	214
Municipalities adjacent to D.F. within the - Metro Area of Mexico City MAMC (average):	689	6.760	279
DISTRITO FEDERAL	1,273	9.000	388

1. Source: World Bank (2000), CAEM and CADF

2. = Naucalpan has important industrial areas

3. MAMC = Metropolitan Area of Mexico City

The institutional arrangement and responsibilities

The complex set of institutions and responsibilities involved in the urban water sector in the Federal District as well as the changes made in 1992 for the contract are shown in Figure 2.5. At the federal level, the CNA (National Water Commission) grants and oversees water rights and operates the bulk supply to the Metropolitan Area of Mexico City (MAMC). At the regional level, the DGCOH (General Directorate of Construction and Water Operation) is under the jurisdiction of the Federal District. The DGCOH is responsible for the primary network and the sewerage system.

The federal district's Delegaciones (local administrative areas of the federal district's government) are fully in charge of the operation and maintenance of the secondary network as well as of management functions (with the exception of billing and revenue

collection which, up to 1992, had remained under the responsibility of the treasury). The complexity of the institutional arrangements and the splitting of responsibilities was a continuous source of inefficiency and inadequate information compilation and analysis.

To improve the management situation the Federal District Water Commission (CADF; *Comisión del Agua del Distrito Federal*) was created under the supervision of the Works and Services Secretariat (SOS) (see Figure 2.6, - second part after 1992). CADF is formally responsible management of the secondary network and commercial activities, including direct customer services.

To perform several of its assigned duties, CADF opted for contracting out private companies through the services/management contracts subject of this study. Although CADF should group and co-ordinate all the activities of the secondary network, the Delegaciones still control most of the operation and maintenance of the secondary network. As we will observe throughout this article, this had caused delays in the execution of the third phase of the services contracts. (see Figure 2.6, after 1992).

It was expected that eventually CADF will also deal with tariff collection in full, but at this time it is being supported by the former desks of the Treasury. Unfortunately, although CADF has now control of the customer database, the detailed information of clients' payment status is passed back to CADF by the Treasury. This obviously causes delays that stand in the way of improving commercial efficiency..

2.3.4 Contract development and implementation

After its creation, the CADF and the city authorities worked on the preparation of the bidding documents and contract design. The invitation were issued in 1992 and the competitors offers were ready by February 1993.⁸

The objectives of the reforms and the contracts were to:

- Improve the administrative efficiency by the transfer to CADF of the responsibilities which the Treasury of the DDF (Federal District Department) had been traditionally exercising over the issuing and collection of bills for the water service. In addition, transfer to CADF the responsibilities which the 16 Delegaciones had over the operation and maintenance of the water and drainage secondary networks.
- Improve the operation and distribution efficiency by decreasing the level of losses in the water network (close to 40% in 1992) and ultimately reaching international standards of unaccounted for water (UFW) by improving the overall operation and maintenance of the secondary network.
- Improve the administrative efficiency by switching from the issue of 'fixed rate' and 'historical consumption' bills to a 'metered service' with bi-monthly reading and billing and to change culture toward water savings.
- Increase the commercial efficiency of tariff collection (close to 60% in 1992) to reach adequate standards.

8. Information in this section is derived from interviews with personnel in CNA, CADF, Industrias del Agua, Tecnología y Servicios del Agua, and Agua de Mexico, January, 1998 and subsequent personal communication.

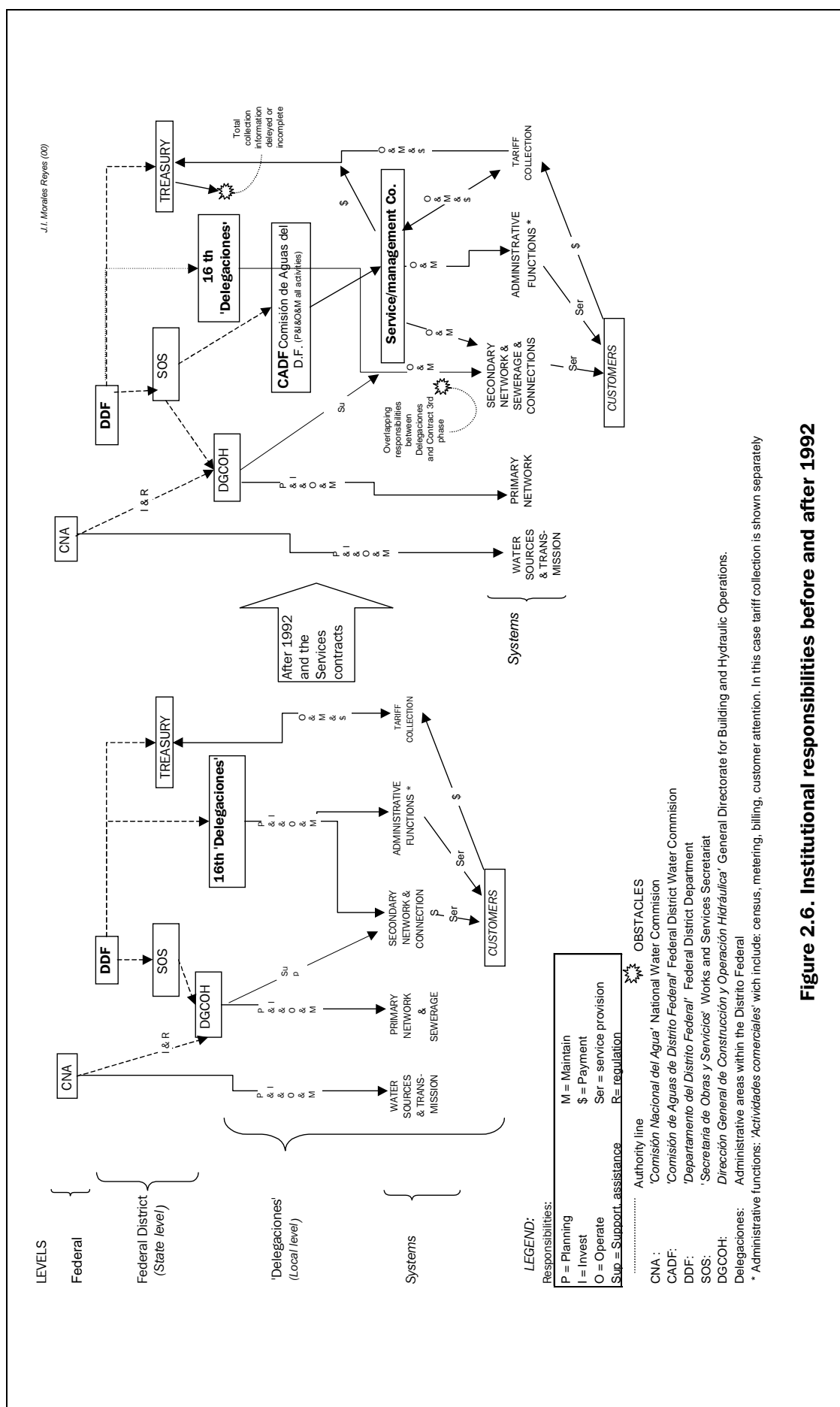


Figure 2.6. Institutional responsibilities before and after 1992

Ten year contracts were signed with four consortia out of seven that submitted bids. The firms were required by law to include majority Mexican ownership (at least 51%) with an international operator maintaining at least 33%. Each consortium was given the responsibility for managing the agreed service contract functions for approximately one quarter of the Federal District customers. The intention of splitting the area into four was to ensure back-ups in case of contract failure and to promote competition. Each zone was designed to have approximately the same number of water general connections and a similar range of socio-economic levels, though with different types of operational problems (ECLAC, 1998).

The four contracts, similar but particular to each contractor, known as the 'General Contract', were signed in September of 1993 by each of four contractors or consortia and the Commission (CADF) as client with operations commencing in 1994.

The four consortia responsible for operating the four contracts are shown in Table 2.16. There have been two changes of companies since the contracts started. In Zone B, Azurix bought the Severn Trent share and in Zone C, Grupo Peñoles took over Bufete shares. The table also shows the significant changes in the number of users registered, from the contract document figures in 1993 to the figures after the census performed by contractors. The first figure of 1,140 thousand connections corresponds to the general intakes registered by the Treasury. These register does not considered the case of multiple users from one general intake. After the census performed within the service contract, the registered users by 1998 were approximately 1,600 thousands, this is a 40% increase. It is estimated that half of the increase is due to the users or plots detected with no previous registry⁹ and the other half to the count and registry of the different users connected to a general intake. This shows the relevance of the decision to go for a phased contract approach contract, considering that the original available data was poor. The initial systematic 2 year customer survey provided good quality information for subsequent phases of the contract.

The contracts

The objectives and general contractual obligations are briefly described in a statement of intent. The actual contract activities had to be performed as requested by the CADF through "Specific Contracts" that are signed each year. The contract is generally classified as a phased approach service contract or phased service-management contract. The General Contract is divided into three stages or groups of services to be undertaken at an agreed cost. The first two may be classified purely as services activities since they are paid on a unit cost basis, as tendered by each contractor. In the third phase or group there is a set of activities that require the management of the network with indicators management and incentives.

The group tasks to be performed were grouped in three stages summarized as follows:

Stage 1 - Survey and meter installation tasks (paid by unit price)

The objectives were to obtain reliable information on users and on the state of the potable water and drainage networks, plus the installation of a metering infrastructure whose electronic reading procedure would leave no room for guessing or modifying meter readings. Activities include:

9. Mostly illegal connections.

Table 2.16. The companies, partners and number of connections¹

Zone and initials	Company name and partners	Estimated general intakes in treasury database. (March 1993) (numbers in thousands)	Approximate CADF connections database by 1998.
Zone A. North west. SAPSA	Servicios de Agua Potable SA formed by: National: Ingenieros Civiles Asociados SA (ICA) Foreign: C. Générale des Eaux, (now Vivendi)	299	
Zone B. North east. IASA	Industrias del Agua SA formed by: National: Socios Ambientales de Meixco SA Foreign: 1993 to 1999 Severn Trent UK, change from mid. 1999 to Azurix	252	
Zone C. South east. TECSA	Tecnología y Servicios del Agua SA formed by: National: 1993 to 1998 Bufete Industrial, change from 98 to Grupo Peñoles. Foreign: Lyonnaise des Eaux (Ondeo)	327	
Zone D. South west. AMSA	Agua de México SA formed by: National: Grupo Gutsa Foreign: United Utilities	263	
		1141	1600

1. Sources: CADF (1996), Díaz (1997), IASA (2000), Agua de México (2000) and research sources

- mapping of the secondary water and drainage networks
- customer census
- installation of meters to all customers

Stage 2 - Customer-oriented tasks (paid by unit price)

The objectives were to ensure billing of all customers and increase revenues whilst raising customer awareness about the careful use of water and the punctual payment of bills through:

- meter reading
- meter maintenance
- issuing of bills and distribution
- customer care in dedicated offices
- bill collection
- telephone care service
- new connections (water and drainage)
- prepayment meters

Stage 3 - Network management tasks (to work out together with Stage 2 activities and paid by unit price plus an incentive formula)

The objectives were to reduce unaccounted for water and to improve the efficiency of the operation and maintenance of the secondary water and drainage networks and raise the overall quality of the service (water pressure, water quality, etc.) through:

- operation and maintenance of the secondary water and drainage networks
- detection and repair of visible and non-visible leaks in the potable water networks.
- drainage leaks repair
- rehabilitation of water and drainage networks.

Box 2.1. Mexico City service/management contract structure

The formal documents are divided into two:

- 'General Contract' and its amendments for each one of the four contractors, all similar in structure and contents except for the prices. It sets the general clauses supporting the contract and type of activities to be performed. It also allows the agreement of new tasks as requested by the CADF
- The 'Specific Contracts' are execution contracts which never exceed the time frame of the year when signed. In this contract each activity to be performed is specified and budgeted based on the original (General Contract) unit price. They are simple agreements of tasks to be performed and its costs, but they can include additions or changes to the specifications of the General Contracts.

The basic structure of the general contracts are as follows:

1. Definitions and declaration of parties
2. Objectives and scope. First two phases are for a range of services to be delivered (groups 1 and 2), the third is the management of water distribution
3. Payment terms both for provisional and final payments
4. Payment conditions, cost reviews and 'contractor availability' remuneration, the last refers to payment to contractors when no tasks are given or there are cancellations.
5. Calendar of events
6. Guarantees and union issues
7. Penalty clauses
8. Responsibilities and property
9. Dissolution or termination of contract
10. Legislation and dispute procedures

The basic structure of the Mexico DF General Contract is set out in Box 2.1. The activities of stage 1 and 2 are paid by fixed unit and the quantity of unit are set by CADF via the Specific Contracts. Whereas for State 3 activities (network management tasks) which should be performed together with the Stage 2, there is a formula with built in incentives and penalties additional to the baseline payments by unit price. The rates agreed were supported by cost breakdown showing expected direct cost, indirect cost and profit for each task. Correction factors were also defined to be applied to such rates to adjust them to each specific Delegaciones or contract area. Indirect costs and profit expectations had

Box 2.1 continued...

Payment and incentives

Payment to contractors (remuneration) is classified and determined per phase.

- a. For the 1st phase (survey and meter installation) the contractors are paid by unit cost. It also requires the contractor to finance the working capital.
- b. The 2nd phase of commercial and customer oriented tasks is similar to the 1st phase but activities are of recurrent type.
- c. In the 3rd network management phase the contractor should be paid as follows (assuming that 2nd phase activities are also performed):
 - Provisional remuneration is based on a proportion of the estimated costs.
 - Final remuneration which has two aspects:
 1. By a formula that is related to the water charges collection from customers minus the relevant tasks paid for in the period such as network maintenance, metering, disconnection, meter replacement and billing. Therefore the greater the collection, the higher the remuneration. This should be calculated every three months and then adjusted by verifying the internal rate of return on sales for the following period.
 2. An additional remuneration is paid for other services not covered by the basic tasks specification. 'Contractor availability' remuneration is also paid to contractors when no tasks are given or there are cancellations

Penalty clauses (later adjustments)

Basic penalty guidelines were set according to Public Works Law and were adjusted during the implementation. The contractors pay penalties if they cause 'relevant' damage to the public authority (but 'relevancy' is not defined). Penalties are incurred under the following circumstances.

- Due to delays on tasks: 20% off corresponding payment if the delay is less than 6 months; 30% after 6 months of delay.
- Due to delays of more than 3 months and not specified in the contract: fine of no less than US\$100,000.
- Failure to comply with no justifiable cause or termination with responsibility: 5% of the amount pending to perform

Failure to sign a Specific Contract: 15 million Mexican pesos (US\$1.4 million in 2000)

to be computed for each stage and converted into an indirect cost factor and a profit factor (both expressed as a percent of the direct cost), which would be applied to all prices of the same stage'. The unit prices could be adjusted according to official inflation indices.

The specific contracts

The Specific Contracts are the execution orders of the General Contract. They are necessary to perform the tasks specified in the General contract and to be able to charge for the services. Generally they have more than two months span and they never exceeds the time frame of the year when signed since they are dependent of the yearly budget and specific policies implemented by CADF.

It has been common that the first Specific Contract awarded for a given task would be preceded by complementary agreements arising from further negotiations between the CADF and the contractors. These are called 'Convenios Modificatorios' or 'Convenios Aclaratorios' to update, adapt to newer conditions or fill the gaps of the General Contract, for example: modified specifications, procedures for supervision, rules for application of

penalties, etc.). The subsequent specific contracts for the same task would then tend to be much more succinct and only make reference to the terms already agreed, either in the general contract or in the previous specific contracts.

Currently, no less than 40 Specific Contracts are signed each year with each of the four contractors. A situation which requires a lot of administrative time and does not allow the contractors to plan their work on a long-term basis.

For some repetitive tasks which are not possible to postpone (issuing of bills, meter reading, etc), the process to issue contracts is reasonably secure. But when greater investment is involved and liaison is required with the Delegaciones in charge (meter installation, rehabilitation, leak detection and repair, new connections, network rehabilitation), the process for approval tends to take longer or can be postponed.. As policy changes occur in CADF or Delegaciones, the process tends to be delayed and the tasks mentioned can be cut due to restrictions on budget.

The General Contract clearly states that the CADF reserves the right not to subscribe Specific Contracts for the tasks contemplated, in case the necessary budget is not approved by the Federal District Assembly (which is a yearly process), or for other reasons. This limitation of the contract decision making process has hampered progress and the overall planned schedule suffered considerable delays. The 1st stage lasted 4 years instead of the 2 planned years, the 2nd stage started two years later and the 3rd stage started 3 years later and it has been applied partially resembling the task activities of the 1st and 2nd stages. This is far from the intended 3rd phase objective of delegated management of the operations and maintenance for the secondary network to the private operators.

Contract performance

One of the key improvements resulting from the contracts is the collection of water charges, which increased considerably in nominal terms by 294% from 1994 to 2000, refer to Table 2.17. The real benefit is reduced due to the high inflation during the 1995 crisis, so that revenue only increased by 22%. This improvement represents the highest in country for the same period as shown in see Figure 2.5 on page 71, contrasting with Table 2.12 on page 70 showing the average tariff's decline by 60% in real terms.

Table 2.17. Trend of tariff collections within the contract (reported by CADF)

	1994	1995	1996	1997	1998	1999	2000	Variation 1994 - 2000
Collection in 2000 (constant) million pesos	2,302	1,749	1,873	2,209	2,621	2,742	2,800	22%
Collection in current (nominal) million pesos	711	729	1,049	1,493	2,053	2,504	2,800	294%

Regarding the improvement of the unaccounted for water (UFW), Table 2.18 shows some key contract outputs for all the Federal District Delegaciones. The DF government reported that savings reach¹⁰ 0.94m³/sec (80MLD) that represents a significant achievement. There is, however, a general lack of comprehensive information to assess the contract performance for each of the specific zones.

Table 2.18. Key contract outputs for all zones, as reported by DDF¹

	Accumulated tasks from December 1997 to September 1999
UFW recovered	0.94m ³ /s (29.6 million m ³ – year)
Leak detection	5,500 non visible, 63,400 visible and 36,055 indoors
Pipes rehabilitated (secondary network)	256 km.
Renewal of household connections	33,094 units
Renewal of control valves on network	4,138 units

1. Source: Federal District Government. October 1999. Obras y Servicios.

The 1st stage was finished by the end of 1995, the 2nd stage activities were fully operational by the end of 1997 including the local customer care centres established (for which there was no 'unit cost' in the general contract). However, it had still not been possible to bring about the redistribution of responsibilities described in the contract objectives. The 'Delegaciones' are still in charge of most parts of the operations of the secondary network and the Treasury still helps to collect part of the water bills but fails to feedback the information in detail by user. Such fragmentation of responsibilities hampers progress and made the compilation and analysis of data difficult. For example, the contractors did not have direct access to determine who had paid the bills they had distributed.

Regarding the 3rd Stage, the private contractors are performing part of the operation and maintenance of the secondary network but this has created dilution of responsibilities. Trials of district metering (District Management Areas -DMAs) were tried as a prelude to taking on responsibility for operation and maintenance of the networks and the result were positive, nevertheless, the investment required to extend the technique as planned was high (in one pilot DMA it was found that 1,996 bulk meters were required due to the complexity of the interconnections of the network). As a result, the DF has delayed the investment to prioritise more urgent needs.

Table 2.19 presents the accumulated services that one of the companies has performed to date, giving an indication of the size of one contract and the achievements made. The tasks are arranged as shown in the General Contract and italics indicates those added during the contract implementation.

10. Latest information from CADF sources mention that more than 1.5 m³/s had been recovered.

Table 2.19. Completed contract tasks (Zone D)¹

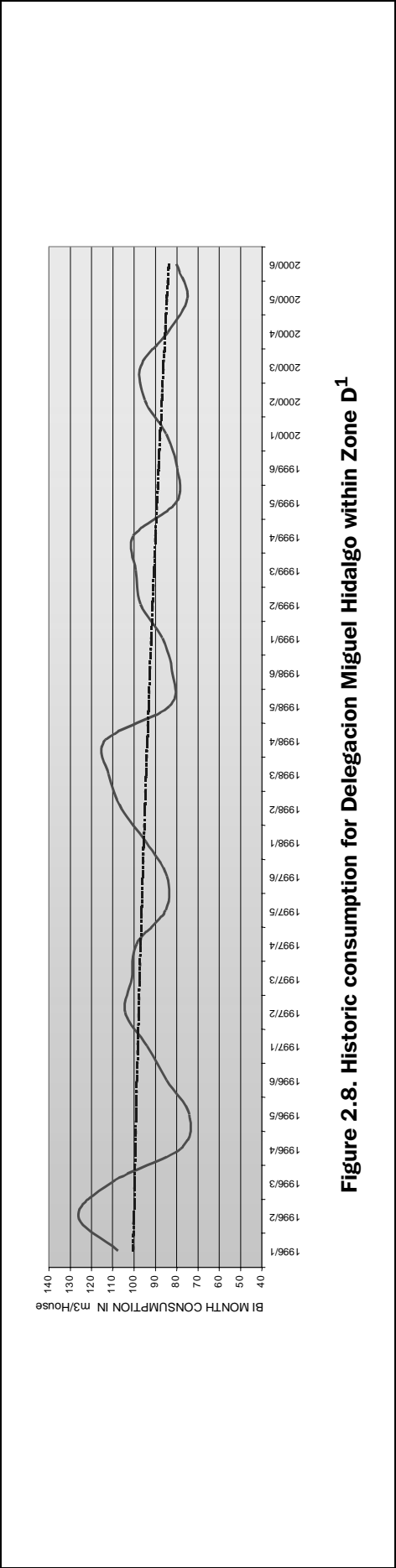
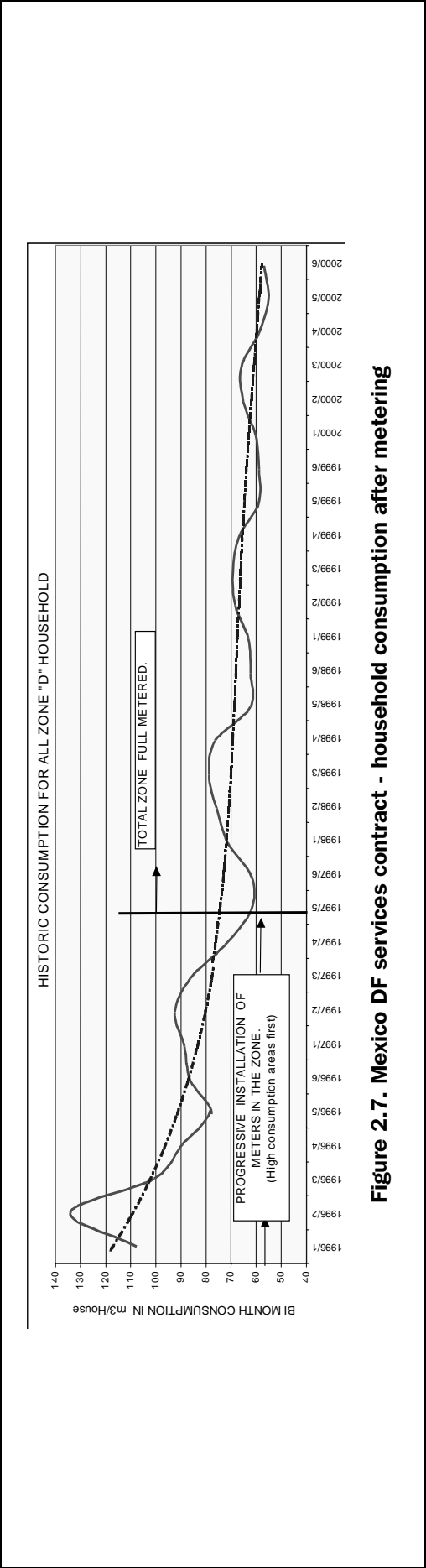
CONTRACT TASKS Tasks in <i>italics</i> are those activities not considered in the general contract (added in the specific contract)	UNIT	COMPLETED TASKS in Zone D* only, accumulated in June 2000
Activities related to Phase 2 tasks		
Census and customer registration in database	Connection	389,361
Mapping water distribution network	km ²	204
Mapping sewerage distribution network	km ²	204
New electronic meters installation (area A)	Installation	290,719
Recycled meters installation (area B)	Installation	1,716
Activities related to Phase 2 tasks COMMERCIAL ACTIVITIES		
Meter reading (domestic and commercial) (area A)	Reading	5,075,054
Large users meter reading (mainly industrial)	Reading	970
Register new customers on database	Customer	16,318
Bi-monthly billing (emission and distribution)	Bill	7,130,438
Annually billing (emission and distribution)	Bill	37,067
Meter maintenance and replacement (area A)	Read m ³	463,858,567
Informative letter	Letter	188,525
Notice letter	Letter	324,976
Reminder letter	Letter	709,786
New water connections	New connection	1,250
Customer attention centres	Unit	
Activities related to Phase 3 tasks LEAKS, CONNECTIONS AND VALVE EXCHANGES		
Non visible leak detections	Leak	1,493
Leak repair (connections)	Leak	9,051
Leak repair (connections exchange)	Connection	698
Leak repair in secondary network	Leak	1,711
Valve exchanges	Valve	1,673
Rehabilitation of secondary water network	Linear km	109.5
Connections exchange from rehabilitation work	Connection	16,914
Installation and operation of District Metering Area (DMA)	DMA	2 (temporally in 1997 only)

1. Agua de Mexico S.A. - AMSA

The savings in domestic consumption of water from 1996 to 2000 in Zone D, as part of the Mexico City service contract are shown in Figure 2.7 and Figure 2.8. After the corrections regarding the total population covered in Figure 2.7, the overall in-house savings reached in 4 years after the installation of meters are more than 20%. The first part of the Figure 2.7 shows the high impact of metering in high consumption areas.

Figure 2.8 is included to confirm the saving trend considering only Miguel Hidalgo Area, which was fully metered since the beginning. In this area the saving in their indoors consumption ranged from 50m³ to 42 m³/month, that is a reduction of 16%. Notice also the dramatic variations within a year and how the differences are lower with the advance of the metering culture and water tariff increase. This Delegacion is characteristic of extensive garden areas.

If these savings were achieved due to the actions of the first and second phase of the contract (in this case basically metering, billing and in-house leak detection), the possibilities of further savings on UFW are high. (which was estimated in 40% in the beginning of the contract).



1. Source: AMSA (2001)

Mexico City: concluding comments

The information available suggests that the Mexico City service contracts have brought a considerable improvement to the water supply systems that serve almost nine million people. Although the activities performed by the contractors are only part of the complex system of infrastructure, institutions and resources that provide services, they have been a source of leverage, and have shown a permanent commitment (and pressure) to perform basic (and targeted) actions that were neglected for decades. In seven years, most users as well as the network systems have been formally surveyed (not common in Mexican towns) and have a proper connection with new electronic meters. Customers are billed bi-monthly and are dealt with by specific customer service and telephone units.

By the end of 1999, the leak detection and repair programmes were running with almost a cubic meter per second recovered from leak detection activities. The change to metered service has also brought more than 20% reduction in domestic water consumption, as illustrated in Zone D. Unfortunately these are not final figures for the DF, as there is no official systematized data showing the overall results and activities.

From 1994 to 1997 there was a considerable increase in the amount of bills issued (177%), but the status of payment per bill is not available. There was also a surprising increase of 40% of users detected, which emphasizes the value of detailed surveys.

The analysis of the data provided by CADF regarding total income reported from the Federal District shows that water revenues increased by 294% in nominal terms from 1994 to 1998, though in real terms it this represents a 22% increase. Such an increase is a significant achievement, considering that average tariffs have declined by 60% in real terms due to the financial crisis. Although the service contracts helped to deliver these achievements, there is still much room for improvement. For instance, billing and tariff increases have not always been coupled with service improvement. Moreover, the total revenue shown in the data corresponds to an approximately 70% of the domestic customer (55% paying on time and 15% with reminding letter), which means that there are still 30% non payers.

The phased approach to contracting-out that was outlined in the Mexico DF General Contracts follows a logical sequence that can be used for contracting-out water services in other towns and cities in low and middle-income countries. It is based on some key principles such as the necessity to undertake early comprehensive surveys of customers, services provided and assets, to generate the information against key indicators that will enable effective management of services. Equally, improving customer service, billing and collection are a priority. These are necessary to generate additional revenues for system improvement. However, this should be paralleled with noticeable improvement in the service provided.

The phased approach does, however, make the contractor vulnerable to changes or lack of changes that were initially envisaged. In Mexico City not all activities designated in the General Contract have been given to the contractors. The third phase responsibilities added with the commercial activities from the 2nd stage were intended to be closer to management contract with O&M of the network and included performance incentives, but this has not happened. This is essentially due to the 1995 financial crisis, the political changes, the complexity of institutions involved, and the fragmentation of responsibilities, all of which has hampered the process of change.

- Of interest to this research into the value of services/management contracts (as a PPP, relative to a concession for example) is the less than favourable view government staff have of the contracts.¹¹ After four years of the contract's operation, members of the government staff like to believe that they could have done an equally good job. Whilst the authors continue to emphasize the benefits detailed above and also recognize that these comments may have been influenced by the circumstances of particular moment (1998) or contractor, the client has mixed perceptions of the success of the contracts and the achievements of the contractors:
- 'they are not bringing capital or technical expertise or very good management; we can do it as well'
- 'the contractors are reactive, not proactive. They have not added value'
- 'the companies are not trying to improve efficiency because of uncertainty over the contracts'
- 'sometimes they are friends, sometimes they are confrontational'
- 'technically, no skills have been transferred, which was part of the original vision'
- 'we detect some errors that later were solved by Mexican experienced personnel'
- 'it avoids government bureaucracy. Previously it took months to repair a meter; now it happens fast'
- 'the companies have financial sources - companies can finance cash flow for a few months when government is slow to pay'
- 'the mistake was to make the contract as if they knew the system: "It's a service contract – you tell me what to do" say the contractors but the public supervisor does not know what to do.'
- 'company 'x' are giving the best results, giving training, taking Mexicans to Europe, have invested in the project, even though they have not earned a lot at present. Their district metering trials results are also poor but they do try. Their proposals are better. Others want to see money first.'

Such perceptions have to be balanced against the frustration of the companies for committing themselves in the contracts to deliver certain outputs only to find out that progress through the phases has not happened as they anticipated.

The contracts were awarded according to a *present value analysis* of the estimated ten-year package of work. Contractors therefore had the opportunity to devise their own best combination to design individual values. The purpose of having four separate areas to promote competition was presumably to deliver these alternative solutions. For example,

11. The staff interviewed request confidentiality arguing they were mentioning unofficial perceptions.

one contractor had installed higher cost meters which could be read cheaply through a radio receiver in a moving van ('rather than 70 people to read meters we only need 6 people to run 3 vans. We read 2,500 meters in one shift').

Differences in technological capabilities partly explain the differences in price between companies for performing the same activity. However, there are price differences for other activities, which are not explained by variations in technology (e.g. billing, meters, maintenance activities, and the installation of new connections). For instance, one contractor is charging 40 pesos (US\$4.2) for issuing and distributing bills (a task included in the second stage), while other is charging 8 pesos (US\$0.9). Such price differences are explained by a loophole in the bidding requirements regarding contractual obligations. There were activities that lacked clear apportionment guidelines and consequently, they were not budgeted in the same basis. Examples of this are the investment and operation of customer service centres, the billing to customers, the investment and operation of the telephone customer service, the updating of census and plots and the upgrading of the computer centre.

In this regard, two of the four contractors included the estimated costs of the above mentioned activities within the item of costs for bill emission. Since this is a fully contracted activity, these two contractors can recover the cost of their investment in all these activities. A third of the contractors included the costs of such activities within the meter maintenance item. Unlike the others, the fourth contractor calculated such costs as a constant percentage of the unit cost for the 2nd stage activities. Since only 30% of the activities for this phase have been contracted, this contractor has been losing money since. He had claimed the issue for three years but by the end of 2000 he had received no relevant response. In response, the contractor was preparing a lawsuit and planning to take his client to Court. These various experiences strongly indicate that detailed specifications for essential issues on a contract are essential to foster balanced and fair competition.

These variations were particularly frustrating for CADF, which had been paying for each meter read and bill served. In some cases CADF paid over 30 pesos to the contractor for a customer who only had to pay a 15 pesos fixed charge. As an informant commented, 'So, we are reading meters for water management rather than billing.' Giving this situation, the government preferred to move slowly from fixed charges to metered charges for small consumers (500,000 out of 1.2 million in the areas served at that time), even when CADF had paid for meters to be installed. In short, the process of introducing viable tariffs can be a long and highly political process.

In contrast to the rigidity that we saw regarding adjustments to cost allocation in the second stage, in the third stage (where there are no variations in the use of distinct technologies) CADF analysed price variations in terms of unit prices. As a result, the costs were adjusted down to pay the same to all contractors despite the fact that only a small proportion of the services included in that stage were contracted. For their part, the contractors agreed to the price adjustments but not before arguing for and requesting again the contracting of all the services comprised in the third stage.

Despite these perceptions as well as the delays and the partial transference of tasks to the four consortia, it is worth emphasizing that the process of change has survived. The contracts are delivering significant benefits which the government was previously unable to deliver and are even attracting new investors. These observations suggest that the main

stakeholders are committed to the process. Additionally, it appears that the size of the contract, the importance of the city and of the private contractors (the largest international and national water companies) is also helping the process to move forward by adding pressure to force all actors involved to implement the changes effectively.

The changing national political and economic situation has clearly restricted the planned expansion of contracting out in the city. Another key issue is the complexity of the political and institutional arrangements, which have hampered effective decision-making. However the point is made (ECLAC, 1998) that a full Concession would not have been politically acceptable. Therefore, the service contract, albeit to some extent frustrated by political and institutional arrangement, is delivering real benefits and demonstrating that it is a mean to promote change.

Such a large service contract must therefore be seen as much a part of the political process as a vehicle for improved technical services provision. The contractors who signed up to do a technical task have to make a success of it. There is a sense that their international reputations are on the line and therefore, efforts have been made to work beyond the contract demands. As one contractor commented, 'If we are good boys they will give us other contracts').

Having been encouraged by the political system to continue to expect massive subsidies, consumers have a long a history of not paying for water, Disconnection for non-payment by domestic consumers was not allowed by law (though the installation of a 'trickle water device' is allowed). During this period a Mayor (Governor) of Mexico City was elected for the first time ever. The winner was the founder of an opposition political party. During the political campaign he promised to investigate how the contracts were operating ¹². Contract expectations were big: expecting the customers would move from fixed charges (which half of them had never paid) to metered bills, while providing limited service improvements and higher tariff is a hard task.

Hence, it is necessary to recognize this services/management contract as more of a change management process, enabling the city to move forward institutionally. The contracts have been a vehicle for change in a city where a concession would have been too big a step politically. It is also clear that improved systematization of the emerging information from contract activities can benefit all stakeholders, particularly the government.

Service contracts are effective but normally can only improve performance to a certain degree. Moving towards a Management contract where more responsibility is delegated to the operator offers greater potential benefits. The expectations of government and companies are different but in general, it is possible to find a common ground, albeit, this requires much more time than is usually predicted. The inclusion of foreign interests (though not necessarily foreigners; there are only two expatriates in one company) seems to act as a guarantee to commitment beyond a normal public works contract.

12. After 70 years of government by the PRI (Partido Revolucionario Institucional), the first time elected Mayor was from the most radical opposition left-centered PRD (Partido de la Revolución Democrática).

Some final words come from stakeholders: 'This PSP project is probably the best in Mexico. The relationship is still good but it has not yet reached its steady state' (contractor). If you forget the first line that it is a social business you are lost' (contractor); researcher: 'there is no short cut to private sector participation'- government: 'we know that now'.

2.3.5 The Puebla management contract

Background

Puebla represents one of the most significant examples of the PPP development process in the urban WATSAN sector in Mexico. Like Torreón, Puebla participated in the first phase of the wastewater treatment expansion through BOTs. In the two cities BOT contracts were cancelled for similar reasons. Both then took part in the second phase of wastewater projects, the PPIBOOTs (Public, Private, Investment, Build, Own, Operate and Transfer).

The capital city of the state of Puebla, 'Heroica Puebla de Zaragoza Municipality' has a population of 1,350,000 and is located approximately 100 kilometres south of Mexico City, in the middle east part of the country. A city of diverse industries (primarily textiles, chemical, metallurgy, and paper), Puebla is most famous for its Volkswagen automobile factory, visible on the drive to Mexico City. Because of its importance for national economic development the city receives federal government support through diverse programmes. Located in the sub-region of Alto Balsas, Puebla's source of water is the Balsas River, whose main tributary is the Atoyac River. Because water supply has not been able to keep pace with the increasing demand generated by the 16% population growth experienced from 1990 and 1995, the city faces serious challenges associated with water shortages.

For six years, the task of improving the water system delivery and treatment has taken centre stage in the regional development plan that incorporates the municipality of Puebla. In 1993, with the support of the federal government, the Governor of Puebla initiated a comprehensive regional development plan for 'Angelopolis'—an area comprised of the four areas of the City of Puebla: Puebla, Cuautlancingo, San Pedro Cholula and San Andrés, along with ten other municipalities. According to the Angelopolis Plan, the Puebla Valley was overexploited by 140%, and its aquifer had dropped by 20 meters in the preceding nine years. The Plan envisages a need to import water in the future.

In addition, the city and the Puebla Valley at large face considerable pollution problems. In 1995 no wastewater treatment plants operated in the Puebla Valley; wastewater polluted the main source of potable water and the pollution of irrigation flows was seriously affecting the area's agricultural production.

The water utility Operating System for Drinking Water and Sewage Services of the Puebla Municipality (*Sistema Operador de los Servicios de Agua Potable y Alcantarillado del Municipio de Puebla*; SOAPAP) functions as a decentralised 'organismo operador' or semi-autonomous authority. It is authorized to contract-out services and run concessions, suspend services, determine tariffs and include costs of investment in the tariffs charged to users. Between 1993 and 1996, the president of the

board was a state government representative, although according to most interpretations of the law, it should have been the city's municipal president. This led to a strong legal confrontation when there was a change in political party leadership in the city.

As reported by CNA, administrative or commercial efficiency (the ratio of collections over billings) was around 60% in 1997 to 1998, which is a low value in comparison to cities of comparable size in Mexico. According to CNA data, the operating efficiency (ratio of water sold over water produced) for the same year was 52%.

Service coverage reports show that between 85% and 90% of the population is covered by the municipal water supply service. Since the implementation of the Angelopolis Regional Plan began, 270 kilometres of new pipeline was constructed to increase coverage.

The management contract for commercial services

In 1998, the city authorities signed a well-developed service/management contract with performance incentives to deal with the commercial systems and hence, be able to meet the set objectives for the urban water and sanitation sector. The sequence of PPPs and investment projects outlined in Table 2.20 shows how Puebla authorities are addressing the city's infrastructure requirements and the need for improved commercialized management using a variety of PPP contracts.

The management contract is the country's first contract to be focused only on commercial services for the urban water sector. The municipality hopes to address the problem of low commercial efficiency through a management contract. A key aspect of this particular contract is the establishment of the proper incentive structure for achieving this efficiency and a detailed and structured contract.

The state's Governor was very active in ensuring political support for the changes in the water system both for the management contract and the PPIBOOT. He even provided a budget for water separate from the city's municipal budget. He also chaired the planning committee that met weekly for a period of three years, and was assisted by first class external consultants. The regional development plan created the basis for the changes developed for Puebla's water system. As reported by the Plan, it drew upon the responses of over 3,000 "citizen involvement committees" to prioritize public service provision—mainly water.

It seems that the Puebla contract bidding process strictly follows the legislation on this matter, minimizing the technical evaluation of the bidder and the proposal. This led to an award of the contract virtually based on the lowest-tariff bid. Subsequent changes can then occur during contract negotiations.

Experience from a number of cases suggest that some companies might under-bid in the proposal stage either because of an underestimation of real costs or reliance on the practice of re-negotiating more realistic costs and higher payments after being awarded the contract. These practices interfere with market goals of competition and governance goals of transparency, leading to unrealistic contract proposals.

SOAPAP has set ambitious goals through the 'Modernization Project for the Commercial System' with objectives to increase commercial efficiency (increasing billing and collection rates) from around 65% to 95% by the year 2000. The SOAPAP plans to achieve these objectives through a management contract that it recently signed with OMSA (of Grupo ICA). It is a ten year contract with clauses for reviewing the contract terms mid-way through the contract period. In the planning of the tendering process, the estimated starting date was March 1998, but the programme started nearly a year behind and later interrupted. The estimated year for the completion of works (metering) was 2001; the contract-ending year was 2008.

Table 2.20. Key stages of Puebla PPPs from 1991 to 2000

Period	Contract type, key issues and contract term
1991 to 1995	Private funded BOOT – the first contract to build and operate five-wastewater treatment plants with complementary sewerage. After several problems, one plant was built but as a result of the financial crisis, the private company could no longer afford to continue and the contract was cancelled
1996 to 1999	Development project - the provincial state began a huge regional infrastructure project, 'Angelopolis', assisted and financed by national and international organizations to address water shortages by providing a new bulk of water supply.
1996 to date	Public Private investment BOOT (PPIBOOT) The contract for the wastewater treatment plants was re-structured and re-bid with 40% of the total investment as a federal government subsidy. The contract was signed in 1998, and included the debt of the 1991 contract.
1998 to date	Management contract In order to address the considerable inefficiencies the public utility experienced, a management contract was prepared, and tenders were invited and assigned to a Mexican Company (OMSA -ICA) Signed: end 1998; Contract duration: 10 years. Aim: Modernization of the Commercial System including: Census, Database, Metering (up to 160,000), meter reading and maintenance, billing and collection and customer attention.

The main services to be provided by the contractor are:

- increase the registry of connections to 250,000
- regularize supply of 160,000 connections
- supply and install 80,000 automatic meters and 80,000 manual reading
- supply, install, operate and maintain the Commercial System's computer system
- meter reading, billing and payment collection
- maintenance of meters
- dealing with public relations.

The contract is well described, developed and organized. Incentives are included and efficiency gains are required by the contract. See Box 2.2 for a summary of the payment terms, incentives and penalties. SOAPAP acts as the regulator of the management contract. Note that the operation and maintenance of the distribution network has not been included in the scope of the contract.

The contractor assumes sole responsibility for service delivery and cannot subcontract to another firm without SOAPAP approval. On the other hand, SOAPAP may contract another party for services. In general, the contract gives SOAPAP a great deal of flexibility. It can change the terms of the contract or its annexes and determine the terms of reporting by the contractor. It can also terminate the contract if it is in the public interest or if the company fails to comply with contract terms, and suspend the contract in full or in part for non-compliance or if *force majeure* interferes with service delivery to the public.

In the case of a dispute, the parties must first try to solve the differences by dialogue. If another way to deal with a dispute is required, as they must appeal to a special Technical Committee of three persons (the contractor, SOAPAP and a third member they both agree upon). As a final remedy (usually avoided in most cases) the city courts are the only entity allowed to interpret the contracts.

The funding of this contract is complicated and I inserted in the mega-project 'Angelopolis'. Thus, it may be facing similar problems to those of other contracts (e.g. Aguascalientes, Mexico DF) when the public entity or political changes produce delays in the budget allocation for investments or in the compliance with parts of the contract.

During the early stages of the management contract, OMSA (the operator), said it did not have experience any particular problems with their collections because the people in Puebla had shown willingness to pay for the service delivered. However, the installation of micrometers in homes has required a continuous effort in working out customer relations.

It is interesting that SOAPAP has decided to limit a management contract to commercial services only (billing, collection, meters and customer services), leaving out the operation and maintenance of the water distribution network. If had SOAPAP included network management in the contract, incentive payments on improvements in billing and collections would have also provided incentives for the operator to improve customer services and system performance. Customers are generally willing to sustain payments for improved water services.

After two years the results of the management contract are still awaited and no information has been disclosed. It is expected that they will be less than the ambitious goals programmed as contract implementation has had continuous problems due to financial and political changes.

Box 2.2. Summary of incentives and penalties for the Puebla contract**Payment and incentive conditions**

- All services will include a payment in advance of 10% and if materials are required an additional 20% for its acquisition
- Incentives are only provided for billing and collection according to the following procedure:

The indicator is the collection efficiency (collection/billing) to be measured every six months and this will be compared with the previous period to measure the increase/decrease in efficiency. The efficiency gains will be an economic incentive calculated as a percentage increase to the service cost according to the following table:

Collection efficiency of the period in %	Additional payment as percentage of the cost of the service
> 0 - 40	0.0
> 40 - 50	0.2
> 50 - 60	0.4
> 60 - 70	0.7
> 70 - 80	1.4
> 80 - 90	2.3
> 90 - 100	3.5
The collection figures exclude late payments of previous bills	

Penalty provisions

Penalties can be charged in cases where the failure is due to the contractor.

- Due to Delays on tasks: 20% base charge and 30% in addition if it was finished after 1 to 3 months delay, depending of the service type.
- If the collecting efficiency was reduced due to the contractor failure, they will pay 5% of the equivalent amount that was not collected.
- If a task is not completed they will be fined with 5% of the total amount.
- If the contractor refuses to undertake a Specific Contract Annex as a whole, they will pay 10% of the total corresponding value.

2.3.6 The Aguascalientes management contract

Background

The city of Aguascalientes is located in the central area of Mexico. It has a population of 640,000 and water production of 245 MLD in 1998. Despite contractual problems, there has been an ongoing public private partnership with the same operator for the last eleven years. In 1989, the city of Aguascalientes decentralised water utility. (CAPAMA) signed a management contract with the private company SAASA, owned by Grupo ICA (*Ingenieros Civiles Asociados*, the biggest building company in Mexico, now widely diversified). SAASA is now owned jointly by ICA and Vivendi, under the name of Operación y Mantenimiento de Sistemas de Agua, SA de CV (OMSA). The goal of the management contract was to increase the water system's efficiency.

As summarized in Table 2.21, the municipality has gone through four main stages in the Public Private Partnership with the same company. The preparation for the first management contract came from the proposal presented by the private company (similar to Cancun) and had the support of federal government representatives.

The Public Private Partnership developed from the more limited management contract to a complex concession contract over this period. Revisions to the contract then occurred due the financial crisis in the mid-nineties and the need to have a more clearly defined contract that dealt with issues such as investment, tariffs and arbitration.

Table 2.21. Key stages of Aguascalientes PPPs from 1989 to 1999

Period	Contract type, key issues and contract term
1989 to 1993	Management service contract: to increase efficiency. Contract duration is 3 years. Direct assignment of the contract.
1993 to 1995/6	Concession contract: In 1992, appraisal reports showed that investment and service needs were beyond the capacity of city authorities. A concession contract was therefore developed. The contract requires the operator to take full responsibility for operations and rehabilitation of water system for 20 years duration
1996 to 1999	Revised concession contract: Contract renegotiated as a result of financial crisis. Redefined investment procedures; tariff levels established through contract; dispute procedures established; reporting to regulator procedures; and establishment of contingency fund: 30 years duration
1999	Second revision of concession contract: Re-negotiation of investment agreements and resolving questions over the tariff formulas and rate of return. It was estimated to be resolved at the end 1999 to 2000.

Implementation of the contract

As the management contract started, SAASA immediately undertook several programs to improve water delivery efficiency, including:

- customer census
- metering program and new billing and collecting system
- consumer program

- survey of current condition of assets and system network
- new contracting system for repairs by means of services contracts
- leak detection program and system rehabilitation program.

These activities were introduced in phases. SAASA did not take over the billing and collecting system until the customer database was complete and other information systems were in place. Rehabilitation of the distribution system was not executed until studies were carried out to determine the condition of the assets.

The results of the three-year management contract were favourable according to reports prepared by Grupo ICA and Saade (1993). Some illustrative indicators of this first contract include:

- the number of registered users increased by 42%, from 74,000 to 105,000
- metering was installed for 59,850 connections (starting from almost zero)
- employees per 1,000 customers declined from 5.13 to 4.02 by the end of 1991
- gross income increased by a factor of 3.5 (nominal terms), from 6 million to 28 million pesos
- tariff increases from \$0.15 to \$1.5 pesos per cubic metre (in current pesos).

Although the tariff increased substantially, due to the deteriorated condition of the system assets and commercial inefficiency (partly due to poor payment by customers), it was still difficult to generate sufficient revenue to meet operating and investment costs. Moreover, customers' willingness to pay was negatively affected by the tariff increases. For further illustration on the revenue issue, refer to comparative trends shown in Figures 9 and 10.

By 1993 the water authorities and the private company recognized that the water system's investment and service needs went beyond the capacity of the municipality. Consequently, the Municipality of Aguascalientes prepared the basic legal framework for a full Concession contract of the water system, building on the relative success of the Management contract.

In October 1993 the Municipality of Aguascalientes signed a basic concession contract with the Water Concessionaire of Aguascalientes, (CAASA), which comprised the same Mexican and French companies involved in the management contract. The concession contract was signed on October 21st 1993, one day after the State Congress passed legislation on drinking water and sewage systems ("Ley de los Sistemas de Agua Potable y Alcantarillado"), which addresses basic legal and regulatory issues for PPP. The following day, the State Legislature approved the Concession Contract.

Pressure for the concession came from the Governor as well as the construction industry. In exchange, the city required the concessionaire (operator) to assume about \$70 million pesos of municipal debt. Much like the Cancun concession, the contract terms were vague and unfortunately, as soon as a major economic crisis occurred, the contract hit serious problems.

With subsequent developments it became apparent, that the detection of leaks and rehabilitation of the system were not complete before the concession contract (the next phase of the contract development) was signed in 1993. At the time there was still uncertainty about the condition of the assets and the extent of investment that would be required to continue reducing physical water losses.

The concessionaire wanted fees raised. (The major costs for a water system are personnel and electricity for pumping the water, both of which are extremely inflation-sensitive). But the city complained that the concessionaire was not performing its tasks, and initially refused to authorise the tariff increases. Negotiations have continued to try to resolve such difficulties.

Lessons

One of the main lessons of the Concession is that if contracts are initially described in general terms, they will require substantial modifications, and surely disputes may arise with the resulting waste of time, energy and resources.

Another lesson is that regardless of the established public regulatory mechanisms and contractual terms, political involvement will arise when changes of authorities take place especially regarding the tariff, which to date remains a problem in the city. Additionally, the financial and investment schedule, as well as return on investment should be carefully planned and stated as well as the outputs compilation and analysis to try to conciliate conflicting opinions amongst the main actors. Table 2.22 below summarises many of the key negotiations, campaigns and legislative changes that were necessary for developing the PPPs and moving towards sustainable services.

However, the key lesson for this study is that the service/management contract delivered favourable results with significant improvements to service and efficiency. The contract is a good example of how smaller service/management contracts can improve substantially the performance against basic indicators, with commitment of both parties. In addition, the initial contract helped to prepare the water utilities authorities to think about long term planning and investment and work towards a more complex Concession contract as this case showed.

2.3.7 Conclusions: Key lessons learnt in Mexico

The main stakeholders, public and private, have jointly learned lessons through their PPP endeavours over the years, which have subsequently translated into better contracts and service improvements for customers.

The service and management contracts enable system and management improvements. But some public utilities have also achieved the same on their own (Monterrey, Chihuahua, Cd. Juarez, Leon, Reynosa, Torreon, Tijuana). The key common factors are

Table 2.22. The long process in Aguascalientes of the evolving contracts:

Year	Type of change	Actors involved	Change/Event
1989	Legislative Commercial Service contract. Management change.	Federal Leg/ CNA CCAPAMA; CAASA; ICA CAASA	Federal Law creates decentralization framework Utility of Aguascalientes signs 3 year management contract with SAASA SAASA begins services provision to Aguascalientes
1990 - 1991	Service / management contract. Management change. Tariffs	CAASA CAASA and users	Census and Established customer database; reduced number of employees; increased commercial efficiency ; micro and macro meters program; expanded service Changed from fixed fees to metered tariff structure
1992	Political Legislative Administrative	State Government Federal Legislature/CNA Municipality	State development plan includes Concessions. New federal Law 'Ley de Aguas Nacionales' allows private participation. Completed integrated diagnostic and 20 year investment plan for water system
1993	Legislative Services Co. to Concession. Regulatory Fiscal	State Government CCAPAMA, CAASA Municipal Gov. and CCAPAMA CAASA, Banobras, CNA	State enacts law allowing Concession Oct 20. Approval 20 year integrated Concession Oct 21. Modification of CCAPAMA internal organization to become regulator of concession. CAASA assumes 71,000,000 peso liability, financed by Banobras 49%; SAASA 38%; CNA 13
1994	Fiscal Commercial	Federal devaluation of peso and Macro economic crisis. CAASA	Capital crisis hits Mexico December: capital flight; increase in interest rates and inflation. Tariff increase as indexed to inflation; only 5 of 11 increases approved by municipality.
1995	Political Administrative	Municipal pte. Candidate Municipality and Governor Federal Government	Muni presidential candidate campaigns on platform of lowering tariffs and revoking concession. Wins August 1995 election. Newly elected muni president asks governor to mediate relations with Concessionaire. Secretaria de Gobernación mediates.
1996	Political Contract redefined. Commercial/ Political Financial Legal	Mayor/ City Council City Council, CCAPAMA, CAASA-OMSA, CNA State, Municipality, CAASA State Government Muni, State, CNA, CAASA State	Municipality takes over CAASA offices – March Negotiations among CAASA-OMSA, Municipality and CNA April Re-initiate Concession with new contract conditions- May State backs contract with 10 million peso guarantee. Each contribute 40 million pesos to resolve fiscal problems. Enacted new law Sept 15
1998 to 1999	Financial Commercial Legal Contract redefined	Banobras, Municipality, OMSA Municipality Municipality, CAASA-OMSA	Renegotiating Loans. Demanded 10% reduction in tariffs – August Re-negotiating Contract; finalization set for April 1999

continuity, political will, basic commercial orientation and customer culture. These contracts can assist in developing a more commercially orientated culture and a momentum for change.

Factors that have hampered the effective development of service/management contracts in Mexico include:

- the financial crisis in the mid-nineties;
- the large number of government organizations involved that have led to overlapping or fragmented responsibilities;
- political interference or lack of action in the form of: party politics, reluctance to change laws or regulations, being influenced by media attacks and a lack of willingness to charge higher tariffs.

While these problems remain to varying degrees, the public and private sector are co-operating in making sector and service improvements.

The Mexican national partners are mostly the big construction companies. Initially they tended to push for large construction projects and the quick returns they were used to in government contracts as opposed to developing the efficiency and effectiveness of systems operations and long term returns.

The influence of international operators has helped local companies become more orientated to service improvements. For Mexico City the international operators were required to join with national partners. Although international companies have been involved in the larger contracts they have generally used national and regional staff. There has not been a 'foreign take-over'.

Public Private Partnerships (PPP) in Mexico have generally been a wide society participation and awareness, additional to the increase of private sector involvement and specific services improvement.

The main stakeholders have to a large extent realized that the old way of subsidies, welfare oriented institutions and bureaucracy needs to change and they actively participate in the reform debate. Although in most cases, public participation and information systematisation may be improved as well as the consolidation of clear regulation systems and procedures.

The process of changing people's attitude to more proactive commercial approaches is continuing, but takes time. An important factor in bringing about change is providing clear and transparent incentives to operators, employees and customers.

Important efforts were made by the central authorities to compile good management information on the sector. But there still needs to be more consistency and better availability of data, especially for managers of small utilities, far from the main area of influence of Mexico City. Unfortunately, there are still cases where data is hidden for fear of misinterpretation or being misused.

Most contracts have strong guarantees for clients and are heavily weighted on penalties but they have rarely been applied. But recent contracts now have a clear commitment to solve disputes in 'friendly' mechanisms and with third party arbitration as second alternative. The last resort is the law courts which are generally avoided.

For some contracts the bidding process follows the straight application of the law, minimizing the technical evaluation of the bidder and the proposal. This can lead to an award of the contract based on the lowest-tariff bid. Subsequently substantial changes or delays to the contract may occur during negotiations.

Experience from a number of cases suggest that some companies might under-bid in the proposal stage, either because of underestimation of real costs or relying on further re-negotiating more realistic costs and higher payments after being awarded the contract. This interferes with effective competition and transparency, and can lead to unrealistic contract proposals¹³.

2.3.8 References

- Agua de Mexico (AMSA) (2000). *Research interview and internal reports*.
- Angelopolis (1993) . *Presentation document*. Gobierno del Estado de Puebla.
- Banobras (1998). *Research interview*. Banco Nacional de Obras y Servicios Públicos SNC.
- Banobras (1998)(b), *Water sector briefing for 66 urban areas in Mexico*, Internal document, Mexico
- CADF (1996). *Research interview*. Comisión de Aguas de Distrito Federal.
- CAEM (2000). *Research interview and Data sources for Sector Diagnostic*. Comision Estatal de Aguas de Estado de Mexico.
- CNA (1994-1999) *'Yearly Sub Sector Report.'* National Water Commission, Mexico.
- Casasus, C. (1994) *'Privatising the Mexican water industry,'* Journal American Water Works Association, March, 1994
- CNA (1999) *'Strengthening the Strategy for Public and Private Sector Participation in Water and Sewer Services in Mexican State and Local Governments,'* study for CNA, sponsored by the World Bank.
- Diaz, L. (1997) *'Una nueva estrategia de agua para el Distrito Federal'* Comisión de Aguas del Distrito Federal; and interview notes.
- ECLAC (1998) *'Progress in the privatization of water-related public services: a country-by-country review for South America,'* Economic Commission for Latin America and the Caribbean. ECLAC. Santiago.
- IASA (2000). *Research interview*. Industrias del Agua S.A. de C.V. Mexico.
- INEGI (1999) *'Indicadores de desarrollo sustentable.'* Instituto Nacional de Estadística, Geografía e Informática. México.

13. A legislative proposal was introduced in 1999 to the National Congress to address this issue but with very limited success.

INEGI (2000) '*Censos 1990, Conteo 1995 y Resultados preliminares del Censo 2000.*' Instituto Nacional de Estadística, Geografía e Informática. México.

INEGI (2000) Web article taken INEGI data (Instituto Nacional de Estadística, Geografía e Informática, Invertia.com.

Morales-Reyes J.I., Franceys R., Sansom K. (1998) '*Mexican BOT Experience and World Comparison*', WEFTEC 98. Orlando Fl. USA

Saade, L. (1993) '*Perspectivas de la participación de la iniciativa privada en el servicio de agua potable en México.*' Tesis de licenciatura en Economía. ITAM. México.

Saade, L., 1998, New Strategy in urban water management in Mexico. The case of Mexico D.F. Natural Resources Forum. Vol.22 N°3

Tortajada, C. (1999). '*Environmental Sustainability fo Water Management in Mexico*'. Third World Centre for Water Management. México. Quoting UNAM 97 and National Research Council *et al.*, 1995

World Bank (2000) '*Diagnostic Study of the State of Mexico Water Sector.*' Developed by J.I.Morales-Reyes for the World Bank Mexico. W.B. Mission State of México. Mexico D.F.

2.4 Trinidad and Tobago management contract: 1996 to 1999

Based on a paper presented by G. Weatherdon of STWI, UK to a WEDC seminar 18 March 1999. Editing and concluding comments by K.R. Sansom, WEDC, UK.

2.4.1 Background: Prior to the contract

Trinidad and Tobago, in the Southern Caribbean, are islands with a combined population of 1.3 million. Trinidad and Tobago has a reasonably healthy economy strengthened by development of natural gas resources in the 1990s, has an expanding industrial base and a traditional agricultural sector. .



Figure 2.9. Map of Trinidad

Water and wastewater services are provided through the islands by WASA (the Water and Sewerage Authority). Although 90% of the community had access to a water supply, public standpipes and tankering were significant elements in the provision of services. The level of service to customers had deteriorated progressively with a large proportion of the population receiving water supplies for a few hours a day and in some areas no water for weeks at a time.

Economic restrictions over the last 15 years had limited investment in the utility and the infrastructure was in a poor condition. Up until now, Central Government kept direct control of tariffs, budgets and investment together with other matters of direct national interest.

WASA has mainly relied on the Government for all of its capital requirements. The tariffs have only recently been increased after a period of several years. The Government were not willing to increase tariffs further, for increased investment, until the population could see services improve.

2.4.2 Introducing the management contract

Internal management improvements to WASA were tried over the years, including a period of top management support by local consultants, but with limited success. As part of the Government's thrust towards a viable water sector, private sector participation was sought which would establish specific service quality objectives and comply with World Bank conditionalities for funding.

After extensive negotiations the Government and WASA entered a first stage management contract, the Interim Operating Arrangement (IOA) for a period of three years which included a preferential right, subject to performance, to negotiate a Long Term Arrangement (LTA) which would constitute the second stage.

The three year IOA entered into by the Government of the Republic of Trinidad and Tobago (GORTT) and WASA with Trinidad and Tobago Water Services (TTWS), a joint venture company formed by Severn Trent Water International and Tarmac Construction Caribbean Limited in April 1996, had the following key deliverables: -

- Improved Service to an expanded customer base
- Financial and operational self-sufficiency

The form of IOA developed had many of the characteristics of a management contract but control was exercised through secondment of a new management team, (Chief Executive Officer (CEO) and expertise) by the private operator, to WASA. The responsibility of the Operator was to supply personnel to undertake the management of WASA to an agreed Business Plan. The contract also involved arrangement of funding (i.e. resources) for the operational shortfall for the three year term (amounting to around US\$83 million).

The Government also established a Consultative Committee which acted as a forum to resolve contract issues. This comprises a Ministerial representative and representatives from the Board of WASA and the Operator.

The detailed Contract form was developed jointly with the Client and was only passed for legal input after technical, operational and commercial points were substantially agreed. This proved an excellent method of fast tracking this type of agreement. A novel part of this Contract is in a performance related incentive payment, that is the Operator puts a major part of his fee at risk against achievement. This is as opposed to a 'bonus' on top of fees as in conventional models.

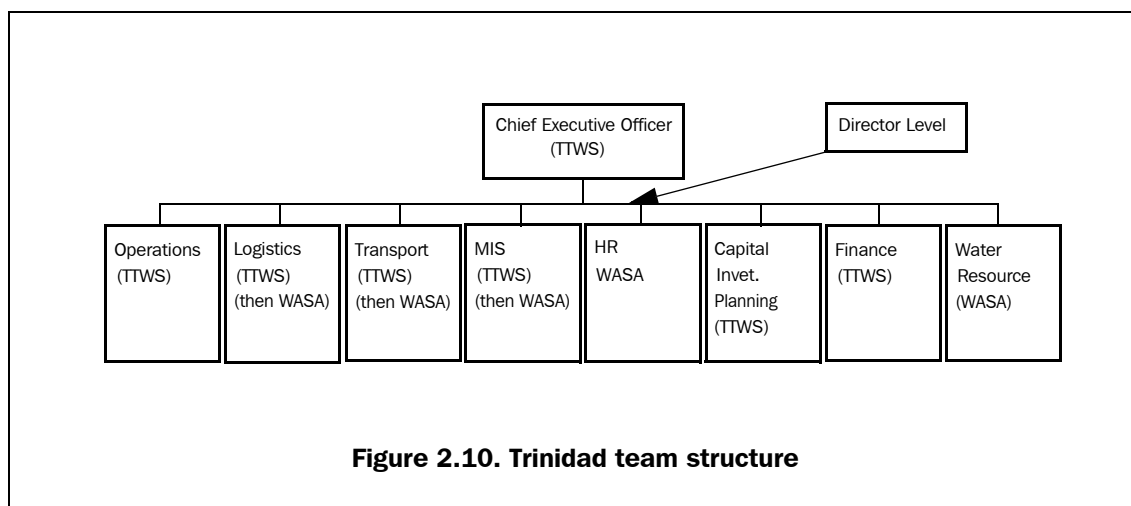
Achievement was measured against a basket of performance indicators related to levels of service for WASA and the associated measures of effectiveness for all aspects of the WASA business. From this, a series of key measures for Operator's effectiveness were abstracted and included: -

- continuity of supply of water
- operating debt to income ratio
- operating sales

- treated water production capacity

2.4.3 Contract implementation

As mentioned earlier the Operator provides a full top management team, together with other technical and professional support. Throughout the contract some top management posts have reverted to local WASA employees when suitable candidates have been trained and are available refer to Figure 2.10 below.



In addition a comprehensive training programme for WASA staff was a major influence on ensuring the transformation of the organization. This involves overseas utility experience for key staff as well as the training programme established throughout WASA.

Although there was a high degree of loyalty to WASA among employees the previous funding shortages had led to a lack of motivation and incentive. Initially the TTWS managers were an unknown quantity and treated with some apprehension. However, with the experience of working together and the growing appreciation of, and confidence in the professional approach of the managers in the TTWS team, a climate of optimism and determination was developed.

2.4.4 Performance/achievements

In the third year of the IOA some of the key achievements which have been made without the long term capital improvement programme that was originally envisaged, are shown in Table 2.23. Financial management has shown a marked improvement, with WASA achieving an operating surplus for 1998 to 1999, the first time in its thirty-four year history.

Significantly more water is now produced and plant breakdowns have reduced considerably but this has not led to any significant improvements in customer service. New strategies and systems are now in place for more efficient and effective operational management and as a result WASA is poised to make significant improvements in service provision.

The original IOA plans for improvement of levels of service were linked to the crucial planned provision of capital investment, a pre-requisite of the IOA. Delays and postponement of the multi-lateral bank funding and other investments has had a major

Table 2.23. Some key achievements of the IOA in Trinidad and Tobago

Key policy areas	Achievements by 1999
Supply production	<ul style="list-style-type: none"> Total water production increased 30% to 176MGD from 135MGD
Environmental protection	<ul style="list-style-type: none"> 9 out of 12 wastewater plants complying with effluent discharge consents (1 out of 12 pre IOA)
Use assets efficiently	<ul style="list-style-type: none"> Capital investment monitoring and control procedures developed and implemented
Customer service	<ul style="list-style-type: none"> Customer Service Bureau's opened in five new locations offering 24 hour service to customers on 12 dedicated telephone lines
Expand domestic and industrial service	<ul style="list-style-type: none"> Customer register developed by island wide survey and introduced into the billing process
Service to society	<ul style="list-style-type: none"> Schools public relations programme developed Public relations strategy in place
Achieve financial self-sufficiency	<ul style="list-style-type: none"> Turnover projected to increase by 45% by end of IOA 1998 to 1999 Small operating surplus forecast for 1998 to 1999
Prioritise actions to address areas of greatest need	<ul style="list-style-type: none"> Levels of service measures and targets implemented
Employee development	<ul style="list-style-type: none"> 30% reduction in manpower numbers Extensive in-house and UK training undertaken HandS systems introduced
Customer accounting	<ul style="list-style-type: none"> Collection performance improved

detrimental effect on the planned potential increases in levels of service. To remedy the effect on operational issues due to the lack of capital investment during the course of the contract, TTWS have developed with Government sponsorship, and are managing an innovative and ambitious new multi million dollar scheme, the South Water Project. The introduction of universal metering is also proposed to encourage water conservation (G.Weatherdon, STWI (1999)).

2.4.5 End of the contract

The changes in the operations and finance of WASA provided a foundation for the negotiations for a Long Term Arrangement and the incentive for the expansion of private sector participation. However, at the end of 1999, the decision to move to the second phase of the contract was deferred and WASA was managing operations by themselves.

2.4.6 Concluding comments

It is clear that during the IOA Contract, WASA under TTWS management improved its performance and this has been achieved in spite of major constraints that could not have been anticipated at the outset of the IOA.

Significant improvements have been achieved in aspects such as water supply production, effluent discharges and financial management. But improvements to service provision, have been hampered, even though contract performance criteria were met, because tariffs have not been raised sufficiently and the proposed World Bank loan was not forthcoming.

Solutions for capital funding have been explored by TTWS and the government, and the South Water project is an example of success in this area. But political reluctance to raise water tariffs has emerged as a major constraint, as in many other developing countries.

No doubt many factors influenced the GORTT's decision not to proceed with the 2nd phase contract at present, including pressure from other stakeholders such as the unions who have their own perspectives.

“While hundreds of jobs have been lost, the consortium’s promise of better services and profitability, according to the National Union of Government and Federated Workers (NUGFW), has not been achieved” (Trinidad Guardian 13 March 1999)

Comments of this nature serve to emphasize the need for all stakeholders to be involved in the change management process and Government/Operator obligations, in order to that the interests of all parties are considered based on factual information.

A difficult lesson for the governments to learn is that to generate adequate funds for significant service improvements invariably requires substantial tariff increases. A ‘willingness to charge’ is often a bigger constraint than a ‘willingness to pay’. If governments seek PPPs, there is also a need to allow sufficient time for the private operator to make improvements.

The particular form of a management contract that has been used in Trinidad and Tobago where TTWS staff have been brought into to be the majority of the members of the management team of the existing WASA (see Figure 2.10 on page 104), no doubt created ‘initial apprehensions’, displacing some senior WASA staff, but it has enabled more commercial and customer orientation of WASA and government staff. Selection of an appropriate form of management arrangement, depends on the willingness to make changes to the existing organization(s).

At the end of the specified contract period it was agreed that the contract would not be renewed. The Government of Trinidad and Tobago decided not to move towards a full concession in the short term.

2.4.7 References

Weatherdon, G., STWI (1999) *'Private sector participation in the water services for Trinidad and Tobago – case study,'* Severn Trent Water International, UK.

Ashcroft, E., Renwick, D. (1997) *'Severn Shake up in Trinidad'*, article in ‘World Water and Engineering’

Trinidad Guardian (1999) *'Trinidad and Tobago: Water Privatisation three years on,'* 13 March 1999.

2.5 Serving the poor in Haiti

A summary case study based on a paper by Bernard Collignon on 'Restructuring the Water Services in Port-Au-Prince Shanty Towns' published in Unicef's Waterfront, Issue 11 August 1998. The editor of this summary is Kevin Sansom.

Programme context

- Port-Au-Prince is a rapidly expanding capital city of 2 million inhabitants, with the population increasing 10 fold in the last 30 years. However, the water distribution network has not kept pace with this growth. Approximately 55 litres per capita of water are available each day, but only about 12% of families have water connections in their homes. For the remainder of consumers the standpipes have not been functioning regularly. CAMEP who are the public water company are reported to be heavily in debt. Consequently Port-au Prince has seen a rapid increase in water distribution by the private sector. The types of service they provide and the prices they charge to areas without a pipe distribution network are summarized in Box 2.3.

Box 2.3. Port-Au-Prince independent service provider chain

Private tubewells: water is sold wholesale at a price of about \$0.1 mainly to truck owners who resell the water in Port-Au-Prince.

Trucks: water is delivered by trucks and sold to owners of private water tanks at a price of \$0.8 to \$1.5 per cubic metre. Clients are retailers who resell the water in their neighbourhood.

Private water tanks: water is sold at a price of \$2 to \$3 per cubic metre. The clients are the water carriers who then resell it door to door.

Water carriers: water is sold to private individuals who do not have their own pipe connection, by the water carriers at a price of \$3 to \$5 per cubic metre.

Programme to serve 14 shanty towns

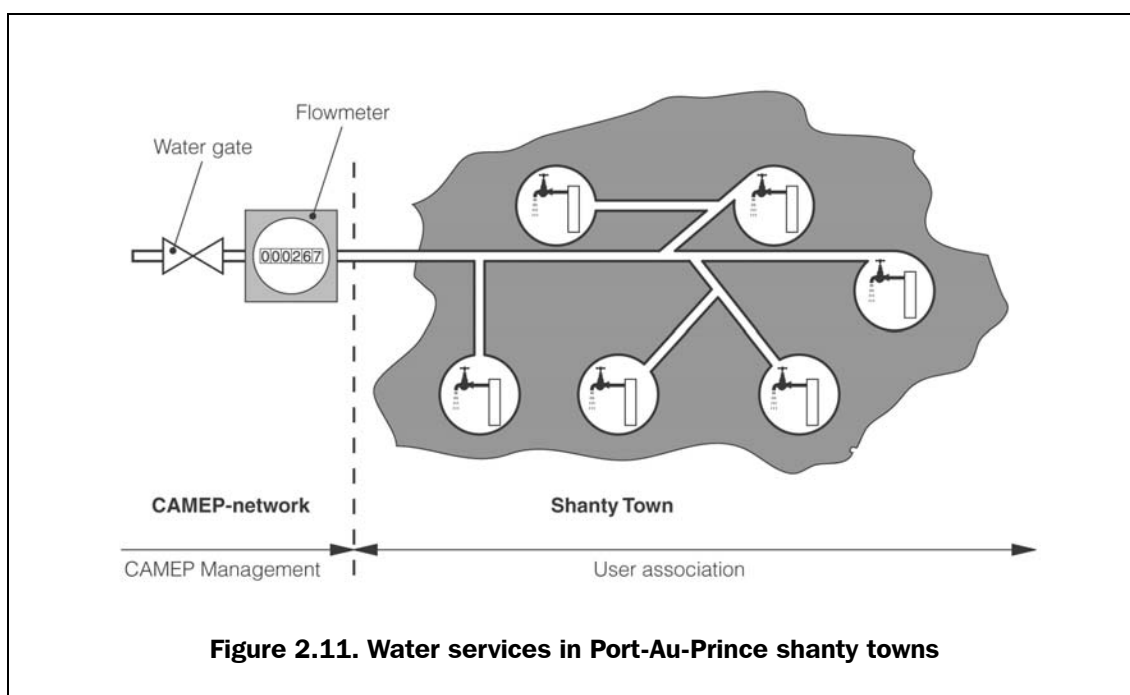
In a situation where people living in the poor unserved areas are paying \$3 to \$5 a cubic metre (compared to \$0.5 from the public network), a programme of improvement was developed that was led by GRET (French NGO), with technical assistance from HYDROCONSEIL. The project aims were to supply water to the shanty towns through new pipe distribution networks that would be managed by local community associations. Funding of this work was provided by the European Union and the CFD.

The construction works were undertaken by local private companies from 1995 to 1998. Particular attention has been paid to technical surveys and design of the new pipelines, in order to avoid conflicts over land rights and to reduce the risks of breakdowns. As the CAMEP network only has water pressure for a few hours a day, additional water storage was provided in the system to allow for more reliable distribution of water.

On completion of the construction work, water was provided to poor neighbourhoods via the main urban network that is managed by the public operator (CAMEP). This avoids the need to use private transportation for water. Water is distributed to users via standpipes in the shanty towns, where water is sold at an average cost of \$1 per cubic metre, which is considerably cheaper than the water provided by the independent service provider chain.

A key to the success of the programme is the active and capable participation of the neighbourhood water committees. An intensive mobilisation and training process was, therefore, carried out by GRET and SOLAM, who are a local NGO who specialise in social mobilisation work in the shanty towns. The committees are made up of representatives from all the community organisations in the neighbourhood. They decide what work is to be done (eg choosing the number and location of standposts) and collect the revenue from water sold at the standposts.

The division of responsibilities between the water company and the water committees is shown in Figure 2.11 below. CAMEP maintains the pipe network and bulk supply of water up to the flowmeter just outside the shanty town. While the local water committee maintain the pipelines and stand posts inside their community area..



Water is purchased from CAMEP at \$0.3 per cubic metre by the local committee and the monthly bill is based on the flowmeter readings. The users pay about \$1 a cubic metre at the standposts. This difference in price enables the committees to pay the water sellers at the standposts, provide a small payment to committee members and finances the O&M of their local pipe network. The remaining profits (15-20%) are invested in other public facilities such as drains and walkways.

Results

By 1998 20 kilometres of pipelines had been constructed, providing water to approximately 60 new standposts, although 500 to 1000 water points will be needed to satisfy demand. Once all the 14 networks have been completed, mains supply water will have been provided to 50,000 people, with additional supply to a further 150,000 inhabitants.

No water bill presented by CAMEP has yet gone unpaid, which is a good indicator of the success of the programme and encourages the water company to serve more informal settlements using this management arrangement. The introduction of this new

competition to these areas has had the effect of reducing the price previously charged by water vendors, who have come to accept the new system and there have been no cases of sabotage.

The volume of water sold by CAMEP to the first eight water committees increased from zero in October 1995 to 15,000 M3 per quarter in July 1998. This shows that the new system is meeting the demands of the users. However, it is interesting to note that during the rainy season consumption declines as people opt for cheaper sources such as rainwater collected from rooftops.

The water committees have shown great maturity in dealing with conflicts within the communities and managing funds effectively. The successes that have been achieved in Haiti, would suggest that it would be worth adapting the management arrangements described above, to provide improved water services to informal settlements elsewhere in the world.

2.6 Case studies from Africa

Sector overview

In many African cities such as Kampala, Lagos and Nairobi, the older established parts of the city often receive relatively good water services, with supply hours ranging from 8 to 24 hours a day. However, the urban populations have grown rapidly in recent years, but the expansion of infrastructure has not kept pace with this growth. Consequently the percentage of households who are directly served by the utilities is low, as can be seen from Table 2.24. In the selected cities, between 17 and 36% of households have their own in-house water pipe connection. The reminder have to rely on standpipes or independent providers or traditional sources. The percentage of households with in-house connections to the sewerage system is less than 10%. This situation has arisen despite the mandate of most urban water utilities to provide high quality services to all residents in their respective countries.

Table 2.24. Service levels of watsan utilities in selected African cities¹

Service level	Kampala (Uganda)	Dar Es Salaam (Tanzania)	Conakry (Guinea)	Nouakchott (Mauritania)	Continuo (Benin)	Ouagadougou (Burkina Faso)	Bamako (Mali)
Source of water for household use (Percentage of households)							
In-home connection	36	31	29	19	27	23	17
Standpipe water fetched by household	5	0	3	30	0	49	19
Independent providers / traditional sources	59	69	68	51	73	28	64
Means of disposal of household septic waste (Percentage of households)							
In-home connection to piped sewerage	6	3	10	4	1	0	2
Family labour or independent providers	94	97	90	96	99	100	98
Near network: connection feasible	(9)	(6)	(17)	(4)	(1)	(0)	(2)

1. Source: Collignon and Vezina (2000)

Many water utilities in Sub-Saharan Africa have undergone change programmes including institutional development projects promoting commercialization, corporatization and decentralization, for example:

- In Uganda and Ghana, National Water and Sewerage Corporations were established for the largest towns. The Corporations have undergone extensive institutional development and training programmes. In both countries they are actively pursuing PPPs.
- In Kenya, some municipal authorities have transformed their water departments into autonomous water companies with associated capacity building and donor assistance. A state corporation, the National Water Conservation and Pipeline Corporation, was formed in 1989 to develop water projects and manage water services on commercial basis. Despite these measures, the water utilities do not have full financial autonomy, since water tariffs have to be approved by the central government.
- In Tanzania each of the 18 largest towns other than Dar Es Salaam have their own semi-autonomous Urban Water and Sewerage Authority. This has occurred as part of a recent decentralization and commercialization programme. Many towns are still heavily dependent on central government for finance.
- In Nigeria semi-autonomous state water boards have been established, but the state governments still retain many powers over the boards.
- In Malawi separate water boards with limited commercial approaches have been established for the main towns.
- In Lesotho and Swaziland, national corporations were formed to manage water services in urban areas on commercial basis.
- In French speaking West Africa, countries such as Guinea and Cote de Voire have had Lease/Concession contracts together with International operators for some time.

While increased commercial orientation has resulted in some successes, in many utilities, there is still considerable room for improvement. This is evident from Table 2.25 which shows figures for Billing Efficiency (accounted for water) and Collection Efficiency for seven selected urban utilities in Africa.

Now some governments and external support agencies believe the way forward is through some variation of Public Private Partnerships. Indeed either Management, Lease or Concession contracts are being implemented, or are in the contract development stage, in a growing number of places such as: Ghana, Uganda, Kenya, Tanzania, Mozambique and South Africa. This trend is no doubt motivated by a belief that such contracts offer favourable incentives for a transformational improvement in services, provided the contract arrangements and regulations are appropriate. While there has been success in the more complex PPPs in Francophone Africa, there will be considerable interest in the progress of such contracts in other parts of Africa.

Table 2.25. Accounted-for-water and collection efficiency in African utilities¹

Utility	Accounted-for-water (%)	Collection efficiency (%)	Period
Kaduna State Water Board, Nigeria	57	74	1996
Katsina State Water Board, Nigeria	65	69	1996
Ghana Water and Sewerage Corporation, Ghana	52	90	1996/7
National Water and Sewerage Corporation, Uganda	41	70	1997
Lusaka Water and Sewerage Company, Zambia	51	62	1996
Borno State Water Board, Nigeria	n/a ²	69	1996
Addis Ababa Water and Sewerage Authority, Ethiopia	58	n/a	1996/7

1. Source: Water Utility Partnership (2000)

2. n/a – Data not available

Contracting out in Africa using service and management contracts

There is a growing number of cities and towns in Africa for which Management contracts are being actively pursued in countries such as: South Africa (Johannesburg), Mozambique (some main towns) and Uganda (medium and small towns). Some of the key reasons behind the selection of these types of contracts include: the potential to improve operational management with better incentives, and also to generate better quality management information and systems to possibly allow the implementation of more comprehensive/complex contracts such as Lease and Concessions in the future. Lease contracts are being also pursued in many countries.

Many of these initiatives involve international consultants and operators, which can entail high transaction costs. For those utilities in Africa who are not able (or willing) to attract international operators, or wish to support the local private sector, appropriate strategies need to be developed. There are already at least 40 service/management contracts (reported as part of this research) that are under development or have been implemented in the African water sector. This demonstrates a willingness to utilize the private sector in service provision amongst utilities and governments. A number of case studies are presented in the following sections to learn lessons from such existing contracts. The client authority and location of these contracts are as follows:

- a) Kampala Management contract with the National Water and Sewerage Corporation in Uganda
- b) Malindi Service contract with the National Water Conservation and Pipeline Corporation, in Kenya
- c) Malindi Management contract with the National Water Conservation and Pipeline Corporation in Kenya
- d) Tongaat Management contract with Durban Metro Water in South Africa
- e) Johannesburg Management contract in South Africa

- f) Kibera Co-operative contract between Nairobi City Council and a community group in Kenya.

Case studies a) to d) emphasize the need to develop better contracts with appropriate incentives that enable win-win situations for both parties. The large Johannesburg Management contract for water services (case study e)), is only recent but potentially offers a way forward for evolving PPP along with municipal and utility reform. Further lessons on contract design and the bidding process are contained in Part 1 - the contract analysis section of this document. The Kibera case study demonstrates that community groups can also be effective partners for a utility in water service provision.

References

Collingnon, B., Vezina, M. (2000) *'Independent water and sanitation providers in African cities'*, World Bank Water and Sanitation Programme.

Water Utility Partnership (2000) *'Performance indicators for selected urban water utilities: Draft copy'*, Abidjan: WUP

2.6.1 National Water and Sewerage Corporation, Uganda

Silver Mugisha and Richard Franceys, IHE, 2000

Historical brief of NWSC

The National Water and Sewerage Corporation (NWSC) was established by Decree No. 34 of 1972 and re-established by the 1995 water statute. According to the 1995 water statute, the corporation has the mandate to operate and provide water and sewerage services in areas entrusted to it (the principal city and towns of Uganda). It operates as a body corporate and may do all acts that bodies corporate do lawfully-acquire, hold and dispose of real and personal property and sue or be sued in its corporate name.

In 1986, when the new government came in, NWSC was in an inadequate state in terms of WATSAN service delivery capacity. The corporation was operating water and sanitation services in only 3 towns (Kampala, Jinja, and Entebbe). The levels of service were extremely poor ranging from intermittent to no supply at all in some parts.

The corporation then, had very few engineers and the whole corporation was managed with only three vehicles - one for the managing director, another for the corporation secretary and the last one for the area manager Kampala. At that time, the area manager Kampala was overseeing operations in all the three towns. This means, in essence there was only one vehicle in charge of operations. Most of the mobility for operations work was managed by walking.

By 1989, using loans and grants the corporation had extended operations to four more towns with new and improved levels of service and input facilities. The additional towns however were not able to break-even. There was need for subsidies from Kampala area (the biggest and viable town) to finance operations in the other towns. This created a huge financial demand on Kampala area.

Additionally, the new and refurbished plant and water network installations in the newly acquired areas gave rise to increased fixed costs (depreciation costs). This together with the various loans, grants and other expenditure accounts necessitated more professional and commercial accounting procedures augmented with increased revenue generation avenues. Realizing this need, the management with the assistance of funds and expertise from GTZ, decided to install a computer based commercial accounting and billing system. At the same time, a block-mapping programme aimed at increasing the body of knowledge about customer base was launched in 1989. The purpose of this programme was to put into the system all those customers who were connected to the NWSC network but unknown.

These programmes, as expected, yielded successes and in 1993, the corporation was able to make surpluses out of which a big office structure was constructed in Jinja.

Close to the end of 1992, the corporation commissioned a big water treatment plant (called GABA II water treatment works) which was built with some donor funds. This greatly improved the water situation in Kampala because all areas that were connected on the Kampala water distribution network started getting more than 18hours of supply per day. Reliability of water supply in Kampala was no longer a question of limitations of the quantity of water produced, but of network operational and rationalization inadequacies.

Towards the end of 1993, shortly after NWSC had computerized all its billing system, it was apparent that the corporation had made substantial improvements since 1986. The corporation had extended its operations to nine towns, with more than 20 vehicles in operations and about 10 at headquarters. The number of engineers had also grown to about 40 from 3 in 1986, and the annual turnover from revenues had greatly improved.

Most of this turnaround improvement was however, attributable to the huge quantities of grants and loans that had been pumped into the infrastructure rehabilitation and construction. This came to manifest itself in 1994 when the corporation was compelled to raise the WATSAN tariff to one of the highest recorded in Africa at that time. This sharp increase was aimed at generating enough revenues to repay the loans and at the same time finance the additional operation and maintenance needs for all the towns.

By 1994, NWSC had developed a fully-fledged human resource centre. A number of training programmes had been conducted in this centre including the management development and capacity building programmes conducted by Richard Franceys in 1994. These were aimed at imparting to both middle and senior management, aspects of TQM and behavioural changes as a means of fostering improved performance in the corporation. Other important institutional strengthening programmes that were carried out from this centre include the corporate planning (GTZ funded), customer care, information technology programmes (mostly locally tailor-made) that were all aimed at improving performance in NWSC and in the end increase customer satisfaction.

More reforms came in 1995; the legislative framework and the organizational structure of the corporation were reviewed and strengthened in order to give more vigour to operations. The legal framework gave rise to a strong management tool called Corporate Planning (CP) that NWSC was obliged to prepare and submit to the minister in charge of water, at prescribed time intervals. The corporate planning document, which was finalized and approved in 1996, institutionalized PPP as one of the management options and goals for NWSC.

In 1997, two more towns (considered by NWSC to be unviable) were added to NWSC operational frame by the government, thereby increasing the corporation's financial burden further. Moreover additional plans were at an advanced stage to add one more town in less than two years. This created the need to look for ways of instant revenue improvement to meet these challenges. The assumption and the general perception by top management were that the previous institutional strengthening measures did not seem to be delivering benefits at the anticipated rates to meet the environmental challenges at hand.

Resistance to payment by domestic and commercial customers led to high un-accounted for water and low billing and bill collection efficiency, exacerbated in some instances by malpractice. Press reports (New Vision, 2nd February, 1998) were that 'NWSC has been losing big sums of revenue in fraud. Meter readers collude with customers and they under read their ratings or even reconnect them, at a private fee, when the water supply has been disconnected for defaulting on payment.'

The leadership of NWSC was committed to overcoming these problems and through its Area Managers was prepared to disconnect government offices, the international airport, the zoo and even the major hospital. 'We recently cut off Parliament until they paid, we

cut off the Barracks, we are very liberal.’ In their laudatory efforts to generate revenue, the major performance indicator for Area Managers became the number of disconnections per month. The subsequent problem of sewers then being used by ‘disconnected users’ was met by some Area Managers attempting to ‘disconnect sewers’ through deliberate blockages.

‘We have given a 3.5% to 10% fee to arrears collectors - they brought us a cheque for \$4 million and we gave them 3.5%’ according to the then Managing Director, Hilary Onek.

However these efforts did not enable the Corporation to ‘break through the performance ceiling’ in the words of Mr Onek. Although inefficient in terms of staff per thousand connections (25), the Corporation began to undertake Corporate Planning exercises and was willing to consider any new approach to become more effective. One such approach in the mid 1990s was clearly private sector participation. With the encouragement of the World Bank, staff members attended courses in Washington and in particular visited the Malindi service contract in Kenya. This two year service contract (after an initial eight months) had to address the 44% UFW, the 80% of estimated billings and set up a computerized billing system for the over 4,500 connections.

Kampala Revenue Improvement Programme (KRIP)

With the addition of two more unviable towns on the cash strained ‘basket’ of NWSC in 1997, the pressure to operate more efficiently became more eminent than ever. This was in addition to the huge loans (> \$60 million) which were yet to mature in 1998 - requiring both principal and interest payments (communications from NWSC senior managers, 1999).

The nearest and most logical area of focus was Kampala area, which accounted for 68% of NWSC operations and the same figure for revenues (KRIP-TOR, 1997). Previous analyses by NWSC finance department (NWSC, 1997) had put the UFW of Kampala area at 50-60% and the cash collection efficiency at 70%. The area was also perceived by NWSC top management as having staff with inappropriate values and attitudes leading, among others, to acts like illegal connections, manipulation of meter readings by staff, uncoordinated operations, lazy staff etc. In short, the organizational behaviour of Kampala area was perceived as being one of the causes of poor performance (Onek, 1997).

In view of the large proportion of Kampala area operations, this poor performance was seen as having serious efficiency repercussions on the overall performance of NWSC (KRIP, 1997).

Top management therefore resolved to improve the performance through the use of the PPP – management option. One of the major focuses of this option, according to top management was to change the perceived poor organizational behaviour of staff. This would enhance the level of services offered to its customers through the improvement of the management of water services.

Seeing a number of possible benefits from private sector participation, NWSC chose to develop a project to overcome its perceived biggest challenge: revenue collection in Kampala. Kampala, the capital of Uganda represented about 80% of the Corporation’s connections and approximately 80% of its billed revenue. Believing that malpractice was

a significant element in poor billing and collection ratios, and recognizing the size of the potential benefit to the Corporation of achieving acceptable revenue collection in Kampala, the Kampala Revenue Improvement Project (KRIP) was developed. This project was designed as a 3.5 year management contract whereby a private company would take responsibility for distributing water (from the main supply reservoir) along with billing and tariff collection. It was presumed that a foreign private contractor would be able to address the problem of malpractice among staff.

Having been impressed by the work in Malindi, the Corporation turned to its long-term consulting engineering firm, Gauff, Ingenieure, a German company which had been working in Uganda for 19 years, and negotiated a contract with them. Gauff, as a typical consulting engineering firm, had limited experience in operating and maintaining water supply systems. Incidentally, Malindi was their only experience to date.

The negotiating process was closed to outside scrutiny and the contract remains confidential. The contractor was however given clear targets and the promise of a performance bonus, based on revenue collection and new connections. The process of implementing KRIP was also designed to reduce the number of staff in Kampala area. KRIP was also seen as the precursor to the more complete privatization of NWSC.

In August 1997, NWSC asked Messrs. H.P. Gauff Ingenieure GmbH and Co (JBG) of Frankfurt/Germany to submit technical and financial proposals for the commercialization of NWSC operations with the Kampala Water Supply Service Area (KWSSA) – only the water sector. The proposals were accordingly submitted, negotiated and the contract signed on 20th November 1997. The contract period was 42 months and due to expire on 30/6/2001 unless the parties otherwise, agree to extend the contract (KRIP, 1997).

KRIP has the objective of improving the billing efficiency for water and sewerage services, improvement of revenue collection, increase efficiency, recover debts and arrears of NWSC and improve water distribution and maintenance to reduce on water losses. 'The KRIP project was established after realizing that Kampala Water Supply Service Area (KWSSA) performance efficiency was seriously affected by physical losses at 31%, billing efficiency at 40% and collection efficiency at 70% (Mucunguzi, 1998).'

The contract's stated objectives included the following:

- Improvement of billing for water and sewerage services to increase billing efficiency
- Improvement of revenue collection to increase collection efficiency
- 'It is expected that billing efficiency will go up from 40% to 65% and revenue rise from 75% to 85%.' (New Vision, 1998)
- Improvement of arrears and bad debt recovery to reduce on equivalent-debt-age of all un paid water and sewerage service bills
- Improvement of water distribution operation and maintenance management to reduce on water losses through bursts, leaks and wastage
- Expansion of the customer base to increase on the water supply coverage

- Establishing of a management information system (MIS) in the Kampala Water Supply Service Area (KWSSA).

The improvements, as it can be seen from the Gauff technical and financial proposals in the contract were mainly to be developed through streamlining systems and procedures, structures and but implicitly, appropriating the organizational behaviour of the seconded NWSC staff.

Analysis of the KRIP contract documents, however, leave the following questions unanswered:

- How would Gauff (the historical desk consultants of roads and WATSAN systems, devoid of a comprehensive WATSAN operational experience in developing countries) manage a monopoly water-based business?
- Were the change management issues well addressed by top management to get full support of the senior management team and the key stakeholders in Kampala area to avoid undue sabotage and also foster team working?
- Was the whole venture done in a fair and transparent manner?

Performance in Kampala –KRIP (December 1997 to November 1999)

The contractor started operations in December 1997. Subsequently, the contract had to be amended by the new board in a supplementary contract of October 1998 (in less than one year). This, apparently, resulted in cutting of the management fees by more than 40% and increase of the revenue collection targets. This section will look at the resultant performance outputs against the contract targets.

In 2002 an international consortium - OSUL (including Ondeo) were awarded a Management contract for Kampala water services, with a view to developing a Lease contract in 2006.

Income and UFW

Figure 2.12 and Figure 2.13 show the KRIP performance relative to the contract targets.. .

The results of Figure 2.12 and Figure 2.13 suggest that Kampala-KRIP has for the majority of the months performed below the target billing but has tended to achieve the target UFW. Normally these two parameters are related; by achieving one, you should be close to achieving the other in a well-designed contract.

Revenue collection and collection efficiency

The KRIP supplementary contract mentioned above, singled out revenue collection as the “parent target” after, possibly realizing some irregularities in the other targets.

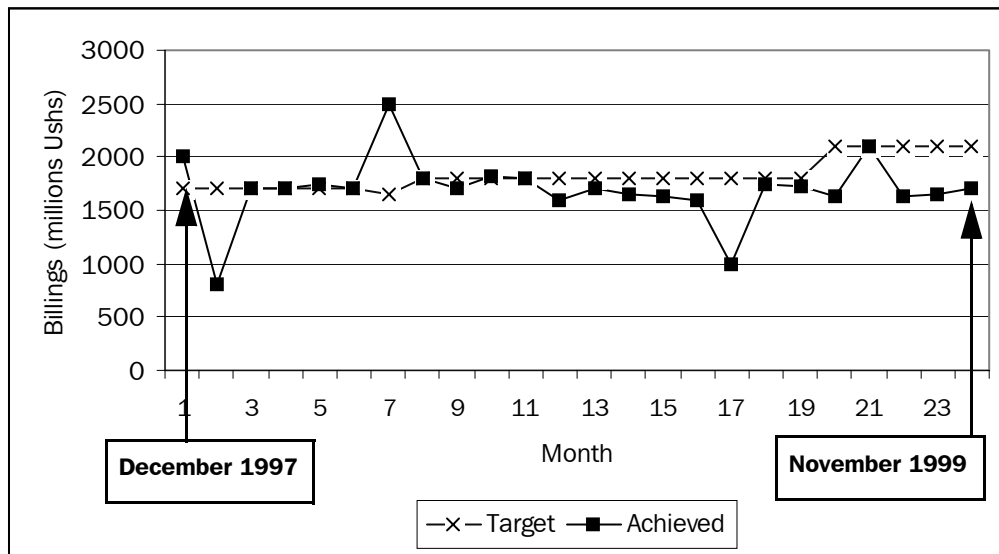


Figure 2.12. TARGET Krip Billings vs Achieved

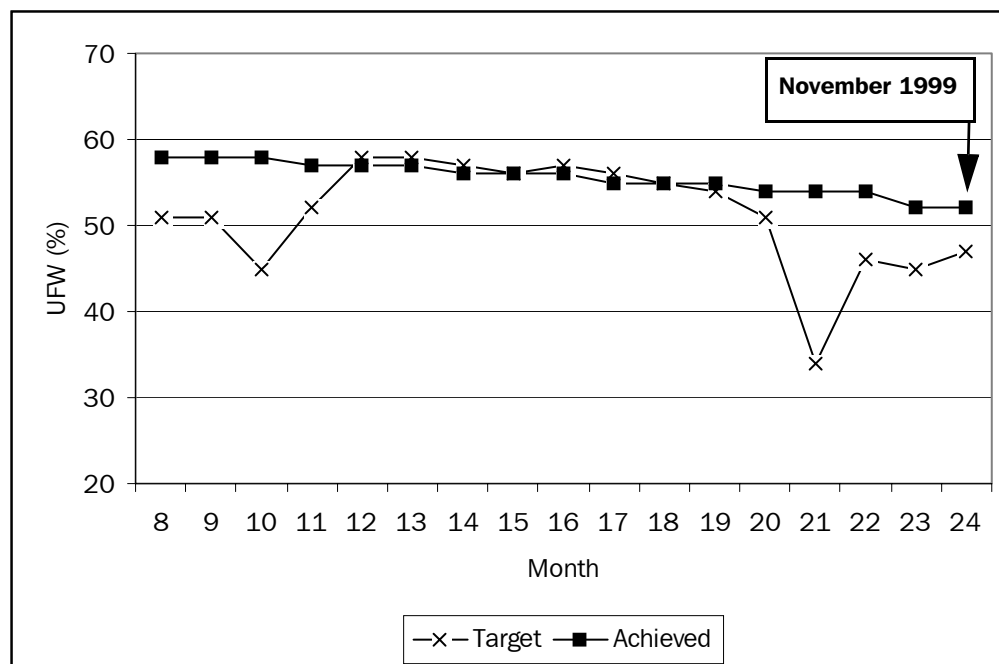


Figure 2.13. Target UFW (%) vs Achieved

Surprisingly, both the original and supplementary contracts allowed the contractor to regard receipts from government debts – which were verified by NWSC prior to the contract and only waiting to mature – as part of the firm's collection. This money, reportedly about Ushs 8 billion (about 5.4million US\$), was only waiting for a time to come and some body to go and collect it.

More still, the supplementary contract defined collection as:

the current billings collected + arrears collected + provision for bad debts.

The last parameter is not money as such. In the previous arrangements it was reported that bad debts were never regarded as collections. . .

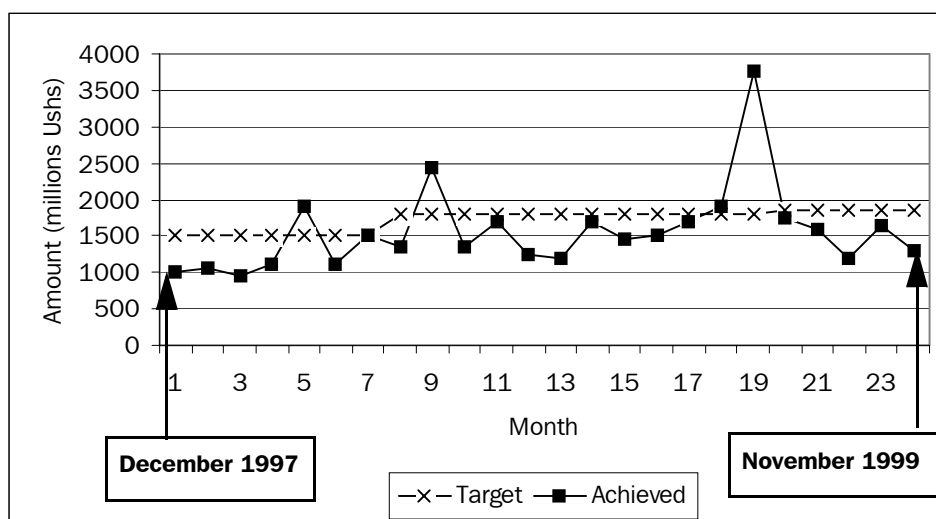


Figure 2.14. KRIP collections

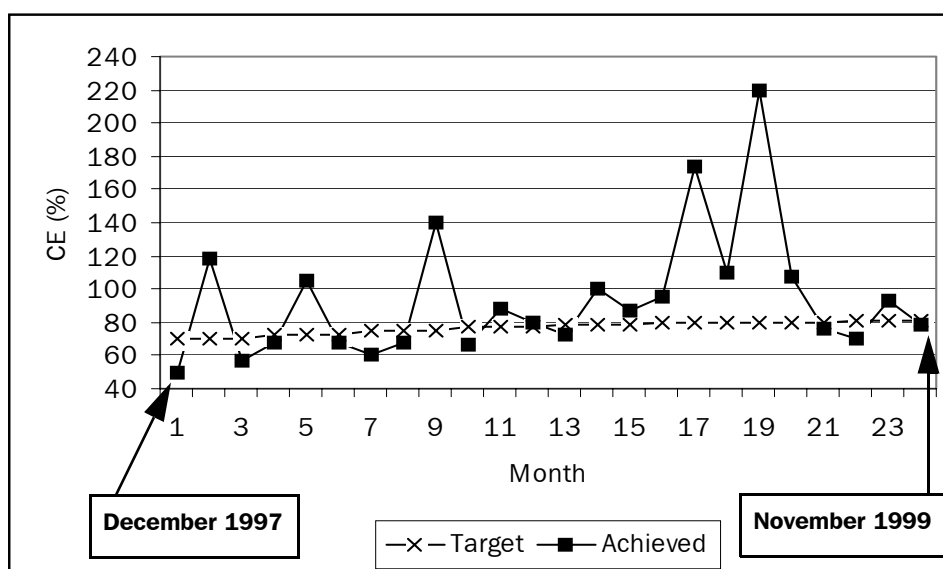


Figure 2.15. Target CE (%) vs Achieved

Both graphs suggest that the collection efficiency (CE) is achieved more than it is not. The collections however fall below the targeted ones most of the time (Figure 2.15). The erratic trend of the collections is possibly due to the government promissory notes, which were verified prior to the contract.

Arrears reduction

According to the objectives of the contract, the project was supposed to reduce the account receivables (arrears) although no specific targets were set. Table 2.26 and Figure 2.16 shows the trend in arrears reduction from June 1997 to October 1999.

Table 2.26. Arrears status with KRIP (in billion Ushs)

Month	June-97	June-98	Feb-99	May-99	Oct-99
NWSC Overall	24.66	29.14	33.19	32.19	29.14
KRIP	17.85	22.75	25.07	24.32	22.70

The trends of arrears growth/reduction in monetary and debt age terms are shown below.

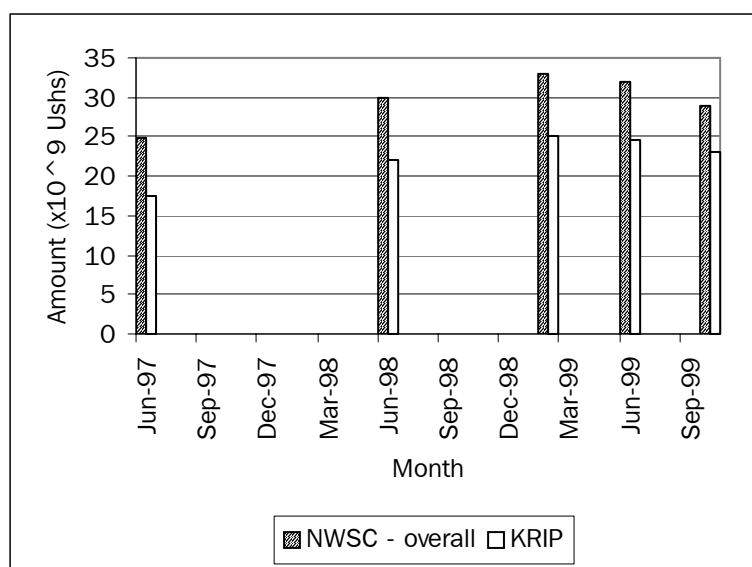


Figure 2.16. Arrears reduction (June 1997 - October 1999)

The graphs (Figure 2.16 and Figure 2.17) show no real reduction in the debt age (average length of time for water bills to be repaid). The possible cause of this could, be failure on the part of government to pay the debts, or the general inefficiency on the part of KRIP to collect debts from other users (mainly domestic).

The resulting overall financial performance indicators for NWSC can be seen in Figure 2.18. The trend of increasing DRR (days receivable ratio) or average time to pay water bills, has clearly continued, with no substantial improvements from the KRIP

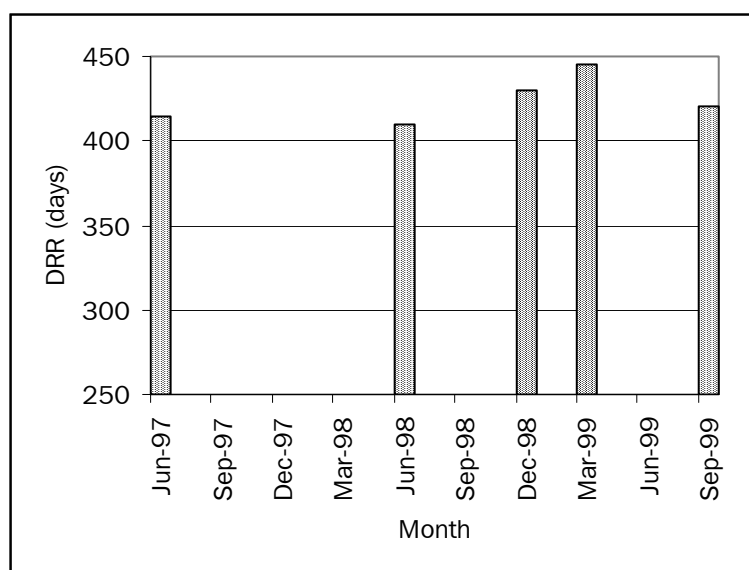


Figure 2.17. Kampala area debt portfolio

contract. The operating ratio (operating costs/revenues) has also been fairly static at around 1.0, implying that insufficient funds are being generated for new investments. The Management Contract is not therefore, achieving its desired objectives.

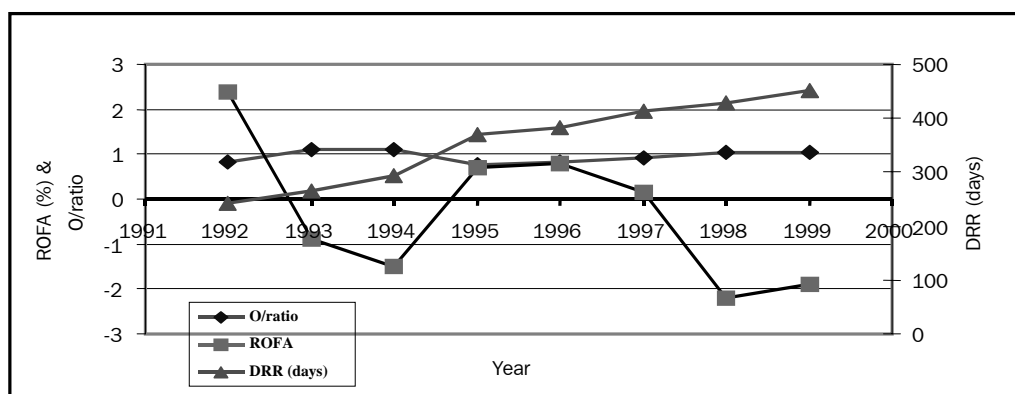


Figure 2.18. Kampala financial indicators (1992 to 1999)

Points from observations and inquiries in and out of KRIP offices

- Most middle managers feel discriminated against and have resorted to sitting and earning salary for nothing. “They say they know everything, we shall just come at 8.00a.m and go back at 5.00pm as they want...” one of them said.
- Commonly ‘I do not care attitudes’ and lack of co-ordination exists among the maintenance teams e.g. a plumber commented, “these people (expatriates) think they can organize best, but don’t you see our bosses just there? They are not allowed to sign

anything, you will see us leaving for the field at 11.00 o'clock (instead of 8.00-8.30 am)."

- Tribalism is noticed by its lack of absence. While the author was in one of the KRIP offices a senior official remarked, "...they say there is corruption in section "X" (there was a popular opinion that this section was a "grey" area for corruption indeed) but this is just tribalism, there is no corruption as such."
- House keeping in the zones and booster pump houses is inadequate because staff do not care. One time, senior managers from headquarters after hearing several complaints from customers had to intervene and head the cleaning exercise in one of the service areas of KRIP.
- Gross corruption is reportedly pronounced in KRIP. This is mainly in the form of illegal connections and dealings with customers. In July 1999, a local newspaper reported Kampala as having excelled in illegal connections by accounting for more than 80% of the 404 illegal connections unearthed (The Voice, 12th to 18th June, 1999). The KRIP October 1999 progress report pointed out that the staff are behind most of the illegal connection malpractice. Headquarters has, apparently, intervened by instituting a "spying network" to catch illegal connections but this appears to have become very unpopular with the workers who cherish these illicit activities.
- Generally, the way staff handle customers and operations suggests that they are deficient in skills regarding customer care, operations and maintenance, and general management.
- Inquiries and stories from lower staff showed that the interpersonal relations with the expatriate staff are poor. There was a general complaint that the expatriate staff are insensitive and rude to them.

Conclusions

It is reported that at the start of the contract in December 1997 NWSCs own staff were collecting on average \$1.2 million per month. For a monthly fee (before any bonus payments) of \$400,000 KRIP apparently succeeded in collecting an average of \$800,000. This cannot be considered a success in cash terms. In addition, the funding for enabling early retirement of staff went to a few senior individuals, and not to the many area based workers.

Following a change in senior management in National Water within nine months of the start of KRIP, the base payment to the contractor was negotiated down to \$200,000 per month. Senior staff in KRIP were changed (there were four Managers of KRIP within a 27 month period). Gradually performance began to improve in billing and collection efficiency, but overall the cash effects of the contract remained negative.

Other targets were also not being met: 'The Kampala Revenue Improvement Project (KRIP) under the National Water and Sewerage Corporation (NWSC) has connected 1,650 new customers in Kampala in the first eight months of operation,' project programme director, Peter K Peterson has said. Before the contract commenced, Kampala Area claims to have been connecting a higher average of customers per month.

However, the contractor believes that it has done better than the figures presented here suggest: Peterson said that: “since January this year, water billings have increased from Shs 1.5billion to Shs 1.8billion, while the average revenue collection has risen by 30% from Shs 950M before the project came into effect. The cumulative surplus for NWSC following the inception of KRIP has risen from negative to over Shs 3billion to-date and our objective is to increase this even further”.

He also said that: “the overall goal of the project is to improve the revenue of NWSC and to prepare KWSSA and NWSC for the intended privatization by the year 2001”(Mucunguzi, J., 1998).

Analysis of the overall financial performance of NWSC does not give such a positive picture and Mugisha (2000) suggests that the private contractor through KRIP has not succeeded in changing organizational culture to the extent necessary to break through the ‘performance ceiling.’

Senior manager’s comments about the KRIP contract

All senior managers seem to indicate that the contract has not progressed as expected, sighting the following causes:

- Unplanned and flawed way in which the contractor was brought in.
- Poor organizational behaviour of KRIP staff (inadequate teamwork, de-motivation, and illicit activities by staff etc).
- The contractor having no stake in the system and therefore not interested in its maintenance as long as money is collected.
- Inadequate operating experience of the contractor in water operations.
- Low productivity of staff due to poor behavioural context and skills.

The benefits of the venture were given as:

- Providing a chance of having experience with PPP
- Improved documentation
- Reduced headquarter and political interference
- Accelerated government debt payments because of preferential treatment (foreigners are listened to more by government bureaucrats).

There was a popular support for PPP but with complaints that a raw deal had been got from the KRIP contract, which appears fully entrenched through political and legal means.

Meanwhile, in the rest of NWSC, a dynamic new Managing Director, committed to challenging organizational behaviour has, amongst other ideas, led to competition among Area Managers for Revenue Improvement with cash bonuses for workers was resulting in significantly improved collection. ‘Mbarara town won the trophy for towns that can

independently sustain themselves, whose area manager Joseph Kaamu took the trophy and Shs 300,000 was given to his workers. Kaamu told Sunday Monitor that in September he managed to send a Shs 28m surplus to the corporation headquarters.’ (Lubwama, S., Obore, C., 1999).

Overall, this research shows that so far PPP in NWSC is not delivering a change in organizational behaviour to improve performance. But, it can be urged that the irrational contract process that went along a “nominated contractor” basis, eliminating the possible benefits of competition for the market was part of the debacle. This appears to be reinforced by the flawed contract design that was apparently a result of lack of PPP experience by NWSC management. The above contract shortfalls, probably could be part of the reasons for procuring an, apparently, deficient contractor that does not seem to be transforming organizational behaviour, which was originally perceived as the major problem in Kampala area.

But does all this mean that PPP cannot deliver? The answer is may be “*It depends*”. In Ivory Coast and Guinea, public private partnerships seem to be working quite well and yet the geographical conditions are not very different from Uganda’s. One of the success factors in the West African cases is adapting the workforce into a productive mode which was also intended in the Kampala KRIP. The answer, therefore, appear to lie more in focusing on “*how to do it*” effectively.

Endnote

Since this case study was written the contract term of the contractor has concluded and the contract was not renewed. Staff of NWSC took over responsibility for operations in Kampala whilst a bidding process was undertaken for a new contractor. The international private operator Ondeo has been given a short term contract whilst the water sector in Uganda is restructured. It is presently envisaged that a complex PPP will be introduced in a few years time, combining the operations of the major cities of Kampala, Entebbe and Jinja with a number of the smaller towns.

Based upon Organisational Behaviour and Performance: Public Private Partnership in a Water Utility, Uganda, Silver Mugisha, unpublished MSc Thesis, IHE 2000.

References

- Lubwama, S., Obore, C. (1999) The Monitor (Kampala), October 1999, Uganda
- Mucunguzi, J. (1998) The Monitor, Wednesday September 23rd, Uganda
- New Vision extract (1998) 2/2/98, Uganda
- NWSC, *Kampala Revenue Improvement Project Contract* (1997), Kamapala, Uganda
- NWSC, *Kampala Revenue Improvement Project Contract, Terms of Reference* (1997)
- NWSC (1997) *NWSC Annual Report*, Kampala, Uganda
- ‘The Voice’ (1999) 12th to 18th June, Kamapal, Uganda

2.6.2 Malindi O&M and billing service contract, Kenya.

Cyrus Njiru and Kevin Sansom, WEDC, 2000

This case study is presented to demonstrate the lessons learnt by a public water utility using a service contract for billing and revenue collection. A service contract was awarded to a private firm to carry out improvements in billing and revenue collection, without competitive bidding. Based on lessons learnt from this contract, the client later transferred additional management responsibility to the same operator by awarding a management contract to improve management of operations and maintenance of water services in the town.

Introduction

The municipality of Malindi with a population of about 140,000, encompasses an area of about 360km². It is the twelfth largest urban centre in Kenya and is located along the central part of the Kenyan coast some 130km north of Mombasa. As well as its rural hinterland, it comprises the urban coastal centres of Malindi and Watamu. Malindi town is a district headquarters, a commercial centre serving its hinterland and the sparsely populated areas to the north, and together with Watamu, is a major tourist destination for visitors to Kenya. Malindi water supply project is one of 42 water projects managed by the National Water Conservation and Pipeline Corporation (NWPC) in Kenya. NWPC is a state owned water utility organization that was set up in 1989 to develop, manage and operate new and existing water supply projects in Kenya. The Malindi water project is part of the complex Mombasa and coastal regional water system that serves a large part of the eastern coast of Kenya. Malindi water project serves Malindi town and Watamu urban centre, as well as the hinterland through which the water transmission pipeline traverses. The project has 4 500 water connections.

Preparations for private sector participation in Malindi

There has been a large investment in water supply infrastructure for Malindi so that the existing infrastructure (consisting of source works, treatment facilities, bulk transmission pipelines and balancing storage) is adequate to supply Malindi with water, well beyond the year 2010 design horizon. The area now has adequate bulk capacity to ensure that it will continue to receive an adequate supply of water even in the expanded area.

Malindi area is also fully metered as a result of an extensive NWPC meter replacement programme for Malindi in 1994 to 1995 that was completed in early 1995. In this programme, approximately a third of all consumer water meters were replaced and an area zoning and bulk metering system was installed. NWPC contracted-out the meter installation works to a private contractor after using a private supplier for supply of the water meters.

Malindi area was, therefore, the only part of the coastal regional water system (and one of only a few water projects in Kenya) with an adequate water production, transmission and storage capacity that meets current and future demand, and where water shortages should not occur. Various management and organizational improvements could, therefore, be tried and tested without infrastructure constraints. In line with the policy of the Kenya government for increased private sector involvement in the former public sector, NWPC intends to introduce private sector involvement in the operation and maintenance of its water supplies. Due to uncertainty as to the best way forward, NWPC, therefore, decided

to use Malindi as a 'pilot' area for a variety of inter-related activities and objectives that can first be tried, proven and refined there, and then introduced into its other areas at the appropriate time.

NWCPCs PPP objectives for Malindi were to:

Attain high and acceptable levels of administrative efficiency (metering, billing, and revenue collection)

Attain low levels of physical water losses (zonal bulk metering, leak detection surveys).

Improve operations and maintenance.

NWCPC commenced the improvement on the administrative efficiency and hence maximization of revenues within the Malindi urban area by commissioning H.P.Gauff consulting engineers through an addendum to an ongoing externally funded typical design and supervision consultancy contract. The service contract period was seven and half months.

The scope of services to be carried out by the consultant were supervision of:

- Meter reading
- Billing
- Revenue collection
- Operation and maintenance

The contract was later extended on an adhoc basis with funding from a World Bank credit and with NWCPC funding.

Achievements and constraints in initial phase (first 7.5 months)

After the first 7.5 months of the contract, the clients general objectives had not been achieved but the consultant had identified several constraints that were impediments to the achievement of the objectives. These were:

- Lack of trained and motivated staff to carry out financial management and customer relations functions.
- Lack of trained and honest meter readers.
- Large number of outstanding bills many of which were disputed by the customers.
- The centralized computer billing system in use at the regional office was found to be inappropriate for the improvements earmarked for Malindi.
- Frequent faults or 'stalling' on many of the consumer meters in the distribution network.

In order to address and overcome the above constraints, NWCPC retained the same consultants for a further six month period on the same consultancy-type service contract. NWCPC further agreed to implement the following measures as recommended by the consultant:

- Recruitment and training of Malindi based staff in financial management and consumer relations,
- Recruitment and training of meter readers to replace existing ones
- Detailed review of all accounts both large and small to ascertain the erroneous values of debt or credit
- Introduction of new user friendly modern billing software with appropriate reporting and archiving capability, to train Malindi based personnel in the use of computers and to make the Malindi area self sufficient in water billing, accounting and financial control,
- To provide the new billing system with a reasonably accurate opening balance, and
- Refurbishment of section valves and washouts as well as flushing of the distribution system so as to reduce the rate of stalling of both consumer and bulk meters.

NWCPC hoped to attain the previous and the new objectives, as well as the reduction of administrative losses towards the targeted 19%, and the efficient day to day operation and maintenance of the system. The service contract was extended on adhoc basis and it lasted 3.5 years before it was let to lapse.

Assessment of contract implementation (over 3.5 years)

The following improvements in the management of Malindi water supply system upon completion of the improvement programme and the service contract were made:

- Management and staffing levels were reviewed and detailed recommendations made for a revised staffing arrangement, complete with job descriptions.
- Meter reading was reorganized to form a routine programme so that each meter reading zone or route could be walked by the meter readers and read in a single day.
- Meter reading trainees were recruited and made conversant with several areas so that absence (such as due to illness) of an individual does not prevent regular meter reading.
- Meter readers were assigned different areas to read in successive months thereby reducing the likelihood of reporting of artificial readings, collaboration between a meter reader and members of the public to defraud NWCPC by falsifying meter readings, construction of unregistered connections, etc.
- Re-designations of NWCPC staff and modalities for payment of incentive bonuses to staff were recommended to NWCPC and implemented.

- Recommendations for an in-house Malindi based billing system were made and accepted by NWCPC. A computerized billing system was developed and used to compile monthly meter reading data for actual billing, the program was producing numeric data on both an individual and meter reading zone basis to enable comparison with actually issued bills thus providing a basis for detection of major errors and anomalies in billing, combined with debt control.

The reported achievements against key indicators are as follows:

- The percentage of billing based on operational meters rose from 21% at the commencement to some 89% at the end of the initial period with estimated readings dropping overall from 66% to 13%. This means that customer meters were being read and used for billing purposes.
- Billing collection efficiency improved from 50% to 62% of that billed, with cash received rising from approximately K.shs 1,500,000 to K.shs 2,100,000 monthly.
- Physical losses were reduced from an estimated figure of 44% to 41% through an aggressive leak detection and repair programme.

The service contract resulted in some improvements in the commercial activities of NWCPC in Malindi (indicated by the increase in revenue collection) and to a lesser extent, in the day to day operation and maintenance of the system (low response time to leakage).

The service contract was initially financed through a grant from a bilateral donor with the latter extensions of the service contract being financed through a credit from a multi-lateral financier (18 months) while the last extension (6 months) was financed by NWCPC. NWCPC was eventually unable to sustain the financing of the service contract from the revenue collected in Malindi, and the contract was let to expire in June 1998. With the expiry of the service contract, supervision of the entire operations of the water system reverted back to NWCPC. Revenue collection soon deteriorated as NWCPC staff could not handle the new billing system that had been installed exclusively for Malindi. The consultant's billing supervisor had not transferred skills to his NWCPC counterpart. With reduced funding, there were no more generous allowances to staff that the consultant was offering earlier. Staff morale was low as remuneration was back to the way it was at the start of the service contract. In order to maintain the level of operations and maintenance and avoid further deterioration of customer service, NWCPC decided to urgently arrange for continued private sector participation in Malindi.

Strengths and weaknesses of the Malindi service contract

Strengths

- The client's general objectives were stated though not specified in the contract.
- Bilateral donor financing of the contract was obtained on a grant basis for the initial 7.5 months and the financing was stated in the contract. This built confidence from the perspective of the private operator.
- There is evidence of good co-operation between the private operator and the client.

- There were improvements in services and revenue collection. There was also substantial improvement of the client's image among the customers.

Weaknesses

- The contract did not clearly specify the services to be carried out. It did not state specific and measurable targets to be achieved by the operator. The improvements (objectives) stated in the contract were not quantified. This made it difficult to objectively monitor and evaluate the contract.
- The critical service provision and cost recovery problems were not identified and adequately addressed either within or outside the contract. An existing consultancy contract for design and supervision work was used instead of one that is more suited to meter reading, billing, revenue collection, operations and maintenance work.
- The contract was not financed from the revenue generated, perhaps because tariffs were too low. This lack of financial sustainability made the contract lack the necessary win-win situation required for sustainable public-private partnerships.
- The private operator lacked autonomy over the staff as he was working with the client's staff. This might have limited innovation and was certainly a drawback to efficient performance of the contract.
- Insufficient management responsibility was transferred to the private operator; the client's objectives could not be fully met by a service contract.
- The contract lacked appropriate incentives for successful performance and penalties for poor performance against carefully chosen indicators and targets that relate to the contract's objectives.

Key lessons learned

- Commercialization policy implementation should precede or accompany contracting out.
- Cost-covering tariffs must be implemented hand-in-hand with service improvements to ensure sustainability.
- It is important to specify objectives, and set measurable targets to be achieved by the private operator.
- A self-financed contract based on win-win situation between the client, contractor and customers is preferable to an externally financed contract, as the latter is unlikely to be sustainable in the long term.
- The operator ought to be given autonomy over staff.
- A carefully prepared and competitively bid service contract has the potential to substantially improve services to customers and improve revenue collection.

In spite of the general improvement in the operations of the area, the client considered that the investment in the physical improvements in Malindi and the financing of the service contract was not adequately compensated by the achieved benefits, especially when compared with the revenue collected. The client, therefore, decided not to carry on with a service contract but to experiment with a management contract that would transfer greater management responsibility for operations and maintenance to the private operator with agreed targets and specific performance indicators. The client also realized that water tariffs in Malindi needed to be increased to cost-covering levels. This way services could be substantially improved through private sector participation.

2.6.3 Malindi O&M and billing management contract, Kenya.

Cyrus Njiru and Kevin Sansom, WEDC, 2000

Introduction

The Malindi management contract was let following lessons learnt by NWCPC from an earlier 3.5 year Service contract, (refer to the case study on the Malindi Service contract). In order to utilise the experience gained by the consultant during the three years of the service contract and also due to the urgency to have a private operator in Malindi to regain service levels, NWCPC awarded a five-year management contract to the same consultant in January 1999. The contract was based on a technical and financial proposal submitted by the consultant.

During the first eighteen months of the management contract it was agreed that the client will finance (through bilateral funds) the following activities:

- Strengthening and extension of the Malindi reticulation system
- Replacement of pumping sets at the source-works
- Construction of a new area office in Malindi
- Procurement of additional vehicles and billing computer hardware
- Construction of additional staff houses
- Commencement of consumer pipe connection replacement programme

Provisions in the management contract

The management contract is more output based than the previous Service contract, consequently the following targets have been set:

- Increase the consumer base by at least 1,000 new connections (after extension of the reticulation system financed by NWCPC through donor funds)
- Reduction of unaccounted for water to not more than 25% by targeting 1,000 connections replaced per year over 5 years, subject to the replacement of consumer connections by the client.
- Re-attain a collection efficiency of 80% within six months of the management contract and improve this to 85% after a further six months and thereafter to reach to as close to 100% as proves practicable.
- Finalize historic debt analyses started during the service contract, and collect all amounts that are deemed to be collectable by end of year 3. Thereafter and whilst making all reasonable efforts on other outstanding amounts define the bad debts to be considered for writing off (tentatively bad debts to be written off is expected to result from disconnected consumers owing up to Ksh.50,000/- each and who have not sought re-connection.

- Optimize the number of area personnel currently expected to result in the reduction of the workforce by about a quarter (from 74 to 54 persons) during the period of the contract. The excess staff will be deployed in other water projects managed by the client.
- Establish a complete digitised and updated Geographic database within the initial 6 months and link this to consumer information to complete a full MIS by the end of the first year.
- Improve operations and maintenance of the water system.

Note that the last objective does not have a quantified target, although there are specified targets for UFW and bill collection efficiency.

Fees, incentives and penalties

The operator receives a fixed monthly fee, which shall be adjusted in line with inflation according to an agreed formula. It has been agreed that the client will second its staff who are currently working in Malindi to the operator (as advised by the operator) and meet all the staff costs as well as finance operation and maintenance costs.

The following incentives and penalty clauses have been included in the management contract:

Financial collection efficiency

At the end of the service contract, a financial collection efficiency of about 85% had been attained. For the management contract, the target is to attain as close to 100% as proves practicable. The range within which the standard fee will apply is:

- after the initial 6 months (July and December 1999) 80% + 5% - 2%
- after a further 6 months i.e. from January 2000 onwards 85% +/- 2%

A penalty for every 1% lower (averaged over three consecutive months and applicable commencing the end of that three months) shall be the equivalent of 25% of the extra revenue obtained.

After every tariff increase, it can be expected that collection efficiency will initially drop due to a reluctance to pay by some consumers. Any such dip in collection efficiency in the two months after an increase in tariff will not be cause for the imposition of this penalty clause.

There is a clause requiring the client to raise tariffs to cost-covering levels and review them every year to keep pace with inflation.

Unaccounted for water efficiency (UFW)

The UFW was 40% by the end of the service contract. The range within which the standard fee will apply is 40% +/- 5%. Penalty for every additional 1% averaged over three consecutive months shall be 3% of the monthly fee becoming initially due at the end of

the three months. Bonus for every 1% improvement averaged over three consecutive months and subsequently maintained shall be 3% of the monthly fee becoming due at the end of the three months.

The management contract states that deductions of either penalty will be strictly tied to the sufficiency of funds annually agreed between the operator and the client as necessary for operation and maintenance. A deficit in such funds for example due to failure to annually and appropriately update the water tariffs shall immediately render both penalties inoperative.

Potential strengths and weaknesses of the contract

Strengths

- The contract specified that it would be effective only after a cost-covering tariff was implemented, and therefore has potential for self-financing.
- The financing of the contract is clearly specified, the means of payment are flexible and the payment process is clearly outlined in the contract.
- Bilateral financing on grant basis was assured for the extensions and improvements of the distribution network, thus reducing physical losses and improving the customer base.
- “Open-book accounting” principle was specified in the contract to facilitate periodical inspection of the operator’s project books of account by the client.
- The contract has provision for incentives for good performance and penalties for poor performance.
- The contract has attempted to specify performance targets, though not in a comprehensive and competitive manner.
- The contract has a clause requiring both parties to deal fairly with each other and recognizes that it is not practicable in this type of contract to provide for every contingency which may arise during the life of the contract.
- The contract period for this contract is five years; this is a suitable period that should enable the client to realise substantial benefits from a management contract.

Weaknesses

- The management operator does not have full autonomy, and therefore flexibility, over all personnel, with only three full-time and two part-time senior management personnel being employees of the operator. The rest of the staff are employees of the client, “seconded” to the management operator.
- The management operator does not have a free hand in procurement of operations and maintenance materials, and is required to adopt the client’s public sector procurement guidelines with only minor deviation during emergency situations.

- The incentives and penalties are based on below average performance standards for efficiently managed water utilities. The unaccounted for water efficiency of 40% is high, yet a range of 40% +/- 5% has been stated as the range within which the standard fee applies.
- The performance targets set are neither comprehensive nor are they competitive in magnitude. If the collection efficiency is already 80% before award of the management contract, then a target of 85% is low. With the stated investment to be made in replacement of customer connections, then a target of 25% UFW may not be demanding enough for a management contractor.
- There was not any competitive tendering, probably because of the perceived experience obtained in the project by the same firm under the earlier service contract, and the bilateral financing link with the donor country. Absence of competitive tendering in contracts may increase contract costs and reduce net savings and benefits for the client.

Concluding comments

A summary of the analysis of both the Service and Management contracts against agreed guiding principles is included in Appendix 3. The Management contract appears to be well prepared and strong on payment conditions but weaker on the partnership conditions.

In 2000 it was still too early to draw clear lessons from the operation of this management contract. However, the fact that there was not competitive bidding for this contract raises doubts about whether potential benefits will be maximized for both parties. The contract was quite dependent on grant aid funding for new infrastructure, but other utilities will be expected to make improvements without such assistance.

2.6.4 Johannesburg water management contract, South Africa

Based on presentations by representatives from Johannesburg Water Company and the Operator Ondo/Northumbrian Water Group in 2001. The case study drafting and concluding comments by Cyrus Njiru and Kevin Sansom, WEDC

Introduction

Johannesburg is one of the biggest cities in Africa with an estimated population of over 3 million. Until early 2001, the Greater Johannesburg Metropolitan Council (GJMC) was directly responsible for water and sanitation services in the city among other municipal services. As a result of financial and organisational problems within GJMC and changes in jurisdiction for Johannesburg arising out of the recent political developments in South Africa, a single entity (The Unicity) was created in early 2001.

A major reorganisation of municipal services was undertaken with the sale of non-core assets such as Gas works and the Rand airport. Municipal business enterprises such as the Zoo, Civic Theatre, Bus Company and the Fresh Produce Market were corporatised. Core functions such as planning, community services and emergency services were retained by the restructured City Council. New autonomous agencies (non-trading companies) and utilities (trading companies) were recently created to be responsible for Electricity, Solid Waste and Water and Sanitation.

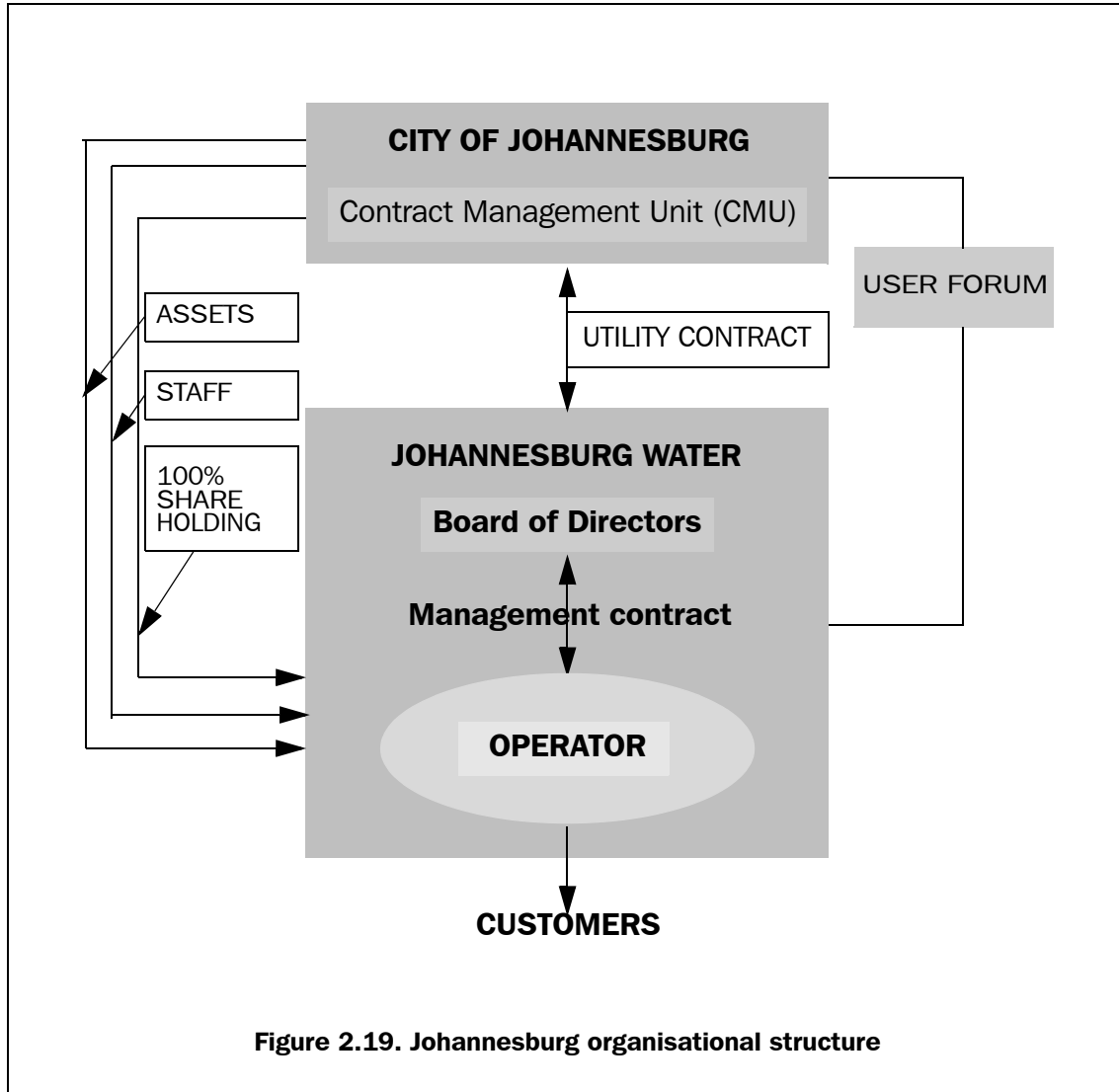
Water and sanitation in Johannesburg

The city of Johannesburg receives about 1000 million litres per day of treated water in bulk supply from Rand Water, an autonomous regional water authority in the Republic of South Africa. The city of Johannesburg distributes this water to customers through over 8000Km of distribution network. There are 70 reservoirs and 26 water towers in the network. Waste water is collected through a reticulation system with over 8000km of sewers. Prior to the management contract, the city's water utility had 2700 staff in 10 operating divisions.

Among the challenges facing the water utility include financing of future water and sanitation services to meet increasing demands. . The scale of the business is huge with a turnover of about R1.6 billion per year (1 Rand=£0.09 or 1GBP=11.478 South African Rand). The key problems identified by the utility are non-compliance with environmental requirements and reduction of unaccounted for water that is currently over 40%. The GJMC found it difficult to overcome these problems and challenges with the existing 'organisational dysfunction' (A. Still, 2001).

The creation of a new autonomous water utility, Johannesburg Water was considered a welcome development. Apart from forming a new water utility, it was also decided to contract out water and sanitation services to a management contractor. Figure 2.19 shows the planned organisation structure incorporating the new autonomous water utility, Johannesburg Water and an Operator responsible for management of water and sanitation services in Johannesburg.

Note that there is a performance contract or a 'Utility contract' between the City of Johannesburg CMU and the new utility Johannesburg Water. There is also a Management contract between Johannesburg Water and the private operator. The management of the city water services is therefore placed within a much more performance related contractual framework, compared with traditional municipal management..



Formation of the utility and contracting out

The Greater Johannesburg Metropolitan Council created a new autonomous water utility for the following reasons to:

- Enhance accountability in performance and service provision
- De-politicise water and sanitation services by placing their management further from politicians in the Greater Johannesburg Metropolitan Council
- Attract and retain appropriate good quality staff
- Attract investment

Upon formation of the new utility, a management contract was decided upon mainly due to the need for speed in effecting change. A management contract was seen as the quickest way to procure a ready-made team to manage water and sanitation services in Johannesburg. The management contract was also seen as enabling procurement of technology and management expertise in running water and sanitation services. Other modes of private sector participation such as concessions and lease contracts and also the outright sale of assets were considered and found inappropriate considering the context at the time. However one of the tasks of the operator during the course of the contract, is to advise the utility on how to proceed with a proposed future Concession contract (Chevallet, 2001).

Procurement or bidding process

A two stage bidding process was followed by Johannesburg Water.. A team of council officials procured the lead consultants in October 1999 while other consultants were procured in November 1999. The consultants prepared tender documents and invitation for pre-qualification of the management operator was sent out in December 1999. A total of seven (7) Joint Ventures (J V's) were pre-qualified in February 2000 to bid for the management contract. The J V's were:

- Acea (Italy), Nuon (Netherlands) and Eskom Enterprises
- Azurix Services Ltd (UK/USA), Umgeni Water Services (Pty) Ltd (South Africa) and Zonkizizwe Investments (pty) Ltd
- Northumbrian Water Group (UK), Water and Sanitation Services (Pty) Ltd (WSSA) and Suez - Ondeo (France)
- Severn Trent Water International (UK) and Taylor Woodrow SA
- Thames Water Overseas (UK), Black and Veatch (SA) Pty Ltd and Sirius development Foundation (Pty) Ltd
- Vivendi (France) and Rand Water (South Africa)
- Water Corporation of Western Australia (Australia) and Capital Formation Advisers (Pty) Ltd

The request for proposals was issued on 5th June 2000 and five (5) tenders were received on 1st September 2000. It took 6.5 months from pre-qualification to submission of bids. The bid structure consisted of two proposals , technical and financial and the relative weight of each proposal was Technical/Financial: 60/40.

The technical evaluation report was then prepared, only those bidders who scored higher than a 75% technical rating were considered as part of the assessment of the financial proposals. The financial envelopes were opened on 13th October 2000. The advisory board, the council panel, and relevant council committees discussed the technical evaluation report and the financial proposals. The preferred bidder was selected on 9th November 2000 and is the Northumbrian Water Group JV, who are part of Ondeo.

The process of selecting a management contractor to operate the water and sanitation system was considered transparent and took about 13 months. The successful bidder took 60 person-months in preparing the bid, which is indicative of the effort that is necessary to win such a large contract.

Role of GJMC and the water utility

The Greater Johannesburg Metropolitan Council (GJMC) plays the traditional role of the client in contracts. In particular, the GJMC is the:

- Issuer of the exclusive licence for the water utility (30 year period)
- Regulator of the Water Utility (The Unicity/GJMC has a regulatory unit within the Municipality)
- Sole shareholder in the utility (over the 5.5-year Management Contract) through Equity and Shareholder loans
- Borrower on behalf of the Utility (initially, since the Water Utility has no credit history to facilitate borrowing)
- Approval of the business plans of the utility

Despite not having a credit history, the new Water utility has good potential to attract finance given its considerable autonomy. International and local finance should be available for the utility, subject to credit ratings, appropriate legal contracts and negotiations between the GJMC/Utility.

The new Management Operator (Northumbrian/Ondeo Water Group) and its financial and legal advisers can assist the Utility in its negotiations with the GJMC. The business plan for the utility needs to be continually updated as well as the Utility financial models and scenarios. Clarification on borrowing powers of the utility should also be made in the future.

Role of the Management Operator

The Northumbrian Water/Ondeo Group in a joint venture with Water and Sanitation Services (South Africa) was awarded a 5.5-year management contract to manage water and sanitation services in Johannesburg. Specific functions of the Operator include but are not limited to the following:

- Operate and maintain the water and sanitation system to specified and acceptable performance standards
- Train and empower utility staff
- Render services to the poor
- Design and manage the capital expenditure project
- Carry out billing and revenue collection, and develop the customer base

- Advise the utility in the proposed concession contract negotiations with the Unicity.

Operator's remuneration and incentives

The Operator's remuneration consists of three components:

- A fixed management fee (R25 million) that is linked to service delivery
- Incentive A (up to R20 million) for human resource development, capital expenditure program delivery, sewer overflows, customer service and O&M of facilities measured in terms of plant downtime.
- Incentive B is about profit sharing, which is a percentage of the improved operating margin before interest, tax and depreciation.

Such a mixture of flat management fees, targeted incentives and profit sharing, is intended to promote the right balance of incentives for the operator to make the expected improvements, without Johannesburg Water being overly generous. A 'win-win' situation will hopefully be the outcome. Details of remuneration of the Operator are clearly stipulated in the contract.

Concluding comments

The contract has been operational since April 2001, so it is not possible to comment on any lessons learnt during implementation to date. However, the operator is keen to make some early successes in aspects such as:

- Change management
- Reduction in UFW
- Services for low income communities
- Development of business systems
- Implementing agreed work plans

The operator is using a number of expatriate personnel in Johannesburg at the start of the contract, most of whom are expected to be phased out during the first two years of the contract, thereby transferring responsibilities to local staff. Such contracts are potentially, therefore, a good means of developing the capacities of local managers.

The Johannesburg management contract provides a good example of innovative ways of combining contracting-out options with necessary institutional changes for the purposes of improving urban water services. The substantial institutional changes implemented could not have taken place without the necessary political will.

References

Chevallet, J: Presentation made to the Secretary to the Ministry of Urban Development in India on '*The Johannesburg Management Contract*', during a visit to Ondeo offices in Paris, France, in July 2001 (Notes on the presentation taken by Kevin Sansom, WEDC)

PART 2: CONTRACTING OUT CASE STUDIES

Still, A: *The challenges of managing water and sanitation services in an African City*, A presentation made at the 2nd Regional conference on reform of the water and sanitation sector in Africa, Kampala, 26th – 28th February 2001 (Notes on the presentation taken by Cyrus Njiru, WEDC)

2.6.5 Tongaat management contract in Durban, S. Africa

Kevin Sansom (WEDC), 2000

Contract summary

Tongaat is a town of 85,000 people on the coast just to the north of Durban in South Africa. It currently comes within the jurisdiction of Durban Metro Water for its water and wastewater services. But in 1991 the towns water services were the responsibility of the Tongaat Town Board. At that time a local company 'Aquafund,' who are part of the Bateman group, approached the Town Board about taking over the management of UWSS services in the town. A 15 year management contract was developed and signed at the end of 1991.

The contract covers O&M of water supply and sewerage services for the town including sewage treatment plants, water and sewage reticulation networks. It is a 'Delegated Management' type of contract where responsibility is handed over to the private operator and no new joint venture company is established. There is a detailed monitoring system specified in the contract including records of the following:

- quality of raw and treated sewage
- routine and preventative maintenance
- monthly bulk flow meter readings
- flows and analytical results against key indicators at treatment plants
- records of adjustments, modifications and repairs
- weekly reports of the status of the reticulation systems.

Monthly meetings between the client and operator are held to review the performance reports and recommendations by either party.

Payment is based on a tendered management fee that is paid monthly and is adjusted for inflation. Variations in electricity and chemicals costs are dealt with by stating the assumed throughput flows for each treatment plant in schedule 1. Prices for each additional kilolitre treated at each plant per day are quoted as are the reductions in price per kilolitre for amounts less than the assumed flows. Storm flows that are not treated but are merely diverted do not attract additional payments. Careful monitoring is therefore required for accurate payments.

The contract has no penalty clauses in the contract, apart from a statement to the effect that if the Department of Water Affairs certifies in writing that effluent does not comply with the standards, the operator will incur the associated fines, if compliance is not achieved within 14 days from receipt of the certificate. It is interesting to note that in contract amendment in 1997, this period of grace was increased from 14 to 30 days.

The contractor is required to ensure his operations comply with all national water and environmental standards. In case of any failure by the Operator, Durban Metro shall give notice of the required rectification. If the operator fails to comply, Durban Metro can enter the site and carry out the necessary work and deduct the costs from the Operators account.

The fact that there are very limited penalty clauses and no incentive clauses in the contract means that the client is quite dependent on the professionalism of the operator for good performance, particularly for water supply. However, the contract is regarded as being generally successful over a period of 5 years, according to Durban Metro. A key factor in the success of this contract, is a competent operator who is keen to establish a good reputation in a market that is expected to expand.

More recent PPP initiatives

In 1999 tenders were invited for a meter reading contract for the Durban area of water supply.

An analysis of the tender document reveals some interesting features. Each meter reading device contains between 200 and 700 locations to be visited on a given day. The number of meters to be read each day depends on ease of access and the distance between meters for each route.

The meters remain the property of Durban Metro Water and must be returned to them each day by 17:00. Potential disputes could therefore arise over who is responsible for faulty meters. It may have been better to include the repair of the meters in the contract.

Incentives for the contractor are dealt with by payment curves where the payment rate per reading is dependent on the percentage of good meter readings. For example if 98% of readings are 'good', the payment rate per reading is 145 cents per reading on alpha (difficult) routes, whereas if 88% of readings are 'good', the rate is 105 cents. All routes are classified as either alpha (difficult) or beta (easy) routes.

The penalty clauses also have potential substantial impacts on contract payments. For example the contractor should flag all unread meters for that day. If the total number of flagged readings exceeds 20% of total readings on a route, the contractor will not be paid for any reading on that route. An analysis of both the meter reading and Tongaat contracts are summarized in Appendix 3 and reveals that some lessons have been learned from the first contract.

Recent reports indicate that Durban Metro Water has been pursuing more substantial PPP options such as a Concession. The fact that the current policy is for free water to be provided to certain poor areas, will make it difficult to create incentives for a future operator to improve services to those areas. Effective PPPs should be complimentary with sound commercial approaches.

References

Durban Metro Water (1999) '*Meter Reading Contract*', Durban

Durban Metro Water (1991 and 1997 amendment) '*Tongaat O&M Management Contract*', Durban

2.6.6 Co-operative management of water in Kibera, Nairobi

Kevin Sansom, WEDC, 2000

This case study outlines an innovative shared management solution to reduce the profiteering of water vendors in Laini Saba village, part of the large Kibera informal settlement in Nairobi, Kenya. A CBO (Community based organisation), buys water from the city council based on bulk flow meter readings and manages a small water distribution system with water kiosks. This arrangement also improves cost recovery to the bulk water supplier, Nairobi City Council.

Background

The Kibera informal settlement has an estimated population of 500 000 with an average population density of 2,000 per hectare (Kariuki and Mbuvi, 1997). The area is characterized by overcrowded housing with very poor infrastructure services in terms of water supply, excreta disposal, solid waste management, drainage and a lack of paved access. In the past little has been done to improve the situation due to the questionable legality of land ownership and buildings within the area. Many unofficial pipelines have been constructed in Kibera to serve private water kiosks and form a 'spaghetti' of leaking pipelines. About 30 to 40% of connections are metered but only 10% pay their water bills.

Kibera is divided up into 9 'villages' and a rapid needs assessment was carried out in each village. The study was managed by the UNDP-World Bank Water and Sanitation Program office in Nairobi and the city council.

Residents of Laini Saba, one of the nine villages in Kibera, consider sanitation and water supply as the most critical problems they face, according to the study. Most residents obtain water from privately owned water kiosks and pay KShs. 2 to 3 for each jerrican (20 litre container). Note this is many times more expensive in terms of Kshs per kilolitre, than house connection supplies in Nairobi. The payment increases significantly during shortages when they can range between Kshs 5 to 20 per jerrican (Malombe and Kimata, 1997). Most kiosks do not have water for at least 3 to 5 days a week and residents also collect water from distant locations outside Kibera. The main water problems experienced include:

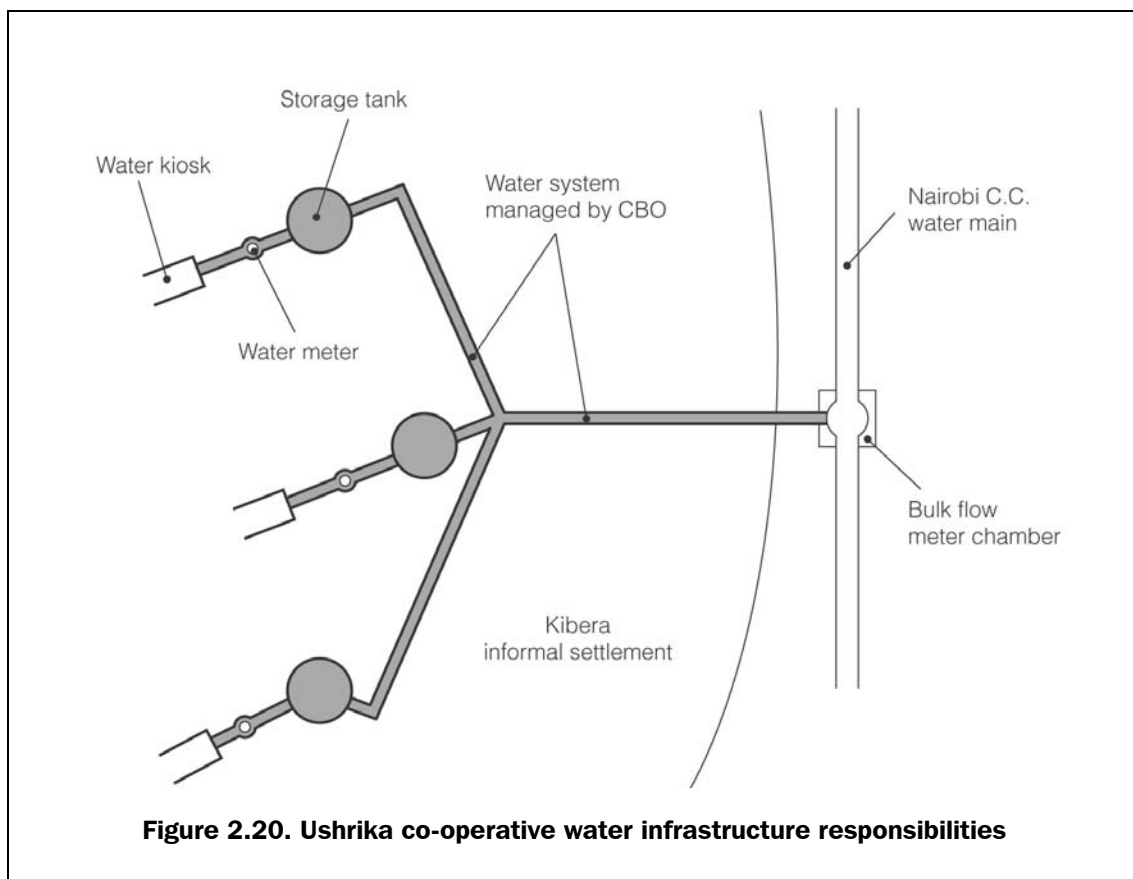
- long queues for water
- high prices during water shortages as private owners collude to raise prices
- dirty water due to leaking PVC pipes
- low water pressure
- long distance to alternative water points
- delays in pipe repairs meant people using dirty water
- contamination of open storage tanks

The average consumption per household is 2 to 10 jerricans which indicates low per capita consumption.

A community based initiative

In response to the poor water supply problems, a community organization in Laini Saba called Ushirika, approached a local NGO - Maji Ufanisi for assistance. Together they developed a proposal in collaboration with the Nairobi CC, to provide a new supply pipeline connected to a water main outside Kibera and construct pipes and a number of water kiosks in Laini Saba. The NGO provided the materials and expertise and Ushirika arranged for the labour to construct the pipeline and kiosks in 1997.

In 1998 the new water system was operating well. Ushirika through its management committee and treasurer, regularly pays for the water they receive to the Nairobi CC, in accordance with bulk water meter readings. The meter is located at the point where their pipe connects to water main in a locked chamber. Refer to Figure 2.20, for a representation of who manages which part of the water main infrastructure..



Ushirika now own a number of water kiosks, each of which has a water meter and outlet taps. The selling of the kiosk water is let to an individual who sells water to local people for 2 KShs. per jerrican. Ushirika manages and maintains their small distribution network, for which it makes a small profit for each kilolitre sold to the water sellers, who in turn make a small profit for each jerrican of water they sell.

From its profits Ushirika, has built an office and a shop and is looking to invest in new works such as drainage improvements. There is no formal contract between the CBO and the city council, apart from the agreement to pay the water bills. Monitoring and regulation of Ushirika's activities is dependent on its members and the local community.

Conclusions

From the city council's perspective this arrangement with a CBO works well, because the city council does not have to manage services in Kibera where there are legal constraints, but it is paid for the water it supplies. This potentially leads the way for making the bulk supply more reliable with the increased revenue they receive.

From the local consumers' perspective the situation has improved because they receive a more reliable kiosk service from Ushirika and pay a fixed price that is not subject to increases during shortages. Even consumers who use other nearby kiosks benefit from Ushirika's competition with the local private vendors who are less likely to raise their charges. The members of the CBO Ushirika also benefit because their work provides a potential springboard for more beneficial work in their community.

If we were to classify this form of Private Sector Participation, it could be described as a form of small Management contract or a Co-operative arrangement. It can also be considered to be a Public Private Partnership because of the collaboration with the city council and the CBO earns profits and hence behaves in part like a private enterprise.

A planned new water distribution for Kibera should provide more opportunities for successful co-operative management of water services.

The information in this case study is based on a field visit conducted by Kevin Sansom, on behalf of DFID in September 1998.

References

- Kariuki, M., Mbuvi, J. (1997) *'Field Note: Water and Environmental Sanitation Needs of Kibera,'* UNDP-World Bank Water and Sanitation Programme, Nairobi, Kenya.
- Malombe, J., Kimata, D. (1997) *'Draft needs assessment for urban environmental sanitation issues in Kibera informal settlement,'* UNDP-World Bank Water and Sanitation Programme, Nairobi, Kenya.

2.7 Indian case studies

2.7.1 Sector overview

Municipal authorities and metropolitan water and sewerage boards are direct service providers to a fast growing urban population that is currently over 300 million. These organizations continue to provide services with limited funds, but have difficulties in responding to the growing demand for service expansion and improvement. Service levels have declined in many areas, with typical daily water supply hours ranging from 0.5 to 8 hours a day and low income consumers receiving as little as 16 litres per capita per day. Many people resort to using private borewells and tankers to supplement their supply. 'Only about 43% of India's urban population is reported to have access to basic sanitation' (World Bank *et al*, 1997).

An analysis of information from water suppliers in 35 urban centres in India, representing about 15 percent of the urban population, (Franceys and Sansom, 1999) revealed a general lack of commercial orientation. The average domestic water tariff is Rs2/m³ (\$0.055), while the overall operating ratio, that is the ratio of operating costs to operating revenues, is 2.53 which indicates that only 40 per cent of operating costs in these towns is being covered. There is therefore no recovery of capital costs, so substantial and non-sustainable subsidies are provided. Average bill collection efficiency is reported as 76% and there are an average of 24 employees per thousand connections, which is considerably higher than any reasonable target for a low wage economy, let alone the 2 staff per thousand connection of high-income economies.

'Historically the UWSS sector has not performed well, despite considerable investment over the last two Plan periods. New methods of funding and managing the sector are therefore required' (GoI in UWSS report, 1997). 'There is a growing awareness and acceptance of the need for substantial changes in the sector. A number of policy papers and the work of State Finance Commissions, captures the emerging consensus (World Bank *et al*, 1997).

Whether India opts for a substantial increase in more complex PPPs (such as BOTs, Leases etc.) in the sector, or more commercialized public bodies with contracting out, or a combination of both, many key issues will need to be addressed, if a substantial improvement in services is to be achieved. These include: the very low tariff levels, fragmentation of responsibilities and a lack of autonomy, high staffing levels and a lack of resources devoted to capacity building and targeted management development.

2.7.2 Recent large PPP initiatives

Key decision makers at national and state level have long realised that there is a huge funding gap between the level of loans and grants public institutions have been able to deliver and the funding requirements to bring the daily water supply up to say the design standard of 145 litres per person day. 'The current investment in the sector is of the order of \$5 per person per year. To give a sense of the magnitude of the challenge facing the sector, this investment might be compared with the present UK investment of \$77 per person per year on an already functioning system (Franceys and Sansom, 1999, Ofwat, 1997).

More complex PPPs such as BOT and Concession contracts are seen as an effective way to attract the much needed private finance and make service improvements. About 30 PPP initiatives in the water and wastewater sector have begun, but many have failed to take off. Although there have been successes in solid waste disposal facilities.

‘Despite the large number of initiatives in the sector, there is a lack of clarity in the underlying objectives, with the main drivers for most PPP initiatives being “attracting private capital” and a curb on additional public sector employment. In general there is less recognition of the private sector’s ability to bring in operational efficiency and a greater consumer orientation’, (Metha, 1999).

In recent years, the Tirupur water and sewerage project has been expected to be the first Concession/BoT to be implemented in India. This is because of the agreed substantial contributions from the local successful hosiery and knitwear sector. As of 2000, financial closure had still not been achieved.

There are many reasons for the lack of large PPP initiatives proceeding to implementation, including limited political will, low tariffs and the low value of the rupee. It is interesting to note the reasons given for the abandonment of the BOOT approach in Hyderabad. Bids were invited by the Hyderabad Metropolitan Water Supply and Sewerage Board, for a new water intake on the river Krishna, a water treatment plant and 135 kms of transmission mains with en route pumping stations. The pumping head is high at 481 metres. The main reason given for not proceeding was the high bid prices compared to the estimates arrived at through the avoided cost methodology (Metha, 1999). Some of the reasons given by the bidders for the high prices are as follows, (based on Subrahmanyam, 1999):

- Difficulty in estimating and providing for foreign exchange risks
- high risks associated with HMWSSB’s capacity to pay the bulk charges, especially in view of the *lack* of any standard tariff increase procedure
- dissatisfaction with only a state government guarantee for failure of HMWSSB to pay the charges
- inadequate protection against force majeure events.

No doubt successful BOTs and Concessions will emerge once lessons are learnt and commitment is shown by all key stakeholders. However, what is to be done to improve services in the many cities in India that will not have substantial PPPs in the medium term? Reforms are needed but it is also important to build on what is being achieved at the moment, which includes more commercial approaches in conjunction with the use of the private sector through service and management contracts. Attracting private and public sector capital funding will be easier once improvements in sector performance and cost recovery have been achieved.

2.7.3 Contracting out using service and management contracts

Many water boards and municipalities throughout India have let Service contracts for O&M of discrete pieces of infrastructure such as pumping stations, sewage treatment plants and water treatment plants. Substantial savings on many of these contracts have been reported. There is an encouraging sign that some recent contracts are more output based and are therefore more likely to deliver service improvements.

A number of brief case studies are presented in the next section detailing experiences and lessons learnt from contracting out in the Indian UWSS, as well as multi-village piped water schemes. The location and client authority for the series of case studies are as follows:

- a) Ajmer, Rajasthan Public Health Engineering Department
- b) Chennai Metropolitan Water Supply and Sewerage Board
- c) City and Industrial Development Corporation (CIDCO) in New Bombay
- d) Hyderabad Metropolitan Water Supply and Sewerage Board
- e) Temghar, Thane, Maharashtra Jeevan Pradhikaran (MJP), a State Water Agency
- f) Maharashtra multi-village piped water schemes including:
 - Asodha - Bhadli 8 village scheme
 - Jalgaon 80 village scheme
 - Khatwal, Satara 13 village scheme
 - Kolhapur 4 village community managed scheme
 - Development of a model management contract.

It is worth noting that those organizations that are more commercially orientated such as b), c) and d) above, tend to contract out more services than other authorities in India. Output based contracting out of services is complimentary with commercial approaches, as is demonstrated in other countries such as Chile. Indeed it can play an important part in developing a performance based work culture.

The case studies indicate areas where there is room for improvement, in terms of maximizing the potential benefits from contracting out. It is encouraging that those organizations who persevere and are willing to adapt their contracts, tend to achieve improved performance. Refer to the contract analysis in Part 1 of this document for additional suggestions to improve contract design.

There are key aspects in service provision that utilities in India have been reluctant in the past to contract out, such as the O&M of the water distribution network and billing and collection from customers (apart from CIDCO). The reasons for this include: union problems, the political involvement in detailed water service provision and an unjustified lack of trust in the private sector. The typically high staffing levels would suggest that the private sector could potentially make substantial savings, if they were allowed to manage service delivery to customers. This could be done through appropriate arrangements, such

as management contracts with suitable incentives and penalties. Recent reports suggest that the more progressive Metro water boards in Chennai and Hyderabad are actively considering such contracts.

2.7.4 References

Franceys R. W. A., Sansom, K. R. (1999) *'The role of government in adjusting economies: India, Paper 35: Urban Water Supply'*, International Development Department, University of Birmingham, UK.

Metha, M. (1999) *'A review of Public-Private Partnerships in the water and environmental sanitation sector'*, DFID, India

Ofwat (1997) *'Report on the financial performance and capital investment of water companies in England and Wales'*, Birmingham, UK.

Subrahmanyam, L. V. (1999) *'Infrastructure needs in water supply - A case of Hyderabad city'*, presentation at the conference on Indian Infrastructure, New Dehli, January 1999.

World Bank, DFID, GoI. (1997) *'Water resources management sector review: Urban water supply and sanitation sector'*, India, October 1997.

2.7.5 Ajmer for O&M of bulk water supply in Rajasthan

Richard Franceys, (IHE) and Kevin Sansom (WEDC), 2001

Water supply and sewerage in Rajasthan is the responsibility of the State Government, carried out through the Public Health Engineering Department (PHED) under a separate PHE Ministry. In February 1995 the PHED commissioned a new water supply scheme serving 6 towns with the Bisalpur dam as its' source. Ajmer with a population of 730,000 is the main town with 63% of the total population served by the scheme (WSP, 1999).

A significant private sector participation initiative was taken with the letting of service contracts (June 1995) for the operation and maintenance of this newly constructed scheme. Separate O&M contracts were let for:

- 112km of transmission mains (1200 to 1700mm diameter pipes),
- 5 main pumping stations
- and a 132 MLD water treatment plant

The letting of the contracts was driven by the ban on further recruitment of government staff. The rates tendered in one round of bidding from four existing contractors were twice as high as expected. They appeared to be acting in a cartel so the PHED continued with the existing contracts. There were difficulties in approving other firms of sufficient experience to be placed on the tender list but for some contracts these were overcome by using a co-operative of retired engineers whose years of service were accepted as 'Class A Contracting experience'. After a court challenge the contracts were let at 40% less than the cartel contractors had offered (but for a reduced period of time). Over the past two years the work has proved to be satisfactory.

Contractors were chosen through open advertisements with bidders depositing guarantee money, 'details of organization, management staff and personnel, evidence of similar work carried out in the past, a list of current jobs, as well as current income tax and sales tax certificates. The annual turnover of the bidding firm in the last three years has to be at least 50 per cent of the estimated cost of the bid. No consortium or collaborative bidding is permitted. The PHED awards the contract to the best-qualified bidder offering the lowest evaluated valid tender. This essentially means that the lowest bid does not necessarily get the contract.'

WSP South Asia (1999) add that 'it is clear that this was a move in the right direction. All the important stakeholders- the Government exchequer, the PHED, the private contractors and the consumers have benefited from this new arrangement.'

The pipelines are now looked after by a single private firm, Paharia Construction Company which has its own cranes, stock of pipes and patrolling staff equipped with wireless sets supplied by the PHED.' This contractor is responsible for carrying out round the clock surveillance, as well as preventative and breakdown maintenance of the pipelines. Another company, Hydron looks after the treatment plant and some of the pumping stations whilst AEC India looks after the remainder.

The terms of the contract include well-defined obligations for the contractor and the PHED. For the pipelines contract in particular, there is a balance of performance-linked incentives and penalties, which are set out in Box 2.4. This output based contract as led to a reported reduction in the average time taken to repair leaks and bursts in the pipeline from 60 to 72 hours to 24 to 30 hours. A summary of the analysis of these 3 contracts is contained in Appendix 2.

Box 2.4. Ajmer pipelines contract: Incentive and penalty clauses¹

Incentives clause 30 A

If the contractor completes the work earlier than the stipulated period, he shall be allowed an incentive payment as follows:

when 5% of the completion period is saved, he is entitled to 1% of the actual cost of work

when 7.5% of the completion period is saved, he is entitled to 1.5% of the actual cost of work

when 10% or more of the completion period is saved, he is entitled to 2% of the actual cost of work.

Penalty for delay in repairs beyond the specified period

Period of delay beyond specified period	Penalty (Rs./hour)
0 to 2 hours	500
2 to 4 hours	750
4 to 8 hours	1 000
Beyond 8 hours	2 500

1. Source: Government of Rajasthan, PHED, Ajmer, Government of Rajasthan pipelines contract (1996)

The estimated savings for the contracts based on a comparison between the estimated costs if the government had done the O&M and the costs incurred by the contractors, is as follows:

- pipelines 70%
- pumping stations 26%
- water treatment plant -
- **Total estimated savings** 44%

Source: PHED, Ajmer Rajasthan, cited in WSP 1999

Contracting-out has therefore generated substantial efficiencies in operations and maintenance. However, it is reported that even after these efficiencies the cost of the water is approximately Rs30/m³ (\$0.71/m³) and is being sold to customers for Rs3/m³ (\$0.07/m³). This would indicate that more emphasis on commercial approaches is required in this state, if sustainable improvements are to be achieved. But the Ajmer contracts have

been a clear step in the right direction with the PHED assuming a new role: changing from a monopolistic service provider to supervisor of a number of private sector operators (WSP, 1999).

References

Government of Rajasthan, PHED (1996) *'Tender documents for O&M of pipelines, pump houses and water treatment plants'*, India.

Water and Sanitation Programme (WSP) South Asia Region (1999) *'Privatizing the operation and maintenance of urban water supply - the experiences of Ajmer, Rajasthan, India'*, SPI Series 1, New Dehli, December 1999.

2.7.6 Chennai Metro Water Supply and Sewerage Board

Kevin Sansom (WEDC) and Richard Franceys (IHE), 2000

Background

The major metropolitan city in Tamil Nadu, Chennai (formerly Madras), has its own specific water supply company. Chennai Metropolitan Water Supply and Sewerage Board was established in 1978 to serve Chennai metropolitan area but is now serving only the c

ity ('official' population of 3,885,000 (1991 census) and an estimated actual population of 5,500,000). The Board is constituted with a Chairman and 14 Directors, four full-time, five ex-official and six non-official all selected and appointed by State Government. It used to have a politically based Chairman of Board and representatives of all section of community as Directors but this system 'did not work' so now an IAS member is the part-time Chair and other IAS members act as directors. There were seven Managing Directors in the three years up to 1990 with the subsequent MD allowed to stay until 1994.

Chennai has particular problems in lying under a rain shadow with no major river systems supplying surface water. Total water production of 440MLD is being increased to 1,000MLD to meet the anticipated demand in 2011. No grants are received from government, only loans. There are 179,000 connections and 7,879 standposts delivering water 1 to 4 hours per day.

Development of contracting out: 1992 to 1995

As part of a general institutional development programme and in the face of severe droughts, Chennai Metro began in the early 1990s to experiment in contracting out various services. For example, many of the staff cars began to be supplied by a taxi firm and the water tanker service was out-contracted. It was discovered that vehicle repairs had been 30% of O&M costs and vehicles were off the road for 50% of time. Metro Water disposed of 59 vehicles and began to hire vehicles in, particularly tankers. It used to cost Rs300 for 6m³ delivery by Metrowater truck. With the out-sourced service it cost Rs150 for a 12m³ delivery by a private truck.

Maintaining and operating pumping stations had traditionally been problematic for the Board. In particular, station labour quality and absenteeism jeopardized the conduct of these duties and the Union rejected any attempts at imposing discipline. Policing and monitoring the work was difficult and expensive.

Realizing this, from 1992 Metro invited tenders from contractors to undertake O&M of Sewage Pumping Stations. The great advantage to the contractors was the minimal capital outlay required to win and manage a contract. This allowed them to build up their skills and experience gradually. Contractors also received cash up front, before they had to pay out. Significantly, they trusted Metrowater not to abuse the contract conditions which although appearing onerous were in fact standard for the Government of India.

The Metro Board reported that the O&M of 14 sewage pumping plants were contracted out for a year in 1993 at an average cost of 20% less than the estimate for Metrowater to carry out the work. Two or three contractors took a couple of pumping stations each, the

remainder were taken by single contractors. Only in one case had a contractor failed to fulfil adequately the contract and in this case the damages clause in the contract was resorted to.

Under the new contracted out arrangements minor repairs are defined and these are to be carried out at the cost of the contractor. minor repairs costing up to a maximum value of Rs.2,000 (\$55) per month are the responsibility of the contractor. Major repairs because of their size and unpredictability are retained as the responsibility of the Board. Imposing the cost and responsibility for minor repairs on the contractor potentially provides an incentive to fulfil the routine, preventative maintenance required by the contract. By proper discharge of duties the contractor avoids costly and disruptive breakdowns.

Another 22 pumping plants (out of the total of 103) were privately managed in 1994, on that occasion for three year contracts, resulting in bids coming in at 40% less than Metro Water's estimate for their own staff to do the work. The contractors could make those sort of savings because 90% of operation and maintenance costs is labour. For example, a new graduate would have to be employed by Metrowater for Rs6,000 per month but a contractor would only pay Rs2,500 and would still get staff. Young engineers are willing to work at these reduced rates because the contractor represents an opportunity to gain experience quickly and the recruits would move on to better paid jobs. Each contract had up to 6 bidders competing to win and each had a strong incentive to be price competitive. Even with the 40% reductions it is believed that the contractor was obtaining a 20% profit margin.

In planning for contracting out, Madras Metro first identifies how to rearrange existing staff and work out staff redeployment before going ahead with privatisation ideas. It is still not possible to lay off any workers from a large organization so redeployment to expanding areas, early retirement and waiting for deaths in service are vital tools for personnel management.

In the Metro contract functions were tightly specified, a code of practice established and a Senior Engineer given powers to supervise and where necessary recommend deductions from a compulsory deposit paid by the contractor in the event of unsatisfactory execution. To encourage efficient working the Metro contract imposed penalties for slow progress in the form of daily fines and imposed conditions on the quality of contract staff. For all the potential for conflict between the board and contractors it was reported by both sides that the system had worked remarkably well and to the satisfaction of both.

Development of contracting out: 1996 to 2000

By 1996 some problems with the execution of the sewage pumping station contracts were emerging, although substantial savings were still being achieved. Senior CMWSSB staff reported that there were some concerns about the quality of preventative maintenance being undertaken by the contractors. The Rs.2 000 reimbursement limit on minor electrical and mechanical repairs did not seem to act as an effective incentive to undertake the repairs and maintenance in a timely manner. There was a perceived tendency to wait for the Board to initiate major repairs.

It was also found that contractor staff attendance was becoming a problem. CMWSSB responded by specifying the precise numbers of contract staff for each shift and their qualifications. It can be beneficial to state qualification requirement, but specifying the

precise staff numbers restricts the scope of contractors to innovate and make savings. For example, each contractor maintained a maximum of 3 or 4 stations, but if larger contracts were let for more stations, the contractor could innovate, perhaps by using radio and telemetry systems (which were not used) in order to improve operations and reduce staff numbers.

Precisely specifying the number of contract staff can also have the effect of driving contract staff wages down to low levels, making it difficult to attract qualified staff. This is because where there is no flexibility on staffing, contractors bidding for new contracts can only win contracts by lowering their staff wages, as it is the only variable for such service or 'labour only' contracts.

Ideally contracts should be 'output based', ie contract payments, penalty and incentive clauses are dependent on the contractor achieving specified outputs, thereby achieving service improvements as well as cost savings. However, it is not always easy to specify output standards for large numbers of sewage pumping stations, particularly where electricity supplies are unreliable (as was the case in Chennai). Therefore, the pumping station contracts tended to be 'input based' i.e. payment was based on numbers of shifts worked and penalties were for non-attendance. Monitoring of such contracts can be time consuming.

It is potentially easier to develop 'output based' contracts for discreet pieces of infrastructure such as water treatment plants (WTP) and sewage treatment plants (STP). From 1995 a number of such contracts were let for STPS, a WTP and water production wells by CMWSSB. Some details of these contracts are included in Table 2.27.

The management of the O&M of the 300 MLD water treatment plant at Redhills (item 4 in Table 2.27) was let using a more output orientated management contract. The liquidated damages or penalty clauses are shown in Box 2.5, it includes both output based and input based criteria. While such performance based contracts with penalty clauses can enhance service delivery, if incentive clauses had also been included; there would be potential for even greater improvement in performance.

The Redhills WTP contract is also interesting because the bidders were invited to enter separate prices for O&M, supply of chemicals, minor and major repairs. CMWSSB are effectively transferring responsibility and risks for major repairs to the contractor, which is unlike most O&M contracts in the Indian water sector. It is encouraging that such 'trust' in the private sector is developing because it gives contractors more scope to make improvements and savings. However, there is a need to allocate risks fairly and to the parties best able to bear those risks. A summary of the analysis of this contract as well as a Chennai sewage pumping station contract are included in Appendix 2.

CMWSSB has increasingly been pursuing commercial and customer orientated approaches in the last few years. Contracting out has been an effective part of this process particularly in terms of cost savings. But where contracts are more input based or 'labour only' contracts, as the sewage pumping station and STP contracts tend to be (refer to Table 2.27), then it become a way of imposing public sector management styles on the contractors (World Bank, 1998). This limits the scope for service improvement and innovations by the contractors. To address this issue, contracts need to be developed that

Table 2.27. Chennai service and management contracts¹

Contract scope	Contract period	Value of contract (per annum)	Procurement details and comments
1. O&M of sewage pumping stations (36 no.) through 14 contracts	3 years from 1995	Rs.23.9 million Savings of 30% less than CMWSSB's cost estimates.	A single bid document with qualifications specified for supervisory staff.
2. O&M of sewage pumping stations (30 no.) through 10 contracts	3 years from 1997	Rs.11.55 million Savings of 26 to 66% less than CMWSSB's cost estimates.	No pre-qualification but tender open to registered contractors. Daily log sheets for contract staff introduced.
3. O&M of 15 water production wells	2 years duration starting in 1995	Rs.3.2 million Savings of 48% less than CMWSSB's cost estimates.	No pre-qualification but tender open to registered contractors. Contractor responsible for minor electrical and mechanical repairs up to Rs.5,000 per month.
4. O&M of 300 MLD water treatment plant at Redhills	3 years from 1997	Rs. 5.25 million	A single bid document with eligibility criteria indicated. Separate prices were requested for each of the following: O&M, supply of chemicals, minor and major repairs.
5. O&M of Villivakam sewage treatment plant (STP) (10 MLD)	3 years from 1995/96	Rs. 0.27 million Savings of 16 to 67% less than CMWSSB's cost estimates.	Single bid document. Cost of power and consumables borne by the CMWSSB
6. O&M of STP at Kodungaiyur (80 MLD)	3 years from 1996/97	Rs. 1.29 million Savings of 16 to 67%.	Bids quoted in terms of rates for specific manpower and not a fee for O&M. This implies that it is a 'labour only' contract
7. O&M of STP at Nessapakkam (23 MLD)	3 years from 1997/98	Rs. 2.45 million	Bids quoted in terms of rates for specific manpower and not a fee for O&M. This implies that it is a 'labour only' contract

1. Source: adapted from Table A1.3 in A Review of PPPs, Metha, DFID, 1999

are sufficiently large to make monitoring worthwhile, with easily measurable performance indicators (such as quantity of water treated or the percentage increase in revenue).

During 2000 Chennai Metro Water Board have been reviewing management options and potential public private partnerships with support from DFID and KPMG. The use of management contracts for O&M of parts of the water distribution system, together with billing and collection has been suggested. CMWSSBs recent zoning of their water supply network can enable this to happen in an aspect of water utility management where the private sector can really make an impact in improving services and cost recovery. No doubt union and staffing problems will need to be carefully handled. But a well-designed incentive based management contract for water distribution and billing with good

Box 2.5. Liquidated damages at Redhills Water Treatment Plant, Chennai¹**Penalty for delay in repairs beyond the specified period**

	Penalty
If the quantity of treated water is less than 90% of raw water supplied	Rs.10 per 1,000 litres of shortfall
If the quality of treated water fails in any one of the prescribed parameters in a day	Rs.2,000 per million litres
If the quantity of water used for washing the filter bed increases beyond 40 cubic metres per one MLD of treated water	Rs.10 per 1,000 litres
If the key personnel are not employed as per the list	Rate at the double pay scale

1. Source: Agreed CMWSB contract, 1997)

management information and regulation, could effectively contribute to better services. Potential benefits can be further enhanced if competition is encouraged, both with other contractors and with public sector managed parts of the city.

2.7.7 CIDCO, New Bombay service/management contracts

Kevin Sansom, WEDC, 2001

Background

The City and Industrial Development Corporation (CIDCO) is a limited company wholly controlled by the Maharashtra State Government, which was set up to develop New Bombay (Navi Mumbai). As a new town development authority, CIDCO's functions included the planning, implementation, administration, operation and maintenance of all urban infrastructure and services in Navi Mumbai, until they are handed over to Navi Mumbai Municipal Corporation (MC) (World Bank, 1998). This case study briefly examines the contracts between 1992 to 1997.

As CIDCO knew it would eventually hand over the assets to the MC, it was reluctant to recruit staff to manage services in the interim. It therefore decided to use the private sector in urban services delivery since 1987 (World Bank, 1998). For the management of the water and wastewater systems, along with the collection and transportation of solid waste, the private sector has been extensively utilised.

Contract scope and key features

A summary of the 3 main types of contracts used by CIDCO for the provision of water services are shown in Table 2.28.

Table 2.28. CIDCO water sector contract details¹

Contract scope	Contract period	Value of contract (per annum)	Procurement details
Collection of water charges from consumers. (<i>with incentives and penalty clauses</i>)	1 year duration for each year since 1992/ 3	Not known	Awarded to community-based groups or citizens groups directly without any formal procurement process. A bank guarantee of Rs.5,000 required as a security deposit.
Preparation and distribution of water bills for water charges.	1 year duration for each year since 1994/ 5	7 contracts with an annual average value of Rs17.9 million	Awarded through competitive bidding on a schedule of rates, with 3% amount deducted from the monthly claims as retention money. Average payment at Rs.1.41 per bill issued.
Repair and regular maintenance of water supply network.	1 year duration for each year since 1994/ 5	9 contracts with an annual average value of Rs1.46 million	Awarded through competitive bidding on a cost basis. A security deposit of 4% of the contract value is held.

1. Source: adapted from Table A1.3 in A Review of PPPs, Metha, DFID, 1999

The contracts for the collection of water charges are unique in the urban water sector in India during this period, for two main reasons. Firstly, community groups are being contracted by a public authority in an urban setting to collect payments for water services from customers - a potential model for further partnerships between public bodies and the informal sector. Secondly, these contracts incorporate both incentive and penalty clauses that demonstrate a win-win situation for both parties. The community groups are entitled to an incentive payment of 1% of the amount collected and a penalty of Rs.100 per day is

levied if the cash counters are found to be closed. The average recovery rate increased from 66% in 1992/3 to 88%, and in centres contracted out it rose to 94% (Metha, 1999). This demonstrates the benefits of having appropriate incentives.

The penalty charges levied for the preparation and distribution of water bills contract, include Rs.500 per incidence of erratic water meter reading, as observed by the inspecting officer. There are no penalties or incentives specified in the contract for the repair and maintenance of the water supply network. Although, the threat to withhold the 4% security deposit would presumably act as a type of penalty clause.

Perceived benefits and cost savings

The benefits that derive from good contract performance are clear, such as increasing the bill collection efficiency to 94% by the community groups who collect water charges. This directly contributes to sustainable management of services.

CIDCO estimate that if they were to carry out all the contracted services in-house it would cost them Rs.432.69 lakhs (approx. \$1.14 million) each year, compared to the annual contract values of Rs.234.26 lakhs (World Bank, 1998). So the estimated yearly savings are 45%, which is substantial although it presumably does not take into account the contract monitoring and regulation costs.

The perceived advantages of contracting out services in CIDCOs case are (World Bank, 1998):

- ensures that both development and provision of services can be managed without depending too much on financial assistance from the government
- no permanent overheads apart from a small skeletal staff required for the supervision of work performed by Service contractors
- increase in job opportunities for people affected by the project and entrepreneurial opportunities for small scale contractors.

The fact that these contracts have been renewed each year and savings have been achieved demonstrates that the implementation of the contracts has been mutually beneficial. However, more benefits could possibly be achieved if the structure and content of the contracts were improved. For example clearly specified incentive clauses in the case of the billing and the maintenance contracts.

References

Metha, M. (1999) *'A Review of Public-Private Partnerships in the Water and Environmental Sanitation Sector in India'*, DIFD, London.

World Bank (1998) *'Privatisation of Urban Services Delivery in India - Emerging Issues for Management Contracts'*, www.worldbank.org.

2.7.8 Hyderabad Metro Water Board contracts

Richard Franceys, (IHE) and Kevin Sansom (WEDC) , 2000

Background

One of the three main metropolitan water boards in India is Hyderabad Metropolitan Water Supply and Sewerage Board which was formed in 1989. The Board is chaired by the Chief Minister of the Government of Andhra Pradesh and includes: another minister, important secretaries of state government departments, as well as three directors from HMWSSB, including the Managing Director. This utility has successfully pursued commercial and customer orientated approaches with leadership from a number of able MDs during the last decade.

HMWSSB has also benefited from a number of institutional development programmes with the support of the local RCUES (Regional Centre for Urban and Environmental Studies), as well as others. The various initiatives have resulted in more proactive management and improvements in: O&M, repair of leakages, customer care and computerized billing. However, up to the year 2000, HMWSSB has not been able to resolve its long standing bulk water supply problem with customers receiving in the region of one hour supply of water a day. Considerable effort was given to a proposed BOT contract for a bulk water supply from a new source on the River Krishna. But contracts were not signed because of the high bid price and for other reasons, which are outlined in the section above at the start of the Indian case studies.

The twin cities of Hyderabad and Secunderabad cover an area of about 169km². In 1991 the population of greater Hyderabad was determined to be 4,273,498 with a growth rate over the decade of 37.4%. There are serious problems due to lack of water resources and rapid industrial developments have also caused waste disposal and pollution problems.

Contracting-out initiatives

Hyderabad has been experimenting with private public partnerships using mainly Service contracts. Table 2.29 provides some key details of contracts that have been let. More specific discussion of the contracts is set out below.

The main Sewage Treatment Plant at Amberpet has been maintained on a contract basis since its rehabilitation in 1995. The private contractor (who was a sub-contractor in the rehabilitation) was paid Rs3 lakhs per month (\$8,300) for a three year contract with 10% per annum inflation increase agreed. The Contractor paid Rs.90 per day for labourers, 50% more than the Board was allowed to, but which was 'needed to get people to do such unpleasant work'. The contract required a graduate which 'would cost Board Rs7,000 to 8,000 but is employed by the contractor for Rs.4,000'. This flexibility is a vital component of private sector participation. In a series of visits by one of the authors, the contractor was been seen to be working effectively and efficiently at a standard not often observed in other Indian treatment plants. The engineer responsible commented that:

'the contract has been a success and should be renewed; there are 20% cost savings but that is not important - with government staff we would never have been able to maintain it like this'

Interestingly, other local observers commented that ‘there are problems with the contractor as he is asking for more money - a labour only service contract isn’t proper privatization’.

Table 2.29. Summary of selected Hyderabad service contracts¹

Contract scope	Contract period	Procurement details and comments
O&M of 135 MLD water treatment plant at Pedaharpur	1 year renewed since 1993/4	Contract initiated at the completion of construction of the new plant, following the warranty period. Bid selection on the quoted monthly rate.
O&M of sewage treatment plant at Amberpet (115 MLD)	Since 1995	Through competitive bidding with bid selection on the quoted monthly rate. Penalty linked to a minimum quantity of gas produced.
O&M of STP at Husseinagar (20 MLD)	Half yearly since 1997/8	The contractor receives a monthly fee of Rs180,000 (\$4,200) which does not include the average monthly power charges.
O&M of 73 bulk flow meters, 27,000 bulk consumer and 98,000 individual domestic meters, after installation.	3 years duration	Contract awarded through competitive bidding for the supply of equipment and the O&M of the meters. Meters are installed as part of a strategy to reduce unaccounted for water in the city.
O&M of sewer cleaning machines.	1 year duration	Linked to the purchase of equipment. There are no clear performance specification of outputs.

1. Source: adapted from Table A1.3 in A Review of PPPs, M. Metha, DFID, 1999

In addition, contracting out has recently been extended to a 120MLD water treatment plant including a large water pumping station. The Board also began to try a variety of pilot projects, including bill delivery and cash collection from area offices, all by private contractors in addition to self-reading of meters (for a possible 10% price reduction).

HMSSB has recently taken over the operation of the water and sewerage systems in three of the peripheral villages which now fall within its jurisdiction. While it plans to undertake most activities itself, a management contract for billing and collection of water charges in these villages is being explored (Metha, 1999).

A new wastewater treatment PPP in 1999

Although doubts remained in many local people’s minds about out-contracting, operations and maintenance of a new sewage treatment plant was contracted-out on commissioning in 1999.

Hussain Sagar Lake, built in 1562 adjacent to Hyderabad, Andhra Pradesh, served until 1930 as ‘one of the primary sources of drinking water to the citizens of the Pearl City’ as well as acting as a place of recreation. As the twin cities of Hyderabad and Secunderabad developed around the 570 hectare lake, discharge of untreated industrial and domestic waste waters into natural water courses, discharging into the lake, gave rise to serious pollution.

To overcome this, HMWSSB have diverted the effluents from the five nullahs entering the lake into a new main drainage system. However, this meant losing the dry weather flow of the average annual run-off into the lake of 30 million m³ (storm overflows

continue to enter the lake, welcomed to act as a 'flushing mechanism'). Therefore to maintain the water levels and hydrological balance of the lake the Board built (through contractors) a 20 MLD Sewage Treatment Plant, which is designed to treat a proportion of the domestic sewage diverted from a nullah drainage scheme.

The plant cost Rs.60M (\$1.4M), within the overall project cost of Rs.450M (\$10.6M) which included a 1.8m diameter main drain several kilometres long (110MLD capacity), part of the Rs4,000M (\$94M) sewerage network for the city.

The sewage at Hussain Sagar is treated by a Biological Oxidation Method, using a 77m by 77m aeration tank, achieving a 95% reduction in BOD to 20mg/l and 92% reduction in Suspended Solids to 30mg/l. The Board are proud of their 'state of the art, fool proof treatment scheme, involving five stages, to achieve high standards of treated water quality' (Dedication Booklet, HMWSSB, May, 1998) and have taken the unusual step (in India) of guaranteeing an uninterrupted power supply to ensure 24 hour operation.

After inauguration in May 1998 followed by commissioning and trials, a contract for operations and maintenance was put out to tender by HMWSSB and the contract awarded to the lowest cost bidder after financial checks, Nikhileswari Consultants, Visakhapatnam. Managed by a biochemist, their previous operational experience was developed through managing a wastewater treatment facility for the Indian Navy in Visakhapatnam. The initial six month trial contract began in March 1999.

The contractor receives a monthly fee of Rs.180,000 (\$4,200) which does not include the average monthly power charges of Rs.600,000 (\$14,100) which are still borne directly by Hyderabad Metro. The contractor uses a staff of 8 to 9 for each of the three eight hour shifts, having a total of 27 staff. The contract specifies in detail the activities to be undertaken by the contractor. It allows for labour, consumables (e.g. oil) and minor spares.

The Board (K. C. Waghray, Dy. General Manager), explains that they chose the PPP approach to run the plant because of lack of skills and experience at managing an extended aeration plant.

The initial contract was extended in September 1999 for an additional six months and the contractor was asking for a three year contract to run from March 2000 so that he might be able to make what he describes as 'small investments' to improve the performance. The contractor describes having three objectives in the contract: to do a good job, to improve efficiency by reducing the costs of maintenance and thirdly to make the plant work more effectively.

Work satisfaction by a professional contractor appears to be a driving force in this PPP example as Mr Subrahmanyam (Nikhileswari Consultants) describes how he would like to undertake small research projects to improve the plant. Testing different inputs to the sludge treatment process to give a better final product to farmers is one proposal; experimenting with different fixing details on the aerators to reduce vibration and extend the life of the concrete walkway/supports is another idea. None of these is required in the contract but are being pursued at the contractor's interest. He sees the potential in the longer contract of being able to cut costs as he gains in experience and to be able to share these benefits with the Board.

The contractor believes he can make a 'reasonable profit' under the present arrangements, appears to be motivated by the desire to do a professional job, as well as by acquiring future wastewater treatment contracts. The Hyderabad Metropolitan Water Supply and Sewerage Board are well content with the technical and financial performance of their new sewage treatment plant and most of all, are proud that Hussain Sagar is at last beginning to change colour.

References

Metha, M. (1999) '*A Review of Public-Private Partnerships in the Water and Environmental Sanitation Sector in India*', DIFD, India.

2.7.9 Temghar Water Works service contract, Maharashtra

Vijay Gawade, and Kevin Sansom of WEDC, UK, May 2001

Introduction

Temghar Water works supplies treated water to Thane, Bhayender and Bhivandi Municipal Corporations, just to the north of Bombay and to 33 villages in the nearby area. Maharashtra Jeevan Pradhikaran (MJP), a State Agency which is primarily concerned with new infrastructure, constructed Temghar Water Works in 1987 with a World Bank loan. The Water Works includes Headworks at Shahad, a 10km long Raw Water Transmission Main from Shahad to Temghar and 210 million litres per day (MLD) Treatment Plant at Temghar near Bhivandi, which is fully utilized. The supply to these cities and other villages is being charged on a volumetric basis and bills are sent out monthly, although this is not part of the Operation and Maintenance (O&M) Service Contract.

The Water Works were operated by MJP with its own staff until 1993 when operations of the Works were transferred to a contractor. MJP developed the O&M contract based on its own experience of operating the Works. With an intention to learn from the experience, MJP fixed the term of contract as one year. The contract has been renewed each year since then with minor improvements being made every year to the contract. This case study examines the contracts between 1993 and 2000

Scope and key features of the service contract

The scope of the contract includes operation and maintenance of a raw water pumping station at Shahad, a 210 MLD capacity treatment plant, a pure water pumping station and power sub-station at Temghar. Raw and pure water transmission mains are not included. The value of the contract as estimated by the MJP for the year 2000 is about Rs.6 Million (\$134,000) per year. The contract sum covers only the minor repairs but includes labour costs for major repairs for a period of 1 year. In case of major repairs, all materials are supplied by the client (MJP).

The contract generally gives guidance for frequency of operations of various units based on their installed capacity and performance parameters. A detail operation and preventive maintenance schedule is provided in the contract. A minimum number of staff in each category with the required qualification and experience has been specified in the contract along with each of their duties.

The work of the contractor is directed by the Engineer-in charge from the client (MJP) on a daily basis and the duties of each of the contractor's staff is specified in the contract. Hence there is very limited scope for the contractor to introduce his own improvements and cost savings.

There are no incentives in the contract to encourage the contractor to improve performance. But there are a number of penalty clauses that generally relate to absenteeism of staff and not carrying out specified duties. The contract is in effect a labour only contract, where the contractor provides the staff to perform specific duties, but very little risk is passed onto the contractor. It was reported that adequate policy

support was not available in 1999 from the State Government to make any major amendments to the ongoing contract, although more recently there appears to be a greater willingness to change.

Contract management and monitoring

MJP supervizes the contract in a very detailed manner with qualified supervisory staff of 3 engineers and 22 labour staffs. Such high client staffing levels would indicate a lack of willingness to delegate management to the private contractors or perhaps there is a reluctance to reduce or re-deploy staff. Such intensive supervision also raises doubts about the overall cost effectiveness of the contract.

- The quantity of water produced is not monitored regularly but the quality of water and chemicals is monitored through laboratory reports and third party checks. Flexibility is given to the contractor to adjust chemical doses to maintain the quality of water. MJP is planning to computerize the Water Quality Database generated at the Waterworks. The contractor supervizes work through a resident mechanical engineer and a chemist. Some supporting staff are also available to them. They provide reports to MJP according to the contract provisions. Potential improvements to the contract are outlined in Box 2.6.

Box 2.6. TeTemghar: Potential areas for improvements to the contract

In the opinion of some of the MJP engineers interviewed, providing additional incentives by widening the scope of the contract would help the contractor to perform better with greater flexibility and to optimize the costs further. Potential improvements to the contract could include:

- Addressing critical problems such as reducing costs to contribute to much needed investments for future expansion,
- Allocation of appropriate risks to the contractor with compatible incentives in order to achieve a win-win situation,
- Longer contract period of 3 to 5 years,
- Purchase of chemicals and materials by contractor,
- Energy bills paid by contractor – an incentive to optimize energy use and save costs,
- Payments linked to performance – including incentives to reduce water losses and save cost,
- Collection of monthly payments from the municipal and village councils, possibly with incentives. This would encourage the contractor to provide a good service.

Labour issues

The total staffs engaged by the contractor at the Headworks and Treatment Plant are 79. Out of which, 18 are at the Headworks and 61 are at Treatment Plant. 22 Staff from MJP are additional and used as standby manpower.

Initially, when MJP was operating the Works, MJP had 59 staff engaged on the Works during 1989 to 1990. Out of these 22 staff, whose lands were acquired by the government for construction of waterworks and being project affected, obtained permanent jobs with MJP. The other 37 staffs were attached to the contractor when the O&M was contracted out. Since then, the contractor has been paying their salaries. In 1993, these 37 staffs filed

the case in the High Court demanding job permanency with the MJP, like the other 22 staff. They also sought the raising of their salaries to the levels of MJP staffs. The case is still pending with the court. However, the O&M of the waterworks is not affected by this Court Case.

The contract document mentions the transfer of MJP staff to the contractor. MJP is likely to continue to deploy these staffs on this contract irrespective of a change of contractor. In the situation, MJP remains the principal employer of the transferred staffs. According to the existing employment regulations in Maharashtra, the staffs can claim job permanency with the principal employer if they have been in continuous service for more than 240 days in a year for two continuous years. Under the circumstances, MJP may likely to receive a court judgement in favour of the transferred staff.

- According to the provisions of the Contract Labour Act 1970, the principal employer and the contractor both have to be respectively registered and licensed under the Act. The contractor engaged so far (there is only one contractor since the works were contracted out) is not registered under the Contract Labour Act 1970 and Maharashtra Contract Labour Act and therefore, he does not attract the provisions of these Acts. A study of some of the contract labour cases indicates that a failure to comply with these conditions carry the risk of a claim by the workmen that they have been employed by the principal employer (See an example in Box 10). In this case, deployment of any additional workmen by the contractor carries the risk of such claim.

Box 2.7. Employees claiming they are employed by the principal employer

Food Corporation of India Worker's Union V/S Food Corporation of India and others¹

The Gujarat High Court held that under section 7 of the Act, the principal employer is required to obtain a certificate of registration issued by the appropriate Government and under Section 12, while the contractor is required to obtain a license. The workmen can be employed as contract labour only through a licensed contractor. Unless both aforesaid conditions are complied with the provisions of the Contract Labour Act 1970 would not be attracted. In a situation wherein either of these two conditions is not satisfied a workman employed by an intermediary would be deemed to have been employed by the principal employer. Therefore, in relation to the period when either the principal employer did not possess the certificate of Registration or the contractor did not possess the license, the workmen can claim that they are directly employed by the principal employer.

1. Source: * A case from 'Labour and Industrial Laws' by S.N.Misra – Central Law Publications

The revised contract document (1999 to 2000) covers the provisions of these Acts and recommends that the contractor is registered under the above Labour Acts. Failing this, penalty provision has been made in the contract.

Lessons learnt and concluding comments

Contracted out O&M is cheaper at Temghar in terms of wage and salary levels than if MJP undertakes the O&M work directly. The contract at Temghar is operated as a 'labour only' type of Service contract. The scope of the contract is limited and does not provide any incentives or place any significant accountability with the contractor. Under this situation, MJP continues to be responsible for the performance of Temghar Works and needs to respond to public pressure for reliable supply. MJP has to mobilize resources when dealing with major breakdowns.

Legal aspects such as engagement of labour, their transfer to the contractor, their wages and safety were not adequately addressed before framing the contract. These are critical issues and require legal analysis and consultations with legal advisors, the Labour Department, labour unions and contractors before such labour contracts are finalized. Licensing of contractor under the various Labour Acts should be a precondition for contractors to bid for contracts. Similarly, Principal Agency should also obtain its registration under these Acts before such contracts are let out. This would help transfer the risks associated with labours engaged on contract to a contractor.

In the Indian context, social obligation for reliable supply is an issue, which MJP is concerned about, despite any contractual arrangement MJP enters into in O&M of the waterworks. Hence, MJP has maintained its own management structure to take over the O&M during emergency situations. The potential solutions to this problem could be to switch over to management contracts, specifying stringent qualifying criteria and critical assessment of contractor's capacity to manage the works under critical situations, in conjunction with a well designed contract.

MJP have met the contract objective of avoiding taking on new staff, subject to the final judicial decision in the pending court case. The scheme has been handed over to the 3 municipal corporations in 2000. The three corporations have jointly formed a separate organization to manage the O&M of the handed over scheme. It is hoped that these municipalities will seek to utilize the commercial management skills of the private sector to achieve broader objectives such as providing improved services and reducing costs.

References and bibliography

Government of India (1970) '*Contract Labour (regulation and Abolition) Act*', Government of India.

Government of Maharashtra (1971) '*Maharashtra Contract Labour Rules*', Government of Maharashtra, India.

Government of India (1947) '*Industrial Dispute Act*', Government of India.

Government of Maharashtra (1980) '*Service Rules and Benefits for staff employed on Daily Wages, Work Charged Establishment and Converted Temporary /Permanent Establishment*', Government of Maharashtra, India.

MJP (1998 to 1999) '*Operation and Maintenance Contract – Shahad Temghar Treatment Works*', Maharashtra, India.

Misra, S. N '*Labour and Industrial Laws*', Central Law Publications, India

2.7.10 Multi-village piped water schemes in Maharashtra

Kevin Sansom and Vijay Gawade, 2001

Background

The land to the east of Bombay (Mumbai) and the Western Ghat hills in Maharashtra experiences relatively low rainfall. Its groundwater yield is often unreliable in the Deccan Plateau (the predominant rock of this region). In addition, the groundwater that is available, is often used by farmers for irrigation. Consequently, the Maharashtra Jeevan Pradhikaran (MJP), the State Water Supply Agency who are responsible for the design and construction of new schemes, frequently opt for the construction of piped water multi-village projects in rural areas, using reservoirs or rivers as water sources. This tends to be a very expensive option compared to groundwater solutions.

The many multi-village or regional schemes vary in size and complexity from a 4 village scheme in Kolhapur district, to an 80 village project in Jalgaon district. There are 457 regional schemes currently in Maharashtra. The management of the O&M and the cost recovery of these schemes presents substantial challenges for whoever is responsible. For example, expensive pumping and water treatment is often required and there are usually many kilometres of pipelines between villages along which leakages can occur. Cattle herders have been known to 'encourage' leaks in the pipes to water their livestock during dry periods. Village committees have also often been reluctant to pay the Zilla Parishad (ZP or rural district council) for managing these schemes from the source up to the elevated water reservoir outside the village. A lack of funds for maintenance has been the result leading to poor levels of service, which is common on many of these regional schemes in the state.

The most common management arrangement in the 1990s entailed the ZP managing the schemes themselves, often with a lack of trained staff. They are responsible for the O&M of the infrastructure from the source (reservoir or river) including all treatment plants, pumping stations and transmission mains up to the village water reservoir. Village committees then manage the release of water from that reservoir plus the village pipe distribution system. The committee is also responsible for revenue collection from private connection and standpost users in the village.

In many cases the ZP do not have sufficient staff to take-over the management of the regional scheme from the MJP, who have designed and constructed the scheme. In such situations the MJP have sometimes opted to manage the O&M of the schemes themselves, but have not received revenues for doing so.

Case studies of different management arrangements

A number of brief case studies have been included below to illustrate the different management arrangements that have been tried for the management of these regional schemes in Maharashtra. Key lessons are highlighted, particularly with respect to effective contracting out of services.

a) *Asodha - Bhadli 8 village scheme - Jalgaon District (with limited management inputs) (Based on a field visit in 1996)*

The 8 village Asodha - Badli multi -village scheme was commissioned in 1986 to serve a design population of 38,000. It was handed over to the Jalgaon ZP (Zilla Parishad or District Council) to manage in 1989. However, the ZP recruited very few new staff to manage this scheme, which consists of a jackwell and infiltration gallery intake on the river Tapi, from where water is pumped to a balancing reservoir. It then gravitates in transmission mains to the village reservoirs.

Residents experience serious water shortages particularly in the dry season (April to July) and this is mainly due to low flows in the river bed at the intake. Shortages are most acute in 3 villages: Asodha, Kadgaon and in Bholane, where people travel 0.5km to dig holes in a river bed to supplement their water supply. Other villages receive approximately half an hours supply in the summer months. Leaks have been observed from valves and pipes and preventative maintenance is generally not carried out, leading to the rapidly declining conditions of the assets.

The scheme is managed up to the village reservoirs by 2 ZP irrigation engineers, who provide some inputs along with their many irrigation duties. One pump operator/ electrician is employed together with 7 lowly paid 'daily waged' field staff. So a total of 10 untrained staff work on the scheme, compared to the figure of 54 staff that was recommended by the MJP to manage the O&M in accordance with their 'norms'. The cost efficient number of staff to run a scheme such as this would probably be somewhere between these 2 figures. *Contracting out O&M would be a suitable means of determining the optimum staffing levels, provided it was a well designed outputs based contract let to a capable contractor.* In this case rehabilitation works would be needed before reliable services could be provided.

One reason why the ZP did not recruit an adequate number of qualified staff to manage O&M is due to State Government restrictions on the creation of new posts. There is also a lack of confidence that the ZP will be able to obtain adequate funds to pay for new staff from the village committees, who are supposed to transfer the water charges they collect from users to the ZP. About 80% of the required water charges were reported to be collected by the village committees on the Asodha - Bhadli scheme, but very little of this has been transferred to the ZP - a common problem on multi-village schemes in Maharashtra.

The ZP and State Government are heavily subsidizing such schemes, particularly electricity costs, at levels they cannot continue to afford, because the villagers are not transferring payment. Until a proactive commercial and consumer orientated approach to O&M and cost recovery is adopted, based on the 'user pays' principle, it is difficult to see how such schemes can be sustainably operated.

b) *80 village scheme - Jalgaon District (with more commercial management) (based on field visits in 1995 to 1997)*

This scheme was commissioned in 1997 and was one of the regional schemes that were supported by the UK Department for International Development (DFID). A high pumping head and conventional water treatment was necessary for this scheme, which

meant O&M costs would be high. A key focus for this programme was to concentrate on the capacity building and community management components and thus avoid the sort of problems experienced at the Asodha- Bhadli scheme.

The Government of Maharashtra introduced and developed a Water Management Unit (WMU) in the Jalgaon ZP to enable it to effectively manage the O&M and cost recovery of the multi-village schemes in the District. The new staff for this unit included trained and experienced water engineers, finance officers, extension staff and skilled field staff. The use of commercial accounting was encouraged. Considerable effort was devoted to strengthening the WMU and the Village Water Committees (VWCs), who manage the village distribution system and the collection of water charges.

The challenge of generating sufficient revenue on this scheme to meet O&M costs is considerable. Table 2.30 shows the projected revenues and tariffs from 1996 to 2002

A summary is presented in Table 2.30 of the plan to break even (on O&M costs) on this scheme including tariffs and revenues, assuming all the subsidies for electricity etc will still be available. It is assumed that there will 90% collection efficiency in the villages and 80% of the required amount transferred to the ZP. Constant prices are shown:

Table 2.30. Agreed financial projections for the 80 village scheme¹

	Base year 1997/98	Break even targets by 2001/02
O&M costs (Rs.)	710,000 (£120,000)	710,000
No. of private connections	9,707 (41%)	19,172 (80%)
Households using Standposts (SPs)	13,493	5,094 (20%)
Tariffs per H/H PCs Per year SPs	Rs.360 Rs.75	Rs.475 Rs.105
Projected deficit (Rs.) (with subsidies)	560,000	0

1. Source: JPS Management consultants reports, 1996

Note that it is envisaged that subsidies will be gradually reduced to zero by 2001 to 2002. This however, does not include all the subsidies on capital costs, electricity etc. If these factors are considered the estimated real costs are represented as follows:

The average real cost per h/h without subsidies
for the 80V scheme is:

Rs.1,876 per h/h per year
(5 times the current tariff)

The average real cost per h/h without subsidies
for an average groundwater village scheme is:

Rs.381 per h/h per year

Reports in 1999 revealed that the new 80 village scheme experienced good service levels and VWCs were handing over 87% of the required water revenues to the ZP Water Management Unit. The 95 operational staff engaged on the scheme were working well, but some questions remained: *could these staffing levels be replicated on the many other multi-village schemes throughout the State, when funds are so limited? Also, perhaps*

these schemes could be effectively managed with fewer staff and reduced costs? One way of finding answers to these questions would be to contract out the O&M and cost recovery for these schemes and allow competition to demonstrate optimum staffing levels.

c) *Khatwal 13 village service contract - Satara District*
(A summary of a MJP PPP working group evaluation in 1997.)

In 1996 Satara ZP let a one year service contract with a private contractor for the operation and maintenance of this scheme, from the headworks on a small reservoir to all the elevated village storage tanks (MJP, 1996). Revenue collection and payment for electricity costs were not part of the contract. The scheme includes a 1.5MLD water treatment plant, balancing reservoirs and pumping stations.

The contractor (P.G. Bansole) entered into a lump sum contract for Rs.4.32 lakhs (about \$1,200), which included all 'minor' repairs, such as leakage removal, welding of joints and purchase of small materials. While major repairs and chemicals are arranged by the ZP. The contract specified the appointment of 21 staff, although the contractor has employed only 12 people.

The quality of the maintenance and the water was reported to be good by a visiting MJP team (who were part of a Maharashtra/DFID PPP working group) (MJP, 1997), when the supply was said to be normal for 275 to 300 days a year. In Dhondewadi village, the supply time for filling the village reservoir is 6.30 to 7.30 am. The water supplied serves 350 house connections and 55 standposts and the villagers were reported to 'have no complaints against the contractor'.

This contract has not helped to resolve the cost recovery problem that is common with other multi-village schemes. The ZP was incurring expenditure of Rs.44,000 (\$1,160) per month for the O&M of the scheme. Whereas the billed amount is only Rs.22,000 per month and the average actual revenue collection was only Rs.4,000 per month, which is 9% of costs. The ZP could certainly benefit from a more commercial approach to collection of water charges from villages, although the use of private contractors to undertake this task had not been seriously considered.

The contractor stated in 1997 that he was not interested in re-bidding for the contract. This is not entirely surprising given the very limited incentives in the contract, as well as the lack of autonomy for the contractor to set his own staffing levels. The bidding for a new contract is essentially dependent on who assumes the lowest staff costs in their bid, because the precise number of staff are specified and personnel costs are the major component of the bid. This results in the contractors being 'squeezed to hard'. Refer to Appendix 2 for an analysis of the Khatwal contract.

d) *Kolhapur: A sustainable community managed scheme in Shirol*
(A summary of the Small Private Initiatives Field Note by the Water and Sanitation Program (WSP) Delhi, 1999.)

In 1980 the MJP constructed and commissioned a piped water scheme to serve 4 villages and a Spinning Mill. The works included transmission mains, an intake on the Panchanga river, a pumping station and a settling tank. The Kolhapur ZP was not prepared to take the scheme over, because it said that it did not have the necessary resources. Extensive

local discussions took place, before a joint water management body (Mandal) was set up to take over the scheme and manage the O&M and cost recovery. The Mandal included representatives from all 4 village committees (in Lat, Latwadi, Shivanakwadi and Shiradwad), plus a technical adviser from the MJP. A co-operative management arrangement had in effect been established.

The Mandal have successfully managed the scheme for the last 20 years. They have generated a total revenue surplus of Rs.370,000 (\$123,000), which will no doubt be useful for contributing to the future investment in developing more water supply capacity. A key factor that has led to the good cost recovery is the increase in the number of house connections from 419 in 1981 to 1,723 in 1999. The Mandal has actively promoted revenue yielding house connections and has been able to reduce the number of public standposts.

Some of the reasons for the success of the Mandal management include:

- Water scarcity in this area means the villages have a definite incentive to sustain the scheme.
- Able leadership has been demonstrated by a Sarpanch (head of Lat village committee) and the secretary of the Mandal, who have invested considerable time and effort in successful operation.
- The Mandal members have been committed, gaining satisfaction from overseeing an effective public service, and being able to generate sufficient funds to contribute to social development in the villages.
- The fact that financial details of the scheme are always available on request has undoubtedly contributed to the trust the Mandal enjoys in these villages.

A crucial factor that enabled such co-operative management among the 4 villages was the small size of the scheme. The Mandal officials were opposed to the idea of multi-village schemes serving more than 5 villages, because effective decision making would be hampered.

e) Development of a model management contract for multi-village schemes

There has been an active interest both in the Government of Maharashtra (GoM) and in the MJP in introducing PPPs into service provision for the urban water sector and multi-villages schemes, since around 1995. A number of more complex PPP urban sector initiatives which included capital funding in Pune, Kolhapur and Jalgaon have unfortunately not led to contract signature. There has however, been a number of service and management contracts with private companies for the O&M of multi-village schemes such as:

- 22 village Manerajuri scheme in Sangli district
- 4 village Raigon scheme in Sangli district
- 13 village Khatwal scheme in Satara district

Following field visits to some of the contracted out schemes, the MJP recognised that improvements could be made to the one year service contract format that was generally used on the multi-village schemes in Maharashtra. A PPP working group was set up by the MJP with support from DFID local staff and consultants in 1997. A key aim for the group was to develop a model management contract and process, to be used on regional schemes. This included the preparation of a contract for the DFID supported 51 Village scheme in Jalgaon district, but this draft contract was not used.

A standard bid document was developed by MJP/GoM for management contracts in 1998 to be used for the O&M of regional schemes throughout Maharashtra. This format was used on the 4 village Raigon scheme in Sangli district. A number of improvements were included in the model contract compared to previous contracts such as the following:

- Contract duration increased from 1 to 3 years to allow the contractor to develop effective management systems.
- The precise number of staff is no longer specified thereby allowing the contractor the autonomy to make improvements and savings.
- The inclusion of specific penalty clauses to encourage the contractor to provide better services.

Other aspects of the standard bid document that are an improvement on the previous form that was used (e.g. the Katara contract), are highlighted in the contract analysis that is summarised in Appendix 2.

A particular challenge for contracts on these multi-village schemes is how to encourage the contractor to promptly undertake repairs on infrastructure that is spread over such a large rural area, as well as to effectively distribute water to all the village reservoirs in the agreed manner. The authors of the Maharashtra standard bid document have attempted to address this issue by applying the penalty clause formula shown in Box 2.8.

No incentive clauses have been included in the contract, so there is a risk that interested contractors may not view the contract as sufficiently attractive, because the penalty clauses may be perceived to outweigh the potential benefits in the contract for the contractor. In order to achieve the right balance between penalties and incentives, it is necessary to learn both from local experience and from lessons learnt elsewhere.

Concluding comments and lessons learnt

The relatively high cost of providing effective O&M of these multi-village schemes that cover such wide rural areas, as well as the poor cost recovery experienced, suggests that these large schemes should be avoided if alternative technical solutions are feasible. The potentially viable management options to emerge include the following:

- Commercialized Water Management Units (WMUs) in the ZPs with adequate levels of trained staff who focus on providing good services to customers and maximizing cost recovery. The WMU manage supplies up to the village reservoir and the village committees manage distribution within the village. Doubts remain, however, as to whether commercial and customer orientated approaches can be maintained within the ZPs, and whether optimum staffing levels will be achieved.

Box 2.8. Penalty clause on Maharashtra multi-village scheme contract

The payment deductions per month due to inadequate service levels = $\frac{(X - Y)}{X} \times R \times F$

Where X = Total number of village reservoirs *expected* to be filled during the month
 Y = Actual total number of reservoirs filled during the month (When the contractor was able to do so, e.g. when there was sufficient electrical power for that day)
 R = Monthly fixed charge payable as per the agreement.
 F = The multiplying factor that is derived from the table below:

Ratio $\frac{(X - Y)}{X}$	Value of F
0.00 - 0.10	0.00
0.11 - 0.20	0.60
0.21 - 0.30	1.00
0.31 - 0.40	1.25
0.41 - 0.70	1.30
> 0.70	1.40

Note: In case the actual supply is required to be increased to some or all the villages, as per the directives of the engineer/employer, a formula for increasing payments is also included in the contract.

- Community co-operatives with representatives from each village (e.g. the Kolhapur community managed scheme), offers an alternative for smaller multi-village schemes. The suggested limit on the number of villages is five, although this would need to be verified. Too many villages could hamper effective decision making and teamwork amongst the committee. Where there are water shortages it would be difficult for such a committee with village representatives, to allocate water to meet the competing demands of all the villages. For the community group to work effectively and sustainably, basic management skills, good leadership and teamwork are important.
- Contracting out the management of the O&M of the schemes using an outputs based management contract, that is let to a capable contractor, offers a cost effective and flexible solution. But doubts remain as to whether the ZP will collect sufficient revenues to meet all the costs of the schemes. So the inclusion of cost recovery in the management contracts should be considered.

The problem of developing appropriate penalty and incentive clauses in contracts has been previously discussed on the development of a model contract for multi-village schemes. One way of introducing incentives and penalties that are relatively easy to monitor and manage, is to include cost recovery as well as O&M in the management contract, and to allow the contractor to take a small percentage of the increased revenue above a certain threshold.

For example, if the contractor achieves a bill collection efficiency at between 70 to 80%, no incentive payment would be due. But if he achieves greater than 80% then a small percentage of the additional revenues will be paid as a bonus. If bill collection efficiency drops below 70%, then a penalty charge would be made proportional to the size of deficit. This arrangement provides incentives for the contractor, not only to improve cost recovery but also to improve O&M and general services to increase customer satisfaction and willingness to sustain payment. The precise threshold and bonus percentages will need to be determined to suit each contract and situation.

If such contracts that included cost recovery were to be introduced in Maharashtra, then the issue of legality and consent for private operators to collect revenues from village committees would need to be addressed. Presumably there would need also to be powers for the contractor to reduce flows to the village in the case of repeated non-payment of bills. While this may be politically difficult, it is difficult to envisage long term sustainable management of these schemes, without such commercial approaches.

Schemes that do not have reliable water sources, e.g. on rivers that dry up during the summer, present challenges in setting performance targets. More recently (1999 to 2000) the Government of Maharashtra has embarked on a reform process for the urban water sector, with the assistance of the USAID 'FIRE' project. This will entail reform of the sector institutions and exploring ways of developing sustainable public/private partnerships. No doubt lessons learnt and skills developed in the urban sector can be transferred to the management of multi-village schemes in the state. If significantly more resources are not devoted to developing capacities to provide more sustainable management arrangements for these multi-village schemes, they will continue to be a burden both to the government and to the concerned village people.

References

Government of Maharashtra (1998) *'Standard Bid Document - Management Contracts for O&M of Regional Rural Water Supply Schemes'*, Government of Maharashtra, India.

Maharashtra Jeevan Pradhikaran (MJP), previously MWSSB (1996) *'Service contract for O&M of Khatwal 11 village scheme Satara district'*, MJP, India.

Maharashtra Jeevan Pradhikaran (MJP) (1997) *'Report of visit to Khatwal 11 village scheme, Satara district'*, MJP, India.

Water and Sanitation Program (WSP) (1999) *'Small Private Initiatives Field Note on Sustainable Management of a Multi-village Water Supply Scheme in Kolhapur, Maharashtra, Delhi'*, WSP, India.

JPS (1996) *'Management consultants report'* Mumbai.

2.8 Indonesia contracting-out cases

Widi Hastuti with Okke Braadbaart and Richard Franceys, June 1999

2.8.1 Summary

Water supply services in Indonesia have shown significant progress in the last three decades. Water production has increased remarkably along with water demand. Unfortunately, the increase in water demand goes far beyond that of water production. This situation has challenged the government to look for new ways to fulfil unmet demands either by building new systems or optimizing the existing ones. Optimizing the existing systems is more realistic for the Indonesian conditions. However, it is a big challenge as most of the 300 water companies (PDAMs) in Indonesia have poor performance and low productivity. Limited technical and managerial capacities and inadequate commercial and cost recovery policies make it difficult to expand and improve the quality of services.

One of the strategies adopted by the government in order to improve the efficiency of the PDAMs is to encourage Public Private Partnerships (PPP). Among various options of PPP, contracting out using Service and Management contracts, is the simplest arrangement.

In order to be successful, several conditions need to be fulfilled. Specifications of duties, functions and responsibilities of both parties and procedures for monitoring performance need to be clearly stated in the contracts. The contract needs to eliminate any potential ambiguity and dispute. These conditions are not yet met in all contracts analyzed in this study. No less important is the process of involving the private contractors. The latter should be transparent to ensure the existence of real competition, which will determine the accountability of the process.

The results of out-contracting in Indonesian PDAMs indicate good achievements so far, as experienced by PDAM in Medan, Bekasi, Tangerang and Bandung. In these cases out-contracting has proved to improve efficiency, overcome labour shortage, and fulfil the need for special skills. However, the process of awarding contracts is still inappropriate as transparency and accountability are still poor. In the cases reviewed, three of the four contracts were awarded through direct negotiation rather than any bidding process.

To improve the process, initiating an external member into the tender committee may improve the transparency and proper terms of reference will help in minimizing any potential risks that may arise. They will contribute to improve the accountability of the tender process. Ultimately, all necessary terms should be provided prior to execution of tasks. The terms include risk allocations, penalties and enforcement mechanisms. These factors should be taken into account in the implementation of new public private partnership projects.

2.8.2 Contracting-out in Indonesian water companies

Government strategy in PPP for water supply services

The government of Indonesia (GOI) is now facing a growing enthusiasm for private sector involvement in Indonesia's economy in general and for PP in urban water supplies in particular. The government has clearly recognized that with Indonesia's rapidly growing urban population and economic growth the demand for urban water supplies is increasing. The increase in demand is beyond the ability of current institutions to meet on their own. The development strategy to solve this problem is a strong partnership between the community, government and the private sector.

The GOI has permitted PPP in water utilities since 1986. There are three major factors that have led the GOI to consider involving private sector in infrastructure services. First, as a consequence of the predominance of public provision, the absence of strong competition from the private sector has hindered efficiency in public service delivery. Second, public providers of services have been increasingly subject to institutional constraints on their capacities to operate and expand services. This is due to organizational and human resources weaknesses. Third, the decline in oil revenues and the tighter resource position have constrained public provision financially, especially given the large investment and O&M requirements for infrastructure.

Legal framework

Indonesian public utilities and governmental entities have out-contracted some of their tasks to the private sector for a long time. Some examples are contracts for petroleum-related activities, maintenance of aircraft in state airlines and administration of custom tariff operation for imported goods.

In the water utility sector, authorization of out-contracting is first provided by the Regulation of the Minister of Home Affairs No. 3/1986. The regulation permits regional enterprises to out-contract some of the tasks to third parties regarding "management and operation assistance". Later, the Regulation of the Minister of Home Affairs No. 4/1990 states that service contracts may be awarded by regional enterprises to the private sector through "management co-operation", "operational co-operation", "management contract", "agency, usage and distribution", or "technical assistance co-operation". These terms are not defined in the regulations. No clear procedures are established for evaluating bidders or for awarding contracts. No standard contract terms or format were prescribed. However, based on those two regulations, many PDAMs out-contracted some of their tasks to the private sector.

To ensure that private sector performance of services is provided at the lowest possible cost and with the greatest efficiency, there should be competitive bidding by qualified bidders prior to the award of contract. There were no rules in the water utility sector that provided regulations for private sector recruitment until the enactment of the Presidential Decree No. 16/1994 regarding the implementation of the state budget, which contains the regulation on the procurement of goods and services.

This decree states that for local government enterprises such as a PDAM, the Board of Director regulates the procurement of goods and services through the private sector, under the guidance of the decree. This regulation is then used as a standard guideline for private

sector recruitment process, which provides the technical guideline for goods and services procurement and the technical guideline for pre-qualification of the potential private firms.

This regulation states different processes of awarding contracts for goods and services procurement i.e. open competitive bidding, limited bidding and direct negotiation including implementation procedures. The selection of the awarding process, according to this regulation, is based on the value of the task to be accomplished. This regulation also determine:

- the procedure to calculate owner estimate costs (OE),
- the submission of sealed bids,
- the evaluation of bids to select the most competitive bidder,
- the remuneration of the private sector and
- contract arrangements.

The recent regulation states that the local government should involve the community and private sector in the implementation of urban development, which includes water supply services. This is known as the Law No. 19/1999 regarding administrative decentralization.

These principal laws and regulations, which are relevant to the service contract awarding by public utilities and government entities to private sector, can be summarized below:

- Regulation of the Minister of Home Affairs No. 3/ 1986 concerning cooperation of a regional enterprise with third parties.
- Regulation of the Minister of Home Affairs No. 4/ 1990 concerning the guidelines for co-operation between a regional enterprise and a third party.
- Presidential Decree No. 16/1994 concerning the implementation of the state budget.
- Law No. 19/1999 concerning the administrative decentralization.

Contracting-out experiences in four Indonesian PDAMs

In the past several years many PDAMs in the larger cities in Indonesia have contracted private firms for a portion of their scheduled replacement activities, routine repairs, maintenance, meter reading, and billing and collection services. This is a trend which has spread rapidly. They are generally utilizing small local firms for well-defined routine tasks. The contractors typically provide low cost services, using labour intensive work practices.

In four selected cities, Medan, Bandung, Tangerang and Bekasi where data for this study were collected, different tasks have been out-contracted. It was found that goods procurement is fully out-contracted in all the four PDAMs, as well as pipe installation, repair and replacement, which is partly out-contracted in the four cities. The other tasks

being given to the private sector, either fully or partly included: computer programming, vehicle maintenance and repair, cleaning services, meter reading, billing and collection, technical planning and mechanical equipment maintenance and repair. Table 2.31 shows the out-contracted tasks in the selected cities.

Table 2.31. Out-contracted tasks in four selected PDAMs¹

Activities	Bandung	Bekasi	Tangerang	Medan
Number of connections	33,914	47,338	50,044	222,829
Information technology		XX	XX	
Vehicle repair and maintenance	X		XX	X
Cleaning service			XX	XX
Meter reading		XX		
Fees collection			X	XX
Technical planning	X			
Pipes installation, repair and replacement	X	X	X	X
Mechanical equipment maintenance and repair				XX
Goods procurement	XX	XX	XX	XX
Note: X partly out contracted; XX fully out contracted				

1. Source: Primary data

Reasons for contracting-out

During the visits to the selected PDAMs interviews with key persons/decision-makers were carried out to obtain information about the main reasons for out-contracting. Each person had their own point of view, the most popular reason which was given was that out-contracting was in accordance with the Presidential Decree No. 16/1994. Most of them argued that out-contracting should be done when the value of the tasks exceeds a certain amount stated in the regulation to give opportunities to the private sector to participate in providing the services.

According to the Presidential Decree the limit is Rp50 Million, but in practice, each PDAM creates their own standard. Other reasons include; to improve efficiency in term of cost and time, to fulfil the need of particular skills and equipment, to overcome a labour shortage, and to improve the quality of service.

The fact that most people think of out-contracting because the regulation states it rather than as the best choice, suggests a lack of incentive for the PDAMs to compare the benefits to be derived from in-house work and out-contract work. From the interviews, it was understood that no PDAM has ever done any comparative analysis. Whether they believe the argument that out-contracting can improve efficiency and cut costs, there is no analysis to support this argument.

Some people stated they believe that out-contracting give benefits to PDAMs and have evidence that out-contracting is a good alternative. They experienced the improvement of efficiency, for example, in fees collection, and execution of such tasks that needs special skills or are labour intensive without recruiting more employees or buying new tools. However, in terms of cost comparisons, the case remains to be proved at the four PDAMs.

Process of awarding the contract

In general, in the selected PDAMs, most of the contracts were awarded through limited bidding, except for some cases that needed special skills from specific private firms. The example of such cases are fees collection service in PDAM Medan and meter reading in PDAM Bekasi, which were based on direct negotiation rather than competitive bidding.

Limited bidding among pre-qualified private firms is usually adopted since the local government normally has a list of pre-qualified companies (*Daftar Rekanan Mampu, DRM*) for different types of jobs (goods procurement, construction, and consultation). According to the regulation, PDAM should utilize this list and give the priority to local firms, before choosing private firms from other cities or provinces.

Direct negotiation contracts using an initial set of criteria, were reported to focus on:

- quality and experience of staff,
- track record of services provided,
- management ability and methods
- the company's accountability and reputation.

In some cases, direct negotiation has been chosen as an alternative for awarding contracts in the situation where the number of private companies with the required qualification is not enough to create good competition. In such cases the number of companies that submitted bids in open competitive bidding or limited bidding were less than expected (according to the Presidential Decree No. 16/1994, the minimum numbers of bids that may be submitted for open/competitive bidding and limited bidding are three and five respectively).

As a consequence, there is less competition and in some cases the PDAMs have decided to award the contract on a negotiation basis, because the task had to be executed anyway. When this situation exists, the advantage of out-contracting, which is gaining efficiency by creating competition, is limited. In the extreme situation where the private firm has no capability to do the job, any advantage is lost. To mitigate against this risk, PDAMs should provide a good terms of reference or contract. To ensure that private contractors will accomplish the task and not break the agreement, penalties and enforcement rules should be introduced in the contract.

In each of the PDAMs, there is a specific committee in charge of the tender process. The committee consists of a head of the committee, secretary and some members (normally four or five). They are staff members that had been appointed by the board of director accountable for the whole process of selecting the private firms. The duties of the committee are:

- Preparing the tender documents comprising the general conditions of the task, drawings, bill of quantities, and instructions to tenderers.
- Preparing invitations for the private firms
- Collecting and evaluating the bids
- Contract award

The preparatory activities and bidding process are outlined in Table 2.32 and Table 2.33.

Table 2.32. Tender process and responsible parties: *Preparatory activities*

Tasks	Responsible parties	Quality of the process (Related to responsible parties)	Possible risks mitigation
<i>Preparatory activities</i>			
Appoint tender committee, which consists of PDAM staff	PDAM (Board of Directors)	Less accountability in case the members appointed are not familiar with the tender process and the tasks to be out-contracted, since they have to prepare the terms of reference	Select only qualified members from various backgrounds/ skills
Prepare terms of reference for private firms	Tender committee supported by expert staff		Provide appropriate scope of works to attract capable contractors and a well designed contract
Pre-qualification of private firms	Local Government	Less transparency and accountability, since the unqualified private firms may get political support and the qualification may be too general	Involve other parties in the process
Prepare short list of private firms according to pre-qualified private firms list	Tender committee	Less accountability especially for special tasks, since the committee does not conduct the pre-qualification	Provide good scope of works and terms of reference
Prepare invitations	Tender committee		

According to the interviews, it was concluded that the committees faced problems regarding the tender process. One of the heads of the committee agreed that there is still lack of transparency in PDAMs dealing with private sector. The reasons for the lack of transparency is that unqualified firms may receive political support to win the bid since the PDAM normally does not conduct a pre-qualification of potential bidders but utilizes the list of pre-qualified bidders issued by the local government. Other problems of tendering include:

- Collusion and price fixing among bidders, tendering firms may conspire to make up prices and allow one of the firms to win the bid

Table 2.33. Tender process and responsible parties: *The bidding process*¹

Tasks	Responsible parties	Quality of the process (Related to responsible parties)	Possible risks mitigation
<i>The bidding process</i>			
Completion, distribution of tender documents and clarification	Tender committee		
Bid preparation	Private firms		To minimize collusion among bidders, give as little time as possible for bid preparation Make an owner estimate of costs for a reference, to avoid predatory pricing and adverse selection
Submission of bids	Private firms Tender committee		
Opening of bids	Tender committee Private firms representative	Less transparency	Introduce an external member in the committee or a customer representation
Evaluation of bids	Tender committee	Less transparency and accountability, information asymmetry may exist	Introduce an external member with certain qualification
Contract arrangement and awarded	Tender committee		Make good contracts with all necessary elements, introduce penalties and the enforcement in the contracts
Execution	Private firms		

1. Source: Interviewees data

- Predatory pricing, a bidder under-prices the competition to win the bid and tries to negotiate price later
- Adverse selection, winning firm may have won because it made mistakes in its calculation or because it does not understand the tasks
- Information asymmetry, the private firms can cheat because they know more than PDAM staff members

During the visits, it was observed that there are no proper mechanisms that can guarantee the existence of real competition. The only mechanism that exists is the presence of two witnesses from the private sector during the opening of bids. Since there is a lack of a regulatory agency, introducing an external committee member may ensure a fair selection of private firms and avoid the collusion, corruption and nepotism practices (*Kolusi, korupsi dan nepotisme, KKN*). If the external member has certain qualifications he or she may also minimize the information asymmetry among PDAM and private bidders. It is

understood that the introduction of an external member may not give a guarantee that the collusion practice will be stopped, but by involving people with no interest in the bidding process it will hopefully be minimized.

An external committee member may be taken from the Development and Financial Control Board (*Badan Pengawas Keuangan dan Pembangunan, BPKF*) which has an obligation for auditing PDAM financial statements every year. Another alternative, like a consumer representation, may be suitable to improve transparency and to ensure that negotiations are made in the interest of consumers.

Terms of the contracts

According to the contracts collected during the visits to the four PDAMs, in general, a contract document consists of several articles, which states different terms in each article. Since there is no standard format for contract writing, the terms of the contracts vary from one contract to another, but they always address important aspects that govern the relationship between the PDAMs and private firms. In broad, important aspects stated in the contracts are:

- the description of parties involved and their roles in the relationship
- the tasks and scope of work to be accomplished
- the value of the tasks and method of payment
- the initial duration of the contract
- the penalties for not accomplishing the tasks or breaking the agreement

Other essential aspects that were found but not stated in all collected contracts are:

- arbitration in case agreement cannot be achieved in bilateral negotiation
- force majeure and its consequences
- level of service to be received by the PDAMs or performance measure
- bankruptcy of one or both parties
- contract variation order (addition or reduction volume of works)
- enforcement of penalties
- risks allocation

An important aspect to be emphasized is the allocations of risks. The legal risks may be minimized by introducing an article on arbitration or other modalities of resolving disputes, but the other risks e.g. financial and political risks are not mentioned in any collected contracts. Only one contract, the fees collection contract from PDAM Tirtanadi, introduced an article to minimize commercial risks while some contracts mentioned the

technical risks. With no proper risk allocations in the contracts it is unclear which party has to take those risks. This may lead to a condition where the private sector has no incentive to improve services and the potential for disputes can arise.

Duration of the contracts

The length of the collected contracts varies from a few days to one year depending on the type of tasks. In the shorter-term contracts, when the contracts are finished, the PDAM decides whether they will extend or renew the contracts through another bidding process. The renewal and re-tendering of the contracts should ensure that competition forces the incumbent to confirm whether it has retained its efficiency or has missed the contract targets.

For negotiated contracts the extension of the contract depends on the performance of the private firms. Therefore, it is important to state in the contracts the level of service that should be received by the PDAM, to be used as a measure of the private sector achievement. It will force the private firms to maintain a good performance or they will lose the contracts.

The longer-term contracts will increase the exposure of the private firms to all kinds of risks which will give greater incentives to improve services. But the important aspect is that, whether it is short or long, the length of contracts should allow for the private firms to achieve the goal of the tasks and the PDAM to measure and evaluate the performance of the tasks.

The remuneration of private firms

The remuneration of the private firms varies from one contract to another depending on the type of tasks. The payment methods found in the contracts were on the basis of work done, unit price or lump-sum. Work done means that the contractor is paid proportionally to the total volume of work accomplished. Unit price means that the price for one unit of work was set up in the contract and the payment for the contractor is the set-price multiplied by the total units of work accomplished. In lump-sum base, the payment for the contractor is fixed at an agreed price for a fixed amount of works.

Work done and unit price basis are suitable for the type of tasks with uncertain volumes or quantities. It means that the payment will depend on the final measure of the volume or unit of work that actually been done. Lump-sum base is suitable for the tasks with fixed volumes or quantities, where the tasks should be finished in certain times at a fixed price.

Selected cases

The following are presented to give detailed information about out-contracting in the selected PDAMs. The cases are related to different kinds of activities in each PDAM. These include fees collection service in Medan, meter reading service in Bekasi, computer programming in Tangerang and vehicle repair and maintenance in Bandung.

An evaluation has been carried out in each case with different efficiency indicators to determine the performance of out-contracting compared to in-house. The indicators include quality of the service, financial gain, the need for PDAM to hire new staff, costs and time needed for conducting the service. The efficiency of the case, both through out-contracting and in-house, with respect to given indicators is judged on a value of +, ++ or +++. The in-house performance is used as a benchmark and given a value of + for each

indicator. +, ++, and +++ value for out-contracting mean that the contractor performs the same, more and much more efficient for each indicator than the in-house provider. There has to be some degree of subjectivity involved in this evaluation (see Table 2.34, Table 2.37, Table 2.38, Table 2.40, Table 2.41).

2.8.3 Fees collection service in PDAM Tirtanadi, Medan

During the past ten years, PDAM Tirtanadi has increasingly used private sector participation in the provision of its services. PDAM Tirtanadi now contracts private firms to construct physical works and facilities; goods procurement; pipes installation, repair, and replacement; mechanical equipment repair and maintenance; cleaning service; part of vehicle maintenance; and fees collection services.

Since 1987, PDAM Tirtanadi in Medan has contracted a private firm to provide a fee collection service for the residential, commercial and industrial accounts of the PDAMs customer base. At first the PDAM used a three-year contract but since 1996 a one-year contract was used, since the PDAM felt that one year is enough to evaluate the performance of the contractor. The remuneration of the private firm is on a progressive payment scale based on collection percentages. At present PDAM Tirtanadi contracts two private firms to provide the service.

Background

PDAM Tirtanadi began to contract private firms to provide a fee collection service in 1987 by issuing a three-year contract between PDAM Tirtanadi and C.V. Multi Jasa. The contract approved the retention of the firm as the contractor for the collection service. It describes the major elements of the contracting program, and delineates a graduated payment scale based on percentage collection. In 1994 PDAM Tirtanadi decided to involve another private firm for the service to introduce more competition and made a one-year contract with PT Tirta Karya Jay a Mandiri.

Since 1996, two contracts have been awarded every year. From the seven branches of PDAM, the first firm provides the service in five branches and the other in two branches; the rest area is under the responsibility of the PDAM.

The contractors were selected on a negotiation basis, using an initial set of criteria, which was reported to focus on quality and experience of staff, track record for service, management ability including familiarity with computers, and collection methods. There was no competitive bidding included in the selection process, the firm was known to the PDAM and selected in part due to its track record on previous assignments.

The contracts are extended every year after having an agreement of both parties. The documents are relatively detailed contracts which delineate responsibilities of the contractors, the dates for the monthly operational cycle, the basis and method of payment, administrative matters and penalties.

Operationally, the contracts accommodate a regular monthly billing and collection cycle. Every month, the PDAM provides customer bills to the contractors, which deliver them to the customers. The contractors then contact the customers to collect payment.

Service performance

Collection results suggest that the systems have run successfully. In 1986 when the collection was done by the PDAM, the collection efficiency was only 68%. After the involvement of private contractors the efficiency has increased every year. In 1987 the revenue collected was 82% of the total amount billed and the collected bills was 85% of the total number of bills issued, the figure rose up to 96% and 98% respectively in 1998. Bad debts, which the contractors are unable to collect are transferred back to the PDAM after an agreed period, in that case the PDAM takes over the responsibility to collect the debts.

In terms of labour, the impact of out-contracting to the PDAM is positive. The PDAM may maintain its productivity index since recruitment for new staff members is not necessary. While in conducting the service, CV Multi Jasa alone employs 200 people. It means that if the PDAM prefers to do the job in-house, they would need to hire more than 200 people for fees collection.

Table 2.34. Comparing out-contracting and in-house execution for fee collection

Key indicators	Performances		Comments
	In-house	Out-contracting	
Quality of service	+	+++	The collection efficiency is higher through out-contracting
Financial gain	+	+++	There are some gain yielded from out-contracting
The need (for PDAM) to hire new staff	+	++	<i>in</i> case of out-contracting the PDAM does not have to hire new staff
Time needed for conducting the service	+	+	The time needed is the same for both methods

Table 2.34 does not mention cost indicators because the costs for in-house works are not known. It depends on the number of staff to be hired by PDAM.

Although the performance of the out-contracting is generally better, there is a weakness in the system regarding the transfer of information. Since the PDAM do the billing, it has to print the bills and the contractors collect them every month, there is a possibility that some of the bills may be slipped off and lost. The same thing may happen when the contractors transfer back the uncollected bills.

To solve this problem the PDAM and the contractors should develop an information transfer system that allows the contractors to receive the data in their office. It can be in the form of data transfer via discs or diskettes or in the more develop form, an on-line computer system. To support this system the PDAM and the contractors need to have compatible computer hardware and software to make sure that every party can have access to the data. In addition, the contractors should print the bills themselves.

Terms of the contract

The terms of the current contract between the PDAM and the contractors are contained in the *Surat Perjanjian Kerja Sama Tentang Penagihan Kuitansi Air*, which is the extension of the original contract for the collection service.

The contracts are detailed documents, which delineate the operational standards of the program and monthly activities of the contractor at a certain period. The detailed terms of the contract are developed based on the experiences of the PDAM during the first few years of the program.

Every contract specifies the working area of each contractor. They describe the monthly billing cycle, identify specific dates for completion of tasks (including provisions for holidays or similar occurrences), and outline detailed procedures for certain elements of the collection process where consistent financial reporting controls are needed. The reporting controls include the procedures for lost bills, timing and reporting of bank deposits and mechanism for enforcement of penalties involving the contractor's bank guarantee.

The term of each contract is one year. The contracts state that the term can be extended at any point during the contract period for an unspecified length of time. The PDAM can also terminate the contracts at any time without notice if the contractors disobey the terms of the agreement. The PDAM management feels that a one-year contract is appropriate, it permits the PDAM to adequately monitor and enforce performance and to undertake any necessary penalties.

The PDAM reviews the collection trends on a monthly basis through a series of financial reports, which is previously mentioned. The contractors must provide a significant amount of ongoing data and input into PDAMs reporting system. The PDAM assesses the operational performance of the contractors through this system that permits monitoring of the track record of the contractors.

The contracts provide a relatively rapid and automatically enforced punishment, which focuses on the contractors' payment and their bank guarantees. The requirement of a bank guarantee from the contractors by the PDAM, with approximately the full amount of the estimated payments, is a good mechanism to ensure payment to the PDAM since the PDAM can withdraw the bank guarantee if the contractors do not pay. It will encourage the contractors to stay on schedule and to report on each stage of monthly cycle.

Payment structure

The payment structure for the contractor is based on the percentage of the revenues collected. The contractors must collect at least 80% of the total amount billed in their working areas otherwise they will not be paid. The PDAM checks the collections through the appointed bank, where the contractors should deposit the money collected and deliver the receipts to the PDAM every day.

Once the 80% collection has been met, the contractors receive payments, which are a certain percentage of the collected amount. The percentage of payments increases gradually, along with the improved collection efficiency. The higher the collection efficiency, the more payments the contractors will receive.

The percentage of payment can be adjusted periodically based on the changing economic and business conditions or other factors. This will minimize the commercial risks of the contractors, which makes the service a stable and predictable business for the contractors.

Results of the partnerships

The PDAM and the contractors have received benefits from the partnerships. Collection efficiency has increased significantly, although as the PDAM has to pay the contractors, the amount is lower than the actual gain. It means the PDAM still can make some improvement in its income. Another benefit for PDAM is no recruitment of new staff members for fees collection needed; therefore it can maintain its labour productivity index.

The contractors now have detailed information on the PDAMs financial and reporting system as well as customer data basis. They also gain a particular knowledge on the operation of billing and collection activities, which can be used to improve their services to the PDAM.

2.8.4 Meter reading service in PDAM Kabupaten Bekasi

PDAM Kabupaten Bekasi now contracts private firms for goods procurement, pipe installation, computer programming and meter reading. Since 1997 PDAM Kabupaten Bekasi has contracted private firms to provide a meter reading service for all connections in the service area. At present, the PDAM is utilizing a one-year contract, which can be extended if agreed by both parties. The payment for the contractor that is calculated every month is based on a unit price. Recently there has been one contractor hired to provide the service.

Background

PDAM Kabupaten Bekasi began to contract private firms to provide a meter reading service in September 1997. The PDAM decided to out-contract the service because it requires many staff members and at the same time there was a lack of manpower in distribution and production divisions. It was expected that by out-contracting, the staff members that previously carried out the meter reading could be transferred to those divisions. Another reason was to reduce customer complaints caused by inaccurate meter reading.

The first contract was awarded to PT Belmanda Dharma Lestari. The contract approved PT Belmanda Dharma Lestari as a contractor for meter reading service for all connections in the service area of the PDAM. The length of the contract was for six months. When it was finished in February 1998, instead of extending the contract the PDAM decided to contract another private contractor to provide the service. The new contract was awarded to the PDAMs employees cooperative. The decision was reported to be made not because the co-operative proposed a cheaper unit price but because the employees might benefit financially. In cases where co-operatives run such a service, some of the benefits are given back to the employees in the form of dividends every year.

Initially the first contractor was selected on a negotiation basis using initial criteria which focused on the proposed unit price. There was no competitive bidding included in the selection process because the firm was known to the PDAM.

During the visit to the PDAM, the existing contract was for a one-year period valid until March 1999 with the possibility of an extension. The document is a relatively simple contract, which delineates the job description, the time given for the operational period, the basis and mode of payment, administrative matters and penalties for incorrect meter reading.

The contract specifies the responsibilities of the contractor for regular meter reading and other related activities, such as reporting the condition of the distribution system and water meters. Every month the PDAM provides the customer data to the contractor, who will perform the meter reading according to this data within fifteen days. The number of water meters to be read may be different every month. The contractor can give the report to the Data Processing Division within another fifteen days.

Service performance

It is too early to evaluate the results of the contract and whether it is successful or not. Nevertheless, the management staff of the PDAM are satisfied because the objective of out-contracting meter reading activity without recruiting new staff members has been achieved. The PDAM believe that they can save operational expenses and maintain labour productivity.

The co-operative employs 35 staff members, which means that each staff member reads an average of 90.2 water meters per day. The following table shows the result of a simple cost comparison analysis of conducting the service by PDAM and a private contractor, assuming the PDAM also employs 35 staff members.

Table 2.35. Cost comparison results of conducting the service in 1998¹

Service provider	Labour (persons)	Cost of conducting the service (Rp/month)
PDAM (in house)	35	25,777,500
Private contractor	35	14,201,400

1. Source: Analysis based on 1998 prices

According to Table 2.35, there are cost savings as the result of out-contracting the meter reading service. The management staff of the PDAM have not yet analyzed the impact on efficiency of out-contracting, although there is a relationship between the accuracy of meter readings and the efficiency indicator. Improved meter reading can reduce the amounts of administrative water losses. Table 2.36 below shows the summary of UFW analysis results in 1996 and 1998.

Table 2.36 shows that the UFW was improved in two years as the result of an improved ratio between the total water sold and the total water distributed. But, it is not clear whether the increase in the water sold was caused by the improvement of meter reading or collection efficiency. The major benefit of out-contracting meter reading services so far may have been achieved in terms of fulfilling a labour shortage.

Table 2.36. UFW analysis in PDAM Bekasi¹

Indicator	Unit	1996	1998
Total water produced	m ³ /y	9.699.845.2	12.598,704.7
Total water used during treatment process	m ³ /y	722.774.2	1.232491.2
Total water distributed	m ³ /y	8,977,071.0	11.366,213.5
Total water sold	m ³ /y	5,974.453.0	8,058,983.0
UFW (total water distributed- total water sold)	m ³ /y	3,002,618.0	3,307,230.5
UFW	%	33.4	29.1

1. Source: Analysis of primary data

Table 2.37. Comparing out-contracting and in-house execution for meter reading

Key indicators	Performances		Comments
	In-house	Out-contracting	
Quality of service	+	++	The customer complaints are less
Financial gain	+	++	There are some gain yielded from out-contracting as the result of cost-cutting
The need (for PDAM) to hire new staff	+	++	in case of out-contracting the PDAM does not have to hire new staff
Costs of conducting the service	+	++	The costs of out-contracting is cheaper than in-house (Table 41)
Time needed for conducting the service	+	+	The time needed is the same for both methods

Terms of the contract

The terms of the contract between the PDAM and the contractor are contained in the *Surat Perjanjian Kerja Sama Tentang Pembacaan Angka Meter Konsumen PDAM Kabupaten Bekasi* No. 26A/SPKS/PDAM/BKS/X/1997.

The contract is relatively simple. It delineates the operational standards of the program and monthly activities of the contractor at a certain period. Since out-contracting is relatively recent, the terms of the contract are not too detailed. Maybe after some time it will be enriched by inputs from experience.

The contract specifies the scope of work for the contractor, which involves meters of PDAMs customers in residential, commercial and industrial areas. The contract specifies the dates for the completion of tasks and the dates for reporting the results to the Data Processing Division. However, it does not outline detailed procedures for the unread water meters and any minimum target, which is risky.

It is not clear whether the contractor is still accountable for the unread meters or whether the PDAM is responsible. Where the payment is based on a unit price, it seems that the PDAM will take over the responsibility for the unread meters. This may represent a problem for the PDAM if the number of unread meters is too high, since the contract does not mention any minimum target that should be achieved by the contractor. In that case the PDAM will need extra staff to read meters, which also means extra expenses.

The length of the contracts is one year and can be extended at the end of this period. The contract stated that changes and additional terms are possible at any time, and every three months both parties will evaluate the reading accuracy and any problems that have arisen. This is one of the mechanisms to monitor the performance of the contractor.

Other mechanisms are Data Processing and Meter Data Evaluation Division controls in addition to penalties for inaccurate data. Yet, the punishment is not automatically enforced, since the controllers only do a random sampling and cross check the data taken by the contractor. It means that inaccurate meter reading may occur and will not be recognized by the controllers.

Payment structure

The payment for the contractor is based on the unit price. The total payment per month is the total number of water meters read times the unit price. The contractor will be paid Rp300 per water meter read. The payment will be given in two installments, first, at the beginning of the month as a down payment (50% of last months payment). The rest will be calculated and given after the contractor has reported all the results to the PDAM.

The unit price is fixed for the period of the contract, which means that there are some commercial risks for the contractor.

Results of the partnership

Currently, some benefits have been gained by the PDAM. First, the PDAM can overcome the labour shortage. Second, the customer complaints caused by inaccurate meter reading were reported to be less (unfortunately, no figure can support this statement) and thirdly, the PDAM staff members receive greater dividends from the contract every year.

2.8.5 Information technology in PDAM Kabupaten Tangerang

In PDAM Kabupaten Tangerang, there are currently several tasks that are carried out by a private contractor. These include information technology, vehicle repair and maintenance, cleaning services, goods procurement, pipe installation and repair and co-operation with private banks for fee collection.

At the beginning of 1995, PDAM Kabupaten Tangerang started to develop a computer application for its customer database and accounting system. The PDAM contracted a private firm to carry out this task because there are no staff members appropriately qualified. The contractor worked with the counterpart from PDAM's technical team, who provided information needed by the contractor. The contract term was for one year and the contractor would be paid on a lump-sum base. Unfortunately the contractor could not finish the task on time even after the PDAM gave an extension, therefore the PDAM decided to terminate the contract and performed another tender. In January 1997 another contract was awarded to a different private firm.

Background

Along with the increasing number of connections and the will to improve services to its customers, the PDAM felt the need to computerize the customer database and accounting system. The first contract was issued in February 1995 and was awarded to PT Aura Balima Citra for the required consultancy services. The contractor was selected through limited bidding. Although it competed with other private firms in the tender process, at the end of the term the contractor could not accomplish the task as expected. The PDAM decided to give an extension until May 1996, but once more the contractor could not finish the work.

So the PDAM terminated the contract and carried out another limited bidding process. In this case there was a loss for PDAM since 68.2% of the payment including the down payment had already been given to the contractor. This clearly shows the importance of pre-qualification in involving private contractors. This will minimize the technical risks caused by an unqualified contractor.

The second contract was awarded to PT Nahlindo Mitra Sejati in January 1997. The contractor had been chosen for its best-combined offer of price and quality. The contract was valid for ten months. It was completed with the technical proposal offered by the contractor during the tender process, which was used as a reference of what to do. The technical proposal was developed based on the terms of reference had been given by the PDAM together with the tender invitation.

The contract clearly explained the scope of work, the responsibilities of the contractor, the date for finishing the task, guarantees for realizing the job and for a good result, penalties and arbitration. Operationally, the contract accommodates a series of work to be done by the contractor. The work includes the program installation, transfer of knowledge to PDAM staff to be able to operate the programs, and supervision for program application by the operators.

In carrying out the job, the contractor was accompanied by a counterpart, a team consisting of PDAM staff. This team has obligations to co-operate with the contractor performing a series of discussion and providing relevant data to the contractor.

Service performance

It is difficult to quantify the results of out-contracting the information technology, but qualitatively there has been an improvement in the customer database and accounting system. Before, some divisions related to customer service would update their data regarding active/non-active customers, new connections, cut off connections, re-connected customers and customer debts, which are needed for the issuing of bills every month. These divisions include Customer Relations, Billing, Financial, Accounting, General, and Data Processing Divisions. This system could introduce unsymmetrical data among divisions caused by human errors in data input process.

With the computerized system, which is a network system, all divisions can access the data they need in a very short space of time. They needed one to two hours to update the data before, with this system they can do it in five to ten minutes. There is time efficiency gained from this system. Furthermore, the out-contracting can fulfil the need of the PDAM for special skills.

However, so far the network system only can be applied in the central office. It means data transfers among the branch offices or payment points and the central office still have to be done via diskettes. In this case, data lost may still occur during the process of transportation.

Table 2.38. Comparing out-contracting and in-house information technology

Key indicators	Performances		Comments
	In-house	Out-contracting	
Quality of service	+	+	The quality of service assumed to be the same, according to the term of reference
The need (for PDAM) to hire new staff	+	++	In case of out-contracting the PDAM does not have to hire new staff
Time needed for conducting the service	+	+	The time needed for in-house is assumed to be the same as out-contracting

Table 2.38 does not mention costs as the costs for in-house works are not known, it depends on the number of staff hired by PDAM. In addition the financial gain cannot be calculated although the benefits of an improved database are apparent.

Terms of the contract

The terms of the current contract between the PDAM and the contractor are contained in the *Surat Perjanjian Pemborongan Pekerjaan Tentang Pengembangan sistem Komputerisasi PDAM Kabupaten Tangerang* No. 022/Kontrak-02.1 -Litb/97.

The contract is complete and detailed, it delineates the scope of work and responsibilities of the contractor including the penalties if the requirements are not met. The contract clearly mentions the remuneration of the contractor without any down payment, which means the contractor will receive payment only after they produce and transfer the results to PDAM. It also required guarantees for realizing the job and good results by introducing a mechanism for penalty enforcement which involves the contractor's bank guarantee. The terms mentioned above prove that PDAM tried to make the contract as detailed as possible, to avoid losses that were experienced with the previous contractor.

Since the work cannot be easily quantified, the contract introduced an article for contract variation, where the contractor can make a written proposal for the addition or reduction in the volume of work, including its price, at any point of the period of contract. Afterwards the PDAM will evaluate the proposal and the decision will depend on the result of the evaluation.

The length of the contract is ten months. The contract is very strict with respect to its duration. The PDAM can terminate the contract without notice if the contractor fails to finish the task on time. The contractor cannot sue the PDAM if this happens and the PDAM may give the job to another private firm. It will though encourage the contractor to stay on schedule.

Payment structure

The contractor was paid on a lump-sum basis. The payment covers the costs for computer programs and data input. These costs include other contractor's expenses connected to the accomplishment of the task and the payment will be given in two stages.

The contractor can take the payment if the level of service required is met. The first payment of 80% will be given only after the contractor completes the task and transfers the result to PDAM. Transfer of results can be done after the PDAM agreed that all the requirements are met. Where the contractor cannot finish the job or the PDAM is not satisfied with the result, the contractor will not be paid. The other 20% will be given after the contractor has finished the data input and the programs can be operated.

Results of the partnership

The co-operation between the PDAM and the contractor has resulted in an improved customer database and accounting system. The system has provided more reliable information for the management of PDAMs transactions. More accurate information will guarantee a realization of improved operational functions of the PDAM and allow management to make good decisions. In addition it will increase the accountability of PDAM in front of customers and other related institutions.

2.8.6 Vehicle maintenance in PDAM Kabupaten Bandung

Recently, PDAM Kabupaten Bandung has out-contracted some tasks to private contractors. These include goods procurement, technical planning, pipe installation, repair, and replacement, and vehicle repair and maintenance.

PDAM Kabupaten Bandung has been out-contracting vehicle repair and maintenance for some time to a private garage without any signed contract. The co-operation was made based on an agreement between the PDAM and the garage's owner. The PDAM think that no contract is necessary for this cooperation, because so far the PDAM has never had any complaint about the service provided by the garage.

Background

Vehicles are important elements for a water company to support their daily activities. In PDAM Kabupaten Bandung there are 20 cars and about 24 motorcycles in operation every day. Despite the large number of vehicles, only one person is in charge for their repair and maintenance. The PDAM does not intend to recruit new staff members since the labour costs are already high and the budget for vehicle repair and maintenance is limited. Besides, if they want to do the repair and maintenance in-house, the initial costs for building and equipment are too high. The management decided to out-contract the tasks that cannot be handled by its own staff.

At present, the staff can handle small repairs like lamp replacements and brake checking but not for larger jobs like oil changes, tune ups, overhauls, etc. Normally the users can take care of the motorcycles. Since the budget is limited, the head of the division has to make priorities. Every month, from ten orders of repair and maintenance only four can be realized and sent to the private garage, the rest will be put on a waiting list.

So far the co-operation between PDAM and this garage has happened without any contract as they trust each other. The garage gives priority to the PDAM, where every car sent is done as soon as possible and the PDAM can pay later, at the end of the month. The

person who brings in the car brings a letter from the head of general division to prove that the car belongs to the PDAM. Another merit is that the garage gives a guarantee of the work done. In case the PDAM is not satisfied with the result, they can make a complaint without any additional charge for the service, except the charge for spare parts. This will ensure that the PDAM always gets a good quality of service.

Although the relation between PDAM and the garage runs well, all agreements made between both parties should be written down in a contract to ensure that expectations can be realized. Besides, if any dispute arises, both parties should know how to deal with it to find the best solution

Service performance

Experience suggests that out-contracting provides some benefits to the PDAM. First, there is no need for the PDAM to recruit new staff members, which means saving the labour costs. Second, the PDAM does not need to spend any money on initial costs for building and equipment. Third, the quality of work is far better than in-house work. Fourth, time efficiency is gained. Normally the time needed for in-house work is three to four times longer (*Internal affairs sub-division PDAM Kabupaten Bandung, 1998*). There are of course extra costs for the service charged by the garage apart from the spare parts costs, but they charge only 30% of the spare parts costs (*Internal affairs sub-division PDAM Kabupaten Bandung, 1998*).

In 1998, for eleven months from January through to November, the PDAM spent Rp49,842,225 on car repair and maintenance. From that figure, Rp38,340,175 was for the cost of spare parts and Rp11,502,050 was for the cost of service. Therefore, on average the cost for service was Rp1,045,640 per month.

If the PDAM prefers to do the task in-house, it will cost the company more. Assume that the PDAM will need 2 more staff members (in total 3, *Internal affairs sub-division PDAM Kabupaten Bandung, 1998*) to work in the division. The average income is about Rp350,000 per month including the basic salary, incentives and health insurance (*Data taken from the Personnel Division of PDAM Kabupaten Bandung, 1998. According to the report from Dinas Cipta Karya TKI West Java in 1996, the average income in PDAM Kabupaten Bandung was Rp439,000 per month*). It means that every month the PDAM will spend Rp1,050,000 only for the labour costs and considerably more if the calculation includes the initial costs for building and equipment and overhead costs.

Table 2.39 below shows the comparison of the labour costs in case the task is done in-house and out-contracted based on the assumption above.

Table 2.39. Labour costs comparison analysis¹

Service provider	Labour (persons)	Labour costs in 1998	Remarks
Private garage	3	1,045,640	
PDAM (in-house)	3	1,050,000	The costs do not include initial and overhead costs

1. Source: Author's analysis

Although the labour cost comparison shows a slight difference, the total costs for in-house works will be much higher, which includes the initial costs and over head costs.

Table 2.40. Comparing out-contracting and in-house - for vehicle maintenance

Key indicators	Performances		Comments
	In-house	Out-contracting	
Quality of service	+	+++	The quality of service through out-contracting is much better
Financial gain	+	++	There are some gain yielded from out-contracting as the result of cost-cutting
The need (for PDAM) to hire new staff	+	++	in case of out-contracting the PDAM does not have to hire new staff
Costs of conducting the service	+	++	The cost of out-contracting the service is less
Time needed for conducting the service	+	++	The time needed for conducting the service through out-contracting is less

Results of the partnership

The results of the partnership show that the PDAM obtained definite benefits. These included cost savings, as there was no need for the PDAM to recruit new staff. In addition, the PDAM did not have to spend financial resources on building and equipment. Other benefits are that they have received a good quality of work and have gained time efficiency. These are important in supporting the daily activities in the PDAM.

2.8.7 Summary

Private Sector Participation in the provision of water supply services through out-contracting has great potential for improving the efficiency and quality of service delivery in Indonesia. However, experiences testify that the development of private sector arrangements are not free of risks and difficulties.

Table 2.41 presents results that can be drawn from the cases reviewed. The table shows that the correlation between the quality of contract awarding process and the quality of service as an output is not clear. It is because all the cases show good performance in out-contracting, although the process of contract awarding was associated with some weaknesses. However, from the case of PDAM Tangerang, lessons have been learned that improving the pre-qualification process and contract arrangement the failure of out-contracting a certain task may be avoided.

A summary of the experiences discussed in the above four case studies is set out in Table 2.42.

Table 2.41. Summary of the four out-contracting cases performance¹

Key indicators	Valuation Result			
	PDAM Tirtanadi Medifa	PDAM Kab. Bekasi	PDAM Kab. Tangerang	PDAM Kab. Bandung
Quality of service	+++	++	+	+++
Financial gain	+++	++		++
The need (for PDAM) to hire new staff	++	++	++	++
Costs of conducting the service		++		++
Time needed for conducting the service	+	+	+	++

1. Source: Analysis of four cases of out-contracting in water supply companies in Indonesia, Widi Hastuti, unpublished MSc Thesis SEE-081, IHE Delft, June 1999

Table 2.42. Contracting - out arrangements in 4 Indonesian PDAMs¹

Feature	PDAM Tirtanadi Medan	PDAM Kabupaten Bekasi	PDAM Kabupaten Tangerang	PDAM Kabupaten Bandung
Out-contracted task	Fees collection service	Meter reading service	Computer programming for customer database	Vehicle maintenance and repair
Reasons for out-contracting	To improve efficiency	To fulfil labour shortage To reduce customer complaints causing by inaccurate meter reading	To improve quality of service to the customer To fulfil the need of special skill (computer programming)	To fulfil labour shortage To cut operational costs
Private sector participant	CV Multi Jasa PT Tirta Karya jaya Mandiri	The Co-operation of PDAM employees	PT Nahlindo Mitra Sejati	One private garage
Process of contract awarded	Negotiated contracts	Negotiated contract	Limited bidding	Negotiated contract
Service area	Residential, commercial and industrial accounts in seven branches	All connections in the service area	The central office of PDAM Kabupaten Tangerang	All cars belong to PDAM
Terms of contracts				
Duration of contracts	One-year	One-year	Ten months	unspecified
Method of payment	Progressive, based on a certain percentage of the amount collected	Unit price	Lump-sum	Work done
Penalties for not accomplishing the tasks or breaking the agreement	Withdrawing the bank guarantee automatically or termination of contract without notice by PDAM	Fines for inaccurate data	Withdrawing the bank guarantee automatically, fines until certain amount for delaying, if exceeded termination of contract without notice by PDAM	Not available
Risks allocations stated in the contract	Legal risks taken by both parties Force majeure and commercial risks taken by PDAM	Technical risks taken by the contractor Force majeure taken by PDAM	Legal risks taken by both parties Technical risks taken by the contractor Force majeure taken by PDAM	Not available

Table 2.42. Contracting - out arrangements in 4 Indonesian PDAMs¹

Financial guarantee	Bank guarantee	Not available	Bank guarantee	Not available
Level of service to be received by PDAM	At least 80% of the total amount billed must be collected	Not available	Certain conditions to be approved and decided by PDAM	Certain conditions decided by PDAM
Arbitration	Established in the contract	Not available	Established in the contract	Not available
Result of partnerships				
Benefits	Increased collection efficiency Improve revenue No staff recruitment	Overcomes labour shortage Supposed to cut operational costs Decreased customer complaints Increased dividends from the co-operation	Improved customers data basis and accounting system resulting in time efficiency Overcome the need of special skill for computer programming	Cut operational costs Time efficiency gained Get a guarantee for good quality of works
Weaknesses of the cooperation	Less competition in the process of awarding contract Inadequate transfer of information system	Less competition in the process of awarding contract No minimum level of service required Inadequate control mechanism	Inadequate transfer of data between central office and branch offices and payment points	There is no guarantee of cooperation continuity since no written contract available

1. Source: Analysis MSc Thesis, IHE Delft, 1999

2.9 Case studies from USA

A literature study by Richard Franceys

Cases from the high-income United States of America are included in this study of middle and low-income countries because of the level of decentralization in the USA - reportedly 54,000 individual water provision entities and 16,000 sewerage entities, the degree of under provision. Approximately 740,000 people lacked access to potable water in 1999', and the limited nature of private involvement. 'Some 80% of the population is served by municipally owned and operated water companies' (Owen, 2000). It is also an approach that has traditionally received substantial subsidies from central government which are now being restricted.

As the sector looks to improve services, contracting out is seen as a vital tool: 'a new study of utility delivery business in North America indicates that outsourcing will increase significantly during 2000-2004. The META Group's study reveals a very high degree of both current and planned outsourcing for pipes and wires infrastructure services. Planned levels of outsourcing for revenue cycle, information technology and customer relationship management services indicate significant increases' (Global Water Report, 1999).

'Reinventing government'

Politicians and leaders in government in the USA have been looking to improve all types of service provision by government direct providers in order to benefit their consumers. *The* starting point for change has often been to use the techniques that have been pioneered by private industry, particularly through the drive for improvement and optimisation by contracting out.

In the USA this approach became known as 'Reinventing Government', popularised in the book of the same title by Osborne and Gaebler in 1992 with its subtitle: 'How the entrepreneurial spirit is transforming the public sector.' Osborne and Gaebler stress how they believe deeply in government, and believe also in what they call 'that rare thing, effective government, where the people who work in government are not the problem; the systems in which they work are the problem; and [also] believing deeply in equity.'

For governments who wish to retain direct public sector control over their water and sanitation provision whilst gradually improving services to their citizens, there are relevant experiences in the USA.

'Governance is the process by which we collectively solve our problems and meet our society's needs. Government is the instrument we use. The instrument is outdated, and the process of reinvention has begun.'

The word government is from a Greek word which means 'to steer'. The job of government is to steer, not to row the boat. Delivering services is rowing, and *government is not very good at rowing.'*

'In government all of the incentive is in the direction of not making mistakes. You can have 99 successes and nobody notices, and one mistake and you're dead.' Standard business methods to motivate employees don't work very well in this kind of environment

‘Smaller but stronger – making more policy decisions, putting more social and economic institutions into motion, maybe even doing more regulating. – but rather than hiring more public employees, they make sure other institutions are delivering the services.’

Osborne and Gaebler describe what they see as ‘common threads’: ‘most entrepreneurial governments promote *competition* between service providers. They *empower* citizens by pushing control out of the bureaucracy, into the community. They measure the performance of their agencies, focusing not on inputs but on *outcomes*. They are driven by their goals – their *missions* - not by their rules and regulations. They redefine their clients as *customers* and offer them choices – between schools, between training programs, between housing options. They put their energies into *earning* money, not simply spending it. They *decentralise* authority, embracing participatory management. They prefer *market* mechanisms to bureaucratic mechanisms. And they focus not simply on providing public services, but on *catalysing* all sectors – public, private and voluntary – into action to solve their community’s problems.

Therefore they believe that ‘Public entrepreneurial management’ is required to make government effective. In addition to describing how government bureaucracies could be made more entrepreneurial through changing systems (‘Expenditure Control Budgets), as well as attitudes (‘the idea was to get [managers] thinking like owners’), they emphasise the role of contracting out services.

‘Freeing policy managers to shop around for the most effective and efficient service providers helps them squeeze more bang out of every buck. It allows them to use competition between service providers. It preserves maximum flexibility to respond to changing circumstances. And it helps them insist on accountability for quality performance; contractors know they can be let go if their quality sags; civil servants know they cannot.’

They quote one very positive view: ‘contracting with private vendors ‘is cheaper, more efficient, more authentic, more flexible, more adaptive. Contracts are rewritten every year. You can change. You cannot change with state employees who have all sorts of vested rights and privileges.’ (Keefe, Frank in Osbourne and Gaebler, 1992)

There has been considerable and understandable resistance to many aspects of change in government by the staff of government. Osborne and Gaebler believe that ‘public employees do not have to be the victims of entrepreneurial government in some places they are its primary beneficiaries job satisfaction increases dramatically when they have the opportunity to work for an organisation with a clear mission and minimal red tape they are often reborn. Governments that move from steering to rowing have fewer line workers but more policy managers, catalysts and brokers. Fewer paper pushers and more knowledge workers.’ And some have even contracted-out the ‘steering function’. Reinventing Government describes how the Arizona Department of Health Services is using non-profit agencies on three year contracts as ‘administrative entities’. ‘The nonprofits are clearly the best’ says Flory, many social services are simply not well suited to companies whose basic motive is profit the for-profits are in business to make money and the public sector agencies have little interest in saving money.’

The re-inventers stress that ‘Privatisation is ONE answer, not THE answer.’ ‘Privatisation is simply the wrong starting point for a discussion of the role of government. Services can be contracted-out or turned over to the private sector. But *governance* cannot.’ And they stress how there is a need to inject competition into service delivery in government, quoting Moffit: ‘*The issue is not public versus private. It is competition versus monopoly.*’

Making a similar point, Flanagan (ibid) states ‘Where there is competition, you get better results, more cost-consciousness, and superior service delivery.’ And although ‘most of us would prefer a comfortable monopoly, competition drives us to embrace innovation and strive for excellence. This is not to endorse cut-throat competition which can bring out the bad as well as the good. If competition saves money only by skimping on wages or benefits governments should question its value.’

Experience of contracting-out in the USA, quoting Savas (ibid) ‘Private firms under contract were equally effective, equally responsive, but vastly more efficient than government agencies.’

Studies show that ‘on average, public service delivery is 35 to 95 per cent more expensive than contracting, even when the cost of administering the contracts is included.’

- Competition forces public (or private) monopolies to respond to the needs of their customers
- Competition rewards innovations: monopoly stifles it
- Competition boosts the pride and morale of public employees

‘Competition actually heightened the equity of service delivery – because public agencies were, in effect, creaming. When city forces encountered delays and did not want to pay overtime, they would simply skip some areas that day – often the poorest areas, because they had the least political clout.

One of the challenges of decentralising and contracting out is the increased opportunity it gives for corrupt practices. United States experience to overcome this challenge reports that: ‘corruption is difficult when a contracting system meets four criteria:

- the bidding is truly competitive,
- the competition is based on hard information about cost and quality of performance;
- the contractors are monitored carefully;
- and a relatively non-political body is set up to perform these tasks.’ (ibid)

Clearly no system is perfect and contracting out is open to other forms of abuse as described in this frightening example from another public service sector: one ‘approach is to contract out to a single lawyer or group of lawyers all a county’s defence work. Too often this means the contract goes to the lowest bidder. In 1993 one Georgia county cut the cost of its indigent-defence budget by awarding the contract to a lawyer who, at

\$25,000 a year, bid almost \$20,000 less than the other two bidders. In the next three years the contracted defender tried only one felony case in front of a jury, while entering guilty pleas in 213 other cases.' (The Economist, 1998)

Government still retains the responsibility to ensure quality services through contracting out. To achieve this and overcome other challenges, Andrisani and Hakim (2000) report that of all forms of privatization by [US] state governments, 78 percent is contracting out.' They describe the conditions for the selection of service to be contracted out as:

1. Clear and precise definition of expected output(s) with measurement of quantity and quality of service. Where output cannot be easily measured, privatisation is unlikely to be successful since firms will probably reduce the quality and quantity of services to increase profit.
2. Competitive environment with multiple providers.
3. Monitoring by government should be of low cost. Savings from contracting out should be higher than the contract bidding and monitoring (enforcement) costs.
4. Government must be prepared to pick up the delivery of service if the contractor fails before the contract expires.
5. Explicit definition of the population and/or the geographic area to be served.
6. Choose services which entail low probability of changing conditions which will affect costs.
7. Government monitoring should be effective but should not be so stringent as to smother the contractor

In another list of important points (Rehfuss, 1993) gives 'The Ten Principles of Successful Contracting:

- Encourage competition
- Prohibit employees from having any financial or other interest in the contract
- Prohibit ex-employees from representing others, such as a contractor, before the agency. Two years prohibition after leaving the agency may be an appropriate period.
- Only allow bid openings and awards in an open, public meeting
- If a bid is awarded on any basis other than the lowest competitive written proposal, publicize the rationale for the decision. Any formal bid analysis should be made public.
- In setting standards, do not use the specification of anyone bidding for the contract
- If a bid is to be negotiated or based on a Request for Proposals basis, prepare a formal explanation of why the agency's interests are best served by the manner proposed.
- Rely on legal counsel throughout the bidding process

PART 2: CONTRACTING OUT CASE STUDIES

- Once the bidding process begins, limit contacts with the contractors to the negotiation period.
- Publicize bid awards widely and vigorously and keep a record of the search for contractors and the bid award

Rehfuss describes the keys to successful contracting as an open bidding process, appropriately detailed specifications and frequent competitive rebidding.

For scoring bids, Rehfuss recommends a weighting of 20% for contractor experience, 20% for contractors' employees to be assigned, 35% to the technical value of the proposal and 25% for the fee proposed. He stresses again that the 'single most important technique for preventing contracting problems is to promote competition between service providers.'

Before returning to a focus on water, the Federal Highway Administration (Witthof D K, 1997) gives a reminder as to the objectives and approach to contracting-out:

- **Prepare your goals and objectives**
- **Assess potential for partner contribution**
- **Refine partner selection criteria**
- **Talk to prospective partners**
- **Negotiate**
- **Evaluate performance and communicate through relationship**
- **Remain Flexible**

Water and sanitation – USA

In the USA by far the majority of water supply and sanitation operations are managed as part of government and the move towards autonomy has been very limited. This is described also in a series of reports by the Reason Foundation who from 1992 began to describe how to contract water and wastewater utility operations.

'In the United States, the over 300 operations and maintenance contracts between private operators and municipalities are a form of competitive franchising. These contracts, which generally run for five years, have achieved cost savings of between 20 and 50 per cent. Contractual performance and cost guarantees enable municipalities to secure operation's accountability. Removing state and federal laws that restrict the length of contracts would give private contractors more opportunity to make and finance capital improvements, and hence increase potential cost savings.' (Haarmeyer, 1992)

By 1993, Hartman was describing the '400 O&M contracts with rated capacities over 1 million gallons per day. This represents about 5% of all facilities. The majority of these facilities, 85 to 90 percent are for wastewater treatment facilities.'

‘When properly implemented, contract O&M can provide greater accountability for operations, allow community leaders to shift the risk of meeting environmental standards to the private sector and bring added expertise to the increasingly complex operating environment of water and wastewater systems. Contract O&M also offers a more predictable operations budgeting process, and an opportunity for local governments to realize operational savings that can be shifted to investments in capital facilities.’

‘While cost savings is often cited as the primary reason municipal officials consider contract O&M, price alone should not determine contractor selection. In addition to a guaranteed price, the contractor is providing professional management, technical expertise, and financial controls for water and wastewater operations. Hence, a contractor with a record of successful operations is the key to achieving maximum benefit from private contract O&M.’

‘Equally necessary is a relationship of mutual trust between the contractor and the municipality. An objective and unbiased procurement process is important in early development of this relationship. Since contract O&M is a professional service that provides management, financial, and human resources capabilities, a procurement process similar to that used in securing other professional services should be used. Professional operation, efficiency, and performance are the keys.’

‘For many municipal officials contracting out raises concern over loss of daily operating control. The owner is placing millions of dollars of assets in the hands of a contractor for operation and maintenance, yet the owner will continue to be the permit holder and be ultimately responsible for overall performance. It is important for the owner and contractor to develop an agreement that affords the owner a level of accountability, as well as liability and fine protection, that can substitute for the owner's direct control. If this is accomplished, private operation of municipal water and wastewater facilities is a valuable option for community leaders’ (Hartman, 1993).

In 1997, the Internal Revenue Service (IRS) removed a long-standing obstacle to public/private partnerships. The IRS now has provided "safe harbor guidelines" which now make it easier for municipalities to enter into long-term contracts for the private operation, maintenance and management (OM&M) of their water and wastewater treatment systems (Herbst, 1997). Prior IRS regulations not only limited OM&M contracts to five-year terms, but were required to be drawn up so that the public sector partner could terminate the contract without penalty or cause at the end of the third year. This structure made it difficult for private providers to think in the long term and make investments to reduce costs, automate or initiate capital improvements because, in effect, they only had a three-year contract.

New arrangements for compensation are now permitted which ‘must be reasonable and not based in any part on a share of net profits (sharing in both revenue savings and expense reductions).’

With the IRS Final Rules, a market shift toward long-term operations management and maintenance agreements could be on the horizon, opening the door to a wide variety of previously unavailable options. There will be many new ways to structure public/private partnerships. However, it is important to remember that even though IRS regulations now permit 10-, 15- and 20-year contracts, some state laws forbid extended agreements.

Herbst describes how ‘In essence, communities can get out of the day-to-day water and wastewater business and yet still own and control the assets. Cities will continue to have oversight and monitoring while giving primary responsibility to firms whose core competency is to operate, maintain and manage systems.’

Elias (2000) emphasises that in order to ensure the success of the public/private partnership there should be an efficient allocation of risks. The main risks foreseen are

- permit risks (construction permit and operations permit),
- design and technology risks, construction risk,
- operations risk,
- economic/financial risks and
- force majeure (casualty and business interruption).

Considering the O&M contract, Hartman finds typical contract terms of five years with requirements for the contractor to give monthly operating reports, quarterly maintenance account reconciliations and an annual report and audit to the city council or board of directors. The scope of the contract, in addition to requiring contractors to work ‘in a professional and cost-effective manner while meeting applicable regulations’ and guaranteeing effluent or product water quality may detail certain staffing requirements (some regulatory agencies specify minimum numbers), process control systems, laboratory quality assurance and public relations.

The scope can also ‘spell out requirements for transition into the first year of the contract or at contract termination. There likely will be requirements for an equipment and facilities inventory including vehicles and spare parts, and a corresponding inventory of consumables.’ Elias includes the need for agreement to allow the operator to use existing tools, equipment and vehicles.

Basic compensation can be through monthly or quarterly payments, based on a lump-sum bid, and incentive-related pricing structure or a cost-plus arrangement, allowing for adjustment for cost increases (tied to various indices) and for significant changes in flows and loadings.

Details of employee transition are common in first time contracts, covering issues such as job offers to existing employees, retirement arrangements, restrictions on transfers and initial wage increase guarantees.

The contract should also ‘specify the type and amounts of insurance coverage that the contractor must provide,’ to indemnify the municipality for breach of agreement and for operator’s negligence (Elias) as well as for worker’s compensation insurance and require the contractor to submit proof of coverage to the owner.’

Distinction is made between *normal maintenance*, up to an agreed amount, for example \$2,000, and *major maintenance* which remains the responsibility of the owner, as does capital replacement.

Finally Hartman refers to the need for incentives to be described in the contract, particularly for energy costs which can represent as much as 25 percent of O&M expenditures and which can generate substantial savings. Such costs can be assigned directly to the owner or can be the responsibility of the contractor to encourage optimisation of plant running. However, this latter approach then requires detailed consideration of fluctuations in loading/demand and energy price changes as well as incentive sharing.

Elias adds the potential for Performance Bonds but notes the costs associated with a bond typically costing a worthy entity anywhere between 0.25% - 0.75% of the face value of the bond annually.

One of the end results of this process of contracting-out is reported by Factor (quoted in Hartman) that there are 1.76 employees per MGD treated in contracted wastewater treatment plants in Massachusetts and 2.38 employees per MGD in Municipal plants.

Managed competition - USA

An increasingly popular approach in the USA is providing drinking-water operations through managed competition. This involves the development of a competitive process between the public sector providers and private contractors. Using competitive, open market approaches, public agencies can determine the best value for the services rendered.

Managed competitions have been conducted in such cities as Charlotte, NC, and in Phoenix, AZ, and are underway in a number of other areas. In some cases the public agencies have successfully competed against private providers. In other cases, private providers were found to be the most cost-effective alternative. Conducting managed competition requires careful structuring of the performance processes and documents in order to assure fair competition. These and other measures are important to create a 'level playing field' (Westerhoff, 1998). 'Contracting arrangements face less regulatory scrutiny than ownership, since the municipality is judged able to protect the public interest in negotiating and implementing contracts' (World Bank, 1999).

While many cities own and operate their water and wastewater facilities, most outsource design, engineering, and construction of new facilities, and they increasingly contract for operation and maintenance as well. A 1997 service-delivery survey by the International City/County Management Association (ICMA) showed that 1 in 15 cities outsources operation of water or sewer systems. Revenue projections for firms that design, build, and/or operate municipal water and sewer systems indicate expectation of increased outsourcing. Typically, cities and counties "have a small dedicated engineering group to handle day-to-day environmental problems and monitoring. . . . [A]ll significant designs are outsourced."

A 1998 survey by R. W. Beck found that the greatest operational concern of water and sewer utility officials is meeting environmental regulations. The survey paints a more complex picture of capital-investment concerns. Public officials were asked what were the most important drivers of water and sewer capital improvements. For 40 percent it was growth in demand, for 30 percent the age of existing capital, for 27 percent it was environmental regulations, and three percent indicated other reasons.

Box 2.9. Once monopolistic water utilities are becoming competitive; Is yours?¹

Benefits of privatization cited by utility owners:

Cost reduction

Technologies

Guarantees

Management expertise

Capital

Predominance of contracts to-date have been for O&M

The predominance of these contracts to-date has been for operations and management services not involving private capital. O&M contracts present the lowest political and legal barriers to enter into privatized services. However, once a utility has been privatized, the general trend has been to continue operations and expand the relationships.

Privatization is a force that has and will continue to change the landscape of the water industry. There is little question that new industry wide expectations for service, performance and costs are emerging simply because privatization exists as an option for service delivery in the water utility marketplace.

Growing political support for privatization

There is growing political support for privatization. This can be related to the fact that privatization has benefits to politicians that may not be available through other forms of service delivery. In its 1997 Survey, the Urban Water Council of the U.S. Conference of Mayors, found that the political interest in public/private/partnerships was expanding.

Survey finds 40% had some form of privatization

Of 261 cities surveyed, 40% currently had some form of public/private/partnership. Another 14% of the cities without any public/private/partnerships are considering it.

The most common services that were privatized included:

	Number of cities:	using PPP now:	expecting to use PPP
for:			
Design and construction		71	36
Meter reading		33	73
Billing and collection		31	50
Distribution system O&M		25	32
Treatment facility O&Mv		19	41

The results suggest that politically there is significant dissatisfaction with nearly every aspect of service delivery. The results of this survey strongly suggest that political decision-makers increasingly see significant benefits by using privatization for the deliver of water services.

1. (Callahan, 2000)

Keeping up with economic growth and coping with aging facilities are currently the greatest concerns. But that may change. Over the last two decades, through the Clean Water Act, the Safe Drinking Water Act, and their subsequent amendments, standards

Box 2.10. From design to discharge: New partnerships in water and sewer system¹

Arvin, California, a city of 10,000 at the southern tip of California's Central Valley, signed a contract on July 8 with US Filter Operating Services to finance, design, build, and operate a new 2 mgd wastewater treatment plant. This innovative partnership, the first of its kind in California, entails a 35-year lease of the facility to US Filter and payments totaling \$54.5 million.

US Filter operates the city's existing plant. The new expanded partnership will extend the firm's management to all elements of the system, and the new plant will be on line in the summer of 1999. US Filter will also invest \$5.5 million in other components of the city's wastewater system.

A few hundred miles north of Arvin, the slightly smaller city of Dos Palos, California, in June signed a five-year contract with ECO Resources to operate the city's water and sewer systems. The city will pay a total of \$1.6 million over the term of the contract, which includes water treatment and distribution, meter reading, and wastewater collection and treatment.

Taunton, Massachusetts, finally completed its agreement with Air and Water Technologies (AWT) to manage and upgrade the city's sewer system for the next 20 years. The city of 50,000 will pay AWT a total of \$50 million and will save residents an estimated \$62 million.

AWT subsidiary Professional Services Group was scheduled to take over operation of the 8.34 mgd facility on August 1. Another AWT subsidiary, Metcalf and Eddy, will begin a series of facility upgrades aimed at controlling sewer overflows. The contract is expected to save the city \$15 million in construction costs for the upgrades and up to \$47 million in operating and maintenance costs over its 20-year term. It also locks in rate stabilization over the same period. In an arrangement similar to that in Indianapolis, United Water Resources teamed with the AFSCME local in Gary, Indiana, to win a 10-year, \$95 million contract to operate the city's wastewater system. The city's 60 mgd system serves a population of 120,000. Total savings to the city are expected to be as much as \$30 million.

And in Chicago, the Water Department has signed an agreement with US Water to modernize its metering and billing system. US Water will be paid \$19-\$23 million to provide a new, more customer-friendly, more accurate system for tracking water usage and billing customers. Perhaps most important, the new system will be year-2000 compliant. (Moore, undated)

Infrastructure Management Inc., a consulting firm, surveyed 27 governments that had bid out water/waste water operations. The public sector submitted bids in almost half of these competitions, winning 69 per cent of the time.

1. (Quoted in Eggers, 1998)

governing the quality of drinking water and cleanliness of effluent discharged into waterways have become ever more stringent. To meet these increasing standards, many local water and wastewater systems require improved technologies and upgraded infrastructure. The Environmental Protection Agency, the Association of Metropolitan Sewerage Agencies, the Water Environment Foundation, and others proffer varying estimates of the capital investments needed to bring all U.S. water and sewer systems into compliance, but the total is likely between \$500 billion and \$1 trillion. Planned federal and state funding will likely amount to less than one-quarter of the need; the rest will have to come from local taxpayers or from private investors.

A number of studies have shown that outsourcing water and wastewater utility management and facility development can cut costs by 10 to 40 percent. Usually, outsourcing reduces the rate increases that were planned prior to privatization, and it sometimes supports rate decreases.

In Milwaukee, outsourcing cut the city's annual wastewater operating costs by 30 percent, for projected total savings of over \$148 million. After one year, those cost savings allowed the city to cut sewer fees by 15.5 percent.

Atlanta's outsourcing produced even more dramatic results. The city water system was significantly out of compliance with environmental standards, and the water utility's own estimate of the cost to upgrade the system and achieve compliance called for a water rate increase of more than 100 percent. Instead, the city chose to outsource upgrading, operating, and maintaining the water utility for 20 years. The agreement cuts the cost of upgrading and operating the utility by 44 percent and reduces the water rate increase for the upgrades to less than 30 percent. The city's annual cost was \$49.5 million. The winning bid was only \$21.4 million per year; however, the city will also pay roughly \$6.1 million per year to cover the costs of electricity, natural gas, and insurance for the facilities, as well as contract monitoring costs.

In May 1996, Jersey City, New Jersey turned over the operation of its water system to United Water. When the system was run by the city, only 66% of the water produced was actually being paid for. The new contract provides financial incentives for the contractor to increase this percentage. If the percentage rises to 70 to 75 per cent, United Water gets to keep 5 percent of the increased collections. If it rises to 75 to 80 percent, United Water keeps 10 percent of the increase in collections and if the collection rate exceeds 80 percent, this percentage rises to 25 percent of the increase in collections (above what they would be at a 70 percent rate).

The city estimates increased water revenues of \$17 million and increased sewage collection of \$32 million from the profit sharing arrangement (assuming that the collection rate increases to 75 percent in the first year and 80 percent in the second year).

Benefits and costs

Various studies have shown significant savings from out-contracting: 'Cost savings from outsourcing range from 8-30%. West Haven, Connecticut is saving around \$700,000 annually; Houston, Texas should save \$12.7m over five years; and Indianapolis, Indiana, some \$13m over a similar period' (Global Water Report, 1997). Similarly: 'contractor costs averaged 20% to 50% less due to shorter construction lags and lower construction costs. Competition also reduces operating costs 20% to 50%' reported Hilke (1993)

The National Association of Water Companies (NAWC) study, in an investigation of water and wastewater systems in 29 cities serving over three million customers, found that 'the facilities experienced costs savings between 10% to 40%, avoiding large rate increase to the consumers.'

They also found that prior to entering a PPP 41% of facilities surveyed were not in compliance with the Safe Drinking Water Act. 'One year after entering into a PPP, all were in compliance with federal water standards' (NAWC, 1999).

Box 2.11. Southeast water purification plant, Houston, Texas¹

The 80 million gallon per day Southeast Water Purification Plant near Houston serves 700,000 people in 13 cities, utility districts or water authorities, each with various percentages of production capacity ownership.

The City of Houston is the plant's managing partner and owns 23 per cent. In early 1996, the city offered a five-year operations and maintenance contract for the plant in a 'managed competition'. The qualified bidders hailed from as far away as France and England, but also included competitors from the United States, along with a 'company' owned by Houston area ratepayers.

Officials had conservatively expected around 10 percent savings from using a competitive-contracting process, and were delighted that the winning bid came in with savings of 43 percent from current costs. A change in technology offered by one of the private firms allowed for the huge drop in costs. The only way that the public sector could have won the bid was if they had offered the same change in technology. 'The private company offered to take the risk of failure in new technology. It would have been hollow for employees to take the same risk,' explains IMG's Steckler.

The 13 cities that own the plant will save \$12.7m over the five years of the contract.

Lee County, Florida

When Lee County put its wastewater treatment plant out to bid it received proposals from four bidders, including the county staff. The winning bidder, ST Environmental Services, came in \$7 million lower than the county staff and the next private bidder. Though bid protests were filed by both the county teams and another private bidder, the choice of ST Environmental Services was approved by the Board of County Commissioners.

Even though the savings were enough to finance a new water plant extension and to add an injection well for effluent flow without any rate increases, no employees had to be laid off; the contractor agreed to take on all displaced employees and reduce the number of workers (from 90 employees to 70) through attrition. 'We didn't see many new faces, we just saw fewer faces,' says J W French, Lee County's Public Works Director.

1. Quoted in Competitive Neutrality, William D Eggers, Reason Public Policy Institute, March 1998

But there are costs involved in using the private sector as has been shown earlier in the legal example and as shown in the box below, giving one perspective on the Indianapolis experience.

In their recent overview, Moore et al (2000) found that a 'wealth of evidence demonstrates that outsourcing can be an effective tool that governments can use to deliver infrastructure projects and capture a broad range of benefits. Outsourcing part or all of infrastructure projects helps governments to:

- Achieve improved quality;
- Accommodate peak demand;
- Speed project delivery and meet deadlines;

Box 2.12. Selling out city hall, profits for big business, secrets from taxpayers¹

Indianapolis, Indiana, is a city where the mayor is freed of democratic constraints and legal oversight to pursue a policy which benefits himself and his wealthy campaign contributors. It is a case study of why this country desperately needs comprehensive campaign finance reform for local politics, as well as all other levels of government.

The mayor of Indianapolis, Stephen Goldsmith, is only a symptom of the anti-democratic, corporatist values that are eating away at our society. Corporatism, the persistent rival of representative government, sees democracy as inefficient, ineffective, corrupting, and subject Privatization, the latest manifestation of Corporatism, has failed in Indianapolis by its own standards of efficiency, cost-effectiveness, accountability and incorruptibility, has turned ordinary citizens into civic ciphers, and has enhanced the power of the wealthy clients and patrons of the mayor.

Indianapolis has been touted as a model of the free-market approach to city government and Goldsmith is hailed for his dedication to privatizing the city's assets and services. He is an adviser to Texas Governor George W. Bush and reportedly wants to be in Bush's cabinet. Goldsmith's approach differs from that of other "innovative free-market mayors" in an important way: He doesn't want to run the city like a business, he wants business to run the city and reap the gains while many of the risks and costs are borne by the public.

Contracting out the city's advanced waste water treatment facilities (AWT) is the centerpiece of Goldsmith's program. These two plants, built with federal money, had won numerous awards using high-tech ozone and cryogenic oxygen to produce far better water quality than required by law. But clean water was never the issue with Mayor Goldsmith, cheap water was his goal and a consortium calling itself the White River Environmental Partnership (WREP) promised to save the city \$65 million over a five-year contract.

This cost-saving was something that the city could have achieved easily without privatizing simply by doing what WREP did, laying off 40% of the work force and switching to a cheaper chlorine process that was strenuously opposed by environmental groups as more dangerous and ecologically destructive. Of course keeping the AWTs under public management would not have generated any campaign contributions or publicity. Since Goldsmith needed no approval from the city council, the privatization became official in March 1994. Grateful officers of WREP have contributed generously to the "Elect Steve Goldsmith Fund" and reportedly toast his name at every opportunity.

The mayor insists that, aside from massive fish kills from time to time, this privatization is a success. So far the savings haven't translated to lower taxes or sewer bills, but with the French government subsidizing one of the principals in the consortium, Lyonnaise des Eaux-Dumez of Paris, taxpayers remain hopeful.

1. (Miller, 2000)

- Gain access to expertise;
- Improve efficiency;
- Spur innovation;
- Better manage risks; and

- Cut or contain costs.’

‘The first seven benefits are often overlooked in the public debate, but research shows that they often drive actual outsourcing decisions. This study provides the first systematic overview of all the potential benefits of outsourcing infrastructure projects, with both research summaries and case studies to help public officials find solutions they can use themselves.’

The examples from the United States indicate that well-managed contracting out of services by government direct providers can produce significant benefits to customers in terms of quality improvement as well as cost reduction. However, the emphasis appears to be on the ‘well-managed’ characteristic. Contracting out does not represent an abrogation of government involvement but rather demands an enhancement of managerial responsibility.

2.10 References

Andrisani P and Hakim S, *‘Making Government Work: Lessons Learned from America's Governors and Mayors’*, Rowan and Littlefield, 2000.

Callahan, N., Water Online, www.wateronline.org accessed 1/7/00.

The Economist, *‘Too poor to be defended’*, London, April 11th, 1998.

Eggers, William D., *‘Competitive Neutrality’*, Reason Public Policy Institute, Los Angeles, March 1998.

Elias D, *‘The O&M Agreement’*, Water Industry Organization Archives, <http://waterindustry.org/frame-8.htm>, 2000.

Global Water Report, 16 October 1999, Issue 82, Financial Times Newsletters, London.

Global Water Report, 1 August 1997, Issue 28, Financial Times Newsletters, London.

Haarmeyer, D., *‘Privatizing Infrastructure: Options for Municipal Water-Supply Systems’*, Reason Foundation, October, 1992.

Hartman, Roger, *‘Contracting water and wastewater utility operations’*, Reason Foundation, Los Angeles, 1993.

Herbst D., *‘How IRS Revisions for Management Contracts Will Affect Long-term Public/Private Partnerships’*, Water Online, www.wateronline.org accessed 10/30/1997.

Hilke, John, *‘Cost Savings from Privatization’*, Reason Foundation, Los Angeles, 1993.

Miller, Jack D., *‘Selling Our City Hall’*, www.waterindustry.org archives, 2000.

Moore, Adrian T. *‘From Design to Discharge: New Partnerships in Water and Sewer System’*, Reason Foundation, Los Angeles, undated.

Moore, Adrian T., Segal, Geoffrey F., McCormally, John, *'Infrastructure Outsourcing: Leveraging Concrete, Steel, and Asphalt with Public-Private Partnerships'*, Policy Study No. 272, Reason Foundation, September 2000.

NAWC, *'NAWC Privatization Study: A Survey of the Use of Public-Private Partnerships in the Drinking Water Utility Sector'*, National Association of Water Companies, Washington, 1999.

Osborne, David and Gaebler, Ted, *'Reinventing Government: How the Entrepreneurial Spirit is transforming the public sector'*, Plume Penguin, New York, 1992.

Owen, D., *'Masons Water Yearbook 2000-2001'*, Masons, London, 2000.

Rehfuss J, *'Designing an Effective Bidding and Monitoring System to Minimize Problems in Competitive Contracting'*, Reason Foundation, California, 1993

Sansom, K.R., Franceys, R., Njiru, C. and Morales-Reyes, J., *Contracting Out Water and Sanitation Services - Volume 1, Guidance Notes for Service and Management Contracts in Developing Countries*, WEDC, Loughborough University, Loughborough, 2003.

Westerhoff G P, *'National Report USA'*, in International Report, *'Public/private partnerships of water supply throughout the world'*, Water Supply, Vol 16, Nos 1/2, Madrid, pp49-87, 1998.

Witthford, David K., *'Outsourcing of State Highway Facilities and Services'*, National Cooperative Highway Research Program, National Academy Press, Washington DC, 1997.

World Bank, *'United States Study Tour: Avoiding Privatization'*, World Bank Water Helpdesk, unpublished, 1999.

Appendix 1

A.1 Table A.1 to Table A.9 - World-wide contract analysis

The analyses of service and management contracts used for water and sanitation services in Latin America, Africa and India has been undertaken by Kevin Sansom, Javier Morales-Reyes and Cyrus Njiru, and is set out in Table A.1 to Table A.9. Individual contracts have been analyzed against the 22 guiding principles for contract development described in section 1.7.

Table A.1. Analysis of service and management contracts in Latin America: Category A - Guiding principles Category A: preparation/process

Contracts Analysed	Attractive to capable operators	Suitable specification and outputs	Clear tendering procedure	Means of assessment of tenderer's capability is specified	Suitable identification and allocation of risks	Comprehensive conditions of contract	Comprehensible language	Addressing key problems	Political acceptance	Percentage of guiding principles agreed with (not including Xs)
Chile service contracts										
Santiago, EMOS: Reading meters. Chile (1999)	1 ¹	1	1	1	1	0	1	1	1	89%
Santiago, EMOS: Meters supply & maintenance. Chile (1999)	1	1	1	1	0	1	1	0	1	78%
Santiago, EMOS: Network maintenance. Chile (1999)	1	1	1	1	0	0	1	1	1	78%
Rancagua, ESSEL: Service cut & replace. Chile (1999)	1	1	1	1	1	1	1	0	1	89%
Rancagua, ESSEL: Meters/personnel supply. Chile (1999)	1	1	1	X	0	1	1	0	1	75%
Rancagua, ESSEL: Billing/others small contracts. Chile (1999)	0	1	0	0	0	1	0	X	1	38%
Percentage of contracts complying - sub total Chile	83%	100%	83%	80%	33%	67%	83%	40%	100%	
Mexico contracts										
Aguascalientes, CAASA Management contract. Mexico (1989 to 1993)	0	0	0	X	X	X	1	0	1	33%
Mexico City. 4 zone - Service/management contract. Mexico (1993 -)	1	1	1	1	1	1	1	0	0	78%
Puebla. ICA-CIMA. Commercial system management contract. Mexico (1997 -)	1	1	X	1	X	1	1	1	0	86%
Navojua. Mex.GA. Management contract. Mexico (1997)	0	0	X	0	0	1	1	1	1	50%
PERCENTAGE OF CONTRACTS COMPLYING - SUB TOTAL MEXICO	50%	50%	50%	67%	50%	100%	100%	50%	50%	
Percentage of all contracts complying with each principle (not including X's)	70%	80%	75%	75%	37%	78%	90%	44%	80%	

1. '1' indicates that the guiding principle is substantially complied with; '0' indicates that the guiding principle is not complied with in a substantial manner; 'X' indicates that the researcher has not been able to assess compliance.

Table A.2. Analysis of service and management contracts in Latin America: Category B - Guiding principles Category B: payment aspects

Contracts Analysed	Suitable incentive clauses	Suitable penalty clauses	Flexible means of payment	Clearly specified payment process	Open book accounting	Guarantees for client	Guarantees for the contractor	Percentage of guiding principles agreed with (not including Xs)
Chile service contracts								
Santiago, EMOS: Reading meters. Chile (1999)	1 ¹	0	1	1	1	1	1	86%
Santiago, EMOS: Meters supply & maintenance. Chile (1999)	0	1	1	1	1	1	1	86%
Santiago, EMOS: Network maintenance. Chile (1999)	0	1	0	1	X	1	X	60%
Rancagua, ESSEL: Service cut & replace. Chile (1999)	1	1	1	1	1	1	1	100%
Rancagua, ESSEL: Meters/personnel supply. Chile (1999)	0	1	1	1	1	1	X	83%
Rancagua, ESSEL: Billing/others small contracts. Chile (1999)	0	1	0	1	0	1	0	43%
Percentage of contracts complying - sub total Chile	33%	83%	67%	100%	80%	100%	75%	
Mexico contracts								
Aguascalientes, CAASA Management contract. Mexico (1989 to 1993)	0	0	1	X	0	X	0	40%
Mexico City. 4 zone - Service/management contract. Mexico (1993 -)	1	1	0	1	1	1	0	71%
Puebla. ICA-CIMA. Commercial system management contract. Mexico (1997 -)	1	1	X	1	0	1	0	67%
Navojua. Mex.GA. Management contract. Mexico (1997)	0	1	X	1	0	1	0	50%
PERCENTAGE OF CONTRACTS COMPLYING - SUB TOTAL MEXICO	50%	75%	50%	100%	25%	100%	25%	
Percentage of all contracts complying with each principle (not including X's)	40%	80%	63%	100%	55%	100%	50%	

1. '1' indicates that the guiding principle is substantially complied with; '0' indicates that the guiding principle is not complied with in a substantial manner; 'X' indicates that the researcher has not been able to assess compliance.

Table A.3. Analysis of service and management contracts in Latin America: Category C - Guiding principles Category C: partnership aspects

Contracts Analysed	Means of financing contract clearly stated	Clear definition of roles and duties	Win-win situation for both parties	Operator has adequate autonomy over their personnel	Impartial dispute adjudication	Provision for monitoring and evaluation	Percentage of guiding principles agreed with (not including Xs)
Chile service contracts							
Santiago, EMOS: Reading meters. Chile (1999)	1 ¹	1	0	0	0	1	50%
Santiago, EMOS: Meters supply & maintenance. Chile (1999)	1	1	1	1	0	1	83%
Santiago, EMOS: Network maintenance. Chile (1999)	1	1	X	0	X	1	75%
Rancagua, ESSEL: Service cut & replace. Chile (1999)	1	1	1	1	0	X	80%
Rancagua, ESSEL: Meters/personnel supply. Chile (1999)	1	1	1	0	0	1	67%
Rancagua, ESSEL: Billing/others small contracts. Chile (1999)	1	1	X	1	0	0	60%
Percentage of contracts complying - sub total Chile	100%	100%	75%	50%	0%	80%	
Mexico contracts							
Aguascalientes, CAASA Management contract. Mexico (1989 to 1993)	0	X	1	1	0	1	60%
Mexico City. 4 zone - Service/management contract. Mexico (1993 -)	1	0	1	1	1	1	83%
Puebla. ICA-CIMA. Commercial system management contract. Mexico (1997 -)	0	0	0	1	1	1	50%
Navojua. Mex.GA. Management contract. Mexico (1997)	1	0	X	1	0	1	60%
PERCENTAGE OF CONTRACTS COMPLYING - SUB TOTAL MEXICO	50%	0%	66%	100%	50%	100%	
Percentage of all contracts complying with each principle (not including X's)	80%	66%	71%	70%	22%	89%	

1. '1' indicates that the guiding principle is substantially complied with; '0' indicates that the guiding principle is not complied with in a substantial manner; 'X' indicates that the researcher has not been able to assess compliance.

Table A.4. Analysis of service and management contracts in India: Category A - Guiding principles Category A: preparation/process

Contracts Analysed	Attractive to capable operators	Suitable specification and outputs	Clear tendering procedure	Means of assessment of tenderer's capability is specified	Suitable identification and allocation of risks	Comprehensive conditions of contract	Comprehensible language	Addressing key problems	Political acceptance	Percentage of guiding principles agreed with (not including Xs)
Indian service contracts										
Bisalpur O&M of treatment plant. India (1997)	1 ¹	0	1	1	0	1	1	X	1	75%
Bisalpur O&M of pump/hse & elec/mech works. India	1	0	1	1	0	1	1	X	1	75%
Bisalpur O&M of pipelines. India (1997)	1	0	1	1	1	1	1	X	1	87%
Nasil sewage treatment plant. India (1996)	1	0	X	0	0	0	1	0	0	25%
Ternghar water treatment plant. India (1997)	0	0	1	0	0	1	1	0	1	44%
Chennai metro water O&M, sewage pumping stations, India (1992 to 1996) yearly contract	0	0	1	0	0	1	1	0	1	44%
India management contracts										
Safara district, O&M, regional rural piped scheme, India (1994 to 1997)	0	0	1	0	0	0	1	0	1	33%
Maharashtra standard format for management contracts for O&M of regional rural piped scheme, India (1998)	1	1	1	1	0	1	1	0	X	75%
Chennai metro, O&M, water treatment plant, India (1998)	1	1	1	1	0	1	1	1	1	90%
Pune water and sewerage, O&M, India (1998) (not used)	1	1	1	1	1	1	1	0	0	78%
Pune water and sewerage, billing and collection, India (1998) (not used)	1	0	1	1	1	1	1	1	0	78%
Percentage of all contracts complying with each principle (not including X's)	70%	27%	100%	73%	27%	73%	100%	25%	70%	

1. '1' indicates that the guiding principle is substantially complied with; '0' indicates that the guiding principle is not complied with in a substantial manner; 'X' indicates that the researcher has not been able to assess compliance.

Table A.5. Analysis of service and management contracts in India: Category B - Guiding principles Category B: payment aspects

Contracts analysed	Suitable incentive clauses	Suitable penalty clauses	Flexible means of payment	Clearly specified payment process	Open book accounting	Guarantees for client	Guarantees for the contractor	Percentage of guiding principles agreed with (not including Xs)
Indian service contracts								
Bisalpur O&M of treatment plant. India (1997)	0 ¹	0	1	0	0	1	0	29%
Bisalpur O&M of pump/hse & elec/mech works. India	0	0	1	0	0	1	0	29%
Bisalpur O&M of pipelines. India (1997)	0	1	1	0	0	1	0	43%
Nasil sewage treatment plant. India (1996)	0	0	1	0	0	1	0	29%
Temghar water treatment plant. India (1997)	0	0	1	0	0	1	0	29%
Chennai metro water O&M, sewage pumping stations, India (1992 to 1996) yearly contract	0	0	0	1	0	1	0	29%
India management contracts								
Satara district, O&M, regional rural piped scheme, India (1994 to 1997)	0	0	0	1	0	1	0	29%
Maharashtra standard format for management contracts for O&M of regional rural piped scheme, India (1998)	0	1	1	1	0	1	1	71%
Chennai metro, O&M, water treatment plant, India (1998)	0	1	0	1	0	1	0	43%
Pune water and sewerage, O&M, India (1998) (not used)	1	1	1	1	1	1	1	100%
Pune water and sewerage, billing and collection, India (1998) (not used)	1	1	1	1	1	1	1	100%
Percentage of all contracts complying with each principle (not including X's)	50%	75%	50%	100%	25%	100%	25%	

1. '1' indicates that the guiding principle is substantially complied with; '0' indicates that the guiding principle is not complied with in a substantial manner; 'X' indicates that the researcher has not been able to assess compliance.

Table A.6. Analysis of service and management contracts in India: Category C - Guiding principles Category C: partnership aspects

Contracts analysed	Means of financing contract clearly stated	Clear definition of roles and duties	Win-win situation for both parties	Operator has adequate autonomy over their personnel	Impartial dispute adjudication	Provision for monitoring and evaluation	Percentage of guiding principles agreed with (not including Xs)
Indian service contracts							
Bisalpur O&M of treatment plant. India (1997)	X ¹	0	1	1	0	1	60%
Bisalpur O&M of pump/hse & elec/mech works. India	X	0	1	1	0	1	60%
Bisalpur O&M of pipelines. India (1997)	X	0	1	1	0	1	60%
Nasil sewage treatment plant. India (1996)	X	1	0	0	0	1	40%
Temghar water treatment plant. India (1997)	X	1	0	0	0	1	40%
Chennai metro water O&M, sewage pumping stations, India (1992 to 1996) yearly contract	1	1	0	0	0	1	50%
India management contracts							
Safara district, O&M, regional rural piped scheme, India (1994 to 1997)	X	0	0	0	0	1	20%
Maharashtra standard format for management contracts for O&M of regional rural piped scheme, India (1998)	0	1	1	1	1	1	83%
Chennai metro, O&M, water treatment plant, India (1998)	1	1	1	1	0	1	83%
Pune water and sewerage, O&M, India (1998) (not used)	1	1	0	1	X	1	80%
Pune water and sewerage, billing and collection, India (1998) (not used)	1	1	0	1	X	1	80%
Percentage of all contracts complying with each principle (not including X's)	80%	64%	45%	64%	11%	91%	

1. '1' indicates that the guiding principle is substantially complied with; '0' indicates that the guiding principle is not complied with in a substantial manner; 'X' indicates that the researcher has not been able to assess compliance.

Table A.7. Analysis of service and management contracts in Africa: Category A - Guiding principles Category A: preparation/process

Contracts Analysed	Attractive to capable operators	Suitable specification and outputs	Clear tendering procedure	Means of assessment of tenderer's capability is specified	Suitable identification and allocation of risks	Comprehensive conditions of contract	Comprehensible language	Addressing key problems	Political acceptance	Percentage of guiding principles agreed with (not including Xs)
Service contracts										
Malindi water project, billing and collection, Kenya (1995) (service contract)	1 ¹	0	0	1	0	1	1	0	1	56%
Durban metro water, meter reading, S. Africa (1999)	1	1	X	X	1	1	1	1	1	100%
Management contracts										
Malindi water, O&M, billing and collection, Kenya (1997)	1	0	0	X	1	1	1	1	1	75%
Tonga water and wastewater management, S.Africa (1992 to 2006)	1	0	X	X	0	1	1	X	1	67%
Kampala revenue improvement project, Uganda (1997)	1	0	0	X	0	1	1	0	1	50%
Percentage of contracts in Africa agreeing with each principle (not including Xs)	100%	20%	0%	100%	40%	100%	100%	50%	100%	
Sample european contract										
Bulgaria water and wastewater (93)	1	1	X	X	1	1	1	1	X	100%

1. '1' indicates that the guiding principle is substantially complied with; '0' indicates that the guiding principle is not complied with in a substantial manner; 'X' indicates that the researcher has not been able to assess compliance.

Table A.8. Analysis of service and management contracts in Africa: Category B - Guiding principles Category B: payment aspects

Contracts analysed	Suitable incentive clauses	Suitable penalty clauses	Flexible means of payment	Clearly specified payment process	Open book accounting	Guarantees for client	Guarantees for the contractor	Percentage of guiding principles agreed with (not including Xs)
Service contracts								
Malindi water project, billing and collection, Kenya (1995) (service contract)	0 ¹	0	0	1	0	1	1	43%
Durban metro water, meter reading, S. Africa (1999)	1	1	1	1	0	1	X	83%
Management contracts								
Malindi water, O&M, billing and collection, Kenya (1997)	0	0	1	1	1	1	1	71%
Tonga water and wastewater management, S.Africa (1992 to 2006)	0	0	1	1	0	1	1	57%
Kampala revenue improvement project, Uganda (1997)	0	0	1	1	1	1	1	71%
Percentage of contracts in Africa agreeing with each principle (not including Xs)	20%	20%	80%	100%	40%	100%	100%	
Sample european contract								
Bulgaria water and wastewater (93)	1	1	1	1	1	1	1	

1. '1' indicates that the guiding principle is substantially complied with; '0' indicates that the guiding principle is not complied with in a substantial manner; 'X' indicates that the researcher has not been able to assess compliance.

Table A.9. Analysis of service and management contracts in Africa: Category C - Guiding principles Category C: partnership aspects

Contracts analysed	Means of financing contract clearly stated	Clear definition of roles and duties	Win-win situation for both parties	Operator has adequate autonomy over their personnel	Impartial dispute adjudication	Provision for monitoring and evaluation	Percentage of guiding principles agreed with (not including Xs)
Service contracts							
Malindi water project, billing and collection, Kenya (1995) (service contract)	1 ¹	0	0	0	1	0	33%
Durban metro water, meter reading, S. Africa (1999)	X	1	1	1	0	1	80%
Management contracts							
Malindi water, O&M, billing and collection, Kenya (1997)	1	0	0	0	1	0	33%
Tonga water and wastewater management, S.Africa (1992 to 2006)	1	0	1	1	1	1	83%
Kampala revenue improvement project, Uganda (1997)	1	0	0	0	1	0	33%
Percentage of contracts in Africa agreeing with each principle (not including Xs)	100%	20%	40%	40%	80%	40%	
Sample european contract							
Bulgaria water and wastewater (93)	1	1	1	1	1	1	100%

1. '1' indicates that the guiding principle is substantially complied with; '0' indicates that the guiding principle is not complied with in a substantial manner; 'X' indicates that the researcher has not been able to assess compliance.

Glossary

AMSA	Agua de Mexico S.A.
BOD	Biological Oxygen Demand
BOOT	Build, Own, Operate, Transfer
BOT	Build, Operate and Transfer
BPKF	Badan Pengawas Keuangan dan Pembangunan (Development and Financial Control Board, Indonesia)
CAASA	Water Concessionaire of Aguascalientes (Mexico)
CADF	Comision del Agua del Distrito Federal (Federal District Water Commission, Mexico)
CAN	National Water Commission, Mexico
CAPAMA	City of Aguascalientes Decentralized Water Utility (Mexico)
CBO	Community Based Organization
CCMSA	Compania Chilena de Medidores, S.A. (A water meter manufacturer, Chile)
CE	Collection Efficiency
CEO	Chief Executive Officer
CIDCO	City and Industrial Development Corporation (New Bombay, India)
CIDCO	City and Industrial Development Corporation (India)
CMWSSB	Chennai Metro Water Supply and Sewerage Board
CNA	National Water Commission (Mexico)
CP	Corporate Planning
DBFO	Design, Build, Finance and Operate
DDF	Departamento del Distrito Federal (Federal District Department, Mexico)
Delegaciones	Administrative area within Federal District (Mexico)
DF	Distrito Federal (Federal District, Mexico)
DFID	Department For International Development (UK)
DGCOH	Direccion General de Construccion y Operacion Hidraulica (General Directorate of Construction and Water Operation, Mexico)
DMA	District Metering Areas
DMAs	District Management Areas
DRM	Daftar Rekanan Mampu (Indonesia)
DRR	Days Receivable Ratio
EMOS	Empresa Metropolitana de Obras Sanitarias S.A. (Chile)
ENERSIS	Energy company (Chile)
ESSEL	Empresa de Servicios Sanitarios el Libertador S.A. (Chile)
ESVAL	Empresa de Obras Sanitarias de Valparaiso (Chile)
GABA II	Big water treatment plant (Kampala, Uganda)
GOI	Government of Indonesia
GoM	Government of Maharashtra
GORTT	Government of the Republic of Trinidad and Tobago
HIC	Habitat International Coalition

HMWSSB	Hyderabad Metropolitan Water Supply and Sewerage Board (India)
ICA	Ingenieros Civiles Asociados S.A. (Mexico)
ICSA	Ingenieros Consultores Sociedad Anonima (Chile)
IHE	International Institute for Infrastructural, Hydraulic and Environmental Engineering (Delft, Netherlands)
IOA	Interim Operating Arrangement
KKN	Kolusi Korupsi dan Nepotisme (Collusion, Corruption and Nepotism - Indonesia)
KRIP	Kampala Revenue Improvement Programme (Uganda)
KWSSA	Kampala Water Supply and Service Area
LAC	Latin American Countries
LICs	Low Income Communities
LTA	Long Term Arrangement
MAIPU	Water company, Chile
MAMC	Metropolitan Area of Mexico City
MC	Municipal Corporation
MD	Managing Director
MGD	Million Grams per Day
MIS	Management Information Service
MJP	Maharashtra Jeevan Pradhikaran (State Water Supply Agency, India)
MLD	Million Litres (of water) per Day
MLIC	Middle and Low Income Countries
NGO	Non-Governmental Organization
NUGFW	National Union of Government and Federal Workers (Trinidad and Tobago)
NWCPC	National Water Conservation and Pipeline Corporation (Kenya)
NWSC	National Water and Sewerage Corporation (Uganda)
O&M	Operation and Maintenance
OMSA	Operacion y Mantenimiento de Sistemas de Agua S.A. (Mexico)
PDAM	Indonesian public water company
PHE	Public Health Engineering Ministry (India)
PHED	Public Health Engineering Department (State Government, India)
PPIBOOT	Public Private Investment Build, Own, Operate, Transfer
PPP	Public/Private Partnership
PRASA	Puerto Rico Aqueduct and Sewers Authority
PRD	Partido de la Revolucion Democratica (Mexico)
PRI	Partido Revolucionario Institucional (Mexico)
PPP	Public Private Partnerships
RCUES	Regional Centre for Urban and Environmental Studies (India)
ROT	Rehabilitation, Operate, Transfer
SELEC	Electricity company, Chile
SOAPAP	Sistema Operador de los Servicios de Agua Potable y Alcantarillado del Municipio de Puebla (Operating System for Drinking Water and Sewage Services of the Puebla Municipality, Mexico)
SOS	Secretaria de Obras y Servicios (Works and Services Secretariat, Mexico)
SP	Standpost
SSIP	Small-Scale Independent Providers
STP	Sewerage Treatment Plant
STWI	Severn Trent Water International
TQM	Total Quality Management
TTWS	Trinidad and Tobago Water Services
UF	Unidades de Fomento (Monetary index which is updated daily with reference to inflation index, Chile)
UFW	Unaccounted For Water
UNDP	United Nations Development Programme

PART 2: CONTRACTING OUT CASE STUDIES

UWSS	Urban Water Supply and Sanitation
VWC	Village Water Committees
W&S	Water and Sanitation
WASA	Water and Sewerage Authority (Trinidad and Tobago)
WATSAN	Water and Sanitation
WEDC	Water, Engineering and Development Centre, Loughborough University
WMU	Water Management Unit (Government of Maharashtra, India)
WTP	Water Treatment Plant
ZP	Zilla Parishad (District Council, India)

