Private Sector Participation in Water Provision: A Reform Policy to Meet Rapid Growth and Development, with Reference to Arriyadh City, Saudi Arabia

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I dedicate this work to those ones in my life who have been a great source of motivation throughout this entire venture. They gave me strength to move forward to something better.

Abstract

Constant increase in water demand, scarcity of resources, insufficient public finance, and the country's geographical position in one of the most arid regions of the world have combined to create considerable problems in the provision of water to Saudi Arabia. This is in addition to the enormous and rapid increase in population growth, which is the main driver of demand and which was accompanied in the past by an increase in urbanisation, placing the country among the most highly urbanised countries. These conditions have instigated new patterns of demand that undermine the principle of sustainability. The high per capita consumption of water coupled with the low tariff levied by the government all represents a challenge for efficient management of water services around the country. As water provision in Saudi Arabia relies greatly upon government financing, any reduction of spending on the sector by the government is likely to mean shortage of supply and under-provision of services.

The objective of this study is to increase the understanding of how the initial course of action might be explored, when seeking reform in order to promote private sector investment in the process of water services delivery. This entails potential, practicable reforms in the operation of the urban water system so as to put forward a model for such participation by the private sector, showing alternative long-term policies and institutional frameworks for the water industry and drawing key inferences concerning a new structure that will most benefit the country.

Saudi Arabia is the case study, and its capital city Arriyadh is used as an example to show the impact of rapid growth upon water resources and services, and the associated implications. Basically, the case study is an intensive strategy used to access detailed knowledge in certain areas of science. To achieve the aims and objectives of this research, and to address its issues and questions a combination of primary and secondary procedures were employed to obtain the required knowledge, collection, analysis and interpretation of data. These include a literature survey, analysis of relevant documents, and focused interviews, as the objective was related to existing circumstances with a view to proposing new policies.

This study finds that in the light of existing conditions, water demand will continue to increase due to projected population growth. This must mean the growing importance of seawater desalination in the future. Meeting demand with desalinated water entails new and significant expansion for the industry, and this will require vast investments which the government might not be able to provide. Given that, private sector involvement appears to offer a viable option for developing and running large-scale projects for water production. This study also indicates the importance of synchronised fundamental changes, with such participation including water tariff restructuring and effective control of network leakage, among others.

Not surprisingly such changes in the water sector are both possible and expected, given the trend for this and other governments to increase the private sector's contribution to economic activities. The study offers a range of guiding principles that should be considered in line with the prospective changes in the country's water services. Finally, recommendations are made to support policy-makers in reaching appropriate decisions with respect to this vital resource, together with the intention of achieving greater sustainability in water development and management programmes.

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ADA	Arriyadh Development Authority
ADB	Asian Development Bank
AMANA	Arriyadh Municipality
ARWSA	Arriyadh Region Water and Sewage Authority
BOO	Build-Operate-Own
BOOT	Build-Operate-Own-Transfer
BST	Bulk Supply Tariffs
CDS	Central Department of Statistics
CITC	Communications and Information Technology Commission
CMA	Capital Market Authority
DWASA	Dhaka Water and Sanitation Authority
ECRA	Electricity and Co-generation Regulatory Authority
FDI	Foreign Direct Investment
GAO	General Accounting Office, USA
GCC	Gulf Cooperation Council states
GDP	Gross Domestic Product
GIS	Geographical Information System
HCDA	High Commission for the Development of Arriyadh
HPT	High Point Terminal
IADB	Inter-American Development Bank
IAHS	International Association of Hydrological Sciences
ICWE	International Conference on Water and the Environment
IMF	International Monetary Fund
IPA	Institute of Public Administration
IPO	Initial Public Offering
IWPP	Independent Water and Power Project
MCAR	Ministerial Committee on Administrative Reforms
MEPA	Meteorology and Environmental Protection Authority
MOEP	Ministry of Economic and Planning
MOMRA	Ministry of Municipal and Rural Affairs
MOWE	Ministry of Water and Electricity

MWSS	Manila's Metropolitan Waterworks and Sewerage System
NCCI	The Company for Cooperative Insurance
NSS	National Spatial Strategy
Ofwat	Office of Water, UK
OPEC	Organisation of the Petroleum Exporting Countries
PBT	Progressive Block Tariff
PMDS	Preferred Metropolitan Development Strategy
PPP	Public Private Partnership
PSP	Private Sector Participation
PWPA	Power and Water Purchase Agreement
RFP	Request For Proposal
RFQ	Request For Qualification
SABIC	Saudi Basic Industries Corporation
SADAFCO	Saudia Dairy and Foodstuff Company
SAGIA	Saudi Arabian General Investment Authority
SAMA	Saudi Arabian Monetary Agency
SASO	Saudi Arabian Standards Organisation
SEC	Supreme Economic Council
SECO	Saudi Electricity Company
SIDF	Saudi Industrial Development Fund
SR	Saudi Riyals
STC	Saudi Telecom Company
SWCC	Saline Water Conversion Corporation
Tadawul	The transactions system of the Saudi Stock Exchange
UFW	Unaccounted-For Water
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
USD	United States Dollar
WTO	World Trade Organisation

1. Introduction

1.1 Background

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1.1 Background

Water has increasingly become the focus of the world's attention since the International Conference on Water and the Environment (ICWE) in Dublin, January 1992. ICWE emphasised in its statement that the lives of millions of people depend upon urgent action in the form of new approaches to assessing, developing and managing freshwater resources more efficiently. According to the United Nations press release in 2002, almost 1.2 billion people are without access to safe drinking water and 2.4 billion people lack proper sanitation (UN, 2002) (also in: Dolatyar and Gary, 2000; Holland, 2005). Subsequently, in June 1992 a United Nations Conference on Environment and Development (UNCED) was held in Rio de Janeiro. The governments of the world were invited to consider the ICWE recommendations as a framework for programmes of action, for water and sustainable development. Chapter 18 of UNCED's Agenda 21 formulated a comprehensive plan devoted to water issues, aiming to ensure that adequate, good quality water supplies are maintained for all people (Dolatyar and Gary, 2000). At the 2002 World Summit on Sustainable Development in Johannesburg, further emphasis was placed on global water issues. Due to the critical state of water resources worldwide the United Nations launched a range of global events and activities, pronouncing 2003 the International Year of Freshwater (UN, 2002).

Among the principles of the ICWE Statement was to give water its economic value in all its competing uses, and that it should be recognised as an economic good. Due to the importance of water for life, its development should be based on a participatory approach through which all the stakeholders will be involved (see also: Holland, 2005). In fact this marked a breakthrough for market solutions to water sector services.

As one of the most precious and vital resources, water is endangered by the continuous increase in population growth leading to increased water demand for a wide range of human activities, by desertification, and climate change. These effects are of outstanding significance in the arid regions of the world. It is therefore crucially important that water, especially in arid regions, should be used and managed through a highly sustainable system that will involve dedicated effort at both local and national levels.

1.2 The challenge for the future

The importance of infrastructure elements in development in general, and in urban and economic developments in particular, can be attributed to the vital support infrastructure services provide for sustainable and integrated development.

Massive global population growth, rapid changes in living standards and increasing rates of urbanisation are all factors that are intensifying the pressure on natural water resources because of the unprecedented and still escalating demand. This has left many governments incapable of satisfying these demands, for different reasons: for instance the reduction in the necessary funding, especially in developing countries, has complicated the objective of supporting sustainable human settlements and also put more constraints on the provision of appropriate development. However, the policy of continuing the pursuit of meeting demands is no longer considered sustainable. Sustainability should be involved in many adjustments dealing with methods of resource utilisation, the flow of investment, and the adoption of technological development and institutional change. Thus seeking new and sustainable funding resources, for instance, has become a necessity for policy-makers in their efforts to serve future generations.

1.2.1 Urbanisation, the other side of the problem

Provision of an adequate water supply for its people must be at the forefront among the priorities of any government. Certain obstacles may challenge this objective, such as the lack of sufficient water and the necessary financial resources. Developments in the third world have not included the adequate provision of services, especially in countries which have had to face extraordinary population and economic growth. The rapid rate of urbanisation (population growth and rural-to-urban migration) in developing countries, coupled with governments' failure to sustain adequate provision of infrastructure services, have led to further decline in existing services and under-provision of new basic ones. Such conditions would certainly create many health issues for people, with environmental deterioration and consequently a decline in the quality of life (Sagane, 2000).

One of the most significant economic and social challenges facing the governments of many developing nations, now and in the near future, is to supply their residents with enough safe, reliable and reasonably priced drinking water. The overarching policies to tackle this challenge focus essentially on seeking new sources of finance to meet these objectives, and hence underpinning the organisations that deal directly with water supply.

1.2.2 Considering water in this perspective

Rapid growth and urbanisation in a number of countries around the world has effectively increased the demand for water, while supplies have not risen to meet their needs. Developing countries are the regions most likely to undergo further rapid urbanisation in the coming decades. It will require a great effort to maintain services at an adequate level, and to carry out the necessary maintenance for existing provisions. In truth this will place

a further load on governments' spending, and their ability to achieve the goals of sustainable development. Failure to do so could lead to chronic under-investment, causing degraded systems, increase in water loss, etc.

Among the reasons Kinnersley (1994) mentioned among the causes of global concern about water is that "*the capital spending required to supply water for most kinds of usage is very large and has to be provided up front*" (1994: 3). Nickson (1997) suggests three underlying reasons for the imbalance between supply and demand. These are: (1) the under-pricing of water, compared with its cost; (2) water being a public commodity, which has made it difficult to charge consumers an economic price, and (3) the fact that the way water is used produces some environmental externalities which have not been accounted for in water charges.

Under-pricing their services does not help water organisations to become self-financing, to cope with investments that will be needed in the future. Self-financing usually requires changes to the tariff system to reflect the actual costs, along with governmental subsidies targeted at users on a low income. However, in the absence of an adequate pricing policy water services will continue to be inefficient in terms of their performance.

1.2.3 Reforms and the water sector

The exigent need for huge capital investment required by the water sector, to meet growing demand and provide future services, will entail governments seeking a number of mechanisms for economic reform. This might include the options of institutional restructuring, and new policies that allow for new sources of finance (Bakker, 2003). It

may be through Private Sector Participation (PSP)[1] as well as the proper pricing of services (Bienen and Waterbury, 1989). PSP refers to the role that the private sector can play in services provision. There are different levels of PSP with service contracts, concessions, etc. Unlike the more common policies of private provision, that include contracting out and long-term concessions by which public assets technically remain with the government, the term 'privatisation' can refer to the direct sale of public assets to the private sector.[2]

Reform in the provision of water could be embraced to overcome dissatisfaction with the traditional arrangements. Reform initiatives for the water sector as a whole should be led by two main principles: (1) equity, where every consumer receives an acceptable level of improved service, and (2) sustainability, through providing a technically, legislatively practical and financially viable service (Kessler, 2002b). The reform of any public service such as water is likely to require the introduction of effective management instruments, including the separation of responsibilities for providing the services and governing them.

1.3 Regionally-based water problems in Saudi Arabia

The Arab region (of which Saudi Arabia is part) faces critical water problems in terms of quantity and quality, as well as limiting input to food security and economic development (Rached et al, 1996). They add that Arab countries, including Saudi Arabia, represent 10.3% of the world's surface area and 5% of the world's population; however, they possess only 0.4 percent of the world's recoverable water resources, and share only 2% of

[1] The private sector is usually seen as those organisations and enterprises that are owned by individuals or groups and not the government, whereas the public sector comprises government agencies and other state-owned entities.

[2] Although the terms private sector participation and privatisation are used interchangeably in this thesis, it was always the aim to refer to the private sector's involvement in water services and not to the direct sale or transfer of public assets to some private entity, which is known as divestiture.

the world's total rainfall. This problem must be acknowledged, since only 19% of the whole land surface of the Middle East receives good rainfall. Although the region is almost covered by desert and features a harsh climate, the precipitation rate varies from about 150mm per annum to as much as 2000mm annually. However, the desert zones receive less than 150mm per year of irregular rainfall, and the highest percentage of that rain falls on marginal mountain chains and some isolated inner mountains (Gischler, 1979).

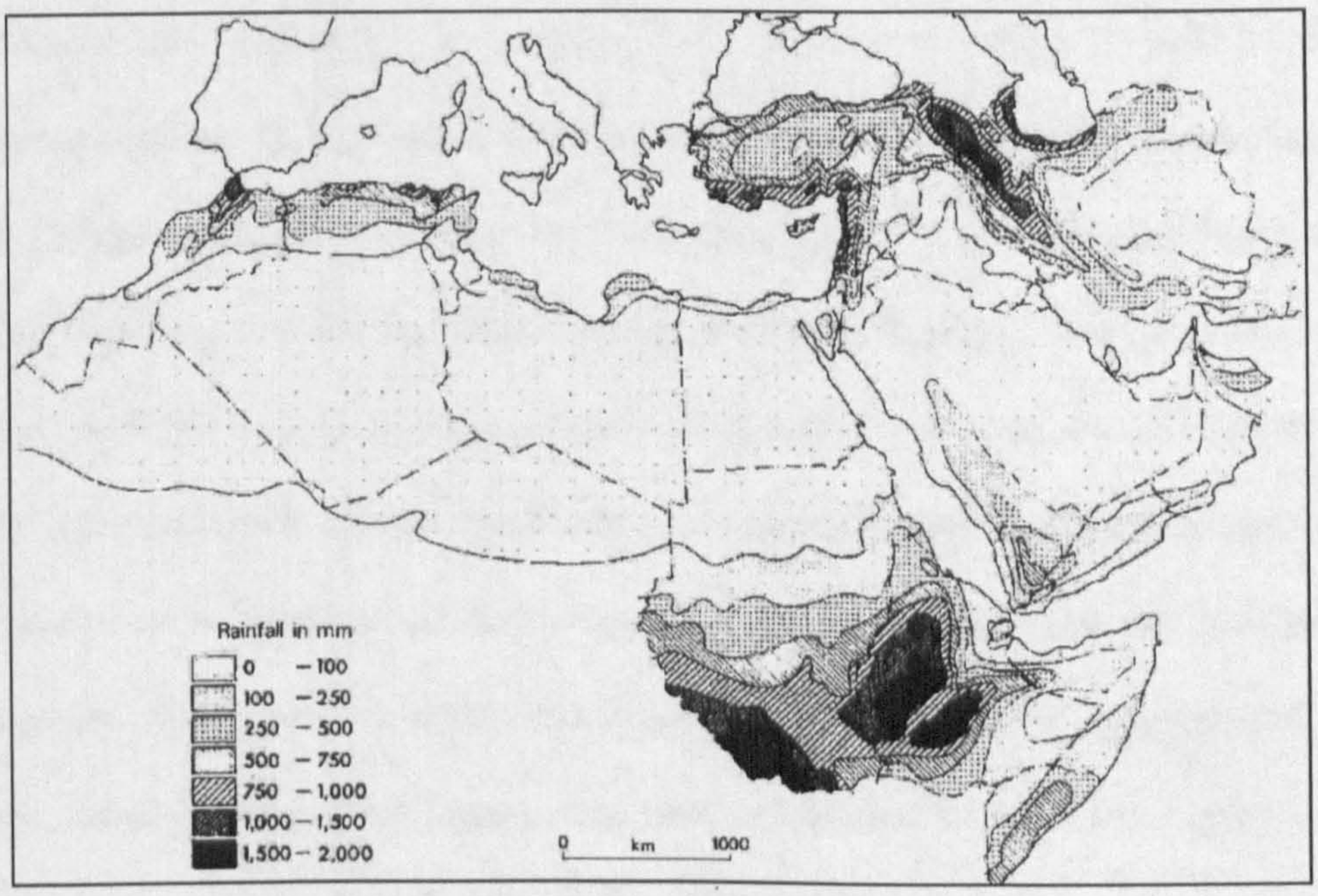

Figure 1.1: Rainfall in the Arab world

Adapted from (Gischler, 1979)

Most countries in the region already consume much more water than their annual renewable supply, and thus they are entering a critical phase (Rached et al, 1996). Fifteen Arab countries (that is including Saudi Arabia) have been identified by the World Bank as falling below the water poverty line. Water supply for all uses is expected to decline significantly due to population growth, which is among the fastest in the world with

average rates of about 2.5% annually (Brooks, 1996). The economic growth in some countries of the region will create even more demand for water. In his description, Brooks (1996) says about the Arab countries that "*some regions of the world are drier, and others have higher populations or larger economies, but no other region of the world embraces such a large area, with so many people striving so hard for economic growth on the basis of so little water*" (1996: 73).

In the past decades many Arab countries come to be increasingly reliant upon non-renewable groundwater supplies to expand their scarce water supply, in order to respond to growing demand. Groundwater provides an easy and cheap form of increasing water resources. This has led to a situation in which many parts of the Arab world have become extremely vulnerable to the imminent drying up of their aquifers. This uncertainty about the future will have a negative impact upon people and their lives. Swain (1998) claims that the most important complication in the use of groundwater is that it is renewed much more slowly, over hundreds of years, than other water sources. Thus the withdrawal of groundwater should be done with some consideration of the rate of recharge required to maintain sustainability. This means that abstraction should be either equal to, or if possible even less than the rate of recharge. This situation has supported the belief that water should be found from alternative sources at a reasonable cost (Dabbagh et al, 1994). As a consequence several Arab countries have chosen to invest in desalination, to augment the supply available for drinking. The Arab countries as a whole have nearly 56% of the world's desalination capacity. Wagnick argues that despite the anticipated changes in the distribution of desalination capacity, the Arab region will remain one of the largest users of this resource; at least for the near future (cited in: Dabbagh et al,

1994). Rogers (1994) argues that water is a resource without which life can not be sustained. He adds that there is an almost infinite supply of seawater which could be desalinated to provide potable water. Some Arab nations have found the financial resources to develop new water projects to tackle the problem of water deficiency, while others due to spending constraints have entered a new stage of serious water shortage.

1.3.1 Creating a strategic partnership

Meeting the growing demand for water will require enormous capital investment, which a government should obtain through innovative financial mechanisms that permit new sources of funds. It can be assumed that if the government lacks sufficient funding to develop its public services, then establishing a partnership with the private sector might be a viable option due to the expected financial and technical resources that will need to be invested. Should this be the case then PSP could help in cutting public expenditure on new projects, because of the reduction or negation of need for the government to borrow; moreover, government budgetary resources could be directed to fund other pressing social objectives. The introduction of PSP can improve transparency in the sector, and that will help the government to improve the effectiveness of its subsidies that target eligible consumers. On the other hand, it could justify the introduction of cost-reflective charges that give water its economic value, and will certainly lead to more efficient and equitable use together with more successful conservation of a limited and valuable resource, let alone the expected growth in returns to serve the population in other areas, which may ultimately mean meeting consumers' needs and preferences more effectively. Even in countries that enjoy a relatively good financial position for water projects, governments are considering privatisation as the latest solution for economic

development; the United Arab Emirates is just such an example. This is unlike the case of governments in many developing countries, which are under pressure from creditor and donor institutions to implement reform programmes in order to liberalise and privatise their economies that in turn must force public utilities to maintain full cost recovery.

1.3.2 Reasons for new participants' involvement

While desalination has become a principal source of water supply in many Arab countries, especially Saudi Arabia, (see: page 124 in Chapter Four) it is a capital intensive development that requires very specific and technologically advanced knowledge. This being so, governments increasingly see PSP as a way forward to develop, manage and operate desalination facilities. The motivating rationales for PSP may include access to private finance; greater managerial and technological capacity; improved operational efficiency, and less need for public subsidies. However, it can be assumed that in general the shortage of financial resources essential for the provision of public services represents the core of the issue. On the other hand, dissatisfaction with public services provision may encourage governments to live with any alternatives that are possible, including privatisation. The privatisation of basic public services includes an extensive spectrum of activities intended to promote a market-friendly environment, through legal and regulatory reforms: with changes in systems of property rights and publicly-owned assets in particular.

Therefore, when a private investor takes over these responsibilities the government remains free to work on maintaining its objectives and addressing its priorities. Those priorities might include more technology in the system, increased service coverage, improved levels of quality, etc. However, PSP needs to be structured within an effective

regulatory framework to function and oversee the overall operations, as a strong regulatory system is important to ensure that the private provider is carrying out all its contractual obligations. A regulatory framework is also needed as an inevitable structural accompaniment to ensure the compliance of the new monopolies to deliver a high standard of performance. Effective competition between providers will introduce and help ensure efficiency as well.

1.4 Area of research

Saudi Arabia is the focus of this case study. Its capital city, Arriyadh, is used as an example to show the impact of rapid growth upon water resources and services, and the concomitant implications. As will be explained in the research aims and objectives, this study will look at a possible way to overcome some of the major problems of the water sector in Saudi Arabia arising from the rapid growth of urban areas, by considering what is actually taking place at the present time. The latest initiatives, regulations and general foreign investment protocols, with a brief description of procurement practices in the prospective water development projects will also be explored.

The research will attempt to answer questions concerning how such changes can be successfully implemented from the point of view of government officials, private sector investors and those other individuals who have an interest in the operations of the sector's services and their related functions. These questions have been developed as issues for investigation under four main topics associated with water services provision, and selected to present the scope and context of the research methods. These topics are efficient management, high growth rates and the problems of urbanisation, the motives

for PSP, and some of the issues involved in regulation. The issues for investigation highlighted here are described in more detail in Chapter Six.

1.4.1 Problem statements

One of the critical problems facing the water sector in Saudi Arabia is the scarcity of adequate, suitable sources of supply, it being located in one of the most arid zones of the world. With the increase in revenue generated by oil exports since the mid 1970s, the government has made a significant effort to expand the desalination industry as a new source of water supply. An extensive programme of building desalination plants has been in place for more than three decades, as well as drilling deep wells and creating and extending distribution systems. Needless to say, water services are provided and owned by the public sector. Due to generous spending by the government over that period, the water supply has improved to meet the demand at least adequately. Saudi Arabia is currently a leader in desalination industry. At present, the country's 30 desalination plants pump just over 3 million m^3 of water daily through nearly 3,700km of pipeline, meeting almost half the country's requirement for drinking water. However, the national income has gone down since the mid 1980s as a consequence of the decline in oil prices, while the urban population has increased remarkably. Water provision in Saudi Arabia relies upon government financing through high subsidies for water abstraction, treatment, desalination, pumping and piping, and distribution. Yet the highly subsidised rate of supplied water is inconsistent with the actual costs of provision. The charges of the progressive tariff system levied for water services, which were first introduced in 1994, do not match the actual costs of these services due to the low tariff charges. Such charges do not assist in sustaining the water system.

By 2000, the water demand in Saudi Arabia from all sectors (residential, industry and agriculture) had reached about 21 billion m^3. It was also estimated that the annual increase in demand for water would be 1.3%, raising the total demand to 22.5 billion m^3 in 2004. The same estimates predicted that demand would raise the total water requirement to almost 27.7 billion m^3 in 2020. Unless new water desalination projects are implemented as the strategic option to augment water supply (for residential and industry uses), the sector will suffer shortages reaching more than four million m^3 per day by 2020 for Arriyadh city alone. This will require the government to provide additional finance for new water investment, involving vast expenditure; especially in a context of high consumption levels and inadequate water reuse programmes, and bearing in mind that the per capita consumption of water stands at just over 250 litres per day.

Saudi Arabia has been transformed in a few decades from an entirely rural realm into one of the most highly urbanised countries, with almost 85% of the population living in urban areas. Rapid population growth poses another challenge, nationally reaching 3.5% annually, and reached 8% in Arriyadh city between 1990 and 1996. This was accompanied by a significant trend towards economic diversification. Urbanisation in the country has resulted in new patterns of water supply and demand, represented in the high per capita consumption that severely undermines any notion of sustainable provision, taking into account its limited freshwater sources.

The main challenge facing Arriyadh now and in the future relates to two issues. The first is the rapid growth in population and development which have characterised the city during recent decades. Predictions by the city's development authority indicate that the city will continue to grow at the same rate, and this will be accompanied by growth in the

villages and surrounding communities in the region: adding the challenge of meeting those additional demands on public services, and water in particular. Factors that may intensify this issue are the latent high level of per capita consumption, and the problem of network leakage in an arid area with scarce water resources. The second issue is the inadequacy of potable water resources, leaving the city to rely heavily on desalination which already provides 60% of Arriyadh's water supplies.

In the past, several governmental bodies were responsible for the management of water in Saudi Arabia. However, recently there have been changes to the structure of the water sector, placing all the functions of the institutional framework of water provision under one single entity in line with a trend towards increasing private sector involvement in water services. At a time of great concern about water conditions these changes aim to consolidate the institutional framework, to regulate the industry and to maintain efficiency in the process of decision-making, proposing new policies and setting objectives. This explains the establishment of a new ministry for water, and changing the old regional water authorities into branches of it. In the light of unsustainable patterns of water production and consumption, the government has recently acknowledged that providing adequate water to meet all future needs will be an enormous challenge. It has affirmed that it will pursue innovative approaches to involve different stakeholders and investors from the private sector. This has been backed by the establishment of new bodies, to assume the functions of supervision and to promote private investment.

1.4.2 Research aims and objectives

The general question behind this study concerns the issue of how to provide initial principles and guidelines when exploring the potential for reform to promote private investment in the process of water services delivery. This is to ensure that the process considers all the related aspects, and recognises the critical issues. This involves examining the most important issues relating to PSP, and introducing new measures for delivery that will permit new roles in participation.

This means taking the utmost pains to balance the details of the Saudi Arabian context to achieve a degree of coherence in the arguments that will be developed, to discuss alternative institutional frameworks for water service provision and to draw inferences regarding the institutional features that would most benefit Arriyadh city. The efficient management of water services would maintain the desired degree of integration with rapid urban development and in addition, improved provision will mean better quality and quantity, sufficient funding, and a significant contribution to tackling the critical problems of urban water.

This research aims (1) to explore practicable reforms in the context of urban water systems, and to investigate changes that have taken place and their implications for the foreseeable future; and (2) to predict the effects of likely reforms on the whole water sector by identifying the underlying causes, if the relevant knowledge can be gained. Such reforms could introduce new approaches to water services delivery, and permit new areas of participation for parties other than the public sector in terms of provision and operation.

In order to achieve the aims of this study certain objectives were set. These included:

1. The investigation of new alternatives or practices to improve the management of water services, considering the critical issues in order to tackle the high dependency on governmental subsidies and to offer sustainable finance for water provision systems.
2. The determination of a broad spectrum of responsibilities and functions that could be carried out or assigned in accordance with a new form of provision. That is within a broad long-term policy framework to enable the optimum use of water resources, maintaining a balance between providing adequate supply and meeting the increasing demand.
3. The examination of a broad method of implementing the overarching goals related to facilitating PSP in urban services provision. These goals are clearly stated in the national development plans, and in the resolutions issued by the Supreme Economic Council.
4. Putting forward a set of recommendations that will support the decision-making process, with a view to using private investment to achieve greater sustainability in water development and management programmes.

1.5 The organisation of the research

A standard system has been followed when organising this research thesis, being arranged to flow from broad to narrow: from general topics to more detailed issues towards main conclusions. The thesis is arranged in five parts to serve the purpose of achieving the specified aims and objectives, and to proceed in accordance with its approach to the investigation. Figure 1.2 outlines the structure of the thesis. The whole

thesis consists of ten chapters; each deals with certain topics related to the area of research, starting with this introductory chapter which forms part one.

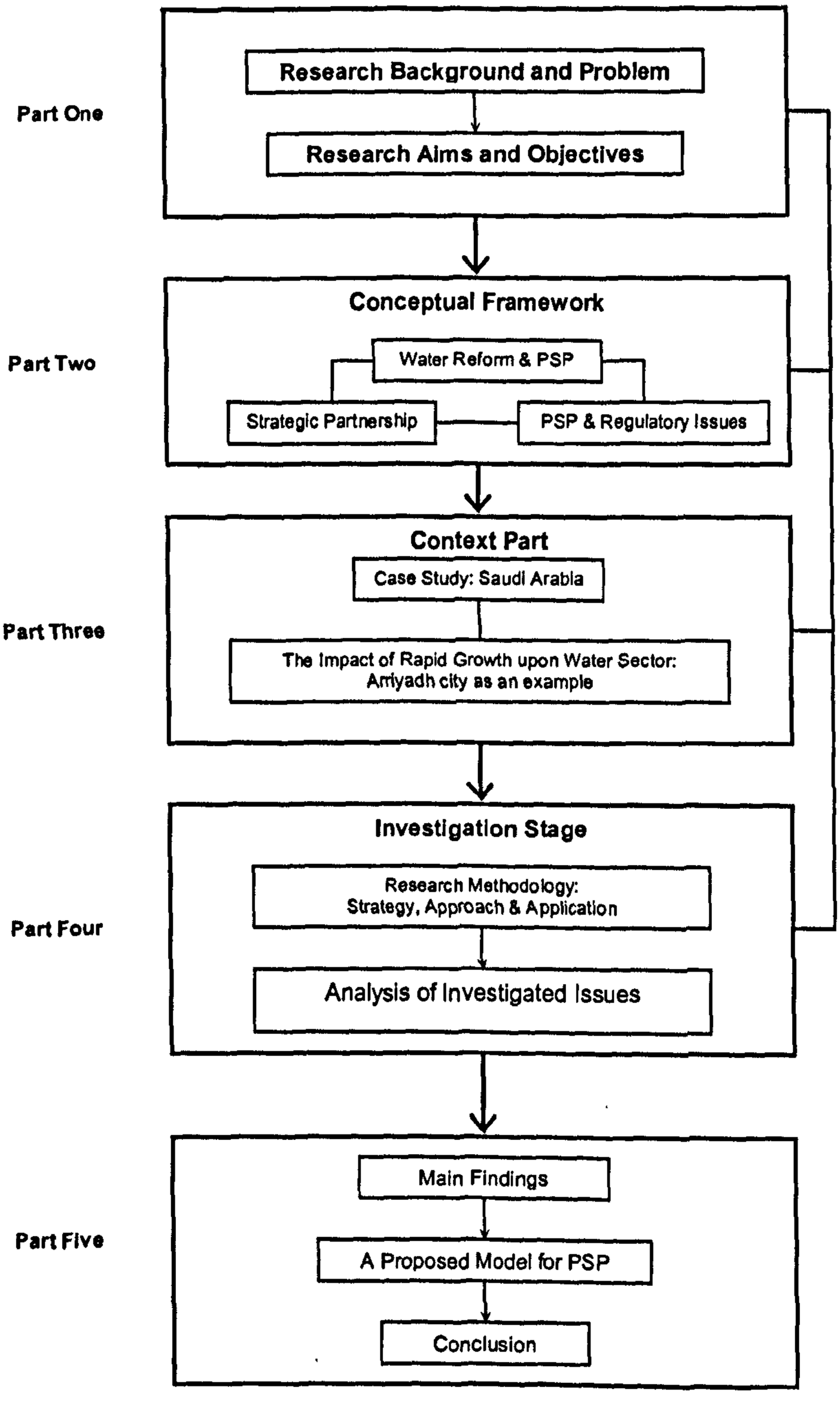

Figure 1.2: The structure of the research

Part two of the thesis, which consists of two chapters, deals with the conceptual framework where different topics associated with water are reviewed from different perspectives. In this part, Chapter Two explores issues relating to the likely investment fields and the potential involvement of the private sector in water services provision, which involves sector reform criteria among other issues. Such involvement will be discussed in terms of its motivations, patterns and extent. Chapter Three offers an analytical review of some international experience aimed at supporting the discussion of the issues being investigated, together with the lessons that can be learnt from such practices. The chapter also looks into the likely benefits to be achieved from PSP. It takes into account the requirements and issues that exist for potential partners. This section is followed by considering some of the concerns associated with PSP in water services, particularly those of governments and consumers; then it goes on to explore the question of whether water should be considered a public good or an absolute economic commodity. The chapter examines the competition issue, and discusses critically how a PSP should be arranged under an effective and yet important regulatory framework.

The third part is concerned with an account of the case study, and is made up of two chapters. Chapter Four describes the physical profile of Saudi Arabia, and gives some statistics about existing circumstances with particular focus on the water sector. It examines the effects of urbanisation and the remarkable population growth, where new patterns of demand are undermining sustainable provision. A brief account of desalination as another source of water is also provided. Other sections in this chapter attempt to explore the critical challenges and the most recent changes aimed at improvement, including the privatisation strategy introduced by the government as well

as the new investment laws. Chapter Five considers Arriyadh city as an example from Saudi Arabia to show the impact of rapid growth upon water resources and service, and the associated implications. It explores urban development controls from their beginnings in the city up to more recent policies, in addition to the overarching guidance available to the city. A review of the existing water provision in the city is included. Other sections of this chapter deal with critical issues and future challenges, from different dimensions.

Part four can be described as the investigation stage, and comprises two chapters. It demonstrates the methods and their application with reference to questions arising from the gaps in the research, after considering the previous chapters in parts one and two. In this part, Chapter Six deals with the research methods applied to gather information. It also explains the sampling approach adopted, as well as the reasons for choosing the particular techniques and the procedures for data analysis.

Chapter Seven presents an explanatory and argumentative analysis of the information gathered after the application of the research methods in the fieldwork exercise. However, the interpretative nature of this stage of research has facilitated the purpose of making comparisons and contrasts between and within the gathered data, as well as assisting confirmation or rebuttal of the raised issues.

The fifth and final part encompasses three chapters, these being the summary and main findings, a proposed model, and the conclusions. In this final part, Chapter Eight attempts to identify briefly the main issues discussed in earlier chapters and their implications for the water sector in Saudi Arabia, and Arriyadh city in particular. It takes into account both sides of the highlighted issues, while considering the results obtained from the research. Chapter Nine describes first the way to establish a strategic partnership with the

private sector; a partnership intended to develop new water projects in order to increase water supply. Also, the chapter gives a brief account of a suggested model that might be suitable for implementation in the Saudi context to overcome the existing critical issue of water provision. It deals with the potential institutional changes that would be introduced as part of the proposed model. It then examines the reasons that make certain arrangements a likely option for the Saudi context. The final chapter (Conclusions) summarises the research and sets out the main concluding remarks. It also makes a number of recommendations based upon the conclusions produced. Finally, it offers some points for further research.

2. Water Services Reform and Private Sector Participation

2.1 Introduction

2.2 Water, the vital resource

2.3 Water services and urbanisation

2.4 Gaining sufficient finance and international trends, an issue

2.5 Water sector reform

2.6 Involvement of the private sector in water services provision

2.1 Introduction

This chapter attempts to summarise some different aspects associated with water as a vital resource, since the need for adequate supplies of potable water will remain a major priority in the years to come: especially in dry countries. This has helped to introduce different topics in a way that flows from broad to narrow, and takes into account the most relevant issues. Massive global population growth, rapid changes in living standards, and increasing rates of urbanisation are all factors that are intensifying the pressure on natural water resources because of the unprecedented and still escalating demand. This has left many governments incapable of satisfying these levels of demand, for different reasons: for instance the declining availability of necessary funding, especially in the developing countries, has complicated the objective of supporting sustainable human settlements and also put more constraints on the provision of appropriate development. However, the approach of continuing the pursuance of meeting demand is no longer considered a sustainable policy. Sustainability should be involved in many adjustments dealing with the methods of resource utilisation, the flow of investment, and the adoption of technological development and institutional change. Thus seeking new and sustainable funding resources and increasing government income, for instance, have become a necessity for policy-makers in their efforts to serve future generations. In addition the chapter explores issues relating to the likely investment fields, and the potential involvement of the private sector in water services provision. This entails sector reform criteria, institutional restructuring, devising new policies and changes to the current system of service charges. The chapter concludes with an account of the reasons and motivation

behind the promotion of private provision of public services, including involvement patterns and extent.

2.2 Water, the vital resource

Although water plays a primary role in the environment, and in areas such as the economy and food production, it also has a significant part in improving the quality of life (Ward, 1989). The need for freshwater supplies will remain a major priority in the years to come, especially in arid zones; an adequate supply of water for domestic uses is the most important prerequisite for sustaining human life and maintaining ecosystems. Development planners have to consider sustainable water policies to provide water for drinking, domestic use and supplying non-residential users such as industry and commerce among their objectives in development strategies (McDonald and Kay, 1988; Pakarinen and Ylinen, 1995).

McGranahan et al (2001) stated that "*in the 14th century Ebn Khaldun placed water for human consumption first in the list of resources whose negligence had made a number of Arab cities of the past very ready to fall into ruins, inasmuch as they did not fulfil all the natural requirements of towns*" (2001: 44). "*Unlike oil, wood and most other vital resources, water is usually needed in vast quantities and in spite of water being a renewable resource and a common property, it needs the most successive policies to be managed and conserved,* [given] *that it is a major component of life quality now and for future generations*" (Johnson, 1988:136).

Questions and debate over how water is used, who uses it, and how much is used are consequently matters for the widest discussion at local, national and international levels. Water is a deeply political issue and, as Albrechts et al put it, in spite of the attention currently being paid to issues of urban water management both in theory and

in practice, problems only seem to grow. Inadequate water resources, difficult access to financial resources, unreliable water supply, unsustainable utilisation of used domestic and industrial water, low percentage of sanitation services coverage per head of population, and uncontrolled increase in water demand despite the scarcity of water resources continue to cause concern, while academic research continues and conferences are organised about the topic (cited in: Pakarinen and Ylinen, 1995).

2.3 Water services and urbanisation

Due to the rapid increase in demand for fresh water, it is now considered to be scarce in more than 20 countries. "*By the year 2025, one out of every three people*" is likely to be living in an area with an acute shortage of water supply (Bailey, 1996: 34). This will bring more pressure on near- exhausted water resources to meet the growing demand attributed to, and that can be traced back through, the population explosion (Freideriksen and Bruestle, 1989). The inevitable move to develop new water supplies in order to meet the requirements of urban growth has aimed to tackle the widening gap between supply and demand (Milliken and Taylor, 1981). As towns have gradually expanded, water has been brought from increasingly distant sources as a result of sophisticated engineering advances such as dams, aqueducts and seawater desalination technology (Froukh, 1997; McCaffrey, 1997). On one hand, reducing the demands being met by local resources is a method for controlling or reducing the pressure on distant costly resources; in contrast, if any efforts to shape the demand on local resources were introduced it might shift the demand rather than conserving those distant resources. If the overall demand remains constant, any attempt to reduce the consumption of local resources will be at the cost of increased consumption of the more distant sources (McGranahan et al, 2001).

Global population projections suggest that the world population, over 6 billion people in 2000, will increase by 20% to over 7 billion by 2015 and to 7.8 billion by 2025 (Jacquemin, 1999). Similarly, Howard and Shamir (2000) claim that in the 21st century, billions of people are likely to be living in urban areas, which must increase the pressure on water resources. Between the 1950s and 1990s the number of cities with more than a million inhabitants increased four-fold, from 78 to 290, and Uitto and Biswas (2000) claimed that this may reach 600 cities in 2025.

Thus, there is a need to consider how urban developments may be planned and implemented to minimise any negative effects, and at the same time to facilitate improvement in water management by shaping water use and restraining development as a necessity to avoid changes in land use accelerating away from ideal development patterns (Lee, 2000).[3] With the continued increasing demand for water "*the progressive degradation of water resources and the inability to treat and recycle water mean that demand is outpacing supply at an increasing rate*" (Johnstone and Wood, 2001: 7) (Also: Gleick et al, 2002).

Massive population growth, changes in living standards[4] and urbanisation will all intensify the pressure on natural water resources, leading eventually to increases in the cost of urban water supply. Uitto and Biswas (2000) claim that "*the cost per cubic metre of water for new water supply projects in real terms is now 1.5 to 3 times the cost of the previous generation of projects. "Thus, the investment requirements for*

3 Where it happened as a gradual process, e.g. in London and New York where growth was spread over a century or more, this rate of growth enabled these cities progressively and effectively to develop the necessary infrastructure and capacity to manage their water supply services. In contrast, urbanisation in developing countries meant rapid growth during the post-1950 period. Cities there simply could not cope with such unprecedented increase, causing a rapid decline in the quality of life (Biswas, 2000: 7).

4 Haughton and Hunter (1994) argue that "*increasing per capita consumption is related to a number of factors including urban and industrial activities*", in addition to changes leading to higher living standards. They add that "*in the UK recent decades have seen a considerable growth in domestic water consumption during a time of almost stable population, suggesting profligate use*" (1994:166).

new water projects would be significantly higher than are estimated at present" (2000: 8).

Urbanisation is evidently increasing at a steady rate worldwide. Marvin, et al (1999) believe that "*rapid urbanisation from 1840s was based on an increasingly dense lattice of technical support services - initially water, waste and gas, but later followed by electricity, transit systems and the telephone*" (1999: 99). They add that these services have facilitated greater urban development and rapid growth by prevailing over different constraints. Such growth is mainly because cities attract people and businesses; the most common reason for urban migration is the search for the employment opportunities that cities can provide (Haughton and Hunter, 1994). On the other hand, such enormous advances in urbanisation mean economies of scale (in contrast with the previously rural societies) and the development of inter-urban transportation, which together with many other factors has supported the emergence of large cities in modern societies (Nijkamp and Perrels, 1994).

2.3.1 The expected problems, water as an example

The problems of urbanisation such as congestion, pollution and poor quality services may contribute to a decline in the quality of life in urban areas (Nijkamp and Perrels, 1994). The high rate of growth in urban areas has already caused a huge increase in demand for urban services. This idea was supported by Marvin et al, (1999), who state "*governments were expected to provide more electricity systems, public transportation facilities and potable water supplies*" (1999: 343). Easton (1989) claims that this rapid development growth would not have occurred without a remarkable and farsighted development of infrastructure services, e.g. vast systems and networks being the stimulus for urban growth. In this context, Brueckner believes

that "*when a city's population is growing and its residents wish to maintain a constant level of public services, both infrastructure and current inputs must increase over time*" (quoted in: Azizi, 2000: 1346). For their water supply, if governments are unable to provide the growing numbers of people with adequate water and sewerage services consumers will need to rely on private water vendors. This might lead to the creation of a large number of suppliers distributing water, usually to un-served districts by a number of means, e.g. tankers at high retail prices, while buying it from public supply points at subsidised prices (Swyngedouw, 1995).

However, the predictions of population growth in urban areas and the shortfall in the necessary funding, especially in developing countries, will further complicate the objective of supporting sustainable human settlements and in addition will further constrain the provision of appropriate development (Kyung, 1997).[5] Lee (2000) argues that existing institutional systems evolved from over-centralisation, bureaucratic inefficiency and lack of sustainable finance are the obstacles which have precluded governments from satisfactorily fulfilling their responsibility for adequate provision.

However, slower population growth may break the escalation in demand for potable water, allowing countries to plan in accordance with the constraints they suffer. This may apply in regions experiencing rapid population growth, an arid climate and shared water resources, such as the Middle East.

5 'Smart growth' refers to land use and development practices that enhance the quality of life in urban areas and preserve integrity in the environment. Its actions also aim at controlling the sprawl of urban centres by using approaches such as urban containment limits. Smart growth acts in response to contemporary economic conditions that confront governments, in which it supports activities performed in accordance with resource efficiency and conservation in order to maintain development that is socially, economically and environmentally sound. Obtained from: http://www.smartgrowth.org

2.3.2 Taking sustainability as a principle in the water sector

Sustainable development does not just focus on the tasks of environmental protection; rather it is involved in many adjustments dealing with the methods of resource utilisation, the flow of investment, and the adoption of technological development and institutional change as mentioned earlier. These issues are well embedded in both present and future needs, as explained by Nijkamp and Perrels (1994). "[Therefore] *sustainable cities are cities where socio-economic interests are brought together in harmony with environmental and* [resource exploitation] *concerns in order to ensure continuity in change*" (Nijkamp and Perrels, 1994: 4). There is also a need for economic incentives to prevent the negative externalities of development which can cause urban sprawl to spread from the inner-city areas to a much larger surrounding area. Nijkamp and Perrels (1994) add that unprecedented changes in the economy, in line with transformations in technology and altering demography, are the main characteristics of the modern city. Such shifts also advocate technological innovation and new institutional and administrative procedures, which can be considered as operational tools when initiating urban and regional development strategies.

Improved efficiency is likely to be one of the crucial steps in the search for sustainability, which in return supports the enhancement of local conditions. Sustainability demands that a number of technical, social, financial and administrative factors be taken into account. Seppala et al (2001) think that typically, water sector objectives are based on improving operating efficiency and long-term sustainability, and at the same time aiming for full cost recovery for service use rather than maximising profits (2001: 45) (see also: Ogden, 1995: 196).

Briefly, sustainability in the water sector is conditioned by three constraints: (1) providing adequate supply to meet increasing demands, considering population

growth and rising per capita consumption; (2) improving water management approaches and technological innovation, in order to enhance water quality and wastewater reuse to save natural resources; and (3) conserving water resources through various programmes (report by IAHS, 1997). Such constraints are likely to be achieved as a fulfilment of the development objectives, if sustainable development is well represented in comprehensive urban and environmental policies.

In addition changes need to be made relating to the economics of the water sector, including water pricing and the costs of providing services, towards achieving a sustainable utilities sector. For instance, the costs of water extraction and/or treatment and delivery should at least be covered by the users, and where they pay these costs it will lead to accountability and financial sustainability to water services.

2.3.3 Water scarcity and under-provision, a mixed relationship

Water in many countries has been supplied and consumed with scarcity and value in mind; however, in most countries water has been overused and its economic value has been ignored (Winpenny, 1994). Ironically, freshwater is abundant throughout the world on a regional basis, although at the same time it is disproportionately distributed. Some countries have high per capita water supplies while others exist in a state of acute water shortage, because of which their social and economic activities cannot be sustained. Some dry countries rely on groundwater as a major source of supply, and use it well beyond its renewal rate. Other countries are tapping into fossil groundwater resources and, where feasible, have initiated seawater desalination programmes (McGranahan et al, 2001). However, over-utilisation of groundwater can lead to the limited availability of water in aquifers and increasing pumping costs, as

well as saltwater intrusion (Johnstone and Wood, 2001). Several factors might intensify the scarcity of water, such as physical and commercial losses.

Unaccounted-for Water (UFW) is the difference between the quantity of water supplied to a network and the metered quantity of water used by the consumers. UFW has two elements: physical losses from leakage, and administrative losses (non-revenued water supply) due to illegal connections and the under- registration of water meters (Johnstone and Wood, 2001). No doubt there is a need for efficient water management, and it can be argued that there is a necessity for even more emphasis on rational water use and associated measures in this context (Guy and Marvin, 1995).

Because water is still widely provided by public authorities in many countries, public administrators decide who will get connected, at what price, and in what way the resource is used. This means access to water services is an issue of political influence (Johnstone and Wood, 2001) (Also: Bickford and Vehorn, 1982). However, lack of access to water is an indicator of a society's underdevelopment and is associated with lower standards of living. Low-income households will suffer financial difficulties and a reduced level of well-being, because they will seek informal access to water which is typically far more expensive; as illustrated by Swyngedouw (1995).

Institutions' ability to provide for future services depends on various factors (e.g. finance, availability of resources etc.). There are also many unavoidable influences which may affect the performance of those organisations, such as energy costs, the effects of inflation and other influences that affect the national income, and demographic shifts in population (Bickford and Vehorn, 1982).[6] However, it can be

6 In the past the role of the Federal Government in the US was described as that of a distant observer; more recently this role has been transformed into that of an influential actor in local governance. During the 1970s, local sectors experienced high levels of growth accompanied by increased public spending. Due to rising wages the public sector faced more difficulties than the private, which can be attributed to labour intensity in the public sector. Many states were keen to limit the growth of local government, to avoid further borrowing. As a result there was a sharp decrease in activity, with stabilisation of spending leading to an inability to provide adequate services. This problem instigated a population shift from northern cities to southern ones, due to the decline in economic opportunities and lack of

assumed in general that the shortage of financial resources essential for the provision of public services represents the core of the issue. Additionally, Boisvert and Senouci (2000) point out that the World Bank has identified three basic factors that contribute to deficiencies in the infrastructure sector and therefore its ability to provide adequately. They are: (1) the lack of market competition in terms of urban services; (2) the lack of independence of public institutions with regard to management and finance; and, (3) the weakness in relationships with customers.

2.4 Gaining sufficient finance and international trends, an issue

The need for governments to provide public services for their people requires that they increase their income to meet future obligations. It must be borne in mind that businesses rely on cities for providing public infrastructure, and this is decisive in attracting investment that will create job opportunities (Bickford and Vehorn, 1982). For example, when the water sector faces the imperative need for major capital investment which cannot possibly be met by internal cash flow, (i.e. charges paid by users) in order to provide future services, then the sector will suffer from under-investment (Kinnersley, 1994). The government may seek a number of financial mechanisms through economic reform, which can be implemented with less bureaucracy. This might include the options of service price restructuring, and potentially, privatisation.

Haarmeyer and Coy (2002) attribute the reasons for the increased cost of providing good water services to the steady rise in basic improvements, operation and maintenance costs of infrastructure systems. The increase is intensified by strict

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investment funds. This shift has presented the governments of southern cities with the challenge of providing their increased population with sufficient services. Northern cities have suffered a continuing decline in their taxation base, despite having to continue providing basic services for the existing population (Bickford and Vehorn, 1982).

environmental standards and additional requirements related to water treatment technology, such as membrane filtration and ultraviolet disinfection.

With respect to the management of public services, the last decade has shown some remarkable shifts and changes in the political environment in Europe. Examples of this are the emergence of a number of new management methods, as illustrated by Nijkamp and Perrels (1994) such as (1) Deregulation (concerned with removing the unnecessary administrative, institutional or bureaucratic barriers); (2) Decentralisation (concerned with devolving the responsibility for energy policy and production from centralised agencies on the national level towards a number of agencies at the local and regional levels); (3) Diversification (involved in creating independence with respect to resource orientation, as a transition from single to multiple resource orientation) and (4) Market Orientation (dealing with support for a more competitive context on the basis of market indications and prices). Seppala et al (2001) argue that deregulation is introduced to rely on market mechanisms, but in the case of water monopolistic tendencies, negative externalities and inequitable outcomes will inevitably cause market failures (2001: 46). This is especially true in the absence of appropriate regulatory reform, as claimed by Montagu (1994). She also argues that deregulation is another means of breaking down state monopolies, "*either by removing controls or by challenging the status quo through the courts*" (1994: 59).

Swyngedouw (1995) described one of the constraints of investments in water provision, where the World Bank showed the operative price charged for water supply in third world countries to be about 35% of the average cost of supplying it "*while the utilities generated only 21% of the project's total costs*" (1995: 393). Capital invested in water services is usually described as a long-term investment, due to their large-scale projects. Therefore there is the threat of a very slow accumulation of capital,

because investment in these services is not rapidly paid back by consumers; particularly when charges are kept low to maintain social needs. However, any imbalance between the use of services and the return on investments should be the responsibility of government, which will deal with any debts occurring (Pakarinen and Ylinen, 1995).

2.5 Water sector reform

The exigent need for huge capital investment required by the water sector to meet growing demand and provide future services will entail seeking a number of financial mechanisms through economic reform by governments, as discussed before. This might include the options of institutional restructuring, and new policies that allow for new sources of finance (Bakker, 2003). This may be through PSP as well as changes to the current financing system, including the proper pricing of services (Bienen and Waterbury, 1989). (Figure 2.1 shows the relationship between these changes). Reform in the water sector could be embraced to overcome dissatisfaction with traditional water services provision.

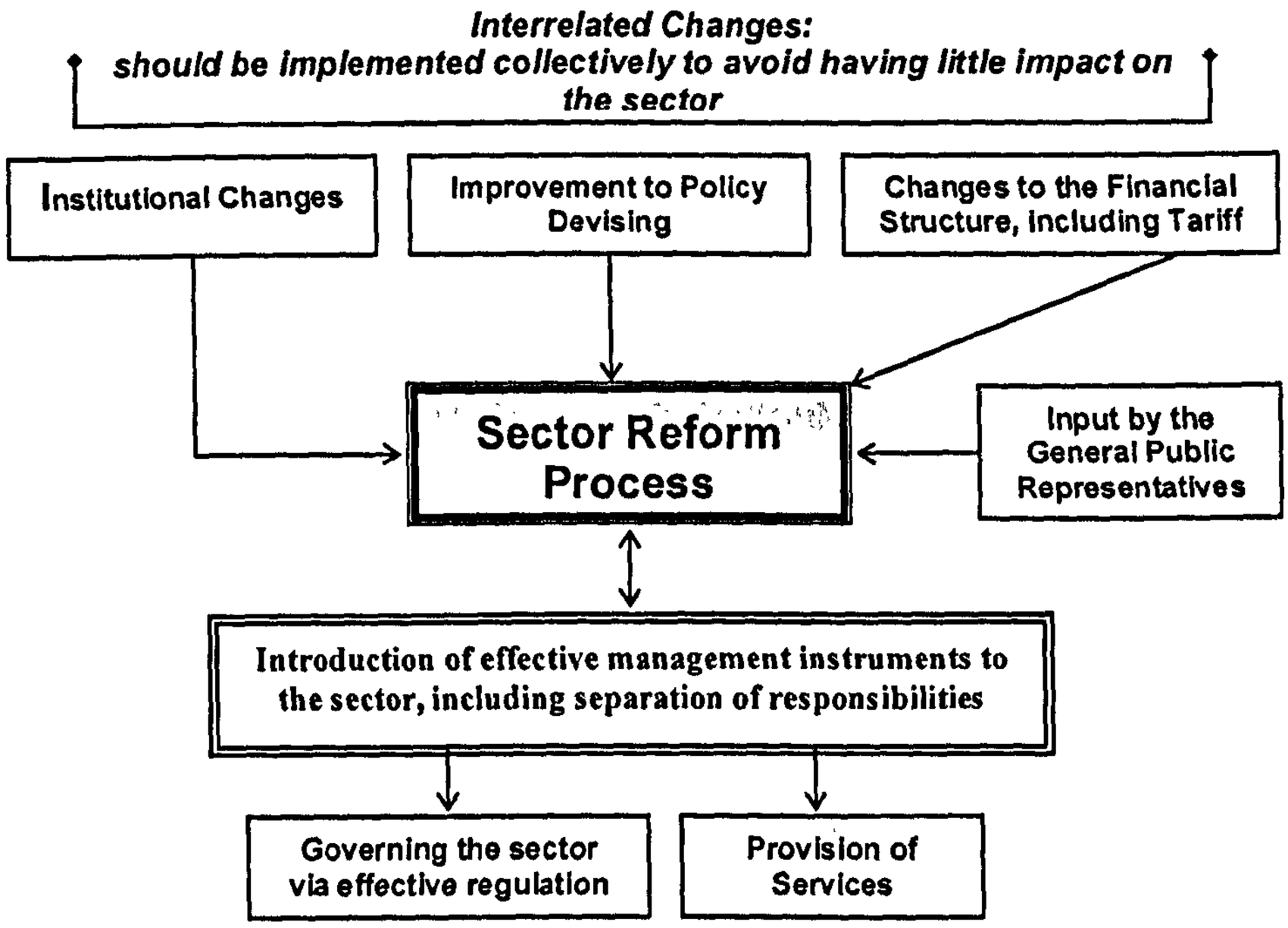

Figure 2.1: The Reform Process

Kessler (2004) states that the term 'privatisation' refers to the direct sale of public assets to the private sector, unlike the common policies of private provision that include contracting out and long-term concessions by which public assets technically remain with the government. In these arrangements responsibility for operating the assets, delivering services and collecting user fees is transferred to a firm. Private provision has often taken place after the implementation of a number of policies, including corporatisation, commercialisation and decentralisation. Kessler explains these policies as follows:

1. Decentralisation occurs when central government transfers basic service responsibilities to local governments or authorities, with the aim of locating service entities closer to the people and improving their accountability. However, local governments might lack the experience or capacity for efficient supply and provision. Once local governments encounter fiscal constraints due to the lack of budgetary resources needed to provide essential services, they will seek private participation if

the law allows. This option of decentralisation makes the privatisation of water a convenient political exit strategy for local governments that are unable to meet financial and technical requirements.

2. Corporatisation is a method by which public services are transformed into financially independent organisations, and consequently are taken off the general budget. In this situation of financial autonomy services should be self-financed by revenue generated from service provision, such as user fees, to fund the operation, maintenance and system expansion.

3. Commercialisation is a process based on imposing a full cost recovery for the services used. Consumers are obliged to pay fees that cover the actual costs in order to gain access to these services. The commercialisation of public services should result in making them financially more efficient, and hence more attractive to potential future investors from the private sector. Usually privatisation takes place in an environment of commercialised services (Kessler, 2004).

Reform initiatives for the water sector as a whole should be led by two main principles: (1) equity, where every consumer receives an acceptable level of improved service, and (2) sustainability, by providing a technically, legislatively practical and financially viable service (Kessler, 2002b; Bakker, 2003).

Watson et al (1996) claim that although institutional arrangements are fundamental in determining the opportunities and limitations that affect sector resources management, evaluating their effectiveness and considering reforms to improve their performance are also important (1996: 45).

2.5.1 Institutional change as a tool of reform

Sector reform is typically followed by privatisation, if that was the government's objective. Achieving efficiency and accountability in the reform of the water sector may require overall institutional change, including reassessment of both roles and responsibilities (For more on the reform of public enterprises, see: Cook and Minogue, 1990). There is also a need to arrange for long-term financial schemes (including tariff structure) and customer service to promote such changes. Every programme of institutional change in water services will have its own strengths and weaknesses, depending on the level of independence granted to the reformed institutions. Certainly any change to the institutional model should ensure the theme of simultaneous reporting upwards (to the next level of authority, e.g. local or central government) and downwards (different categories of consumer) by the service provider (Kessler, 2002b) (see also: Bakker, 2003).

Kessler (2002b) argues that the involvement of citizens in government planning for reforms to the services sector is very important, and should take place through citizen-based institutions where the representatives are engaged in dialogue about such plans as an established procedure. Additionally, open and comprehensive citizen participation in the reform process will certainly ensure accountability both from and to private companies, so that any critical issues such as unjustified tariff increases can be addressed (Bakker, 2003). Since the private provider will operate in accordance to an agreement made with a democratic government in a transparent manner, any expropriation will not be permitted in the legal terms.

When a water authority is totally owned by the state, its activities will noramlly be part of a political process in which the effect of directors' appointments and the provision of subsidies may control the extent to which efficient operations will be

achieved; therefore the sector will often make provisions to satisfy the political will or pressure by way of over-employment, an unreasonable tariff system, political targeting of new investments, and (most importantly) contracting-out based on political motives rather than economic criteria. This was the main feature of some Latin American water systems, resulting in low quality services, areas with serious under-investment, and a largely disconnected population, among other problems (Foster, 2002: 64).

However, there are ways to assess the viability of reform in the public services sector. Kessler (2002b) describes some of the conditions for ensuring the best information, the greatest accountability and the highest level of social legitimacy in the reform process. Some of these interrelated conditions are:

(a) *Public legitimacy of the process*: Approval of overarching policy reform to be by elected members from the highest legislative body possible, (e.g. parliament at the national level), thus exhibiting the social legitimacy of public consent through an adequate system of representation.

(b) *Adopting the principle of transparency throughout the process*: Integrating public legitimacy into a policy initiative can be achieved through proper disclosure of policy proposals prior to their approval and implementation, which will also improve the policy design in the first place. If the involvement of the private sector in utility services is being considered this requires transparent procedures, not simply showing the intention but rather describing the policy actions that will be carried out before, during and after reform implementation. These policy actions should include the extent of provision, disclosure of contract terms and mutual obligations, together with dispute settlement (and appeal) mechanisms. Clear definition of roles and

responsibilities at a very early stage will enhance the whole process, and help protect the rights of all stakeholders.

(c) *Holding public meetings for debate*: Public meetings are a method of citizen engagement through a political system featuring openness and a free press where it is possible, to debate alternative proposals. If dialogue follows these procedures it should be adequately supported by information, data and analysis. Such a forum, which may include the representatives of concerned groups, can assist in explaining the government's plans while providing an opportunity for sceptics or the opposition to present their reservations and offer constructive criticism of the proposals.

2.5.2 Institutional and regulatory framework

The establishment of an effective and clear institutional framework for the provision of water services requires concrete descriptions of the responsibilities and powers of the different organisations concerned with the reform process. When this involves PSP, it is important to identify to what extent such transactions might be affected by the political cycle. Evans et al, (2002) argue that institutional issues could create obstacles in the process of introducing PSP in the water sector. For example, the legal right to provide water services may have been given to municipalities or regional departments in accordance with the national constitution, while central government is expected to provide the largest part of the capital to finance water projects. However, legal frameworks as indicated by Evans et al (2002) should play a role in reducing the risks for the private investor that result from regulatory uncertainty, which will eventually reduce the overall costs of services and bring about lower charges. Such legal issues can be developed predominantly in the light of institutional and regulatory controls.

The institutional framework for water services should define and describe transparent regulatory functions in the first place, and whether there are comparable examples in other economic sectors. The appropriate delegation of these functions to a certain body will be crucial, to ensure that the regulator has primary charge of regulating the operators' main responsibilities.

The legal feasibility of the various approaches to sector reform should be explored carefully by experienced consultants, and painstakingly investigated to determine which could benefit consumers most in the specific context. If a particular method is regarded as the best approach to providing services or to promote desirable improvements it may be necessary to adopt an Act to introduce it, despite the additional time required (Evans et al, 2002) where this will bring about the outcomes aimed for by the government.

2.5.3 Tariff reform

This is an important stage in the reform process of any public service. Proposing new measures within changes to the financial structure can help in attracting new sources of finance, including changes to the current tariff structure and its system. Along these lines, Stottmann (2000) argues that "*massive under-pricing and failure to collect tariffs effectively do not allow many utilities to raise the financial resources needed for maintaining and operating water systems adequately, and prevent the generation of much-needed funds for investing in system rehabilitation and expansion*" (2000: 158).

Concerning tariff-setting and social principles, the framework governing services should be attached to a non-discrimination standard that is clearly defined to avoid any undesirable social implications, especially for people on low incomes

(Brocklehurst, et al, 2002). The issue is whether all consumers should pay the same tariff (which leads to a certain level of cross-subsidy), or that consumers should pay according to the costs they impose on the utility. The latter option might have negative aspects, considering that providing service access is likely to be proportionately more expensive to those on low incomes, or favourable if they become financially attractive customers offering the private provider a substantial incentive (Evans, et al, 2002). In fact, this may be the case if the low-income households are in unserviced areas; however, if they are residents in areas previously occupied by more affluent households who have moved out to new suburbs, most of the cost of basic services provision will already have been met according to the 'housing filtering theory'.[7] Evans et al (2002) claim that the concept of 'providing access to public services for all' should be taken seriously into account by the legal framework, which would result in a strict obligation for the provider to make services available to the whole population within its service area.

However, as Rogers et al (2002) put it "*economic theory has long ago explained how correct pricing of private and public goods can lead to gains in economic efficiency*" (2002: 2). In principle tariffs should be set to allow for cost recovery for the services provided, with a reasonable return on investment for the provider. If the existing tariff levels are below operating and maintenance costs, tariff reform will be a crucial prerequisite to self-financing and efficiency, which will eventually make the utility an attractive area of business for private capital investment.

7 Housing Filtering occurs when the value and condition of older houses decrease so that they become undesirable to high-income households, who move into new, high quality housing units in outer areas. A reduction in rents of older units would offer low income households the opportunity to improve their current housing conditions by moving into these areas. Moreover, the availability of this housing stock should eventually reduce the financial burden of low income groups. However, housing quality can be affected by the unit's location, including access to resources, jobs, and transport; quality of public services, and the neighbours and community surrounding it (Hartman 1998).

Reform of tariffs usually encompasses specific and realistic changes to tariff levels, not the tariff structure,[8] in order to maintain a level of service to small consumers or those on low incomes using targeted subsidies. As a result utility services will generate revenues matching the actual costs of delivery, and similarly altering the whole tariff structure to be more responsive to water usage (Evans et al, 2002). However, any increase in tariff levels should be introduced gradually, together with obvious improvements in terms of supply quality, reliability, adequate investment for expansion, etc. In this context, Howe et al (2002) argue that underpricing of water services "*may satisfy political goals, but it also undermines economic efficiency and results in higher long-term costs to users*" (2002: 42). However, a reasonable rate of return for the provider should be made possible by determining the marginal cost of water delivery as a basis when establishing the tariff structure and tariff adjustment criteria.

The best tariff design for a specific service is one which achieves the most desirable balance among the objectives that are important to the community where these services are provided (Boland, 1997; see also: Rogers et al, 2002: 5).

Evans et al (2002) also argue that the appropriate tariff for services can be achieved through balancing a number of challenging objectives. These include:

1. Tariffs should be sufficient to recover the full average costs[9] of water provision.
2. Water tariffs should reflect what can be described as external costs (the value of water volumes to other competing users, e.g. agriculture, the environment, industry). Charging this cost for households is crucially important in arid areas, where each unit of water is scarce and valuable; this was also pointed out by

8 The tariff structure is a combination of measures and rules used to determine how different categories of consumers are charged for the use of a certain service, for example, the flat volumetric charge where all residential customers pay the same amount for every unit of water they use (Evans, et al, 2002).

9 But this should not be solely absorbed by households; rather it should apply to every single user of such services.

Hearne et al, (2001). However these revenues should be returned to the owner of the resource, which will often be the public sector, as the private provider will gather revenues from operational and maintenance costs.

3. Discharge cost is another element that needs to be incorporated in tariffs, due to the quality effect or impact of discharging wastewater into water bodies such as rivers, lakes or the sea. The discharge cost is in the removal and treatment of all wastewater, surface water and drainage from private and common places, and the disposal of that water.
4. The costs of operation and maintenance should be reflected in tariffs, as these costs relate to the entire process of provision including wastewater treatment. Operating and maintenance costs rise as water treatment increases.

Taking social equity into account during the process of changing the tariff system is vitally important, but is likely to be unproblematic if the management of public services lies entirely with the government. This is not the case where public services management and/or provision are delegated to investors from the private sector. In this case, the independent service-regulator will be responsible for carrying out the negotiations related to tariff reform. Nevertheless, any changes need to be approved by the government through its regulatory system, and should then be given public legitimacy. The regulatory body will examine the proposals before giving its approval, in order to ensure that the changes are reasonable and consistent with the contract.

2.5.3.1 SUBSIDIES

It is not an easy task for any government to achieve a balance between the objectives of improved efficiency in water sector services, and ensuring that such services are extended to all people at affordable charges. Therefore the government should have a subsidy scheme by which people on low incomes can access and enjoy water services (Brocklehurst et al, 2002), particularly if they have undergone a privatisation process which may have led to increased charges. Fankhauser and Tepic (2006) argue that it is difficult to operate such a scheme, because it needs competent organisations and much administrative capacity to implement it effectively. If low income households are denied access to the water utilities network, they will use private vendors as an alternative; with the result that they will pay more than the charges imposed by the utility, as discussed above (in: 2.3.1). The Chilean subsidy scheme introduced in the early 1990s had a main criterion which emphasised that the charges levied for extended water services should not take up more than 5 per cent of household income. Subsidy was targeted to cover the major proportion (25-85%) of charges for a defined quantity of consumption (20m^3 a month) for eligible families (World Bank, 1997). Eligibility is defined according to certain criteria such as region, family size, the average cost of water, and household income and wealth, and is reassessed every three years. However, customers who benefit from such a scheme are obliged to pay their share of the charges, otherwise their subsidy might be suspended (World Bank, 1997; Gomez-Lobo, 2001).

Due to the social sensitivity of water, therefore, the overall social policy and objectives for the sector need to be clearly defined. Clear definition of such policies will guide the process of water services provision to bring many benefits to consumers, among which is ensuring the affordability of the service for low-income

households. Fankhauser and Tepic (2006) define affordability as "*the share of monthly household income that is spent on utility services*", (2006: 2). In their study Fankhauser and Tepic (2006: 3) also presume that the cost of water and wastewater services should not exceed 5% of a household's disposable income, and this may be used as an acceptable benchmark (also see: Gomez-Lobo, 2001).[10] Foster (2002) assumes that a subsidy scheme can be implemented by means of a complex array of cross-subsidies, with the application of substantial surcharges to industrial tariffs, incorporating legally binding connection targets for certain areas. Allocating subsidies to those households that need them should be in accordance with defined targets. This may be based on socioeconomic scores gathered from an accurate household survey, or follow the national classification of neighbourhoods' socioeconomic characteristics based on the physical quality of the housing environment and availability of public amenities.

2.5.3.2 PAYING FOR WATER

Nauges and Thomas (2000) suggest that the government department responsible for water and the private operator should agree on three different elements concerning the water rates. These are; (1) a basic tariff; (2) a formula for annual price revision; (these two should be determined prior to awarding contracts) and (3) clauses allowing for exceptional conditions, because operating costs can be affected by variations in input prices and production revenue, among others.

Typically, there are three options by which a certain volume or unit of water is charged:

10 Fankhauser and Tepic (2006) identified other benchmarks used for measuring the affordability of water services. The World Bank put it between 3-5%, for example, while 3% and 2.5% are used in the UK and the US respectively.

(1) Fixed volumetric charge: By this all consumers are charged the same amount per unit of water used. Fixed charges are a satisfactory mechanism, if tariffs are proposed at fair, reasonable and affordable rates that make the entire utility service feasible. It is likely that other costs generated by the operation, maintenance and expansion of services will need to be reconsidered. Arguments about the fixed rate for water services could arise in respect of the high costs that may fall on the poor. On the other hand, this option does not effectively adopt the principle of sustainability in water usage, as charges are imposed regardless of the level of consumption (Mazzucchelli et al, 2001: 85; Brocklehurst et al, 2002; Rogers et al, 2002).[11]

(2) Progressive Block Tariff (PBT): This is also known as the increasing tariff system, in which the rate per unit of water increases in increments as the volume of consumption increases. The price of water units consumed increases progressively from the first block to the next block above. Typically the charge for the first block is kept low, putting into practice the concept of a lifeline services rate for disadvantaged residential users. Industrial and commercial customers are usually charged more than residential customers in all blocks, which brings about a cross-subsidy from other categories to residential customers and from high-volume residential users to low-volume residential users. However if the PBT structure is chosen by the government as its favoured system for water charges then the operation and maintenance costs should be reflected in the first block of the structure, while the upper blocks cover their actual costs. This option of progressive volumetric charges can encourage sustainable use of water, since wise usage will reduce the cost of water and sewerage bills for consumers (Mazzucchelli et al, 2001: 85; Brocklehurst et al, 2002; Rogers et al, 2002).

11 Also see: Paper No. A4, 'Paying for Water' February 2003. Water Policy Series A: Water & Domestic Issues. Available on http://www.servicesforall.org

(3) Non-volumetric charge:[12] This option is based on the size of property, which can be determined through the local property tax bill, using the existing property bands as a guideline to determine how much the water charge for each household should be. For instance, most dwellings in England and Wales are subject to a Council Tax bill based on the value of the property and how many adults occupy it. The property (e.g. house, bungalow, flat, etc. and whether it is owned or rented) may be placed in one of eight valuation bands, depending on its open market value (with adequate publicity being given to the sale) on the 1st April 1991, the date on which every domestic property in England and Wales was valued for banding purposes. However, improvements or alterations to a dwelling may lead to a change in its council tax banding. The bands are determined by the Listing Officer at the Valuation Office Agency in accordance with a statutory appointment under s.20 of the Local Government Finance Act 1992.[13] Table (2.1) showing the current valuation bands and the proportion of Band D charge that has to be paid in England:

Table 2.1: The eight valuation bands of properties

Band	Property Value (as at 1st April 1991)	Proportion of Band D Charge
A	Up to and including £40,000	6/9ths
B	£40,001 - £52,000	7/9ths
C	£52,001 - £68,000	8/9ths
D	£68,001 - £88,000	9/9ths
E	£88,001 - £120,000	11/9ths
F	£120,001 - £160,000	13/9ths
G	£160,001 - £320,000	15/9ths
H	£320,000 or more	18/9ths

Source: http://www.voa.gov.uk/council_tax

In a study undertaken by the American Water Works Association Research Foundation of water utility customer attitudes, initiated in 1993 and updated in 1998, getting safe and reliable water to consumers was 10 times more important than

12 This option arose from discussion with the supervisor of this study.

13 It could however be argued that this might result in households with higher incomes paying more for water. On the other hand this could mean some inequity, especially for older pensioners, those left occupying higher tax band properties but consuming little water.

providing them with reasonably priced water services. In 1998, "[the] *overall perceptions remained about the same as the 1993 results*" (Howe et al, 2002: 43).

In summary, table (2.2) illustrates the basic criteria that should inform the groundwork to be done during the early stages of reforming the water sector.

Table 2.2: Outline of criteria to tackle some issues and implications when planning reform

Issue	Implications	Essential criteria for policy framework
Institutional Framework	Lack of certainty may delay the process at the consumers' expense	1. Responsibilities should be identified and appointed before the reform. 2. Powers need to be clearly assigned regarding who has the authority to propose or make decisions.
Regulatory Framework	Regulatory agency usually concentrates on regulating the main operator functions	3. Autonomous regulation should be supported by law to ensure compliance by the operator. 4. The scope of the regulator's responsibilities should be identified to include all relevant operations.
Form of PSP	Some forms of PSP may not be allowed by law, such as Divestiture	5. In accordance with given circumstances, the form of PSP should be chosen after thorough assessment. 6. New legislation can be delivered if required to permit a suitable form of PSP.
Tariff and social aspects	Tariffs setting Rules may lack clarity and transparency	7. Rules for setting tariffs should be clearly determined in law. 8. The minimum levels of service access need to be into effect within tariff system. 9. The setting of tariffs should embrace affordability for consumers and incentives for operator.
Consultation procedures	Users should have the opportunity to express their views in consultation	10. Consumers' preferences and priorities must be dealt with through proper channel of consultation. 11. Involvement of all stakeholders should be considered in the light of established procedures.

Source: adapted from Evans et al, (2002)

2.6 Involvement of the private sector in water services

The reform of any public service such as water is likely to require the introduction of effective management instruments, including the separation of responsibilities for governing the services and providing them. PSP and potentially full privatisation of provision may be expected. This section looks at the involvement of the private sector in the provision of water services, and describes the reasons for involving private investors in this process; together with the existing options for such involvement, and the possible implications.

2.6.1 Reasons behind the involvement of the private sector

There is a spectrum of ways to privatise water services, such as transferring responsibility for operations, maintenance, supplies or treatment systems from public to private investors. In other circumstances there may be a complete transfer, i.e. the sale of publicly owned assets to a private entity. A variety of combinations is possible (Gleick et al, 2002; Howe et al, 2002). Grimsey and Lewis (2002) claim that the involvement of private investors can be attributed to their perception of the move from 'taxpayer pays' to 'user pays' for the provision of infrastructure services, which could improve economic use of those services (2002: 108).

The main reason for the involvement of private companies is the need for capital investment, when public sources of finance are no longer sufficient to cover the escalating costs of providing and expanding water systems.[14] As Kinnersley (1994) puts it "*even in Britain, one of the Thatcher Cabinet's main reasons for privatising water utility services was the agreed assessment that £24 billion had to be invested in them in ten years, to catch up on arrears after years of restriction on capital*

14 Haarmeyer and Coy (2002) claim that many Eastern European countries have considered privatisation as a strategy to attract capital to their less developed water systems. This is in order to improve water services and modernise the infrastructure, in line with their aim to join the EU with its environmental standards.

spending" (1994: 4). Ministers supported the idea that financing these investments would not be possible through government borrowing (see also: Ogden, 1995). Howe et al, (2002) claim that inadequate spending on infrastructure systems in American cities was due to shrinking city budgets, which led to a large backlog of deferred maintenance and expansion. This was a key factor engendering local officials' interest in new options that promised to relieve those pressures, including PSP. Deane (2002) assumed that PSP would bring expertise and successful management practices to short- and medium-term operating and maintenance contracts.

Gleick et al, (2002: 22) described the driving forces that made governments consider water privatisation. These are shown in the table below:

Table 2.3: Driving pressures for privatisation

Driving Pressures	Reason
Societal	Privatisation may help to meet demand via new investment
Commercial	Businesses and economic development and growth (e.g. developing countries)
Financial	Privatisation can mobilise capital in a rapid and cost effective way
Ideological	Leading to smaller and more efficient government (e.g. industrialised countries)
Pragmatic	Water systems operations can be competent and efficient

Also see: Cook and Kirkpatrick, (1995; 2000) and Bienen and Waterbury, (1989)

The provision of infrastructure by the private sector is not new; traditionally, the private sector has played a key role as contractor or consultant (Howe et al, 2002) or supplier of equipment and services. Private sector contributions remain crucial to alleviating the burden falling on publicly funded programmes. In the US some 20 per cent of the population is served by privately managed utilities, and in Europe such involvement dates back to the 19th century (Rogers et al, 2002; Stottmann, 2000:159). PSP is likely to be useful in improving the efficiency of water utilities. Although there are certainly many examples of efficiently managed public water services, in other cases utilities have suffered from serious problems under public management such as

inadequate maintenance, weaknesses in their cost recovery system, and a growing demand for finance that must be met by governmental spending. These problems, among others, may be attributed to the following factors described by Johnstone and Wood (2001):

1) Inefficient management, arising from the lack of financial resources on one hand and having multiple objectives on the other. This is obvious where a government is both the owner and the provider, in the absence of well-established priorities.
2) Public management lacks flexibility and independence, as operational processes are determined to a large extent by bureaucratic requirements.
3) Public utilities face difficulties resulting from lack of access to the investment capital necessary to provide good quality services, and to manage the processes of expansion, improvement and maintenance.
4) Lack of competitiveness arising from the disciplines of the market means there is little incentive to provide effectively managed services. (See also: Lokiec and Kronenberg, 2001)

It is worth noting that the whole of a water system (water pumping and treatment, distribution, sewerage and wastewater treatment) will benefit from economies of scale, thus efficiency in provision, operation and maintenance can be better achieved if they are assigned to a single entity. Subsequently the government devolves these responsibilities to such a body that may allow multiple providers to participate in the sector at particular stages (Johnstone and Wood, 2001; Kessler, 2002b).

To a large extent, anticipation has been raised concerning the potential of private investment to meet the backlog in basic water supply and sanitation. It is clear, as far as water sector reform is concerned, that the traditional provision by public services should be replaced. This is due to various issues related to the performance of the

public sector, as outlined below in figure (2.2). Thus dissatisfaction with public services provision may encourage governments to live with any other alternative possible, including privatisation.

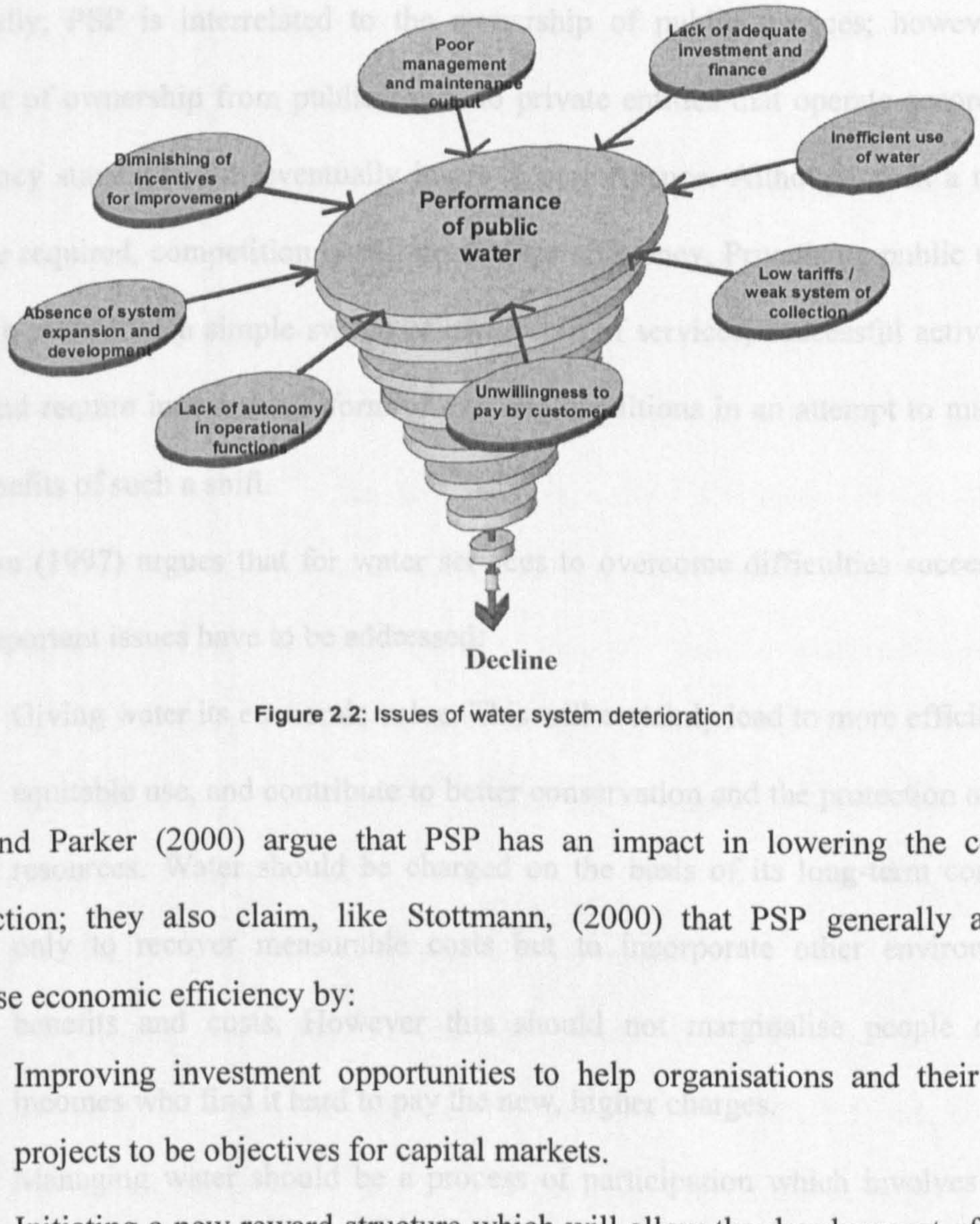

Figure 2.2: Issues of water system deterioration

Sall and Parker (2000) argue that PSP has an impact in lowering the costs of production; they also claim, like Stottmann, (2000) that PSP generally aims to increase economic efficiency by:

1. Improving investment opportunities to help organisations and their projects to be objectives for capital markets.
2. Initiating a new reward structure which will allow the development of new and successful management practices and technical expertise.
3. Setting up objectives with a clear vision of profit-orientation instead of focusing on ambiguous criteria related mainly to the public interest.
4. Removing political interference, investment barriers and unnecessary controls in order to manage the organisations efficiently, while at the

same time meeting the various demands of interested groups (Sall and Parker, 2000: 253). (Similar reasons were described by Lee and Jouravlev, 1997).

Generally, PSP is interrelated to the ownership of public services; however, the transfer of ownership from public hands to private entities that operate according to efficiency standards will eventually improve performance. Although such a transfer may be required, competition is still needed for efficiency. Privatising public utilities is much more than a simple switch of ownership of services; successful activities of this kind require innovative reform of existing conditions in an attempt to maximise the benefits of such a shift.

Nickson (1997) argues that for water services to overcome difficulties successfully, two important issues have to be addressed:

1. Giving water its economic value. This will certainly lead to more efficient and equitable use, and contribute to better conservation and the protection of water resources. Water should be charged on the basis of its long-term costs, not only to recover measurable costs but to incorporate other environmental benefits and costs. However this should not marginalise people on low incomes who find it hard to pay the new, higher charges.
2. Managing water should be a process of participation which involves all the stakeholders, including users, planners and policy-makers at all the different levels.

2.6.2 Motivation for promoting private provision of public services, water as an example

Kessler and Alexander (2003) have described four motivations associated with the promotion of PSP in water services. They can be summarised as follows:

Motivation No. 1 — *To Stabilise Budgets*

Privatisation can bring important benefits for budget stability and balance, by releasing scarce budgetary resources that can be redirected to meet other pressing social goals. A budget surplus might arise when a government sells off public assets, or puts them under private management and receives payment in the form of licence fees. However, a problem arises when a government privatises services that are functioning well, or sells attractive assets that generate revenue, perform efficiently and satisfy a broad customer base. In spite of that, privatisation is normally organised by a Finance Ministry, and those bodies tend to view the process in narrow transactional terms with the focus on maximising the fiscal revenue from the asset sale (Kessler and Alexander, 2003).

Motivation No. 2 — *Attracting Capital for Investment*

The private sector has access to far more capital resources than governments, especially for sectors marked by high delivery costs, such as infrastructure. In reality, when a government has failed to invest in marginalised people because of budget constraints or the nature of its political priorities, private capital may represent the only viable way of reaching such excluded citizens. Normally, foreign direct investment (FDI) will be readily attracted to countries with high quality institutions that promote investment protection treaties and offer various incentives. Although attracting FDI will provide extra funds to finance infrastructure projects after selling some or all of the assets (such as utilities) to foreign investors, a well-established

regulatory system is needed to safeguard national interests from influence over public policy through the control of information and management decisions (Kessler and Alexander, 2003).

Motivation No. 3 — *Improved Efficiency and Performance*

Advocates of privatisation often portray the public provision of services as bureaucratic, lacking any incentives to innovate, and being unresponsive to consumers needs. Conversely, PSP is expected to improve efficiency and expand service in terms of coverage and quality, to satisfy the demands of existing and new service customers.[15] For example, Chile's privatised water system has made safe water available to 97 percent of its urban population, compared to 80 percent before privatisation. However the government should impose strict requirements through proper regulation of the operator regarding delivery and output, e.g. the number of connections, to avoid any uncertainty. As an example of the impact of weak regulations, before being resold in 2002 Bulgaria's private water company routinely overcharged customers, randomly cut off services, and failed to respond to consumer complaints (Kessler and Alexander, 2003).

Motivation No. 4 — *Making Reform Permanent*

One of the most convincing arguments for the private provision of public services is that it helps make reforms dependable. Changes in any political system create a degree of uncertainty associated with the accomplishment of reform, and PSP is a useful way to remove relevant policies from the political agenda. In extreme cases, investment might be at the risk of political expropriation. Actually, expropriating private property (and to a lesser extent withdrawing a legal contract) would be

15 Kessler and Alexander (2003) assume that the possibility of innovation in private provision of services is likely to be from cost-cutting., e.g. in maintenance or new investment, rather than in extensive improvements to the water system as a whole. In this context, it can be argued (as by Hickson and Pugh, 1995) that the success of privatisation programmes cannot be universalised, because what has been successful in one place may not succeed in another.

considered radical behaviour, especially by investors upon whom governments are depending to create jobs and economic growth. Governments can also make public service reforms permanent, through legally binding constraints (Kessler and Alexander, 2003).

Legge (1993) described in her research some reasons why natural monopolies (e.g. water services) could be an area for PSP. (1) It can increase productive efficiency, whether or not a monopoly is involved: for instance, pressure from shareholders looking for a return on their investment. (2) Wider share ownership among people who are investors as well as customers, and are interested in a good service at a fair price, make an irresistible combination and effective lobby in favour of efficiency. (3) Private investors can draw on capital markets to fund expansion. However, these should be supported by a regulator to protect rights, encourage efficiency and promote innovative practice and technological advances. Figure (2.3) shows that the regulatory task must begin with the PSP process itself if it is to serve the objectives mentioned above, and this must be a successful replacement for any previous mechanisms of government.

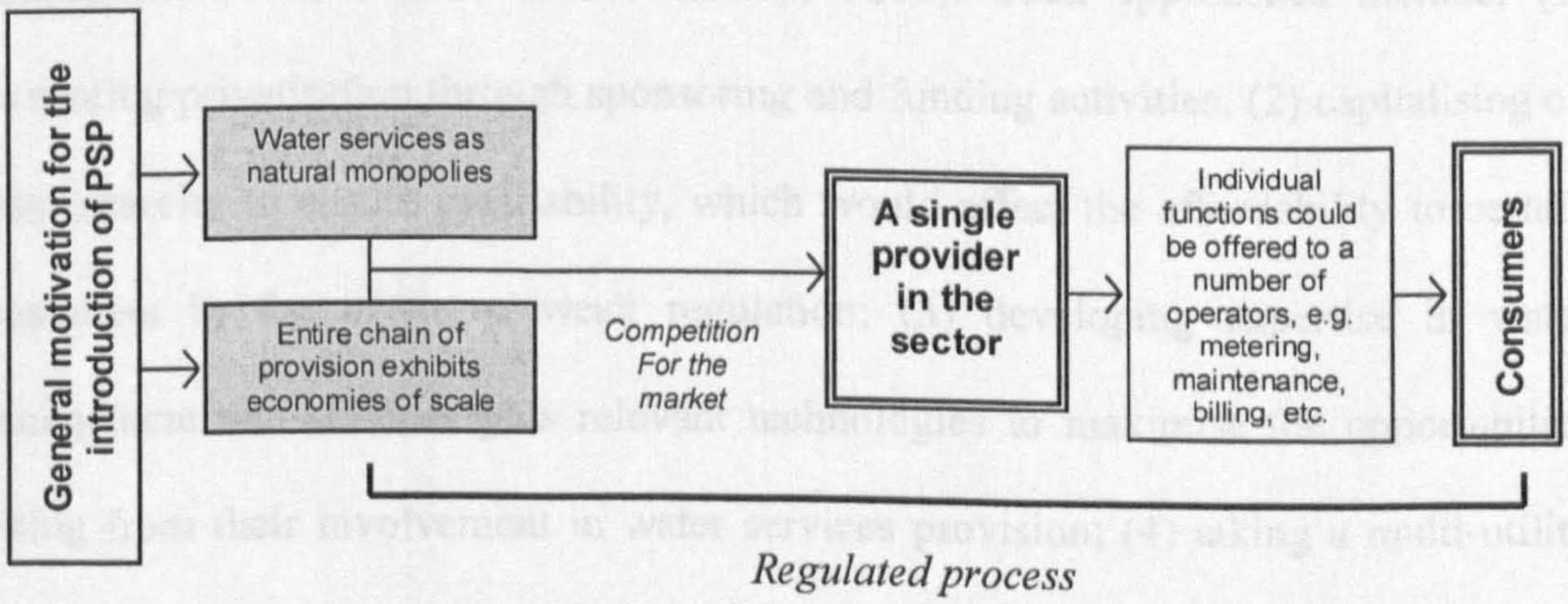

Figure 2.3: Typical structure model of PSP

2.6.3 Patterns of involvement by the private sector

Kessler (2004) believes that the idea of privatisation initially gathered popularity and political support during the rising tide of neo-liberalism during the 1980s. (Also in Howe et al, 2002). Since that time, political leadership and the voters have moved to become increasingly receptive to changes that shift the ownership of assets from governments. Kessler (2004) adds that this idea of privatisation was exported from North America and Europe to other parts of the world marked with inefficient or failing publicly-owned services, especially in Latin America and Africa as well as East Asia. Furthermore, the international lending agencies convinced the governments of these poorly managed public services that selling them off to the private sector would be the best option to promote growth. This trend for privatisation received further support during the 1990s, as the post-Soviet countries privatised many of their public organisations (Ernst, 1994). Kessler and Alexander (2003) claim that international firms concerned with water services operations (and to some extent, international finance institutions and other development banks) have adopted a range of approaches to fulfil the objective of expanding their operations (Cook and Kirkpatrick, 1995; Deane, 2002; Holland, 2005). Such approaches include: (1) advocating privatisation through sponsoring and funding activities; (2) capitalising on water scarcity to ensure profitability, which would affect the affordability to certain consumers in the event of weak regulation; (3) developing expertise in water management and services plus relevant technologies to maximise the opportunities arising from their involvement in water services provision; (4) taking a multi-utility service approach via large-scale projects that comprise power, water, sanitation and other services, in order to meet the broadest demand and gain maximum profitability; and (5) creating joint ventures and buying major (or even smaller, but innovative)

firms that are considered to be distinguished in their area of water operations. Kessler and Alexander (2003) add that the former International Monetary Fund (IMF) Director Michel Camdessus admits that, *compared with other types of infrastructure, the water sector has been the least attractive to private investors, and the amounts of capital investment involved have been the smallest* (Kessler and Alexander, 2003). Possibly private investors have had less motivation to be active in water supply and sanitation because of the amount of capital required, and the nature of long-term investment with relatively low return. The highest value privatisation programmes have taken place in the developed countries, compared with similar activities in developing nations (See: Cook and Kirkpatrick, 1995).

According to Haarmeyer and Coy (2002) two broad models can be distinguished globally in the strategies of private companies involved in water markets. The first is when firms provide services across multiple utilities, through bundling services such as water, electricity, gas etc. This model can be described as the multiutility approach, and is largely practised in the European context. It can be a useful model in developing countries that have less developed markets and little competition in the services sector. The second model is apparently when companies "*focus on one utility sector, either a certain segment or an integrated suite of services in the same sector*". This model is common in the USA, and to some extent in the UK. The viability of this approach can be attributed to the level of deregulation and competition in the service sectors, which makes specialisation a business necessity for the companies concerned (Haarmeyer and Coy, 2002: 25).

At present, there are various models and trends in the way water services are managed. Nickson (1997) illustrates four trends which have emerged in the field of water management, these being: (1) The global trend towards PSP in water services;

many countries in Africa who have adopted it still have to introduce reforms to their regulatory systems. (2) Another trend related to the French model (franchising) and its associate arrangements, which many Latin American countries have taken as their preferred option. (3) The trend that takes PSP through divestiture of assets; this is the British model, which has not been followed anywhere except in England and Wales (plus to some extent in Chile and New Zealand, as asserted by Holland, 2005).

(4) The German model, which takes best practice in the private sector as a benchmark to monitor improvements in the performance of the services provided and operated by the public sector; many countries in the southern part of Africa have been very successful in increasing the efficiency of their services by adopting this model.

According to the World Bank (1997), currently two terminologies are being discussed internationally to explain the new role that the private sector might play:

1. **Private Sector Participation:** PSP refers to the role that the private sector can play in services provision. There are different levels of private sector involvement from service contracts, lease and concessions, etc.
2. **Public Private Partnership (PPP):** PPP is a contractual agreement of cooperation and mutual interest between public and private sectors (perhaps via a joint venture) for the purpose of designing, planning, funding, constructing and/or operating a service or facility for use by the general public, which would traditionally have been carried out by the public sector acting independently. PPP aims to improve management, in order to deal with any particular risk-taking and the rewards created by delivery. Ongoing monitoring of the performance of the partnership is important to ensure its success. This idea gets its popularity from the principle that both parties can

contribute to maximise the benefits and enhance the quality of provision. (See also: Grimsey and Lewis, 2002; Seidenstat, 2002: 465).

Nickson (1997) as well as Howe et al (2002) argue that there is as yet no single approach that suits every country, because there are variables which must be taken into account such as the general political goals and the legal and cultural environment, as well as the size of the public sector (See: Bienen and Waterbury, 1989; Schwartz, 1995). In this context, Cook and Kirkpatrick (1995: 19) argue that the outcomes of privatisation in terms of the ideal performance depend on the objectives set for such a policy, which is the key initial step by the government.

2.6.4 The diversity of PSP

Although water services in most of the developing countries are provided by the public sector, Johnstone and Wood (2001) argue that recent years have been marked by a shift in the scale of the private sector's role in providing such services. This may be illustrated by the growth in capital expenditure of more than 80% between 1984 and 1997. They add that sustainable regulatory frameworks in infrastructure should be created as this would prove their trustworthiness for investors, production efficiency, and be accepted as legitimate by consumers and other groups of stakeholders. Lindfield (1997) argues that PSP could be carried out either by financing and perhaps operating government organisations that provide services on a commercial basis, or financing and operating services via contracting arrangements. Johnstone and Wood (2001) believe that PSP in infrastructure in the form of contracting, concessions etc. has made it one of the most rapidly growing businesses in the world. PSP ranges from management and service contracts to leases, concessions, divestiture and build-operate-own-transfer (BOOT) agreements.

They further explain that the principal reason underlying the provision of water services by public authorities was the need to take advantage of the economies of scale, but when a single authority carried out the entire process this led to a natural monopoly with greater potential for inefficiency because "*the sunk costs of the major infrastructure investments in the water supply and sanitation sector are significant and do not justify duplication of infrastructure*" (Seppala et al, 2001: 43). This led to expensive solutions, given the supply-led approach encouraged by governmental subsidies and unreliable water supply. These approaches were characterised as '*over-engineered*', with a high level of inefficiency and low level of service. In fact, poorer households usually get the smallest portion of subsidised services while they pay the full cost of any provision (Johnstone and Wood, 2001).

Stottmann (2000) as well as Johnstone and Wood (2001) described seven areas in which the private sector could be involved in providing water services, which were also discussed by Lee and Jouravlev (1997). Some of them were also highlighted by Seidenstat (2002). Each area is highlighted as follows:

1. **Service Contracts**: Various duties could be performed by private participants in a short-term contract that carries no obligation or responsibility for the operational system. This could include reading meters, repairing leaks etc. The public authority holds overall responsibility for the system operation and its maintenance. Service contracts could last for an average of 1-3 years.
2. **Management Contracts**: Management contracts are expected to allow the private contractors in a short-term contract, with no private capital input, to have daily responsibilities for operating, maintaining and expanding the system, without any commercial or legal obligations to the customers. Furthermore, the contractor will be required to continue improving the management of the system according to a

set of stipulations and standards. These contracts usually last between 3 and 5 years.

3. **Leases**: In this type of contract the private sector takes responsibility for operating and maintaining services owned by the public sector, for a period of time and under the stipulations of a contract through renting programmes. However, responsibility for financing and expanding the system remains with the public sector, with no liability for the private contractors. Alternatively the contractor is motivated to increase fee collection, because revenues are returned with minimum operating costs which are normally determined according to the debt for the service capital. These contracts usually last between 5 and 15 years.
4. **BOOT Contracts**: Through this contract a private contractor will provide capital investment to develop a project (e.g. water treatment plant, etc.). The process involves Building, Owning, Operating and Transferring (BOOT). This kind of investment is described as large and long-lasting, as it must be in order to cover the capital expenditure. The private contractor might experience difficulties generated by the requirements of the public authority, which aim to meet a certain level of demand. A private operator is required to finance, construct, operate and maintain the service facilities for a period of time, before transferring it back to the public authority. These contracts usually last for more than 20 years. In the case of desalination plants, this contract should include a 'take or pay' water purchase agreement as a guarantee for the developer in return for his investment and to show commitment by the host government (Lokiec and Kronenberg, 2001).
5. **Concessions**: The concessionaire in this form is fully involved in uncertain investments, which include financing, operating, maintaining and expanding the system through a long-term contract. The contractor collects payments from

customers, accepting the condition that the revenues may not cover the costs or any penalties imposed by government's regulator if the service standards have not been met. In fact, such a long-term contract will normally enable the contractor to recover his investment costs. In terms of scale, concessions are typically substantial to serve at regional or city level and might be approved on the basis of bidding for the tariff. These contracts usually last from 25 to 30 years.

6. **Shared ownership**: This is an obvious form of PPP, when services are provided through a cooperative agreement between public and private organisations. Accordingly they share: (a) responsibilities for the provision, (b) representation on the board of directors, and (c) division of profits. Of course the provision of services can be allocated for specific urban or rural areas.
7. **Full Divestiture**: As long as there is a well-established regulatory system in place, full ownership and responsibility can be vested in the private sector. To generate more revenue, public assets are sold to one or more private investors. Divestiture is described as full privatisation, where the ownership of public assets is transferred entirely to private investors after their sale by tendered bids. Public authorities take control over the process of executing the divestiture, in order to maintain the government's interests.

In practice PSP arrangements are often hybrids of the above options (Stottmann, 2000). The decision about the preferred form of PSP will be made on a case-by-case basis, taking into account the distinctive nature of national concerns and objectives. The distinctive nature of management options can be seen in the ownership and responsibility of assets and the way services are provided, as in the following figure (2.4).

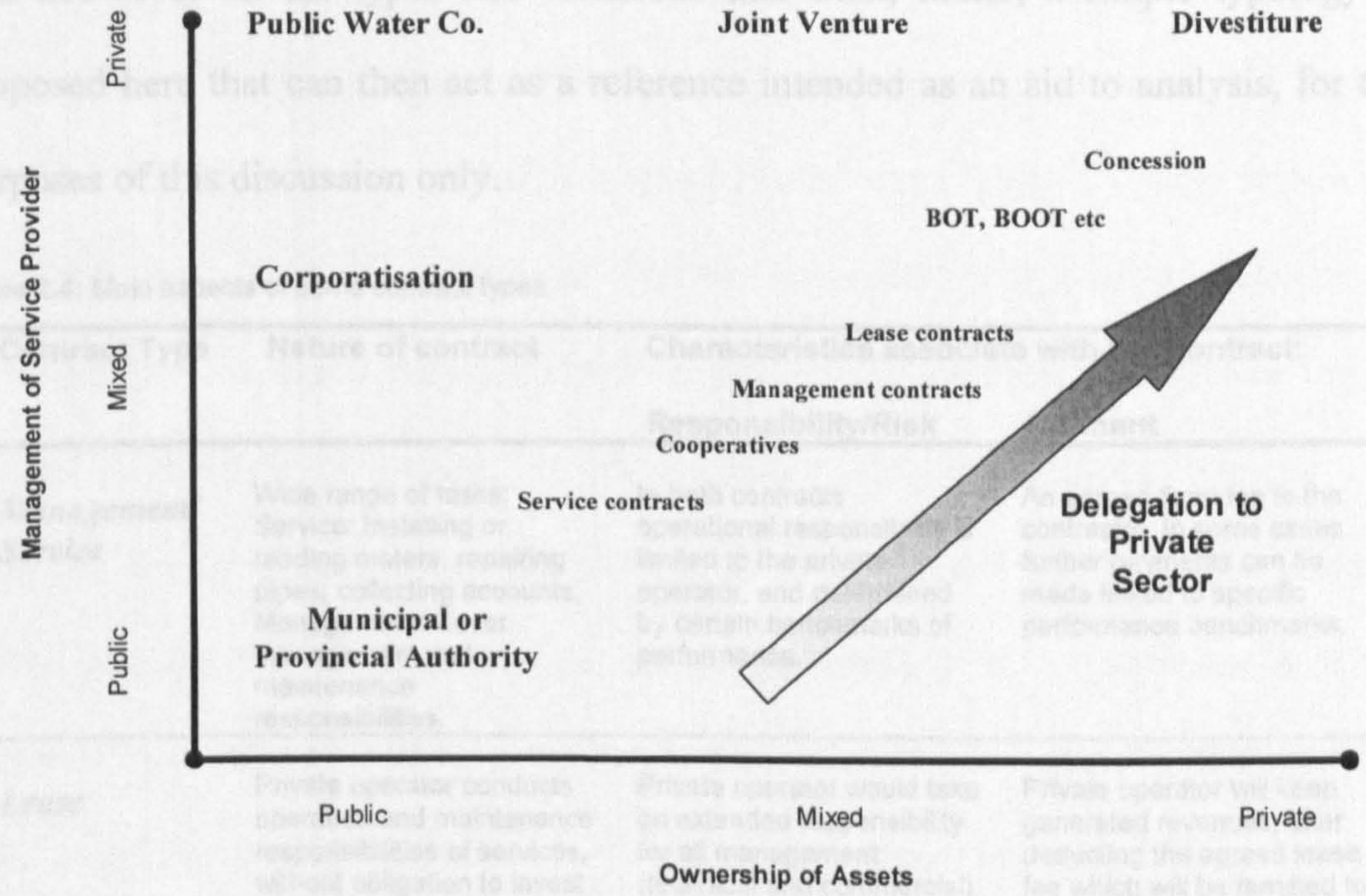

Figure 2.4: Modes of Public and Private Management and Ownership of water utilities.

(Adapted and reproduced by the author from *Webster and Sansom, 1999*, in: http://www.thewaterpage.com)

The competition among private investors for BOOT contracts will benefit the public sector in terms of cost effectiveness. On the other hand, concessions are considered to be an appropriate approach to improve performance and financing. However a well-established regulatory framework and reliable information about assets, as well as a sustainable system of cost-recovery tariffs, are fundamental for successful concessions. If BOOT or concessions options cannot be implemented, other management contracts should be looked at as a means to improve existing conditions in the water sector through delegating certain tasks and/or responsibilities, with improvement in mind.

An overview of contract types and their characteristics is given below in terms of risk/responsibility allocation between the public authority and private provider, in addition to the way the private operator is remunerated, with the aim of helping when assessing the interaction between contract type and service provision. However, this

will not cover all the types and variations that exist; rather, a simple typology is proposed here that can then act as a reference intended as an aid to analysis, for the purposes of this discussion only.

Table 2.4: Main aspects of some contract types

Contract Type	Nature of contract	Characteristics associate with the Contract: Responsibility/Risk	Payment
Management/ Service	Wide range of tasks; Service: Installing or reading meters, repairing pipes, collecting accounts. Management: Cover management and maintenance responsibilities.	In both contracts operational responsibility is limited to the private operator, and determined by certain benchmarks of performance.	An agreed fixed fee to the contractor. In some cases further payments can be made linked to specific performance benchmarks.
Lease	Private operator conducts operation and maintenance responsibilities of services, without obligation to invest capital into the system. The private operator pays the government for the lease contract.	Private operator would take on extended responsibility for all management (technical and commercial) of existing functions. New investment for system expansion would be funded by the government. Commercial risks are allocated to the private operator, and depend on the difference between the generated revenues and the lease fee owed to the government.	Private operator will keep generated revenues, after deducting the agreed lease fee which will be remitted to the government that typically funds the costs of system investment. Occasionally the operator might receive additional rewards if efficient performance targets are met.
Concession	This contract grants a long-term entitlement to the private operator to utilise assets, including responsibility for investment. Existing assets, including any created by the operator will be returned to the government at the end of concession.	Management and investment responsibilities are totally allocated to the private operator.	Revenue generated from service charges.

Source: (The World Bank, 1997; Lee and Jouravlev, 1997; Stottmann, 2000; Johnstone and Wood, 2001; Holland, 2005).

Having considered the contract designs described above, their nature and key elements, it may fairly be said that management or service contracts place limited responsibility on the private operator who will normally be compensated through an agreed fee conditional upon a set of performance targets. A contrast is seen in the concession contract, where the responsibilities and risks fall entirely upon the private operator.

It is likely that if more risk has been allocated to the private operator in contracts, more efficiency will be achieved in terms of improvements because the private operator will adopt every available method to cut costs. This of course requires a qualified regulator to supervise the process successfully. Typically management contracts do not place responsibility on the private operator for setting tariffs, expansion or levels of service. In some contracts (e.g. leasing) the operator may receive a reward if the service coverage targets have been exceeded, by his additional investment and the permission of the regulator. Similarly, the concessionaire might become responsible for planning and funding new investment under the government's conditions. These are significant incentives for the provider to expand the service, and to augment revenues in order to meet the cost of serving new consumers. This should encourage the operator to develop innovative services at an affordable price, given the approval of the regulator that the tariff structure and levels are consistent with those efforts.

3. International Experience of PSP and the Importance of Regulation

3.1 Introduction

3.2 Background

3.3 The developing world, an international experience

3.4 Examples and case studies

3.5 Potential benefits to be achieved from PSP

3.6 The concern about water in the case of PSP

3.7 Attracting investment versus risks

3.8 Regulation of PSP

3.1 Introduction

The preceding chapter looked at the issues around potential involvement, as well as the motives behind the promotion of private provision of public services. This chapter begins by presenting some background information concerning certain issues opposing privatisation, with a brief account of the international water market. The chapter also explores some of the issues that face the developing world. An analytical review of some international experience is presented in order to support discussion of the issues being investigated, plus the lessons that can be learnt from such practices. The chapter then explores further the likely benefits to be achieved by PSP for the water sector and its customers. The chapter also considers the requirements for potential partners and examines the issues around choosing the most appropriate one, beginning with identifying the basic aims of PSP. As for the preparations for PSP, some conditions for these are also highlighted in this chapter. There are some common features, like those recommended for assessing the viability of reformed public services. Subsequently the chapter considers some of the concerns associated with PSP in water services, starting first with some general concerns for governments and consumers, then goes on to explore the question of whether water should be considered a public good or an economic commodity. This chapter reviews the literature concerning competition, as this is crucial to good contracting in order to maintain efficiency and satisfaction for customers. The chapter concludes by discussing critically how PSP should be arranged under an effective regulatory framework to function and oversee the overall operations, and describes some general aspects that need to exist within that framework, in addition to certain fundamentals that may improve regulatory governance.

3.2 Background

With the increase in global consumption of water resources which is doubling every two decades, more than twice the rate of population growth, governments around the world are finding themselves under pressure from multinational institutions advocating privatisation of water services. This is despite the worsening water crisis being experienced in many parts of the world (Barlow and Clarke, 2004). As discussed in Chapter Two, advocating water privatisation is based on the belief that a market system is an efficient way to meet the growing demand for the wide range of water services. However, some international experience has demonstrated that dealing with water as a pure economic commodity in the open market does not address the needs of the poor and under-served population. In this case privatised water will be delivered to those who can pay for it according to market mechanisms, particularly if a proper regulation regime is not in place to protect vulnerable consumers.

Opposition to privatisation is based on central economic issues—prices, profits, jobs and development. Privatisation of water is normally seen as making service prices higher, being oriented towards profit-making with unjustified higher wages for senior management. It may be the cause of redundancies, and create an insecure working environment (Hall et al, 2005:292). The context, technology and strategy of water privatisation are necessarily different from one place to another. Meanwhile small businesses, like large multinational water companies, must all play their part in the phenomenon of water privatisation. Some countries have chosen to invite a giant firm to take over their water system, while elsewhere a number of smaller companies have been

appointed to undertake their separate tasks. These usually operate without becoming visible to the public.

Water is becoming an increasingly valuable commodity due to limited resources, pollution and the escalating costs of storage and other related systems. These factors are making water supply a capital intensive process, with a long time necessary to recoup the initial investment, let alone making a reasonable profit. Yet this situation is critical, because new investments are most urgently needed in regions where the population are least able to pay: particularly those regions that lack well-established basic infrastructure assets (Stephenson, 2005). Surely this is because of the dilemma between what is considered as a right and something for which an individual should pay to gain access.

Stephenson (2005: 265) presumes that the international market for water is about 400 billion USD per year, but this includes only urban water businesses. The market is largely (30%) in Western Europe; meanwhile the growth in the water market stands between 8-10 per cent annually, which is made up largely from the developing countries. This is confirmed by the figures in Table 3.1, illustrating the need for future capital investment.

Table 3.1: Requirements for capital investment in certain parts of the world

Region	Water investment requirements for 10 years in USD	Percentage of unaccounted-for water loss
Asia	280 billion	50%
Latin America	220 billion	30%
Africa	80 billion	n/a
Middle East	45 billion	n/a
Eastern Europe	40 billion	30%
North America & Western Europe	35 billion	15-25%

Source: Stephenson (2005)

3.3 The developing world, an international experience

Developing countries can be divided into two main categories, i.e. countries in transition with a higher growth rate and rapid industrialisation and urbanisation, and countries with a slower growth rate. It is not appropriate to lump all developing countries together as low income societies (Ujang and Henze, 2006).

The developing countries, in particular those in the second category, are facing a situation where economic activity is declining leading to rising unemployment, political instability as a consequence, and the further under-provision of basic services because of limited public financial resources. The provision of water services in many developing countries is dependent on how the residential areas are laid out; normally, densely populated areas with less planned development and possibly squatter communities are likely to lack adequate services of all kinds, especially water supply and sanitation, among other basic necessities (Ujang and Henze, 2006: 9).

The future challenge for many developing countries is to meet the Millennium Development Goals for water and sanitation, as proposed by the world community on many occasions. One of those goals, as an example, is to reduce by half the number of people without access to safe drinking water by 2015 (see: Allen et al 2006).

Following these lines, Ujang and Henze (2006) have summarised the problems in developing countries that relate to water services provision. These include (1) insufficient exploitable water resources, especially in arid areas; (2) insufficient expertise, creating gaps between optimal policies and implementation; (3) insufficient funding for water supply and sanitation programmes, because of competing public expenditure on other sectors due to rapid urbanisation and population growth, and (4) inappropriate

management systems and institutional frameworks for providing water facilities. It may be accepted as a fact that in many developing countries water supply systems fall short of present and future needs (Allen et al, 2006:47).

Water privatisation is one of the many conditions that determine the scale of loans provided by international lending agencies. The government of a poor country in the developing world that is seeking international financial assistance to reform its public sector without offering PSP in water services may find it difficult to obtain the necessary funding from those agencies (Cann and Jones, 2006). In other words, the governments of poor countries are forced to eliminate any choice other than options that are based on private investment and/or operations involvement. This has proven to have a negative influence upon the development and promotion of existing good local practices in managing and operating the utility sectors within public provision.

3.4 Examples and case studies

In the following sub-sections an analytical account is provided of some different experiences taken from around the world, particularly from Latin America, Africa and Asia. This should provide a basis of literature to underpin the discussion in the following chapters, and provide additional support to the lessons that may be learnt from failure or success as they have been experienced in other parts of the world. Together these will inform the work of attempting to reform water services in Saudi Arabia.

3.4.1 Water privatisation in Latin America

Many Latin American countries benefit from an abundance of fresh water. The region contains four of the world's 25 largest rivers, the Amazon, Paraná, Orinoco and

Magdalena; the combined run-off of these four rivers is about 22,800 km^3, almost equalling the combined run-off of the other 21. However the steady destruction of water sources, along with inequitable access, has left most Latin Americans 'water poor'. Furthermore, millions live without access to clean water. While the region's available resources could provide about 3,130 m^3 of water every year to every person, the average resident has access to only 28.6 m^3 per year. This compares with the annual average of 118 m^3 in North America and about 64 m^3 in Europe (Barlow and Clarke, 2004).

Privatisation has provoked more popular dissatisfaction and criticism in Latin America than in other parts of the world, resulting in political opposition and violent demonstrations. Nellis et al (2004) argue that a number of technical studies of privatisation in Latin America have indicated an improved level of performance and operating efficiency. They (2004: 2) add that in Argentina, Brazil, Chile, Colombia, Mexico and Peru efficiency gains have risen to a remarkable average 67 per cent. This is in addition to further extension to the network coverage with an increased number of connections, as well as improvement in the quality of services.

At the same time privatisation has delivered a positive flow of funds with a reduction in public debt for many governments in Latin America, by means of cost rationalisation, relative elimination of subsidies and increased national income from taxes imposed on profitable private companies. For instance, "in the first four years following sales in Bolivia the government received 429 million USD, none of which was derived from sale proceeds" (Nellis et al, 2004: 2). Normally the cash flow in such circumstances is used to ease public debt and fiscal deficit, and increased public expenditure on social needs. However, it can be argued that the reason why infrastructure privatisation (and

particularly water) has drawn most criticism in Latin America may be attributed to the perceived loss of sovereignty where national assets come under the control of multinational companies. This is in addition to the belief that privatisation increases the price of basic services and is likely to lead to increased unemployment. These are the reasons identified in many Latin American countries, according to a survey undertaken in 2001 by 'Latiobarometro'. These researchers found negative attitudes to privatisation, especially in Uruguay, Bolivia, Chile, Mexico, Venezuela and Argentina (Nellis et al, 2004) (see also: Kohl, 2002).

Bolivia:

The violent protest against water privatisation is exemplified by the case of Cochabamba, Bolivia, where the process went wrong in 2000. Cochabamba put its water system up for auction in 1999; but there was only one bidder for the long-term concession. This company, Aguas del Tunari, was jointly owned by the large American construction firm Bechtel and Edison, the Italian utility business. The company promised to expand water services with great improvements in performance and efficiency across the system.

At the beginning of the operation the company imposed an average tariff increase of about 43% for consumers. In January 2000, as a consequence of the tariff increases there were massive public protests in the streets. Workers went on strike to show their opposition to the takeover of the water system. The government was forced to declare a state of martial law in the city. These protests may have been sparked by price increases but they gained momentum from the critical levels of unemployment and economic instability. The concession was later cancelled, and this was followed by the resignation of President Hugo Banzer Suárez (Nellis et al, 2004; Barlow and Clarke, 2004). The other

side of the story is however, that the publicly-owned water utility had been desperately inefficient for many years and had failed to supply the poor with water; instead they had to buy water from private vendors. The subsidised tariffs were of most benefit to privileged middle class consumers, yet even they suffered from an unreliable service (Barlow and Clarke, 2004).

The case of Cochabamba illustrates a situation that must be of great concern in the context of economic reform: privatisation being introduced to a utility sector without proper regulations that legislate for price increases when required, while at the same time protecting vulnerable groups of consumers such as those on low incomes. Violent street demonstrations and burgeoning opposition have led other concerned governments to reconsider their plans to privatise utilities in Panama, Lima, Rio de Janeiro and many other cities in the region.

Argentina:

Argentina is regarded as the leading nation in Latin America to have introduced privatisation in water services provision; 70% of the population there is supplied with drinking water by private companies (Haarmeyer and Coy, 2002). The French company Vivendi won a 30-year concession in 1995 to manage water supplies in the Argentine province of Tucuman. When taking control, the company imposed an immediate price increase of 68 per cent on all customers. Despite this tariff uplift that should have increased its revenue, the company failed to achieve the expected return on its investment and water services did not improve. This under-performance was the first setback experienced by water privatisation in the country, when coupled with price increases (Cann and Jones, 2006; Haarmeyer and Coy, 2002). People refused to pay for water that

had turned brown, and a campaign of non-payment was organised. A new provincial government came into power, leading the government to take over the water regulatory body. These popular protests, and poor performance by the company led to the termination of the 30-year concession after just over two years, in October 1998 (Haarmeyer and Coy, 2002; Cann and Jones, 2006). Even World Bank experts believed that the tariff increase at the beginning of operation was probably a misjudgement. In December 2001 the government rejected plans to award a new privatisation contract for Tucuman. Instead, a utility was set up with 90% owned by the province itself and the remaining 10% owned by the workers' union. It continues to operate in that way (Cann and Jones, 2006; Haarmeyer and Coy, 2002).

Another example of unsuccessful privatisation in Latin America can be seen in the extent and time-scale of the tariff adjustment, which affect poorer consumers in particular. For instance, the Buenos Aires water and sewerage concession permitted the private operator to impose a connection charge of between 1,000-1,500 USD (spread over two years) to be paid by consumers in areas where the average monthly income is around 245 USD (Nellis et al, 2004: 3). The responsibility for such charges indisputably lies with the government department concerned with the concession. In this situation the private company should not be blamed for the charge, since it must remain accountable to its shareholders and not its customers; on the other hand the government must be accountable to its people, and should try by every possible means to mitigate the charges proposed or imposed by the private operators. However, in Buenos Aires the water services overall showed substantial improvements in their management and operation, as described in section 3.5 which examines the potential benefits to be achieved from PSP.

It can fairly be said that the many privatisation contracts that resulted in criticism and challenge were reconsidered because of unanticipated shifts in market conditions, contract renegotiation by opportunistic private investors, and public sector inability or unwillingness to meet the stipulations of the contracts, e.g. tariff changes (Nellis et al, 2004: 3).

Honduras:

Between 1994 and 1998 there was a successful restructuring of the state-owned company which provided water services to the capital, Teguciga, which dramatically improved efficiency and management effectiveness. The restructure was based on working with trade unions through a mechanism aimed at effectively involving the workforce. Hurricane Mitch, which hit the country in November 1998, caused great destruction. The water sector suffered damage worth 60 million USD alone, from a total damage figure that reached almost 30 billion USD (Cann and Jones, 2006). Many donors contributed to the rebuilding effort, and many of them pressed for privatisation at the same time; for instance, in the same year the Inter-American Development Bank (IADB) gave agreement to a project to channel investment in urban services, e.g. water supply in San Pedro (the country's largest city) if privatisation were to be introduced. In mid 2000 a concession contract for San Pedro was awarded to a multinational consortium, and this process was financed by IADM. In less than three years the consortium found itself in difficulty over making the essential investments stipulated by the contract, and was also failing to reduce the high leakage rate. The company blamed political intervention in the project for this underperformance. Meanwhile many of San Pedro's residents rejected the involvement of foreign companies in providing their water services, taking direct action

by preventing basic tasks such as installation of measurement equipment in some areas (Cann and Jones, 2006).

Uruguay:

Barlow and Clarke (2004) highlighted the case of Maldonado province in Uruguay. Maldonado's water system was operated by a private company, Uraqua, which is a subsidiary of the Spanish water company Aguas de Bilboa. While the company was permitted under the concession to deliver water on a full cost-recovery basis, the quality of water it supplied did not match the high prices it charged. This situation drove the people of Maldonado to launch a successful national referendum in October 2004, seeking the constitutional protection of water as a human right, a public good that could not be subject to for-profit businesses.

Paraguay:

In June 2002, the Paraguayan parliament voted by 32 to 7 to suspend for an indefinite period privatisation plans for the publicly-owned water company Corposana. The motives behind this privatisation proposal were fiscal, and an attempt to comply with IMF targets. This rejection by the parliament was welcomed by trade unions as a great victory against the forces of globalisation and neo-liberalism. The decision was endorsed in August 2004, when a second privatisation attempt was abandoned as a result of pressure from protesters (Hall et al, 2005:288).

In conclusion it can be said that weakness in the regulatory framework, poor public confidence in the benefits of privatisation, and occasionally political opposition are key contributors to unsuccessful or under-performing participation. However, the unhappy experience of privatisation and liberalising reforms in some Latin American countries can

be attributed to the lack of a well-functioning institutional framework. Certain institutions are necessary (1) to define and protect the rights of customers, (2) enforce the contract conditions, and settle all disputes through a well-established legal system, (3) provide a regulatory institution that is autonomous and well equipped (e.g. staff and resources) to regulate the monopolist provision of services, (4) in addition take a new approach to administration of the utility sector that meets minimum standards of competence, impartiality and planning for the future. As Nellis et al (2004) put it, "the more careful and extensive the preparation devoted to the institutional underpinnings of privatisation, the better the results, in both efficiency and equity terms" (2004: 6).

3.4.2 Water privatisation in Africa

South Africa:

Following the implementation of its 1994 policy for water, the South African government reduced the subsidies given to local municipalities to deliver basic services. Support was now given to financial instruments for privatised delivery. In due course this encouraged local governments to adopt the commercialisation of basic services, and to recover their full cost from revenues. This commercialisation meant introducing a wide range of PPPs with the private sector (Ruiters, 2005: 166). Corporatisation was adopted as a form of commercialisation, by dividing water services into financially independent units owned by local government (e.g. municipalities) and operated according to market principles. The reason behind this was to establish a transparent form of accounting, to identify all the costs and revenues of service delivery as well as any subsidies, thus allowing managers to identify areas of financial loss and gain that may have been hidden in the centralised system of accounting. It also helped to implement a scheme based on targets

driven by financial performance, including rewards for meeting the required standards (McDonald and Ruiters, 2005).

The corporatisation adopted was meant to offer autonomous management for the separated water business units by appointed officials from the municipal authority. This changed the management culture to focus on the financial bottom line, promoting cost recovery and other market principles (McDonald and Ruiters, 2005) rather than the principle of cost-cutting. Corporatisation also promoted a competitive operating environment that allowed many service providers to compete with the independent units to provide specific services at cost-effective prices, and to achieve the desired outcomes in the absence of subsidies. In addition, corporatisation could be a pathway to attract private investment when the system became more flexible, free from hidden cross-subsidisation structures and political intervention in decision making processes, as well as a poor management culture.

Although the majority of water services in African regions are still operated by public sectors, the truth is that "*all water systems in Southern Africa have been fundamentally transformed by the (growing) pressures of commodification* (as the driver of privatisation), *as evidenced by the increasing number of public-private partnership and the running of public water services like a private business*" (McDonald and Ruiters, 2005: 23).

As discussed above, Johannesburg represents one example of management reform in basic municipal services. The overlap in municipal services resulted by the duplication of urban centres was overcome by consolidating municipal responsibilities into a single city authority and at the same time delegating services responsibilities, e.g. water, to entities

operating several types of public-private partnership. Responsibility for service delivery to residents is still in the hands of both enterprises and the metropolitan authority board to which they are accountable. The finance for this change was partially provided by central government, due to its importance at the national level (Evans et al, 2002). The change to the way water is managed in Johannesburg was based on a radical change to the metropolitan council's overall organisational structure. Separating out the different departments into 'ring-fenced' units was an approach to improved performance through greater flexibility of practice in the delivery system, which involved PSP through a management contract made in 2001 (Harvey, 2005: 122).

What bound the South African government to a pro-privatisation position (commodification of water services and PPPs) can be attributed to three factors: (1) the number of government initiatives (following the early 1990s) that either changed or proposed major policy and legislative and constitutional developments to promote privatisation through the principle of full cost recovery, in addition to the support for such objectives given by the African National Congress; (2) the aggressive push for water privatisation by donor agencies, international financial institutions and international consultancy firms, as well as global water businesses, together with the demands imposed on the government by economic circumstances; (3) the commitment on the part of the government after signing of a number of important international agreements that encouraged private engagement in services delivery, e.g. GATS and the Johannesburg Implementation Plan which was adopted to focus on partnerships for development. This was a response to the World Summit on Sustainable Development held in South Africa in 2002 (McDonald and Ruiters, 2005; Felcker and Clarke, 2005; Flynn and Chirwa, 2005).

This is applicable to many corporatised entities in South Africa and other African countries which operate like private multinational corporations. It can be said that "*the Southern African experience with privatisation is typical of the new global trend towards a multiplicity of public-private partnerships, outsourcing and corporatisation*" (McDonald and Ruiters, 2005: 29).

Ultimately, commodification made water a market commodity that is delivered and used while profit-making is kept in mind by the providers. Although the 'Free Water Policy' offers 1000 litres per month to each household free of charge, households are charged a high price for additional use. The allocation is not enough to cover basic needs, and the cost is severe for those on low incomes and the inhabitants of rural areas. Accordingly many problems arose, such as non-payment by customers and services being cut off, among others (Ruiters, 2005: 166).

Zambia:

After independence, the government of Zambia embraced a regime of increased spending on social programmes in order to improve health and education. In the early 1980s, the copper price collapsed (copper is the country's main source of income) and interest rates soared. This left the Zambian government facing an external debt of 40 per cent of GDP by 1986 (Cocq, 2005).

Because of that, and following the advice of the IMF, a programme of structured adjustment took place to devalue the currency, lift price controls on commodities and liberalise foreign exchange rates. Obviously privatisation in Zambia was supported by the IMF programme and the World Bank, as well as other major donors.

This programme and the activities of the succeeding government caused rises in the cost of essential commodities, and subsequently provoked public riots.

Zambia is among the most urbanised countries in Southern Africa. 40 per cent of its population (nearly 4.1 million) live in cities, particularly Lusaka, the capital. However, 80% of the population lives in poverty on less than 1 USD per day. In urban Zambia 82% of households have access to clean water, but this is not the case for those people who live in peri-urban areas in what are described as informal settlements. Inhabitants of these latter areas lack adequate and reliable water supplies, as well as proper sanitation. Since the 1990s the water sector, which was operated by municipal companies, had encountered many problems, institutional and financial. To overcome the deterioration in water services and to ensure further assistance from international donors, several important legislative, institutional and financial changes in Zambia's water sector were introduced in the form of a new national water policy in 1994. That was based on the separation of water functions and regulatory roles and responsibilities, with devolution of authority to local bodies and commercialisation of water services, among other reforms (Cocq, 2005) (also: Robinson, 2002; Gumbo, 2004). The commercialisation of these services was the most important change in water management, while regarding water as an economic commodity in order to tackle the financial crisis in the sector.

In 2002, the UK water company Severn-Trent began a study funded by the World Bank to recommend the best option for PSP in Lusaka. The study was conducted under the supervision of a governmental committee that included representatives from a number of government departments. This study produced recommendations after conducting comprehensive consultation with all stakeholders during a workshop arranged for that

purpose. However the study was given little publicity and suffered from lack of access to information. The key recommendation in the Severn-Trent study was a move to a ten-year lease contract as the preferred option for PSP. The study also recommended a new tariff structure, including an initial increase of 35 per cent (Cocq, 2005). In this arrangement a private partner would lease facilities from the municipality to operate, maintain and manage the system. The responsibility for new capital investment remained with the public sector. The suitability of a lease contract was because of the unattractive existing legal and regulatory conditions, as well as the assessment of financial risk. It should be noted that the private sector will only choose to participate in a secure investment environment that offers adequate guarantees; otherwise it will seek an involvement that is free from any capital obligations. This is obvious from the recommendations of the Severn-Trent study.

Kenya:

In November 2000, the Kenyan government was advised through a donor review to adopt PSP in the water sector. The recommendation of this review concluded that a concession contract was not feasible, but a lease contract was possible in Nairobi if funds could be sourced from various agencies to finance the initial capital programme. It is worth mentioning here that the recommendation involved an increase in water charges of about 40 per cent (Cann and Jones, 2006). A similar study by a private consultancy during 2001was funded internationally to develop a 'road map' for privatising water services in Mombassa and the coastal areas.

Cann and Jones (2006: 42) argue that the number of studies that examined the Kenyan case presumed that concession contracts were more suitable in order to maintain private

investment in the water sector. However, such contracts would not be financially viable in the initial phases, and therefore lease contracts were the recommended option.

On the other hand, in June 2004 the World Bank agreed to finance a new institutional restructure for Nairobi Water and Sewerage, worth nearly £8 million. The project aimed to strengthen the commercial operations of the city's water and sewerage company (owned by the municipality) including improvements to customer services. This involved a range of reforms intended to develop stakeholder participation, with a communications programme designed to ensure strong and sustained support for the activity (Cann and Jones, 2006). Although Kenya shares the circumstances of many developing countries where economic reform and privatisation are conditions for funding by lending agencies and donors, a new pathway is coming to be seen. This is about sponsoring and funding studies and activities to build a consensus among stakeholders that supports water privatisation, to avoid possible public backlash (Cann and Jones, 2006). However, it should be noted that the amount of funding by the World Bank for water and sanitation is conditional on institutional and policy reform in the water sector in Nairobi and Mombassa.

3.4.3 Water privatisation in Asia

Malaysia:

The Federal Government in Malaysia chose to privatise its sewerage services in 1993, with a 25-year concession being awarded to a private local consortium. The main reason for this was that the sector was under-developed due to the inadequate financing it had received, despite the fact that investment in sewerage facilities is hidden in housing development projects that are directly paid for by customers. The objective of this

privatisation policy was to operate, maintain, refurbish and upgrade existing and future systems to meet all relevant environmental standards. This was in addition to meeting set targets to increase the number of connections in both major and smaller local authorities (Ujang, 2006: 55-56).

Indonesia:

Water privatisation in Indonesia is a mixed relationship. The interests of multinational water companies which were influencing (i.e. involved in a corrupt relationship) with the governing regime collaborated with the World Bank to press for privatisation in the country. Hitherto, most of the poor residents of Jakarta (the capital city) had been without piped water services (Public Citizen, 2003; Bakker, 2007).

This began in the early 1990s when the World Bank agreed to provide a loan of 92 million USD for water system development, and at the same time advising the Suharto government to privatise (Hall et al, 2004). In addition to the World Bank loans and other Japanese loans being prepared, and in light of the moves towards privatisation, Suez and Thames (giant international water companies) took the initiative to take over the public water system (Public Citizen, 2003; Hall et al, 2004; Bakker, 2007).

During that time, to do business in Indonesia a foreign investor needed to have a local partner. However, most major enterprises were controlled by the Suharto family and of necessity, Suez and Thames formed an alliance with local companies owned by relatives of the President. Consequently the bidding process lacked openness and transparency, despite the claims by the World Bank and ADB that the transactions represented good governance and transparent privatisation. In 1997, after extended negotiations, the contracts were awarded to two new alliances allowing Suez to operate in the western half

of Jakarta and Thames in the eastern half. It worth stating here that national laws and local regulations in Indonesia forbid foreign investment in the delivery of drinking water (Public Citizen, 2003; Hall et al, 2004; Bakker, 2007).

The new 25-year contracts with PAM Jaya (the municipal water supplier) were expected to be profitable for both the international and local partners. However PAM Jaya was not a formal regulatory body, and it had no right to see financial reports of the companies. Also, and most importantly, PAM Jaya had no authority or clear sanctions for non-compliance with performance targets (Public Citizen, 2003; Bakker, 2007).

The new companies started right away, with a move into luxurious new offices in Jakarta's business district rather than the old offices where PAM Jaya had operated. The foreign executives (who lived in the wealthiest neighbourhoods) were paid much more than the PAM Jaya officials, and their new wage scale caused a great deal of anger and resentment among the employees (Public Citizen, 2003; Bakker, 2007).

The agreement made with the new companies stipulated management of the system and increase of supply, expansion of the existing pipeline, investment of 318 million USD, 1.5 million new connections to servw 70% of the population, and the reduction of unaccounted-for water. In 1997 about 70 per cent of the water used in Jakarta came from private wells, which was why PAM Jaya forced businesses and private homes to shut down their private xources and buy their water from the companies (Public Citizen, 2003; Hall et al, 2004; Bakker, 2007).

In spite of that the companies received their payment from PAM Jaya according to the water supplied with no link to revenue collection, which guaranteed their profits from risks and cost recovery. The two companies insisted that their payment should be in

dollars, since they borrowed in dollars, but this was disputed by the governor. Eventually they agreed to accept payment in local currency that was pegged to the US dollar. This is in fact one of the investment guarantees that any private partners would ask for, to protect themselves against currency devaluation (Public Citizen, 2003; Bakker, 2007).

In 1998, there was a radical change in the political situation following the Asian financial crisis and the end of Suharto's reign. There were concerns about a popular uprising, and the companies' major executives were obliged to abscond to Singapore. The crisis meant Jakarta's new governor had to order PAM Jaya to take over the operation.

After intervention by the British and French Embassies and rigorous pressure on the government not to breach the contract, which would have damaged confidence in Indonesia as a place for investment, Suez and Thames were allowed to return if the contract could be renegotiated. Thames and Suez agreed to take over the shares owned by their local business partners in order to overcome the damage caused by their connections with the Suharto family, since these connections were the cause of public resentment (Public Citizen, 2003).

The financial crisis of 1998 resulted in the dramatic devaluation of the Rupiah (national currency), forcing PAM Jaya into ever more debt. While the revenue from customers was dropping in value, the payments to Suez and Thames (being pegged to the dollar) were increasing. With this stressful political situation, increases in the tariff frequently had to be postponed. Ultimately an agreement was reached to establish a regulatory entity and enable PAM Jaya to have access to company financial records. In 2003 both companies threatened to pull out of the agreement with PAM Jaya if their proposed price increases were rejected by the government. This prompted the administration to implement their

proposed 40 percent price rise in late 2003, despite opposition from consumer groups (Hall et al, 2004; Bakker, 2007).

With the lack of interest by the two companies in renegotiating the contract, basically the investment and expansion targets were never met. Suez claimed it had increased connections by 50%, which meant it had failed to meet the 70% target. The expected capital investments fell almost 200 million USD short of their target.

The improvements in water services in Jakarta were limited to the rich, middle-class and industrial areas. In contrast most poor communities remain without piped water, due either to unaffordable connection charges or the lack of incentives for PAM Jaya or the water companies to service these areas. The residents there still boil their water to ensure its safety for drinking (Public Citizen, 2003; Bakker, 2007).

The Philippines:

The Philippines was among the first countries in Asia to embrace PSP in its water sector; indeed, the first privatisation of a waterworks utility in Asia was in Subic Freeport in 1996. This was followed by the world's largest water privatisation at that time: Manila's Metropolitan Waterworks and Sewerage System (MWSS) in 1997, promoted by the former President Fidel Ramos who wanted to set an example for others to follow (Hall et al, 2004: 19). Many laws and Acts provided the underpinning for local government to improve its role in the provision of water, and to fast-track PSP in the water sector. In particular these instruments included the 1995 Water Crisis Act (Hall et al, 2004: 19).

The west and east zone concessions were won by Maynilad Water Services and Manila Water Company respectively. Maynilad is a joint venture between the French based Suez and other local partners. Manila Water is a consortium of local firms with UK's United

Utilities, US-based Bechtel, and Japan's Mitsubishi Corporation (Hall et al, 2004). Granting the contract was apparently based on making the biggest promises, not because the parties had any particular understanding of the water business. This has been described as adverse selection (Kessler, 2002a). Among the promises made by these private operators were to provide 24-hour water service and universal connection; to reduce system losses from leakage, and maintain the network; and to spend about 7.5 billion USD in new investments. Of course none of these promises were met (Hall et al, 2004). The private companies blamed the East Asian financial crisis, and the effects of currency devaluation in particular. The regulators then allowed Maynilad and Manila Water to automatically pass the costs of exchange rate depreciation onto consumers. The result was a severe price rise for urban consumers, and a disincentive for the company to economise by switching away from imported inputs (Kessler, 2002a). Maynilad's tariff increased from 4.96 Philippines Pesos in 1997 to 19 Philippines Pesos per cubic metre in 2003, while Manila Water's rate increased from 2.32 Philippines Pesos in 1997 to 15.65 Philippines Pesos per cubic metre in 2003 (Hall et al, 2004).

When a contract is unclear about the times when increases are allowed, increases are to be expected; especially if that lack of clarity is coupled with a weak regulator who is unable to enforce the contract stipulations. However, price rises can be permitted only by the regulator in the case of provision difficulties over enforcing the contract, to protect the private operator from going bankrupt because this would cause interruption to the services, with various social and political consequences for the government if no alternative operator were prepared and able to take over provision immediately (Kessler, 2002a).

Hall et al (2004) state that due to financial losses from March 2001 Maynilad discontinued payment of the monthly concession fees to the government, and the amount overdue is now almost 166 million USD. This non-payment by Maynilad drove MWSS into ever-deeper debts "*which continued to accumulate and totalled 240 million USD by the end of 2003*" (Hall et al, 2004: 20). In 2002, Maynilad failed to win the government's approval for a tariff increase. Accordingly in December 2002 it decided to terminate unilaterally its 25-year concession, blaming the government for not complying with the terms of the contract. The case went to international arbitration. While the case was pending the government started confidential negotiations with Maynilad, and in March 2004 revealed a controversial plan for debt-to-equity exchange. However the public objected strongly to this, compelling the government to call off the deal. A new rehabilitation plan is currently being arranged, with similar terms for Maynilad. In this plan the local partner will give up its 60% control in Maynilad but will be released from debt, while Suez will halve its shareholding in Maynilad to 20 per cent. It is true that Maynilad is bankrupt, and this is damaging Suez' financial position as well as its reputation as a technical operator. The government had hoped to benefit from Suez' international experience to solve Manila's water problems, e.g. the substantial water loss (Hall et al, 2004). If Maynilad's rehabilitation plan is approved, the government and ultimately consumers (and taxpayers) will take back once more what remains from this privatisation failure, apart from the MWSS debt burden.

Bangladesh:

The Dhaka Water and Sanitation Authority (DWASA) was established in 1963 to manage potable water, sewerage and storm water drainage for Dhaka, the capital city (Hall et al, 2004). During the global surge of privatisation during the early 1990s DWASA was experiencing major financial problems and severe operational inefficiency, with high system loss.

As a result the World Bank agreed to provide a loan conditional on some institutional reforms, such as a privatisation study, a pilot privatised scheme for revenue billing as well as a system for collection. DWASA, government representatives and the trade unions gave their agreement to an experiment to last for a period of one year, with one Revenue Zone operating in the private sector and another as an employees' cooperative.

Both DWASA and the private contractors were outperformed by the employees' cooperative in terms of revenue increase, reduction in unaccounted-for water, and increase in consumer satisfaction. Their success came from making the most of the experience and knowledge of the workforce through participative decision making, on top of investing in reliability. They doubled the salaries paid by DWASA as the members of the cooperative were rewarded based on the revenue gained (Hall et al, 2004). The private contractors lacked local experience and knowledge, while DWASA under-performed because of bureaucracy, poor pay and inefficiency.

The poor residents and slum inhabitants were connected by the employees' cooperative, since DWASA stipulated connection at nominal cost only to the officially owners of land within DWASA's area. The majority of the poor were not connected because they were not landowners, and were thus forced to buy their water from private vendors at a far

higher price. Connecting those residents to a reliable water supply and simultaneously bringing higher revenue were among the successful achievements of the employees' cooperative. Even the ADB acknowledged the success of this experiment (Hall et al, 2004: 16).

<u>Cambodia</u>:

Cambodia also represents a good example of efficient public management of water provision. The public utility in Phnom Penh has increased household access to the water network from 25 to 84% in the space of ten years, and this was welcomed by the Asian Development Bank (ADB) as an indication of impressive and real improvements in the performance of the utility (Cann and Jones, 2006). These dramatic improvements by a successful public utility are obvious, and consumer satisfaction is high. Water is available 24 hours a day in the served areas, according to a survey undertaken by ADB in 2004.

3.5 Potential benefits to be achieved from PSP [16]

Involvement of the private sector in water services might be justified on four social grounds: improved water supply and quality, better customer representation, more effective and legitimate bodies for customer representation, and more open and participatory regulation and enforcement (Dooling, 1999). Mazzucchelli et al (2001: 106) described some of the benefits from privatising water in Buenos Aires, such as (1) increased investment and cash flow for improvements to the water system; (2) greater number of connections (service coverage) for the previously non-served population; (3) tariffs remaining below their levels pre-privatisation; (4) improved service quality, especially in distribution; (5) significant reduction in network leakage, and (6)

16 This section draws largely on 'Toolkits for private sector participation in water and sanitation" by the World Bank: Transport, Water and Urban Development Department (1997) except where otherwise stated.

improvement in the operator's capacity to undertake a wide range of technical research, e.g. environmental and social surveys, among others (2001: 107). It is worth emphasising that service coverage should not be looked at as an independent indicator for overall service improvement, rather the number of connections installed must be considered as described above.

If the involvement of the private sector were a success in the utilities sector because of the channelled funds and technical resources invested, this would bring a wide range of benefits to the industry and its customers. For instance, PSP can reduce public spending on projects, eliminating the need for governmental borrowing to finance new systems and thus increasing the revenue from charges. Other benefits may include freeing the sector from government intervention in day to day management, as argued by Legge (1993). PSP could also help in tackling the issue of government subsidies, allowing for greater effectiveness of such a policy in targeting eligible consumers (Chapter Two: 2.5.3.1). In this context, the introduction of cost-reflective charging could offer sufficient returns to serve the high populations in other areas, which would mean meeting consumers' needs and preferences more efficiently, not to mention the likelihood of increasing technical and managerial capability across the whole sector.

However, to achieve success in PSP it is necessary to choose a private partner with a high level of technological capacity, innovative funding approaches and a reasonable response to political opinion. Technological ability can focus on solving specific problems such as improving operational efficiency, service coverage and the quality of provision, while funding approaches seek a tariff system which takes into account the willingness of consumers to pay. Additionally, responsiveness to political views will increase the

opportunity to gain support from different levels of government and from the key stakeholders. As highlighted earlier, Gleick et al (2002) believe that openness, transparency and well-established public regulatory supervision are key requirements when planning to shift the responsibility for water services provision from public authorities to private entities.

3.5.1 Key requirements for the potential PSP

PSP in water services is a large-scale process, usually conducted in two major steps. The first involves choosing the best option, in line with government evaluation and other relevant variables such as existing conditions, as well as preparing the regulatory framework. The second and much more crucial step deals with choosing a partner from the private sector to carry out the process of implementation. PSP in water services provision remains a strategic choice for many countries, or at least one solution to help escape the problems associated with provision, operation and maintenance.

By and large, success in choosing and implementing the option of PSP demands a genuine commitment by the government to build a partnership, and a high level of effectiveness in management, transparency, openness and appreciation of the investor's point of view about existing local conditions and their potential. This would emphasise the need for the future roles and responsibilities of each party to be clearly defined, with an assurance that these concerns are ones able to be implemented.

There are some issues which need to be addressed prior to the move towards PSP:

1. Identifying the aims of PSP in the water sector: whether these are to augment supplies, improve efficiency, introduce new technology, ensure new investment or a combination of some or all of these objectives.

2. Clarifying whether the existing tariff system will cover the costs of the intended improvements, or whether there is a need to impose new levels of charges with some consideration of the consumers' willingness to pay.
3. Ensuring whether the structure of the regulations has the capacity to support private involvement, and at the same time encouraging it to take some risks in investment. In addition a well-established and developed banking sector is important for success (See: Schwartz, 1995). Barnes (1995) claims that stock exchange entities are important for PSP, as they complement the institutional framework to facilitate the marketing of equity in sectors designated for PSP.
4. Winning the necessary support of the major stakeholders for the aims, or at least avoiding their opposition by the adoption of effective policies which consider the interests of the various groups.

To reach the collective acceptance of PSP by most of the stakeholders, the various concerned parties need to be invited to contribute fully or in part to the development of this process. Such groups could include:

1. Different ministries and governmental authorities that are directly concerned;
2. Governmental, provincial and local councils that have authority to endorse agreements with private investors;
3. Regulators, banks and other financial sources;
4. Regional and local planning authorities which propose general plans for infrastructure provision in accordance with national objectives;
5. Other agencies associated with the water sector such as environmental agencies, chambers of commerce and industry;

6. The current management of water services and the suppliers of equipment for the water industry.

There is another group to be added to the above-mentioned, which exists especially in countries with strong public representation and includes: (1) Political parties; (2) Labour and professional unions; and (3) Non-governmental organisations which have various aims and objectives, including any organisations concerned with consumers' rights.

3.5.2 The phase before choosing the option of PSP

This stage of the process involves a significant step, the preparations for PSP that governments need to make in line with the general aims of the sector.

Nickson (1997) argues that governments should have sound economic management; improved political legitimacy; clear roles; adequate legal reforms, and preciseness in their tendering procedures. He explains these conditions as follows, some of them having common characteristics with those recommended for assessing the viability of reforming other public services:

1. Achieving a well-managed economic environment: this maximises the benefits of PSP throughout the reduction of any risks associated with investment, such as instability in exchange rate policies. This will help to minimise the risks related to financing methods, including borrowing, which are needed for system expansion. Policies should be proposed for effective competition, bringing the water tariff to economic levels, as well as considering a set of counter-actions such as subsidising.
2. Political legitimacy: water services are at the centre of political attention because of their public visibility, and the belief that PSPs generate profits at the expense of consumers; not to mention concerns related to the loss of control by the public sector,

fear of possible foreign involvement, and ignorance of labour problems. The government must do all it can to involve the public in the process of dealing with these issues if it is to achieve legitimate decisions concerning them. Moreover, the views of different groups of service users need to be sought and incorporated during the process of developing relevant policies.

3. Clarity and continuity: all PSP options should be defined through well-prepared contracts after a process of careful legal evaluation and associated technical and financial advice to be used in negotiation. Any changes in policy might lead to lack of clarity, and to the private sector becoming unduly afraid of the risks.
4. Legal reforms: laws and regulations must be such as to create an acceptable framework that guarantees the rights of potential PSP partners, and simultaneously the rights of consumers. Any weakness in regulations and/or lack of precision in laws might also lead to apprehension of risk by the private partner. Legal reforms are required for various areas to do with labour, taxation, and restrictions on import and banking businesses.
5. Open tendering procedures: it is important to establish a system of tendering that is characterised by openness, and this is another aspect of the requirement to have good administrative resources. The procedures should cover the evaluation criteria, for example the need for a two-part bidding procedure where the first deals with technical, administrative and financial capacity as a pre-qualification for the bidders, while the second part covers the stage of submitting the price bids (Nickson, 1997).

To make the water sector attractive to private investors, comprehensive and detailed information about it needs to be collected by the government for assessment purposes.

This will help in determining any amendments that should be introduced prior to the introduction of PSP. Such an assessment must include the contribution of experts and consultants in the field to cover the following matters, described by the World Bank (1997) and also mentioned by Stottmann (2000):

1. Comprehensive technical assessment of the present condition of the system, including the serviced areas and those targeted for service expansion.
2. Accurate data about the condition of assets, and the current standards of performance. These can be obtained by an extensive review of annual reports to find out about levels of supply, service interruptions, manpower numbers, skills and salary rates, etc.
3. Analytical review of the basic financial resources in terms of the cost of meeting the government's objectives, and the implications of any amendments to service charges. This should include the tariff structure, subsidy schemes and disconnection actions.
4. Preparation of a comprehensive structure of regulations and performance incentives by economic specialists.
5. Evaluation of the existing legal framework and deciding what changes should be included, in addition to producing all documents related to the contractual phase.

3.6 The concern about water in the case of PSP

Calls for PSP emerged from the assumption that public services suffer from continued management weaknesses and the lack of necessary financial resources, among others. Ironically, advocates require the same government (i.e. this inefficient operator of public services) to regulate profit-seeking private firms despite suffering from serious limitations and inadequate resources. Many would argue that insufficient resources in the public sector are the outcome of inappropriate pricing, which reduces any investment to

expand or even maintain the existing infrastructure due to the shortage of revenue. Indeed, financial shortfalls have negatively affected investment in basic services over long periods of time, especially when profits generated from these services have been transferred to the general budget instead of being re-invested in the same sector. This situation is exacerbated when key users do not pay for the use of such services, including the governmental organisations themselves. This section attempts to highlight some of the concerns associated with involving the private sector in water services, starting first with some general concerns among governments and consumers, then investigates the dilemma of whether water should be considered a public good or an absolute economic commodity.

3.6.1 Governments' and consumers' concerns about PSP

Historically, water services have been administered in the belief that ministries, municipalities or public boards have a social liability to supply and subsidise water for the people, and in most cases there has been neither investment planning nor incentives for optimal management (Lokiec and Kronenberg 2001: 110).

The issue of providing the whole population with adequate and reliable water services at a price that they can afford is of great importance to any government; universal access to safe and reliable water is generally considered to be one of the basic standards for quality of life in contemporary society (Ernst, 1994: 37; Marvin and Guy, 1997; Holland, 2005).

Evan et al, (2002) claim that governments are certain that involving private operators will enhance efficiency; however, these governments may also be concerned that prices could increase to a level which poorer groups could not afford. Other concerns may be associated with: (1) the future of public sector employees, especially where there is

strong representation by workers' unions; and (2) losing direct control of a vital resource, from a political and strategic point of view.

These concerns need to be addressed in detail through the process of arranging PSP, in line with effective policies through the involvement of all stakeholders such as consumers, current employees and relevant governmental agencies during the early stages of the process. This will create an opportunity to devise successful solutions for the concerns mentioned above.

This could entail confirming whether designated services for PSP have actually lacked the financial resources to function properly in the first place, or have been subject to budget cuts or the radical reform of fiscal policies. Kessler (2002b) believes that considering their budgets is important, since the causes of deterioration in public services are not necessarily limited to corruption, incompetence, bureaucracy, overstaffing or the absence of innovative management skills. In contrast, private firms might be offered substantial incentives to invest capital in these sectors. In fact this may raise the question of whether or not the public sector could be improved and provide services efficiently, if its budget priorities were reviewed and re-evaluated.

Consumers are likely to have three major concerns about the process of PSP in water supply, and these are: (1) the price that will be levied for the use of services; (2) the extent of system expansion for the purpose of adding new connections in formerly un-serviced areas, and (3) the level of service standards such as water quality, reliability of supply, promptness of response to service enquiries, and the nature of administrative services such as billing, connection applications etc. Of course consumers will have different concerns, depending upon their income and whether or not they already have

access to the public network. Regardless of income, those who have a connection will not care much about system expansion unless they have an interest in limiting connection cost cross-subsidies. However those better-off are attractive customers for the operator, making them a favourable target for future improvements. In terms of the price for using the service, wealthier consumers are usually less concerned than low-income groups unless the price is to be differentiated, and customers with a better income are likely to pay higher bills. All classes of consumer are likely to share concerns about service levels. Those who enjoy higher incomes might care more about water quality and reliability, while poor consumers are more concerned with affordability and choice (Evan et al, 2002).

It has been said that if private sector participants are "*regulated effectively and if the service provider is innovative, PSP need not necessarily be a threat to poorer households and neighbourhoods*" (Johnstone and Wood, 2001: 2). This means that the public sector should remain a key player in this area as regulator and supervisor, bearing in mind the very public nature of water services and matters such as health and the environment.

3.6.2 Economic commodity or public good, the dilemma

Victorio (1995) asserted that "*water resources tend to be depleted because they are perceived by demanders as common property, property having no well-defined owner*" (1995: 20). The misuse of water can be monitored and then restricted by charging a per-unit price for usage; however consumers must not be denied access or disconnected from safe drinking supply just to make water services profitable. Nickson (1997) argues that the definition of what public goods are can be done most easily by looking at their counterpart, 'private goods', which are typically traded in markets through various price

mechanisms in what is known as the commodification process.[17] The ownership or use of a good (or service) can be transferred; therefore, private goods tend to be excludable from certain consumers, while public goods are non-excludable. (See also: Gleick et al, 2002) The United Nations Committee on Economic, Cultural and Social Rights declared in its International Covenant that access to water is a human right, and emphasised that water is a social and cultural good, not simply an economic commodity (Capdevila, 2002). The UNDP's 2003 Human Development Report[18] states that governments have traditionally provided public goods because "*their market value alone would not capture their intrinsic value and social benefits*" (2002: 111). It also emphasises that water as a limited natural resource has a public nature, which is clearly defined in the declaration. So the human right to water allows every individual sufficient, affordable and reasonably priced, physically accessible, safe and acceptable water for personal and domestic uses. (See also: Marvin and Guy, 1997: 23-24). Lack of access to safe and reliable drinking water has an obvious impact on public health.

Public goods are typically described as non-excludable, such as national security or environmental protection. Infrastructure and social services differ from pure public goods because they can be restricted and are excludable (Kessler, 2003). Like public goods, water services provide benefits that extend well beyond the particular individuals who consume them, such as improved public health and greater economic productivity. However, unlike public goods, they can be restricted and access denied to specific users.

Conversely, for social equity or for the numerous benefits of access to water services, no

17 It can be argued that commodifiying water may bring about greater efficiency in the management of such a precious resource. In that case, a market will be needed for it to decide its value. There remains the risk that those who cannot access the 'market' will eventually be left without the right to use it. The problem will be severe in absence of adequate legislation governing such services.

18 Available on: http://hdr.undp.org/reports/global/2003/

one should be excluded from at least a minimum level of service because of income or location (Kessler, 2003). But, like public goods, the same standards of service provision are supplied to all consumers connected to the network in terms of supply, interruption and water quality.

Nickson (1997:167) assumes that water can be looked at as an economic commodity, since a cubic meter consumed by one person is not available for consumption by another, despite the fact that many aspects of water supply and water quality exhibit the features of a public good. A public good is a good that is available to all members of society and not used by any one in a way that affects the ability of another to use it, as described by Gleick et al (2002).

A water service cannot be described as a total public commodity, because consumers are charged according to their use and non-payers are excluded by disconnection. So if water is managed on the basis that it is an absolute public good, it will be difficult for providers to implement the desired objectives associated with water conservation as an important natural resource. However, Gleick et al (2002) argue that economic definitions of goods should not be confused with the ownership, since a private good can be publicly owned.

In spite of this, water as a resource or services can be managed on the basis of being a public responsibility, which can be achieved through various institutional mechanisms and measures. Similar ideas were expressed earlier by Swainson (1976). Such measures aim at achieving the best approach with respect to water use on the part of consumers. It is worth mentioning that measures of this kind need to be developed in accordance with local experience, and to some extent to regional considerations.

Therefore it can be argued that access to an adequate and reliable water supply by all members of society needs to be taken as a 'right' not a 'privilege'. Privilege is something granted as an exclusive and peculiar benefit or special favour, whereas a 'right' is better interpreted as an obligation on the part of the government to ensure an appropriate service for its citizens.

3.7 Attracting investment versus risks

Haarmeyer and Coy (2002) claim that compared with other infrastructure sectors, the water sector received only 5% of total infrastructure investment during the 1990s, about 580 billion USD. Although the water sector has a feature of producing steady, long-term revenue returns, Haarmeyer and Coy (2002) attribute the relatively weak flow of private capital investment in water services to five characteristics which together represent considerable risks on the part of investors. They are in general terms:

1. The great involvement of different levels of government in regulating water services, due to concerns about health, environment and monopoly. Intervention is typically carried out in such a way that it exposes the sector to a high degree of uncertainty.
2. The small-scale of most water systems means they are very costly to deliver, while representing relatively low value compared with other sectors such as gas or electricity that can benefit from the advantages of regional integration. Private investors are less interested in a fragmented structure which might adversely influence efficiency measures.
3. Governmental intervention and political expropriation can significantly affect PSP due to weak or unclear regulatory and judicial frameworks.

4. Unstable currency exchange rates have an impact on attracting investment to services in countries with underdeveloped capital markets, with the concomitant risk for investors of not being able to recover the full value of their invested capital.
5. The under-pricing of water services due to government subsidies can discourage private investment. This occurs because in many countries water is considered a public good, with the perception of it being free or that it should be available to everyone (2002:8-10) (Also: Deane, 2002).

A starting point for obviating these risks and to open up the sector for investment would be to offer the private sector some investment guarantees reflecting the risks mentioned above, as well as the involvement of other organisations in the process of participation. This is not to forget the importance of introducing competition and more accurate pricing for the services provided.

A short-term incentive can be given to private providers to increase efficiency by making prices fixed, so that the company can make profits from cost reductions in any segment of the system's operation that do not compromise the right of consumers to receive good service. However problems may occur when prices and costs diverge later, which will create the need to reset prices in line with costs and consequently undermine this incentive. Consumers' long-term interests should not be compromised by short-term ones, for instance investment to secure a reliable water supply in the future should not be affected by favouring short-term objectives such as price reductions (Mumssen and Williamson, 2002). It can be argued that inflexible stipulations in the contract could make it less attractive for potential investors because these stipulations could considerably increase the overall cost of the concession. They could also limit the response to changing

social, economic and technical conditions which may arise over the life of the contract (Stottmann, 2000: 171). Such stipulations may involve serving physically remote areas with their unprofitable customer base.

3.7.1 Competition, a sign of good contracting

PSP is based on a detailed contracting process. The contracts are arrangements that encompass a number of practical steps and legal terms by which governments can make sure that PSP in public services is successfully attached to certain standards of accountability. Good contracting is essential to maintaining efficiency, as well as customers' interest and satisfaction. However, competition is a key element to establishing a reasonable foundation for negotiations over performance and provision responsibilities (Levy and Spiller, 1994; Stottmann, 2000). For example, water concessions may be granted according to the lowest tariff, or to the best offer for improving access to the public network such as additional connections, or a combination of these two promised by the bidder's contract (Kessler, 2002b). However, contracts may be subject to particular terms for periodic or exceptional renegotiation.

Although natural monopolies in water can weaken the significance of competition, nevertheless competition remains a necessary lever for improving performance and the quality of provision by bidders (Seppala et al, 2001). Competition to win a license to operate can be maintained if enough qualified firms enter the bidding process, to deliver quality and low prices to the same customers. The qualifying competitive bidders should have a reputable record of experience and an acceptable degree of performance in the field where they are to invest (Kessler, 2002b). Normally the bidder that can provide water services to the greatest number of residents at the lowest possible tariff will win the

contract. Good competition, properly introduced will certainly affect the level of regulation required. This means that the more competition is introduced the less regulation may be needed, especially for governments with limited regulatory capacity (Stottmann, 2000: 169).

The possible competition options applicable to the water sector are set out in the 'Toolkits for private sector participation in water' by the World Bank (1997). They are:

- Competition at different levels of the water sector. This could be introduced by separating bulk treatment and supply from distribution, and allowing competition among suppliers.
- Competition for the market through tendering of a concession, lease, BOT, etc. to a private entity which has relevant experience of handling an infrastructure sector with a large and diverse customer base. Through this competition, companies acquire exclusive rights after winning a time-bound contract awarded to them over an operating area.
- Comparative or yardstick measures used when there is an established flow of information about utilities' performance, management and regulation. These will be used together with price controls to ensure that efficiency targets are incorporated with price increases, as well as the services received against money paid.
- Competition in the market is not easily introduced into the water sector, apart from construction work to increase capacity, providing plumbing services to utilities customers, or perhaps meter-reading tasks [19] for the sole operator.

19 Such responsibilities can be handed over to a private corporation that enjoys wide experience and large resources, to provide a high quality, cost-effective and progressive services in meter reading, data collection and related metering services.

Haarmeyer and Coy (2002) argue that the introduction of privatisation into the water sector in England and Wales has made the UK a leader in meeting EU Directives, due to the remarkable improvements resulting from capital investment within the allowed price-cap structure (Also see: Graham, 1997: 137).[20] As Mumssen and Williamson (2002) put it, long-term assets and investment in the water sector represent the key issue that complicates any attempt to generate sufficient competition in the market, although that is not to disregard its monopoly characteristics (2002: 32).

3.8 Regulation of PSP

Regulation is needed to 'sanitise' the exchange of public monopolies for private ones. It is also needed to ensure the compliance of the new monopolies, while at the same time "*enabling them to draw in the capital required from private investors on a sustainable basis*" (Kinnersley, 1994: 169). Ernst (1994) regards regulation as an inevitable structural accompaniment in sectors that feature the characteristics of monopolies.

It has been argued that involving private partners without effective regulation may not encourage them to deliver performance of a high standard; effective competition between providers will introduce and ensure efficiency. Regulation is essential, which is why the 1986 White Paper in England and Wales that proposed privatisation of water services also proposed the creation of an Office of Water (Ofwat) to undertake economic regulation, including price controls (Legge, 1993). So, "*the regulatory approach to the natural monopoly problem is based upon the establishment of agencies endowed with particular industries*" (Vickers and Yarrow, 1985: 20).

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20 In such a developed sector, an innovative approach may be used to further improve competition across boundaries. Haarmeyer and Coy (2002) explain that Ofwat allows companies to compete to supply large customers in each other's territory, making their pipes common carriage and available to their competitors. This became possible after the implementation of the UK Competition Act 1998, which gave Ofwat powers to remove barriers to competition in the water sector (Also see: Seppala, et al, 2001).

In addition to good competition, PSP should be arranged within an effective regulatory framework to oversee the overall operation. A strong regulatory system is important to ensure that the private provider is carrying out all its contractual obligations; it should be well presented and operate effectively. It should cover the areas of independence; openness; access to legal recourse, and a strong institutional framework. Nickson (1997) assumes that this issue will be highly challenging, especially in countries still at the stage of developing their regulatory system since in some cases these lack openness and transparency, and in others involve highly complex structures which make them prone to political interference.

The nature of any outcomes anticipated from PSP in water services largely depends on the success of the regulatory mechanisms that are applied to guide decision-making within the model of services provision. Furthermore, the early consideration of regulations prior to PSP would help prevent any of the potential risks in such a costly and time-consuming process.[21] Figure 3.1 outlines a structure through which such decisions may be made and brought to implementation.

21 In the absence of an independent regulatory authority, a city council or municipality can take the role of regulating water services' provision according to the terms of the agreement such as performance targets for coverage, water quality, leakage detection, rehabilitation of the system, etc. Haarmeyer and Coy argue that the City of Sofia in Bulgaria presents an example of this situation, where the first concession was signed in 1999 with one of the prequalified firms who submitted the lowest proposed tariff. This was regarded as the key decision variable (2002: 14).

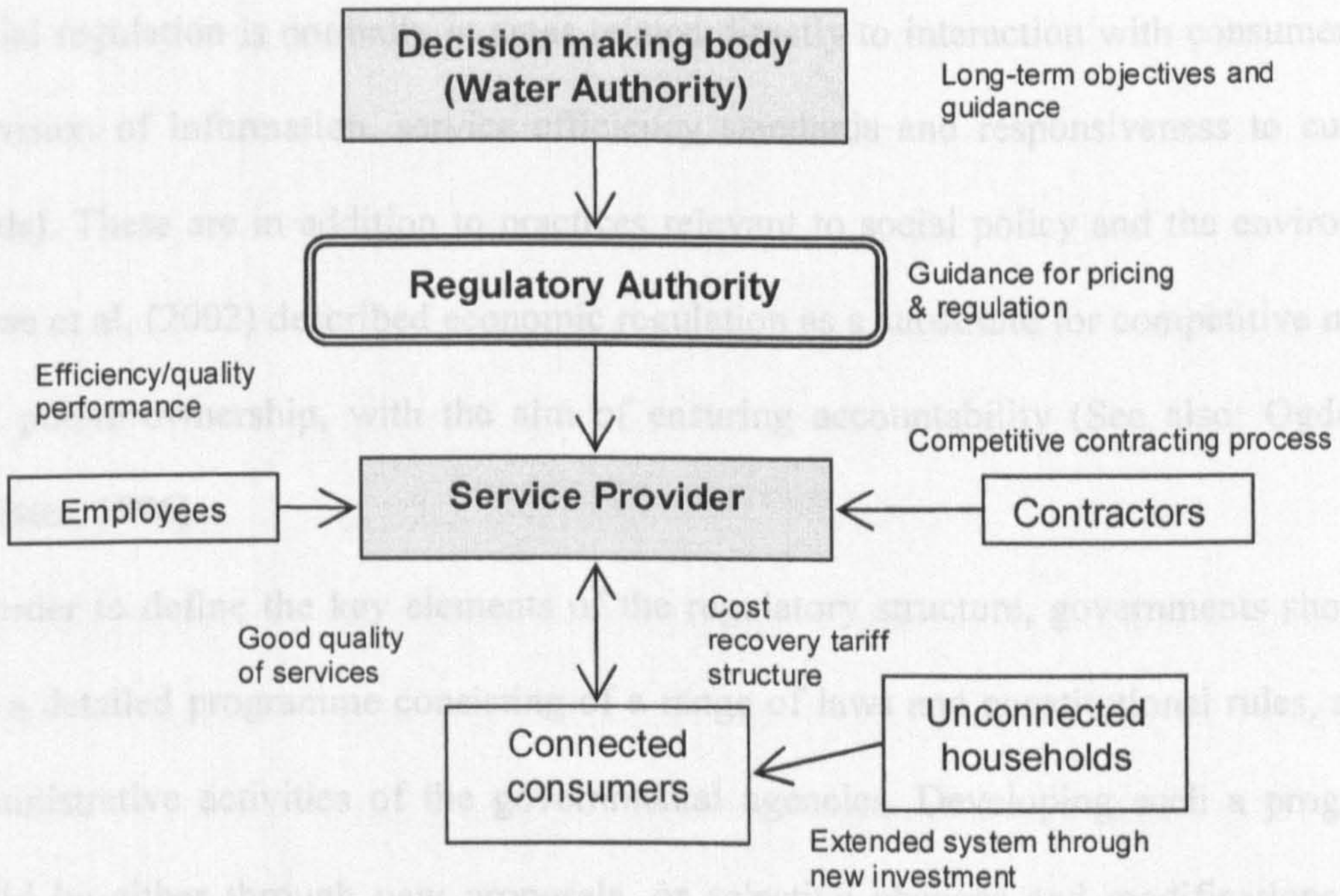

Figure 3.1: Model of water services provision. (Reproduced and adapted from Foster, 2002)

3.8.1 The main characteristics of regulation and the regulator

As explained earlier, effective private involvement, especially in water services which feature natural monopolies, requires effective government regulation, monitoring and enforcement. The government should be able to create and back a regulatory authority that has sufficient resources to observe the functioning of private provision of services.

It has been argued that regulation consists of two major components, economic and social. Ernst (1994) believed that differentiation between them is neither clear-cut nor preferable. He went further to say that "*in practice the two dimensions of regulation are intertwined*" (1994: 55). Swann (1988) claims that economic regulation concentrates on the sector's role in the economy (e.g. monopoly practices, competitive structure, etc.) and the financial management of the sector (return on investment, pricing of services, etc.).

Social regulation is normally in areas related directly to interaction with consumers (e.g. provision of information, service efficiency standards and responsiveness to customer needs). These are in addition to practices relevant to social policy and the environment. Howe et al, (2002) described economic regulation as a substitute for competitive markets and public ownership, with the aim of ensuring accountability (See also: Ogden and Glaister, 1996).

In order to define the key elements of the regulatory structure, governments should set out a detailed programme consisting of a range of laws and constitutional rules, and the administrative activities of the governmental agencies. Developing such a programme could be either through new proposals, or selective changes and modifications to the current framework. This comprehensive programme should create a coherent structure for the regulatory framework which is likely to play a leading role in PSP in water services.

Among the steps to be taken in this context are: (1) assigning legislative responsibilities to different levels of decision-making, with clarification of jurisdictions; (2) putting forward the measures needed to legislate for PSP if none exist;[22] (3) improving the laws that manage water resources, the environment and public health; (4) developing laws to administer the contracting process and competition; and (5) initiating legal arrangements associated with financial regulation and investment.

On the other hand, Mumssen and Williamson (2002) describe some general aspects that need to be in the regulation framework. They believe regulation should be:

- Open: a process that allows interested parties to put forward their views and be challenged by others, providing maximum access to relevant information.

22 Water legislation is an instrument to implement a new policy or to operate a current one. A well-timed matching up between legislation and policy Introduction should not be ignored because of the extensive processes involved in developing new legislation. Sometimes new legislation is developed, or existing legislation amended, with no obvious policy gain.

- Transparent: the demonstrable use of available information where a regulator reaches decisions on the basis of observable data sources, in order to minimise the scope for discretion;
- Consistent: whereby the regulator uses a stable set of decision criteria to ensure that when change in regulatory methodology or practice is required, this can be done in a manner that is as acceptable and predictable as possible;
- Accountable: decisions should be justified by reference to defined criteria (such as a list of regulatory objectives), so that they can be effectively challenged. This provides an incentive to establish a good process for making decisions (2002: 37-38).

Kessler (2002b) describes five fundamentals that can assist in improving the governance of the regulatory body, including:

(a) Independence: independence for the regulator is essential to improve both the capacity and integrity of the regulating process and to ensure long-term consumers' interests, which is of fundamental importance to ensure impartial decision-making. The independence of the regulator can be promoted in these ways:

1. Selection of staff should be made entirely on the basis of professional criteria, and all selected personnel should have proven experience in the area for which they will be responsible.
2. Regulators should be provided with fixed terms and legally protected from subjective dismissal, which will safeguard them in the case of their making decisions against the wishes of political leaders. Mumssen and Williamson (2002) back this idea, since the regulatory authority is normally appointed; this makes regulation strongly related to the political process.

3. Financial resources for the regulator should be obtained in a way that ensures autonomous decision-making to eliminate any form of influence that might occur, especially from groups with an interest in specific regulatory outcomes. Mumssen and Williamson (2002: 38) add that the regulator has to be protected from being deprived of funds. Foster (2002: 83) advocates that regulator funding should be independent of the general budget, and subsequently provided by means of a percentage levy on the turnover in the industry. However, it is not unusual for the early stages of establishing the regulatory agency to be funded by government resources until the desired level of autonomy is attained (Foster, 2002).[23]
4. Regulators should be excluded from activities or financial interests in the private firms they regulate, or firms in related sectors; and for a certain period after they leave the public sector.
5. Regulators should benefit from competitive salaries compared with those offered in the private sector (Kessler, 2002b).

Stottmann (2000) argues that the level of independence should not undermine the accountability of the regulator. This could be avoided through the clear specification of duties, and transparent decision making.

(b) Capacity and resources: the complexity and frequency of the regulator's responsibilities are the two factors that determine the level of regulatory funding requirements and the quality of the staff. For instance, inspection of water quality twice a week will cost more than doing so once a month, and there is a wide range of water tests that can be conducted. Similarly, monitoring the costs and expenditure of a firm can vary

23 But this does not abolish the need for the government to approve the regulatory budget through the usual channels of public auditing.

from simply receiving invoices to providing specialised accountants. It is essential that the complexity of regulatory responsibilities be appropriate to the skills and experience of staff at all levels; it is clearly recognised that as monitoring complexity and frequency increase, this will increase the resources required and consequently the cost. The option of assessment by a panel of non-political experts could be adopted, aimed at protecting the regulatory authority against under-funding and to help administer the regulatory needs. The panel's recommendations may be circulated publicly; these recommendations are not necessarily binding, but could influence and raise concern about the resource (Kessler, 2002b).

(c) Enforcement and coordination: the regulator will only be able to guide the performance of private firms in service provision to achieve the desired outcomes if it has the necessary powers to enforce and penalise any misconduct, for example by imposing fines. Coordinating tasks and responsibilities to a good level should be well-embedded in the policy design, to overcome any potential overlap or competition among the different public agencies. In the absence of good coordination, uncertainty about rules and authorities can lead to open disagreement among government officials, which is likely to adversely affect the implementation of previously approved decisions (Kessler, 2002b). However, defined authorisation, scope of interest and procedures for operation are key requirements if the regulator is to maintain accountability. Furthermore, Mumssen and Williamson (2002) indicate that specifying the regulator's duties and powers should be stated clearly in the legislation in the first place, in order to legitimise its decisions and raise its accountability in accordance with the democratic process.

(d) Transparency: the importance of transparency in regulation is the same as it is in the reform process. Any information obtained by the regulator should be fully disclosed to the public in an understandable way, by means of whichever media are used by most citizens. It is also recommended that the regulator publish all its decisions, together with an explanation of them (Kessler, 2002b).

(e) Legal recourse: consumers should have access to an organisation (which can be partially or totally independent from the regulator) that is equipped to receive their complaints and grievances. This organisation, which could involve representatives of the public and a wide range of stakeholders, should operate as an advocate for consumers in any disputes. Consumers with grievances should also have access to documents or data provided by a company that denies misconduct. As part of this transparent behaviour any decision taken in settlement of a dispute should be publicly disclosed, for protection of the decision and the interested parties (Kessler, 2002b).

Additionally, Stottmann (2000) believes that adequate discretion being given to the regulator (clearly specified in the applicable law) is also important and desirable if it is to deal with unforeseen situations during the life of the contract.

3.8.2 The role of the regulatory body

The regulator's role would depend on the appropriateness of the regulatory framework, in terms of proposals and the method of their implementation. Of course effective regulation requires long experience, and will evolve gradually over time. However some key courses of action regarding tariff-setting, access to services or system expansion should be well-established prior to embarking to PSP, as a requirement for regulatory reform. Once the regulatory framework has improved sufficiently, the regulator will be able to:

(1) monitor performance and information collection and circulation; (2) deal with prices and prevent hidden price rises, while maintaining standards of service; (3) identify quality and safety standards; (4) approve adjustments in structure or investment commitments; and (5) handle complaints so as to resolve disputes, imposing financial penalties if needed (Stottmann, 2000; Kessler, 2002b; also in: Holland, 2005). Each regulatory body will have its own approach to carrying out its responsibilities, in which its role and powers are clearly specified and identified. Those roles and powers are the key difference between regulatory bodies, and this is related to a large extent to the level of transparency introduced into the system.

Among the key responsibilities of the regulator are monitoring and enforcement of contract terms, in order to keep the provider accountable and committed to its obligations. Achieving the objectives of PSP requires adequate monitoring of performance by the regulator, making that 'performance-based' to ensure delivery is accurately carried out in accordance with the agreement. This must be maintained, since the risks are shifted onto the private sector that entered the bidding process based on fair competition.

This type of performance contract has a number of weaknesses, as explained by Kessler (2002a). He describes two issues that should be addressed, those being:

1) A certain quantity of production should be specified in the investment commitments drafted in the contract stipulations. Concurrently, innovative methods of service delivery should be encouraged to cut costs. Payment will continue unchanged, therefore any savings in production costs will increase the investors' returns.

2) The regulator should establish certain criteria that involve 'business-related reputation' to ensure that only suitable operators take part in during the bidding process. The contract

should be awarded not only on the basis of the lowest bid; expertise needs to be considered to keep the tendering free of over-assurance, to be a matter of performance rather than promise (Kessler, 2002a).

Besides monitoring, examining and enforcing the compliance of private provision of services in accordance with performance standards, regulators should also enforce measures controlling environmental protection and consumer safety. In fact the political system that responds to the needs of its people, and allows freedom of speech through respecting the right of association can offer consumers the opportunity to levy accountability for their services, especially if the regulator lacks the essential qualities for its tasks (Kessler, 2002b) or is in the early stages of development.

Effectiveness of regulation is a vital element in improving the quality of services, and requires adequate powers of enforcement over the operator to comply with agreed criteria for provision. Such powers are better defined in the general law rather a lower level of the legal machinery. Typical service parameters include water quality, pressure and continuity of supply (Foster, 2002: 94). Implementing the regulations needs to be carried out through enacted arrangements, an approach developed for the purpose of ensuring compliance to these parameters through explicit procedures involving fines and sanctions. Foster (2002) described such an approach as one based on a classification of the different types of anticipated non-compliance in a hierarchy, with suitable penalties imposed at each level. Typically, fines are either levied as direct cash sum or as a percentage of revenue. Foster (2002) supposes that satisfactory dispute resolution procedures and a body to hear and deal with complaints concerning reliability, quality and over-charging is required, and needs to be specified prior to privatisation. Not to comply with quality

standards and other regulatory obligations will be considered as failure and likely to result in fines or other financial penalties, or possibly in extreme cases to result in a withdrawal of the license to operate as a water company.

4. Saudi Arabia, a Case Study

4.1 Introduction

4.2 Background

4.3 Country Profile

4.4 Existing conditions

4.5 Critical issues and future challenges

4.6 The Five-year Development Plans

4.8 New initiatives for improving water services

4.9 Before plunging into the privatisation of Saudi water

4.10 Concluding remarks

4.1 Introduction

This chapter begins by describing the physical profile of the country, and gives some key facts and statistics about existing conditions with particular focus on the water sector. The chapter explores the effects of the physical transformation of Saudi Arabia into a highly urbanised country with exceptional population growth, which has resulted in new patterns of demand that undermine sustainable provision considering the country's severely limited sources of fresh water. These are looked at as one indicator of the magnitude of the task the Saudi government has had to undertake when developing its service sectors. Water in Saudi Arabia involves many dimensions and these will be described when considering the research, including the history of water supply and the related institutions. This will facilitate the review of Saudi water provision and the context of supply and demand from all sectors, residential, industrial and agricultural. There is a brief account of desalination as another means to augment water supplied for drinking purposes. Other sections in this chapter deal with the critical challenges facing the water sector; finally the most recent changes and new initiatives intended to guide the objectives for improvement are examined, including the privatisation strategy introduced by the government, as well as the investment legislation of 2002.

4.2 Background

Arab countries, including Saudi Arabia, represent 10.3% of the world's surface area and 5% of the world's population; however, they possess only 0.4 percent of the world's recoverable water resources, and share only 2% of the world's total rainfall (Rached et al., 1996). These facts account for one of the lowest averages of water per capita for all uses, including agriculture, in the Arab region at just 1,700 m^3 per year

(only 1250 m^3 in 1996, according to Faruqui, 2001) compared with the world average which is about 13,000 m^3 (Abdel Mageed, 1994; Rogers, 1994). Faruqui (2001) expects this rate to fall below 725 m^3 by 2025. He adds that 1000 m^3 per capita per year is widely viewed as a benchmark to indicate water scarcity. A decline below this level in any country should be considered to indicate a chronic dearth, and is likely to result in severe water stress. This situation would both hinder development and adversely affect human health (Faruqui, 2001) (also in: Fakieh, 1997; Bremere et al, 2001). For a country located in a desert region where water is extremely limited, and where a large proportion of water is taken from non-renewable resources, it is obviously essential to ensure that the use of water is effectively controlled.

Saudi Arabia has been transformed in a few decades, from being entirely rural into one of the most highly urbanised countries; almost 85% of the population live in urban areas. In 1987 the water available in Saudi Arabia was 180 m^3 per capita (Agnew and Anderson, 1992), falling to 160 m^3 in 1990 and projected to be only 50 m^3 in 2025 (Gleick, 1993; Dolatyar and Gary, 2000). Cordesman (2002) claims that the internal water resources which can be considered renewable are very low, only about 2.33 million km^3. This total is equivalent to about 156m^3 per person. Indeed these figures show that Saudi Arabia also has one of the lowest averages of annual water availability per capita in the region. At the same time daily water consumption has reached one of the highest rates in the world, with residential usage per capita standing at approximately 300 litres per day in 1999, having been just 120 litres per person per day in 1980. Several reasons underlie that increase; the supply of water at a very low cost might be one of the main reasons for greater per capita consumption, especially in large cities (MOEP, 2000b).[24]

24 Responsibility for the national economy was moved from the Ministry of Finance and Economy, which afterwards was responsible only for finance. The department for national economy was merged with the Planning Ministry which

4.3 Country Profile

This section offers a brief account of the main geographical and climatic characteristics of Saudi Arabia. It also describes the system on which the government is based, summarises the main aspects of the economy and describes the characteristics of the population.

4.3.1 Geography and Climate

The importance of Saudi Arabia's geographical position is readily apparent, as it is strategically located between Africa and mainland Asia at the crossroads of Europe. It lies close to the Suez Canal, and has frontiers on the Red Sea and the Arabian Gulf. Saudi Arabia comprises approximately four-fifths of the Arabian Peninsula (Figure 4.1), that is about 2,250,000km^2. Almost half of Saudi Arabia is covered by desert and sand ridges, and the country has a lack of permanent water surfaces. Topographically the whole country is a vast platform of ancient rocks, which in general terms falls gradually from the west to the east. Along the Red Sea lies Tihama, a coastal plain about 1,100km long and nearly 60km wide in the south. This gradually narrows towards the Jordanian borders (Gulf of Aqaba) in the north. To the east of Tihama, a mountain chain called Sarawat falls gradually from south to north, from 3000m in height to 1000m, creating several valleys eastward and westward. The Najd plateau is located to the east of that chain, containing escarpments with gravel and sand deserts. On the eastern side of the country, the Arabian Gulf coast is flat and low-lying for about 610km. The Empty Quarter in the southeastern part of the country occupies an area estimated at 640 thousand km^2, made up largely of sand deserts (Twitchell, 1947;

became the Ministry of Economic and Planning (MOEP); it has to have a comprehensive purview of the national economy if it is to get its parameters right when preparing the five-year development plans.

Othman, 1983; Al-Farsy, 1990; MOEP, 1999; Al-Ghamdi, 1999; Al-Buraithen, 2000; Al-Bassam, 2001).

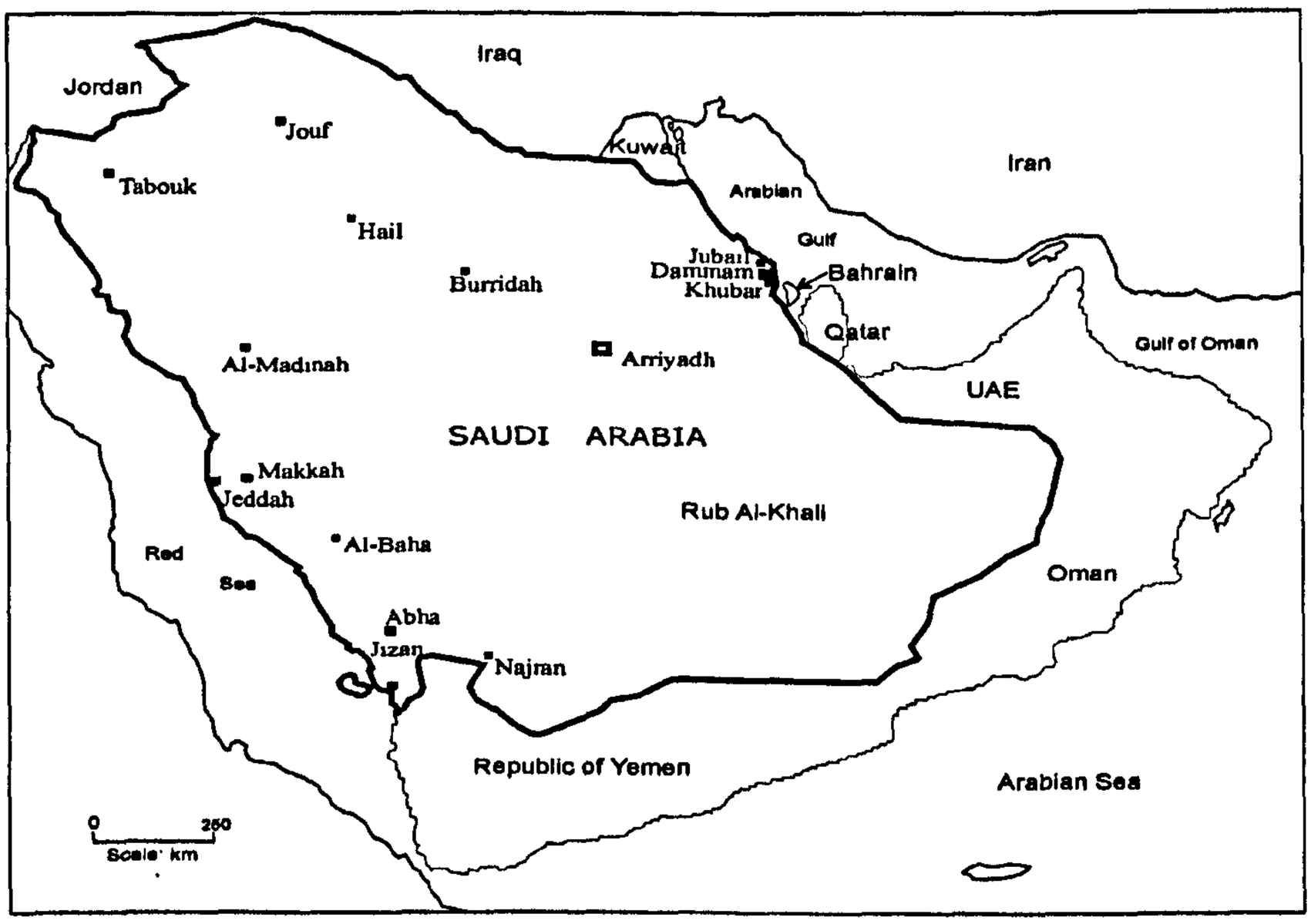

Figure 4.1

Saudi Arabia suffers from very harsh weather and a low, very irregular rainfall, which varies according to the topography and is influenced by the subtropical high-pressure system (Agnew, and Anderson, 1992). For instance, in the central region and most inland areas summer temperatures may reach 45-48°C between June and August, with 37°C on average, followed by a dry spell during winter. Light rains are also seen between November and February, similarly in the northern region. The eastern region experiences high humidity, with temperatures rising to 43°C in summer. During winter the temperature remains moderate, and some rainfall is also experienced. Coastal areas of the Red Sea have a sub-equatorial humid climate. Rainfall in this region is light and occurs primarily during the winter season, which is otherwise generally moderate. The south-western region, which is marked by high mountains, benefits from moderate temperatures in summer and a humid winter. Here the rainfall may reach perhaps 500ml per annum, benefiting from the summer monsoon coming

up from the Indian Ocean. Conversely, the rest of the country regions witness an average rainfall of only 50-100ml annually, between November and May (Othman, 1983; Al-Ghamdi, 1999; MOEP, 1999; Al-Buraithen, 2000; Al-Bassam, 2001).

4.3.2 The system of government

The country is divided into 13 administrative divisions known as provinces, and each province operates a number of administrative governorates. The legal system in the country is fundamentally based on 'Shari'a' (Islamic law),[25] alongside the Basic Law that defines the government's rights and responsibilities. The country is governed by a monarchy, in which the King takes the duties of the Prime Minister. This means that the King is both the chief of state and head of government. The government consists of two major councils. The first is the Council of Ministers (the Government Cabinet was formally established in 1953) which consists of the Prime Minister, his Deputy and Cabinet ministers. The Council is responsible for drafting and overseeing the implementation of internal, external, financial, economic, educational and defence policies, and the general affairs of state. Second is 'Majlis Al-Shura' (the Consultative Council), whose primary function is advising the Prime Minister on issues of importance to the nation. Its members carry out their tasks for a four-year renewable term, and represent the full spectrum of Saudi society. This council consists of 120 members (increased recently from 90, following an earlier increase in 1997) in addition to the Chairman, Deputy and council secretariat.

25 Shari'a extends beyond jurisprudence into the entire religious, political, social, domestic and private life of people and is mainly meant for Muslims, but applies to a certain extent to other people living in a Muslim society. Shari'a Law is the name given to the Islamic legal system derived from its primary source, the Holy Koran. The second element is known as the Sunna, these being the teachings of the Prophet Mohammed that are not explicitly found in the Koran. The third element of Shari'a Law is known as the Ijma (or conventional agreement) of Muslim scholars. These are rules obtained from opinions developed on the basis of debate and subsequent consensus among religious scholars, and Muslim society as a whole. When it is not possible to draw a rule or to find adequate and specific guidance from the previous sources, a supplementary system called the Qiyas may be used. This helps the judges and scholars to draw parallels with the first three sources (see: Faruqui, 2001).

Al-Farsy (1990) describes some of the Council of Ministers duties and functions, among those concerned with the economy:

1. The annual budget, the approval of the year-end balance sheet of the state, and the making of new appropriations;
2. Concession and monopoly contracts granted to individual companies;
3. Any contract, measure or obligation for which there is an appropriation in the provisions of the public budget and which involves SR30,000 or more, if the ministry concerned deems it necessary in executing it to go beyond the established laws of the state;
4. Conciliation in disputes to which the state is a party, when such conciliation involves a charge to the state Treasury or a waiver of amounts payable to the state in excess of SR50,000 regardless of the origin of the obligation.

4.3.3 Economy and Oil Resources

The importance of Saudi Arabia is undeniable for a variety of reasons, not least its economic strength in the region. The value of its vast petroleum deposits adds political and economic weight to the country's position. Crude oil and petroleum production means that developments are taking place in the context of wealth rather than poverty.

As an oil-based economy, Saudi Arabia has the largest reserves of oil in the world (26% of the proven total). As a major oil exporter, petroleum generates almost 75% of budget revenue and 40% of GDP. According to recent (2001) estimates Saudi Arabia's recoverable reserves now stand at 261.8 billion barrels, which represents an increase on the 1993 estimate of 260 billion barrels. However, a steady increase in population has caused growing demand for public services and this, along with the global fluctuation in oil prices, means that the government suffered an average budget

deficit of approximately 7 billion USD annually between the mid 1980s and the late 1990s. According to Montague (1994) this has affected the country's foreign reserves, which have fallen from 120 billion USD in 1983 to below 10 billion USD due to the sharp fall in national income from oil exports (Montague, 1994). The government has encouraged economic diversification, aiming to minimise reliance on the production and export of crude oil as the main source of national income. Luckily, this action was reinforced by increased oil prices during the late 1990s. Following almost two decades marked by constant deficits, budget surpluses are expected in the future and these might be directed to the reduction of domestic debt (MOEP, 2000c; SAMA, 2000; UNDP, 2002).

Al-Qhatani (2002) described the economic conditions in Saudi Arabia, which he thinks are characterised by:

1. Commitment by the government to improve and promote the participation of private investment in a competitive market.
2. Stabilisation in the political and economic environment; for instance, there has not been any expropriation or nationalisation, nor confiscation of foreign investment in the country. In addition, there are stable exchange rates and low inflation.
3. The country has the second largest economy in the Middle East after Turkey. The GDP in 2000 was 168.8 billion USD, nearly 55% of the GDP of the Arabian Gulf states.
4. The country has well-established infrastructure networks and mature banking services.
5. Because the country has one of the largest reserves of petroleum and gas, this places it among the cheapest sources of energy in the world (Al-Qhatani, 2002).

The economy of Saudi Arabia experienced exponential growth caused by the peak in oil revenues during 1980-83 (see figure 4.2). This was followed by the government taking action to adjust the level of public spending downwards, putting more pressure on economic activities, including the infrastructure required to satisfy growing demand. These adjustments were achieved by successful national planning. The early development plans ensured that national revenues were applied to the essential tasks of developing infrastructure and production (industry and agriculture); later plans focused on consolidation of resources, taking into account the prevailing economic climate. It can be said that the boom years were years of great achievement, but they produced economic and social strain. The need to develop the country economically and as quickly as possible meant that speed sometimes took precedence over cost-effectiveness (Al-Farsy, 1990).

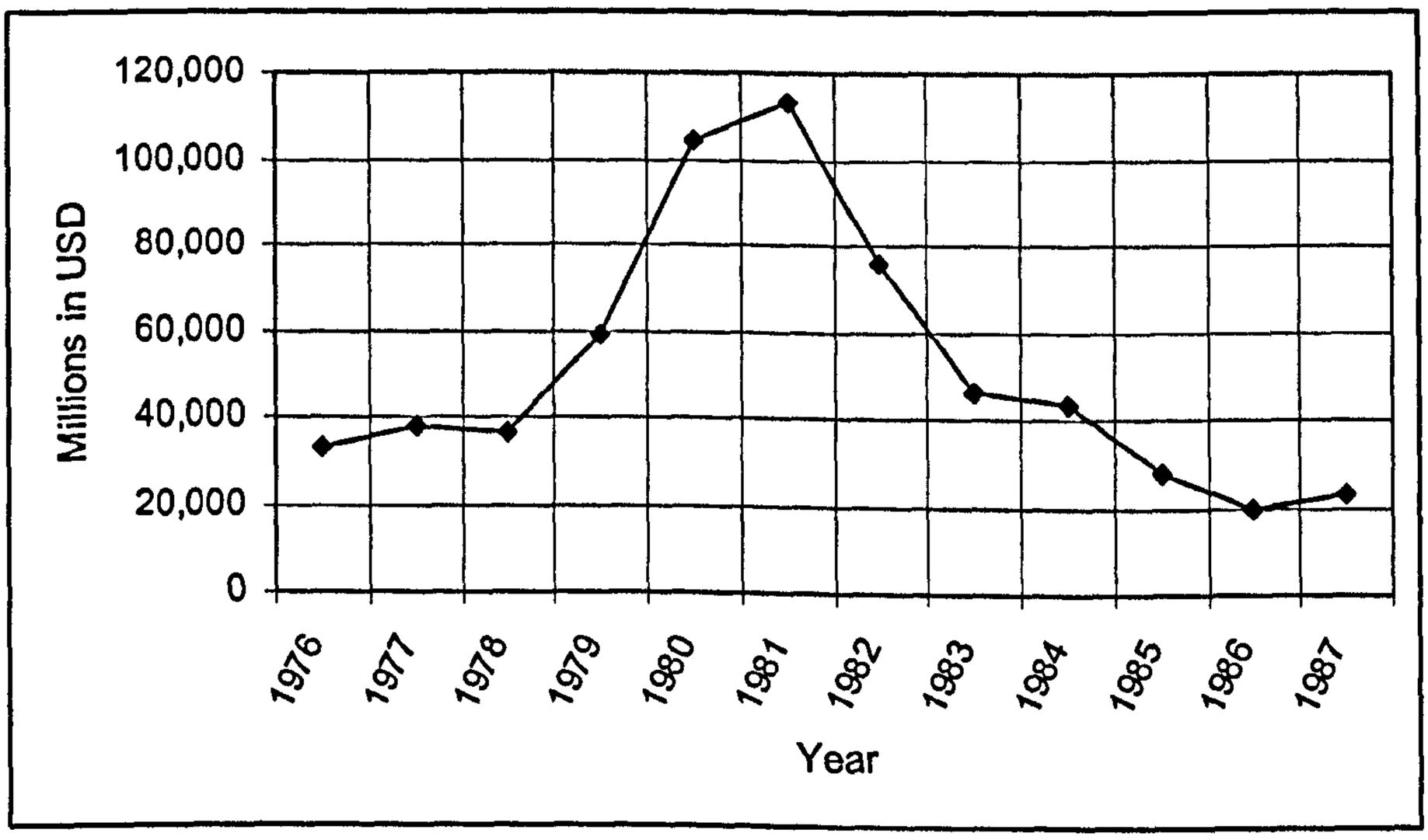

Figure 4.2: The oil revenues (1976-1987)
Source: Royal Dutch Shell Group (1988) In: Al-Farsy (1990)

The global rise in crude oil prices during the past few years (since 2000), coupled with an increase in the quantities produced, has resulted in a major boost for the Saudi economy. The recent government revenues from crude oil exports including natural

gas and refined products will bring about a budget surplus, due to the exceptional oil prices in the global market which is driven by high demand and relatively tight supply, particularly in the refining business, according to a report (The Saudi Economy at Mid-Year 2005) published by the Samba Financial Group in August 2005. The report anticipates a growth in business investment after being flat for several years, especially for large-scale projects.

The current oil boom (see figure 4.3) is driven by high and sustained demand, in a national economic environment marked by the growing role of the private sector in investment activities, together with depth and diversity in the economy. These activities are also benefiting from new sources of capital in the stock and bond markets, and the improved institutional base and regulation functions that have been put in place. But most importantly, a well-established infrastructure has been developed thanks to government spending over past decades, creating the opportunity for new developments that have involved public and private participation.

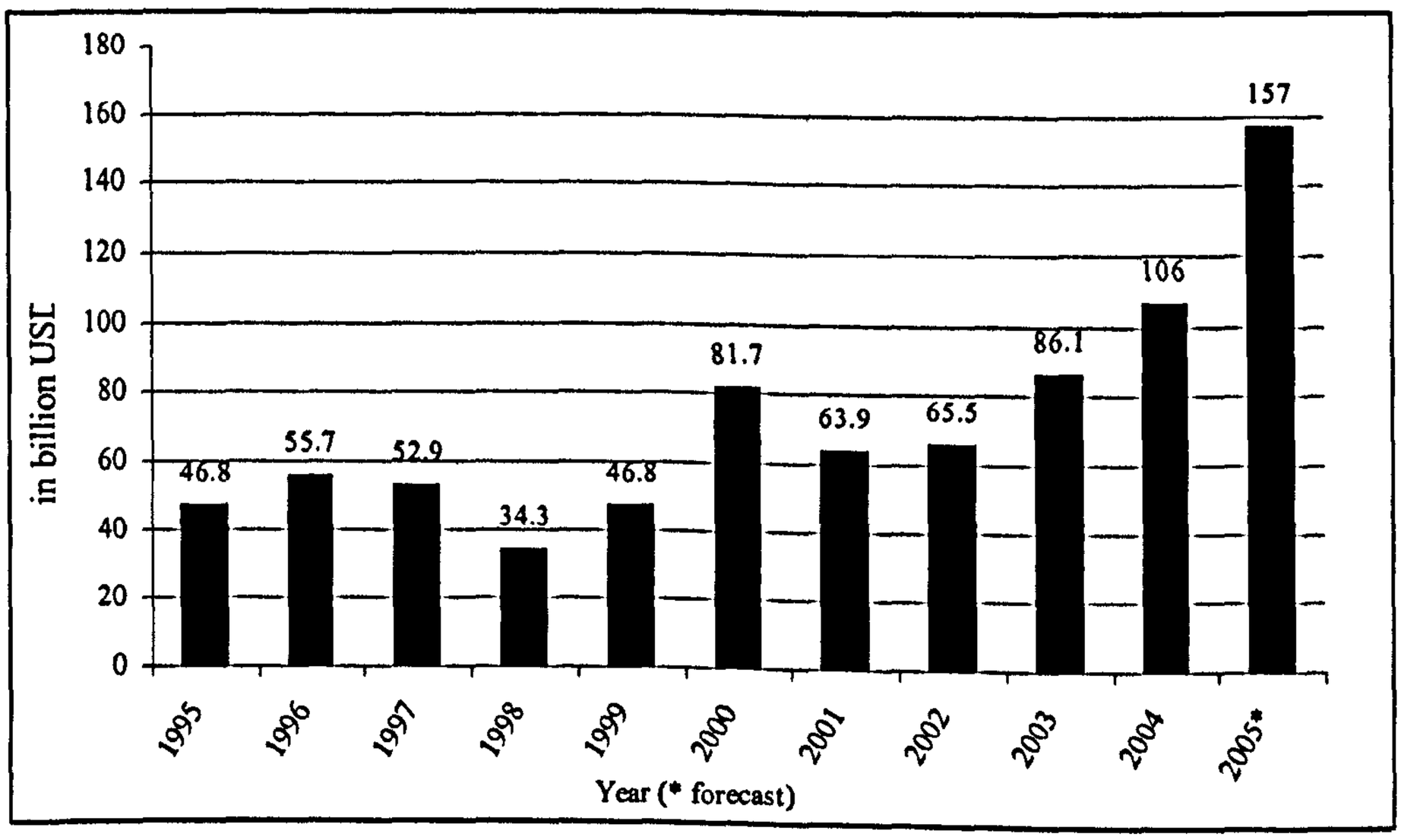

Figure 4.3: Saudi oil export revenues (1995-2005)

Source: Samba Financial Group (2005)

Due to the high level of forecast revenues from oil export, because the government based its 2005 budget on an estimated oil price of 25.5 USD per barrel as a requirement to plan for the budget (it should be noted that the average Saudi oil price is 7-10 USD less than the West Texas Intermediate average). It is likely that the government will increase spending over the planned budget, considering the actual surplus at the end of the fiscal year. According to Samba (2005), the 2005 budget required spending and revenue to balance at SR280 billion, while the forecast was that total spending would actually be SR336 billion. According to the Seventh Development Plan and announcements by MOEP, the oil sector contributed just 45.5% to the GDP in 2004 and the non-oil government sector 19.3%, while the private sector contributed almost 35%. This last figure is expected to increase steadily in years to come, due to the government's move to encourage greater private contribution to the national economy. All of this was occurring despite the government's budget surplus in that year.

It is expected that most of the surplus will be directed to meet the most pressing demands, such as domestic debt (which may stand at SR604 billion by the end of 2005) and to tackle the growing problems of unemployment, especially for young Saudis, through further expansion of training and human resources development. The Labour Ministry estimates unemployment in the Saudi labour force to be just over 9%.[26]

26 According to the governor of the Monetary Agency, the country's major economic achievement in 2004 was a record budget surplus of SR107 billion as a result of soaring world oil prices, bringing the gross domestic product (GDP) to 5.3 percent last year. The government's policy will remain focused upon increased spending on long-term productive projects that promote prosperity for citizens, create job opportunities and strengthen the economy. The majority of the budget surplus from rising oil prices would go for the repayment of public debt (in: Arab news, 10 October 2005).

4.3.4 Population

According to the demographic survey conducted in 2000 by the Central Department of Statistics (CDS), a subsidiary of MOEP, the country has a population of nearly 21 million inhabitants of whom 16 million are nationals. There is a relatively high population growth of 3.5% annually; according to UNICEF the annual population growth rate in Saudi Arabia was 5.1% between the early 1970s and early 1990s, falling to 2.9% between 1990 and 1999 (UNICEF, 2001). The country has one of the lowest population/space densities in the Middle East, with an average of 9 persons per km^2. This is of course because of the large areas of unpopulated desert in the country (Arriyadh Development Authority (ADA), 1997d). A survey by CDS also indicated that 85% of the total population live in urban areas, which can be attributed to a combination of two factors; one being the extraordinary growth of the overall population, and the second the migration of citizens and expatriates to major cities (MOEP, 2000b). The remarkable growth of the population in Saudi Arabia (Figure 4.4) has been accompanied by extraordinary changes in life-styles and living conditions, which have contributed significantly to the increased demand for water.

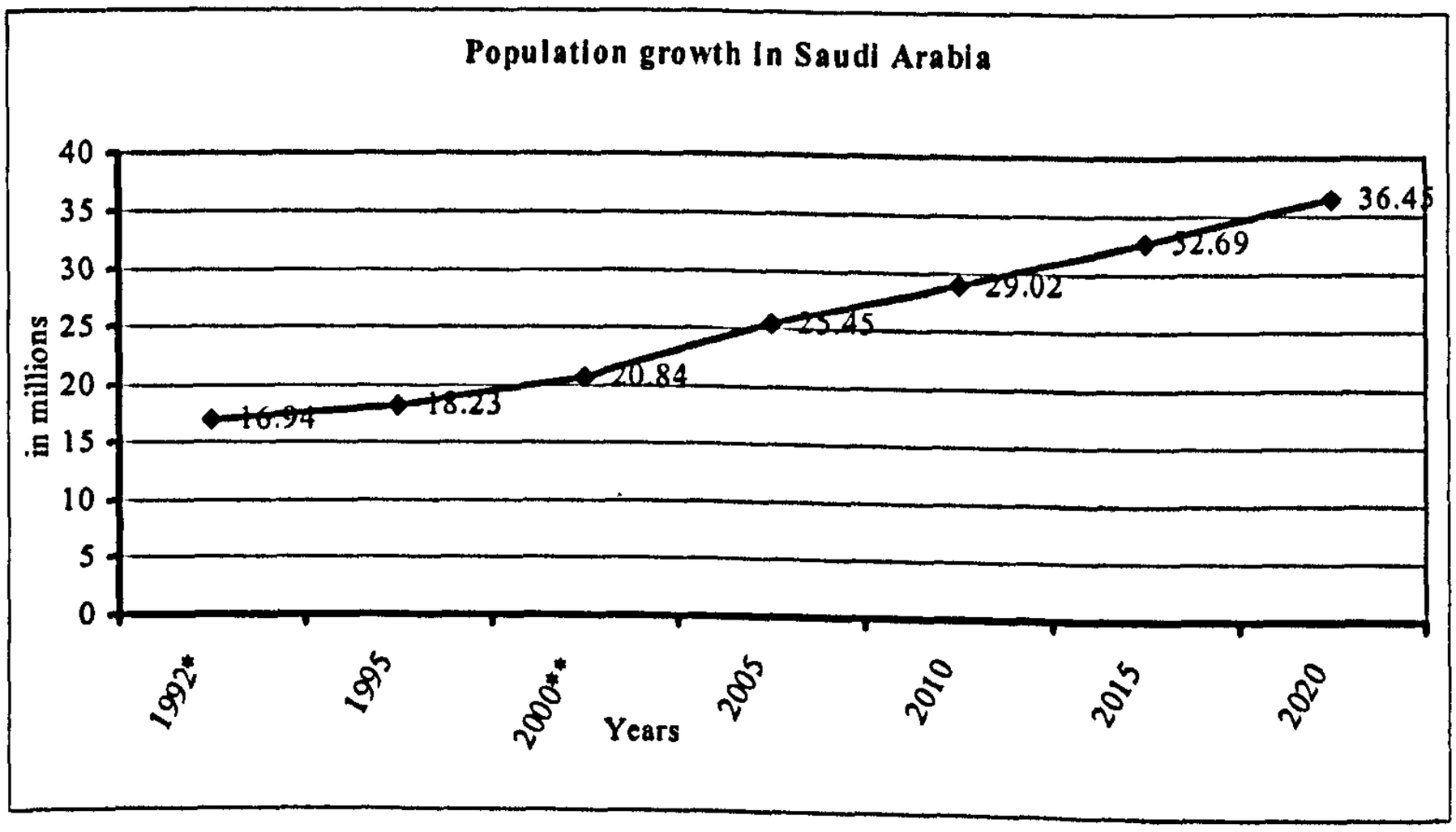

Figure 4.4: Source: CDS (MOEP, 2000b)

*National census, ** Demographic survey

4.4 Existing conditions

4.4.1 History of water supply

The first attempt to increase water supplies for drinking purposes from alternative resources was in Jeddah, in 1928. The government imported the first two seawater condensers, known as Kindasa, which applied energy to seawater. This caused the evaporation of pure water, which condensed and was collected. The production of sweet water reached about 200 m^3 per day, and was sold to water-carriers (private distributors) at less than the production cost. In 1949, water was conveyed from the *Wadi Fatimah* wellsprings (subsequently named Ain Al-Aziziah) to a reservoir built east of Jeddah, with a capacity of about 15,000 m^3. This was a major project by the Ain Al-Aziziah authority, which was established in 1946. Similar efforts were made to drill wells around the springs in the holy regions of Makkah and Medina, not only for the residents but also to meet the increased demand during times of pilgrimage. Oil drilling activities carried out by the Arabian American Oil Company (ARAMCO) between 1935-1938, in the Eastern Province of the country revealed significant quantities of water stored in deep aquifers. Consequently the government relied on groundwater as its main resource, based on surveys conducted in the late 1930s by international experts. The first deep well in the country was dug at Dammam, in the Eastern Province, in 1939.

Arriyadh city on the other hand experienced a significant increase in population from about 80,000 inhabitants during the mid 1950s to nearly 300,000 inhabitants in the early 1960s. The removal of certain government agencies from Jeddah to Arriyadh, and the opening of a rail line connecting it to the Eastern Province in 1951 may have encouraged this growth. It also made the city a focal point for activities that led inevitably to increased demand for water. In 1951, water supplies were brought to

Arriyadh from artesian wells dug in adjacent *wadis* (valleys). However, the first deep well was drilled in the Arriyadh area in 1956 (see: 5.6.1 in Chapter Five) (Twitchell, 1947; Brown and Charles, 1963; Othman, 1983; Al-Ghamdi, 1999; MOEP, 1999; Al-Buraithen, 2000).

4.4.2 Institutional context

In order to facilitate the review of Saudi water systems required here, first it is necessary to consider the institutional structure under which water services are administered. Previously water supply in Saudi Arabia was the responsibility of four government agencies: these were (1) the former Ministry of Agriculture and Water, through the projects it developed, operated and undertook to maintain; (2) the seven Regional Water and Sewerage Authorities, that operated and maintained water projects in major cities; (3) the Saline Water Conversion Corporation (SWCC) which supplied desalinated seawater; and (4) the Ministry of Municipal and Rural Affairs (MOMRA), which operated and maintained water projects in regions and governorates in which the services of the water authorities were not available. As a result some overlap of responsibilities occurred among these agencies, despite their efforts to coordinate and cooperate over the delivery of services.

The fragmentation of authority was one of the major problems in water provision for Saudi Arabia. The city of Jeddah provides an example of this: five agencies participated in water services, these being the Jeddah Water and Sewerage authority, which dealt only with wastewater; the Jeddah Water Project, which reported to the Ministry of Agriculture and Water and dealt with the distribution system; SWCC, which supplied desalinated seawater to the city; the Ain Al-Aziziah agency which collected service charges, and the Jeddah Municipality which provided rainstorm

drainage services. As a result, optimal management of a vital resource was impossible in a country characterised by severe drought and shortage of water (Al Amwal, 2001). The government's interest is basically to maintain reliable water supplies, with low operating costs and adequate revenue from charges. Public authorities are not necessarily concerned with profitable investments; so lacking any motive for improvement, their operation are generally marked by poor performance caused by internal institutional problems such as the lack of financial resources, over-staffing and bureaucratic procedures. Nor are they known for innovative management. On the other hand there are external conditions that affect their performance, such as political intervention with ill-defined and/or overlapping responsibilities at different government levels, as well as centralised decision-making.

4.4.3 The context of supply and demand

Water supplies in the country are typically obtained from conventional resources (surface and deep aquifers) and non-conventional resources (desalinated seawater). The conventional and renewable water resources are the net effective rainfall (runoff into the major drainage basins), alluvial and confined aquifers, both of which can be replenished (Al-Tokhais, 1997; Al-Bassam, 2001).

The country draws its water from four main sources: (1) Surface water, which is to be found predominantly in small quantities in the west and southwest of the country, e.g. dams. (2) Groundwater stored in deep aquifers in water-bearing layers of sedimentary rock. Some of these are naturally replenished, while most are non-renewable. Al-Alawi and Abdulrazzak (1994) claimed that the groundwater in deep aquifers available for abstraction in Saudi Arabia in 2000 was estimated to be about 20 billion m^3 per year (while the former Ministry of Agriculture and Water estimated the total demand for water for all uses including agriculture in the same year to be 21.07

billion m^3, see table 4.1) (3) Desalinated seawater is a source of water and electricity production for all uses other than agriculture, and Saudi Arabia is currently a leader in this industry. In 2001, each day the country's 30 desalination plants (24 of which were built in just 29 years) pump almost 2.27 million m^3 of water (almost 828 million m^3 a year) through nearly 3,700km of pipeline, meeting almost half the country's needs for drinking water(SWCC, 2001). (4) Reclaimed wastewater is a source which will be developed in the future, and offers scope for considerable expansion. This represented about 217 million m^3 a year in 1992 (Al-Alawi and Abdulrazzak, 1994). Reclaimed wastewater is used in irrigation, the artificial recharge of selective aquifers and for construction purposes, as well as for cooling, e.g. in the Arriyadh refinery.

By 2000, water demand in Saudi Arabia from all sectors (residential, industry and agriculture) had reached about 21 billion m^3. It was also estimated that the annual demand for water would grow by 1.3%, increasing the total demand to 22.5 billion m^3 in 2004 towards the end of the Seventh Development Plan (2000-2005). The same estimates indicated that an average annual increase of 1.4% in water demand would raise the total water needed to almost 27.76 billion m^3 in 2020 (See tables: 4.1 and 4.2). These estimates are based on the fact that water consumption increased 7.5 fold between 1980 and 2000, which can be attributed to the rapid increase in population, changes in the nature of residential water use and the vast increase of productive sectors, especially agriculture (MOEP, 2000a).

4.4.3.1 RESIDENTIAL SECTOR

In 2000, the total water supplies were 1.8 billion m^3 (almost 4.9 million m^3 a day). Nearly 46% of this was supplied from desalinated seawater, and the rest from groundwater and surface water resources. In his study, Al-Husain (2002) claims that drinking water supplies from all sources reached 2.09 billion m^3 in 2002 (almost 5.7

million m^3 a day). The annual population growth rate is crucial to estimating future demand for water; it is anticipated that 3.1 billion m^3 will be required for these purposes in 2020, if population growth rate is about 3.5%. (MOEP, 2000b; 2000c) Hence the importance of desalinated seawater will intensify in the foreseeable future, as a major potable water source for residential consumers. This will also require early action to improve the efficiency of the desalination industry, in terms of production and distribution.

The average cost of producing, pumping and piping one cubic metre of water for residential use is about 0.83 USD. This is based on 50% contributions respectively from desalination plants and groundwater sources, which includes treating and blending water from aquifers (Al-Husain, 2002). This means that almost 1.7 billion USD is required to meet the demand for water each year from desalination projects and groundwater supplies. On the other hand, Al-Dhmash (2002) claims that the provision of sewage services requires almost 670 million USD every year, assuming that wastewater is 75% of the total water supply. It should also be remembered that only 30% of residents have access to sanitation networks.

4.4.3.2 INDUSTRIAL SECTOR

Industrial diversification is a key element in the Saudi government's economic strategy. The primary objective of this process is to reduce the country's dependence on oil revenues as a primary source of national income, as well as reducing the need for imported goods, because the government is facing up to the fact that over the long run, the country's oil wealth is a wasting asset. This was supported by the expectations of that time (mid 1970s), that the country would not always be able to earn a significant amount of money from exporting oil (Crane, 1982).

For that reason, the government has encouraged the development of a wide range of manufacturing industries (Al-Farsy, 1990), is through the provision of a range of incentives for the private sector to participate in the country's industrial activities. This is illustrated by the development of eight industrial estates with their necessary infrastructure and services and made available at a very low cost, in addition to credit facilities being made available for such enterprises. These facilities are maintained through loans disbursed by the Saudi Industrial Development Fund (SIDF). SIDF was set up in 1974 as a government agency reporting to the Ministry of Finance, its fundamental objective beingto expand and develop the country's industrial base. It is responsible for providing funds to appropriate private firms by making medium and long-term loans. Capital for these loans was initially allocated from government resources.

The country aims to diversify its economic base, which is likely to mean more investment in industry and manufacturing, placing imminent additional pressures on the water supply. In 2000 industry consumed about 470 million m^3 of water, and given the move towards industrialisation it is estimated that water demand will reach 1.66 billion m^3 in 2020. However, treated wastewater may provide a key alternative supply for industrial purposes; in Japan for instance, 76% of water supplies to industry come from treated wastewater (MOEP, 2000b; 2000c).

4.4.3.3 AGRICULTURE SECTOR

The country consists largely of desert, with modest natural water resources and subject to extremes of temperature. A geography and climate such as these are hardly ideal for agricultural development. During the 1970s, the government of Saudi Arabia

raised the issue of food self-sufficiency (Postel, 1997).[27] Agriculture was given a high priority in the following decades, as explained in the Fourth Development Plan (1980-1985). The ideas behind this included the objective of a national strategy to diversify the economic base, and of course the objective of food self-sufficiency. For that reason, heavily subsidised programmes were introduced and much encouragement given to farmers in the form of land grants, interest-free loans, water irrigation systems (mainly centre pivots, long arms bearing spray heads that make a huge circle around a pivotal point), equipment and machinery. (Al-Farsy, 1990; Postel, 1997). The government offers aid to the value of 50 per cent of the cost of such equipment, and the government also encouraged farmers by buying their crops, especially wheat, at intervention prices higher than those available in the international market. This has made agriculture one of the most productive and fast-expanding economic sectors in the country. Cultivated land expanded from 150,000 acres in 1975 to almost 2,300,000 acres at the beginning of 1985 (Al-Farsy, 1990). To meet the demand for water caused by growing investment in agriculture, there was an escalation of groundwater pumping at that time (Postel, 1997); subsequently the risk of depleting fossil aquifers encouraged the government to seek a more sustainable approach, in order to conserve precious resources (Al-Farsy, 1990; Postel, 1997). In 1993 the area of wheat cultivation eligible for price support was reduced to 25% of its previous size. This policy had a positive impact on groundwater levels and quality across the country (Abderrahman, 2001).

Agriculture accounts for the largest use of water from conventional resources, 89% of total consumption, which was 18.8 billion m^3 in 2000. However the volume of water used could be controlled and consumption could be shaped by adopting advanced

27 Montagu (1994) refers the origins of these highly subsidised, agricultural programmes to the government's fear that the west might use the food weapon during the 1973/74 oil crisis.

irrigation methods, together with the ongoing revision of agricultural policies to rely on renewable water resources and the use of minimal quantities of water for low-consumption crops (MOEP, 2000b). Successful use of methods such as these would significantly reduce the annual growth in demand for water. However, it is not only the agricultural sector that generates problems; the massive use of water for green amenities in large urban areas, public parks and landscaping, maintaining green belts and roadside vegetation in an arid environment must all contribute to the exhaustion of water resources (Dolatyar and Gary, 2000), unless that can be met by reclaimed and treated wastewater.

Table 4.1: Estimated water demand by sectors (MOEP 2000b)

	Billion m^3			Annual growth rate (%) on average	
	2000	2004	2020	Seventh Plan 2000-2005	Long-term perspective 2000 - 2020
Residential sector	1.8	2.03	3.1	2.4	2.8
Industrial sector	0.47	0.6	1.66	5	6.5
Agricultural sector	18.8	19.85	23	1.1	1
Total demand for water	21.07*	22.48*	27.76**	1.3	1.4

*Former Ministry of Agriculture and Water estimates, ** MOEP estimates

Table 4.2: Households distribution by water source

	Water Source					
	Public	Water Truck	Well	Water Container	Other	Total
No. of Families	1624584	966880	120837	694373	20996	3427670
No. of Persons	9901729	6515162	693529	3607793	128671	20846884

Source: MOEP (2000b)

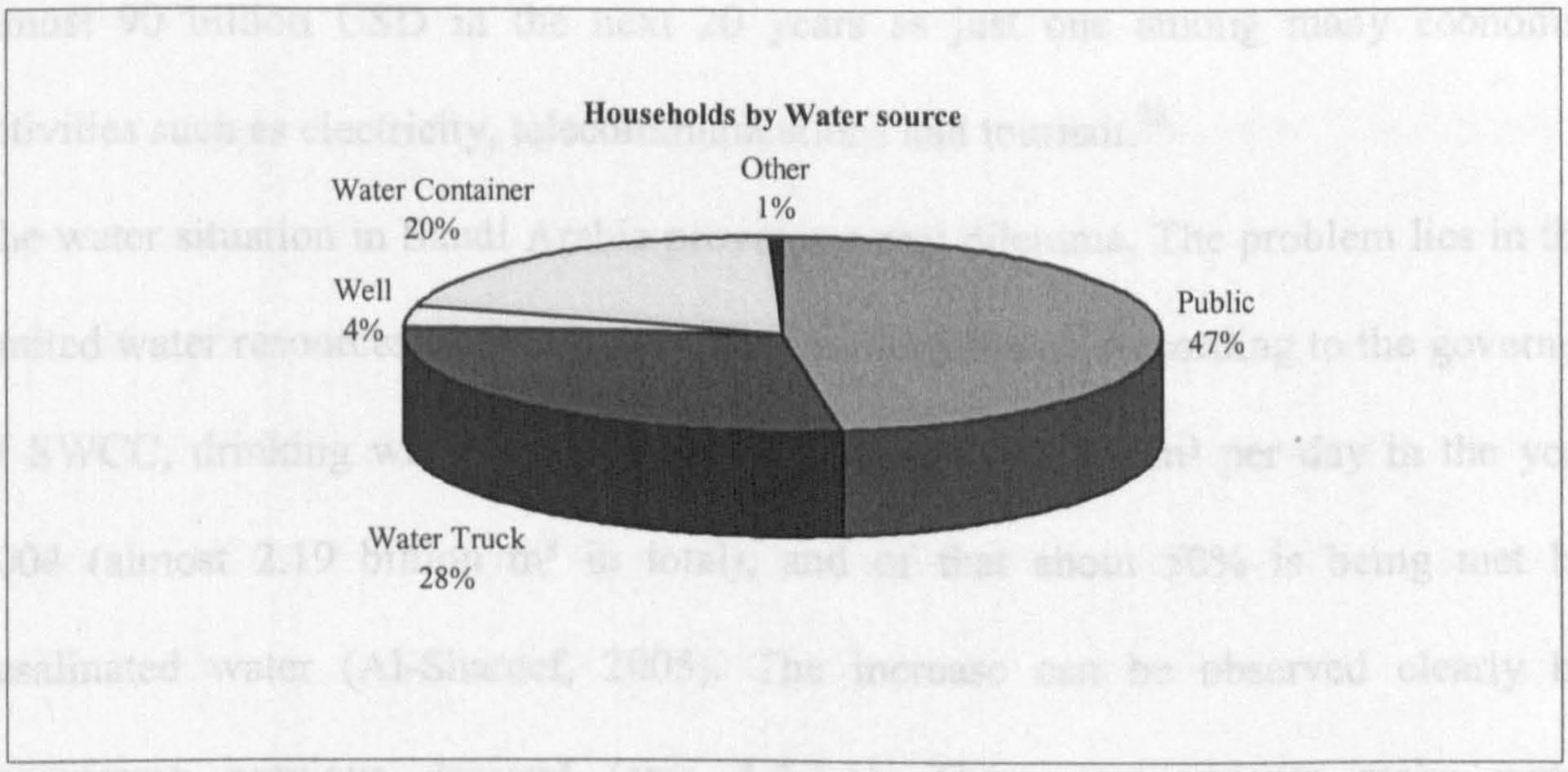

Figure 4.5: (MOEP, 2000b)

Figure 4.5 shows that in 2000 only 47% of households had access to public water, while 53% depended on other ways to obtain water for domestic purposes. It should be noted that the average household size in the country is about 7 (ADA, 1996), which means almost 10 million people were served by public water. The 28% of the population supplied with water by trucks paid the same charges as those with mains access, since the trucks were operated by the government.

The imbalance between demand and supply is not the only problem that needs to be overcome in managing the development of the country's water resources. There are many other issues contributing to the problem, such as aridity, non-renewable supplies, unequal spatial distribution of supplies, salt water intrusion, intermittency of surface runoff and overexploitation of existing resources (Mohorjy and Grigg, 1995).

According to the governor of the Saudi Arabian General Investment Authority (SAGIA), Saudi Arabia will require about 13 billion USD of direct investment every year for the next 20 years to achieve desired economic growth and to meet the demands of development. This can be attributed to the size of the Saudi economy and its markets, bearing in mind that the water and wastewater industry alone will require

almost 90 billion USD in the next 20 years as just one among many economic activities such as electricity, telecommunications and tourism.[28]

The water situation in Saudi Arabia provides a real dilemma. The problem lies in the limited water resources and the yearly increase in demand. According to the governor of SWCC, drinking water demand reached about 6 million m^3 per day in the year 2004 (almost 2.19 billion m^3 in total), and of that about 50% is being met by desalinated water (Al-Shareef, 2005). The increase can be observed clearly by considering previous demand (see: 4.4.3.1). These requirements make water desalination the only secure and economically feasible way to augment the water supply, as a strategic choice now and in the future. The chief purpose of developing water desalination projects is to supplement groundwater resources in regions whose resources do not match their needs. Ministry of Water and Electricity (MOWE) is currently responsible for identifying those regions that urgently need water desalination (Al-Mayouf, 2003a).

4.4.4 Desalination, an alternative source

Desalination was initially developed in 1940, during World War II, when clean water was needed for the troops. Following that work, a number of countries began to consider saline water as a potential source of potable supply. The United States made great efforts to develop the technology, sponsoring the Office of Saline Water during the 1950s and the Office of Water Research and Technology for more than 30 years. In the 1960s desalination units, each producing 8,000 m^3 per day on a commercial basis, were set up in countries around the world. The technology used at that time was based on thermal energy, but in the 1970s newer procedures were developed such as

28 Al-Riyadh Newspaper: 4 May 2003, No 12735.

electro-dialysis, multi-stage flash distillation and reverse osmosis (Buros, 1994),[29] that made desalination a better option in terms of cost and reliability (Gleick, 1993; Bremere, et al, 2001).

In Saudi Arabia and other Gulf Cooperation Council (GCC) states, the abstraction of water from groundwater aquifers has not been balanced by replacement of the volume withdrawn. This has resulted in a constant decline in groundwater levels, and a deterioration in quality, in most of those countries. The reason for the governments in this region choosing to proceed with the construction of desalination plants was to meet domestic water demand resulting from population growth and urbanisation. The technology to desalinate seawater or brackish water remains an option only in countries with the resources to finance such major investments, and which have a suitable coastal area (de Jong, 1989; Al-Zubari, 1997; Fakieh, 1997; Froukh, 1997). However, the supply of water cannot be considered independently of the energy implications of the process as a whole. Desalination, water pumping and transmission from distant sources are processes that create heavy demands for energy (White, 1994). Since desalination is so energy-intensive, Saudi Arabia is capable of developing this industry in the future at the lowest possible cost, because it has the largest proven oil reserves in the world and is one of the few countries that can offer competitive oil prices to consumers, bearing in mind that developments in this industry were initially driven by the growing demand for potable water. Figure 4.6 shows the actual export of desalinated seawater during the past decade, which stands at about 3.01 million m^3 per day (almost 1,100 million m^3 a year). The increase in production is obvious, given that this is the output of all 30 plants.

29 The multi-stage flash process is based on distillers fired by waste heat from gas turbines. The MSF method of water production is based on the process designed by nature itself, where heat from the sun evaporates water from the surface of the sea which in tum rises to form clouds in the upper atmosphere. The winds then move these clouds around until they meet cooler air, which causes condensation resulting in rain.

The Saudi SWCC has developed in stages. The first was in 1965, when an office was established at the Ministry of Agriculture and Water to undertake feasibility studies and then organise the construction of desalination plants. In 1972 a Saline Water Conversion Agency was established, again at the Ministry of Agriculture and Water. In 1974 the SWCC was created as an independent body under Royal Decree M/49 (SWCC, 1999). Saudi Arabia has made significant progress in desalination during the past three decades, and has become a major producer of desalinated water with 30% of the total world output (Fakieh, 1997).

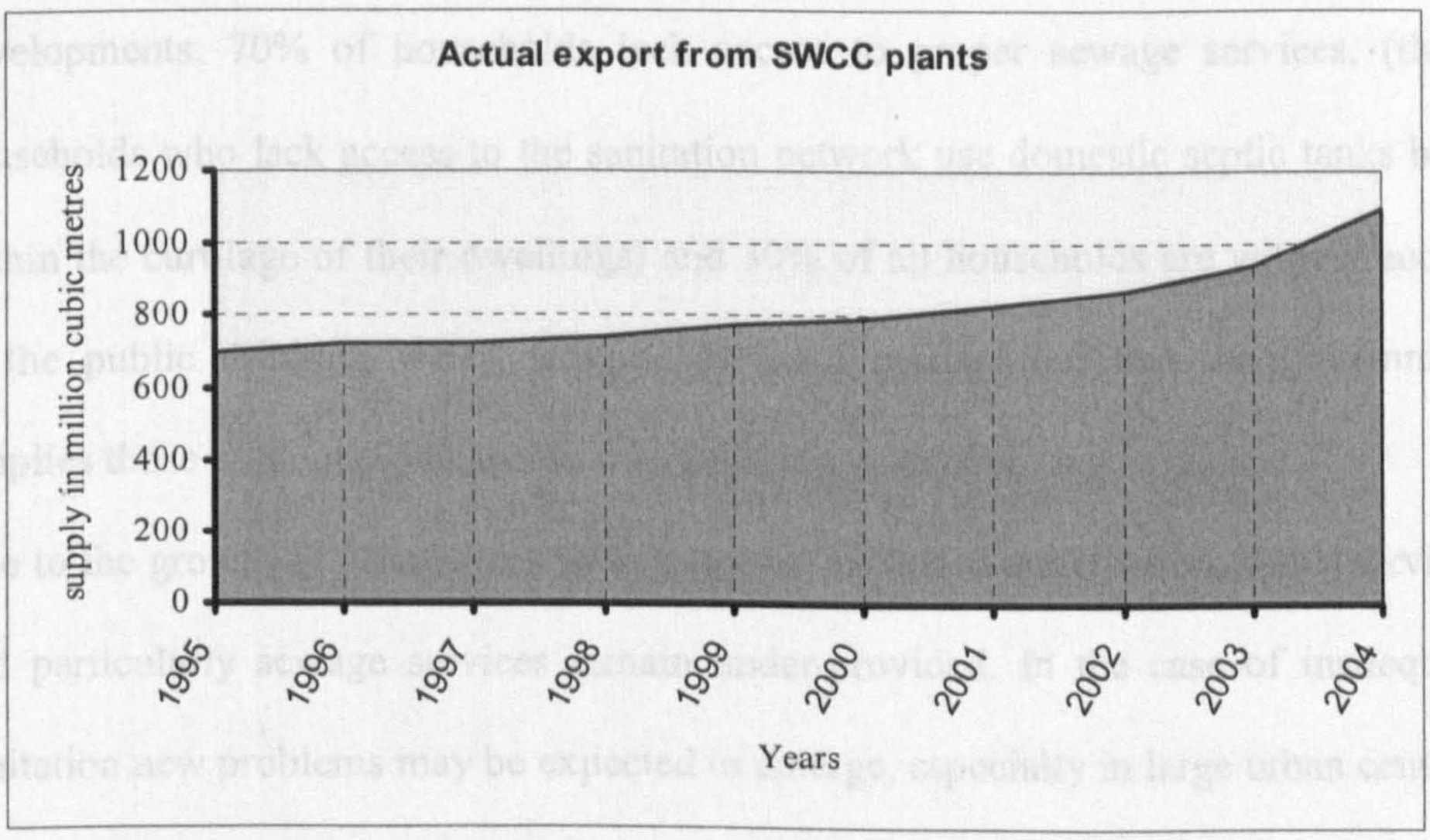

Figure 4.6: SWCC Annual Report 1999, 2001 and 2004

SWCC aims to overcome the shortage of water in the country, which has been made worse by rapid industrial and agricultural development and population growth. Any action to achieve that aim should focus on expanding the investment base in water production, developing SWCC staff and research programmes, and increasing PSP. SWCC also carries out studies and evaluation to extend the work-life of its plants by replacement of worn-out parts.

4.5 Critical issues and future challenges

In the light of unsustainable patterns of water production and consumption, the government has recently acknowledged that providing adequate water to meet all future needs will be an enormous challenge. It has affirmed that it will pursue innovative approaches, not only seeking technical solutions but also ways to involve different stakeholders and investors from the private sector (Al-Mayouf, 2003a). According to the Water Minister in April 2003, the water sector had a budget of about SR6 billion. He indicated that the ministry will require further funds for service developments. 70% of households lack access to proper sewage services, (those households who lack access to the sanitation network use domestic septic tanks built within the curtilage of their dwellings) and 30% of all households are without access to the public drinking water network. He also pointed out that the government supplies those without piped access with drinking water from water tankers.[30]

Due to the growth of urban areas, which has far exceeded anticipation, water services and particularly sewage services remain under-provided. In the case of inadequate sanitation new problems may be expected to emerge, especially in large urban centres, where sewers are not sufficiently loaded and flushed. Such problems could include clogging, cracking and corrosion of the sewers, requiring costly maintenance (Mohorjy and Grigg, 1995).

Water provision in Saudi Arabia relies greatly upon government funding through heavy subsidies for water abstraction, treatment, desalination, pumping and piping, and distribution. The charges levied for water services, which were first introduced in 1994 to enhance the value of water (Abderrahman, 2001), do not match the actual costs of these services. This can be attributed to the low tariff for potable water which

30 Al-Riyadh newspaper 15 April 2003 No. 12716

at the same time does not differentiate between the types of consumer, e.g. residential, industrial, etc., and to some extent to the high level of demand. The water rates charged follow a progressive structure despite their low level, passing through five bands as follows:

Table 4.3: Tariff system for water in Saudi Arabia (since 1994)

Category 1	1-50 m^3	0.026 USD/ m^3
Category 2	51-100 m^3	0.04 USD/ m^3
Category 3	101-200 m^3	0.53 USD/ m^3
Category 4	201-300 m^3	1.06 USD/ m^3
Category 5	301 m^3 and above	1.6USD/ m^3

Such charges do not help to sustain the water system, since the level of charges means that revenue recovered is far less than the cost. Moreover, those charges are not enough to fund further development, nor do they encourage consumers to curb their usage of water. It can be argued that such low prices resulting from subsidy encourage higher consumption. "*Consumers pay a first time connection charge and then they receive bills comprising only the price of water (consumption in cubic meters multiplied by the tariff)*" (ADA, 1997b: 18).

Changes need to be made to the existing water tariffs, to achieve a sustainable system that pays back water provision costs and is attractive for investment without adversely affecting low-income groups. For this the government needs to prepare a detailed assessment of the system, bearing in mind that the structure of the tariff system is a political issue. Subsidies usually benefit residents with formal access to public water network, rather than improving the provision for low-income groups who lack adequate services in the first place. As claimed by Cordesman (2002), per capita revenues from oil exports could drop by 10-20% by the year 2010. Even if oil prices are high in the future, the combination of a growing population and increased development costs will outstrip that growth. Additionally in this context, Montagu

(1994: 8) claims that "[even] *rich countries throughout the world have been finding it increasingly difficult to control public expenditure and are having to curtail and ration funds for social needs*".

Several issues can be drawn from the Seventh Development Plan (2000-2005), which need to be addressed regarding water services in Saudi Arabia. They are:

- Lack of reliable information about water conditions, and the absence of a reliable database for research and study purposes; especially for regions that have not been considered by elementary research. Such a database could underpin the introduction of a national plan for water.
- The necessity to revise the regulations concerned with protecting water resources, to raise awareness about water conservation in order to reflect that through all the country's official channels.
- Weakness in prioritising the use of water between residential and agricultural purposes, bearing in mind the requirements of sustainable development.
- The need to acquire successful desalination and wastewater treatment technologies in order to improve efficiency.
- The unavoidable need to reduce household water usage, in particular the per capita consumption.
- Water must be priced in a way to make its use more efficient, and to ensure suitable funding without increasing the burden on the public.

Turning these issues into action needs to be immediate, otherwise conditions will deteriorate still further. This is especially true in urban areas, if management reforms are not set in motion.

4.6 The Five-year Development Plans

Since 1970, the Saudi Government has adopted a system of short- to medium-term comprehensive planning for economic and social development. Developments proceeded rapidly during the first and second five-year plans (1970 – 1980) due to substantial increases in government revenue from crude oil exports. Additionally, the continuing increase in national income from oil supported government spending during the third plan, which was mainly directed at investment and the development of infrastructure between 1980 and 1985. The main objectives were economic diversification to reduce dependency on oil; developing human resources; developing and completing the physical infrastructure; strengthening the role of the private sector; raising living standards, and improving the quality of life. However each plan had its own distinct focus, reflecting the phase of development and the resources available to the government at that time (MOEP, 1985; 1990; 1995; 2000a). Nevertheless, the provision of adequate services to improve the living standard of citizens has been a strategic goal of the successive Development Plans produced by the Saudi government (Montagu, 1994). The objectives for the water sector can be categorised in two groups; the first called for steady development of water resources to meet the growing demand while the second, which started in the mid 1990s, was aimed at controlling the demand.

The Seventh Development Plan (2000-2005) requires further involvement of the private sector in socio-economic developments. The plan also urges the completion of basic infrastructure projects, to achieve balanced and comprehensive development. One of the strategic bases of the plan calls for improved standards in the services and utilities provided to people, through minimising production costs and adopting advanced technologies for more effective provision. The plan advocates improved

appropriate administrative and regulatory means to serve new trends in development, e.g. private investment in service provision, in order to reduce costs, enhance performance and create job opportunities (MOEP, 2000a; SAGIA, 2003).

Additionally, the plan considers water a central element and a significant criterion for evaluating the economic efficiency of public and private development projects. In fact, one of the key elements of the plan is rationing government subsidies for some public services by restricting subsidies to essential goods, and simultaneously proposing programmes to reduce and then remove these subsidies using appropriate pricing policies that give consideration to low-income groups. It is accepted that the private sector is likely to acquire a major role in water services provision during the plan period. That role would not be limited to implementation, operation and maintenance, but would include finance and management. Such progress could contribute significantly to better economic efficiency.

4.7 Steering the changes, the establishment of a water ministry

Under the Council of Ministers resolution (No.125) of July 16, 2001 the Ministry of Agriculture and Water was divided, becoming the Ministry of Agriculture and a new Ministry of Water. This latter body encompasses all water-related departments, not only from within the former Ministry of Agriculture and Water but also MOMRA, the water authority of Ain Al-Aziziah, and all sewerage departments. The SWCC remains an independent organisation, and the new Minister of Water chairs its directory board. The government has identified a number of responsibilities for the Ministry of Water, such as (1) supervising, managing and regulating water sector facilities; (2) conducting comprehensive studies of water sources; (3) preparing a broad national plan for the development and rationalisation of water, with the aim of protecting resources for future needs; (4) providing a comprehensive national programme to

supply potable water and sanitation; (5) reconsidering water charges for all groups of beneficiaries; (6) proposing a more efficient mechanism for water revenue collection, and (7) making the necessary arrangements for PSP in water services.

Responsibility for water quality lies largely within each ministry's regional branches, that were formerly regional water authorities.

The Ministry's new branches are expected to take a central role regarding the development of a sustainable system for water, at the national level. Launching a water database for the entire country would require obtaining information from the former Ministry of Agriculture and Water, the former Water and Sewage Departments, the SWCC and research institutions. It is vital for regional branches of the Water Ministry to contribute to the preparation of the national water plan in order to incorporate local viewpoints in short and long-term policies. Each branch will present its predictions and studies for a collective assessment of future water needs.

The Council of Ministers has undergone major structural changes during the last three decades.[31] These changes have included the dissolution of some ministries, and the merging of others. For instance the Ministry of Public Works and Housing was abolished, and its functions were integrated into MOMRA. Electricity was transferred from the former Ministry of Industry and Electricity to the Water Ministry, which became the Ministry of Water and Electricity (MOWE). Moving the electricity sector to MOWE would establish better coordination of operations between water and electricity, due to the significant amount of electricity produced by desalination plants

31 The changes introduced on the recommendation of the Ministerial Committee on Administrative Reforms, (MCAR) which was established by Royal Decree in 1999, aim to seek improvement in the services provided to citizens in various sectors, improve the performance of government departments, and cut expenditure. The committee scrutinises the administrative structures within the State's institutions, audits organs, and considers the simplification of procedures, as well as considering plans for the privatisation of some government agencies. MCAR has a sub-committee and a secretariat created within the Institute of Public Administration (IPA) to advise MCAR on technical and regulatory issues. The tasks of this sub-committee, conducted through a detailed programme, cover the assessment of the government administrative structure, employment regulations, the evaluation of the government bodies' staffing, and the evaluation of public expenditure on these sectors from the national budget compared with the share allocated for their development simultaneously (IPA, 2001).

which are managed by a board of directors chaired by the water minister.[32] Furthermore, the existence of a commission regulating the electricity service could play a central role in framing the policies for such an interlinked sector. In November 2001, Saudi Arabia's Supreme Economic Council (SEC) approved an Electricity Regulatory Authority (ERA) to regulate electricity services in Saudi Arabia as a step towards restructuring the power industries, and this is a necessary prerequisite to opening the sector to private investment. The new ERA will regulate electricity provision, balancing the interests of consumers, operators and investors. This is the second major reform in a sector that has been undergoing restructuring since the formation of the Saudi Electricity Company (SECO) in April 2000, consolidating 10 separate regional state power companies into one national entity comprising three divisions: generation, transmission and distribution.[33]

4.8 New initiatives for improving water services

4.8.1 Privatisation advocacy

Privatisation, once seen as a political way of management, is now broadly accepted as being a process of economic reform and stimulus for commercial and economic development (Montagu, 1994). The establishment of the SEC in August 1999 was a milestone, introducing privatisation to the economy, having been preceded by a ministerial committee established for this purpose in 1997. SEC is a council of eleven members headed by the Prime Minister, and has a specialised seven-member 'privatisation committee' that oversees the country's privatisation programme. The SEC's responsibilities include expediting economic reforms, planning and

32 Saudi Gazette April, 2003 Issue No. 537; Arab News: April, 2003 No. 8920; and Riyadh Daily April, 2003 No. 12732.

33 As described in SEC decisions, available on http://www.sec.gov.sa

implementing the country's privatisation programme, and suggesting a timescale for privatising major public corporations. New investments are to be licensed by SAGIA, which was established in April 2000 with the responsibility for promoting foreign investment in the country and granting investment licenses to foreign investors. Creating job opportunities for citizens is among the overarching goals of this body (SAGIA, 2002; 2003; Abu Dahesh, 2002).

The Saudi government has delivered an ambitious plan to privatise 20 vital economic sectors, in order to ease the burden on the national budget and to tackle public debt. This plan will allow the private sector to participate in services previously provided by the government, including certain health, municipal and social services. In addition, the government's stake in Saudi shareholding companies including banks, the Saudi Basic Industries Corporation (SABIC), and SECO have been identified among areas designated for privatisation. The services that have been opened to private investment include telecommunications, water desalination, air transport, airport services, construction and management of highways, seaport services and local oil refineries. Generally, effective private participation requires a firm commitment by the government to maximise the benefits, with suitable laws and mechanisms to control any disputes that may arise between the public and private sectors.

4.8.2 Privatisation strategy in Saudi Arabia

Privatisation was originally a characteristic of the economic planning in the country, and this was clearly manifested in the successive economic development plans that were introduced after 1970. Economic planning was based on market mechanisms to guide economic activities, liberalise the economy and remove investment barriers, looking for optimal utilisation of productive resources as well as to reduce the government's role in that perspective. Due to government support, private

contributions to the GDP have increased to become a significant factor in the national economy, especially in non-petroleum activities. The private sector's contribution to the GDP has grown from about SR7.3 billion in 1970 (2002 prices) to SR286 billion in 2002, which represents approximately 40% of the GDP (SAGIA, 2003) (See also: subsection 4.3.3).

The privatisation strategy adopted in June 2002 is a document offering detailed administrative and legal procedures for implementing the privatisation programme within an approved framework. The strategy includes a number of objectives such as improving the efficiency of the national economy, strengthening its competitiveness, and increasing the contribution of private investment to the GDP. The strategy also encourages the participation of citizens in owning the assets of production through an initial public offering of company shares. Other, more general aims require providing services at reasonable price, reducing dependency on government subsidies for public services which will ease pressure on the national budget, and utilising the national manpower establishment in order to increase household incomes (SEC, 2002; SAGIA, 2003).[34] In the fourth of the Five-Year Development Plans (1985-1990) there was a call to accelerate Saudisation (Montagu, 1985; 1994). Foreign investors in management contracts are obliged to set up training programmes for nationals and additionally, the government requires private firms to increase the proportion of Saudi nationals they employ by 5 per cent each year (Cordesman, 2002). This may mean the introduction of incentives for investors who are willing to train local labour and receive some kind of tax exemption, etc.

Privatisation in Saudi Arabia could face a number of difficulties relating to implementation such as weakness in commercial law, an inexperienced local labour

34 Also published in Asharq Al-Awsat: June 2002, No 8590.

force, inconsistencies between training and education, and the requirements of those sectors designated for privatisation (Abu Dahesh, 2002). Similar thoughts were also raised by Montagu (1994). Abu Dahesh (2002) argues that financing may be expected to generate its own problems, since local banks will be unable to provide enough money for the enormous investment required by infrastructure projects.

For that reason, action should be taken to promote new investment by offering incentives to new strategic partnerships, as well as a comprehensive review of the educational programmes of international standard that need to be established. However, promulgating definite timetables and the expected share prices to the industries designated for privatisation are essential to improve accounting standards and greater transparency in the privatisation process. In fact these are vital activities to protect the stock market from possible damaging losses, should many shareholders choose to buy the new shares while at the same time hastily selling their shares in existing companies.

In general terms, it is important to found this strategy coherently upon clear and specified objectives and aims within one framework and a defined timescale, so the programme can evolve gradually to achieve its desired results.

4.8.3 Towards openness in local markets

For a country to become an attractive destination for foreign direct investment (FDI), multilateral economic reforms should be implemented to gain the benefits of rapid growth. Openness to foreign investment, and economic policies that encourage entrepreneurship are essential for economic growth. FDI could be an important way to access additional capital, with the transfer of successful management practices and training programmes as key ingredients for a healthy economy.

As the government of Saudi Arabia pursues a liberal trade policy based on competition, limited controls over foreign exchange, nonexistent restrictions on quantities and minimal tariff barriers are now typical aspects of the Saudi economy (Montagu, 1994). In the light of this liberated economy and a free market, the local private sector dominates imports, wholesale and retail trades, as the major economic force.

With respect to foreign investment, the government awards contracts for investment through a procurement tendering system. While there is no central tenders board in the Saudi government, government agencies are entitled to extend awarded contracts (Montagu, 1985; 1994). Before April 2002 for instance, in joint ventures the foreign partner supplied the management, technical expertise and part of the equity resources, in accordance with the arrangements for collaboration. The Saudi partner provided local supervision, local labour both skilled and unskilled, and dealt with local business contacts, as well as participating in the equity required. Only local representatives could bid for tenders, because government contracts awarded to foreign investors required 30% of the contract to be carried out by a Saudi agent. Royal Decree (No. M/2) of January 1978 regulated the relationship between the Saudi agents (who should be registered in the Commercial Register of the Ministry of Commerce) and foreign investors who are contracting with the government (Montagu, 1985; 1994).[35]

Regarding foreign investment, such investment may be granted equal treatment, protection and incentives as national capital, if it meets the government's requirements for economic development projects. Bearing in mind that the share of national capital is at least 25 percent, the benefits of successful investment include exemption from income tax for up to 10 years from the commencement of

35 Further information was obtained from the website: http://www.saudia-online.com on 16 March 2003.

commercial production; ownership of land (under the regulations governing land ownership by non-Saudis); no restrictions on foreign exchange and repatriation of capital and profits; and selective customs duty exemptions on machinery, equipment, primary raw materials, etc. (SAGIA, 2002; 2003; Al-Qhatani, 2002).

4.8.4 New investment laws from April 2002

The Foreign Investment Law was passed in 2000, then reviewed and promulgated in April 2002 in order to remove obstacles that still stood in the way of the free inflow of foreign funds. The amended law gives international firms the opportunity to take full ownership of projects. The law authorises foreign corporations to invest in an unprecedented, wide range of economic sectors, and they are no longer required to take local partners. Among the additional incentives available under the new legislation are that foreign firms are able to transfer money from their enterprises abroad, as well as sponsoring foreign employees. Foreign firms with annual profits over 30,000 USD enjoy a new tax rate against their net profit, this having been reduced from 45 to 25% since April 2003 after endorsement by the Shura (consultative) Council.[36] In addition, projects that are entirely owned by foreign firms can qualify for loans from SIDF. The Income Tax Law was finally approved by the Council of Ministers on January 2004, but with a tax rate of 20 percent of the total net profit from foreign business activities. However, setting a tax level which is high in comparison to adjacent countries which are competing with the country for investment does not fit with the government's objectives to attract foreign money and increase the private engagement that the Saudi economy needs (SAGIA, 2002; 2003; Al-Qhatani, 2002).

36 Asharq Al-Awsat newspaper: April, 2003 No. 8918.

Although the Saudi market is distinguished by its substantial national capital, which is still seeking proper local opportunities, this does not necessarily mean that the country does not need foreign investors. Although the national objective to attract FDI may be different from other countries, the priorities in Saudi Arabia as described by SAGIA (2003) include technological advances brought by foreign investors who settle locally. This also includes modern administration and marketing methods, in addition to developing the national manpower.

Investors, according to the new law are also eligible to hold investment licenses in more than one type of activity. Finally, foreign investors will receive assistance from SAGIA and other government agencies to prepare feasibility studies, through the provision of information and statistics for investment projects falling under the scope of the national development plans (SAGIA, 2002; Al-Qhatani, 2002).

Tax exemptions, accelerated depreciation accounting and shared capital are among a number of incentives that may be offered to investors to develop new projects. Conventional bank loans are another method; borrowers can obtain their financing from lending institutions over an agreed timescale. In financially developed countries, borrowing may be sought from other financial institutions such as insurance companies, pension and social security organisations. SIDF presents a good example of financing options due to low service charges, assistance with the detailed study of project proposals, and the possible extension of loans over relatively long periods of time (Montagu, 1985; Al-Samarrai, 2002). However, SIDF usually finances 50% of a project and requires the investor to contribute to the investment, even if that means the investor obtaining loans from other sources (Al-Samarrai, 2002).

The estimates by SAGIA indicate that the water sector will need perhaps 90 billion USD in the next 20 years, and local financiers acting in isolation might be unable to

meet such massive capital requirements. Further improvements to the investment environment are required if the government is to achieve the capital inflow it requires.

4.8.5 Accession to the World Trade Organisation (WTO)[37]

Following the signing of a key trade agreement with the United States in September 2005, Saudi Arabia has almost gained full WTO membership. This was followed by talks with other WTO members, and the signing of a number of bilateral agreements. The deal with the USA removed one of the principal obstacles that stood in the way of Saudi membership, notwithstanding that before signing with the USA Saudi Arabia had signed WTO accords with 38 countries. The government has made a credible commitment to ensure that its trade legislation complies with all WTO rules. In due course this development was followed by the major trading nations giving approval to Saudi Arabia's accession to the WTO, in Geneva on Friday 28th October 2005. This was endorsed by the ruling General Council in December 2005.[38]

It can be said that with Saudi Arabia's entry to the WTO it has become a more promising environment for investment. Accession to the WTO should boost capital inflows, particularly foreign investment; economic and trade cooperation with the organisation's members will provide funds for diversification of the largely oil-based economy and bring new export opportunities for Saudi firms, especially in the petrochemical industry. This will eventually lead to greater openness and transparency as well as further improvement in commercial legislation, lower customs duties, and political and economic reforms. Provision of goods and services will also improve because of intensive global competition, meaning that they will be available at

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37 WTO is a world body committed to promoting free trade in the interests of its members, which currently number 148. Some of the WTO members from developed countries are more equal than others, as they have a competitive advantage; so opening up the utility sector, particularly water, will benefit these countries unless the other members keep water out of the WTO.

38 Arab news: 12 December 2005; Al-Riyadh newspaper No 13685.

competitive prices. In addition, trade disputes will be solved according to the highest professional standards through the organisation itself. Having joined the WTO it is expected that the government of Saudi Arabia will be required to open its markets to imports, as well as service companies in a wide range of sectors including banking, telecommunications, energy, etc. (Al-Othaim, 2005). Holland (2005) has also reviewed the effect of WTO and GATS on water operations.

4.9 Before plunging into the privatisation of Saudi water

Privatisation was initiated to assist the provision of public services after years of global economic recession. Saudi Arabia is intensely committed to PSP in economic development, which is consistent with the aims of economic liberalisation. Although privatisation in Saudi Arabia has not been firmly linked to fixed programmes and timescales, it has made progress and produced acceptable outcomes such as those in telecommunications (Al-Mayouf, 2003a). It can be said that privatisation associated with the water sector has focused on three areas. They are privatisation of finance, for existing and new projects facing a shortfall in financial resourcing; the privatisation of provision, by granting private investors management and service contracts for new projects via a tendering process; and privatisation of ownership, in which some government assets are sold to private investors after a realistic assessment of the socio-economic costs and benefits (Balghanaim, 2001). The introduction of BOT mechanisms in China, for instance, was mainly to introduce foreign funds, advanced technologies, management skills, operational efficiency and competition in the local market. From the beginning that proved a dramatic change from the traditional free provision by the government, to a user-pay basis (Zhang and Kumaraswamy, 2001).

The vast investment required for the future provision of water services means there is a need for private sector involvement. Privatisation is more than the ownership of

water utilities, it is also about introducing innovative management practices by which authorities can raise sufficient funds to develop new projects (Bushnak, 2001). One of the advantages of water privatisation is the low cost of delivery and self-financed projects. Low water charges represent an obstacle for PSP, especially if coupled with a failure to collect them. That is in addition to the high levels of government subsidy, which require gradual restructuring of the tariff before embarking on PSP (Al-Alawi, 1998). However, should effective financial and technical amendments be introduced these constraints can be overridden.

For instance, an independent authority which takes the role of regulating water services is extremely important to protect and maintain a competitive market, and to secure high quality services. Such an authority should control the implementation of measures by supervising how the water services providers conduct their operations, whether in private or public-private partnerships.

Haarmeyer and Mody (1997) claim that the World Bank has indicated that in developing countries, revenues from municipal water projects represent only 35% of the actual costs of provision. Water and sewage services require enormous investment that cannot be recouped over short periods of time. On the other hand, the existence of a natural monopoly does not offer competitive openness in key areas of provision such as treatment, conveyance or distribution, and such investment might be at risk of political expropriation or contractual conflicts. Another risk could arise from instability in foreign exchange rates, which influences the relationship between revenue in domestic currency and international borrowing.

4.9.1 Gateway to privatisation

Given the age of existing seawater desalination plants, and the growing demand for water, the initial involvement of the private sector could be in three areas: maintenance, installation and refurbishment of the existing plants; building new desalination plants and main water transmission pipelines, by some private consortium of Saudi and international companies that specialise in water technologies; and selling the assets of some desalination plants to private investors, with a considerable proportion of the shares being offered initially to the public.

Involving private investors (local, international or a consortium of companies) in the development of new water projects could be through a scheme that offers long-term contracts to build, own and operate (BOO) new seawater desalination plants via what are known as Independent Water and Power Projects (IWPPs).[39] This could follow a structured tendering process involving the qualification of companies, a request for proposals, the short-listing of bidders and awarding of the contract. The price of water units offered by the developer will be a decisive factor in the bidding process, since the project is based on bulk supply. In addition to buying water from the company the government will also buy electricity produced by the desalination process, and subsequently other companies will pump the water to cities or to blending sites where desalinated water is blended with groundwater from deep aquifers. However, water distribution could remain in the public sector, until new measures from MOWE can be delivered (personal communication).[40] In such a structure the relations between private investors and consumers will not be tangible, at least in the near future. Water

39 IWPPs are projects developed by independent companies to operate and maintain assets such as co-generation desalination plants in order to produce desalinated water and electricity in large quantities for ultimate delivery to consumers.

40 This is based on personal communication by the researcher with a senior staff member at the SWCC in July 2004.

supply could witness a substantial level of private involvement, as happened in the electricity industry which is now entirely privatised.

Nonetheless, in order to achieve efficient water service provision by the private sector, two conditions are required. They are: (1) that developed projects should produce sufficient returns to cover construction and operation costs and debt-service payments, with competitive profits on investment; and (2) investment risks associated with construction and operation or regulatory and foreign exchange rates should be openly identified, as well as efforts to minimise them.

Generally, for PSP to be successful a number of issues need to be addressed. Haarmeyer and Mody (1997) described some of them, such as: (1) the importance of government commitment to privatisation; (2) the existence of well-established contracting institutions, to maximise confidence and to offer flexibility in negotiations and independence in the operational processes, and (3) a tendering system which has all the aspects of full competition, carried out in a transparent process to establish accurate information about asset status, pricing and operator qualifications.

4.10 Concluding remarks

Water is becoming the focus of world attention. Water provision in Saudi Arabia involves multidimensional and divergent elements, and most of them have been illustrated when considering the case study. However, prompt action is crucial if the many problems of the water sector are to be overcome.

The physical transformation of Saudi Arabia into an urbanised country has resulted in new patterns of supply and demand that severely undermine any notion of sustainable provision, taking into account its severely limited freshwater sources. Providing an adequate but effective water supply for the growing population, improving supply quality, and conserving and protecting resources are the keys to national water

sustainability. National policies are intended to reduce the pressure on water resources through an optimal distribution of spatial development, which should be integral to the planning system. Treated wastewater may provide an alternative water source for agricultural and industrial purposes, given the availability of relatively large volumes, and this would release freshwater sources to supply the residential demand. Reduction in the overall water consumption for agricultural needs could be achieved by the reappraisal of agricultural policies that could include improving irrigation efficiency by enforcing sprinkler and drip systems, canal lining and laser levelling, as well as offering incentives and assistance for farmers to adopt such techniques.

Government subsidies have kept water charges very low for consumers, and consequently may have allowed or even encouraged high rates of consumption. Changes in the pricing structure might to some extent help to reduce these high levels of demand. Additionally, the supply-led approach to water provision should not be considered as an option for the future. The anticipated shortfall of revenue from charges in relation to actual costs may be made up through government subsidies, especially when income is not enough to cover the costs of existing services, let alone those of future projects. The dearth of market competition, the lack of independence of public authorities in terms of management and finance, and weaknesses in customer relations are major contributors to the deficiencies in service provision.

If water is managed on the basis that it is an absolute public property, water conservation and protection objectives are likely to be undermined. However, water services could be managed as a 'public responsibility' through various institutional mechanisms and measures; for example by making consumers into key partners with respect to water use, which would result in greater stability in production and distribution. These measures need to be developed in accordance with local

experience, and to some extent with regional considerations. As Satterthwaite et al (1994) put it, the government could take the role of a 'facilitator' by which it coordinates with society representatives, local NGOs, the private sector and international agencies, rather than maintaining its old role as a service provider. However the government should retain the right to intervene, in order to preserve public health and over any other issues causing public concern, such as negligence.

The introduction of PSP programmes would be an appropriate way to obtain new financial resources for water development. However, any PSP in water services should maintain the basic goal of meeting the needs of an under-served population, through the expansion of access to services. In Saudi Arabia, PSP in water may well be limited to investment in desalination plants and sewage services, at least in the near future, until MOWE delivers new measures. It can be said that this level of PSP would provide funding for the water sector but at the same time would not affect the issue of public control over water rights, and the 'social good' dimension. However, investments must be protected from the dangers of political expropriation or contractual conflicts, as well as the risks arising from instability in foreign exchange.

A well-established regulatory system is often a prerequisite for investment in the basic infrastructure services for residents, municipal authorities and other stakeholders. By this the government could maintain adequate financing for service provision to acceptable standards, while promoting profitable investment for the private sector. Assessing the roles, responsibilities and institutional issues concerning stakeholders should be integrated in the evaluation process of the regulatory framework, by which the government can adopt and enforce appropriate service standards. An independent government regulator should undertake a wide range of responsibilities stipulated by the regulatory framework, as described earlier.

5. Impact of Rapid Growth on Water, Arriyadh City as an Example

5.1 Introduction

5.2 Arriyadh at a glance

5.3 Concise description on population and social characteristics

5.4 Controlling the urban development

5.5 Overarching guidance for the city

5.6 The water sector in the city

5.7 Challenges for the future

5.8 An analytical perspective and concluding remarks

5.1 Introduction

In previous chapter a descriptive account has been given of some different aspects of Saudi Arabia, which is the subject of this case study. These aspects have been emphasised because they are relevant to the issues discussed in this research, including urbanisation and the impact of extraordinary population growth on the water sector, institutional developments, and alternative sources of supply for the future. This chapter considers Arriyadh city as an example from Saudi Arabia to show the impact of rapid growth upon water resources and service, and the concomitant implications. The chapter begins with a brief description of the city, highlighting its population level and social characteristics. Then it explores urban development controls from their beginnings in the city up to the more recent urban policies, as well as the growth in land use. The chapter also discusses the overarching guidance available to the city from national, regional and local levels of government. A review of existing conditions in the water sector in the city is provided, including the available resources for potable water supply. Other sections of this chapter deal with critical issues and future challenges in terms of the economic, institutional and socio-technical dimensions. This is followed by a concluding analysis of the key issues that have been raised.

5.2 Arriyadh[41] at a glance

Arriyadh city is located on the eastern part of the middle of the Arabian Peninsula, with an elevation of about 600m above sea level. Arriyadh became the capital of the third Saudi State in 1919, and the city has been the focal point of several developments since that time.

41 The name Arriyadh is derived from the plural form of an Arabic word, meaning a place of gardens and trees (rawdah) set in the heartland desert with many wadis (former water courses, now dry).

This process was accelerated during the mid 1950s, by which time all ministries and government offices had been moved to or established in Arriyadh, making it the seat of government. In the same year a Royal Decree was issued, raising the status of the municipality of Arriyadh to that of mayoralty. Its scope of responsibility was greatly enlarged, and its resources increased to enable it to cope with its growing size and population increase (Al-Farsy, 1990). Over nearly half a century, continuous rapid growth has transformed Arriyadh from a small walled town of a few thousand inhabitants into one of the largest metropolitan areas in the Arabian Peninsula, with lots of commercial and financial functions for investment at local, regional and national levels, and a population of just over 4 million residents (ADA, 2002b). An indication of this is the provision of higher level educational institutions, specialised services and cultural facilities of national interest (ADA, 1997a). The area of the two phases within urban limits is about 1782 km^2. Phase I covered developed land with an area of 632km^2, while the total of developed land currently extends to 950km^2 (ADA, 1997c).

The Arriyadh region features very harsh and dry weather, and experiences extreme temperatures during both summer and winter (also see: 4.3.1 in page 107). During the summer maximum temperatures may range between 45-48°C. Irregular and rare rainfall occurs, possibly reaching 100ml annually. Because of the high temperatures and low average rainfall, and because the city lacks any permanent surface water, the humidity in Arriyadh is one of the lowest in the country and averages 19% during the summer (ADA, 2002a).

5.3 Concise description of population and social characteristics

The real watershed in the development of the city came with the discovery of oil in Saudi Arabia, in the late 1930s. Within two decades oil enabled the government to increase its public spending in all areas of its operation, together with improvements in the citizens' lifestyle (Rajab, 1982). As a consequence of the dramatic population growth there were new changes in urban forms, and expansion of urban services. The growth of population was caused by the movement of citizens from surrounding regions to the city, seeking employment, to live in an urban area with better services, and the chance of a higher quality of life. Naturally these changes in the population played a key role in the demand for services, and other relevant factors in relation to social structure.

As an indicator of the growth in urbanisation, the population of Arriyadh city was estimated in 1862 by Palgrave (a British explorer) to be 7,500. In about a century it had grown to 169,000, that is almost 22-fold (Al-Farsy, 1990).

The city was estimated to have about 300,000 inhabitants in the mid 1960s. By 1996 the population numbered 3.1 million, an average growth rate of 8.1% annually between 1990 and 1996. This was a combination of natural growth at 3.3% and a migration rate of 4.8%. According to estimates by ADA, the total population of the city was 4.5million in 2001 (ADA, 1996; 2000; 2002a; 2002b).

Table 5.1: Population growth, natural and migration

Year	Annual Growth	Natural Growth	Migration Growth	Population In '000
1966	n/a	n/a	n/a	300
1976	n/a	n/a	n/a	690
1986	n/a	n/a	n/a	1'389
1991	8.8%	3.3%	5.5%	2'004
1996	8.1%	3.3%	4.8%	3'100
2001*	10%	2.1%	7.9%	4'500
2006*	7.4%	2.9%	4.5%	6'100

Source: ADA (2000), * (estimates)

The urban form of the city was affected by the expansion of low-density, residential communities that needed to be serviced by infrastructure provision. That provision followed the residential development, and was not provided in parallel. For instance, ADA (1996) estimated the population density in 1986 at 5.4 people per square kilometre. According to ADA (2000), the number of inhabitants residing in urban areas of the country increased about 15-fold between 1950 and 1990, placing Saudi Arabia among the most highly urbanised countries worldwide. Arguably this drift could have been caused by natural growth, the migration of working-age people from the region and other countries and the expansion of economic activity in the major cities, due to the dramatic improvement in social, municipal, infrastructure and transport services. Figure 5.1 shows the steady population growth that the city has been experiencing, to almost double in the last 10 years.

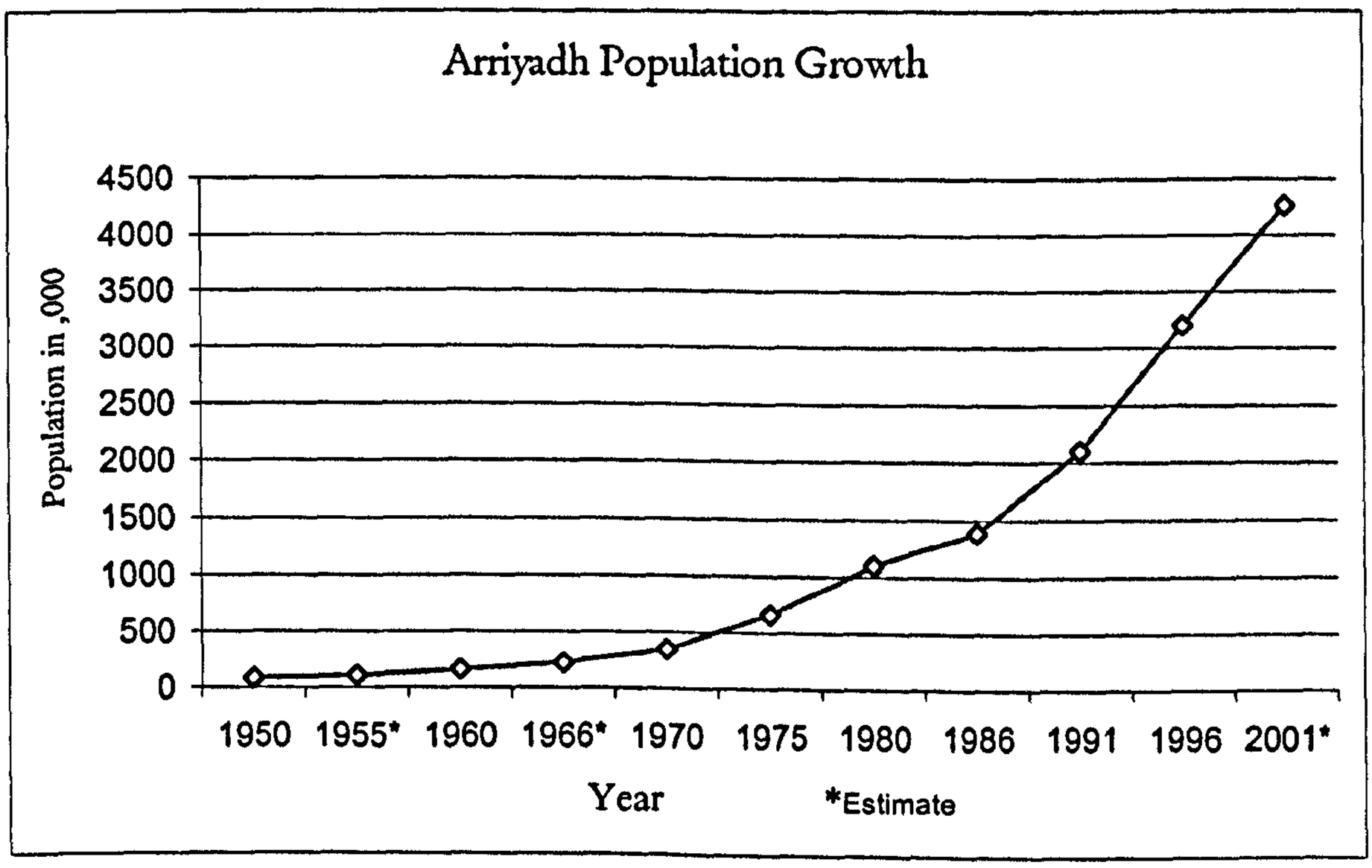

Figure 5.1: The growth of the city's population

Source: MOEP (2000b); ADA (1997a)

It is expected that the population of Arriyadh will grow to nearly 9.5 million in 2021 (Sheikh et al, 1998; ADA, 2000; 2002a), assuming a decline in migration rates of

expatriates,[42] but the city will continue to be a focal point of attraction for Saudi citizens from other regions. During the past three decades, the increase in foreign inhabitants was due to the rapid economic growth of the late 1970s and early 1980s when the country was experiencing a booming economy leading to a demand for construction workers (Al-Farsy, 1990). This had major implications for the development of the city in terms of employment opportunities, housing provision and the level of infrastructure required. The provision of adequate services continues to present an important challenge for the future.[43] This is not to ignore natural growth, as the birth rates in the city are about 37 per 1,000 while death rates are 6.4 per 1,000; additionally, the average household size for Saudis and non-Saudis is about 7.7 and 4.9 respectively. As 50 per cent of all Saudi residents in the city are under 20 years of age, which is relatively young, it could pose a real challenge to the city's economy to provide employment opportunities for the working age population, let alone those who will form new families in the future - thereby increasing the demand for all kinds of services and utilities (ADA, 1996; 1997a; 2002b).

5.4 Controlling the urban development

Formal Saudi government was established in the early 1920s through the establishment of the first modern civic council in the city of Makkah, consisting of 17 members. This council issued guidelines to regulate development matters, including the general municipal councils. This was followed by the development of municipal systems; control was changed in favour of the council municipalities department, and

42 This is due to the adopted programme of Saudisation, as described in (4.8.2) in Chapter Four.

43 Although for a city located in a country that has natural resources such as oil and gas from which it gets considerable export earnings, population growth which exceeds the level of revenues to provide adequate budget for funding necessary projects will cause a number of problems. These may include high unemployment, a run-down public services sector, and erratic social security and benefits, as the government starts to think about the growing need to reform economic and fiscal systems in order to find new channels for financing development with help from the private sector.

then in 1961 it was upgraded to come under the deputy in the Ministry of Interior. This deputy was responsible for all municipality affairs (as well as water departments), and conducting studies and planning among others. In 1975, MOMRA was established as a government ministry by Royal decree No.266/A. This ministry was charged with many duties such as city and rural planning, certain infrastructure provision, landscaping and maintenance of green areas, together with responsibility for sanitation and environmental standards (MOMRA, 2003).

Arriyadh became the centre of governmental activities when those offices were moved to it from Jeddah in 1953. This event, together with the opening of a rail line connecting it to the Eastern Province in 1951, may have been the two principal drivers of the changes that took place in the development of the city as explained in Chapter Four (4.4.1). Unprecedented levels of development created the need for the first master plan (ADA, 1997a; Al-Ghamdi, 1999).

5.4.1 City planning commencement

In 1971 MOMRA awarded Doxiads Associates Consultants a contract to prepare the first master plan for Arriyadh, to run until the year 2000. This put forward the idea of a 2km x 2km grid pattern of development that was indeed implemented, and which has resulted in the relatively low gross population density of about 93 persons per hectare (9.3 per km^2 in 1996) (ADA, 1997c). However, by 1973 urban growth has gone far beyond the limits of that initial plan, due to the vast increase of government revenue from oil exports in the early 1970s which enabled the government to extend its expenditure on development and services provision. As a consequence MOMRA was obliged to call for another consultancy to prepare a second master plan. SECT International began preparation of the Second Plan in 1977, after revising the first one. This plan follows the same physical structure as the first, which led to the

emergence of uncontrolled subdivisions around the fringes of the city (ADA, 1997c). This has yet further undermined the objective of providing services efficiently and in a cost effective manner.

The first master plan did not respect the natural physical aspects of the city; it directed growth to the north, in a linear pattern. Neither plan succeeded in anticipating the growth in population and economic activity which occurred in less than two decades, between the 1970s and 1990s. The second master plan concentrated on increasing the land set out for development purposes in order to accommodate future population growth, of which 34% has already taken place. However, the second plan did partially succeed in including the physical features of the city such as the Wadi (valley) to the west, and natural escarpments to the east, in the main structural elements. However, certain national projects were developed without effective integration into the urban fabric of the city to provide a meaningful metropolitan image. These projects include the two universities to the north, the Sports City, the diplomatic quarter to the west and the two industrial cities to the south.

5.4.2 Current urban control

With the aim of controlling the urban expansion of the city, in 1989 the Council of Ministers adopted a resolution to set up an urban limits policy. This consisted of two phases and the Urban Environs. The urban limits policy is a tool for growth management aimed at preventing urban sprawl, avoiding costs and inefficiency and allocating land for development within specific time phasing. Phase 1 limits covered an area of about 632km^2, designated for development up to the year 1995. Phase 2 limits encompassed an area of about 1,150km^2 for development from 1995 up to the year 2005. The area beyond phase 2, determined by the Urban Environs extends to about 3,120km^2, which will remain for development after the year 2005 (ADA,

1997c). Keeping urban expansion within these boundaries was prompted by the need for better management and adequate provision of public services, pursuing efficiency and cost-effectiveness (Al-Mayouf, 2003b).

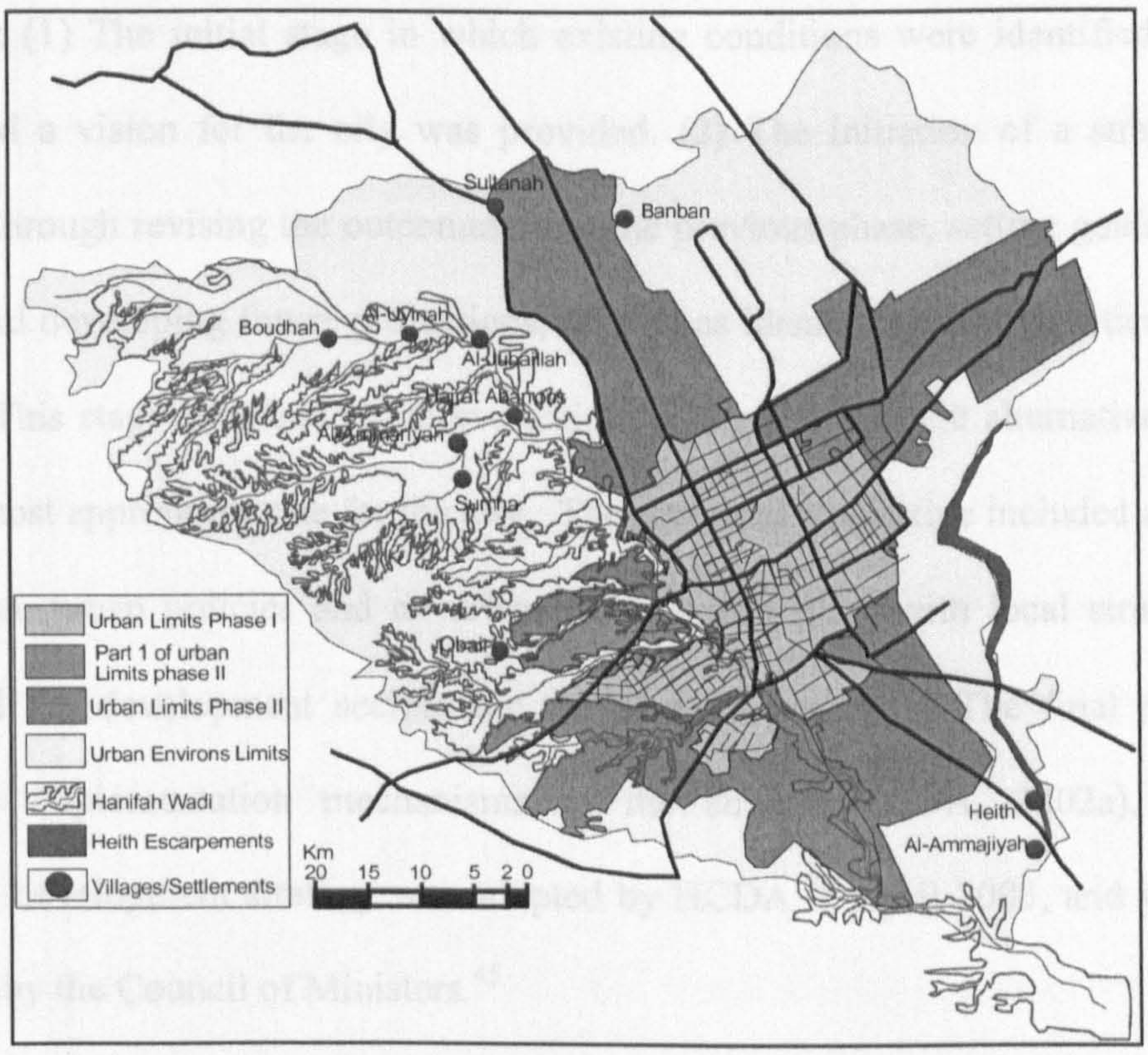

Figure 5.2: The urban limits and phases of Arriyadh city

In 1996, the High Commission for the Development of Arriyadh (HCDA) assigned its professional agent ADA (see 5.5.3 in this chapter, page 160) to start working jointly with a multi-disciplinary consulting team to develop a metropolitan development strategy,[44] with the aims of assessing conditions within the city and to plan for its future. The strategy formulated a 50-year Vision, a 25-year Strategic Framework and a 10-year Implementation Plan in accordance with the adopted urban limits and their phases. The strategy covers different elements of development including a land use plan, transport system, networks, public utilities and infrastructure and environmental

44 The strategy is the beginning of a process of long-term strategic planning and future development. It differs from the static master planning approach, and deals with all sectors of the city (e.g. planning, environment, open spaces, economic, transportation and infrastructure). It will enable planners and decision-makers to effectively monitor and respond to changes through the use of regulatory and budgeting powers (See: ADA, 1999).

requirements, among others. It also set guidelines for future development that might take place over an area of 4900km² and serve a population of 9.5 to 10.5 million by 2021, if the same densities apply (ADA, 1997a; 1999). The strategy has proceeded in three phases: (1) The initial stage in which existing conditions were identified and analysed, and a vision for the city was provided. (2) The initiation of a strategic framework, through revising the outcomes from the previous phase, setting goals and objectives and developing future projections, as well as identifying opportunities and constraints. This stage concluded with evaluation of the development alternatives, to choose the most appropriate one for the city. The preferred alternative included a city structure plan, urban policies and an urban management plan, with local structure plans for all the development sectors for the next 25 years. (3) The final phase covered the implementation mechanisms of the strategy (ADA, 2002a). The metropolitan development strategy was adopted by HCDA in April 2003, and yet to be approved by the Council of Ministers.[45]

5.4.3 Land use growth

Beyond the built up area of the city a vast area of land has been zoned for future residential use. In addition, many vacant plots within the developed areas have been retained by their owners for development in the future (ADA, 1997c).

According to the ADA households survey in 1996, the developed urban area had reached about 38,123 hectares (this does not include streets), this being approximately 20% increase since 1990. 30% of this additional area was land developed for residential use in this period. Residential areas make up the largest proportion of the major uses, representing 40.7% of the total developed area.

45 Al-Riyadh newspaper: 20 April 2003, No 12721.

The urban holding capacity of the city, which includes developed land and undeveloped but subdivided land, could accommodate the projected population increase which is about 5 million people if the same density of development continues. The population which will be accommodated in the city in the future presents a challenge to provide sufficient public services, including water supplies for instance, in the light of the city's limited resources, let alone maintaining existing services. It may be that the city's future growth will be increasingly influenced by the vast proportion of existing, subdivided residential land which is already in private ownership, and will be developed at low densities (ADA, 1997c).

However, the substantial area of vacant land lying within the built up area could favour new development at higher gross densities, which might make it possible to expand existing services rather than providing new services for development beyond phase 2 of the urban limits. This would help decision-makers achieve a balanced distribution of the growing population, with more effective management of demands for public services. The higher density of developments in the new growth areas within Phase 2 of the urban limits would provide a context in which efficiency might be better achieved. Adrian and Trueman (1991) indicate that lot size and density levels have considerable influence on the costs of infrastructure provision in different locations (see also: Azizi, 2000). On the other hand, water supply in the existing but consolidating city should receive extensive improvement via engineering programmes that continue the work of meeting demand. Such an operational policy could be implemented in accordance with, and be compatible with, the current distribution framework (Al-Mayouf, 2003b).

5.5 Overarching guidance for the city

5.5.1 National policy

The country's main axis of development is clearly based on Arriyadh-Jeddah (on the west coast) and Arriyadh-Dammam (on the east coast), with important extensions to Yanbu and Jubail (planned and existing industrial cities). Areas outside these regional growth centres might undergo less development. Some drift towards urban areas is inevitable, but if this can be kept under control the likelihood of urban problems should be reduced. There is clearly a limit to the extent to which every settlement can undertake large scale development, but there is a strong likelihood of continuing government support for areas of natural development in the provinces and these will become increasingly important focal points for new amenities (Walmsley, 1985). On the other hand, the seventh economic national development plan emphasised as one of its strategic principles the achievement of balanced growth throughout all the regions of the country. It aims to direct economic activities that encourage rapid urban and population growth away from the large urban centres, to other areas with good development potential (MOEP, 2000a).

5.5.2 Regional policy

The overall spatial structure of Saudi Arabia has witnessed much development during the last five decades. Arriyadh has received a generous share of the investment and public infrastructure compared with the rest of the country, and become the largest urban centre.

Due to this position of urban primacy, a comprehensive urban strategy has been necessary to organise the development and to place it within an acceptable framework. MOMRA prepared a strategy in the early 1980s called The National

Settlement Strategy, for the period 1980-2010 (MOMRA, 1996). This was revised in 1990, and renamed The National Spatial Strategy (NSS). Its major emphasis is on the importance of promoting a multi-polar settlement pattern to tackle the problems of imbalanced development, and of directing anticipated growth towards the regions with sufficient natural resource potential while conserving existing resources for current growth and for future developments. The strategy is described as a key instrument that coordinates all the diverse objectives in the national development plans, and represents the link between sectoral objectives and regional and local plans. The NSS recommends optimal use of the existing infrastructure and services network, especially in large urban centres where these services have been provided to high standards. The Council of Ministers approved this strategy in its resolution No. 127 in August 2000.

The aim of the strategy is to achieve sustainable development. The NSS included within its main elements the possibility of expanding the economic base for all the regions, and also to determine new growth centres to serve as channels to transfer and coordinate development efforts intended to achieve the equivalent urban development objectives.

Implementation of the NSS has certain implications for development in Arriyadh city. For instance, some urban centres in the Arriyadh region may be given higher investment priority by the government. However, Arriyadh city in this context could play the role of providing the region with more specialised services in education, information and management systems. Such a situation would have a significant impact on the level of regional migration to the city, especially in the long term.

One of the most crucial implications in this context is the impact expected upon the utilities sector; efficient distribution of public spending throughout the country's

regions might lead to a reduction in the investment that Arriyadh would receive. This might affect any programmes of improvement or expansion in the infrastructure, and therefore if the city is to deal with the expected effects of reduced funding there is a need to (1) direct development programmes to locations in serviced vacant land; (2) develop innovative and cost-effective approaches to provision; and (3) change or adjust cost recovery schemes to more sustainable systems, in terms of consumption and pricing.

The diversion of investment from Arriyadh will evidently not be an easy task. Investment will follow the rules of economic viability and sustainability, which could mean that the city continues to grow irrespective of the pace at which the strategy is implemented. Promoting each part of the country according to its own economic potential should be the implementation focus of the NSS.

5.5.3 City level

There are two primary institutions involved in urban development and land use management in the city, and their tasks include the adoption of policies and regulations and taking responsibility for planning activities. The first institution is Arriyadh Municipality (AMANA), which is responsible for daily planning activities, and operates in a hierarchy under MOMRA. The Municipality is associated with approving regulations and subdivisions, conducting surveys, granting planning permission and dealing with the maintenance of municipal utilities and garbage collection, in addition to the implementation of advanced planning proposals.

The second institution is HCDA, which was established in 1974 and consists of members of the various departments and ministries associated with development. ADA is the professional agent for HCDA, dealing with urban planning and the preparation of environmental, economic, social and transport studies (Montagu, 1994;

ADA, 1997a). In addition, ADA coordinates the policies for the planned development of the city with other ministries and associated governmental departments.

Some overlap in responsibility for planning matters might be seen between these two institutions in terms of planning functions; however, Arriyadh Municipality with its huge range of daily duties generally takes the lead role in reviewing plans and studies, providing comments and queries and granting approval. ADA has first-hand responsibility for all large-scale projects, in addition to preparing detailed studies associated with development sectors and responsibilities, and proposing strategies and policies for the city across a wide range of issues.

It should be noted that HCDA is the most senior planning institution in the city. It is chaired by the governor of the Arriyadh region or his deputy, and includes the mayor of Arriyadh city (acting as the Commission's secretariat) in addition to representatives from MOMRA and other government departments concerned with services, as explained above (Al-Mayouf, 2003b). This has made it the only body that undertakes the formulation of development policies that will shape the city in the future.

The urban management strategy provided by the preferred metropolitan development strategy (PMDS) (see: 5.4.2 current urban control) presents specific urban management proposals required to achieve the objectives for the city, including new arrangements for coordinating, timing and the cost-effective provision of infrastructure to meet the city's needs, which may include land release and development programmes. In addition there are arrangements for funding that infrastructure through different types of PSP, as well as continued improvement in managing the existing infrastructure assets using a set of performance standards for monitoring and maintenance. However, the infrastructure strategy of PMDS aims for efficient provision to meet residents' demands, and this provision will be at a price

that reflects the actual costs of production, distribution and delivery. If they are to operate efficiently, infrastructure services needs to embrace a commercial approach with further progress in resources conservation; this is particularly applicable to the water sector.

5.6 The water sector in the city

5.6.1 Historical background

In the early 1940s, the water supply for Arriyadh city depended on domestic wells in houses, or other main sources in residential areas. The vast increase in population required the drilling of deep-water wells to meet the increasing demand. The first deep well was drilled in the Shemaissy area of Arriyadh, in 1956. This was to a depth of about 1400 metres, and was then the main source of water along with several artesian wells dug in adjacent *wadis* (valleys) in and around the city and the Hair area 20km to the southeast. Subsequently water was pumped from the wells to a reservoir built in the hills nearby, in Manfoha (Twitchell, 1947; Brown and Charles, 1963; Othman, 1983; MOEP, 1999; Al-Ghamdi, 1999; Al-Buraithen, 2000). This was followed by more drilling and reservoir construction, with supply networks established by the Bechtel Group of San Francisco, as well as other American and German companies. By 1956 the government had completed the process of expanding the network, with new drillings from which the quantity of supplied water reached 7500m^3 pumped from six wells in the adjacent wadis and their tributaries. In 1963, the Arriyadh Region Water and Sewage Authority (ARWSA)[46] was established to deal with the supply of water in the city and to maintain the distribution system.

46 ARWSA was established in 1963, as the Arriyadh Water Authority. In 1971, the Authority for Water and Sewage in Arriyadh was established by Royal decree No.22/m, then appointed as a government body by the Council of Ministers decree No. 685 in 1976. The Authority took responsibility for management, operation and maintenance of the water treatment plant and sewage utilities as well as the distribution system. It also provided all relevant services

5.6.2 Existing conditions

Water must be considered one of the most significant resources in any arid region. Water services in urban areas depend on three fundamentals to integrate the many activities required to provide reliable services. They are (1) water resources; (2) the water transmission and distribution system, and (3) the process of managing water supply and demand.

5.6.2.1 WATER RESOURCES FOR POTABLE SUPPLY

Currently water for the city is obtained from three sources. They are:

1. Shallow unconfined alluvial aquifers: these layers are located in many different parts of the city, such as Wadi Hanifah and the Hair area. 18,000m^3 per day is produced from Hair area alone. Wadi Nisah (Bayadh layer) produces 54,000m^3 per day from as many as 16 wells of good quality water. These water sources are to a large extent a replenishable resource, especially by rainfall recharge.
2. Deep groundwater aquifers: there are two deep aquifers in Arriyadh region. The Manjur Formation is almost 315m thick, and consists of sandstone. The water stored in this aquifer is about 750 billion m^3 and is described as low quality, with dissolved salts reaching 1500mg per litre. The abstraction from this formation is from well fields in Buwaib and Salboukh, at about 108,000 and 86,000m^3 per day respectively. Due to the low quality of water from this source five treatment plants have been established around the city's region. However, the annual recharge to this formation is estimated to be about 85 million m^3. The Al-Wa'si Formation is almost 150m thick, consisting of sand and clay rocks. It is estimated that 57 billion m^3 of water is stored and this is also described as low quality, with the amount of dissolved salts ranging between 1000 and 3000mg per litre. Water

to water and sewage such as billing and revenues, and imposed fees for collection and supervision of the services and their networks (ARWSA, 2000).

withdrawn from this formation is pumped to a plant located 30km to the east of the city, to be blended with desalinated seawater. It is estimated that the recharge to this formation may reach 420 million m^3 annually. It is worth mentioning that replenishment represents only a small fraction of the amounts withdrawn from these two formations. Water in deep aquifers has been stored naturally over many centuries, and provided a vital and strategic local water source for the city. This illustrates the future risk of resource depletion, given the continued increase in population and growth of economic activities in the city.

3. Seawater desalination: this is considered to be the most important potable water source for the city. 830,000m^3 per day is pumped to the blending site from a distance of just over 400km, accounting for almost 60% of the total water supply (ADA, 1997b; 2002a).

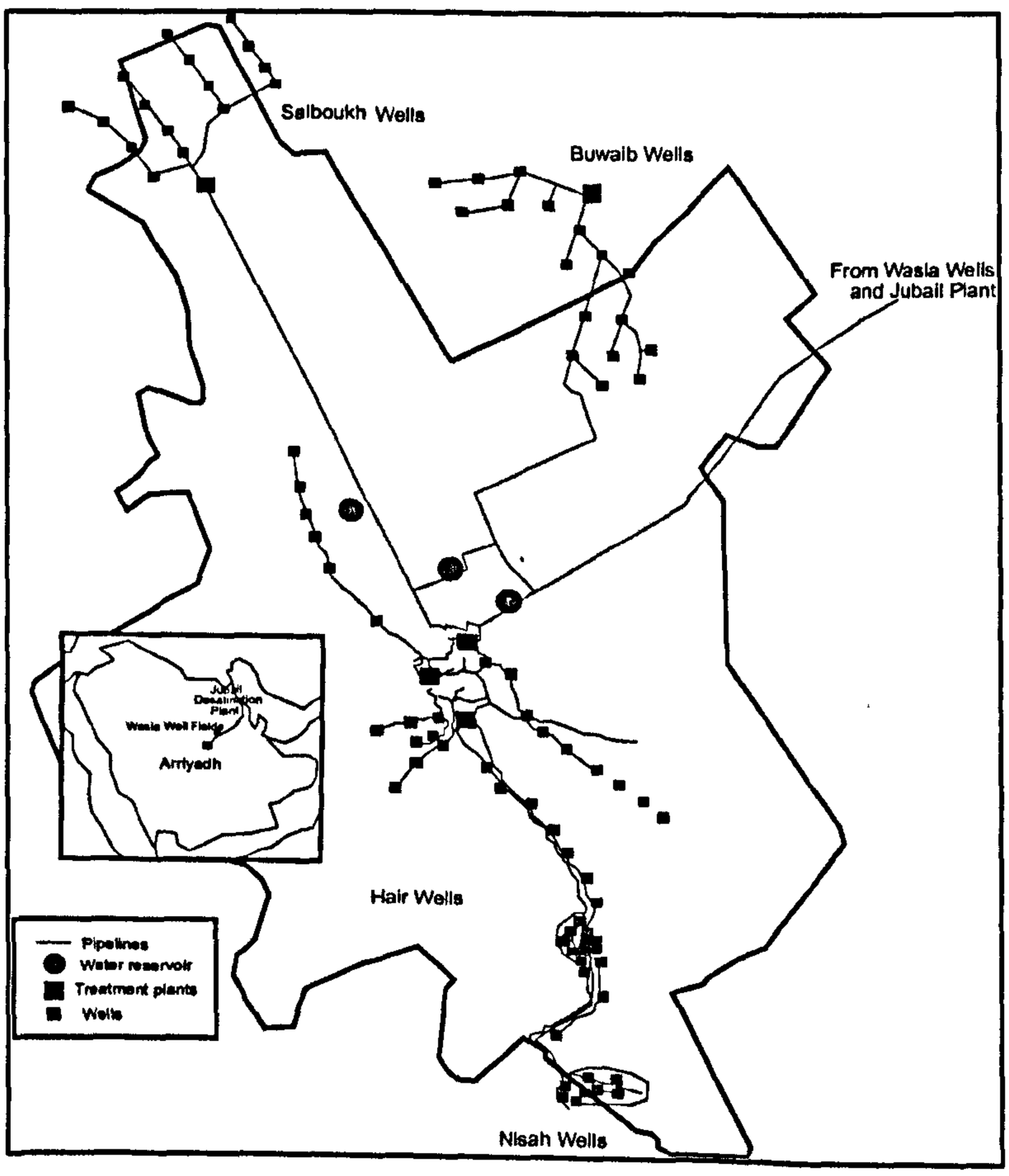

Figure 5.3: A schematic map of Arriyadh water resources

This means that the city gets one third of its water supplies from groundwater aquifers, approximately 430,000m³ per day. The remaining two thirds are supplied from the Jubail seawater desalination plant, to the east on the Arabian Gulf (Al-Bowardi et al, 1997). These two volumes are combined and desalinated water is transformed into potable water at the High Point Terminal (HPT) in a reservoir with a capacity of 300,000m³ (ADA, 1997b).

By 2000, 145 wells around Arriyadh were feeding the treatment and pumping plants, 110 of which were deep wells. When considering groundwater for the city, it is necessary to consider the extent to which these resources will be sufficient to meet demand, and also to what extent these resources might be recharged. These two questions are directly related to the consumption and renewability of water resources, and this relationship might be influenced by various factors such as the historical logic of water utilisation, the determination of areas with stress water demand, and the links between local utilisation of water and the national water policy, if there are any (ARWSA, 1999; 2000).

The existing total water supply is almost 1.3 million m³ per day according to ARWSA, while estimates by ADA indicate that the average demand is about 1,743,100m³ per day (ADA, 1997b). This indicates a clear shortage of supply, and is why water is pumped into the network only every other day as a 'programmed distribution'. According to ADA estimates, the demand for water may reach 5.24 million m³ per day by 2021. Additional work is needed to deal with the shortage in water production, during the period leading up to 2021.

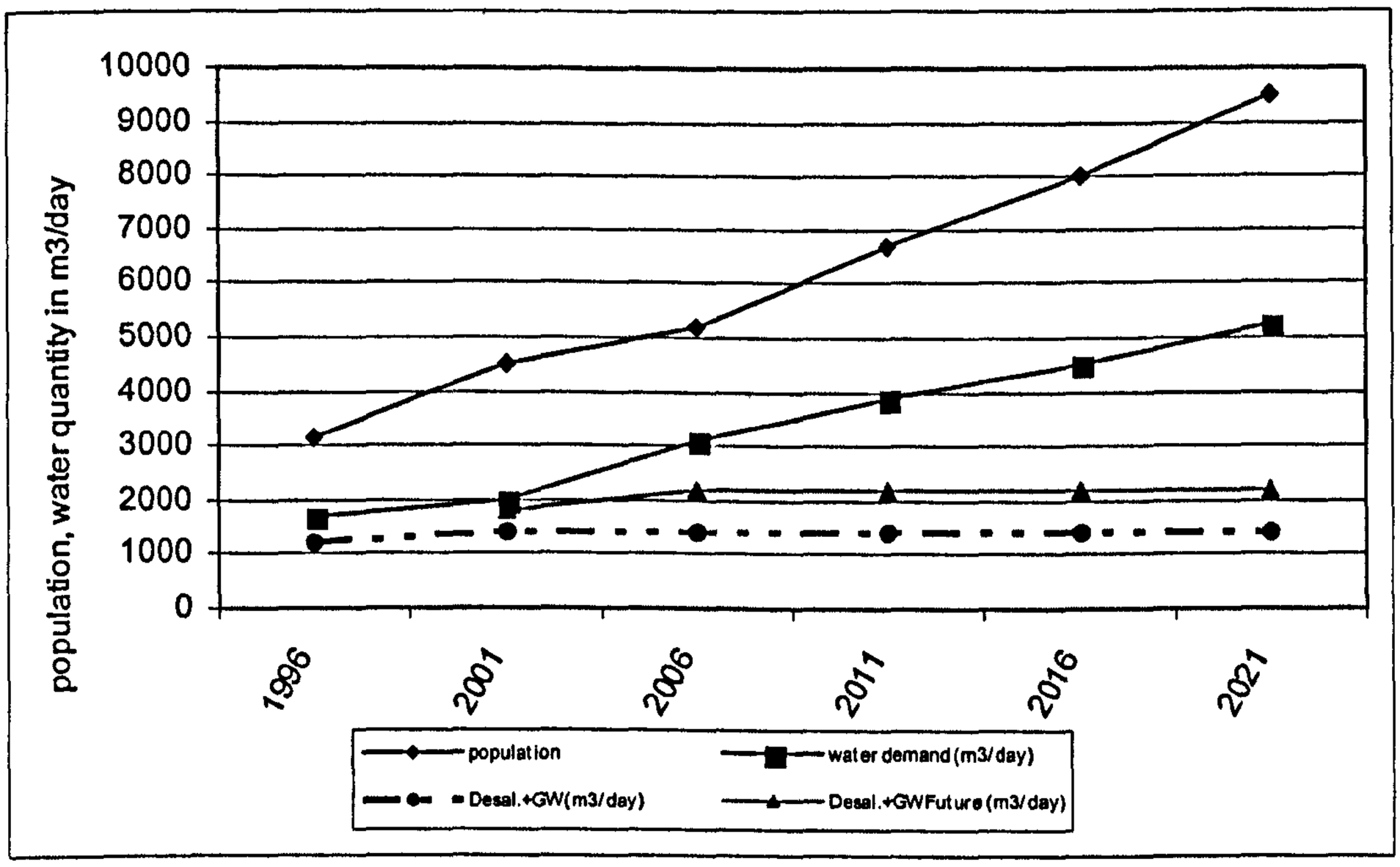

Figure 5.4: Water needs and population growth in Arriyadh

Source: ADA (1997b)

According to ARWSA (2000), the per capita consumption was about 300 litres per day in 1998, but then declined to 286 and 258 litres per day in 1999 and 2000, respectively. There have been dramatic changes in per capita consumption. It was 63m^3 per year (172 litres/day) in 1970, but down to 54m^3 per year (148 litres/day) in 1977; then it rose again to 94m^3 per year (257 litres/day) in 1983 and reached 176m^3 per year (482 litres/day) in 1989. There was a reason behind the huge increase in water consumption: looking at these numbers it can be seen that the vast increase occurred in the late 1970s, during the start of pumping from two well-fields in the north and north east of Arriyadh, which added about 50,000m^3 per day. The second increase in per capita consumption of water occurred in the early 1980s, which was due to commencement of pumping desalinated seawater from the Jubail desalination plant. In short, meeting the growing demand in future will require further expansion and investment as a result of adopting a supply-led approach, unless new methods to

shape demand are in place along with proper pricing of services based upon their economic value.

Over-exploitation of groundwater resources, without much recharge of the amounts withdrawn, has resulted in a constant decline in groundwater levels and deterioration in water quality. Thus in order to meet both the quantity and quality required for drinking water, domestic water supplies in Saudi cities rely mainly on water produced by desalination plants, which is used either directly or blended with groundwater. Seawater desalination is an energy-consuming process, involving the use of fossil fuels in separating salts from seawater. Those fuel reserves are of course not renewable resources, and are major assets for the national economy of Saudi Arabia. Making savings in desalination projects and production capacities would result in a substantial supplement to the national income in the long term (ADA, 1999). The level of demand, in the light of high dependence on desalination seawater prompted by the continuing population growth, might lead groundwater resources to be depleted depending on the way they have been used. Major changes are needed to deal with all the issues involved in water, including the level of consumption.

5.6.3 The Distribution System

Local distribution is the smaller feeder that shapes water networks, and supplies individual residential and non-residential users at each account connection and meter. Before water is distributed, four large-diameter pipelines transmit it from the HPT to three terminal group units which receive water, store it and then deliver it to the distribution system (ADA, 1997b; 1999).

The network of distribution systems currently covers all the developed areas of the city, covering about 850 km^2 and nearly 99% of the population. In 1973, water consumption in Arriyadh was only 100,000m^3 with a network length of 526km and

only 4,716 house connections. However, by 2000 the network length had increased to 9,409km, with house connections for water subscribers numbering 265,249 and 159,118 sewage subscribers (ARWSA, 2000), noting that all connections are metered. These connections are for different categories of land use: residential consumers account for the largest percentage, about 87.7%, compared with 0.85% for industrial customers. This indicates that future projections may be based principally on the increase in demand by residential users.

Sewage services cover 36% of the developed area in the city, and serve 56% of the total population. In 1998, the total length of sewage services networks was 2225km. The rest of the population, who do not have access to these services rely on septic tanks (ARWSA, 1999; ADA, 2002b).

The Arriyadh water networks are relatively new, having been started in the early 1970s (Abo Abat and Al-Haji, 2001). According to the field studies conducted by ARWSA, in 1990 UFW leakage from the network was about 17%. This 17% needed to be restored and was supplied by pumping more water. To overcome this problem, a comprehensive programme of leakage detection became necessary for sustainable development.

The distribution system still suffers some leakage, specifically in the central parts of the city. This may have the effect of increasing the underground water table, which is at a depth of less than 3 metres in most areas of phase 1 of the city; however, programmes are continuously being implemented to reduce UFW. Detecting leakage in the system is an important way to conserve water (Al-Bowardi, 1998).

5.6.4 The financial aspects of water

According to MOWE, the annual average capital requirement for water and wastewater investment is about SR7.5 billion. This does not include the cost of renovating the existing infrastructure (Musalam, 2003).

Table 5.2 below shows the tariff categories of water, as described in Chapter Four.

Table 5.2: Tariff system for water in Saudi Arabia (since 1994)

Category 1	1-50 m^3	0.026 USD/ m^3
Category 2	51-100 m^3	0.04 USD/ m^3
Category 3	101-200 m^3	0.53 USD/ m^3
Category 4	201-300 m^3	1.06 USD/ m^3
Category 5	301 m^3 and above	1.6USD/ m^3

According to the ARWSA annual report (2000), 44% of consumers are in category 1, 34% in category 2, and 17% category 3. 2.5% of consumers fall equally into categories 4 and 5.

A study by ADA carried out in 1990 indicated that the cost of water production was about SR9.90 per m^3 (2.64 USD), while the UFW was about 50% (including leakage and unpaid use of water). If the aim was to recover all the costs, therefore, the study suggested that the price of water should be SR20 per m^3 (5.33 USD). ARWSA and SWCC estimate the cost of water production (groundwater and desalinated seawater) to be SR3 per m^3. ARWSA states that only 75% of all supplied water is paid for, while 25% is UFW. This includes unauthorised water connections, leakage and unpaid use of water for government buildings and facilities (ADA, 1997b).

Furthermore, the ADA report on Infrastructure suggests that the "*annual subsidies for water supply in Arriyadh city are estimated to increase from SR1.138 billion* [approximately 303 million USD] *in 1996 to SR4.760 billion* [approximately 1.267 billion USD] *in 2021*" as outlined in the figure below (ADA, 1997b: 18).

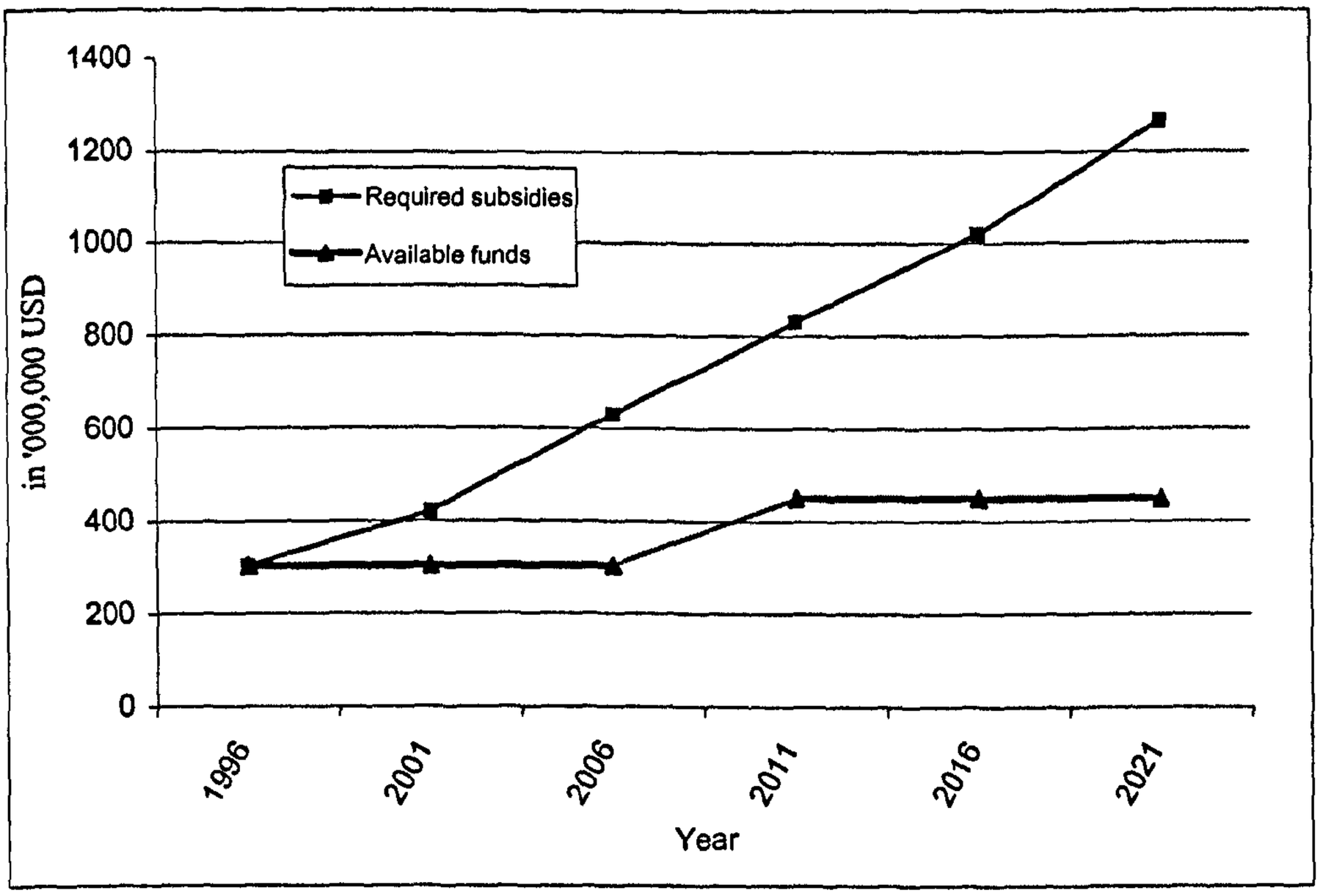

Figure 5.5 : The required subsidies vs. the available funds for water supply

Source: ADA (1997b)

Based on a study by Al-Husain and Al-Mansor (2000), the average cost of desalination, treatment, pumping and conveyance of one cubic metre of water could be SR3.40. ADA has estimated the annual subsidies for water supply in Arriyadh at almost SR1.14 billion, which will need to be increased in the future due to the growing in population. Taking 258 litres per day as the per capita water consumption and 21% as UFW,[47] as estimated by ARWSA, and given that the population stands at 4.5 million, then the total supply of water should be about 1.4 million m^3 per day. The total cost of water supplied to the city from the two sources (ground and desalinated) could therefore reach SR1.74 billion. This means that the annual gap (almost SR600 million) between the required and available funds must be expected to increase dramatically in the future, given that the population is expected to reach 9.5 million in 2021.

47 This is taken as an average between the highest and the lowest rate of UFW (17-25%) estimated by ARWSA.

5.7 Challenges for the future

5.7.1 Economic aspects

Although the government acknowledges the sensitivity of water to people, water services can be provided in a successful and cost-effective way. This is possible when the actual charge per unit consumed becomes less dependent on public finance.

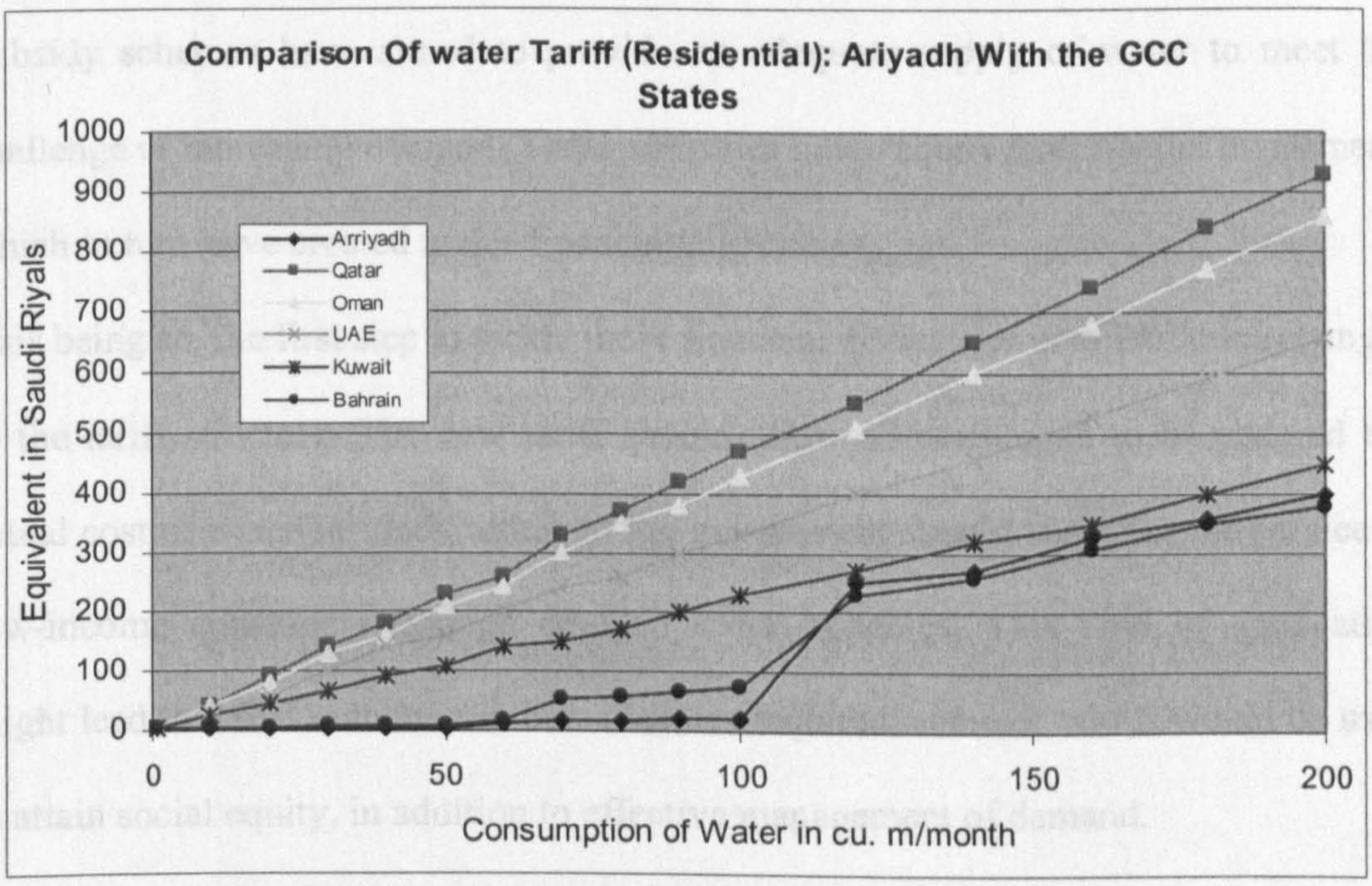

Figure 5.6: Adapted from ADA (1997b)

Figure 5.6 shows the water tariffs for residential consumption in Arriyadh city compared with other GCC states (Bahrain, Kuwait, Oman, Qatar and UAE). This comparison is for residential categories only, noting that in most of these countries no differentiation is made for non-residential users (ADA, 1997b). It can be argued that the consumption of most households is less than 100 cubic metres per month, and the water charge in Arriyadh for this category is very low when compared to other GCC members. The revenue from 100 cubic metres in Arriyadh is SR12.5 (USD 3.33)

compared with SR80 (USD 21.3) in Bahrain, which is second to Arriyadh in terms of cost.

Future expansion of the water system will require increased public spending for production projects and their associated functions, with more maintenance and replacement of existing assets as a consequence of expected deterioration in the system.

Subsidy schemes have aimed to provide an adequate supply of water to meet the challenge of increasing demand. These subsidies have required substantial investment, which in turn have created major financial difficulties.

This being so, the first step to tackle those financial difficulties is to introduce changes to the tariff structure. The new tariff should allow all consumers to be charged the actual cost of water services, although the government should subsidise the service to low-income consumers through detailed social schemes. This kind of application might lead to a real reduction in the subsidies required, some of which would be used to attain social equity, in addition to effective management of demand.

5.7.2 The socio-technical dimension

The high levels of per capita consumption, and the issue of network leakages in an arid area with scarce water resources like Arriyadh, are a critical challenge for the city's future development. The issues that could affect the efficient management of water are: (1) the lack of sufficient data about distribution networks and precise levels of consumption for each type of consumer; (2) the absence of a clear vision of the economic benefits of conserving existing water resources, rather than seeking additional resources (at a time of diminishing finances) to meet increasing demand; and (3) the weakness in considering existing circumstances to contribute effectively to proposals for action required in the short, medium and long terms.

The increase in consumption is usually the result of rapid growth and an increase in economic activities, which are met using a supply-led approach with continued expansion of services. It is essential to manage increased demand through a variety of means, such as increasing the efficiency of water distribution and minimising the problem of leakage by an intensive detection programme. It is also necessary to support the conservation and rationalisation of water consumption, including that by residential users.

The increase of water consumption by residential users might be attributed to:

1. The sharp cumulative escalation of urban development which has accompanied social and economic developments, which in turn have played a part in transforming the social structure and lifestyle of the population.
2. The improvement in the quality of water services provided, during periods of development.
3. The weakness of regulations and specifications with respect to domestic pipe insulation and connections inside the dwellings.

The issue of UFW resulting from leakages, such as were found in the central district of the city due to the relative age of the network, required selective replacement of the pipeline in certain parts of the system. Leakage in residential connections and inside dwellings could exacerbate this problem.

Detecting leakage in dwellings can be done by electronic observation of household usage, using standard billing to compare the previous and the existing consumption; by examining the water meter to confirm its accuracy, and confirming with the household whether a leakage test is needed. Such programmes might effectively help to shape metered consumption, reduce the problem of the rising underground water

table which affects building foundations, and bring about more saving of water resources and the energy required for water production.

To assist these programmes, it is important to encourage households to use water-saving domestic appliances and equipment to reduce water consumption. For instance, households can use water taps that give an appropriate water flow by discharging air with water. This will increase the flow power, and at the same time reduce water quantity. There are also automatic control handles, and automatic closure taps that stop water flow when they are released. Other examples include water-saving showerheads, flushing boxes, etc. It is unlikely that these methods will succeed unless public awareness can be raised, helping to achieve an acceptable level of water consumption by highlighting the scarcity of water resources.

5.7.3 Institutional dimension

The institutional structure for all infrastructure services in the city is well established, especially since the emergence of MOWE. The shifting of responsibility for water services to a single organisation could:

1. Strengthen the relation between water demand, consumers and the economic aspects, especially in those areas with a high level of annual growth. This could help to make the water sector self-financing for future projects and further investments.
2. Take the water services to a better level of quality. Market competition, should privatisation be introduced in the water sector, will require a well-established organisation to provide the necessary supervision.

The principal actors involved in water sector management at the national, regional and local levels in Arriyadh city are shown in table 5.3 below:

Table 5.3: The actors involved in Arriyadh water provision

	GROUNDWATER	DESALINATION
▪ Management at the national level	➢ Council of Ministers ➢ MOWE	➢ SWCC
▪ Consultation at national level	Main participants: ➢ Ministry of Agriculture ➢ National Consultative Council ➢ Provincial Councils ➢ MOMRA ➢ MOEP ➢ Ministry of Finance ➢ Meteorology and Environmental Protection Authority (MEPA)	
▪ Management at the regional level	➢ The Arriyadh Branch of MOWE ➢ HCDA ➢ SWCC	
▪ Consultation at the regional level	Main participants: ➢ Arriyadh Province Council ➢ Ministry of Trade and Industry ➢ Relevant ministries' branches in Arriyadh	
▪ Management at the local level	➢ Arriyadh Branch of MOWE ➢ General Department for Operation and Maintenance (GDOM) ➢ Arriyadh Municipality ➢ ADA ➢ SWCC	
▪ Consultation at the local level	➢ Chamber of Commerce and Industry ➢ Some specialised research institutes sponsored by the government	
▪ Production at the local level	➢ Drinking water production plants managed by Arriyadh Branch of MOWE ➢ SWCC ➢ Arriyadh Water Programme under GDOM	

In the event that PSP is introduced, some of the government agencies that have a regulatory role in water services and their effect on social and environmental objectives may well continue to play those parts, because such tasks are indistinguishable from those which they fulfilled previously when public authorities such as MEPA had direct responsibility for service provision; unless it becomes the government's objective to transfer all regulatory responsibilities to a single entity for this purpose, to avoid the so called 'common agency' problems that arise where a number of agencies or ministries influence the operating conditions of the sector. As Hearne et al (2001) put it, "*'common agency' problems arise when the objectives of*

different public authorities are contradictory or conflicting and it is not clear which take precedence" (2001: 36).

5.8 An analytical perspective and concluding remarks

The main challenge facing Arriyadh now and in the future relates to two issues. The first is the rapid growth in population and development which have characterised the city during recent decades. Most predictions indicate that the city will continue to grow at the same rate, and this will be accompanied by growth in the villages and surrounding communities in the region, adding the challenge to meet those additional demands. The second issue is the shortage of potable water resources, leaving the city to rely on a relatively expensive water from desalination which already provides 60% of Arriyadh's water supplies. It should also be considered that the replenishment of groundwater resources represents only a small fraction of the volume abstracted. Water in deep aquifers took hundreds of years to collect naturally; there is a danger for the future in the form of resources depletion, as population and economic activities continue to grow and urbanisation exacerbates.

Such issues need to be addressed, and must be properly managed to achieve sustainability for present and future generations. It is necessary to introduce guidelines to protect water resources, and to raise awareness about water conservation in order to reflect that through all the country's official channels.

Of course, in the near future population growth and the formation of new households will lead to a significant rate of urban development in the city, despite the assumption that migration from the regions to Arriyadh city may slow, birth rates decline and Saudis replace foreign labour as a result of the Saudisation programme. The city's relatively young population is already ensuring its rapid future growth. On the other hand, new residential areas for the growing population may be on a substantial area of

land around the city which has already been privately bought up and subdivided in anticipation of such demands. Expansion of the infrastructure will be needed imminently, to meet those growing requirements. However, consolidating development in the existing urban areas is essential to ensure the maximal use of the current infrastructure, with the objective of effective sustainability.

Among the city's water problems is the high level of consumption. Although the developed areas of the city will be supplied with desalinated water blended with groundwater treated to potable standards, further measures should be implemented to reduce consumption. It will inevitably be necessary to reduce household water consumption, in particular the per capita consumption that currently stands at around 258 litres per day. This will prove a challenge for the future, considering the lack of effective control over domestic use of water and the failure so far to propose any requirement to adopt water-saving equipment and appliances. Residential consumers account for 87.7% of water use, and any future programmes for conservation and rationalisation must recognise this to be the most important category for attention. The issue of UFW also has a significant impact as a cause of increased consumption, and this may be expected to develop given the age and expected lifespan of the distribution system which will continue to require huge investment for maintenance and rehabilitation.

By 2021 about 9.5 million people are expected to live in Arriyadh city and its surrounding areas, which will obviously require expansion of the suburbs. Low-density urban development may to some extent have an effect on the infrastructure provision, where the size of residential lots for instance has a considerable impact on the total cost. However, this has been tackled by the practice adopted by the government in recent years. This requires that the provision of infrastructure to each

new allotment will be by the developers, and this will release national financial resources for other projects carrying higher priority.

Water must be priced in a way that makes its use more efficient, and ensures suitable funding without increasing the burden on the public. In fact it could help to avoid the over-use of scarce resources, by recognising their economic value.

Desalination is a growing resource upon which, given the absence of economically viable alternative resources, many cities are coming to rely for expanding their potable water supplies. The desalination option is a preferred choice, especially where it is implemented as part of a dual-purpose production with electricity.

The enormous investment required for the future provision of water supports the need for PSP. Involving the private sector in long-term investment programme would help to overcome both aspects of the problem: the shortage of water, and the inadequacy of capital. Whatever the mode of participation, it should deliver a reliable service operating in a safe and competitive environment for investment.

Any progress in this regard should take account of regional experience and international knowledge about introducing privatisation to desalination plant development. This would aid the examination and assessment of the prospects for any type of management, and the necessary procedures and arrangements between an investment organisation and the public sector; such developments need to be assessed on a case-by-case basis.

This should not adversely affect the need for continuous management of current infrastructure assets, by which their condition is monitored against a set of performance standards for life expectancy. Proper access to relevant information and data will always be needed, in order to improve the process of analysis and

monitoring of trends and potential changes in growth and demand. This way, plans will be adequately updated and the decision-makers kept constantly informed.

6. The Research Approach and Methodology

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6.2 The methodology

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6.1 Introduction

This chapter will describe the research methods used to gather information during the fieldwork carried out by the researcher in Saudi Arabia, with the intention of demonstrating and expanding upon the causes, nature and extent of the reforms that have taken place, or will take place, in the water services sector. The research will endeavour to answer questions concerning how such changes can be successfully implemented from the point of view of government officials, private sector investors and those other individuals who have an interest in the operations of the sector's services and their related functions. These questions have been developed as issues for investigation under four main topics associated with water services provision, and selected to present the scope and context of the interview questions. A concise account of the sources accessed during the researcher's survey of the relevant literature is also presented. Also, some guidelines are described that were considered before conducting the interviews. This chapter provides a broad statement of the problem, as well as the aims and objectives of this study. In order to conduct the fieldwork research, a number of decisions about the research strategy, methods of data collection and sampling approach needed to be made. A brief description of the options is therefore given, with some explanation of the reasons for choosing the particular techniques and preliminary procedures for data analysis.

6.2 The methodology

Frankfort-Nachmias and Nachmias (1996: 13) state that methodology is a system of explicit rules and procedures that construct the basis for conducting research and its evaluation. It is necessary to know through which methodological perspective the

practical method or methods of the area of research can be developed and best justified. There is a distinction between the methodology involved in the theoretical and conceptual discussion, and the method defined as the way to collect and analyse data in line with structure of the research as defined by the methodology itself. More explicitly, research method refers to the ways of translating the research questions and objectives in a logical way, enabled by the research techniques and fact-finding operations. However, these two components cannot be divided; rather they are interrelated and must each overlap the other.

The overall structure of the methodology can be modified, moving toward a comprehensive understanding of issues or to establishing a suitable approach. The role of such an approach is to clarify any related assumptions and to highlight a broad structure that is of interest of the research area.

The qualitative approach to research looks at social realities, with an emphasis on the subjective experience of individuals (Mason, 1996). The qualitative approach offers the opportunity to be adaptable, to react flexibly to the information provided by respondents, to pursue new lines of investigation, to ignore irrelevant points, to probe for further information and to go into greater depth, in any one case or any one point. A qualitative approach is especially useful when the topics under investigation are complicated, sensitive and associated with multiple relationships or processes of change and transformation (Robson, 1995). Qualitative research is basically a strategy of adopting different methods to provide a comprehensive explanation for a relatively small number of cases. The task of qualitative social research is not simply to collect observations on given issues or certain conditions, but to explain these within comprehensible

frameworks which examine the underlying causes which construct such situations (May, 1995). However, the selection of the approach depends on the purposes and circumstances of the research, rather than being derived from absolute methodological or philosophical commitments (Brannen, 1992). Mason (1996: 5) offers some clarification: "*qualitative research should be strategically conducted, yet flexible and contextual.*" This means that research decisions should be made according to an outlined understanding of the changing contexts and circumstances that host the research processes.

Hakim maintains that "*qualitative research is used for exploratory studies leading into more structured or quantitative studies*" (2000: 34). Thus, qualitative research can offer a comprehensive perspective of various issues through a patchwork of explanations, as an exploratory arena before larger-scale or more dense research is carried out (Hakim, 2000). Silverman (2001) argues that "*in many qualitative research studies, there is no specific hypothesis at the outset. Instead, hypotheses are produced (or induced) during the early stages of research*" (2001: 4).

6.3 Research design

Yin (1989) claims that "*research design is the logic that links the data to be collected (and conclusions to be drawn) to the initial questions of a study*" (1989: 27). The design of any research starts by defining the problems to be considered, and putting forward the research questions. These questions can be developed to be more specific, and ones upon which the research strategy can be chosen (Yin, 1989). The type of research strategy will inform the choice of research methods (tactics of investigation). Generally the research strategy and its employed methods must be appropriate for the questions for research, or the area of study.

The issues related to reform of the water sector in Saudi Arabia involve a great many variables, making the prediction of them highly difficult, let alone to quantify or measure. Moreover, due to the expected small selected sample[48] and nature of the information required, a flexible structure and more open-ended approach is required such as the qualitative method. This approach is appropriate for the study since there is limited background research in the area covered by the fieldwork. This is because the beginning of reform in the water sector in Saudi Arabia marks a relatively new trend, and there has been little written from which the research might draw for its results. After considering the advantages of the qualitative approach for this study it seemed most appropriate, and it has therefore been adopted.

6.4 Research strategy and tactics

Research strategy is the broad general approach that might be adopted to address the research questions, while research tactics are the specific methods chosen to conduct the investigation. Research strategies are traditionally seen as following three main approaches (Robson, 1995: 38-76; Yin, 1989: 15-26). They are:

1. **Experiment:** typically used for explanatory purposes, it involves the measurement of the effects of controlled variables. It proceeds through selecting samples of respondents from certain target populations. As it involves hypothesis testing, systematic and different experimental conditions need to be allocated to the variables.
2. **Survey:** normally used for descriptive purposes, it is based on a standardised technique of data collection through a selected sample of individuals larger than the

48 This is the certain number of organisations and/or people whose views are relevant to the issues under investigation.

one in the experimental strategy. This approach typically assumes the use of a questionnaire or structured interviews as the main methods of data collection.

3. **Case study**: is basically an intensive strategy to access detailed knowledge in certain areas of science. It proceeds through the selection of a case, or a number of cases, with similar circumstances in terms of context and situation, either for individuals or groups. Observation, unstructured interviews and documentary analysis (which is generally known as the secondary data) are normally the main methods of data collection.

Going further, Robson (1995: 5) emphasises that the case study must be regarded as a research strategy, not a method. This is applied to researches that entail an empirical investigation through the collected evidence about a situation, or of a particular and existing phenomenon within its context.

The 'case study' as a social strategy continues to be used extensively, in many disciplines: sociology, urban planning, public administration and public policy among others (Yin, 1989: 10). Yin maintains that "*case studies are the preferred strategy when 'how' or 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real life context*" (1989: 13). In addition to its suitability for exploratory research, it may lead to insights that can in turn be studied as research hypotheses.

Questions about the reasons for using a case study here are answered by the need to evaluate individual subjects, and by the aim to provide extensive explanation of particular issues; as well as making it possible to investigate a phenomenon when it is not possible to manipulate the relevant variables. Of course, the type of information required and the

method to be used for the study should be guided by the research goals and objectives. However, the issues may be complicated to describe with only a single source of information, which may offer only a limited viewpoint. The quality of information expected, the amount of detail available (according to the type of interview), and the scope of the study are the main factors that support the use of interviews in this research.

6.4.1 Data collection methods

The achievement of the aims and objectives, and addressing the research issues and questions are the basis upon which certain methodological procedures were chosen and employed. A combination of procedures has been employed to obtain the required knowledge, collection, analysis and interpretation of data. These include a literature survey and analysis, analysis of relevant documents, and focused interviewing. Following is a brief description of these procedures, which are presented in two main categories.

- **Primary sources**: This research has adopted personal interviews as the main method of data collection. This is because interviews in general are important data gathering techniques, based on verbal communication between the researcher and the subjects; given the principle of fact-finding, particularly in exploratory and descriptive studies. Personal interviews were typically used to guide and enlighten the scope, context and content of the different stages of the research.[49] The input from interviews in general terms is vital for the research process, discussion of issues under investigation, gauging governmental attitudes as well as those in the private sector towards new ways of providing water services, identifying the reasons and philosophy behind it, and the possible approaches to making any such move.

49 In their turn, a couple of preliminary interviews have been conducted in July 2004 to improve the next phases of interviews in terms of different perspectives, and the insights on conceptual issues they offered.

- **Secondary sources:** this involves secondary data analysis and a literature review, for instance existing relevant documents which are basically the research findings from data collected by other studies. This is used to provide an overview of related issues and involves a wide range of sources such as academic textbooks, articles, governmental reports, technical and annual reports, etc. From a methodological perspective secondary data can provide opportunities for replication if they are reliable, which in turn should increase the validity of research findings obtained with primary data (Frankfort-Nachmias and Nachmias, 1996: 306). Secondary sources are used mainly for the background chapters. However, secondary information is also considered to support the findings from the interviews.

6.5 Employing interviews as a research method

6.5.1 Reasons for choosing interviews as a method

The data from qualitative inquiry is most often people's words, actions and/or behaviour, and thus requires methods that allow gaining such knowledge. The most useful ways of gathering these forms of data are participant observation, in-depth interviews, group interview, and the collection of relevant documents. Observation and interview data is collected by the researcher in the form of field notes and audio-taped interviews, which are later transcribed for use in data analysis (Robson, 1995).

In light of the propositional logic, it can be said that knowledge, views and experiences of the possible respondents carry great significance as properties of the social reality, which can be explored by effective design of the research questions (Mason, 1996). Therefore, from an epistemic perspective, these can generate useful data by gaining access to the

respondents' accounts of the problems and issues under investigation. Also, due to some circumstantial and evidential needs in research that relate to contexts and situations, interviews with a flexible structure are suitable as a distinctive approach to getting at what is required for the issues at stake (Mason, 1996: 39-40).

The appropriate style of interviewing depends to some extent on the goals of the study (Kumar, 2005). If the objective is to understand the shape of a general phenomenon or existing circumstances, with a view to formulating new theories or proposing new policies, then the style should be less structured in the hope that the respondents will come up with unexpected descriptions and arguments. However this is not the case if the objective is to test given theories, because then the style should be more structured and ask all the questions that are relevant to those theories. It is important to allow informants a great deal of freedom, as confining people to a fixed list of questions can be repetitive and annoying (Bewley, 2002).

Interviews, to some extent, are a most natural technique, as they originate from everyday conversation. They may cover a wide range of social phenomena, and can be used for research strategies including experiment, case study, survey or other research designs (Ackroyed and Hughes, 1992). Despite some limitations that have become subjects of criticism, interviews have made a massive contribution to the development of social science and can be used to access knowledge that might be unobtainable with other means of investigation.

6.5.2 Purpose

Much of our experience of everyday life is shared, and an investigation of this experience requires methods which allow the acquisition of 'insider knowledge' through interaction,

observation, participation in activities and informal interviewing (Silverman, cited in Eyles and Smith, 1988: 2). Furthermore, interviews are widely used to obtain a detailed and broad range of information, which can be useful for a particular research issue or question in qualitative research since some of the information is not quantifiable.

Mason (1996) indicates that interviews represent a satisfactory method for conducting research that addresses data and information about people's knowledge, understanding, views, interpretations, experiences and interactions. So, interviews have become the most suitable and significant approach to obtaining information about individuals, groups and organisations in a society characterised by individuation, diversity and specialised role relationships (Fontana and Frey, 2000).

An obvious way to learn about motives, constraints, and the decision making process is to ask the decision makers about them, or other concerned individuals. When this approach is attempted, an obstacle that must be overcome is that many important categories of decisions are considered highly confidential. The task of interviewing is to learn as much as possible about decisions that have been taken or those that will be made, despite people's reluctance to discuss them (Bewley, 2002).

6.5.3 Definition

Generally, an interview is described as a conversation or dialogue between two sides, interviewer on one side and respondents on the other, with the purpose of building a theory, testing a hypothesis or revealing realities.

Most interviews have a simple aim, which is to pursue in-depth information around a certain topic of research. As Gerson and Horowitz (2002: 204) put it "*in-depth interviews should, of course, always leave room to discover the unexpected and uncover the*

unknown". It is crucially important to articulate the key problems that need to be addressed, or the information to be gathered, before starting the design of the interview questions in order to keep a clear focus on the purpose of each section of questions.

6.5.4 Interview types

Usually the distinction between interview types is based on the degree of structure or formality of the interview. The structure of the interview is all about its questions, how they will be asked and in what sequence.

There are many types of interview. Mathers et al (1998) thought that there are three main types of interview; in terms of structure, these are: (1) structured or standardised interviews; (2) semi-structured interviews; and (3) unstructured or in-depth interviews. Frankfort-Nachmias and Nachmias (1996) prefer to group personal interviews into three types, which are: (1) Structured interviews, with a predetermined schedule; (2) Focused interviews, where the major aspects of the study are addressed to all respondents; and (3) Nondirective or non-structured interviews, which are the most flexible form in terms of schedule (see also: Cohen and Manion, 1994). According to Bulmer and Warwick (1993) personal interviews are much more suitable for research in the developing world when compared with postal and telephone interview surveys.

1. The structured or standardised interview is described as a session where a list of specific questions is answered by selected respondents. These questions should be carefully worded to maintain the minimum variation in the respondents' answers. Typically the interviewer does not add any further questions outside the list, or bring any additional interpretations or comments into the interview process. Although this method has less flexibility for questions, however, achieving information other than the expected

from the prepared list of questions will depend highly on the nature of the interview and the skills of the interviewers (Patton 1987:112).

2. The unstructured interview can be described as in-depth or nondirective. It is generally used to elicit information in order to achieve a comprehensive understanding of the topic of interest; it can also be used to explore interesting subjects for further investigation. In-depth interviewing has the distinctive feature of being an open situation, allowing new research directions to emerge through techniques such as probing (Berry, 1999). This type of interview does not involve predetermined questions, in order to remain as open and adaptable as possible to the respondent's nature and priorities while retaining the fundamental purpose of obtaining information regarded as useful by the researcher. However, this method may still involve asking some questions according to the respondent's previous responses, and therefore it is useful to cover only limited and specific topics because the interviewer will conduct the interview without a programmed plan for its anticipated procedure.

3. Semi-structured interviews are also known as focused interviews. This involves a list of open-ended questions, based on topic areas related to the research (Mathers et al, 1998). It also involves different techniques of probing, and stimulating more explanation. Such a method is used to ensure that variations between responses can be attributed to actual differences between all the interviews, not to variations between respondents. This is because the questions are put forward in accordance to a flexible sequence of discussion topics and issues predetermined by the researcher. In other words, the way questions are asked places fewer restrictions on the interviewer. This means that the questions can be altered or reworded according to how the interviewee is responding.

Hakim (2000) argues that in-depth interviews can be semi-structured, which means that there is an interview guide but no questionnaire to follow.

Frankfort-Nachmias and Nachmias (1996) state that the focused interview usually takes place with individuals who have been involved in a specific experience, and is carried out according to topics related to the research issues. They add that "*it is focused on the subjects' experience regarding the situations under study*" (1996: 234).

Employing this approach successfully, especially when the study is exploratory, can offer detailed information in addition to keeping the interview under control by certain limits defined by the research aims and objectives.

The semi-structured or focused interview was chosen for this present study, as a hybrid of the other techniques. This combines the advantages of both structured and unstructured interviews, where questions can be tailored to the position and responses of the interviewee.

The following table (6.1) presents the strengths and weaknesses of the three main types of interview techniques. Despite there being various types of interviews, in practice these types overlap and blend; their advantages and disadvantages vary in accordance to the purpose of the study, and the nature of the data required.

Table 6.1: Interviews characteristics

Interview type	Main characteristics	Strengths	Weaknesses	Typical use
Unstructured / Nondirective	• Direct encounter between interviewer and respondents. • Questions are not predetermined. • Conversational form.	• Establish rapport with respondents. • Help in eliciting detailed information on discussed topic. • Help in clarifying answers or obtaining more relevant responses. • Can offer high rate of response. • Interviewer can probe any doubtful statements.	• Labour intensive. • Costly and time-consuming. • Inappropriate for controversial subject matter due to lack of anonymity. • Risk of obtaining broad information and yet with substantial difficulty in data interpretation. • Key topics may be inadvertently omitted. • May be affected by interviewer bias.	• Gathering a lot of information. • Interviews are normally effective if there are gaps of information on certain aspects in the area of research to be overcome during the interviewing stage. • Explore limited and specific topics.
Semi-structured / Focused	• Predetermined checklist of topics for discussion. • Sequence and wording of questions are decided by the interviewer during the interview. • Conversational form.	• Flexible method as questions are asked and reworded according to the situation. • Can provide the research with underlying themes, with systematic data collection. • Can offer high rate of response. • Permits more complex questions to be asked. • Has advantage of probing.	• Requires good knowledge about the subject on the part of interviewer. • Ineffective if not tape recorded. • Analysis of responses is very difficult due to people's uniqueness. • As information is based on social interactions, the context may be influenced by source of bias. • Not being a neutral tool in data collection by both parties (interviewer/respondents). • Flexibility in sequencing/wording can cause great variations in responses.	• Effective for research with small samples. • Useful to explore, define and map out main issues of research. • Useful for 'how/why' questions rather than 'what' ones. • Effective for predicting and closing logical gaps in available data.
Structured / Standardised	• Determined questions with same sequence and wording. • If not open-ended questions, responses are categorised for the respondent to choose between alternative answers.	• Effective to answer specific questions. • Useful to obtain straightforward factual information e.g. numerical data, etc. • Respondents' answers can be compared and then turned into statistical statements. • Has representativeness. • Reduces interviewer effects and bias. • Data analysis can be simpler.	• Respondents may feel inhibited to express honest or accurate answers. • Does not normally offer accurate data for attitudes and opinions with sufficient detail. • Tricky to determine if the right questions are asked (or not) of the right individuals. • Inflexible at linking the interview to particular individuals and circumstances.	• Useful in research with large sample. • Offers the feature of reliability. • Effective for collecting data on certain areas of research. • Variation between responses can be compared to produce generalisation.

Source: (Langley, 1987; Patton, 1987; Hibberd and Bennett, 1990; Oppenheim, 1992; Rubin and Rubin, 1995; Mason, 1996; Mathers et al, 1998; Arksey and Knight, 1999; Silverman, 2001; Kumar, 2005)

6.5.5 Reliability of interviews

When using the interview method, there is a need to ensure that each respondent understands the questions in the same way as other respondents in order to maintain confidence that all answers can be coded to avoid any uncertainty. This is not the case if the interviews are semi-structured, because this type of interview has no predetermined questions, only a list of topics for discussion; while concentration on this matter tends to deflect attention from the assumptions underlying the meaning that can be attached to the respondents' statements (Silverman, 2001: 229).

However, reliability can be improved through pre-testing to confirm both its schedule and potential for analysing the resulting data within the framework of the research requirements. Silverman states that "*interview studies must also satisfy the criterion of using low-inference descriptions*" (2001: 229). He offers three ways to meet this requirement, and they are: (1) Tape-recording all personal interviews; (2) Transcription of recorded interviews in accordance to the analysis requirements; and (3) Inclusion of reasonable extracts of the transcribed information in the research writing (Silverman, 2001: 230). These ways are seen as major steps for analysing data gathered from the interviewing exercise (see: 6.10.1). By and large, this procedure was adopted for this study, as described in sections (6.10.3 and 6.11).

6.6 Framing the interview questions

The central element of the interview is the asking of questions through conversational encounters. These questions need to be formulated based upon definition of the research problem and its objectives, in order to present them in a specific and concrete framework. The topics covered in the questions must therefore be those that are part of the problem definition and which are intimately linked with the concepts [50] of the research (Hibberd and Bennett, 1990). Collecting reliable information is a key element in conducting useful research, through designing appropriate guidance for the questioners that helps to draw valid conclusions from accurate results. In order to achieve the desired objectives from an interview, from the outset it needs to be designed in the best way possible. This begins when the broad overall topics are clearly identified. For instance, why is the study being undertaken? What does the study aim to learn or determine? The major topics to be considered when designing guidance for the interviews are (1) behaviour of authorities and organisations towards certain circumstances or changes; (2) personal opinions about the selected issues or topics; (3) facts based on expert knowledge (Hibberd and Bennett, 1990).

The next step is to convert these broad topics into measurable elements, as hypotheses or more specific open-ended questions. The task of developing these questions is to gather relevant knowledge, to obtain the desired information from the interview. Normally, the number of questions identified should be more than the number to be asked, since this will give the opportunity to select the most appropriate and useful questions.

50 A concept is an abstract idea, understanding, knowledge or perception construct representing some event or object in reality.

The questions should follow a realistic, sequential approach, in which controversial matters can be highlighted after reviewing all the relevant facts. This will help ensure the better engagement of respondents in the interview (Hibberd and Bennett, 1990; Mathers et al, 1998).

6.6.1 Selecting a question format

The format of questions is an important choice to be made by the interviewer, and might take different forms according to the type of information required. Occasionally a structured interview survey will use a format that is a combination of different types of question. Hibberd and Bennett (1990) argue that unstructured and focused interviews involve mainly open-ended questions. The answers to such questions do not follow a specific structure, but rather the questions are composed to elicit the maximum amount of required information. However, this could require an accurate and time-consuming transcription, which suggests that this format will be most useful in research where the number of respondents is small and the intention is to improve the research development or to test its preliminary findings.

Open-ended questions allow respondents freedom to answer in whatever way they choose, unlike fixed choice questions which constrain the answer by providing response categories for the respondent to choose between, e.g. Yes/No questions, among others (Hibberd and Bennett, 1990).

Open-ended questions are employed to establish the territory, while allowing the participants to take any new direction they want. This will involve listening more than talking (Seidman, 1991). Concrete details will be sought concerning the participants' experience before exploring opinions about the discussed issues. "*Open-ended questions*

are thought to be a more faithful guide to what the respondent thinks" (Hibberd and Bennett, 1990: 52). According to Shedivy (2004) questions for (focused) interviews need to be arranged as a guide, not a road map. Frankfort-Nachmias and Nachmias (1996) additionally suggest the use of 'contingency' questions, which can be formulated in a way that is relevant to the specified respondents chosen from the sampling units.

Another point that should be considered is the "why question", since this type of question may lead respondents in some way to be defensive about their answers. This means that they have to justify their opinions and thoughts, and this may inhibit their responses to later questions.

The arrangement of questions may start with some necessary background, such as the nature of existing issues. The principal questions have to do with the individual's thoughts and opinions about these issues, and the possible actions that need to be taken. The third part may involve current and potential constraints and what changes are required to fit those circumstances.

The final but significant point in the matter of questions, is probing. As described by Hibberd and Bennett (1990), probing can help mine a richer seam of information, and gives the respondent a sense of being engaged in a real conversation, thereby helping to promote rapport between interviewer and the respondent; particularly in lengthy interviews.

6.6.2 Devising appropriate questions

Three main principles need to be considered when developing an appropriate guide for questions, as shown in the following table (6.2):

Table 6.2: The key principles of questions guide

1. Relevance	2. Selection of the proper respondents	3. Simplicity of answering.
Questions should be accurately linked to the main purpose of the research and composed in a way that will generate the nature and level of information required	Questions should be asked to those people who are most likely have adequate knowledge about the research issues to ensure the general objectives of the interview. This does related to proper sampling	Questions should not be complicated, but should be reasonably easy to answer in order not to cause embarrassment or an undue burden on the interviewee

Source: GAO (1991), United States General Accounting Office

6.6.3 Questioning techniques

Individuals vary in their ability to articulate their thoughts, opinions and ideas. With proper questioning techniques, researchers will be better able to facilitate the subjects' accounts and to obtain useful data. There are several questioning techniques, and Dick (1998) makes the following suggestions for conducting an interview:

1. Start the interview by asking a broad, opening question which can be described as content-free. This will avoid predetermining the answer by the questions asked, and in the same time will ensure that the content was determined by the respondent and not the interviewer. Adopting the '*Funnelling*' principle which involves asking questions leading from general to specific subjects can be the second stage of questioning; and
2. Ask any probing questions to clarify issues that have not been satisfactorily answered by the respondent. Probes are not always used in first interviews, since the number of probing questions typically increases from one interview to another.

Other techniques can be summarised in the following points:

1. Questions should be clear, and free of any complexity or jargon.
2. Asking some interpreting questions with the aim of clarifying and/or extending the respondent's statement(s), to avoid any potential misinterpretation on the part of the researcher.
3. Asking one question at time will eliminate any unnecessary burden of interpretation for the respondents (Patton, 1987: 124).

In her study, Berry (1999) described additional techniques for use when interviewing, such as;

1. Contradicting: This involves presenting an opinion opposed to the one provided by the respondent with the intention to stimulate further remarks and/or explanations;

2. Linking: This is about making a relation between the respondent's statements and the information which the researcher wants to obtain;

3. Challenging: The researcher asks for further information in order to validate previous statements;

4. Allowing time for elaboration: This can be achieved by ensuring the participant's responses are understood while at the same time offering adequate time for further remarks.

6.7 Guidelines to consider before conducting an interview

1. People's reluctance to cooperate can be lowered by using the name of a trusted third party when approaching them. Bewley (2002) argues that the use of a name improves the interview by putting respondents at ease, an important point which was earlier suggested by Dick (1998).
2. Interviews should be carried out by appointment, and the respondents should be informed beforehand about the context and nature of their forthcoming interview.
3. As Dick (1998: 5) points out, it is important to "*explain (though only if it was decided earlier) that the information will be anonymous, and will be reported for research purposes in ways which conceal the identity of individual people*". Moreover, it has to be clearly indicated what use will be made of the information collected, and who will have access to it. This in fact has to be the case when the information obtained from the interviews will be summarised in a group of themes for the purpose of analytical consideration, and therefore no one will learn of any individual's answers or statements. In other words, the interviews need to be conducted in accordance with confidentiality[51] terms to provide averaged evidence in which individuals' statements cannot be identified or identifiable (Frankfort-Nachmias and Nachmias, 1996: 90).
4. It is vital to keep discussions as concrete as possible, by requesting specific examples and by confining the discussion to the realm of the respondent's experience. Bewley (2002) argues that abstractions should be avoided, because they lead from matters learned by experience to speculations that may reflect only passing thoughts.

51 This is a principle used to protect the identity of the research subjects in the research findings.

5. Also, it is important not to discuss theories. This will prevent the problem of respondents being confused if they do not understand them. This error may lead them to compete intellectually with the interviewer, rather than explaining their views from their area of expertise (Dick, 1998; Bewley, 2002).
6. To respect the respondents' time, particularly for those in positions characterised by work overload and being generally busy. It is important to pay attention to the respondent during the interview, and to maintain eye contact with them. Key questions should be memorised beforehand to avoid looking down at a list of questions or a guide (Bewley, 2002).
7. However, to start by establishing a good relationship between interviewer and informant is one of the key factors that determine the success or failure of the interview. In other words, interviewers with both knowledge of the subject and skill in human relations are vital to research quality. The commitment or motivation of researchers, or indeed the interviewees, is another major factor in the success of an interview.
8. Ruebhausen and Oliver recognised the importance of "*the freedom of the individual to pick and choose for himself the time and circumstances under which, and most importantly, the extent to which, his attitudes, beliefs, behaviour, and opinions are to be shared with or withheld from others*" (quoted in Frankfort-Nachmias and Nachmias, 1996: 86)

6.8 The interview questions

The research problem, the area of research, its aims and objectives have all been described comprehensively in the introduction. However, for a sound understanding of the issues under investigation, the research problem as well as the aims and objectives will be included in the following two sub-sections.

6.8.1 The problem

One of the critical problems facing the water sector in Saudi Arabia is the scarcity of adequate, suitable sources of supply, it being located in one of the most arid zones of the world. An extensive and strategic programme has been in place for more than three decades, to build seawater desalination plants to meet the growing water demand. Yet water is still supplied at a highly subsidised price, inconsistent with the actual costs of provision. Rapid population growth poses another challenge, 3.5% annually for the country and reaching 8% for Arriyadh city between 1990 and 1996, accompanied by a significant trend by the government towards economic diversification. Critically this requires the government to provide additional finance for new water investments, which will involve vast expenditure; especially in a context of high consumption levels and inadequate water reuse programmes, bearing in mind that the per capita consumption of water stands at around 258 litres per day. Unless new water desalination projects are implemented as the strategic option to augment water supply, the sector will suffer a shortage of more than four million cubic metres per day by 2021 for the city alone. A fundamental restructuring programme has changed the way water services are managed, placing all the functions of the institutional framework of water provision under one single authority in line with a move towards increasing private sector involvement. This

has been backed by the establishment of new bodies to assume the functions of supervision and to promote private investment.

6.8.2 The broad statement

The general assumption behind this research comes under the issue of introducing essential reforms that will promote private investment in the delivery of water services. Improvement in provision means better quality and quantity, adequate financing and a significant contribution to tackling the critical problems of urban water. This should bring about the more effective and sustainable management of water provision in Saudi cities. Arriyadh the capital, and other major Saudi cities are similarly confronted by an unprecedented and burgeoning water demand caused by the dramatic increase in population and urbanisation there. In only a few decades Arriyadh, for instance, has evolved into a mega-city with over four million residents, in a water-scarce region. This needs to be a high priority for water policy makers, in the light of acute water shortages and the high dependency on seawater desalination projects, which require enormous capital investment that is currently provided by the government alone.

This research aims (1) to explore practicable reforms in the context of urban water systems and to investigate changes that have taken place, or will take place in the foreseeable future and (2) to predict the effects of such changes on the entire water sector by identifying the underlying causes, if relevant knowledge can be gained. Such reforms could introduce new approaches to water services delivery and permit new areas of participation for parties other than the public sector in terms of provision, operation and maintenance. The efficient management of water services would maintain the desired and

necessary integration with rapid urban development, as stated in the national development plans.

In order to achieve the aims of this study certain objectives were set. These are:

1. To investigate new alternatives or practices to improve the management of water services considering the critical issues, in order to tackle the high dependency on governmental subsidies and to offer sustainable finance for water provision systems.
2. To determine a broad spectrum of responsibilities and functions that could be carried out or assigned to in accordance to new form of provision. That is within a broad long-term policy framework to assist a new supply organisation to enable the optimum use of water resources, maintaining a balance between providing adequate supply and meeting the increasing demand.
3. To examine a broad method of implementing the overarching goals related to facilitating PSP in urban services provision. These goals are clearly stated in the national development plans, and in the resolutions issued by SEC.
4. To put forward a set of recommendations that will support the decision-making process, with a view to using private investment to achieve greater sustainability in water management programmes.

6.8.3 Issues for investigation

In dealing with the research problems stated above, and to serve the research aims and objectives, four main topics associated with water services provision have been selected to present the scope and context of the interview questions. Under each topic a number of general issues have been put into question form. However this should not be perceived as a final schedule for the questions, it is rather a starting point from which specific

questions will emerge during the course of the interviews, bearing in mind that each interview will be unique.

(1) Efficient Management Approach

To achieve such an approach a range of detailed policy measures focusing on the modes of consumption and production should be developed. The major contributors to infrastructural deficiencies are not necessarily technical problems, rather they could relate to management approaches.

- Is the lack of independence of public institutions responsible for water with regard to management and finance a contributor to the sector deficiency?
- If regional and municipal systems are to be reformed in response to investment requirements, what changes might be described as fundamental?
- If the global approach to public-private partnerships in water services provision is to be considered by the government, what are the driving forces for such a proposal in the Saudi context? Is this type of partnership going to be beneficial to the public, and to the sector itself?
- Water services functions could be partly or wholly transferred to the local/municipal level, or some other entities, as a different approach from privatisation. Considering the following means, what approach might be useful for the water sector given existing conditions?

1. Deregulation: concerned with removing unnecessary administrative, institutional or bureaucratic barriers from the organisation structures.

2. Decentralisation: concerned with devolving responsibility for policy making, provision of services and production from centralised agencies at the national level, to a number of agencies at local and regional levels (regionalisation/localisation).
3. Corporatisation: is a method by which public services are transformed into financially independent organisations, and consequently are taken off the general budget after eliminating their allocations. On that basis, these organisations would receive the revenues from service provisions to fund their operation, maintenance and system expansion tasks.
4. Commercialisation: is a process based on imposing full cost recovery for the services used. Consumers are obliged to pay user fees that cover the actual costs, in order to have access to these services. The commercialisation of services should result in making them financially efficient, and more attractive for potential future investment by the private sector. Usually privatisation programmes evolve in an environment of commercialised services.

(2) High Growth Rates and Problems of Urbanisation

The high rates of urbanisation can lead to increases in the costs of urban water services, precluding governments from fulfilling their responsibilities satisfactorily. Thus supply will not meet the growing demand, this being accompanied by system degradation and inadequate maintenance due to the chronic under-investment in water services producing problems of water loss.

- How might this problem be overcome?
- If the development and growth of the cities is shaped and restrained, will that break the escalation in demand for potable water?

- Can effective programmes for water conservation play a part in solving the problem?

(3) Motives for Privatisation

The Saudi government has introduced a plan to privatise 20 vital economic sectors, including water desalination, in order to ease the burden on the national budget and to tackle public debt. It can be assumed that in general, the shortage of financial resources essential for the delivery of water services represents the core of the issue of under-provision, along with the limited availability of resources.

- The country requires a vast amount of investment to improve, extend and maintain the existing water services systems. What are the possible alternatives to deal with this situation? And how could they be implemented?
- Are improved efficiency, the introduction of new technology and additional financial investment convincing factors for privatisation? Are there any other significant factors?
- Considering the rising costs of water services, and limited funds for development, can PSP be a viable alternative, and in what way?
- If PSP is to be introduced to the water sector, what are the criteria/principles that the contract should be based on?
- Among the criteria used to assess PSP in water services provision are coverage targets, water quality, leakage detection and system rehabilitation. How might it be possible to ensure adequate application and monitoring of such criteria?
- As local banks alone will be unable to provide sufficient finance to meet the enormous investment required by infrastructure projects, what action should be taken

to promote new investments by means of incentives offered to new strategic partnerships?

(4) Regulation Issues

- Disparity and multi levels of government intervention to regulate water services represent an obstacle for effective PSP. What are the respondents' views about this issue?
- What tools are necessary for the regulation of water services provision? (Monitoring, enforcement duties, introducing laws to regulate the contractual process, competition, etc.).
- PSP in water services provision would require a regulatory agency which has the characteristics of efficiency, autonomous, transparency and a clear decision-making process. What are the other aspects are necessary for such an agency?
- At what level of government might such regulatory duties best be undertaken, to ensure adequate control?
- How can adequate guarantees be offered to protect operators' rights and at the same time protect the rights of consumers in the long term, through commitment to participation in the agreement?
- Can the existing tariff system cover the costs of planned improvements, or is there a need to impose new changes to the tariff structure (having regard to the willingness of consumers to pay)?
- How can tariffs be set to allow for cost recovery of services provided, with a reasonable return on investment for the provider? Considering that existing tariff

levels are below operating and maintenance costs, which undermines the objective of making the utilities self-financing.

- Does the existing structure of regulations have the capacity to support changes in the way water services are managed, and at the same time offer guarantees or incentives that encourage providers and operators to take the risk of investment?
- Are the current stock market system, commercial law and local conditions overall appropriate for a move to privatisation?
- To what extent should the citizens be involved in government planning to reform public services and water sector in particular? Should their involvement be through citizen-based institutions where are the representatives engaged in dialogue about such plans as an established procedure?

6.9 Sampling

Unlike quantitative studies, qualitative investigation does not necessarily require generalisability but rather access to discover certain experiences and key characteristics. Given that, McCracken (1998) argues that "*qualitative research is much more intensive than extensive in its objectives.*" (1998: 17).

The sample is defined as a group of respondents who usually have some features in common in a specified area (Hibberd and Bennett, 1990). However, this common feature needs to be closely related to the problem being investigated. Typically the sample is chosen by the researcher, if sufficient information has been obtained in the preliminary phases of the study. In any case, assistance can be sought from specialists in the field to nominate or make recommendations for the sample (Dick, 1998).

The sample is normally chosen from the target population.[52] Target population is defined by determining all the stakeholders of the subject of research, such as those within the institutions and/or organisations concerned (Robson, 1995). However, individuals from other parties outside these institutions can be included if they have an interest or a stake in how these institutions operate. For instance, in this case of study academic researchers, and private sector operatives (especially in topics related to investment), may be included. Hibberd and Bennett (1990) argue that the target population should always be defined in terms of having something in common such as doing a particular job, or having had a particular experience.

6.9.1 Sampling procedures and strategies

There are two main types of sampling procedure. First, 'Probability' sampling where each sampling unit of the population will be included in the sample. This has various types such as simple random, systematic, stratified, cluster and multi-stage sampling. Second is 'Non-probability' sampling, where there is no guarantee that every sampling unit has a chance of being included in the sample. This type of sample design (Non-probability) is used in social studies by researchers and has different forms such as quota sampling, dimensional, convenience, purposive and snowball sampling. However, under certain circumstances (e.g. exploratory research), non-probability sampling procedures may outweigh the advantages of using probability sampling (Frankfort-Nachmias and Nachmias, 1996: 184; Robson, 1995: 137-142).

52 The target population is also known as the sampling frame.

Gerson and Horowitz (2002: 204) claim that "*the sampling strategy must provide an efficient way to answer large questions with a comparatively small group of people* [which is the sample units]".

Mason (1996) identifies four sampling strategies or approaches in research. Among them is an approach based on a range of units related to each other in terms of their experience, types, characteristics, categories etc. Other strategies include statistics representing samples, ad-hoc samples, and a sampling approach based upon providing detailed views of cases (1996: 92-94).

Due to the small scale of the research sample, and the nature of the area to be researched which is about reforming the water sector, two types of non-probability sampling will be used. The intention of this research is to develop the sampling procedures on the basis of combining two kinds of non-probability technique. They are purposive and snowball sampling, also known as the 'Networking Process'. According to Robson (1995) and Frankfort-Nachmias and Nachmias (1996), the main features of these two approaches are that the selection of sampling units is based on the researcher's subjective judgement, assessment and interest, which can be directed to serve the research questions and the main objectives of the study.

When using the networking process (snowball system), the names of participants can be acquired by creating and following a chain of personal contacts. This could begin by asking anyone in the same field whether they were able to nominate other potential subjects for inclusion in the study samples. These nominated people may help by suggesting new names, creating a chain of respondents. The researcher, however, can direct the chain of personal contacts towards particular people and organisations, through

a predetermined set of criteria (Bewley, 2002). Moreover, Bewley (2002) adds that in order to avoid getting stuck in a circle of people who may all think alike, it is important to approach a particular category of people from several points in the networking process. Bewley (2002: 344) argues that "*random sampling is not necessary for understanding the thinking of a class of decision makers, provided the thinking does not vary too much with the class*". This may be valid for certain groups of people who share an interest in the research subject. Therefore, to reach some understanding of a certain strategic issue or policy the best way will probably be by approaching key individuals in the same field through a chain of contacts, rather than taking a random sample of them.

However it is vital to achieve as much variety as possible, and this can be maintained by manipulating the networking process to obtain a varied sample by encouraging respondents to provide names in certain categories.

It is worth mentioning that sample size using these approaches cannot be predetermined, it depends on what the researcher is aiming to find out. This means that interviews, for instance, can be undertaken until sufficient information about the points under investigation has been obtained but before reaching the state of repeated ideas (Bewley, 2002). However, this should not be satisfied by a very limited number of interviews, even if at the beginning similar notions are produced by the respondents; instead the interviewer should improve the level of probing, to extend and obtain variety and other related information.

6.9.2 Selecting the respondents

The overarching goal of sampling is to select respondents who are most likely to provide information and data that will shed light on the issues under investigation. Indeed every social study is improved by a clearer understanding of experience of the actors concerned or involved in its subjects. For instance conducting interviews with professionals who have either worked, are still working, or have some interest in this area, will provide 'professional' accounts from which the discussion and main findings of the research can receive confirmation or contradiction. Such information, described as facts or opinions according to the way the researcher regards it, will have an effect on the quality of results from the interviews; and this depends to a great extent on the correct selection of the interviewees.

In this study, the selection of participants has initially aimed to cover relevant aspects of the research issues and their interdisciplinary nature. Reaching an acceptable level of variation (e.g. government representatives, private sector participants, academics, etc.) was assumed from the outset to provide a rich mixture of information for the study.

The sample was selected to represent the views of the different sections associated with water services provision, development, management and operation, from the public and private sectors. The sample was divided equally, as far as it was possible, between government authorities, the private sector and other interested parties. First, respondents from government agencies were chosen according to the purposive sampling approach, with the use of networking where new respondents were suggested by those already interviewed. All the government agencies approached were either directly or indirectly associated with the previously mentioned water services functions. For instance, such

government agencies included MOWE, including its Arriyadh branch, MOMRA including the Arriyadh Municipality, SAGIA, HCDA through its Development Authority, and SWCC. On the other hand, the selection of respondents from the private sector depended basically on the networking technique as well as approaching the Council of Chambers of Commerce and Industry. The later technique offered the opportunity for representatives from private businesses to be contacted. This was in addition to contacting other leading members of companies linked to the water sector, as well as other individuals with an interest or role in water services such as advisors and consultants.

It should be noted that the sample selected from the private sector does not include representatives from companies that deal with providing water services; this is because water services provision in Saudi Arabia is entirely undertaken by the public sector at the present time. The role of the private sector is currently limited to those tasks that can be contracted out by the government, and these include a wide range of maintenance and operational activities. Tasks like these are typically carried out against a set of performance standards, and the contractor will be paid an agreed fee by the government within a determined period of time.

However, the selection of respondents from the private sector was directed towards representatives of companies linked to the water sector, such as those involved in the maintenance and operation activities as described earlier. This was in addition to certain individuals from similar service utilities such electricity and telecommunications. In addition a number of businessmen were included in the sample; their experience both

improved the discussion and allowed better understanding, of the investment perspectives in particular.

It should also be borne in mind that the most appropriate way of learning about the process of policy and decision making is to ask for details from the people who make them. Not to include the end users of water services in the sample for this study was a deliberate choice made at the outset, when considering the aims and objectives of the research. Furthermore, consumers will probably be unsure and/or unable to offer much information about the behaviour of the current system, or the requirements for a new system, unlike those who involved on almost a daily basis concerning the issues under investigation. Discussion with respondents from inter-disciplinary backgrounds was a particularly useful way to better understanding and to verify the likely outcomes (findings) and this improved the scope of the analysis as well as the results. Limiting the sample to three categories (i.e. government officials, private sector and academics) did not prevent broader consideration of the issues, and themes emerged to support the key observations.

6.10 Processing the content of interviews

In this regard, McCracken (1988) asserts that "*qualitative data are normally relatively messy, unorganised data*". He (1988) adds that this type of data "*demands techniques of observation that allow the investigator to sort the data, searching out patterns of association and assumption*" (1988: 19). As Robson (2002:455) puts it, words are the most prevalent form of qualitative data, which are a speciality of human beings. Normally, qualitative studies result in large amounts of textual data in many forms, such as transcripts of interviews. Unlike the quantitative data analysis, there is no clear, conventional and largely accepted single way for analysing qualitative data. Therefore, to put qualitative information into a scientific framework, it has to be dealt with in a systematic method.

Such a procedure will help to create a comprehensive picture, using a broad range of descriptive to inferential techniques, for the issues under research. Fontana and Frey (2000) claim that "*we are beginning to realise that we cannot lift results of interviews out of the contexts in which they were gathered and claim them as objective data with no strings attached*" (2000: 663). The statements, explanations and remarks produced by the respondents during the interviews provide the content of this process.[53] The content is obviously the component that needs to be analysed, to map out the common themes and consequently to draw the main findings (Mathers et al, 1998).

To achieve the desired accuracy in analysing the responses in the interviews, a tape recorder was used to record their content. However the conduct of interviews is equally important, and entails observing the behaviour of respondents during the interview. This

53 Content analysis is a systematic examination of text from the interviews being used to identify and develop themes.

can present more insight into the content, and help to either confirm or contradict any statements made in it.

There are certain other issues that need to be considered in order to open up the interview process, which reflect on the interview's content. These are based on the respondents' statements being either positive or negative as described in the following Table (6.3).

Table 6.3: Issues to be observed to improve interview's content

The Interviewee's statements	
Positive	*Negative*
▪ Confident in the answers with convincing points	▪ Some uncertainty, besides illogical remarks or contradiction
▪ Statements made with notable enthusiasm and encouragement	▪ Other statements that do not demonstrate much interest on the part of the interviewee

Source: Mathers et al (1998)

6.10.1 Analysis process

The collection and analysis of data are difficult to separate, so transcription of the interviews should be done in their entirety to obviate the possibility of the researcher imposing his own judgement or attitudes influencing the relevance and/or significance of the content.

Creswell (1998) described four major steps for analysing data in such circumstances, and these are similar to those Silverman (2001) later suggested. (1) Tape-recording the interviews, with transcriptions that should be read in their entirety. (2) Inclusion of significant extracts from each transcript. (3) Key statements from the extracts can be formulated into meanings, and then grouped into themes. (4) Integration of these themes into a narrative description.

However, Bewley (2002: 347) states that "*the disadvantage of taping is that it takes much longer to transcribe a recording than it does to type up interview notes*".

Comparison between the key statements made by respondents will help to identify any contradictions and consistencies, during the analysis. Shedivy (2004) asserts that extracts can be reduced to useable text inductively rather than deductively, in order to analyse emergent themes into a coherent, interpretative and analytic context. The theme development should emerge from the interviews, not from the researcher's hypotheses or predetermined concepts.

However, when data enters the process of thematic clustering, overlapping details may occur during the course of the research. In addition to that, competing explanations and discrepant remarks will be particularly important during the process of analysis.

6.10.2 Interpretation

Bewley (2002: 347) describes an approach to organising the transcriptions of interview recordings. He suggests creating two kinds of documents, one a set of spreadsheets, and the other lists of quotations. There should be one spreadsheet for each issue or question discussed. On the spreadsheets, rows correspond to respondents and columns correspond to expressed views on the issue, or to the answers to the question.

Corresponding to each issue and its spreadsheet there is a written document, with a separate section for each spreadsheet column. Each section contains quotations expressing the type of response, with suitable reference to the interview transcript page where the quotation was found. Creating the spreadsheets and documents is time consuming, but makes it easy to see and substantiate patterns in the data and the logic of people's thinking. Spreadsheets can readily facilitate the quick selection of quotations from the documents (Bewley, 2002).

Mathers et al (1998: 17) explain another approach to data analysis, which starts after transcribing the interviews. The analysis of content uses a systematic way of identifying all the main concepts, in order to categorise them into common themes. This is initiated when selected extracts with similar concepts are grouped under a defined theme, but the extracts should be referenced to prevent taking them out of context. Subsequently, a matrix can be created to relate a number of key themes to different respondents, which can be presented in the form of cross-tabulation; with individuals on one side of the table, and the main concepts running across. The cells of the table can contain relevant quotations from the respondents' statements. Once these matrices are prepared, flow-charts show how one theme influences another, which can present logical links between the concepts and the relationship patterns.

The 'template approach' is another technique for data analysis which may be associated with what can be described as a 'spreadsheet approach', and involves the identification of key coded responses. The codes in general terms are symbols applied to specific sections of the transcript, to arrange or categorise them in connection to the research issues and questions. The coded responses can function as a template for the data analysis, if they are shaped into manageable forms for subsequent retrieval and exploration in order to locate the source of information in the original data. Actually, the approach used here adopted some characteristics of the 'editing approach' described by Robson (1995). This means that the coded responses were derived from the interpretation of the meanings or the developed patterns drawn from the texts.

6.10.3 The chosen application

A combination of features has been adopted from the approaches discussed previously to develop what may be described as a qualitative matrix. Because four main topics were discussed during the interviews under each a number of general issues, it was decided to adopt a spreadsheet system for the analysis. Actually, the system was effective for dealing with the various answers given and a good method to organise them logically for later exploration.

Each issue or question that was employed during the interviews has its own spreadsheet forming together a complete set (see: appendix II). The purpose was to create an arrangement by which the rows corresponding to all respondents were distributed in accordance to their categories (government officials, private sector and academics and concerned researchers). The columns represent a description of the different common themes developed from the coding exercise, which was based on the views and answers to the questions set out for discussion covering the four main topics.

The technique of coding is normally used for the purpose of systematic assessment of responses. However, the complexity of a coding exercise may vary widely according to the goals and objectives of the research. Coding is a process of translating raw data (transcriptions in this case) into meaningful categories for the purpose of analysis. It helps to reveal patterns that would perhaps be difficult to detect by simply reading transcriptions.

It is important to affirm that the development of themes listed in the columns followed a systematic procedure. This started with a careful reading and review of all the statements given by the respondents to generate and identify a number of category codes, and to

label data that are related without worrying about the variety of categories. A second stage was applied to eliminate, combine or subdivide the coding categories to avoid repeated ideas and to identify the main concepts. These main concepts were then sorted and arranged into common themes and patterns using the thematic coding to produce the 'end products'. Therefore, the statements inscribed at the top of each spreadsheet are not necessarily the exact wording of answers by respondents. It can be said that thematic coding is a context that provides background information on a subject. This whole process offers a perspective that captures the way in which the respondents define a particular aspect of a setting. It also identifies recurring types of behaviour.

This form of data display (i.e. spreadsheet) was used to explore causes, describe situations, explain and predict actions and trends. It also helped in making comparisons and contrasts between and within the data gathered as well as attaching denial or affirmation to the raised issues.

An initial task was to prepare the set of transcript documents with the intention of facilitating the above mentioned process, and to link them up using the same codes as the spreadsheets.

Each cell is shaded grey if the respondent expressed a view corresponding to the common theme inscribed at the top of the column, otherwise the respondent's row is coloured black if no answer was given. Some individual cells contain very short quotations, contextual details, meanings or explanations when necessary.

All accounts that were given by the respondents were considered, to avoid the following:

- Disregarding information that could conflict with the emerging patterns and themes.

- Ending up with an incomplete map of information, instead every account is carefully valued and considered.
- Making the research results based on selectivity not on a judgement taken in line with a systematically sound approach.

Data analysis, i.e. the processing of the interview contents, started soon after the first few interviews had been conducted. This helped in shaping subsequent data gathering, but this does not necessarily mean that it had a negative influence upon the questions and content of subsequent interviews. Indeed, there was some initial benefit from the preliminary interviews which were conducted before commencing the interviewing exercise proper.

The process was concluded by summarising what could be drawn from the spreadsheets, which represent the trends in opinions as well as identifying any associations between themes and ideas. The reason for that was to provide meaningful justifications for the results and to present accurate statements well-related to the issues under investigation.

6.11 The fieldwork trip

This trip represented a key part of the data collection stage, and took place between the beginning of November 2004 and the 23rd of January 2005.

Some detailed work was prepared for the purpose of the trip, in terms of the data gathering approach and its implementation, as described earlier in this chapter.

The fieldwork trip was undertaken to seek the views of officials from relevant government departments, as well as the private sector, in addition to those of academic researchers who have an interest in the water industry. This was in order to provide both vital insight and understanding of possible changes to water systems.

Before commencing the work in the field some necessary preparations were made, including: (1) letters to facilitate the mission, from the researcher's supervisor in Newcastle University and from the Architecture and Planning College of King Saud University in Arriyadh-Saudi Arabia, by which he has been commissioned; (2) planning visits to the relevant departments; and (3) undertaking the required correspondence and making preliminary contacts.

Interviews were the primary method of data collection, featuring personal interaction, and were linked to a personal timetable prepared to gain the optimum result from the time spent. Interviews were tape-recorded in order to give more attention to the respondents, considering that it was not possible to write down every word, and bearing in mind the interactive nature of interviewing. However, this was supported by note taking as a useful tool to improve the stage of analysis, and this also enabled the researcher to readily locate key extracts from the documented recordings by providing a reminder of some interesting issues. All the interviews were conducted in Arabic, which was essential to make sure that every individual interviewed would understand and respond to the questions with the same accuracy as the other respondents. Arabic is the first and most common language used in the country.

The majority of the interviews were carried out in Arriyadh City, for different reasons; firstly, it represents an example of the case study for the research. Secondly, Arriyadh is the capital of the country, where all the government authorities have their main offices. In addition there are two universities and some other research institutes.

Notwithstanding that, the researcher visited other cities such as Dhahran (in the east of the country) to interview the manager of the water section in the Centre for Environment

and Water. Another visit was made to the city of Jeddah (western side of the country) to interview two individuals, one from Jeddah branch of MOWE and the other from Jeddah Chamber of Commerce and Industry. The researcher also planned a visit to the city of Yanbu, but cancelled it as it was replaced by personal correspondence.

The contacts made for the purpose of carrying out the interviews included MOWE, SWCC, SAGIA, HCDA through its Development Authority the ADA, Arriyadh branch of MOWE, Arriyadh Water Programme for Operation and Maintenance, IPA, the Royal Commission for Jubail and Yanbu,[54] Arriyadh Chamber of Commerce and Industry, Arabian Company for Water and Power Development, Sha's for Water Services, King Saud University, King Fahd University of Petroleum and Minerals, and King AbdulAziz City for Science and Technology. This was in addition to contacting other individuals with an interest in the topics raised by the researcher, including advisors and management consultants.

By networking, the researcher was able to create and follow a chain of personal contacts in which a name of a trusted third party was used when approaching the targeted sample. This contributed effectively to better interviews, by putting the respondents at ease.

Sample size is always difficult to estimate at the outset; therefore it was the chosen option to interview a reasonable number of subjects until saturation point was reached, meaning no new information was forthcoming. Of course this judgement was made carefully.

The selection of samples was based on those with first-hand experience of local and national conditions, as well as the potential lines that the government may follow in the future. The selection was to find individuals with long experience in their field of work;

54 The establishment of this independent organisation was in 1975. The commission is governed by a Board of Directors and its Chairman reports to the Council of Ministers. The mandate of the Commission is to implement the physical and social infrastructure required for the development of Jubail and Yanbu areas as industrial cities. http://www.rcjy.gov.sa

this was an aspect of great importance, as it enabled them to comment with authority on the highlighted issues.

The researcher contacted 46 individuals based on their expertise, professional affiliation and occupation in Saudi Arabia, and received responses from 34. From this group of 34, 18 individuals agreed to a personal interview while the remaining 16 offered their input via personal correspondence (as described in table 6.4). These correspondence interviews followed the same framework, and dealt with the same issues as were covered in the personal interviews. However, contact was maintained with some of the interviewees to continue the discussion of some issues and to fill gaps in the knowledge about these issues when necessary.

Table 6.4: The extent of respondents' participation

	Contacted		**Received responses**	
		percentage		*percentage*
Government officials	**18**	*39.1 %*	**15**	*44.1 %*
Private sector	**15**	*32.6 %*	**10**	*29.4 %*
Academics & researchers	**13**	*28.3 %*	**9**	*26.5 %*
Total	**46**	*100 %*	**34**	*100 %*

It had been hoped that a greater number of participants could be included in the subjective component of this fieldwork. Those individuals who declined to take part in the information gathering exercise cited as their reason lack of time and/or interest about the issues and topics raised by the research.

It is worth stating that those individuals who chose not to participate in the interviewing exercise were not a group from a same sector (i.e. government or private) or a certain group of people working for a specific organisation. For example, three individuals from the government sector refused to participate: one from Arriyadh Water Programme for

Operation and Maintenance; another from the Investment Authority; and a third from HCDA. Indeed the same thing applied to the two other categories of individuals contacted (i.e. private sector and academics/researchers).

Although the researcher endeavoured to obtain input from participants via face to face interviews whenever possible, financial limitations were paired with the unwillingness of some of the targeted subjects to take part in the interviews.

The interviews proved to be an invaluable source of information. They were also a good method of directing the researcher to other sources of information.

7. Analysis of the Interviews: issues for investigation

7.1 Introduction

7.2 Efficient management approach

7.3 High growth rates and problems of urbanisation

7.4 Motives for privatisation in the water sector

7.5 Regulation issues

7.1 Introduction

As stated earlier in the research approach and methodology in Chapter Six, four main topics associated with the provision of water services formed the basis and structure of the questions addressed in the personal interviews, presenting their scope and context. Those four topics also serve as the fundamental aims and purposes of the research, and have provided a framework for this stage. The aim of this chapter is to present an explanatory and argumentative analysis of the opinions of the respondents, in the order adopted for the focused interviews. Spreadsheets were prepared for each issue discussed, in order to establish a thematic pattern from classifying the answers by their type. This procedure helped greatly in tracing and exploring relationships, causes, and helped to describe current situations, explain and predict actions and trends. Accordingly the interpretative nature of this stage of research has facilitated the purpose when making comparisons and contrasts between and within the gathered viewpoints, as well as assisting confirmation or rebuttal of the issues raised by the participants.

7.2 Efficient management approach

7.2.1 The weakness or lack of financial and managerial independence

It can be argued that the achievement of greater levels of efficiency in managing any sector, and especially the water sector, is an important basis for effectiveness and sustainability in the provision of high quality, reliable services for consumers. Among the things that may undermine efficiency in the sector management can be the weakness, and sometimes absence, of independence in the bodies involved with water services due to

the many levels of intervention by government bodies. Accordingly this question was addressed with selected respondents from the government sector, the private sector and the academic researchers.

Most respondents from the government sector believe that the absence of financial and managerial independence in water authorities directly affects efficiency, from both operational and financial aspects. From the operational perspective it reduces the ability to provide good quality services, since decisions are taken by officials at national level and bearing in mind that key differences exist between one region or locality and another. As for the finance, the problem is even more complicated since such authorities may not be able to arrange the required funding to develop and operate, as their resources are related to what is being allocated to the sector from the general budget. This, no doubt, increases the problems associated with approving new projects and improving the current ones; at the same time, it minimises the potential for accurate estimates of the sector's priorities.

Most respondents from the private sector, indicated that the lack of independence in water services authorities acts as a brake upon the extent to which they are able to develop contemporary administrative procedures that are concerned primarily with improving efficiency. This has a direct result in the increasing weakness of planning programmes, and the defects in decision making procedures. In the absence of financial autonomy, the sector cannot benefit from the revenues generated by the services provided which, if collected, would help such organisations to improve their technical and administrative capacity, as well as enhancing the level of service provision in the water system in accordance with needs.

Most of the academics agreed with the aforementioned; generally they felt that independence of financial and managerial responsibilities is vital to developing the sector in terms of provision and management. The absence of independence constitutes an obstacle to improving administration, encourages greater bureaucracy and increases the complexity of procedures.

As a result of all these factors, the absence of autonomy may hinder the objective of satisfying customers' needs properly and on time. This might extend to creating difficulties in pricing services according to their economic value, as the actual costs charged may reflect the lack of authority to do so. Moreover, devoting bureaucracy to procedural work burdens the management and may result in reducing other resources important to carry out key tasks e.g. research and studies. Another issue for management is the lack of clarity about roles and responsibilities and the absence of a transparent decision-making structure. Decision making is very critical and is directly linked to consumer needs. In Saudi Arabia for instance, the lower the level of independence, the slower the process of making the right decisions about operation and maintenance; the same applies to implementing established plans in the medium and long term. Slow decision making may exacerbate other problems related to service provision and operation, due to deterioration in proper responses to the general needs of the sector and an inability to satisfy the growing demand for water and its associated services.

One of the interviewees from the private sector said "*The relationship between independence level and achieving efficiency is a direct one, for not connecting performance, in quality and quantity, with financial resources will not provide a floor for improving service. On the other hand, lack of flexibility in spending the allocated budget*

will create disorder in manifest priorities for the service sector, since it is not the direct beneficiary who defines the relationship".

The interrelated problems of this issue are thus represented by financial and administrative deficits, caused by the lack of freedom to manage such services efficiently. This is in addition to the delays in development, problem solving and activity performance. Most governmental entities are subject to a conventional working environment, with an inflexible organisational structure that causes serious delays in recognising and responding to sudden changes and developments. Furthermore they suffer lowered staff productivity and the absence of challenge, competition and inspiration, not to mention issues of technical competence and the loss of administrative and financial leadership as a result of that.

It is worth pointing out that the lack of financial resources may lead to rapid deterioration of the existing basic infrastructure, because of the lack of appropriate maintenance. The definition of efficiency implies a range of operations appropriate to an organisation's goals, and how to achieve those at a minimum cost. One academic said: "*The absence of financial and management independence has a negative impact, for the authority responsible for services provision cannot adopt the right measures which are close to reality in the shade of the sector's financial dependency*".

7.2.2 Reform of the bodies responsible for water services

The question is whether the regional and municipal bodies need to undergo structural reform as a response to investment needs, and what alterations would be necessary to achieve this.

Most of the government officials shared two opinions about coping with the trend for reform with the purpose of attracting investment. The first is to divert towards privatising some of the sector's functions, or to establish a strategic partnership between the public and private sectors through market-regulated arrangements, to be monitored and regulated efficiently by a governmental entity. The electricity services sector was first restructured as a national joint-stock company; water services can be compared to that, and it may seem fit at a future date to privatise water production on the national level as phase one. The second opinion, however, calls for a clearer definition of roles and responsibilities within the sector, with more attention to training programmes to raise the abilities of working personnel and consequently increase efficiency in performance and the services provided. This has implications for identifying and recruiting the best-qualified administrative staff.

A government official claims that "*water sector reform requires a comprehensive revision of the organisational structure of the sector, with investment in technology and a contemporary approach to administration*". This would include assessing the current laws, bylaws and regulations, amending and developing them in a manner that will assist in establishing a practical working environment through which better performance will be promoted. This was also the view of the academics.

The opinions of the private sector, however, were based around two demands: first to adopt a modern, technical approach in all aspects of water provision, especially the operational ones; and comprehensively revising the legal and regulatory structures by initiating a scientific dialogue, perhaps by arranging workshops for the personnel involved in order to identify weak areas in the business. The other demand is concerned with making drastic alterations to the current tariffs, because pricing policy as well as appropriate legislation that provides trustworthy protection for potential investors represent a major condition for attracting private investment in the future. Changing the current water tariff, which is close to being free, is crucial; a consumer may use 100 m^3 of water within the second level of the tariff structure and still pay less than SR15 (£1 is approximately SR7). Paying the real cost, or at least the greater part of it is important. Consumers need to be aware of their consuming culture, given the geographical location of the country, its climate and scarcity of natural water resources. According to the World Water Council, Saudi Arabia is among the countries that are in a very high stress category with regard to withdrawal-to-availability ratio of water.[55] It is among the 12 poorest countries in respect of its water resources, and the World Bank believes that the per capita share of water in the region is no more than 177 cubic metres per year of renewable water resources.[56] On the other hand, it is equally important that the tariff collection system works efficiently by obliging all different segments of society, and governmental agencies, to pay; and to implement a legal and procedural system that helps fulfil that task.

55 Water Crisis Report, available on: http://www.worldwatercouncil.org. Accessed on 14 June 2005.

56 The Middle East Water Report: with emphasis on the Arab countries, prepared by Abou Zeid (2006).

Further to these proposals, it will be important to review and document the existing condition of water resources, both quality and quantity, and to evaluate the water treatment and distribution systems. At a later stage this may be followed by identifying any inadequacies, while taking into consideration the priorities for each region or district. This would help in successful reform, irrespective of whichever body was responsible, although they all come under the umbrella of one ministry. This process would definitely help in achieving more independence, and consequently better decisions about each region or area.

7.2.3 Public-Private Partnership in water services provision

This kind of partnership between the public and private sectors in water projects has been tested worldwide. Both the public and private sectors participate in managing and funding, as well as both being entitled to financial revenues. The private sector will provide the technical and administrative expertise needed for successful diligence. In this regard, a question needs to be raised about current or potential motives that might encourage the Saudi government to adopt such a step and whether such a move would benefit the consumers in particular, and the water services sector in general.

The majority of government officials envisaged a benefit for consumers if such an approach were adopted. They believe that one of the prime motives to encourage this partnership is the massive investment that will be required in the future, to develop, operate, maintain and extend existing water systems. Another motivation, of less importance to this category, relates to improving the efficiency and quality of provision by seeking the ability and expertise of the private sector, which is likely to be more advanced than its counterparts in the public sector. Some respondents from the

government indicated that the growing demand for water, and the idea that this sector abounds with investment opportunities, are among other factors that might encourage partnerships as a government initiative.

One government official mentioned that: "*implementing this principle of public-private partnership in developing and funding water systems may pave the way to introducing other programmes of national importance such as wastewater treatment and reuse, as an alternative source of water for non domestic purposes at a reasonable and discounted price. Moreover, this would help in restructuring the potable water tariff in a way that reflects its actual costs*". If applied, this would definitely play a significant role in preserving water resources, changing the water sector from being a simple services provider into a complete system that would take into consideration the principles of efficiency and sustainability in a largely-desert country that enjoys very limited renewable water resources.

Most of the respondents from the private sector saw partnership as offering a great opportunity to benefit consumers in particular, and the water sector in general. Among the motives these participants consider significant are improved performance and the enhanced quality of service delivery due to the introduction of experienced private operators of similar projects. It can be argued that if private sector efficiency is achieved at the best possible level, this should play a significant role in improving operational, maintenance and distributive functions. In addition, it may be expected that the level of water loss will be reduced to an acceptable level after improving maintenance programmes, as well as noticeable advances in both the distribution and charges collection systems.

Although all these motives are important, most academics assumed that what would drive the government to adopt such a partnership with the private sector was the inability of the government to secure the funds it needs for water services. In addition to that, they believe that partnership in this sector would help to reduce operating and maintenance costs together with greater efficiency, considering the rapid urbanisation and population growth which will ultimately increase water demand. Moreover, the public sector would benefit from such partnership, focusing its technical efforts and expertise on regulatory and supervisory responsibilities rather than being solely responsible for water provision and distribution, that is when roles and responsibilities have been clearly defined.

7.2.4 Water services provision from a management perspective

The responsibility for water services provision could be transferred in whole or part to municipal/local levels, or devolved to governmental or semi-governmental independent entities as an alternative to privatisation. The visible alternatives in this case may include deregulation, decentralisation, corporatisation and commercialisation.

Most of the respondents from the government sector favoured the corporatisation and commercialisation options, for the following reasons;

- Services projects would be efficiently managed and the government would be able to undertake monitoring and supervisory functions.
- The two models provide the sector with a great degree of flexibility and independence, particularly from the financial perspective, as well as freedom to fund maintenance and future expansion programmes that take priority.

- Greater productivity in the sector will assist the shift from producing with what is available, to producing according to the highest quality criteria with minimum expenditure.
- Transforming the sector into an attractive environment for investment.

The alternative preferred by most of the private sector respondents was corporatisation, because this model will transform the sector into public corporations that benefit from the financial and administrative autonomy necessary to achieve the desired outcomes. Such corporations will be able to improve their performance. It would offer the opportunity to introduce the private sector into some of the sector's activities in an innovative way, via various contracting options, e.g. management contracts, and this could take place without undermining the obligations assigned to the operators by the government. The private sector respondents favoured this model because:

- The expected increase in costs related to water production, operation and maintenance of existing systems.
- There is no comprehensive social security system in the country by which low-income groups can receive benefits enabling them to have access to services at the market price.
- The argument that water cannot be regarded as a pure economic commodity.

Water services require vast investment for production, distribution, maintenance and operations, but innovation is possible in the areas of resource production and development. This is because distribution is less complicated than production, but requires a higher degree of efficiency and effectiveness. The costs of production alongside other provision activities make it financially unrewarding for privatisation in

the absence of proper pricing and/or government subsidies, considering the small revenues in comparison with the huge costs. This remains the case unless the government guarantees to buy the produced supply at a price that offers a reasonable profit for the producer.

Depending on the previous argument, some of the respondents thought that the decentralisation model was the most appropriate option for the time being, given the geographical spread of the country and the cost of moving water over large distances, and the fact that some regions abound with groundwater resources or are located in zones with reasonably good rainfall. Other regions, however, are close to the coast, and consequently could benefit from water desalination.

Promoting decentralisation aims at increasing the capacity of existing communities to autonomously manage local government administration for the benefit of their inhabitants. However, the effectiveness of such an approach remains in question, given the absence of definite local government in the country. The local authority is represented in what are known as province councils, which lack independence as well as adequate finance. The adoption of full decentralisation would not be viable in this context. Unless changes to the way public services are managed on the provincial level this approach cannot be expected to succeed.

Transporting water over long distances is an expensive process, while water can be relatively cheap to store. This supports the principle that water services can best be administered by decentralisation to the lowest possible level, i.e. the province or even a large municipality. However, the benefits of economies of scale should be considered

when proposing decentralisation. Each system needs to be big enough to present an attractive opportunity to private investors if their participation to be encouraged.

In any case, change must be applied as part of a comprehensive strategic national plan to develop the sector and endow it with the requisite degree of flexibility while removing administrative and institutional obstacles, enabling the sector to shift to other models that might be deemed suitable in the future. It is worth noting here that the decentralised model existed previously in the management of the so-called water authorities. This model, however, was terminated after the establishment of MOWE, shifting thereafter towards centralisation.

Some respondents believe that joint models can be implemented in a two-phase process, as a strategic plan. Others see the possibility of taking the advantages of each model to produce an approach that suits the economic, social and climatic circumstances of the country. This would help in preparing the water services sector for management change and development at the same time. In conclusion, corporatisation was the model preferred by most of the respondents from all categories, due to the reasons mentioned earlier. However, a gradual transformation will be necessary when shifting from one model to another.

7.3 High growth rates and problems of urbanisation

The high rate of urbanisation may lead to increased costs for urban water services, precluding governments from fulfilling their responsibilities satisfactorily. Thus supply will not meet the growing demand, being accompanied by system deterioration, short network life and inadequate maintenance producing problems of water loss, due to chronic under-investment in water services.

7.3.1 How should we deal with the urbanisation problem and its impact on water services provision?

Given existing conditions in the country, the best solution for most of the respondents from all categories placed further emphasis upon policies for effective growth management, in order to control development in urban areas. In addition to that, to increase levels of water conservation and improve public awareness about this issue by contacting individuals and groups with information about how important it is to maintain water resources. As an integral part of this action, alternative water resources need to be developed through the reuse of treated wastewater for non-drinking purposes.

This received unanimous agreement, since it is impossible to stop the wheel of population increase, and this means increasing demand for water. Nevertheless there is the possibility of shifting the growth, by developing secondary cities with potential development resources as new growth centres within a comprehensive national plan - such as the NSS - and this would help to slow immigration to major cities. Effective policies establishing urban limits to control urban development may play a significant role in this, and tackle urban sprawl by which costly infrastructure extensions can be avoided. With such policies, no development would be approved outside designated limits and consequently no services extended to such developments. In addition, increasing the gross and net residential density[57] of low density cities is vital. This could be done by permitting residential dwelling units of more than two storeys, through changes to existing building regulations, and also by providing other types of smaller accommodation (promoting flats for instance) to serve the needs of small families, rather

57 Net density is generally calculated by block and excludes areas such as streets, public facilities, etc. by dividing the number of dwelling units by the area. The gross density of a residential area is generally calculated by including all land (including streets) within the boundaries of a particular area, by dividing this area into the number of dwelling units.

than the prevailing detached houses developed in a gridiron street pattern. This would help to reduce the cost of service provision through savings in the length of the main distribution network as well as the main supply pipelines. Increasing the density, however, should be more than allowing vertical expansion, and could also include reduction of the minimum plot area approved for residential land subdivision (currently 400m^2); and increasing the building ratio within residential plots (currently limited to 60% of the total area).

The second opinion expressed by some of the respondents was about adopting more efficient practices to manage water resources and systems. This may be seen alongside the previous opinion, about adopting effective policies for urban development management that work integrally with a competent management responsible for water systems. According to that idea, efficient water resources management must embrace the principles of sustainability and should result in better network maintenance that will conserve water and minimise losses.

The third option, which was less favoured than the others but was deemed important by some from the government sector, is concerned with the importance of reviewing the tariff structure. This would mean correct pricing in order to recover the costs of provision, regardless of the availability of subsidies to cover the difference in costs. This might play a significant role in shaping and controlling demand and be an effective way to manage water consumption, increasing awareness among customers of their responsibility for consumption which can be described as wasteful in some cases.

On the other hand, an academic said that "*it is crucial to encourage further water studies and more researches, and it is important to coordinate this with the institutions*

involved". Equally important is the adoption of the Seventh Strategic Principle in the Seventh Development Plan, which states the need to make water a vital element and a core measurement when assessing the economic effectiveness of projects by the public or private sectors.

7.3.2 Will the restraint of urban growth succeed in controlling the growing demand for water?

The opinions of the government officials about this issue followed two lines. The first is that water demand is directly associated with the increase in population level, regardless of spatial dissemination, as national population growth will generate more water demand in both urban and rural areas. This was also accepted by the respondents from the private sector. The second viewpoint is about the necessity to work on improving the distributive functions, in order to achieve a substantial reduction in water leakage (optimistic figures show it ranging between 17-25%) from the system network that will be saved for the main supply. Of course such efforts should go hand in hand with an appropriate programme for water conservation, and the development of unconventional water resources through water recycling for purposes other than drinking.

In contrast to the principle of compact development, directing urban development towards relatively small and secondary cities, and developing the regions will result in spreading the geographical scale of water demand, requiring infrastructure development for these areas and leading to increased costs of provision nationwide.

The academic researchers shared the opinions of the other two categories, in addition to a third strand; that increasing residential density in the developed and new urban areas may help to accommodate growth, which will save the costs of extending the water supply

network and the main pipelines. Achieving that will improve operations and maintenance due to scale, and enhance water system efficiency. Moreover, water pressure and reliability could be enhanced because of overall improvements in the system's capacity. However other economic sectors, such as agriculture and industry which are closely linked to national development, will emphasise the growing demand for water and this constitutes an obstacle for water conservation.

7.3.3 The role of water conservation programmes

Although some of the respondents were unable to provide answers to the questions about water conservation programmes as a way to cope with the problems of urbanisation, some statements by the government officials indicated the key role of such activities. Effective programmes can help to reduce the demand for water, and at the same time improve consumer awareness about protecting water resources for future generations and not exhausting them. In addition to that they identified the importance of including this issue in the education of rising generations, to increase their awareness of the critical situation of water in the country, the expensive business of producing potable water, and the risks of water scarcity. Encouraging residents to develop a responsible attitude towards water conservation and ensure a long-term commitment to this issue is an important aim to be considered. This opinion was unanimous among the academics, and some participants from the private sector.

The remaining participants from the private sector believed that programmes for conserving water usage have a limited effect, and that awareness should be replaced by enforcement. This should be tied in with a re-pricing of existing water services according to their actual costs. Enforcement would require legislation to achieve the desired

outcome, especially for large users, and this could be done by requiring the installation of water conserving equipment. Many such devices are available such as water reducers and aeration devices in faucets and taps, automatic water faucets, and water aeration showerheads. One of the most effective methods of water conservation is by reducing the size of flushing toilet cisterns, to 6 litres capacity instead of the current design; according to MOWE, a toilet consumes about 12 litres of water per flush and this represents almost 25% of the daily average of per capita water use.

Other interviewees expressed two viewpoints about the feasibility of such programmes. One opinion was that such programmes would play an important role once they had been adopted by all the consumers, especially large users. The second, however, was that these programmes have little effect, because consumers' compliance is high during the media and press campaign and then diminishes after the campaign is over. Despite that, there was one fact that a large number of respondents underlined: the existing tariff level does not encourage water conservation, since water services are highly subsidised by the government and can be regarded as almost free.

Based upon the recommendations presented by MOWE, in October 2005 the Saudi Arabian Standards Organisation (SASO)[58] was instructed by the Council of Ministers to finalise all the standards concerned with plumbing materials and water-saving equipment, among others, within a year, looking towards implementation across the country. This work will include a review of other standards in line with the national objectives of effective water conservation by encouraging the use of more efficient water products.

58 SASO was established by the Royal Decree No. M/10 Dated April 1972 as an independent organisation, which is entrusted with all activities relating to standards and measurements including formulation and approval of national standards for all commodities and products. The organisation is managed by a board of directors headed by the Minister of Commerce and Industry, and comprising representatives of the major government departments concerned with these duties.

MOMRA was also asked to ensure that the Saudi Building Code is updated with new rules to that end. New regulations for using water-saving equipment will be introduced and included in the procedures for planning permission at a later stage, for all public utilities connections.

Accordingly, MOWE will be empowered to monitor its customers' response to the new standards and whether they are using water saving equipment or not. MOWE will report to the Council of Ministers about the public buildings that fail to use such equipment. The remaining customers (e.g. industrial and commercial businesses as well as hotels) may face tougher action such as service disconnection. All new large-scale developments (including government buildings, large residential compounds, commercial complexes, industrial estates and educational institutions) will be required to include in their plans two internal water networks, one being for drinking water. This requirement is a key part of MOWE's call for further expansion in water recycling to achieve the desired level of water conservation. Alongside these changes, the Ministry of Commerce and Industry will ban the import of any sanitary devices and plumbing materials which do not meet the requirements of water conservation, one year after the date of approving the new specifications and standards proposed by SASO. This of course will involve banning any locally manufactured sanitary ware and plumbing materials that do not save water, if they are to be sold inside the country.[59]

59 This recent initiative by the government was also covered by Al-Riyadh newspaper: 4 October 2005, No. 13616.

7.4 Motives for privatisation in the water sector

The spread of privatisation is grounded on the fundamental belief that market competition is a more efficient way to provide necessary services, and leads to more efficient resource allocation and economic growth. Privatisation remains a cornerstone of the Saudi economic reform programme.

A senior government official in SEC claimed that "*basically, the economic development in the country was based on private sector initiatives, and the government's involvement in economic activities happened during periods when the private sector lacked the necessary resources or technical ability*".

The pursuit of privatisation has been guided recently by an ambitious plan by the Saudi government to open 20 economic sectors to PSP, among those being water desalination, as described in Chapter Four. This plan aims to ease the financial burden on the national budget and to deal with the problem of public debt, to find new resources to fund public services and new projects, in addition to developing the private sector's contribution to the national economy as a strategic option. One objective of privatisation is the improvement of public services, increasing their efficiency with optimal use of national resources, and indeed this can be seen as one of the overarching targets. One of the strategic bases of the Seventh Development Plan emphasised giving the private sector the opportunity to undertake many of the economic tasks of the government, on condition that this would result in real benefits through lower costs of delivery, better performance and employment opportunities for Saudi citizens.

When the government has many objectives and at the same time has limited financial capacity, inefficient management can be expected; in this case, considering that the

government is both the owner and provider of water services. As explained by Johnstone and Wood (2001) public utilities are often constrained by bureaucratic requirements which do not affect private companies to the same extent, and private companies are better placed to access capital both locally and globally. Moreover, such companies have the ability to benefit from access to new technical skills and other human resources (2001:8).

7.4.1 Possible alternatives to face financial deficits in funding water utilities

According to SAGIA estimates (in 2003), over the next two decades water and wastewater systems in Saudi Arabia will require just over SR330 billion for maintenance, operation and expansion. The annual allocation of funds for this sector from the national budget is no more than SR6 billion per year. The questions raised in this context are about the possible alternatives to deal with this situation, and how they might be implemented.

The respondents from the government sector suggested three possibilities. The first was to allow the private sector to participate in accordance with an option of PSP. This will move the sector to operating on a commercial basis that guarantees fairness for both the producer and consumer, through a synchronised improvement in operations in general, and in accordance with effective and clear regulations. This would, however, necessitate the development of supporting programmes for the PSP such as water reuse. It is equally important to introduce legislation that enables the government to endorse such a transformation, and to support it financially through the preliminary phases until the whole process is completed. This could be through a scheme by which the government

absorbs the difference in price of extended services, especially for those on low incomes, considering the potential increase in charges in order to achieve cost recovery.

The second emphasised the importance of further funds being made available from the general budget for this sector, with the participation of the private sector being limited to developing new resources for water supply and production. This would mean that distribution remained the government's sole responsibility. Investments in the field of water production by the private sector could be through any model of BOT, by which water would be provided to major reservoirs in urban areas, cities or regions, or pumped directly into the distribution network.

One of the academics suggested that it would be possible to increase government subsidies from the national budget to the sector: "*the expected and required spending for the next twenty years is not that enormous, for it does not constitute a large percentage of the total budget, while some other sectors receive expenditure of more than 45%*".[60]

What proves the above-mentioned argument is that the vast amount of investment and the need to wait for long term profits are unattractive prospects for the private sector, and this will require the government to be responsible for expenditure until the basic requirements are satisfied, when it should be possible for the private sector to participate in production as described earlier.

The third possibility, which some of the government officials, private sector and academic respondents offered, is concerned with the need to implement efficient policies to manage water demand. These could include (a) adopting every possible means to enhance the operating capacity of the sector; (b) providing adequate maintenance for the

60 According to the Monetary Agency's fortieth annual report, the Saudi economy recorded notable growth rates in all its sectors during 2003 as a result of gains in high oil prices. Thus, the state budget registered a surplus of SR36 billion or 4.5 percent of GDP in that year (SAMA, 2004).

ageing distribution network; and (c) reducing water leakage to a minimum in order to prevent loss, which is considered the cheapest way to gain additional water resources. Furthermore there should be some expansion in programmes for reusing wastewater after it has been treated, as a means of providing water for non-household uses that do not require high water quality (for instance irrigation, agriculture, cooling in industry, etc.). Also, such non-conventional water resources can be considered within a promising plan for their return (i.e. injection) to some suitable aquifers, making them strategic reserves. This was suggested by a private sector interviewee. It is important that all such strategic plans should be set up after conducting the necessary studies, for example to encourage the agricultural sector to invest in particular crops that suit the country's conditions, noting that agriculture is the largest water consumer in Saudi Arabia. According to estimates in 2004, water consumption by the agricultural sector constituted 88 percent of the total consumption in the country, standing at 19.85 billion m^3 (see also: the context of supply and demand, in Chapter Four) (SAMA, 2004:44).[61]

Finally, there is a fourth possibility that offers an alternative way of finding the huge investment required to develop the water sector, and this was suggested by some respondents from the private sector and the academics. According to this, the current water tariff should be revised and new regulations and laws should be introduced to support that. This might make the water sector into a magnet for private investment and provide the necessary funds. Restructuring the tariff to generate reasonable revenues, to guarantee acceptable profits for the operator and deliver tangible improvements in the

61 The Saudi Arabian Monetary Agency (SAMA) was founded in 1952 to be the country central bank. The agency's charter requires it to act as the central government bank, to issue currency (paper and coin), and to support the value of the Riyal at home and abroad. It also supervises and encourages the development of the country's banking system in both the public and the commercial sectors.

services provided to consumers is considered a decisive factor for the success of private involvement in the sector.

7.4.2 Criteria used in evaluating private sector participation

It is believed that the evaluation criteria used to assess PSP in water services provision should include coverage targets, water quality, leakage detection and system rehabilitation if PSP is to be introduced into all the sector functions. Discussion about this was focused on the mechanisms for identifying and monitoring the application of such criteria. One point agreed by almost all the interviewees was the need to establish an independent governmental authority that is, technically qualified to conduct the development of the machinery to monitor and oversee implementation. This would acquire international expertise and practice in the field.

The second opinion, however, believes that such criteria must be clearly stated in the agreement before contracting, to be monitored by a technically qualified regulator. Monitoring these criteria by the regulator should be through the use of a clear system binding upon all parties. Enforcement could follow the established procedure, with a system of gradual penalties going as far as license nullification as the final sanction.

This clear system for monitoring should include a detailed programme that encompasses a number of benchmarks upon which standards depend. It would make these standards a basis for negotiation during the qualification stage of potential providers, as well as during the selection and commissioning. This phase, nevertheless, must state clearly the amount of capital to be invested over the contracting years. In addition there is a vital point that should not be neglected, which is concerned with having reliable services at

reasonable cost (the objective of cost reduction), as well as extending the service to unserviced areas, especially those inhabited by people on low incomes.

On this point, two important minor opinions were raised. They emphasised the importance of conducting surveys on a regular basis to determine the service efficiency, at the same time as conducting a population survey to assess customer satisfaction with regard to the services provided. Moreover, it is important to conduct careful studies of the conditions existing in the sector before embarking upon the process of PSP. The importance of these two courses comes from the fact that they will inform the decision maker accurately about what needs to be done in order to improve the current situation. This would also assist in planning for future needs, and adopting the necessary mechanisms to fulfil these needs in terms of operation, maintenance and expansion, before any possible participation. But PSP should be built upon long term partnership and investment, given the importance of water services, to ensure the continuity of high quality provision by all parties.

7.4.3 The basis for approving PSP [62]

If it is decided to adopt the principle of PSP in water services provision, then there must be an agreed basis upon which the decision to grant a contract or not will be taken. That basis could include the price of water units supplied, the technology to be used by operator, and the quality and efficiency of provision and operation.

62 Considering that the PSP would be in the production segment, otherwise the objective of participation should focus on the sector's real problems. Haarmeyer and Coy (2002) reveal that in the experience of Bucharest in Romania, the 25-year concession signed with Vivendi Water in 2000 was not awarded on the basis of technical and price proposal, instead it was based solely on the lowest price bid by the prequalified firms. This scheme was developed by the city's municipality and the International Finance Corporation as a choice to tackle the city's significant water problems which include very large percentage of leakage; critical tariff collection problems; vast capital required for expansion as well as other concerns related to corruption and debates about selection process. However, the wining bidder proposed a tariff increase of 15% initially for the first five years of the agreement.

Respondents from the government sector believed that the price of water units supplied, in addition to the quality and efficiency of services provision and the technology used in the operation are all criteria for consideration when making a decision. Some interviewees argued that the technology to be used should be pre-identified by either the government department or the regulator, so that it would not influence the issue of water quality for cost savings; and that should be regarded as a strategic national principle. Moreover, customers' needs and the provider's plans for response to any emergency that might cause interruption or cessation of supply must be adopted as a real indicator for service development. This would ultimately imply that such participation will be carried out according to a high standard, and provides the logical grounds for transferring it from being a government responsibility. This was agreed by most participants from the private sector and academic categories.

The other opinion, very important according to some of the academics, is concerned with the expertise, efficiency and ability of the services provider, both financially and technically. This opinion was not very popular among the private sector participants, for it is related to the qualification stage of PSP. According to this argument, ensuring that the potential services provider has the necessary expertise, financial security and technical ability will provide the minimum requirements for success in such a process.

7.4.4 Convincing factors for adopting privatisation

The discussion concerning this point was around whether improving the efficiency of performance in water services, introducing operational technologies and attracting new investment could be considered as convincing reasons for privatising the sector, or not.

Most respondents believed that all these factors were convincing, and provided quite enough evidence for privatising the industry or at least one of its key segments. Privatisation will provide the opportunity to develop the institutional systems, and allow the government to play the vital role of supervising and regulating the sector, especially when operational and maintenance functions are fully assigned to those tasks. Moreover, privatisation is key to improving and enhancing the performance of related entities, as it could assist the decision making progress by getting rid of bureaucracy and the delays that are usually associated with it. This, however, emphasises the need to involve the manpower working in the sector in appropriate training prior to any transformation in the sector's operations.

The high demand for water in Saudi Arabia represents a good investment opportunity for the private sector. Privatisation is essential to bring in the new technologies and 'know how' needed to develop the industry, and this objective was highlighted by a government official. He thought, *"this will require local involvement to transfer those skills, and to make the provider more competitive since many things only can be done successfully using local knowledge and local people"*.

A number of respondents, however, indicated that considering only these factors to achieve the desired developments in the sector is not enough; there must be an attempt to change the sector into an investment magnet if such aims are to be totally fulfilled. On

another note, it is worth mentioning that these changes will create employment opportunities for citizens, and increase national revenue because of the expected savings on water projects, and because of what the government will receive in exchange for granting a concession. Moreover, the capital arising from investments can be channelled into other projects that serve the national economic plan, and help achieve development goals in the medium and long term.

A respondent from the private sector said: "*we can say that the participation of the private sector in the water sector will bring about good results in respect of enhancing quality levels for the services extended, because of the continuous competition between the private sector companies* [in bidding for the contract(s)]. *Moreover, this participation will lead to minimising the government subsidy and saving it for other development projects, and consequently raising the level of the national gross product by employing local capital and attracting other foreign investment*".

7.4.5 PSP as a viable alternative

Discussion about this issue was conducted with reference to the two previous sub-headings, while taking into account the issues of the high cost of providing the service, the limited financial resources available and whether this partnership would be a suitable alternative or not.

The government officials emphasised the following: first, the process of selecting a future partner must be detailed, and include all the conditions previously described for developing the service. Thus a financially and technically appropriate partner will be chosen, with sufficient investment guarantees extended by the government, in addition to

facilitating the associated legal procedures. It should be acknowledged here that this idea was also acceptable to some academics and private sector participants.

Secondly, partnership as far as water services provision is concerned could be in all the fields of water distribution, operation and maintenance. However, in the water production functions, private investors can build, operate and own seawater desalination plants as the national preferred strategic option to increase water supplies. According to that, the government could buy water from producers in bulk, and then resell it to consumers. The sale price might or might not follow the same existing tariff structure, which could be less than the actual price. In this case the difference could be paid by the government as part of its subsidy policy for its citizens. The project company would sell the water production and subsequent electricity power to the government under the Power and Water Purchase Agreement (PWPA) for a period of 20-25 years. Such agreements will provide the company with financial guarantees from the Ministry of Finance, approved by the Council of Ministers. It is worth noting here that the incentives offered to investors might include providing them with the necessary fuel for the water desalination process, or making land available.

Although such an approach might seem complicated, it would be appropriate if production, transmission, and distribution functions were separated and regulated effectively throughout the delivery process.

One final opinion in this regard, and which was offered by some respondents from the government sector and the academics, was that such partnership should be introduced gradually. This would help overcome any obstacles, and it would also help to regulate the water sector in preparation for possible full privatisation sometime in the future. The

development could be implemented partially, in one function or in a particular area, and when the approach proved viable it could be generalised around the country.

7.4.6 Arranging sufficient funds for water services provision

It can be argued that financial institutions and local banks can not, or do not want to be the sole providers of funds to cover the investment required by the water sector. Therefore the question here was what action should be taken to promote and encourage new alliances and strategic partnerships to deal with this situation.

The first suggestion was to establish joint-stock companies, in which citizens can participate through the initial public offering (IPO), as has happened in other sectors. This was the preferred option for most of the respondents. This can be attributed to the successful experience of SECO, the Saudi Telecom Company (STC) and more recently Eittihad Ettisalat, the second company for GSM mobile services. Moreover, it could also be attributed to the government's privatisation strategy which includes many targets, some of which are concerned with widening citizens' participation in economic assets through IPO (see: table 7.1). Of course, IPO is considered one of the most efficient privatisation tools used to develop local market capital. Two recent major successful IPOs in the country are; (1) Eittihad Ettisalat Company. When it offered a percentage of its shares for public subscription, almost SR51 billion (just over £7 billion) was deposited with the underwriter. The amount required was only SR1.5 Billion.[63] (2) Bank AlBilad. 50% of its total shares (about SR1.5 billion) were offered for public subscription by Saudi nationals. The subscription was oversubscribed by more than five times, and

63 Asharq Alawsat: 1 December 2004, No. 9500.

almost 8.8 million nationals participated in the IPO.[64] This equals roughly half the Saudi population. Such successful experiences would of course add to the companies' financial strength.

A phased IPO could also be used for the progressive introduction of private capital to existing incumbents. Other goals include encouraging local and foreign capital to invest in the country, which could lead to better employment opportunities for national manpower and an increase in individual incomes.

Table 7.1: Last IPOs on the Saudi Stock Market

Company	Year	Offering Price	Offered Shares in million	Oversubscription	Price on First Trading Day	Price 30-06-05	% Gain
STC	2003	170	90	2.4%	237	944	455%
Sahara Petrochemical	2004	50	6	125%	150	474	848%
Eittihad Ettisalat	2004	50	20	50%	300	657	1214%
NCCI	2004	205	7	11%	372	643	214%
Bank Al-Bilad	2005	50	30	51%	765	781	1462%
SADAFCO	2005	260	1.95	6%	506	590	127%

Source: Samba Financial Group (2005)

The second opinion which can be considered in conjunction with the first one is concerned with the opportunity to attract international financial corporations to participate in developing national projects, especially after activating a privatisation strategy with new investment legislation. If the investment environment is secure enough for the private sector, then it will automatically develop innovative means of finance under the shelter of the financial guarantees offered by the government and which provide the necessary investment stability. Therefore, activating laws for the protection of investors and other parties involved may be considered a good step towards creating an investment environment with the lowest possible risks. This could be done through a

64 The website of the bank: www.bankalbilad.com.sa on 27 April 2005.

strategy that emerges from the privatisation drive, to focus on the water sector and its related activities and create a base that will attract local and foreign investors.

The third opinion emphasises the ways in which the government could extend partial funding in this field from its Specialised Credit Institutions (e.g. Pubic Investments Fund, Saudi Development Fund). These institutions are deemed important channels for direct government spending on different sectors, enhancing the growth of the national economy. By this, the government can retain a percentage that would allow it to play an effective role in the decision making process in favour of consumers. Moreover, the government could participate by issuing bonds to provide the necessary liquidity to fund such projects, restore the existing infrastructure, extend an excellent guarantee for investors, and simultaneously provide cash to cover any possible funding deficit.

An example of this is 'Ejarah',[65] an option that is compatible with Islamic law. This form of finance can be introduced through the government bonds or non-government bonds. Such bonds can be issued in the capital markets to attract deposits in order to fund projects by the means of long-term financing. Bonds of this type can be offered and exchanged in the secondary market, but they require assigned banking services to regulate them and play the role of the advisor to structure the issuing process. Similar bonds would offer a variable rate of return every five years.

65 This is based on a personal communication with a financial advisor, in November 2004.

7.5 Regulation issues

Regulatory requirements for the sector represent a cornerstone ensuring the success of any future reforms. Regulation is required to safeguard the public interest, as key utility services cease to be funded and managed by the government and become privately operated. Therefore it seemed important to highlight the respondents' opinions about this issue, in respect of the regulator's main tasks, how they should be performed and on what level. The existing tariff system was discussed, as well as the importance of public participation in any reforms.

7.5.1 Multi-level government intervention vs. regulatory effectiveness

The first requirement was to seek respondents' views about the disparity and various levels of government intervention required to regulate water services provision as an obstacle to PSP.

Something that all respondents from the three categories agreed about was the importance of combining monitoring and supervisory responsibilities in one independent regulatory authority. This authority should work at evaluating the potential impact of PSP on a wide range of issues, and then identify the range and nature of the effects post-privatisation. It would be possible, however, that the private sector would ask for such an authority to be founded before it embarked upon the process with the government, which it will deal with as an acting party. The regulatory body would be able to establish proper coordination between all stakeholders, so its responsibilities should be clearly defined, so as to avoid overlap in decision making.

Establishing such an authority must be within a comprehensive programme, the aim of which is to restructure the water sector in a comprehensive manner just as happened with

electricity, and over certain timed phases. This may proceed with regard to water as a vital sector, the extent of costs and required investment, with an agreement to gradually increase the current tariff to a level that helps maintain the sector's development in the long term.

Although some interviewees did not express a view about this question, two opinions were raised. The first emphasises the importance of efficient development of laws and regulations which will be proposed by the regulator, so as to ensure the success of the operation. This might include formulating suitable legislation to accommodate the increasing demand for environmental protection, and preventing pollution of water resources through identifying the permitted levels of pollution by discharged residential and industrial wastewater which should be applied nationally.

The second opinion, nevertheless, underlines that such criteria must be determined during negotiations with the private sector as a basis for any agreement, and the relevant duties and responsibilities must be allocated to both parties according to their national importance.

In this context, one of the government officials said: "*the party responsible for the protection of the citizen and the investor is the regulator; therefore, agreements must be preceded by detailed negotiations that eliminate any ambiguity surrounding the process from the investors' part. This, no doubt, would increase the chances of success of any private project if the opinion of the investors regarding such contracts were taken before granting any rights. And this would help in avoiding any problem that might prove an obstacle to the application of the contract in the future*".

Obviously this matter needs clarity and transparency when contracting. Once an independent regulatory authority is established it is likely that such issues would receive attention within a framework of coordinated tasks and the method of carrying out those specified tasks.

7.5.2 Components of services provision regulations

Water services provision regulations should include criteria for carrying out the processes of monitoring, enforcement, introducing laws to regulate the contractual process, and competition within the sector. In seeking to know their conditions or the other important elements that should be included in these criteria, four opinions received equal endorsement from the various interviewees.

Firstly, these important tasks should be carried out by a qualified authority that has access to expertise and international experience, since the water business is highly specialised. Moreover, the issues of enforcement, monitoring and competition must be compatible with the target area and the quality of services required, by which they guarantee the rights of the consumer and the contractor who is responsible for the service provision.

Secondly, there needs to be competition among service providers in the contract bidding process to win a license to operate, and the protection of an adequate level of transparency is also significant. The service provider qualification process must involve these elements in detail, in order to ensure quality services during provision. After that the competition among service providers will identify the best choice of partner to handle the tasks professionally.

Thirdly, in order to achieve transparent competition there must be clear and appropriate legislation covering monitoring and accountability to create suitable regulations that

define the standards and prerequisites for performing the process. The government will be qualified to contract out such tasks if appropriate monitoring and supervision mechanisms are in place to maintain a high level of services. The regulations and legislation must be applicable to all parties. Moreover, it is important to state fair competition criteria and procedures, and make sure that they are observed by all parties in all the contracting stages, and they must be regarded as the basis of the water services regulator's authority.

Fourthly, the ability and willingness to publish the results, as well as any stipulations made by the regulator, as these can be regarded as an indicator of credibility and commitment on its part. It should be stressed, however, that such regulations must be realistic and practical, and reasonable to all stakeholders.

7.5.3 The main characteristics of the service regulator

It is necessary for PSP to have an efficient, independent and transparent regulator; it is equally important to try to identify the other important characteristics that the regulator must possess. The opinion widely shared and agreed upon by most respondents from the government and private sectors was that the regulatory authority must have sufficient technical and managerial expertise, as given the need to be aware of successful practice else where in the world. In addition to that, it must enjoy the flexibility and the capability to periodically review any needs that emerge in the future and to cope with the constant economic changes that the water business involves.

The following views were shared equally among the remainder of the interviewees;

- The regulator should allow different categories of people, community groups (i.e. consumers, equivalent to 'Water Voice' in UK) as well as scientific bodies, to

participate by giving their comment through an established mechanism that ensures society's representation in the decision-making and implementation processes. Moreover, it is important that the powers assigned to the regulator by the government must be entirely applicable to users other than the residential category, such as industry, agriculture and the other main consumers of water.

- The regulator should be provided with financial independence through its own budget. This can be achieved when the operations of the regulatory authority are funded by licence holders as a percentage of the contract value agreed during the negotiations. However, the authority should be managed in accordance with corporate administration, where functionality is high and costs are low. It will be appropriate for the government to support the regulator financially in the early phases until it is stable, and remove the support thereafter.

- The regulator should include a well qualified legal unit to help in providing the necessary support to resolve any disputes that might occur between the service provider and customers. Moreover, it will function as a consultant by providing the management board with legal advice on the contract signed with the private sector. It will be necessary for such a unit to have enough qualified staff to ensure every party's rights.

7.5.4 The appropriate government level where regulatory duties are best undertaken

In order to ensure the successful implementation of regulations and achieving the best outcome, it is necessary to identify at what level of government decision-making (national, regional, or local/municipal) the regulatory duties and powers might best be located. Granting the relevant powers at a particular level has critical advantages and disadvantages.

Most of the academics and government officials believed that regulatory powers should be granted to one national authority, with the intention of overseeing the implementation of general policies nationwide and to create a vision that is compatible with available water resources. At the same time, municipal councils should play a supervisory role since they benefit from their knowledge of local circumstances. This choice takes account of the vital importance of water services in order to activate a strategic basis for the water sector in five-year development plans, as well as ensuring the uniformity of laws and regulations nationwide.

Some interviewees believed that such powers could be granted at regional level, given that the country is divided into 13 administrative regions. This corresponds well with the governing administrative regime, allowing the opportunity to benefit from existing regional/provincial council services that directly supervise many public services in their area. This is possible only if the government is willing to boost the powers of these councils and allocate separate budgets for them. Such a move could be in line with the municipal elections in October 2003, becoming a practical step for political and administrative reform in the country. This would eventually support regional governors

and councils, as well as the people, with improvements to services, better management and better use of manpower and resources.

Arguably, such powers could be invested locally because municipal councils can most accurately describe the existing conditions of local services and determine exactly is what needed. This would accelerate the process of decision-making, not to mention the ability to take account of the different local, social, environmental and population characteristics that exist between one place and another.

In this context, Stottmann (2000) argues that "*decentralised regulation can generally be more responsive to local needs and conditions, ease monitoring, and ensure better access to information, but it can increase regulatory cost through replication of regulatory agencies, reduce regulatory effectiveness, and, because of lack of capacity, increase the danger of poor regulation*" (2000: 173).

Finally, most of the respondents from the private sector emphasised that the clarity and extent of responsibilities and powers to be granted to the regulator are the decisive factors that will identify the level at which they are best undertaken. It is fair to indicate here that the importance of each regulatory task is an important reason for such powers being multi-level; the level rises with the importance of each regulatory task. If the regulation authorities are decentralised, they should be more responsive to local needs and conditions, better able to carry out their monitoring functions, and have better access to information. On the other hand, having a number of regulatory authorities can increase costs and also may reduce effectiveness due to the lack of capacity that could leave regulatory authorities open to manipulation or even the operators taking advantage to control them.

The potential higher cost of this option relates to the training for regulatory staff, as well as the need to create a national agency for audit purposes to ensure the effectiveness of these decentralised authorities. Performance monitoring is better undertaken at the national level, benefiting from solid national performance indicators that could be used to compare the monitoring activities and regulatory decisions through guidelines adopted for this objective.

7.5.5 Investment guarantees

Providing adequate investment guarantees, while at the same time maintaining the long term rights of users through commitment to the provisions of the participating contract, is a vital issue. The government offers these guarantees to the investors, in order to provide a proper, stable investment environment. One of the steps that helps in fulfilling the strategic investment objectives, while establishing effective regulatory procedures is to create one authority; either a national commission similar to other service sectors or a procurement entity that operates closely with the concerned government department. This commission should be empowered to introduce proposals and make decisions about investment and participation. Such a commission would deal directly with investors in order to accelerate the process of decision making, and create a suitable and flexible environment for negotiation in order to reach the best solution for their mutual benefit.

As for a mechanism to achieve such a situation, and this was agreed by most respondents, the preliminary agreements for participation should be comprehensive and include all the prerequisites for successful practice that might be learned from similar experiences elsewhere. These prerequisites could be the main elements of an agreement, which should

be implemented and monitored accurately according to the regulations set out for that purpose.

One businessman said: "*if the prerequisites of quality service provision were clearly stated in the contract, then we must not neglect the importance of equality among competitors so to be fair to all parties. This must be performed mutually, in the sense that the investor shall fulfil all contract conditions and the government shall present all its obligations, especially these concerned with the contract; and shall monitor the value of money over time, since most private sector investments are closely related with loans from financial institutions with annual interest rates charged at certain times. Thus, any delay in this respect will lead to devastating losses on the part of investors*".

Approving the privatisation laws must be done at a high level in the government structure, and be enacted appropriately to provide a legal blanket for future private participation. This should create a kind of balanced state, and meet the needs of all parties. When there are agreed, reasonable profits for the private operator in exchange for the services provided, with affordable tariffs for consumers and high quality services, this should overcome any other obstacles that face the process. Moreover this should minimise investment risks and logically, help resolve any disputes that might occur in respect of these activities.

7.5.6 The existing water tariff structure

Can the existing water tariff cover the costs of developing the service sector? Or is there a need to impose new changes that reflect the actual service costs? In a statement to the press,[66] the Minister for Water and Electricity said: "*At some point the water sector might go the same way as electricity has gone, but before doing so we shall have to reform the sector. Currently it cannot be privatised because of the significant amount of leakage in the network, the high level of consumption and the existing low tariff. The existing water consumption tariff is considered one of the lowest in the world, and is definitely less than those in EU countries. The right water tariff is very important, and restructuring it reasonably will help the efforts to save water...*"

The point that most respondents agreed upon was that the tariff must be restructured on commercial basis, to cover the costs of production and generate some profit for a potential provider of the service. Making changes to the tariff, however, can be directed at the larger consumers in particular, while limiting government subsidies or any possible credit mechanisms (for connection fees for instance) to the first category in the progressive tariff structure to ensure an adequate water supply for residential purposes. As for the other categories, the tariff must be restructured to reflect the actual price of supply. The highest category of consumption should generate the highest costs, as an efficient way to enforce the conservation of water which is an overarching national objective.

Some respondents indicated the importance of the social and financial circumstances of people on low incomes, and their ability to manage any increase in water charges. In

66 Al-Riyadh Daily newspaper: 03 October 2004, No 13253.

other words, there must be a comprehensive reassessment of social characteristics, income levels, and poverty and unemployment rates when preparing a proposal to impose a new tariff system, or restructure the existing one. If the sector is indeed privatised, it will be the responsibility of the regulator to provide the government annually with the costs of supplied water. It will then be up to the government to decide whether it will pay the difference between what is collected in charges and the actual costs, using a proper subsidy scheme. Moreover, the respondents indicated the need to find a new structure for non-domestic water usage, with different water quality identification attached. Doing this will require developing non-conventional resources before changing the water tariff, in addition to effective control of the current levels of consumption as an integral part of such a proposal.

7.5.7 A method for setting the tariff

The question is, how can tariffs be set to allow for recovery of the cost of services provided, with a reasonable return on investment for the provider? Indeed the existing tariff levels are far below operating and maintenance costs, which undermines the objective of making the utilities self-financing.

Most respondents agreed that a minimum per capita consumption needs to be identified, after conducting a full review of consumer life styles. That must be followed by an effective, progressive structure for water consumption levels, that should be closely associated with the type of usage. Water is a vital good, yet it should be treated like other economic commodities according to the costs that result from its production and delivery. Reasonable government subsidies for water will be required that guarantee no great burden on the government, while being fair to conserving consumers who should be

supported in their lifeline consumption of water. The limit of water consumed differs from one society to another, due to different life styles and the ratio of urban to rural population. Taking that into account, any consumers who greatly exceed the lifeline level of water consumption should at least be charged for their extra usage on the basis of actual service delivery costs. In short, if there is any intention by the government to increase tariff levels to reflect the actual cost of provision, then government subsidies will be crucial for lower-income groups.

In this context, one of the respondents from the private sector suggested that "*government support in the form of subsidies is considered vital, especially in the first phases of participation. And by that, the government would be committed to the 'cost plus' principle with a specific ratio identified by the government to permit a guaranteed profit for the service provider at any stage of services provision*".

It would be important to undertake an accurate evaluation of the development, operation and maintenance costs of the water system, and the funds required for expansion in order to establish an accurate range for the tariff structure. This would also help to determine the level of government subsidies offered to low-income groups, and to provide reasonable profits to the provider. Such an evaluation may require a wide-ranging study of available water resources, the treatment, distribution and operation systems and the necessary maintenance tasks, in addition to other related issues such as connection charges; not to mention the costs of new projects, e.g. desalination plants. It is worth remembering that technological advances should reduce service provision costs in general.

Increasing the efficiency of charges collection is a key issue, if providers are to generate service provision revenues such that any surplus may be used to subsidise low-income groups. Government subsidies could take different forms; for instance, the government could pay for the service provided to certain categories identified by the Ministry of Social Affairs as having low income and higher poverty levels.

In general, adopting the principle of the consumers' ability to pay for water services could proceed through:

1. Approving the actual lifeline limit of water use (Litre/per capita/day) as mentioned earlier;
2. Using data on household statistics obtained from the general census of CDS or the electoral register to establish the average family size (including domestic staff if available);
3. Calculating the total household water consumption per month;
4. Applying a progressive tariff structure that is in accordance with the monthly household consumption derived from per capita consumption. That way the government-subsidised lifeline water consumption will be in the first level of the structure, and usage beyond this level will be the choice of the consumer.

7.5.8 The capacity of existing regulations to support changes in water management

The effectiveness of the existing regulations plays an important role in supporting any effort to make changes in water management. Simultaneously they are the ground that provide guarantees to encourage potential providers undertaking investment risks, and will help to avoid future problems such as the level of political intervention, stability of

the investment environment, stability in exchange rates and proper service pricing. It is worth mentioning that the Saudi government has maintained a stable relationship with the US dollar, and the Saudi Riyal has been pegged at the existing official rate of SR3.75 per dollar since 1986. The choice of the US dollar to serve as a common anchor was based on the fact that the overwhelming majority of Saudi Arabia's trade receipts and payments are in US Dollars. Furthermore, a decision was taken by the GCC countries in 2001 to adopt the US dollar as the common anchor for their currencies in preparation for having a unified currency by 2010 (SAMA, 2004:79).

First, it should be noted that most respondents emphasised that the existing regulations are inadequate to support any changes to the way in which the water services sector is managed. On the contrary, they indicated that there is a need to take a quality leap, by developing the regulations in response to the government's objective of attracting investment and maintaining a strong partnership with the private sector. To address this situation, the interviewees suggested four procedures as explained below. These are listed according to the degree of support they received, starting with the most popular.

First, clear regulations; transparent procedures; satisfactory identification of powers and roles; appropriate service pricing; binding purchase agreements, and effective revenue collection systems were all considered important to help create a proper and successful investment environment. In addition, appropriate guarantees and credit should be offered to minimise investment risks, and these could be introduced by the Ministry of Finance. As for the stability in exchange rates, it should be possible to tie the local currency to a foreign one at the time of identifying service prices. It is typical to decide on an exchange rate factor within the contract, in case there are changes during the implementation of

pre-developed projects. This should be followed by setting up internationally acknowledged laws to regulate any extraordinary contingencies that any country might experience, whether these circumstances are natural, political or related to the economy.

Second, the regulation of this sector should be practical, realistic and applicable, and must be monitored by a technically qualified regulator who is keen to develop the sector and promote its best operational capacity.

Third, changes to water sector management are both possible and expected, considering government trends and the existing policies of MOWE as it seeks to liberalise the sector.

Fourth, the issue of promoting regulations to support any changes necessary to attract new investment in the sector can be dealt with by facilitating administrative procedures and limiting the effects of bureaucracy on the organisation's performance as a move towards achieving such an objective. This, in turn, is suitable for the national strategy concerned with attracting local and foreign investment, and providing the appropriate environment for that. Typically, the ministries involved in this field (such as these of water and finance) are the ones that have the best administrative facilities and the means to provide exceptional executive proposals and then present them to the Cabinet for approval.

7.5.9 Appropriateness of a move to privatisation

The issue raised here concerned the ability of the stock market, commercial legislation and general local conditions to support water privatisation.

The existence of a strong, transparent stock market is a primary economic requirement for any country, and is considered a first step toward privatisation programmes that fulfil the aim of attracting FDI. Meeting this basic demand encourages investors, both local and

foreign, to invest and liquidate their assets as they choose, and such a facility will increase the confidence and transparency of the investment climate.

Stock markets are also essential for the privatisation process by providing expertise in pricing, stock issuance and the valuation of assets. This will help to provide a price-setting mechanism for the assets of the government sector in particular, and can be provided through the expertise of participants in the capital markets. This is crucial for a successful privatisation.

In this context, on 16th of June 2003 the Council of Ministers approved a capital market law issued by Royal Decree (No. M/30), in order to restructure capital in the country in accordance with modern thinking.[67] The purpose of this was to raise trust and enhance the attractiveness of this market, in a way that would allow more transparency, openness, protection and equality among traders. The Saudi stock market is considered the biggest market in the Middle East. The market's activities report for 2005 shows that the capitalisation of traded shares reached SR2.44 trillion (approximately equivalent to 650.18 billion USD) posting an increase of 112 % compared with the previous year, 2004.[68] This represents more than 47 percent of the total capitalisation of Arab stock markets and 53 percent of GCC stocks markets. According to the World Federation of Stock Exchanges, the Saudi equity market ranks 16th out of the 50 largest equity markets in the world in terms of capitalisation and 12th in terms of the value traded (Salti, 2005). This growth has been boosted by the government's privatisation programme following the notable flotation of STC shares towards the end of 2002 as the first major development in the capital market. For example, the sale of a 30 per cent stake in STC,

67 Was published in most of the national media channels for example, Al-Watan newspaper, No. 991: Al-Riyadh newspaper, No. 12779 on 17th June 2003. Also on: http://www.cma.org.sa

68 Published on 31st Dec 2005, and available on: www.tadawul.com.sa.

the 14th largest telecommunications company worldwide, through IPO generated almost SR15.3 billion for the Saudi government, making it the second largest flotation in the world in 2003, and trading in those shares has dramatically outperformed the market (Dudley, 2004).[69]

In his keynote address to the conference concerning the Privatisation of Infrastructure Facilities, the Secretary General of SEC said "*The Saudi stock market has continued to climb for the fifth consecutive year. In 2004, the market index rose by 85 per cent...*" In fact this may reflect a favourable domestic investment climate which is supported by the country's political stability and the economic strength. In his speech to the annual conference of the Saudi economic society, held in Arriyadh in November 2005, the governor of the Capital Market Authority (CMA) indicated that the Saudi capital market held 16th position among the world's 50 largest stock markets. Furthermore, he pointed out that the market had grown by an average of 38 percent annually and 95 percent at the end of the third quarter of 2005.[70]

It can be argued that the growth of investment activities evident in the region can be partly attributed to the repatriated funds that were previously invested in western international markets, and particularly the US. This was initially prompted by the political fallout after the September 11th attacks in the US and the fear that Arab assets would be seized or frozen as well as the long period of sustained low interest rates which discouraged investors from leaving their capital assets on deposit. Subsequently, those repatriated funds have contributed positively to expanding liquidity in the regional stock

69 In the article: Regional review, Middle East stock exchanges by Nigel Dudley. Available in the current edition of the Handbook of World Stock, Derivative and Commodity Exchange. Also, available online: http://www.exchange-handbook.co.uk/articles

70 According to http://www.spa.gov.sa on 15 November 2005.

markets of the GCC states especially Saudi Arabia. Such transfers were also triggered by an improvement in the investment climate generated by the economic reforms carried out by the government. According to the Chief Executive Officer of Dubai Bank, although in the Arabian Gulf region capital repatriation is still limited, nevertheless in 2002 nearly SR20 billion was repatriated to Saudi Arabia by local investors (Khaleej Times: 5 Feb 2003). These funds were not simply looking for low risk local real estate investment, and the local capital market was the key investment channel to absorb and deploy such funds. At the same time, the global rise in crude oil prices coupled with an increase in the quantities produced has recently resulted in a major boost for the Saudi economy as the largest producer. Oil prices have exceeded the price range targeted by OPEC, which is between 22 and 28 USD a barrel. As a result, budget surpluses have been achieved in the last few years in the producing countries after a period of substantial deficit, most notably in Saudi Arabia. This has brought about more investment by the governments on one hand, while the private sector has benefited from such economic investment expansion on the other (Dudley, 2004). To conclude, it can be said that a sound capital market is a key factor for the growth of the banking system and investment channels in the economy. It acts as an inter-mediator between individuals and banks and other financial institutions in development and investment projects.

The capital market law is considered to have been an important step in the economic reform of the country, and will emphasise the independence of the market and its supervisory tasks. The new law stipulates the establishment of two basic entities, an authority and a company, to separate the supervisory role of the stock market from the operational and executive ones. The first is the CMA (Capital Market Authority), which

is an independent government organisation and enjoys a direct connection to the Prime Minister. It has a board of five highly skilled and specialised full-time members who are appointed by Royal Decree for five years, renewable one time. CMA has full authority to fulfil its duties, including; regulating and developing the capital market; protecting all parties from unfair and unsound practices involving fraud, deceit, cheating, manipulation and insider trading; achieving fairness, efficiency and transparency in securities issuance, trading and IPO's processes; regulating and monitoring full disclosure of information related to securities and their issuers.

As for the stock exchange process, that will no longer be administered by SAMA or any other governmental agency but instead will be a joint-stock company established under the supervision of the CMA, with responsibility for all executive and operational aspects of the market. In addition to that the company will be responsible for the internal regulations required to protect investors, and will work on the equality, transparency and efficiency of the market as well as listing stocks and publishing information.

Furthermore, the law defines the mechanism for establishing the board of directors of the company, and the representative parties from both the public and private sectors. There will be an administrative service within the market, in the form of a Securities Depository Centre which is solely responsible for all transactions including depositing securities, transferring, settling, clearing and registering ownership of securities traded on the Stock Exchange. Moreover, disputes are to be resolved through a specialised committee of experienced legal counsellors known as the Committee for the Resolution of Securities Disputes, and this will provide investigation, adjudication and appeal. However, the appeal will be carried out by the Appeal Panel to hear appeals against decisions issued by

the committee. The ownership of the company shall be by the shareholders, as the ownership of the current 'Tadawul'[71] services will be transferred from the government (currently with CMA) to the company. The same applies to the brokers, currently represented by Saudi local banks.

The opinion of most respondents from the private sector and academics groups was that if the current government policies were synchronised with a willingness and commitment to activate plans in a manner that encouraged development, that would greatly support a successful privatisation, if successes in other economic sectors are taken into account. That, however, does not necessarily mean privatising the whole sector in one step, but rather starting with one or two functions of the system. For example, the production function could be privatised first as it require massive investment, and until this process proved successful the government would handle distribution.

Another opinion was that there is an increased awareness of investment among different strata of society, and this is accompanied by the availability of liquidity and a shortage of potential investments. It might suit the privatisation of certain functions in the water sector to absorb this liquidity. Among the obstacles to this is the complexity of regulations and the long procedures involved. Moreover, a problem that might deter investors from participating is the absence of commercial courts, as current commercial legislation depends on Islamic law and the Bureau of Grievances regulations; and these might not be enough to deal with some of the potential disputes. In addition, such commercial laws might not initially appeal to the foreign investor.

71 Tadawul is the name of a system used to execute immediately the transactions on a real time basis of deposit, transfer, settlement, clearing and registering ownership of securities traded on the Stock Exchange.

Other obstacles might deter foreign investors, such as the many stipulations required to establish a company. The income tax on foreign investments should also be reviewed on a regular basis, to make the country's markets competitive in their region. Recruitment could also pose problems, as the local market will not satisfy all the requirements. Procedures need to be simplified as a way to encourage foreign investors. These obstacles may be a consequence of the overlapping responsibilities and unclear roles of relevant public departments.

7.5.10 Public Participation

Public participation in plans to reform public utilities sector in general, and the water sector specifically, plays a vital role in identifying priorities, forming an accurate picture of public needs and adopting that as a criterion for PSP. Nevertheless, the extent to which citizens need to be involved in government plans to ensure their success remains an open question. Several opinions were expressed about this issue. These are presented below, according to the degree of support they received, starting with the most popular.

First, public participation should be extended through elected municipal councils that include specialised committees for that purpose. That must be undertaken, provided that the municipal councils are granted the necessary powers and are allowed to supervise, or intervene in, certain activities in the water sector. Such a development should provide a sound channel for public participation, although experience of this is limited. But there is no doubt that such actions will provide the process with the legitimacy required by any attempt at water sector reform.

Second, the establishment of a specialised authority to regulate water services may be an important way to legislate for such participation. Moreover this authority might include

specialist members representing the different spectra of society, and this could be done through established channels; it would be appropriate to include people with previous experience in similar fields. This process is aimed at promoting exchange of views, and the expression of consumer requirements and aspirations to both the regulator and service provider.

Third, quality surveys aimed at identifying consumers' needs would play an important role in paving the way, as they will reveal any areas of weakness. It is worth pointing out that public participation should be encouraged by inviting people to local hearings, where plans for the industry can be presented and where the public can express their opinions and suggest improvements for the process.

7.5.11 Representing service consumers through independent organisations

The establishment of organisations representing water service customers, where representatives of the public can engage in dialogue with providers to discuss proposed plans, failures or under- performance, should be encouraged. Such organisations will help customers to know whom to contact when they have a complaint, and may help them to receive, document, investigate these complaints through correct and developed guidance for handling procedures.

This would be a very significant development, but will require legislation to achieve balanced and successful decision-making. The existence of such organisations will provide the sector with transparency and credibility, support the decision-making process and ensure that the voice of the consumer is heard.

However, it would be appropriate to involve some specialist individuals in these organisations, to enhance the level of technical advice and guarantee an optimal level of

response that considers both the consumer and the country as a whole. Representing consumers and their needs for the regulator and provider, however, may still need established procedures that depend on public hearings, as has been practised internationally. Briefly, it is imperative to adopt the representation of consumers as central to the objective of achieving efficient reform of the water sector.

8. Summary and Main Findings

8.1 Introduction

8.2 The main findings

8.1 Introduction

This chapter attempts to identify briefly the main issues and their implications concerning the water sector in Saudi Arabia, and Arriyadh city in particular. It draws upon a number of issues that have been discussed in earlier chapters. These include the rapid population and urban growth, the partnership between public and private sectors through BOT arrangements, the possible changes that can take place within the context of the country, the regulation basis and tariff setting criteria, as well as the crucial participation of citizens. The argument in this chapter endeavours to reach a balance by taking into account both sides of the highlighted issues, and/or considering the results obtained from the research application and their relevant implications via an explanatory discussion. Given the complexity of the subject, more comprehensive findings could have been obtained; however, it was always the intention of this research to bring together all the threads of the main issues, without going into detail for the less important aspects. It is worth noting that where possible, each issue is presented in an independent subsection. Also, references where needed and applicable are included for a second time in this chapter, with the aim of proving accordance with earlier observations.

8.2 The main findings

1. The widening gap between supply and demand for water resulting from rapid urban growth will inevitably require the development of new water resources; increasingly, water is brought from distant sources as a result of sophisticated advances in engineering, as mentioned by many critics such as Milliken and Taylor (1981). Arriyadh's water supply, which comes mainly from desalination over a distance of

400klm, is one example of this. On the other hand, rapid urban development and explosive growth have been facilitated by the generous provision of good services, including water services, prevailing over different constraints. These developments would not have occurred in the absence of such services (Easton, 1989; Marvin, et al, 1999).

2. If the current population growth rate of about 3.5% continues unchanged, then the estimated population of the country will reach just over 35 million by 2020. Although the country is the water desalination capital of the world, producing one-fifth of the world's total desalinated water, it has one of the highest daily water consumption rates at around 258 litres per capita. The water availability per capita in Saudi Arabia was 160m^3 in 1990, while the World Bank estimates it currently at 177m^3; but it is projected to be only 50m^3 when the population reaches the anticipated 35 million (Gleick, 1993; Dolatyar and Gary, 2000). This steady increase in the national population has, and will, cause a growing demand for public services, including water services. The demand for water in the large urban centres will not be satisfied by the catchment area of these cities, especially in a country with limited water resources such as Saudi Arabia. Certainly, groundwater will be exhausted as a result of overexploitation by constant abstraction.

3. Arriyadh city presents an example of the challenges facing many cities across the country, now and in the future. One of these challenges is related basically to the inadequacy of potable water resources, leaving the city to depend principally on desalination which already provides 60% of its water supplies, in the light of those high rates of population growth and development that have been features of the city

over recent decades. Furthermore, most predictions indicate that the city will continue to grow at the same rate, and this will be accompanied by growth in its surrounding region, adding the challenge of meeting those additional demands. The main problem with groundwater resources is that their replenishment represents only a small fraction of the volume abstracted. Water in deep aquifers took hundreds of years to collect naturally. This indicates the danger for the future inherent in the depletion of resources, as population and economic activities continue to grow and urbanisation exacerbates, which will lead the city and its population to a state of severe water stress.

4. Urban development needs to be well planned and controlled in order to minimise its immanent negative effects on water. A high rate of urbanisation is normally linked with shortage of supply, system deterioration and a short network life-span, leading to problems of water loss due to the inadequate maintenance that occurs because of chronic under-investment. By 2021 it is expected that about 9.5 million people will live in Arriyadh city, which will obviously require expansion of the suburbs. This is despite implementation of the urban limits policy, which considers that undeveloped areas in the city will be able to accommodate such population growth. It should be noted that it is not easy to divert population or economic growth away from Arriyadh, considering the implementation of the NSS. Development will rather follow the rules of economic viability and sustainability; this means that each part of the country should only be promoted according to its economic potential. Therefore, the city will not be greatly affected in its development by the NSS, and will continue to grow. However, this growth should be carefully considered in order to minimise its negative

effects, by planning land use in a way that delivers ideal development patterns. This will enable the city progressively and effectively to arrange the necessary infrastructure and capacity to manage water services. Consolidating development within existing urban areas is also essential to ensure the maximal use of the current infrastructure, with the objective of sustainability.

5. Low-density development may continue to have an effect on utilities provision, considering the size of residential lots. Increasing the gross and net density as well as reducing the minimum plot area approved for residential land subdivision could be through changes to the existing building regulations, permitting residential dwelling units of more than two storeys. This would help to reduce the costs of services provision through overall savings in the length of the main distribution network, as well as the main supply pipelines.

6. Continued rapid growth will require new water supplies in the short-term, which will possibly come from new large-scale projects. There is also a need to develop alternative water sources through further expansion in the reuse of treated wastewater for non-drinking purposes, alongside the requirement to achieve a substantial reduction in water leakage which could be saved for the main supply. Optimistic figures show this loss to range between 17-25%. On the other hand, in the case of inadequate sanitation new problems may be expected to emerge, especially in large urban centres where sewers are not sufficiently loaded and flushed.

7. Given the rapid economic growth of the country, recently strengthened by the high global price of crude oil and the fact that it holds one-quarter of the world's proven oil reserves, the government can continue to increase its investment in most areas of

the economy. However, per capita revenues from oil exports could drop by 10-20% by the year 2010. Even if oil prices are high in the future, the combination of a growing population and increased development costs will outstrip that growth, as Cordesman (2002) suggested. It will be increasingly difficult to control public expenditure even in wealthy countries, which will require more rationing of funds for social needs (Montagu, 1994). However, population growth which increases water demand (estimated at about 1.4% annually) has encouraged the government, through SEC, to create a framework to promote private sector involvement in the water sector, via the development of desalination plants after opening the sector to private investment. Such a move is certainly supported by the approved privatisation strategy and the latest investment laws; not to mention that the country's accession to the WTO will boost investment, particularly foreign investment. The involvement may take the form of IWPP. The constant demand for water makes desalination the only secure and economically feasible way to augment the water supply at the national level, particularly for Arriyadh, as a strategic choice now and in the future. The chief purpose behind the development of desalination projects is to supplement groundwater resources in regions whose resources do not match their needs. Harris (2002) believes that new technology for saline conversion into potable water has pushed down the cost of the process, adding to its viability.

8. The dilemma for water provision in Saudi Arabia arises from two points. One is the problem associated with managing and preserving water resources; the other is the need for huge investment required to develop water projects and their technologies. This is quite separate from the objective to reduce the costs of desalination, in which

the private sector can participate via BOT arrangements (Bremere et al, 2001). According to MOWE the annual average capital requirement for water and wastewater investment is about SR7.5 billion, and this does not include the necessary rehabilitation costs for the existing infrastructure. In fact, this is a real challenge for the development of the sector in the future, and demonstrates the gap between what is required in terms of finance and what was previously allocated to the sector from the budget, about SR6 billion in 2003 for instance. The absence of financial and managerial independence in the water sector directly affects efficiency, from both operational and financial aspects as explained in previous chapter. That is why public provision of water services in general is characterised by poor quality and ineffective performance, which also minimises the potential for accurate estimation of the sector's priorities.

9. Seeking a number of financial mechanisms through economic reform by the government is an option to overcome the vast need for capital investment required by the water sector, in order to meet growing demand and provide future services. This might include the options of institutional restructuring, and new policies that allow for new sources of finance (Bakker, 2003). Given the state of the water sector, effective reform needs to be based on a market-oriented approach, and incorporate: (1) the introduction of efficient pricing for water services extended to customers, since pricing policy represents a major condition for attracting investment in the future; (2) improvement in the incentives designed for performance, and a contemporary approach to administration in the case of PSP, which is likely to be the succeeding step if the services are properly priced; and (3) the elimination of potential restrictions

in the existing organisational structure, law, bylaws and regulations which currently prevent operation in a fully commercial and accountable manner. This would create a practical operational environment through which better performance could be promoted. The institutional framework for water services should identify and describe transparent regulatory functions in the first place, and whether there are comparable examples in other economic sectors. The legal framework as indicated by Evans et al (2002) should play a role in reducing the risks for the private investor emerging from regulatory uncertainty, which will eventually reduce the overall costs of services and bring about lower charges. Responsibilities that include all relevant operations should be identified and powers need to be clearly assigned regarding who has the authority to propose or make decisions. Kessler (2002b) has elucidated this by saying that any change to the institutional model should ensure the principle of concurrent reporting upwards to the next level of authority, and downwards to the consumer by the service provider.

10. The partnership between public and private sectors in water services delivery may be promoted through various types of arrangement, to provide operational services for instance, or even construction on a contractual basis. Partnership might be an option, as indicated above, to maintain new sources of finance. Other motives may include the achievement of greater efficiency and effectiveness, and ultimately a better quality customer service, considering the private sector is innovative and has technological, financial and management expertise which can be accessed. Such qualities in the private sector are likely to surpass their counterparts in the public sector. In short, the growing demand for water, the idea that water sector abounds

with investment opportunities, and the prospect that the public sector will be able to focus on its regulatory and supervisory responsibilities, may be other motives for PSP initiative. To achieve success it is necessary to choose a private partner with a high level of technological capacity, an innovative approach to funding, and a reasonable response to political opinion. Technological ability can focus on solving specific problems such as improving operational efficiency, service coverage and the quality of provision, while funding approaches seek a tariff system which takes into account the willingness of consumers to pay. Additionally, responsiveness to political views will increase the opportunity to gain support from different levels of government and from the key stakeholders. However, there is as yet no single approach that suits every country, because there are variables which must be taken into account such as the general political goals and the legal and cultural environment, as well as the size of the public sector (Nickson, 1997; Howe et al, 2002). The outcomes of privatisation in terms of the ideal performance depend on the objectives set for such a policy, which is the key initial step by the government.

11. The scope and nature of possible changes concerning PSP that might take place in the water sector should depend primarily upon existing conditions and the people's needs agenda. It can be argued that the fundamental motives for PSP in Saudi Arabia are strongly rooted in economy, as discussed in previous chapters, such as bringing in new technologies and the 'know how' required to develop the sector, and the creation of employment for citizens. The private sector's contribution to the GDP has increased to become a significant factor in the national economy, and represented approximately 40% of the GDP (or SR286 billion) in 2002. The huge investment

required for the future provision of water services, given increasing demand, create a compelling incentive to explore the benefits of PSP. Opinions about the move from 'taxpayer pays' to 'user pays' for service provision may be one reason behind PSP, as suggested by Grimsey and Lewis (2002).

Table 8.1: Motives versus barriers of PSP

Opportunities and Motivations	Barriers and Differences
▪ Financial pressures on government make perceived efficiency savings offered by PSP attractive ▪ Ageing water infrastructure requires substantial capital for maintenance, expansion and replacement	▪ Populace reject commercialisation of water services ▪ Payment of actual costs for water services ▪ Scope of customer base in some areas could make large scale PSP unattractive to investment

12. PSP aims generally to increase economic efficiency and improve investment opportunities by helping organisations and their projects to become objectives for capital markets. PSP can create a new reward structure that promotes new and successful management practices and technical expertise (Sall and Parker, 2000; Stottmann, 2000). PSP can reduce public spending on projects, eliminating the need for governmental borrowing in order to finance new systems. The increase in national revenues will not be limited to the expected reduction in public spending; the government will receive returns in exchange for granting a concession contract. Introduction of PSP can improve transparency in the sector, and that will help the government to improve the effectiveness of its subsidies that target eligible consumers. On the other hand, it could justify the introduction of cost-reflective charges that give water its economic value, and will certainly lead to more efficient and equitable use, together with more successful conservation of a limited and valuable resource; let alone the expected growth in returns to serve the population in

other areas, which may ultimately mean meeting consumers' needs and preferences more effectively. Generally, for PSP to be successful a number of issues need to be addressed. These include: (1) commitment by the government; (2) the existence of well-established contracting institutions, to maximise confidence and to offer flexibility in negotiations and independence in the operational processes, and (3) a tendering system which has all the aspects of full competition, carried out in a transparent process to establish accurate information about asset status, pricing and operator qualifications (Haarmeyer and Mody, 1997).

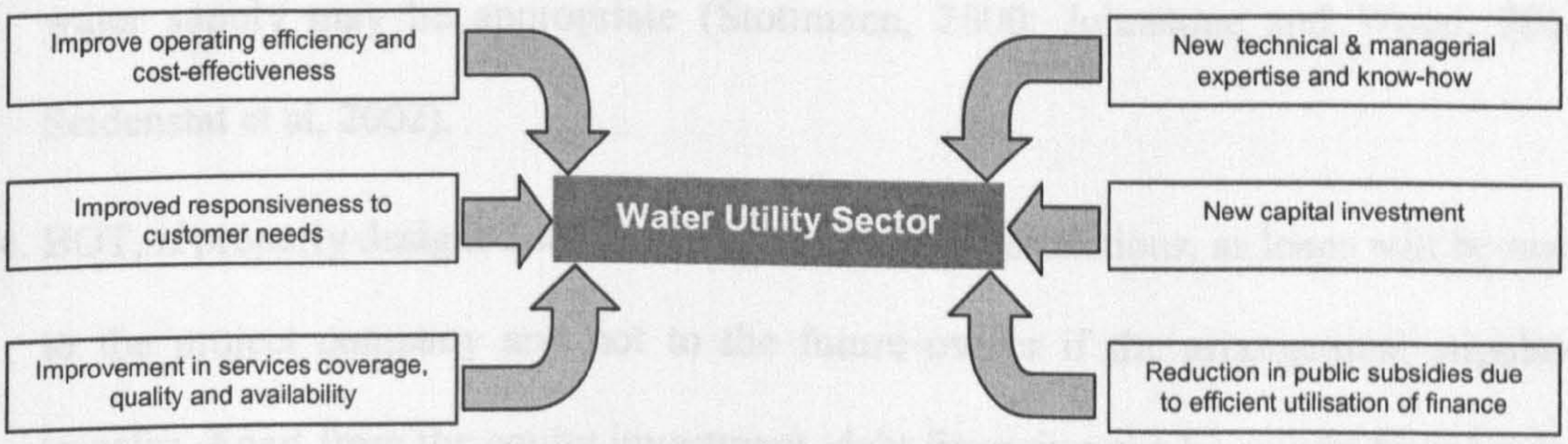

Figure 8.1: Objectives of Private Sector Participation

13. As the main objective of PSP in the water sector is to augment supplies, with some additional aims such as improved efficiency and the introduction of new technology, then one of the BOT arrangements would be an option. Through this contract a private contractor is required to finance, construct, operate and maintain a project for a period of time, according to terms set by the government after entering a type of tendering process, either open or invited. This kind of investment is described as large and long-lasting, over 20-years, as it must be in order to cover the capital expenditure. In the case of desalination plants, this contract should include a 'take or pay' water purchase agreement as a guarantee for the developer in return for his investment and to show commitment by the host government. BOT arrangements could vary for

many reasons, particularly according to the equity share in the special purpose company created to develop and run the project. However, in the BOO, the project is developed and remains the property of the private partner without transferring ownership to the public sector. At the end of the contract, the public partner is free from any obligation to purchase the assets. BOO may be useful as an interim arrangement that allows the government to gain experience with and promote future participation. For the countries that have an underdeveloped regulations framework, or are still developing their regulatory system, contracting out the functions of bulk water supply may be appropriate (Stottmann, 2000; Johnstone and Wood, 2001; Seidenstat et al, 2002).

14. BOT, if properly designed can evade debt servicing restrictions, as loans will be made to the project company and not to the future owner if the arrangement stipulates transfer. Apart from the equity investment, debt financing can be sought from lenders who will participate with no recourse for payment of their loans. Revenue from the project developed may come from direct users, from a government-owned purchaser, or even directly through governmental budgetary resources, which exhibits the flexibility such arrangements can provide especially if the government wishes to introduce a new subsidy policy. These arrangements can also make the most of technical innovation and creativity in terms of feasibility and cost effectiveness, and also leave room for future technological improvements (Lee and Jouravlev, 1997; Lokiec and Kronenberg, 2001). In contrast, BOT arrangements require extensive preparation as regards their legal, technical and financial aspects, as well as well-

developed specifications for construction and maintenance and the extent of risks allocation.

15. The competition for the market to acquire exclusive rights among private investors to win time-bound BOT contracts will benefit the public sector in terms of cost effectiveness, the lowest price possible, shortest construction time, and quality and credibility. Such a competition can only be successful if enough qualified firms with the experience, reputation and having served a large and diverse customer base enter the bidding process, to deliver quality and low prices and the best chance for the government to benefit from the process. Competition is a key element to establishing a reasonable foundation for negotiations over performance and provision responsibilities, and will lead to good contracting in order to maintain efficiency, as well as customers' interests and satisfaction. Good competition, properly introduced will certainly affect the level of regulation required. This means that the more competition is introduced the less regulation may be needed.

16. Changes in the water sector are both possible and expected, given government trends and MOWE's efforts to liberalise the sector. Water management in Saudi Arabia requires a fundamental transformation if it is wished to create a water authority that enjoys real independence. The authority could operate as an independent corporation, accountable to the government for its financial performance. Corporatisation is not necessarily a method of converting a state organisation into an independent commercial company; it is rather concerned with the transformation of such a body into an organisation that performs independently, being comparable with successful private entities that operate in line with the highest quality criteria with minimum

expenditure. This could provide the sector with a great degree of flexibility, particularly from the financial perspective, as well as freedom to fund maintenance and future expansion programmes that take priority. The authority could emerge from MOWE, or MOWE itself could be transformed into such an authority. There has been experience in other sectors which could support this idea, for example when the Ministry of Post, Telegraph and Telephones which had been previously entrusted with development and maintenance of telecommunications services was dissolved and transformed into the Communications and Information Technology Commission, (CITC) after the privatisation of telecommunications. Postal services became the responsibility of a new independent organisation (SAGIA, 2003).

17. The authority should be under government supervision to undertake all activities related to water management in the country, including formulating policy, managing supply and demand, setting standards for improvements and efficiency, and overseeing the tendering for contracts in the case of private involvement. It should also develop a medium-term comprehensive plan, giving details and realistic targets for relevant capital and revenue expenditure with projections of all costs and income. The authority should be empowered to introduce proposals and make decisions with regards to investment and participation. It should deal directly with investors through its procurer, which could be either a company or a division, in order to accelerate the process of decision making. This would create a suitable and flexible environment for negotiation in order to reach the best solution for their mutual benefit. Furthermore, the authority should be granted all necessary resources, which would help in establishing a sound management structure and practice according to contemporary

administrative procedures that were concerned primarily with raising efficiency. Such an approach should be implemented in line with a good accounting system to provide ground for proper commercial profit and loss accounts on a timely and regular basis.

18. Having financial autonomy, such authority would benefit from the revenues generated from the sector (e.g. fees of licensing) in order to improve technical and administrative capacity and to improve the overall performance (e.g. quality services and reduction of costs). The tasks of the authority need to be strengthened by an independent regulatory body that can safeguard the interests of all the sector stakeholders, including customers, through a set of laws which define the assigned duties, responsibilities and roles, functions and powers. Achieving this level of efficient performance in such authority may help to gain the maximum benefits of PSP in the water sector due to the expected improvement in its capacity for negotiation, tendering, overseeing, etc.

19. An independent regulator who operates at the national level, and is technically qualified, is needed to develop the various mechanisms to monitor and oversee implementation of general policies nationwide, on the basis of international expertise and successful practice in the field. The regulatory body should also adopt a range of evaluation criteria through which decision makers in the water authority can be informed accurately about what is needed, with the purpose of improving the sector in terms of operation, maintenance and expansion. Such criteria must be clearly stated in the agreement before contracting, and their monitoring should be through the use of a clear system binding upon all parties. The regulator should use established procedures of enforcement that follow gradual fines in case of under-performance. Additionally,

the monitoring should include a detailed programme that encompasses a number of benchmarks upon which quality standards depend. It would make these standards a basis for negotiation during the qualification stage of potential providers, and during the selection and commissioning as well. This phase, nevertheless, must state clearly the amount of capital to be invested over the contracting years.

20. The other functions of the regulator involve: (1) information collection and circulation; (2) deal with prices and prevent hidden price rises; (3) approve adjustments in structure or investment commitments; and (4) handle complaints so as to resolve disputes. The regulator should also evaluate the potential overall impact of PSP; this will include laws and legislation proposals to accommodate the increasing demand for environmental protection to the permitted levels applied nationally. It is worth mentioning that the level of discretion given to the regulator may discourage private involvement in water provision, unless it has been clearly specified in the governing law and in light of the privatisation strategy and other investment legislation. In order to define the key elements of the regulatory structure, governments should set out a detailed programme consisting of a range of laws and constitutional rules, and the administrative activities of the governmental agencies. Developing such a programme could be either through new proposals or selective changes and modifications to the current framework. This comprehensive programme should create a coherent structure for the regulatory framework, since it may play the leading role in PSP in water services.

21. The regulatory agency staff should enjoy sufficient technical and managerial expertise as well as a sound knowledge of the more successful practices elsewhere in

the world, and their selection should be made entirely on the basis of professional criteria. The appointment of staff needs to be for a fixed period, protecting them from any arbitrary removal from their duties in the case of their making decisions against the wishes of political leaders (Mumssen and Williamson, 2002). They should be paid a competitive salary in order to eliminate any risk of corruption as well as to attract competent and qualified staff. The regulator's staff should be excluded from activities in the private firms they regulate, or firms in related sectors, during their employment and for a certain period after they leave the public sector (Kessler, 2002b). Transparency in regulation is essential. Given that, any information obtained by the regulator should be fully disclosed to the public in an understandable way by means of whichever media are used by most citizens. It is also recommended that the regulator publish all its decisions, along with an explanation.

22. The regulator's duties could be funded by the licence holders of a concession, as a percentage of the contract value agreed during the negotiations. The means of funding the regulator's activities should be carefully designed to resist pressure from operators and politicians, considering the long-term objective of establishing this body to safeguard national and consumer interests as well as the principle of financial autonomy. Of course, such financial independence should not eliminate the need for budget approval by the government through the typical auditing channels. It can be argued that obtaining financial resources for the regulator from the general budget would not ensure the proper independent decision-making, but it is not uncommon during the early stages of establishment for the regulator to be funded by the government until the desired level of independence is maintained. On the other hand,

the extent and complexity of the regulator's duties (which can be assessed by a panel of non-political advisors) will determine the level of regulatory funding requirements without the risk of being under-budgeted.

23. The regulatory body should include a well-qualified legal unit, to help provide the necessary support in resolving any disputes that might occur between the government (represented in the water authority) and developer. Moreover, it will function as a consultant by providing the management board with legal advice on various issues. Additionally, there are some requirements that need to be in place to maintain the desirable level of accountability on the part of regulatory body. These may include: (1) the publication of annual reports concerning the activities conducted; (2) willingness to be subject to independent audit; (3) a clear statement of the regulator's duties in law; (4) ensuring transparent decision-making processes, with a willingness to publish them along with adequate justification, and (5) the facility for the regulator's decisions to be subject to review before the courts or other independent bodies, as well as established arrangements for appeal.

24. Sufficient investment in the water sector would in its turn improve public health, the environment and the economy, since safe and reliable water services are no less a national priority than other vital sectors such as defence. For instance, a wide range of reliable water services can play a role in attracting investment into local communities, which would create employment for the residents. On other hand, investing largely in sustainable wastewater treatment plants prevent pollutants from reaching the environment, creating further opportunities to extend recreational water activities; and so on. The government has taken a long stride towards making the necessary reforms

to attract investment with the opening up of several key economic areas, including water and power. The government is however required to make sure that public priorities are adequately reflected in the investment plans. In the case of water provision, the priorities should be clearly described and specified, such as the required level of water supply and coverage targets for that supply, if private participation is to be introduced. Nevertheless priorities need to be realistic, taking into account the financial capacity of potential developers and the affordability for consumers of new charges imposed for the use of services that are provided entirely by private operators.

25. The existence of a strong, transparent stock market is a primary requirement for economic development, growth of the banking system and investment channels in any country. Providing expertise in pricing, stock issue and the valuation of assets are key functions that can be facilitated through stock markets. A stock market can provide a channel for absorbing substantial local investors' funds that are already in the country and looking for an investment vehicle. The increased awareness of investment among different levels of society, the availability of liquidity and a shortage of potential investments may suit the privatisation of certain functions in the water sector, e.g. production through IWPPs. Moreover, the market will be helpful when the government chooses to continue its economic reform and privatisation strategy. That is if the government wishes to sell further sections of its stake in companies where the public share is already the majority holding. New participation in the water sector could be in the form of joint-stock companies in which citizens can participate through IPO, as has happened in other sectors such as electricity and

telecommunications. However, this is not against the objective of attracting FDI, as these investments could participate in the equity of such companies. This is expected when the investment environment is secure enough for the private sector, by which innovative means of finance under the shelter of the financial guarantees offered by the government can be developed, providing the necessary investment stability.

26. Government guarantees and credit enhancements are often critical to the successful financing of infrastructure projects, particularly during their early years and the transition from state dominance. Such financial support by the government may come in the form of tax relief, direct grants and/or loans to the operator, as well as a wide range of guarantees on foreign exchange rates. Of course, and this is most important in the case of any bulk supply concession, a take-or-pay purchase agreement as mentioned earlier needs to be in place. Obviously the necessary level of support may be determined through a detailed financial analysis when preparing the transaction documents, and this should take into account the demand and growth projections and the existing tariff structure. It should be noted that the output of such analysis will, to a large extent, affect the commercial viability of the planned project. However, reasonable profits for the private operator in exchange for an agreed quality of services provided should overcome any obstacles that might face the process.

27. The unavoidable need to reduce household water usage, in particular the per capita consumption which is amongst the highest rates worldwide, is a critical challenge for Saudi Arabia. Haughton and Hunter (1994) argue that the increase in per capita consumption is related to a number of factors, including the changes that have led to higher living standards. Giving water its economic value would certainly lead to more

efficient and equitable use, and contribute to greater success in conservation and the protection of water resources. Conserving water for future generations should receive ultimate community involvement through measures developed in accordance with local experience, and to some extent with regional considerations. The social responsibility to save water must also become a core issue for organisations, businesses and companies of all sizes. This in turn will boost the image of the sector, and reinforce its positive impact on the community and environment in a sensitive manner since the benefits of conserving water are long- term.

28. Treated wastewater may provide an alternative water source for irrigation and industrial purposes, given the availability of relatively large volumes and the under-utilisation of this opportunity. This would release freshwater sources to help supply the residential demand. Reduction in the overall water consumption for agricultural needs could be achieved by the reappraisal of agricultural policies, and could include improving irrigation efficiency by enforcing sprinkler and drip systems, canal lining and laser levelling, as well as offering incentives and assistance for farmers to adopt such techniques. If water is managed on the basis that it is an absolute public property, water conservation and protection objectives are likely to be undermined.

29. Sustainable development does not just focus on the tasks of environmental protection; rather it is involved in many adjustments dealing with the methods of resource utilisation, the flow of investment, and the adoption of technological development and institutional change. These issues are well embedded in both present and future needs, as explained by Nijkamp and Perrels (1994). Efficiency can lead to sustainability and improved efficiency is likely to be one of the crucial steps towards that, which in

return gives substantial support to enhancing the local conditions. Seppala et al (2001) think that typically, water sector objectives are based on improving operating efficiency and long-term sustainability, and at the same time aiming for full cost recovery for service use rather than maximising profits. The need for full cost pricing for water use should be a central objective with an ever-scarcer and more costly resource. For instance, the costs of water extraction, treatment and delivery should at least be covered by the users, and where they pay these costs it will lead to accountability and financial sustainability in water services. In that way, consumers will become less accustomed to using large amounts of water as they will not be paying only a nominal charge.

30. Existing low water tariffs, coupled with a high level of consumption are among the problems of the water sector. It is not an easy task to achieve a balance between the objectives of improved efficiency in the water industry and ensuring that water services are extended to all people at an affordable price. Tariffs are currently too low to support a commercial operation, and the government should restructure the tariff system and develop a method of public subsidies compatible with a move towards a truly sustainable water sector. Under-pricing of services and failure to collect charges effectively contribute greatly to the failure of the system, making this an industry whose revenues can not fund most of the tasks necessary for its improvement. However, the setting of tariffs should embrace both affordability for consumers and incentives for the operator. Affordability, as described by Fankhauser and Tepic (2006) refers to the share of monthly household expenditure that is spent on utility services. A benchmark of no more than 5% of monthly household expenditure can be

used to measure affordability when setting the tariff for water and wastewater services (Gomez-Lobo, 2001; Fankhauser and Tepic, 2006).

31. Privatisation and tariff increase is a correlated trend, with the aim of full cost recovery. It is important for the government to have a subsidy policy by which people on low incomes can have access to water services (Brocklehurst et al, 2002) particularly if the services have undergone a PSP. The regulator will therefore be responsible for carrying out negotiations with the provider concerning tariff reform. It will examine the proposals, to ensure that the changes are reasonable and consistent with the contract. The regulator could provide the water authority periodically, for instance, with the costs of supplied water, in the event that water production is privatised through the development of IWPPs. The water authority could then put into effect its subsidy arrangements or credit mechanisms to cover the major proportion of charges for lifeline water consumption (defined quantity of water, or the first category in the progressive tariff structure), and pay the difference between the charges and the actual cost for eligible households. The government could proceed with such a scheme by identifying a minimum per capita consumption level, thereafter conducting a full review of consumers' eligibility which would be reassessed on a regular basis. The eligibility of households could be determined through appropriate criteria depending on household income, locality and type of accommodation, family size, and life-style. In that way the government would be able to support consumers, particularly disadvantaged ones, while putting no great burden on its budget, bearing in mind that only those consumers who pay their share of the bill can benefit from such a scheme.

32. If the first category in the progressive tariff structure is to be subsidised, the tariff for other categories must reflect the actual price of supply. The highest category of consumption should generate the maximum costs, as an effective way for enforcing the conservation of water which is an overarching national objective. A sustainable water tariff system should involve a separate structure for non-domestic water use, with a different water quality identification attached. It is worth emphasising that any proposal to impose a new tariff system needs to be based on a comprehensive reassessment of social characteristics, income levels and unemployment rates, to assess its likely impact on the ability of people on low incomes to pay. However any increase in tariff levels should be introduced gradually, together with obvious improvements to the services in terms of supply quality, reliability, adequate investment for expansion, etc. The tariff structure should reflect the external costs and the value of water volumes to other competing users, e.g. agriculture, the environment, industry. Charging this cost for households is crucially important in arid areas, where each unit of water is scarce and precious.

33. Consumer participation in every stage of the whole reform process should be a central element in the activities of the water authority and the regulator. User participation in the early stages of designing private involvement, to identify priorities (including access to information) and the involvement of local people in decision-making are crucial to a successful outcome. Carefully-arranged user participation, in line with the legislative and regulatory framework, will reinforce efforts to satisfy consumers' expectations for quality services and help justify the move away from public provision. Involving the public in the debate about water sector reform and its phases

should include the primary terms and conditions of private participation, the proposed tariff structure, expansion plans, the scale of possible government subsidies, and the availability of structures to ensure accountability by potential participants. Consumers' preferences and priorities must be dealt with through proper channels of consultation, as will be explained in the following subsection. Involvement of all stakeholders should be considered in the light of established procedures.

34. The current elected municipal councils could play a role in this matter. Through different mechanisms, these councils can present the viewpoints of their communities and express consumer requirements and aspirations, which will provide the process with the essential legitimacy. Furthermore, the government should allow users' organisations to be established as a supplement to the efforts of engaging the public in discussing proposals, failures or under- performance. This will provide the sector with transparency, participation and credibility, will support the decision-making process, and ensure that the voice of the consumer is heard. Such organisations should involve qualified professionals to enhance the level of technical debate, and guarantee an optimal level of response that considers both the consumer and the country as a whole. These organisations should operate as an advocate for consumers in any disputes; they could help customers understand whom to contact should they have any complaints, and help them to receive, document and investigate these complaints through appropriate handling procedures. Consumers with grievances should also have access to documents or data provided by a company that denies misconduct. As part of this transparent behaviour any decision taken in settlement of a dispute should be publicly disclosed, for protection of the decision and the interested parties.

Representing consumers and their needs for the regulator and provider, however, may still need established procedures that depend on public hearings, as has been practised internationally. This is in addition to quality surveys, market research and comprehensive assessment aimed at recognising customers' views and their willingness to pay for service improvements. Briefly, it is imperative to make the representation of consumers central to the objective of achieving effective reform of the water sector.

9. Proposed Paradigm for PSP with the Aim of Reforming the Water Sector

9.1 Introduction

9.2 Building the partnership

9.3 Institutional change is a shift towards reform and then efficiency

9.4 Why should the Saudi government choose BOO?

9.5 A new reformed structure for the water sector

9.6 Description of companies' responsibilities

9.7 Managing the reform process

9.1 Introduction

This chapter starts by describing the way to establish a strategic partnership with the private sector; a partnership that aimed at developing new water projects in order to increase drinking water resources. It emphasises again the need to involve private operators in the field of water services provision. The chapter attempts to give a brief account of a model that could be implemented in Saudi Arabia to overcome the existing critical issues in the water sector, the shortage of supply in particular. It also seeks to address the potential institutional changes that might be necessary as part of the proposed model. This involves describing a water authority, its structure and responsibilities, as well as giving details about the regulator and governing bodies for the development. Subsequently, the chapter analyses the reasons and characteristics that make a BOO arrangement a likely option in this case. Then it focuses on the proposed reformed structure with a description of its key contributors, and concisely underlines the management of the reform, preparation, competitive bidding, and prequalification assignments. The chapter concludes by giving an account of the potential risks that may be encountered in such an approach.

9.2 Building the partnership

Meeting the growing demand for water will require enormous capital investment. Governments may obtain this through innovative financial means that permit new funding sources, as discussed previous chapters. It can be assumed that if the government is short of the money and technical resources to develop public services, then a partnership with the private sector might be a viable option. Should this be the case then

PSP could help in cutting public expenditure on new projects, because of the reduction or negation of need for the government to borrow; moreover, government budgetary resources could be freed to fund other pressing social objectives.

The introduction of PSP can improve transparency within the segments of the sector, and that will help the government to improve the effectiveness of its subsidies that target eligible consumers. On the other hand it could justify the introduction of cost-reflective charges that give water its economic value, and will certainly lead to more efficient and equitable use, together with more successful conservation of a limited and valuable resource; let alone the expected growth in returns to serve the population in other areas, which may ultimately mean meeting consumers' needs and preferences more effectively. Harris (2002) believes that where ministries, municipalities or public boards have been heavily engaged in the management of water services along with their other responsibilities, this has had an effect on investment planning and as a result a continued impact on the optimisation of water systems.

9.2.1 Why involve the private sector in water services provision?

The government may choose to involve the private sector in developing water projects for some basic yet important reasons. As mentioned earlier, this may include taking advantage of private sector skills and know-how, maintaining access to finance for new investments, and improving the efficiency of service delivery. The transfer of skills and know-how may require local involvement to expedite, and to make the provider more competitive since many things can only be done successfully by using local knowledge and local personnel. Arguably then, PSP can be described as a channel for improving performance in water services provision. Certainly, substantial improvements in

efficiency can lead to cost reductions, and involving private sector capital and management as well as independent regulation in the sector will help to achieve this. Improvements in the quality, availability, and cost-effectiveness of services extended to consumers require well-designed arrangements for participation through which the rights, responsibilities and risks are carefully defined for each partner.

A well-arranged process in the water sector has to allow enough flexibility to respond to unforeseen changes, and at the same time to keep on track the fundamental objectives for which the whole process was initially adopted. Figure 9.1 shows a realistic route that such a process might follow.

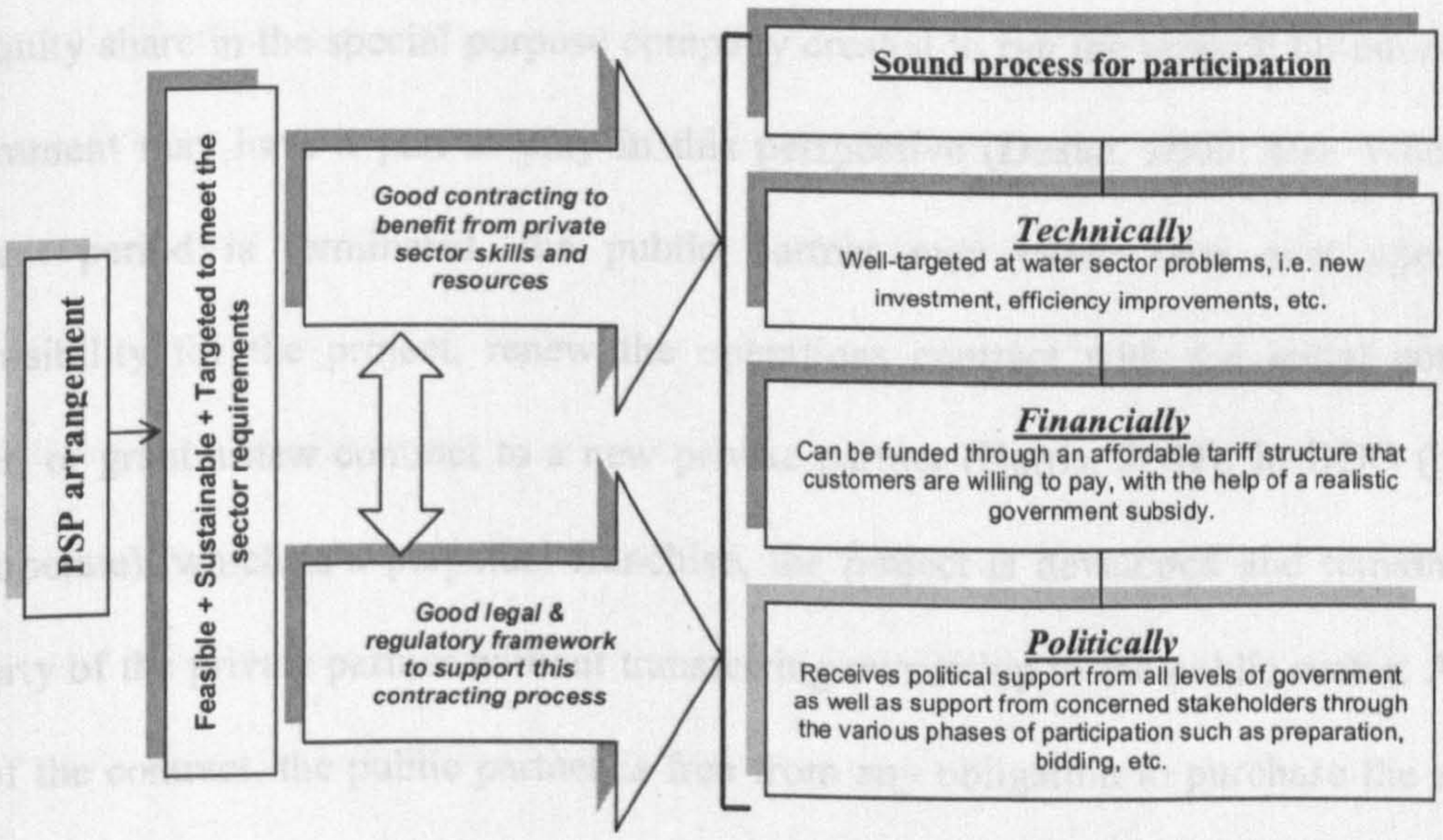

Figure 9.1: Successful path of PSP arrangement

9.2.2 A strategic option to fund water projects

If the main objective of PSP in the water sector is to augment supplies, with some additional aims such as improved efficiency and the introduction of new technology, then one of the BOOT arrangements would be an option. In such arrangements a private partner builds a facility or develops a project according to the terms set by the public authority, and undertakes its operation for a certain period of time after entering a type of tendering arrangement, either open or invited. This has been described by Zhang and Kumaraswamy (2001: 21). As the private partner will provide the finance either wholly or in part, the duration of the contract should allow sufficient time to ensure a reasonable return on their investment. Such arrangements may vary for many reasons, particularly the equity share in the special purpose company created to run the project. Of course the government may have a part to play in this perspective (Deane, 2002: 60). When the contract period is terminated, the public partner may either take over operating responsibility for the project, renew the operations contract with the initial contract holder, or grant a new contract to a new private partner (Harris, 2002). In BOO (build-own-operate), which is a perpetual franchise, the project is developed and remains the property of the private partner without transferring ownership to the public sector. At the end of the contract, the public partner is free from any obligation to purchase the assets (Lee and Jouravlev, 1997).

This kind of investment is indeed fairly described as large and long-term, in order to cover the capital outflow. This requires a commitment by the government to build a strong partnership. It also requires that there be well-established contracting institutions, to maximise confidence and to offer flexibility in negotiations and independence in

operational processes; together with a tendering system that has all the aspects of full competition and operator qualifications, carried out in a transparent process (Haarmeyer and Mody, 1997). This contract may be useful as an interim arrangement that allows the government to gain experience and promote future participation, as claimed by Lee and Jouravlev (1997) (see also: Gleick et al, 2002). It would also allow the government to benefit from the lowest possible price, shortest construction time, and quality and credibility (Zhang and Kumaraswamy, 2001).

Furthermore, contracting out the functions of bulk water supply may be appropriate for countries that have an underdeveloped regulatory framework, or are still developing their system. However, this type of participation requires competition for the market to win a license to operate in the sector. Such a competition can only be successful if enough qualified firms with the knowledge, reputation and having served a large and diverse customer base enter the bidding process, to deliver quality and low prices.

Lee and Jouravlev (1997) highlighted a number of advantages of BOOT contracts (the well known arrangement which may come in various types, e.g. BOO). Some of the advantages are as follows: (1) Proper arrangements for BOOT can evade debt servicing restrictions, since loans will be made to the project company and not to the future owner of the utility if the arrangement stipulates transfer. (2) Typically, most of these projects' funds come from debt financing and the remainder (10-30%) from equity investment. In such arrangements, debt financing can be sought from lenders who will participate with no recourse for payment of their loans; rather that would be against project income, in the light of government guarantees. (3) The revenue from the project developed via BOOT arrangements may come from direct users, from a government-owned purchaser or even

directly through governmental budgetary resources. This shows the flexibility such arrangements can provide to operations in the sector; however, in spite of that they require extensive preparation as regards their legal, technical and financial aspects, as well as well-developed specifications for construction and maintenance. Lokiec and Kronenberg (2001) pointed out some other advantages, such as: (4) these arrangements can make the most of technical innovation and creativity in terms of feasibility and cost effectiveness, and also leave room for future technological improvements; and (5) these arrangements also benefit from the ability to recoup capital costs over the lifetime of the contract, perhaps 20 to 30 years.

9.2.3 Projects for new sources of potable water

In recent times, technological advances in converting saline water into potable water have been coupled with increasing competition among the associated players, pushing down the cost of the desalination process. This has made desalination a viable and in some cases a strategic option around the world (Harris, 2002), especially in countries that lack natural water such as those in the Middle East. The strategic option of developing desalination plants under BOOT arrangements may be considered practical in such a context, to supplement water supplies (Bremere et al, 2001). A competitive and open procurement process will bring about efficient delivery and large savings on production costs. Harris (2002: 428) claims that "*recent projects have today* [brought] *production costs below 1USD per cubic metre*". Bremere et al, (2001) claimed that the cost of desalting seawater was between 0.70-1.20 USD per cubic metre at that time (2001:8). Moreover, (in 2001) they expected this cost to fall below 0.50 USD in the near future.

Typically, desalination plants have been developed, owned and operated by the public sector to meet growing water demand. Considering the significant capital, technical risks and the lack of commercial incentives, the public sector is in place to pass these functions and responsibilities onto water project developers and private investors. The project sponsors provide about 10-30% of the equity, with the remaining funds met by debt financing.

This percentage of equity to debt may vary according to the risk profile of each project, to present incentives and to ensure competition for development within a defined timescale (Harris, 2002).

Of course the financing arrangements for projects like these are normally underpinned by a related water off-take agreement between the public sector and the private developer, under a long-term agreement for supply purchase; such agreements act as financial incentives to attract investment. A fixed agreement involves take-or-pay on the part of the tenderer, to pay a certain amount for the water produced regardless of the level of demand. The price that will be paid for water by the government (or its owned purchaser) is based on a detailed tariff formula, which includes a charge to recover the investment, a charge for the operation and maintenance costs, and an energy charge if the type of plant imposes a certain demand for energy (Lokiec and Kronenberg, 2001; Harris, 2002). In brief, the incentives offered to investors will involve some reassurance by the government to buy at a favourable, agreed price which allows the developer to make a profit, regardless of any fall in demand. Agreements will usually include a credit facility agreement by the lenders, an equity arrangement by promoters and sponsors, design and

construction contracts and insurance policies, among other arrangements, as shown in the following figure (9.2).

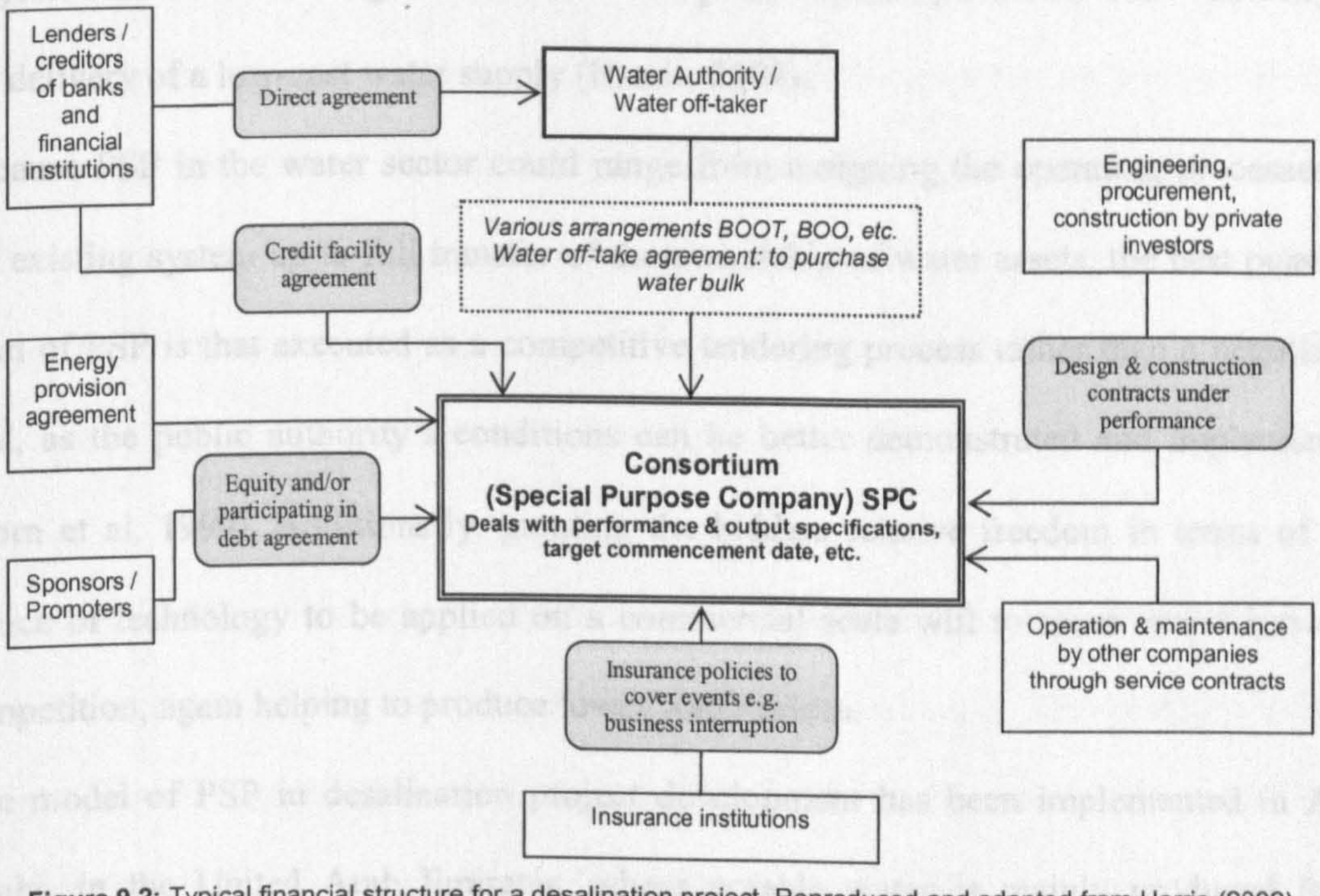

Figure 9.2: Typical financial structure for a desalination project. Reproduced and adapted from Harris (2002)

A well established system based on openness and transparency will attract foreign investment. This in turn should bring about advances in technology, expertise and improvement in the sector's operations.

9.2.4 Procurement of the project

PSP could proceed through a typical sequence such as the following: first, the preparation of master plans with an analysis of existing conditions and future projections; second, promulgation of the required specifications for the planned projects; finally, the award of contracts via competitive bidding, where the bidding proposal follows criteria set by the public authority in terms of operation and ownership (Korn et al, 1999).

The provision of accurate information by the promoter to all the bidders at every stage of the procurement process will improve transparency and enhance the credibility of the project. This will attract a good number of competitive participants and lead eventually to the delivery of a low-cost water supply (Harris, 2002).

Because PSP in the water sector could range from assigning the operating processes of the existing system up to full transfer of the ownership of water assets, the best possible form of PSP is that executed as a competitive tendering process rather than a negotiated deal, as the public authority's conditions can be better demonstrated and implemented (Korn et al, 1999). Additionally, granting the bidders relative freedom in terms of the choice of technology to be applied on a commercial scale will to some extent increase competition, again helping to produce lower water prices.

One model of PSP in desalination project development has been implemented in Abu Dhabi, in the United Arab Emirates, where potable water is mainly produced from desalination plants. It takes place predominantly alongside the generation of electricity in cogeneration stations. This development was the result of the Abu Dhabi government embarking upon a long-term programme for the privatisation of water and electricity, by introducing a number of IWPPs. These were the first of their kind to appear anywhere in the world, according to Korn et al (1999: 211). This step began with the separation of the sector into segments responsible for production, transmission and distribution. This has increased the transparency of sector costs, with the exception of sales to final customers. The project is based on a BOO via joint venture arrangements, and the core of the contractual relationship is PWPA (Power and Water Purchase Agreement). The project is operated by a single-purpose company established jointly between the successful bidder

and a state-owned local holding company, both sharing the capital. The payback of borrowed and equity capital, together with interest, comes from the revenues generated by the project itself. The power and water produced are purchased by a single state-owned company with distribution functions, described as the power and water procurer. This contract specifies all the commercial and legal rules regarding the sales of power and water, as well as the penalties and compensation for any deviation from the contract. Part of the investment was obtained from the local capital markets, and local investors participated through an initial public offer (Korn et al, 1999; Al-Nuaimi, 2005; Carter, 2005).

This model of PSP could well be appropriate for Saudi Arabia, having been developed in a country that has similar conditions with scarce water resources, a harsh desert climate and a constantly growing demand for water. Considering such a case in this study was to provide a basis for judgment, because the introduction of PSP often encounters what appear to be conflicting differences between the various models. It was important to understand the Abu Dhabi model and how it has evolved. However, this should not be looked at as imitating their experience of private involvement but rather as an attempt to adopt the useful elements of their practices and structures.

9.3 Institutional change is a shift towards reform and then efficiency

In connection with the institutional arrangements, introducing changes to the existing system of water management will provide a context for the effective and efficient management of water services.

Different options may be considered for meeting that objective for the city of Arriyadh, and for the country as a whole. However, any option will have its own strengths and

weaknesses. They should retain a range of key interim options for the near future, while maintaining in principle the current institutional structures.

9.3.1 The Water Authority

As described in Chapter Eight, changes in the water sector are both possible and to be expected given government trends and MOWE's efforts to liberalise the sector. A fundamental transformation to water services in Saudi Arabia is required, to create a Water Authority that enjoys real independence and is accountable to the government for its financial performance. Institutional change is a key part of any reform process; it is also interrelated with the expected improvements in policy creation and changes to the financial structure, including tariff reform, which could develop after the emergence of an independent Water Authority.

9.3.1.1 BASIC RESPONSIBILITY AND DUTIES

The Authority shall undertake responsibilities concerning the implementation of private sector involvement in the water sector by fulfilling the goals it is charged with: formulating policy, and facilitating a suitably improved environment for the intended PSP. However, the mission statement of the Authority should be to ensure high quality, safe, secure and reliable water services for customers at an affordable price and which meet customers' demands. Consumer focus should be one of the principles underlying the mission of the Water Authority.

Among other responsibilities of the Water Authority are: (1) To prepare a comprehensive national plan for the development and rationalisation of water, to facilitate water resources conservation for future needs; (2) To conduct wide-ranging studies of water

resources; (3) To propose the necessary measures to legislate for PSP, if none exist. (4) The Authority should be empowered to introduce proposals and make decisions with regards to investment and participation; (5) To improve the laws that manage water resources, the environment and public health; (6) To develop and improve laws to administer the contracting process and competition to deal directly with investors through its procurer, which could be either a company or a division. (7) The Authority shall introduce a wide range of measures to enhance operating efficiency and reduce costs, improve water supply and demand management issues such as leakage, metering, billing and charges collection, customer services etc.

9.3.1.2 THE REQUIRED INDEPENDENCE

The Authority should enjoy the juridical personality and financial independence to achieve these objectives and other relevant goals and to benefit from the revenues generated from the sector (e.g. licensing fees). This would be through a stipulation for that purpose in a new Water Act and in byelaws, in addition to ordinances of the Council of Ministers that are likely to be introduced consistent with this change. However, this should go in line with a clear understanding of the importance of keeping pace with the critical issues and future challenges for the water industry, which could lead to regulatory changes in the investment environment of this sector in particular, i.e. making the necessary arrangements for PSP in water services. Most of the fundamental changes in the investment environment can be attributed to privatisation and the recent investment laws.

In terms of administration for the Authority, several steps should be undertaken. For instance, all of the internal, financial and administrative statutes that regulate the

Authority operations need to be considered during be the initial preparation stage, which could either be undertaken internally or by hiring local or international consultants. This should be followed by a plan to open the water sector to PSP, consistent with the decisions by the Council of Ministers and SEC to open saline water conversion (desalination) to private investors, considering that to be the most strategic and most viable source of potable water.

9.3.1.3 THE ENVIRONMENT AND THE NEW WAY OF MANAGEMENT

The policy framework of the Authority should take full account of the environmental, health and safety implications of operations within the sector. The Environmental Policy shall be based on: (1) enhancement of environmental protection as one of its strategic values; (2) promotion of environmental awareness among its workforce and the public; (3) establishment of an environment management system that identifies performance benchmarks for ensuring continuous improvement, etc.

In its approach to management the Authority should take advantage of the latest information technology. It should embrace innovative human resources management to deal with personnel matters such as salaries, administration, work evaluation etc. There is a need to move away from the old paper-intensive ways of handling these tasks. A Geographical Information System (GIS) should be developed, to improve the accuracy of data mapping which might be needed by departments of the Authority or other government agencies.

9.3.1.4 THE ADMINISTRATIVE STRUCTURE

The administrative structure of the Authority could be composed of a governor (who shall represent the Authority before relevant governing bodies), deputies, administrative and technical staff. The Authority shall be governed by a board of directors, including the governor of the Authority who could be either the chairman or deputy chairman of this board. The members of this board shall be appointed by a Royal Decree. Basically, the board will manage the Authority's business and guide the general policy, and review operational plans to ensure compliance with the Authority's objectives. Besides its role in the approval of internal, financial, administrative and technical byelaws, the Authority's board of directors shall endorse and approve the Authority budget, salaries for staff, all capital investments, and periodic and annual reports. Additionally, the board could create and empower committees for specific tasks related to the Authority's business. Like other government agencies, the Authority may seek advice from technical consultants, specialist agencies, academic and research institutions to improve its operations and to coordinate activities with other official organisations.

9.3.1.5 THE LICENSING FUNCTION

A right to operate in the water sector by independent companies shall require a license granted by the Authority. The board of directors shall approve all licenses to be granted, as well as determining all the related fees and charges. The Authority shall issue the license according to the approved Act and associated bylaws. The operators shall adhere to the conditions stated in the issued license. Renewal of licenses shall be the decision of the Authority's board, in keeping with the relevant standards, rules and procedures. However, the Authority through an established procedures will have the right not to

renew, amend, suspend or withdraw the license for reasons stated in the byelaws including frequent violation of key licensing terms; failure to realise financial commitments by operators; repeated failure to act upon decisions of the Authority; failure to operate under the license within an agreed period of time from the date of its issue; bankruptcy, dissolution or liquidation of the licensee, etc.

Should the Authority take action against any activity by an operator or individual that in its opinion and with the advice of the regulator constitutes a violation to the Act and its byelaws, there shall be established a system where its decisions can be appealed. Decisions can be taken for further appeal to the Bureau of Grievance, if the dispute cannot be resolved and the concerned party is not satisfied with the outcome.

9.3.2 The independent sector regulator

As shown in the previous chapter and in the section above, the Water Authority's tasks need to be strengthened by an independent regulatory body that operates at the national level and is technically qualified to safeguard the interests of all the sector stakeholders, including customers, and can maintain mutual benefits through a set of laws which define the assigned duties, responsibilities and roles, functions and powers. This will enhance its performance, and increase operational transparency to gain the maximum benefits of PSP in the water sector due to the expected improvements in its capacity for negotiation, tendering, overseeing etc. The sector regulator shall develop mechanisms to monitor the implementation of general policies nationwide, based on international expertise and successful practice in the field. The regulator should also adopt a range of evaluation criteria through which decision makers in the Water Authority can be informed

accurately about what is needed, with the purpose of improving the sector in terms of operation, maintenance and expansion.

Although some resemblance between the Water Authority's responsibilities and those of the regulator may be apparent, the difference exists basically in the level at which those responsibilities are carried out. The obligations of the Water Authority are mainly concerned with devising policy and guiding principles, while the regulator's duties concentrate on monitoring and overseeing the implementation of these policies and principles and the related performance of the operator. Adequate resources and powers for the regulator will enable it to: (1) monitor operators' performance according to determined criteria to make the contract performance-based; (2) deal with service charges for all groups of beneficiaries, and prevent hidden price rises while maintaining standards of service; (3) identify quality and safety standards in implementation; (4) report investment commitments of the sector to the Water Authority; (5) handle customers' complaints about reliability, quality and overcharging in order to resolve disputes, recommending financial penalties (if any are needed) to the Water Authority; (6) propose more efficient mechanisms for water revenue collection; and (7) allocate the responsibility for water quality.

Besides monitoring, examining and enforcing the compliance of private provision of services in accordance with performance standards, the regulator should also enforce measures controlling environmental protection and consumer safety. This will include; (1) establishing an environment management system that emerges from the benchmarks set by the Water Authority. This could be used to compare performance with internationally accepted standards ensuring continuous improvement; (2) approval and

application of recycling programmes, to optimise use and save current resources including land, energy and raw materials; (3) assessing the impact of future operations and projects on the environment (e.g. effluents and emissions when discharged or released should cause no damage to the environment, and be consistent with international standards); (4) benefiting from the best practices in similar situations, and trying to improve upon them wherever it is economically feasible and operationally practicable.

9.3.3 The city level

Roles and responsibilities of the key player concerning Arriyadh's development and services provision could in principle be retained within existing structures. With reference to policy for instance, Arriyadh Province Council could maintain its existing tasks under the regional economic plan, preparing and implementing what is needed to achieve its general objectives. It could also continue to embrace national strategies, seeking effective compliance. Improvement in this could be boosted if more powers were entrusted to this Council, along with the necessary funding. Such an arrangement, as has been supported by previous municipal elections, would be a practical step towards political and administrative reform.

With regard to development in the city, HCDA will continue to manage comprehensive metropolitan planning, taking the responsibility for granting approval for large-scale developments and budgets. HCDA may hold on to some other responsibilities, such as coordination of key agencies involved in the city development process; phasing the provision of infrastructure and services in accordance with the metropolitan budget; monitoring, review and enforcement of planning and physical developments in the city.

Other government agencies that have a wide range of responsibilities like economic development, transportation, physical infrastructure and community services delivery will retain such functions; however, these responsibilities will require further clarification and the duplication of activities between agencies must be avoided.

It can be said that the strengths of any proposed model will be seen when the functions and responsibilities of each sector are given to the main actor or the principal agencies involved in its management.

However, the city's priorities may not necessarily be the same as those of service providers who have the entire country to consider, and here is where the significance of province and municipal councils lies.[72] By means of such councils the needs of the city can be properly reflected in the demands made of the Water Authority, the regulator and the service operators. However, this issue is likely to diminish over time, as with experience the ability of those concerned will minimise any shortcomings. It might be concluded that immediate changes in this direction might help ensure that effective city management is achieved within the shortest timescale.

9.4 Why should the Saudi government choose BOO?

As explained earlier, BOO is one type of the well known BOT, two of many types of PSP in services provision. BOO in the water context is usually adopted for the provision of bulk services, (e.g. major water supply facilities) and is typically adopted for Greenfield projects. According to the World Bank (1997), these forms of participation tend to work

72 The city's priorities are likely to be affected by its existing position as the capital of the country, where all the main government offices and other key specialised education and health care services are located. It is the largest city in the country in terms of its annual growth rate, population size and the developed area. The vision for the future which is part of the city's Metropolitan Development Strategy has considered these and other matters, and the city will continue to meet its responsibilities both for its residents and for national development as a whole. In addition to the specialised services that are provided by the city, it may become a centre of research and expert manpower development, as well as a national centre for financial and businesses activities and services which at present time are developing rapidly.

well if the main problem the water sector faces relates to water supply. Developing new projects will surely increase the capacity of bulk water supplies to meet growing demand, and would help to overcome the problem when a private contractor prefers larger metropolitan areas to make sufficient returns on its investments in large networks.

In this arrangement (see: 2.6.4 in Chapter Two, also 9.2.2 and 9.2.3 in this Chapter), the private developer assumes responsibility for constructing, developing and financing the work involved in the project. Also, through the developer's operating group it will be responsible for all the operation and maintenance tasks related to the production facilities. Natural raw water resources are very limited, if not scarce, in Saudi Arabia. Because of that the strategic option by the government for more than three decades has been to rely on seawater desalination to satisfy the growing demand, for all usage other than agriculture. Although the government has opened several key economic sectors to investment, including water, the development of new desalination projects requires huge investment if the private sector is to participate in this market. Considering the moves being made by the government to promote private involvement in water provision, it is apparent that the government's preferred option is for the private sector to assume full responsibility for construction and finance as well as the operating processes. This indeed would serve the principal objectives of PSP, especially gaining access to sufficient funds. Therefore, a BOO arrangement would be suitable for the development of projects that increase supply in the short term without being dependent on public spending, considering the pressing issue of supply shortage. In other words, the significant objective of IWPP is to increase water and power production without burdening the government budget, since the capital requirement, operation and construction risks are all

allocated to the private sector. In addition, choosing this type of arrangement for bulk supply could have the objective of reducing the risks associated with any deficiency in the regulatory framework, and overcome the matter of providing subsidised services that pose unacceptable revenue risks for a private operator.

In summary, the characteristics that make a project for developing desalination plants attractive to private investors may be explained as follows as described by Harris (2002):

- Significant fixed assets with a specified construction period;
- Assurance of selling the product (potable water and power) to a monopoly under the obligations of a long-term contractual off-take agreement;
- The existence of competent engineering, procurement, construction expertise and operational skills provided by private organisations; and
- Proper allocation of capital costs, together with operation and construction risks, to the private sector by the public authority through effective and binding contractual terms for both parties.

Although seawater desalination is highly energy-intensive, Saudi Arabia has the largest proven oil reserves in the world. It is one of the few countries that offer competitive oil prices to customers, meaning that the country could develop this industry at the lowest possible cost. Desalination also involves power generation, which means a better use of energy. At the same time, awarding contracts through an open and transparent competitive bidding process will enable customers to obtain their water at an optimal price. Competition among private investors to share the market in generation and desalination should mean downward pressure on production costs.

9.5 A new reformed structure for the water sector

The separation of the sector into separate segments that are responsible for production, transmission, distribution and supply will increase the transparency of costs, and will facilitate the identification of areas for improvement and cost reduction.

In that way, water production activities could be privatised meaning that private investors would build, operate and own seawater desalination plants. However, such desalination plants would (as previously) take place predominantly alongside the generation of electricity, considering the cogeneration functions in the IWPP. If this initiative proved a success, it should lead to the following results:

- Ensuring the security of water and power supplies;
- Improved economic effectiveness, and the level of water production in particular;
- Promoting both local and foreign private sector investment and participation;
- New employment and training opportunities for nationals; and
- Maximising revenues from asset sales in projects involving the extension or rehabilitation of existing plants.

The organisational separation of a chain of functions which are normally performed by a single entity is described as 'vertical unbundling'. In the water industry, while supply and distribution are often carried out by the same organisation it is not necessarily the case that economies of scale apply to this mode of participation. By this, several entities can compete with each other to gain the right to supply the best and cheapest commodity to the distributor, in a business environment not constrained by any natural monopoly over the water system.

Given that the water industry will be separated to reflect individual responsibilities, the sector could operate according to the 'single-buyer' model: a licensed company for each region or province would buy the output from the IWPPs. The number of licensed companies could however follow the existing seven Water Directorates. Project companies would operate and maintain the assets of the cogeneration desalination plants to produce enough safe and reliable water and electricity for ultimate delivery to consumers. These projects would sell their capacity and output to the licensed single buyer, either on the national level or to large regional entities.

The structure of the water sector and its transactions might be described briefly as follows:

- The single buyer company (there could be one for each province) purchases the available capacity and output from the independent producers under the terms of the PWPA. The same company might arrange to purchase fuel for direct supply to all producers if that was previously agreed. However, the ways in which fluctuations in demand are accounted for will be addressed in table 9.1 in section (9.7.6), which presents the potential risks associated with such developments.
- The single buyer company then sells bulk supplies of water and electricity produced by these independent co-generation projects to one or more distribution companies at the Bulk Supply Tariffs (BST) agreed by both the Water Authority and the sector regulator. Distribution is however better undertaken by a fully independent (e.g. private) firm to maintain the desired level of transparency.
- Besides the water and electricity BST charges that distributors will be required to pay the single buyer, additional payments for the use of transmission systems will be

made to the company appointed to operate and maintain such functions. This transaction structure provides businesses with the incentive to improve their performance.

- Revenues received by the distribution companies will come from their final customers (end users), as well as an agreed governmental subsidy paid directly to the company by the Water Authority to meet the actual cost. This would allow the government to protect the public from tariff increases that reflected the actual economic cost of sales to consumers, since all transactions between companies operating in the water sector would be on the basis of economic costs as a fundamental of such PSP. However, the subsidy will be directed to support lifeline consumption and will be available to all consumers, but not for all levels of usage.

New Structure of the Water Sector

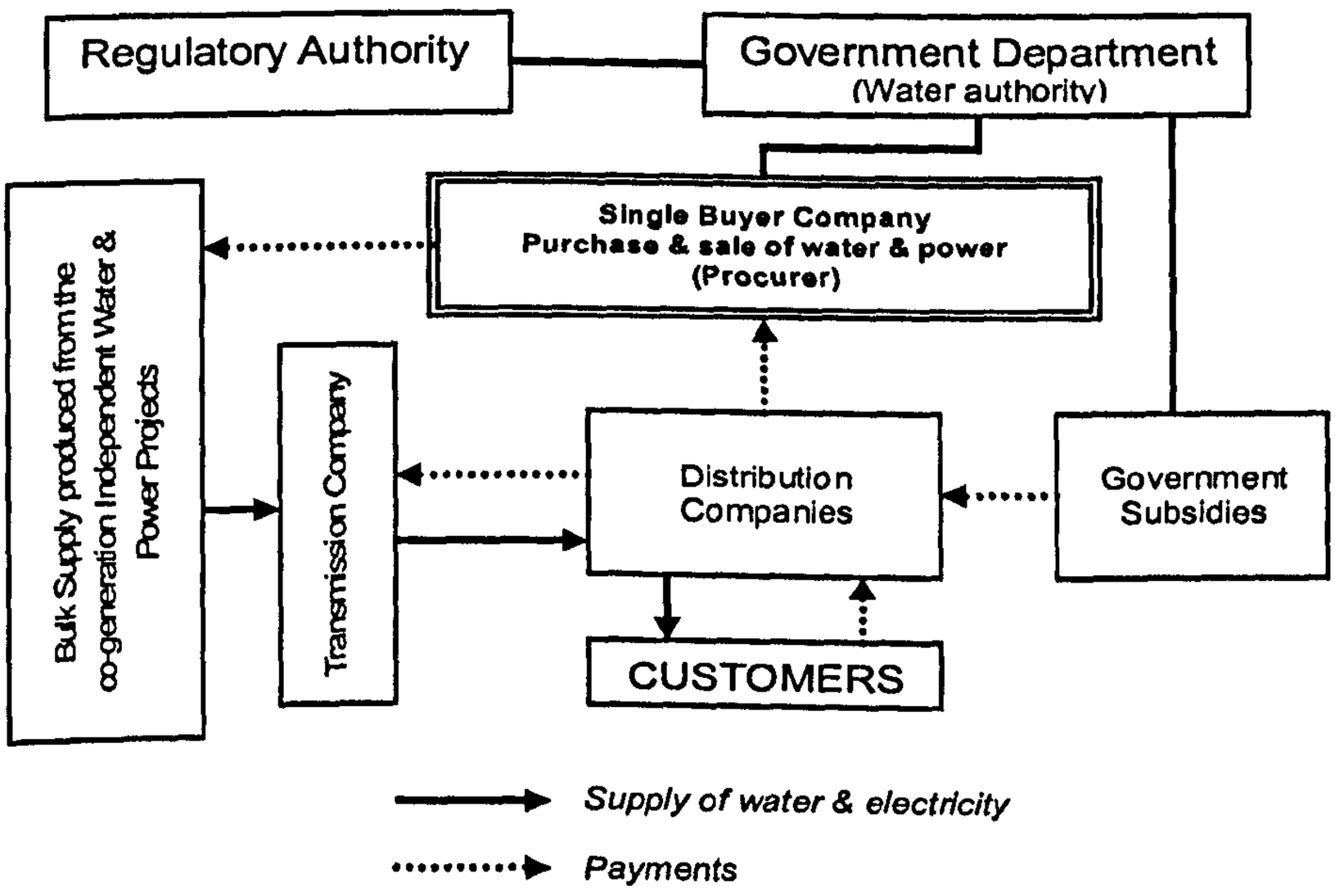

Figure 9.3: Structural transaction between water sector segments

The Water Authority and SECO (the Saudi electricity company), as the two main entities concerned with water and power in the country could share the ownership of these companies (i.e. single buyer, transmission and distribution) between them, or they could be strategic participants in the equity of these companies. Nevertheless, a considerable part of the ownership of companies' shares could be offered for public subscription, in view of the objective of the privatisation strategy to enable citizens to share in economic assets.

9.6 Description of companies' responsibilities

1. Project companies: IWPPs (Independent Power and Water Producers)

These are long-term programmes, typically developed on Greenfield sites, for privatising water and electricity on the basis of BOO via joint venture arrangements between various local and international companies with or without government participation. In the case of government participation, it may retain a specified percentage shareholding while the remaining shares are owned by private investors, either foreign or local. IWPPs sell licensed production of water and electricity from their (desalination) plants to the single buyer company under long-term PWPAs that will normally last from 20-25 years.

Such companies may at a later stage be taken over by other companies; the new companies will then gain control of the shares and interests of the old owner. When the government chooses to sell its stake in such investments this can be either to a second party or to its citizens through IPOs, as has happened in other sectors. IPOs have proved to be a success because their nature allows the possibility of a quick profit, given the shortage of other investment avenues. Government participation in such projects would

be through specialised credit institutions, such as the Public Investments Fund, which are important channels for direct government spending in different sectors.

2. Bulk water purchasing company

This is a licensed joint stock company that becomes the single buyer of water output from the IWPPs in its serviced area. It is very important that the new structure should have an independent bulk water purchasing company, for two main reasons. First, this would facilitate the implementation and transactions of any subsidy scheme which might be initiated by the Water Authority, since the company will be an intermediary entity between the Water Authority and the distribution company. It will also facilitate the application of BST between producers and distributors. Second, having a single buyer would support the objective that all operating companies in the water sector should deal with each other on the basis of economic costs, which should eventually lead to a substantial reduction in operation and maintenance costs. Such a new structure, which comprises a single buyer of production under long-term purchase agreements, articulates the extent of the government's commitment to the process via its financial and political support. This means that the sector will be attractive for investment, given the expected reasonable return on equity.

The bulk water purchasing company will balance supply and demand through sales contracts on the basis of a BST with the distribution companies. Of course the purchase of bulk supply will be under PWPA. The existence of PWPAs will control or eliminate the possibility of the purchasing company acting as a monopolist to force prices down.

The company should assume the following responsibilities; (1) to prepare long and medium-term demand forecasts for water and power, (2) through a high level of

coordination with the concerned departments at the Water Authority, the company may involve in tendering and procuring supplies of water and power from new producers and for system expansion, (3) to set and publish an annual Bulk Supply Tariff, (4) to arrange and publish task-planning records and prepare statistical reports, and (5) to coordinate and settle all payments due to licensed producers and fuel suppliers, in addition to demanding payment from the distribution companies on the basis of the agreed BST for water and power supplied. Such a company should also play a role in the preparation of contracts to manage the tendering and procurement process of IWPP and PWPA, including discussions and negotiations with production companies.

3. Distribution company

The desired performance in distribution could be achieved by appointing a joint stock company to distribute and sell water to billed customers in a serviced area. The company should use the best equipment and most advanced technological methods available, in order to provide consumers with the best possible service. The company's responsibilities and duties shall include: (1) development, maintenance, and operation of safe, secure, and cost-effective water distribution systems; (2) provision of contractual offers for corporate and natural bodies related to water connection; (3) offering and providing the best services to consumers through customer service orientation and the use of appropriate billing and payment arrangements; (4) executing extension and augmentation projects to satisfy the rising residential, commercial and industrial demand for water; and (5) ensuring the availability of advanced equipment which will assist in accomplishing the desired outcomes. The company could undertake (or outsource) the installation and

reading of meters, and customer billing. The company should provide its customers with wide range of customer services, including an up-to-date call centre.

4. Transmission company

This company would receive supplies of water from the production companies and become the hub of the sector, being connected directly to the water mains for onward transmission to the distribution companies. The company would also undertake the maintenance of water pumping stations and trunk water lines. As the carrier of the producers' goods to customers, major investment by this company would be needed to reinforce the main network or expand it if required through an extensive programme of refurbishment and/or replacement, to bring performance to an acceptable standard as stipulated by the regulator. Overall responsibility for the implementation of these tasks would require periodical review, to ensure that they remained relevant and appropriate to the nature and scale of the company's obligations.

It can be argued that there is a less strong case to have a separate company for transmission, because the network is not very complicated; especially when supplies of water are transmitted and targeted to a particular area or region. Arriyadh city, for instance would receive its water from desalination plants on the Eastern coast through trunk lines approximately 400km long, to reach the main pumping station at the east of the city. Then the supply will be pumped into the distribution network to reach the consumers. Transmission, including the maintenance of the main trunk lines, could be undertaken by a subsidiary of the distribution company.

9.7 Managing the reform process

A unit needs to be established to take responsibility for management and coordination of this reform. In order to achieve the desired outcomes the unit should have appropriate powers, and be equipped with staff who are experienced in the water industry and similar fields, adequate funding, good political support and access to decision makers and other necessary resources. The unit should consider the views of all concerned stakeholders, particularly consumers and the various interested parties in the water sector.

Such a unit might be a committee or sub-committee created by the board of directors of the Water Authority and formed by members of relevant government departments, and other key government authorities associated with economic development and investment. The unit shall report to the Authority board, which will in its turn report directly to the Prime Minister. Due to the importance of this unit, its chairman and members should be appointed by the highest level of government, i.e. the Council of Ministers, according to recommendations by the Water Authority's board, in order to ensure full cooperation from public sector agencies when there is a need to obtain information.

In this case the unit could be funded from the Authority's budget; however, this should not affect the level of independence needed by the unit in order to undertake its tasks efficiently. Maintaining these requirements will be an indication and a key element of the government's commitment to successful reform, and eventually private participation.

Among the responsibilities of this unit is to coordinate the various tasks related to PSP preparation. The unit would provide the Water Authority with advice about hiring consultants for each task required by the process, either locally or internationally. The

tasks may include assessment of the existing system, analysis of the existing legal framework, the possible effect on employees and pricing of services, etc.

9.7.1 Initial preparation for PSP

The Water Authority's potential should be considered in the early stages of assessing current performance in the sector, in terms of quality and quantity of services and the availability of information. An accurate assessment will help to achieve successful reform, as clear results will help to enhance the investment attractiveness of the water sector as a whole. Moreover, the assessment results could form a database to include: (1) the existing and targeted coverage area; (2) supply and demand characteristics; (3) extensive information on the system's assets; (4) performance record of services, including financial performance; (5) employee numbers, skills, salary rates, etc., and (6) charges including the tariff structure (and subsidy scheme where appropriate).

Certainly, such a data centre could assist in predicting the costs of improving services to meet efficiency targets, and provide a reliable source of information for determining the performance standards and improvement criteria to be stipulated in any contract with a private sector partner. The exercise of creating a database for the water sector would be a costly and time-consuming task, but would build on the Water Authority's expertise to tackle any issues that might arise from the reform process.

The information thus gathered, as well as data prepared by hired consultants, should be available to all potential bidders via an information centre established within the previously mentioned coordination unit. Subsequently, all this accurate information will form the baseline data from which the regulator will be able to oversee the industry, including any operator's performance.

The importance of this is underlined by the belief that poor information about water assets is one factor among others that complicate the process of PSP, and subsequently the function of monitoring contractors' performance.

9.7.2 Awarding a contract for IWPP

The price of water units supplied is normally the criterion upon which the decision to grant such a contract is based. However the expertise and capacity of bidders, both financial and technical, are other important measures.

Awarding a contract for IWPP should be based on an open and transparent competitive bidding process that offers equal opportunities for all qualified competitors. Competition for the market, in the case of BOO would be through tendering a concession to a company or consortium which had relevant experience in handling large water projects, as well as serving a large and diverse customer base.

This will allow the Water Authority to obtain optimal and sustainable prices for the production of water and electricity from new plants, as a result of the downward pressure on production costs caused by competition. Competition can be an important key even after the completion of the transaction and the commence of production, as the performance of a successful IWPP can be used as a benchmark for other production companies in order to improve the overall performance and efficiency in the industry, leading to further cost reductions.

However, competition in the market can not be easily introduced in the water sector, apart from the construction tasks concerned with capacity or providing plumbing services to utilities customers, or possibly meter-reading work for the sole operator. Such tasks could be handed over to a company (or more than one) that has the experience and

resources to provide a high quality, cost-effective and progressive service in data collection, meter reading and related billing services, etc.

9.7.3 The basic documents for the process

The primary project documents required for the process are as follows:[73]

- The PWPA made between the procurer and the project company on the basis of both available capacity, and actual production. The PWPA should include a clause concerning the supply of fuel, if there is no separate fuel supply agreement. A PWPA should be for a specified period of time, e.g. 20-25 years.
- The land lease agreement between the leaser (normally the Water Authority) and the project company. This grants a lease over the site on which the project will be developed. This agreement should include details of procedures for the decommissioning and return of existing assets to the government if applicable.
- The shareholders' agreement between investing companies in the project company, to specify the contribution obligations of all parties and specify restrictions on the transfer of shareholdings.
- The asset transfer agreement (if it is not a Greenfield project) made by the purchaser of any existing assets from the holding company. This agreement will control the provisional sale, delivery and transfer of existing assets as well as secondary items from the old owner to the new entity.
- The construction and engineering contract between the project company and the turnkey contractor, to include certain obligations at a fixed price.

73 This is based on the experience of an IWPP already developed.

- The operation and maintenance contract, signed with the project company by a contractor to be responsible for the operation and maintenance of the plant for the period of the PWPA. The contractor may be a company which is formed specifically by the project company for this purpose.
- The facility agreement between the project company as borrower, and the sponsor represented by a financial institution as lead arranger for a financial consortium.

9.7.4 Competitive bidding

The Water Authority, through its procurement division employs a bidding process to select a partner from the private sector that has the skills, experience and resources necessary to develop a water project in the most efficient way possible. Thus the bidding process can be described as the beginning phase of a partnership between the government and the prospective private partner.

Typically, this process begins when the Water Authority makes a public announcement of its intention to seek a private partnership to deliver certain services. This announcement may be part of the business promotion for the project. By return the Water Authority will begin to receive expressions of interest from private companies. The bidding will proceed as follows:[74]

1. The Water Authority starts the process by submitting a 'Request For Qualification' (RFQ) document to interested companies and consortia that wish to participate in the project. This document will include a concise description of the project (new assets to be constructed, plants to be upgraded or extended), the implementation approach, and

74 This subsection and the following one were supported by the crucial insights offered by some respondents during the interviews undertaken for this study. Moreover, Harris (2002) briefly described similar steps to select a suitable partner to develop a desalination project.

ownership of assets if this is a Greenfield project. Otherwise, in the case of an asset sale this will involve an Asset Transfer.

2. The Water Authority shall receive the RFQs from bidders and classify them.
3. The Water Authority shall announce the names of the qualifying companies or consortia.
4. The Water Authority shall provide qualified developers with a 'Request For Proposal' (RFP) that includes the technical and specifications, administrative, financial and legal details of the project and bid forms, as well as the process by which the qualified developers' bids will be evaluated.
5. The Water Authority may appoint consultants for the purpose of preparing these detailed documents, working with the in-house project team. As for evaluation methods, typically they rely on the price of production units or the construction specifications, possibly both. Other evaluation criteria may include feasibility of the special purpose company and the timescale of the project, as well as the anticipated employment of the local workforce, etc. After that, meetings between all the governmental bodies involved and the qualified developers may take place, the purpose of which is to ensure a full understanding of the RFP documents and to answer any related questions.
6. The developers submit proposals that should match the specifications laid out by the Water Authority. These specifications shall conclude evaluation methods, such as production unit price, economic feasibility and technical capacity.
7. The proposals are evaluated in accordance with the detailed requirements of the financial, administrative, technical and legal specifications as established.

8. The Water Authority will make a shortlist of the qualified developers from the previous stage, with the name of the first and best offer, and the two next best offers.
9. The Water Authority will begin detailed negotiations with the short-listed developers, to eliminate any uncertainty about financing and in order to reach the final selection. It will then sign a preliminary contract with the developer who has made the best offer (i.e. sensibly priced and technologically suitable).
10. The Water Authority will give the chosen developer, with whom the initial contract has been signed, a certain period of time to fulfil his financial and legal commitments with financing institutions and the Water Authority. This phase is called the Financial Close. This is the final step before starting the project, in which the developer has already defined the allocation of risks to be shared with the project's financiers and other participants. It is also final because the equity of the project has been committed, and all the fund-lending documents have been signed prior to the start of disbursement.
11. In the event that the developer fails to fulfil his commitments within the agreed time, the bank guarantee shall be withdrawn from him and the contract assigned to the second best offer in the list.

Although this bidding process should ensure a suitable level of transparency and help to choose the best possible partner in accordance with market mechanisms, all the technical parameters need to be clearly defined in the bidding documents. Certainty about the desired technical outputs being standardised by the Water Authority will lead to fair competition among the bidders throughout the process.

It may safely be stated that implementing the contracting process in accordance with the above schema should result in appropriate competition among bidders, which should mean:

1. Achieving best water supply prices;
2. Greater efficiency in administering and operating the projects;
3. Generating wider expertise in the governmental department that handles this process, with all its technical and administrative details, thereby becoming acquainted with the latest developments in the field.

9.7.5 The importance of prequalification

Due to the expected long-term partnership in such projects, there is a requirement on the part of the Water Authority to ensure the selection of genuinely qualified partners through prequalification criteria.

Among the general criteria that must be met during qualification are, for instance:

a. The technical capacity and the availability of a track record of the bidder, which can be identified by considering his previous and similar projects in terms of their size, cost and/or customer base.
b. Ensuring that the bidder has properly arranged financing for the implementation of the project. The share of capital from all participants, and the financing methods that will be used should also be considered.
c. Making sure that the bidder is able to accept all the technical, legal, administrative, regulatory and financial conditions that are set out in detail in the RFP.
d. Setting up a timeframe for all the phases, to provide more credibility and trust between the Water Authority and the bidders as committed partners.

e. Conditions should be included in the RFP that take account of environmental protection.

f. The evaluation committees must be totally impartial and neutral, and must avoid making a subjective decision but put professional considerations in first place.

g. Performance criteria should be clearly stated in the RFP, aiming for the process to be 'performance-based' to ensure that delivery is accurately carried out in accordance to such criteria.

This prequalification work should reduce the complexity of the bidding process, and its associated costs, by limiting the number of bidders. In this way the Water Authority will be dealing with fairly small number of genuinely interested bidders. At the same time the Water Authority will find it necessary to define its requirements clearly for keen bidders.

9.7.6 Potential risks with this approach to development

Careful identification of possible risks associated with BOO arrangement, and suitable actions to be taken to mitigate or prevent them, will lead to successful participation. Examples of these risks, as described below in table 9.1 may include:

Table 9.1: Some possible risks associated with BOO[75]

Type of Risk	Reason	Responsibility	Primitive Actions	Remarks
1. Defects in the plant construction	Specification	Public sector provides remedy or compensation to project contractor	Improve specifications in comparison to successful experience	This is mainly associated with new projects
	Private contractor	Private sector provides remedy or pays damages	Improve the monitoring tasks at early stages	Clearer mechanisms in contract to avoid delay in completing the project
2. Poor operation leading to short fall in water quality or quantity	Negligence by the operator	Project company and its local operator. Any damages must be payable to public sector	Advanced monitoring tools accompanied by scheduled inspection of production. This will enable public authority to provide for early warning	Levels of water quantity and quality standards have to be clearly exhibited in the contract
3. Sharp decrease in demand	Bulk water supply more than actual needs	Public sector, if long-term purchase agreement was signed. Payment shall be guaranteed by government	Accurate projection of water demand. Project company can stipulate in the early stage of negotiation exclusivity of supply within certain area or region	If no purchase agreement is signed between the two parties the risks will be taken entirely by project company
4. Sudden increase in demand	Demand for water exceeds the production capacity of developed projects	Public sector, due to the inaccurate projection of future needs	Government should consider contingency plans for this situation, and stipulate the proper action to be taken, with the agreement of the operator	Accurate projection of demand may require the experience of highly qualified consultants. A national water grid could also be considered
5. Exchange risks	Devaluation of local currency or fluctuations in foreign currencies exchange and changes in interest rate	Public & project company if no guarantees were in place	Package of hedging facilities and other compensation arrangements for the project company	Ministry of Finance should be involved during the early stages of contracting the project. This will safeguard the process from any unexpected problems
6. Contingent risks	Force majeure, political intervention	Both parties	All similar events have to be adequately insured as a condition for the overall process. Cancellation by the government of project needs to go along with agreed compensation	Insurer participant has a leading role here to achieve success. Other official agencies such as export credit entities can play a role in minimising such risks

Source: (See: World Bank, 1997; Grimsey and Lewis, 2002).

75 Among these potential risks associated with BOO, number 4 is suggested by the author of this thesis.

10. Conclusion

10.1 Recommendations

10.2 Further points for research

10. Conclusion

This study has identified the essential principles and guidelines that need to be taken into account when exploring the potential of reform, to promote private sector investment in the process of water services delivery. A preliminary model for PSP was discussed in Chapter Nine, presenting alternative long-term policy and institutional frameworks for water sector and drawing inferences concerning a new structure for water services that would be of most benefit to Arriyadh city and naturally the rest of the country. The model was proposed having taken account of all aspects of the sector, and its critical issues. It has set out the broad spectrum of responsibilities and functions that could be assigned in accordance with a new form of provision.

Saudi Arabia suffers many problems that have direct impact on its water resources, and consequently on its water services. It can be said that these problems arise from the country's geographical position in one of the most arid and water-scarce regions of the world, and the swingeing increase in population growth. This has been accompanied over recent decades by a rapid increase in urbanisation, making Saudi Arabia one of the most highly urbanised countries. This has resulted in new patterns of demand that undermine sustainable provision, considering the country's strictly limited sources of fresh water. The high per capita consumption of water coupled with the low tariff levied by the government, plus the declining availability of water per person from sources other than desalination, all represent a challenging dilemma for developing and managing water in the country.

Water issues in Saudi Arabia are multidimensional and divergent, and most of these have been illustrated when considering the research aspects. However, prompt action is crucial if these problems are to be remedied.

Serving the population with adequate, good quality water supplies now and in the future means achieving the UNCED's Agenda 21 goals, and similarly the objectives expressed by the World Summit on Sustainable Development in Johannesburg.

The efforts made by the government to develop water services and to increase supplies in terms of quantity and quality has been obvious during the last three decades, and this is evident in the substantial investment that has been made in desalination. This has made the country a major producer of desalinated water with almost 30 per cent of the total world output, and enabled the government to meet the growing demand for potable water.

Undeniably, what helped the government to achieve this was the vast increase in national income generated by the upsurge in oil export revenues during the mid 1970s. Of course this was followed by a sharp decline in the country's earnings from oil, particularly during the 1980s, which has led to inadequate provision of services and most significantly, the emergence of domestic debt. However, the current boom in oil prices may enable the government to increase spending on vital projects, considering the actual surplus at the end of each fiscal year. This may be a comparable experience to that during the mid 1970s, albeit it will be of less momentum because of recent and more pressing demands such as domestic debt and the growing problem of unemployment. Even if oil prices continue to be high in the future, the combination of population growth and increased development costs incurred by meeting the escalating demand for public services will exceed the anticipated increase in national income.

In this context, the provision of adequate water supplies for the population is among the priorities of the Saudi government; however, the amount of investment that will be required by the water sector is enormous. The government should seek a range of options for reform, including institutional restructuring and policies that consider new sources of finance and PSP; for example the paradigm proposed in the previous chapter. What supports this case is that the government is advocating programmes for greater contributions from the private sector to the national economy, alongside the latest initiatives (e.g. Privatisation Strategy), new regulations, and the Foreign Investment Law. The private sector in Saudi Arabia must be expected to move into areas previously dominated by the government, considering the economic sectors that have been opened to private investment. In addition to that, the government in its long-term economic planning expects the private sector to be a major player in financing, building and operating key facilities in the basic infrastructure services, among others.

Considering all that with regard to water, the introduction of PSP will enable the government to maintain access to finance for new investments, to take advantage of private sector management skills, know-how and cost conscious acumen, and to improve the efficiency of service provision. These are fundamental motives strongly rooted in the economy and offer very important gains to renovate the sector, leading it to sustainability. However, successful PSP can only be achieved by political will at the highest level. Equally this should not be looked at as a halfway house before full privatisation of government assets; PSP is more like a merger, with both sides - public and private - sharing the benefits and risks. PSP should depend first and foremost upon existing conditions and the people's needs agenda.

The creation of an independent water authority and a sector regulator, besides the separation of the sector into separate segments that are each responsible for a particular function, will increase the transparency of the sector and facilitate the identification of roles and responsibilities. It will also reveal areas for improvement and cost reduction. In fact, these steps are of great importance in the process of reforming the industry with the objective of efficient performance. However, this should not undermine the need for proper pricing of water services, as the low tariff is one of the key issues for water provision in Saudi Arabia. The water pricing policy should achieve the right balance between treating water as an economic commodity due to its scarcity, and one which has to be allocated among a range of uses, and as a public good whose availability to certain users for certain purposes will serve the greater benefit of the public as whole. In principle, water pricing should embrace two rules: the recovery of costs against service usage, and the reflectivity of costs to indicate the actual value of water. Consumer participation is equally significant in the early stages of designing a PSP, up to the phase of implementation. This will help to identify priorities and contribute to decision-making, aiming for the best outcome.

As discussed in Chapters Eight and Nine, a BOO arrangement would be suitable for the country's existing circumstances. The development of IWPPs would increase supply in the short term without being dependent on uncertain public spending, while considering the pressing issue of supply shortage. In addition, choosing this type of arrangement for bulk supply could have the objective of helping to overcome any deficiencies in the regulatory framework, and also the matter of providing subsidised services that pose unacceptable revenue risks for a private operator.

A competitive, open and transparent tendering process among bidders to win PSP contracts will guarantee optimal water prices. Competition among private investors to share the market for new bulk water production facilities should mean downward pressure on production costs, which is to the ultimate advantage of customers as the more competition is introduced, the less regulation may be needed. The outcomes anticipated from PSP in water services depend largely on the success of the regulatory mechanisms which would be applied to guide decision-making within the model of provision, as has been discussed throughout this research. Furthermore, the early consideration of regulations prior to PSP would help remove any risks related to such a costly and time-consuming process.

The existence of the Saudi stock market is considered to be a primary requirement for economic development, as it can provide finance and investment opportunities to channel Saudi private sector liquidity. Water companies operating under PSP could be in the form of joint-stock companies in which citizens could participate through IPO. These companies might add substance to listed companies, and contribute to the stability of the market presuming their performance was successful.

10.1 Recommendations

1. Lack of sufficient information about water conditions and the absence of a reliable database for research and study purposes, especially for regions that have not been considered by elementary research, is a key issue. The creation of an integrated and reliable database is crucial for successful reform of the water sector. Such a database would assist in establishing technical, financial, performance and best practice measures to be used as tools for monitoring, evaluation and benchmarking decision-support. The proposed reform management unit could take responsibility for coordinating this task.
2. The growing demand for urban water is too high, and this may have been encouraged by unreasonably low charges for water. The water tariff must be revised to reflect water scarcity in the country, and to cover operation and maintenance expenditures. This is the most immediate and important measure that can be recommended. It could also be used as an effective demand management tool.
3. Water from different sources with distinctly different characteristics (quantity, quality and availability) needs economic incentives which encourage the efficient and equitable use of scarce resources. On the other hand, smart subsidies should be encouraged to target eligible consumers.
4. The water sector should be changed from being a simple services provider into a complete system that will take into consideration the principles of efficiency and sustainability in a largely-desert country that enjoys very limited renewable water resources.

5. Intensive detecting leakage control and monitoring programmes should receive more support from the proposed Water Authority in order to cut losses to the acceptable minimum level. An investment like this is important, particularly when it is compared to the high and continuous running costs required to increase supplies. Unpaid-for water is estimated to be about 25%, including unauthorised water connections, leakage and water that produces no revenue (unpaid water usage, e.g. for government buildings and facilities). Controlling leakage will help to reduce the problems of the rising underground water table.
6. An accurate and reliable appraisal of the groundwater resources of the country needs to be in place in order to have a rational management of them. It is also necessary to introduce guidelines concerned with protecting water resources, and to raise awareness about water conservation that is reflected through all the country's official channels.
7. The importance of desalination in Saudi Arabia is without question. It is important to invest in building capacity in human resources by education and advanced training for the desalination industry and its technologies at all levels, particularly higher education and research. The country will benefit in future from having well qualified specialists, and from further improvements in industry practice, e.g. costs perspective.
8. If the government through the proposed water authority were to expand PSP in desalination, then choosing the appropriate technology to be used and setting performance standards for the operation and maintenance of infrastructure assets would need to be in place. This, in general terms will eliminate the risks associated with putting profit before efficiency.

9. The growing demand for water, and the belief that water sector abounds with investment opportunities should encourage the government to promote the participation of Saudi industry in the future market for water, as well as in the growing desalination businesses.

10. Implementing PSP for the development and funding of water production facilities may pave the way to introducing other programmes of national importance, such as wastewater treatment and reuse as an alternative source of water for non-domestic purposes at a reasonable price. Treated wastewater may provide an alternative source for agricultural and industrial purposes, given the availability of relatively large volumes, and would release freshwater sources to supply the residential demand.

11. Building new treatment plants to recycle wastewater will be essential while the population continues to grow. Accordingly, sewage treatment plants need to be located within appropriate catchment areas that are supported by reticular capacity. Treated effluent can be moved either by pumping or gravity, just as for water supplies. However dual systems for distribution could maximise the use of reclaimed water, with one system for potable water supplies and a second for other non-drinking needs.

12. Sufficient investment in the water sector would in its turn improve public health, the environment, and the economy. It is important to assign legislative responsibilities to different levels of decision-making, together with clarification of their jurisdiction. New measures to legislate for PSP in water businesses in order to increase investment may be necessary. Other laws should receive further attention, such as those for managing water resources, the environment and public health.

13. Increasing the residential density in low density cities such as Arriyadh is vital, with the aim of reducing the cost of service provision through overall savings in the length of the main distribution network for instance. This should accord with well planned and controlled developments to minimise the immanent negative effects on water, based upon national and regional policies, as well as further encouraging urban compact development.
14. Adopting an innovative, massive public campaign will address the key issues of water provision, and raise awareness among all the consumers about conserving and protecting vital water resources.

10.2 Further points for research

1. Considering whether the country needs a national main water grid, which must be considered a major proposal. This may generate a vision for water transmission systems that link together different regions and sources of supply.
2. Exploring and investigating the effects of agriculture on water, including the agribusiness of dairy farming which is a sizeable contributor to water consumption.
3. Agriculture is the largest single user of water resources (i.e. groundwater), because of its vast expansion during the past three decades resulting from the previous governmental policy of 'food security'. Studies that take a comprehensive purview are important in order to revise existing agricultural policies. The solution for this could be three-fold: new methods that rely on renewable water resources; the use of minimal quantities of water for low-consumption crops, and the control of consumption by more widespread adoption of advanced irrigation methods.

4. If the government goes in the direction of developing IWPPs under PSP, there is a need to assess the impact on current employees in the industry as well as the potential of job creation for nationals, and the legislation that would be needed to cope with possible layoffs.
5. Conducting an economic analysis, to compare the costs of the investment needed to increase supply against an effective demand management approach which could include a new pricing policy for services, UFW control, etc.; or how to balance both approaches to gain efficiency and sustainability for the sector.
6. Carrying out a comprehensive environmental impact study on the effects of desalination upon the environment, given the potential expansion of this activity in the future.
7. Broad evaluation studies are essential to identify the withdrawal-to-availability ratio of natural water resources, considering their importance for the future and proposing new measures to save them as strategic reserves.
8. Detailed studies of the successful practice of service sector regulator's responsibilities, duties and tasks. This may involve a legal assessment, comparable to that in similar service sectors, in order to pinpoint areas for improved performance.
9. In-depth studies of the future roles of municipal and provincial councils in water sector reform and related decision-making may prove constructive.

Bibliography

Abdel Mageed, Y. (1994). "The central region: Problems and perspectives". In: Rogers, P. and Lydon, P. (Eds.) Water in the Arab World: perspectives and prognoses. Cambridge: The Division of Applied Sciences, Harvard University: 101-119.

Abderrahman, W. (2001). "Water demand management in Saudi Arabia". In: Faruqui, N. I., Biswas, A. K. and Bino, M. (Eds.). Water Management in Islam. Tokyo: United Nations University Press: 68-78.

Abo Abat, E. and Al-Haji. A. (2001). "The advantages of conserving water consumption". *The 5th Gulf Water Conference*. Qatar: Water Science and Technology Association. Arabic Vol.: 273-293.

AboFutaim, M. (2003). "Ministry of Water offer investment projects to private sector to produce water and electricity". *Al-Riyadh Newspaper*. Arriyadh 14 May, 2003, No. 12745 (in Arabic)

Abou Zeid, M. (2006). The Middle East Water Report: with emphasis on the Arab countries. Mexico City: The 4th World Water Forum.

Abu Dahesh, A. (2002). "Reading in the Privatization Strategy in Saudi Arabia". *Saudi Economic Journal* (10): 42-51.

Ackroyed, S. and J. Hughes (1992). Data Collection in Context. London: Longman.

ADA (1996). Household survey. High Commission for the Development of Arriyadh.

ADA (1997a). Phase I, summary report of MEDSTAR. High Commission for the Development of Arriyadh.

ADA (1997b). Infrastructure technical report, phase I of MEDSTAR. High Commission for the Development of Arriyadh.

ADA (1997c). Land-uses technical report, phase I of MEDSTAR. High Commission for the Development of Arriyadh.

ADA (1997d). Regional Context technical report, phase I of MEDSTAR. High Commission for the Development of Arriyadh.

ADA (1999). Preferred Metropolitan Development Strategy. High Commission for the Development of Arriyadh: 17-74.

ADA (2000). Migration and population growth in Arriyadh City. Research and planning services unit: High Commission for the Development of Arriyadh.

ADA (2002a). "Arriyadh strategic plan". *Tatweer*: (33), 10-12. (in Arabic)

ADA (2002b). Investment Climate in Arriyadh. Arriyadh Development Authority: High Commission for the Development of Arriyadh, Research and planning services unit.

Adrian, P. and Trueman, H. (1991). "Public sector savings of urban consolidation". *Urban Futures* Vol. (1): 16-29.

Agnew, C. and Anderson, E. (1992). Water Resources in the Arid Realm. London: Routledge.

Al-Alawi, J. (1998). "Specific privatization issues applicable to water and electricity utilities in the Gulf Cooperation Council States". *Desalination* Vol. (120): 129-136.

Al-Alawi, J. and M. Abdulrazzak (1994). "Water in the Arabian Peninsula: Problems and perspectives". In: Rogers, P. and Lydon, P. (Eds.) Water in the Arab World: perspectives and
prognoses. Cambridge: The Division of Applied Sciences, Harvard University: 171-202.

Al-Amwal Magazine (June 2001). Water Sector in Saudi Arabia. Vol. (5), No. 19: 32-48. (in Arabic)

Al-Aswaq Magazine (2002). Privatization of the electricity sector in Oman. No. 91: 62-65. (in Arabic)

Al-Bakhit, S. (2004). A scheme aims at involving private investors in desalination projects. (personal communication) A. Al-Mayouf. Arriyadh, Saudi Arabia.

Al-Bassam, A. (2001). The Groundwater. Arriyadh: Al-Humaidhi publisher. (in Arabic)

Al-Bowardi, K. (1998). Production and distribution of potable water of Arriyadh City. Arriyadh: ARWSA. (in Arabic)

Al-Bowardi, K., Al-Buraikan, R. and Al-Saeedy, A. (1997). "Water conserving programme for Arriyadh City". *The 3rd Gulf Water Conference: towards efficient utilisation of water resources in the Gulf.* Muscat, Oman: Water Science and Technology Association. Arabic Vol.

Al-Buraithen, M. (2000). "Water in Saudi Arabia". *Al-Majalah Al-Arabiah*. No. 277: 38-40. (in Arabic)

Al-Dhmash, A. (2002). "The National Strategy for Sewage Services: methods of finance". *Symposium of Infrastructure Financing and Provision.* Arriyadh: Arriyadh Development Authority.

Al-Farsy, F. (1990). Modernity and Tradition: the Saudi equation. London: Kegan Paul International.

Al-Ghamdi, M. N. (1999). "Supply Water to Arriyadh during King Abdulaziz Reign". *Saudi Arabia in Hundred Years Symposium*, Arriyadh: King AbdulAziz Foundation for Research and Archives. (in Arabic)

Al-Husain, A. (2002). "Water Problem: alternatives and solutions". *Symposium of Infrastructure Financing and Provision.* Arriyadh: Arriyadh Development Authority.

Al-Husain, A. and Al-Mansor K. (2000). Domestic water consumption: challenges and alternatives. Arriyadh: SWCC. (in Arabic)

Allan, J. A. (1994). "Overall perspectives on countries and regions". In: Rogers, P. and Lydon, P. (Eds.) Water in the Arab World: perspectives and prognoses. Cambridge: Division of Applied Sciences, Harvard University: 65-100.

Allen, A., Davila, J. D. and Hofmann, P. (2006). Governance of Water and Sanitation Services for the Peri-urban Poor: A framework for understanding and action in metropolitan regions. London: The Development Planning Unit, UCL.

Al-Mayouf, A. (2003a). "Institutional reform in the water sector: towards successful water management in Saudi Arabia". *6th Inter-Regional Conference on Environment-Water: Land and Water Use Planning and Management* (September 2003). Albacete, Spain: Regional Centre for Water Studies

Al-Mayouf, A. (2003b). "Involving the private sector with water provision for a rapidly growing city: The case of Arriyadh, Saudi Arabia". *1st Scottish Conference for Postgraduate Researchers of the Built and Natural Environment* (November 2003). Glasgow, UK: Glasgow Caledonian University.

Al-Mayouf, A. M. (2001). A case study of the impact of rapid urban growth on water services in Arriyadh City, Saudi Arabia. School of Architecture, Planning and Landscape. University of Newcastle upon Tyne. Unpublished MA Dissertation.

Al-Nuaimi, A. (2005). "Overview of the power and water sector in the emirate of Abu Dhabi". *Conference on Privatization of Infrastructure Facilities Financial Markets & Investment Opportunities.* Abu Dhabi-UAE: ADWEA.

Al-Othaim, A. (2005). "Costs and Benefits from the Saudi Arabia Accession to WTO". *Dar Alhayat.* London. (in Arabic)

Al-Qhatani, S. (2002). "Foreign Investment Law and Its Role in the Economy Openness". *Symposium of Infrastructure Financing and Provision*. Arriyadh: Arriyadh Development Authority.

Al-Riyadh Newspaper (2003). "Demanding SEC to set timetables for privatization". 04 May-12735. (in Arabic)

Al-Riyadh Newspaper (2003). "Saudi Arabia will rely on its Own Water Resources". 15 April, No. 12716. (in Arabic)

Al-Riyadh Newspaper (2003). "Desalination plants are to expect involvement from private sector". 11 January No. 12622. (in Arabic)

Al-Riyadh Newspaper (2003). "Water shortage in Arriyadh". 17 January, 12628. (in Arabic)

Al-Samarrai, H. (2002). "Investment in environmental projects: financing of solid waste management programmes and projects". *Islamic Capitals & Cities* (32): 36-47.

Al-Shareef, F. (2005). "Privatisation and Restructuring Strategies: Saudi Saline Water Conversion Corporation a case study". *Conference on Privatization of Infrastructure Facilities Financial Markets & Investment Opportunities*. Abu Dhabi-UAE: ADWEA.

Al-Tokhais, A. S. (1997). "The Renewable Water Resources in Saudi Arabia: methods of protection and development". *Symposium on Renewable Natural Resources in the Kingdom*. Arriyadh: Ministry of Agriculture and Water.131-135 (in Arabic)

Al-Zubari, W. (1997) "Towards the establishment of a total water cycle management and reuse program in the GCC countries". *The 3rd Gulf Water Conference: towards efficient utilisation of water resources in the Gulf*. Muscat, Oman: Water Science and Technology Association.

Arksey, H. and P. Knight (1999). Interviewing for Social Scientists: an introductory resource with examples. London: Sage Publications.

ARWSA (1999). Annual Report. Arriyadh: Saudi Arabia. (in Arabic)

ARWSA (2000). Annual Report. Arriyadh: Saudi Arabia. (in Arabic)

Asharq Al-Awsat (2002). "Privatization Strategy in Saudi Arabia". June 2002, No. 8590, London. (in Arabic)

Azizi, M. M. (2000). "The User-pays system in the provision of urban infrastructure: Effectiveness and equity criteria". *Urban Studies* Vol. (37), No. 8: 1345-1357.

Bailey, R., (Ed.) (1996). Water & Environmental Management in Developing Countries. London: The Chartered Institution of Water & Environmental Management.

Baker, K. (2003). Good Governance in Restructuring Water Supply: A Handbook. Toronto: Federation of Canadian Municipalities (FCM) and Program on Water Issues (POWI).

Bakker, K. (2007). "Trickle Down? Private sector participation and the pro-poor water supply debate in Jakarta, Indonesia". *Geoforum.*

BalGhanaim, F. (2001). "Many international companies are ready to invest in building desalination plants". *Al-Amwal.* Vol. (5), No. 19: 49-50.

Barlow, M. and Clarke, T. (2004). The Struggle for Latin America's Water. New York: Global Policy Forum. Available on: http://www.globalpolicy.org

Barnes, C. (1995). "Privatisation Experience in Portugal". In: Cook, P. and Kirkpatrick C. (Eds.) Privatisation Policy and Performance: International Perspectives. London: Prentice Hall Harvester Wheatsheaf: 113-125.

Berry, R. S. Y. (1999). Collecting data by in-depth interviewing. The British Educational Research Association Annual Conference, Brighton, University of Sussex.

Bewley, T. (2002). "Interviews as a valid empirical tool in economics". *Journal of Socio-Economics.* Vol. (31), No. 4: 343-354.

Bickford, D. and Vehorn, C. (1982). "Changes in the provision of public services". In: Gappert, G. and Knight, R. V. (Eds.) Cities in the 21st Century, Urban affairs annual reviews, Vol. (23). Beverly Hills: Sage Publications.

Bienen, H. and Waterbury, J. (1989). "The Political Economy of Privatization in Developing Countries". *World Development* Vol. (17), No. 5: 617-632.

Biswas, A. K. (2000). "Water for urban areas of the developing world in the twenty-first century". In: Uitto, J. I. and Bisawas, A. K. (Eds.) Water for urban areas: Challenges and perspectives. Tokyo: United Nations University Press: 1-23.

Boisvert, M. and Senouci, L. (2000). "Marginal privatisation and infrastructural deficiencies: Anas and Lee Revisited". *Urban Studies* Vol. (37), No. 7: 1131-1144.

Boland, J. (1997). "Pricing urban water: Principles and compromises". *Seminar on Pricing of Sanitation and water services.* Washington, D.C.: The World Bank, February 18-19.

Brannen, J. (1992 .). "Combining qualitative and quantitative approaches: an overview". In: Brannen, J. (Ed.) Mixing Methods: Qualitative and Quantitative Research. Avebury: Aldershot.

Bremere, I., Kennedy M., Stikker, A. and Schippers, J. (2001). "How water scarcity will affect the growth in the desalination market in the coming 25 years". *Desalination* Vol. (138): 7-15.

Brocklehurst, C., Janssens, J. G. and Kolsky, P. (2002). "Designing water-pricing policy, tariffs and subsidies to help the poor". *Waterlines* Vol. (21) No. 2: 4-5.

Brooks, D. (1996). "Between the great rivers: water in the heart of the Middle East". In: Rached, E., Rathgeber, E. and Brooks, D. (Eds.) Water Management in Africa and the Middle East: challenges and opportunities. Ottawa: IDRC: 73-93.

Brown, G. and Charles, L. (1963). Water Resources for Arriyadh. Arriyadh-Saudi Arabia: Ministry of Agriculture and Water.

Bulmer, M. and Warwick, D. P. (1993). Social Research in Developing Countries: Surveys and Censuses in the third world. London: UCL Press.

Buros, O. K. (1994). Principles of Desalination. Manama-Bahrain: Water Science and Technology Association.

Bushnak, A. (2001). "Privatization of Water and Wastewater services: Experience from Makkah and Madinah regions". *The 5th Gulf Water Conference*. Qatar: Water Science and Technology Association. 465-475.

Cann, V. and Jones, T. (2006). Down the Drain: How aid for water sector reform could be better spent. London: World Development Movement.

Capdevila, G. (2002). UN Consecrates Water as Public Good and Human Right. The United Nations Committee on Economic, Cultural and Social Rights. http://www.commondreams.org/headlines02/1128-01.htm

Carter, N. (2005). "Regulation of Privatised Utilities". *Conference on Privatization of Infrastructure Facilities Financial Markets & Investment Opportunities*, Abu Dhabi-UAE: ADWEA.

Cocq, K. (2005). There is still no alternative: the beginnings of water privatisation in Lusaka. In: McDonald, D. A. and Ruiters, G. (Eds.) The Age of Commodity: Water Privatization in Southern Africa. London: Earthscan: 240-257.

Cohen, L. and Manion, L. (1994). Research methods in education. London: Routhledge.

Cook, P. and Kirkpatrick, C. (Eds.) (1995). Privatisation Policy and Performance: International Perspectives. London: Prentice Hall Harvester Wheatsheaf.

Cook, P. and Kirkpatrick, C. (Eds.) (2000). Privatisation in Developing Countries Volume II. The International Library of Critical Writings in Economics. Cheltenham: Edward Elgar Publishing Inc.

Cook, P. and Minogue, M. (1990). "Waiting for Privatization in Developing Countries: towards the integration of economic and non-economic explanations". *Public Administration and Development* Vol. (10): 389-403.

Coresman, A. H. (2002). Saudi Arabia Enters The 21st Century: Economic, Demographic, and Social Challenges. Washington, DC: Centre for Strategic and International Studies.

Crane, R. D. (1982). Planning the Future of Saudi Arabia: a model for achieving national priorities. New York: Praeger Publishers.

Creswell, J. W. (1998). Qualitative Inquiry and Research Design: choosing among five. Thousand Oaks, CA.: Traditions publications.

Cullingworth, B. (1997). Planning in the USA: policies, issues and processes. London: Routledge.

Dabbagh, T., Sadler, P., Al-Saqabi, A. and Sadeqi, M. (1994). "Desalination, an emergent option". In: Rogers, P. and Lydon, P. (Eds.) Water in the Arab World: perspectives and prognoses. Cambridge: The Division of Applied Sciences, Harvard University.

Day, G. (2002). "The Development of Competition in the Water and Sewerage Industries of England and Wales". In: Seidenstat, P., Haarmeyer, D. and Hakim, S. (Eds.) Reinventing Water and Wastewater Systems: Global Lessons for Improving Water Management. New York: John Wiley & Sons, Inc.: 117-138.

de Jong, R. L. (1989). "Water Resources of GCC: International aspects". *Journal of Water Resources and Management* Vol. (115), No. 4: 503-510.

Deane, J. (2002). "Private sector participation in desalination in the Mediterranean Middle East (MME)-past, present and future". *Desalination* Vol. (152): 57-66.

Dick, B. (1998). Convergent interviewing: a technique for qualitative data collection, Available on: http://www.scu.edu.au/schools/gcm/ar/arp/iview.html, 20 Aug, 2004.

Dolatyar, M., and, Gary, T. S. (2000). Water Politics in the Middle East. London: Macmillan press Ltd.

Dooling, P. J. (1999). Taking Water to Market: An Assessment of Water Privatisation in Britain and a Consideration of the Role for Private Water Management in Canada. Sussex: University of Sussex. Unpublished Ph.D. Thesis.

Dudley, N. (2004). Regional review: Middle East stock exchanges. In: the Handbook of World Stock, Derivative and Commodity Exchange. Mondovisione. http://www.exchange-handbook.co.uk/articles

Easton, J. (1989). "Water marketing in California". In: Baumli, G. (Ed.) Legal, Institution, Financial and Environmental Aspects of Water Issues. University of Delaware, Newark, Delaware, July 17-20: the Water Resources Planning and Management Division: The American Society of Civil Engineers.

Ernst, J. (1994). Whose Utility? The Social Impact of Public Utility Privatisation and Regulation in Britain. Buckingham: Open University Press.

Evans, B., Brocklehurst, C. and et al (2002). New Designs for Water and Sanitation Transactions: Making Private Sector Participation work for the poor. Washington, D.C.: Water and Sanitation Program (WSP), Public-Private Infrastructure Advisory Facility (PPIAF).

Eyles, J. and M. Smith (1988). Qualitative Methods in Geography. Cambridge: Polity Press.

Fakieh, A. (1997). Water reuse in Saudi Arabia: An effective approach to overcome the problem of water scarcity- the experience Makkah Construction & Development Co. Makkah: Fakieh Centre for Research and Development. (In Arabic)

Fankhauser, S. and Tepic, S. (2006). "Can poor consumers pay for energy and water? An affordability analysis for transition countries". DOI "*Energy Policy*" 34(6): 1-12.

Faruqui, N. I., Biswas, A. K. and Bino, M. (Eds.) (2001). Water Management in Islam. Water Resources Management and Policy Series. Tokyo: United Nations University Press.

Flecker, K. and Clarke, T. (2005) Turning off the taps on the GATS. In: McDonald, D. A. and Ruiters, G. (Eds.) The Age of Commodity: Water Privatization in Southern Africa.. London: Earthscan: 77-96.

Flynn, S. and Chirwa, D. M. (2005). The constitutional implications of commercializing water in South Africa. In: McDonald, D. A. and Ruiters, G. (Eds.) The Age of Commodity: Water Privatization in Southern Africa. London: Earthscan: 59-76.

Fontana, A. and Frey, J. H. (2000). "The Interview: from structured questions to negotiated text". In: Denzim, N. K. and Lincolin, Y. S. (Eds.) Handbook of Qualitative Research. Thousand Oaks, CA: Sage Publications.

Foster, V. (2002). "Ten Years of Water Services Reform in Latin America: Toward an Anglo-French Model". In: Seidenstat, P., Haarmeyer, D. and Hakim, S. (Eds.) Reinventing Water and Wastewater Systems: Global Lessons for Improving Water Management. New York: John Wiley & Sons, Inc.: 63-97.

Frankfort-Nachmias, C. and Nachmias, D. (1996). Research Methods in the Social Sciencees. London: Arnold.

Frederiksen, H. and Bruestle, A. (1989). "World Bank's role in global water and related environmental issues". In: Baumli, G. (Ed.) Legal, Institution, Financial and Environmental Aspects of Water Issues, University of Delaware, Newark, Delaware, July 17-20: The Water Resources Planning and Management Division: The American Society of Civil Engineers.

Froukh, M. L. (1997). Decision-support system for domestic water demand forecasting and management. Department of Civil Engineering. Newcastle upon Tyne, University of Newcastle up on Tyne: Unpublished Ph.D. thesis.

GAO (1991). Using Structured Interviewing Techniques. Washington, D.C.: United States General Accounting Office: Program Evaluation and Methodology Division.

Gerson, K. and Horowitz, R. (2002). "Observation and Interviewing: Options and choices in qualitative research". In: May, T. (Ed.) Qualitative Research in Action. London: SAGE Publications: 199-224.

Gischler, C. E. (1979). Water Resources in the Arab Middle East and North Africa. Cambridge: MENAS.

Gleick, P. H. (Ed.) (1993). Water in Crisis: A guide to the world's fresh water resources. New York: Oxford University Press, Inc.

Gleick, P. H., Wolff, G., Chalecki, E. and Reyes, R. (2002). The New Economy of Water: The risks and benefits of globalization and privatization of fresh water. Oakland-California: Pacific Institute for Studies in Development, Environment, and Security.

Gomez-Lobo, A. (2001). "Making water affordable: Output-based consumption subsidies in Chile". In: Smith, S. M. and Brook, P. J. (Eds.) Contracting for Public Services: Output-based Aid and its Applications Washington, D.C.: World Bank and International Finance Corporation: 23-30.

Graham, S. (1997). "Liberalized utilities, new technologies and urban social polarization: the UK experience". *European Urban and Regional Studies* Vol. (4), No. 2: 135-150.

Grimsey, D. and Lewis, M. K. (2002). "Evaluating the Risks of Public Private Partnership for Infrastructure Projects". *International Journal of Project Management* Vol. (20): 107-118.

Gumbo, B. (2004). "The status of water demand management in selected cities of southern Africa". *Physics and Chemistry of the Earth.* Vol. (29): 1225-1231.

Guy, S. and Marvin, S. (1995). The Commodification of Water: New logics of water management in Britain (Working Paper). Department of Town and Country Planning, Newcastle University.

Haarmeyer, D. and Coy, D. G. (2002). "An Overview of Private Sector Participation in the Global and US Water and Wastewater Sector". In: Seidenstat, P., Haarmeyer, D. and Hakim, S. (Eds.) Reinventing Water and Wastewater Systems: Global Lessons for Improving Water Management. New York: John Wiley & Sons, Inc.: 7-27.

Haarmeyer, D. and A. Mody (1997). "Private Capital in Water and Sanitation". *Finance and Development* Vol. (34), No. 1: 34-37.

Hakim, C. (2000). Research Design: Successful designs for social and economic research. London: Routledge.

Hall, D., Corral, V., Lobina, E. and de la Motte, R. (2004). Water privatisation and restructuring in Asia-Pacific. Greenwich: Public Services International (PSI): 1-28.

Hall, D., Lobina, E. and de la Motte, R. (2005). "Public resistance to privatisation in water and energy". *Development in Practice* Vol. (15), No. 3 & 4: 286-301.

Harris, J. S. (2002). "Project Financing of Water Desalination Plants: A Worldwide Trend". In: Seidenstat, P., Haarmeyer, D. and Hakim, S. (Eds.) Reinventing Water and Wastewater Systems: Global Lessons for Improving Water Management. New York: John Wiley & Sons, Inc.: 427-438.

Hartman, C. (1998)."The case for a right to housing". *Housing Policy Debate* Vol. (9), No. 2: 223-246.

Harvey, E. (2005). Managing the poor by remote control: Johannesburg's experiments with prepaid water meters. In: McDonald, D. A. and Ruiters, G. (Eds.) The Age of Commodity: Water Privatization in Southern Africa. London: Earthscan: 120-129.

Haughton, G. and Hunter C. (1994) Sustainable Cities. London: Jessica Kingsely Publishers Ltd.

Hearne, R., Johnstone, N. and Wood, L. (2001). "Regulation of Social and Environmental Concerns with Increased Private Sector Participation in the Provision of Water and Sanitation". In Johnstone, N. and Wood, L. (Eds.) Private Firms and Public Water:

Realising Social and Environmental Objectives in Developing Countries. Cheltenham: Edward Elgar: 21-44.

Hibberd, M. and Bennett, M. (1990). Questionnaire and Interview Surveys : A manual for police officers. London: Police Foundation.

Hickson, D. J. and Pugh, D. S. (1995). Management Worldwide: The Impact of Societal Culture Organizations around the Globe. London: Penguin.

Holland, A. S. (2005). The Water Business: Corporations versus People. London: ZED Books.

Howard, C. and Shamir, U. (2000). "Editorial paper". *Journal of Water Resources, Planning and Management.* Vol. (126), No. 3: 114-117.

Howe, C. W., Beecher, J. A. et al. (2002). Privatization of Water Services in the United States: An Assessment of Issues and Experience. Washington, D.C., National Academy Press.

International Association of Hydrological Sciences (IAHS) (1997). Sustainability of Water Resources under Increasing Uncertainty. Walinford: IAHS Press.

IPA (2001). Guide to the Program of Administrative Reforms of Government Organization towards Distinctive Performance. Arriyadh: Institute of Public Administration. (in Arabic)

Jacquemin, A. (1999). Urban Development and New Towns in the Third World: Lessons from the new Bombay experience. Aldershot: Ashgate.

Johnson, C. (1988). "Historical review of drinking water". In: Speidel, D., Ruedisili, L. and Agnew, A. (Eds.) Perspectives on Water. Oxford: Oxford University Press.

Johnstone, N. and Wood, L. (Eds.) (2001). Private Firms and Public Water: realising social and environmental objectives in developing countries. Cheltenham: Edward Elgar.

Kessler, T. (2002a). Putting the Private Sector in its Place-part I: Issues and evidence in the reform of water and electricity services. Takoma Park, Maryland: Citizens' Network on Essential Services (CNES).

Kessler, T. (2002b). Putting the Private Sector in its Place - Part II: Assessing the feasibility of private sector participation in basic services. Takoma Park, Maryland: Citizens' Network on Essential Services (CNES).

Kessler, T. (2003). Review of the 2004 World Development Report: Making Services Work for Poor People. Takoma Park, Maryland: Citizens' Network on Essential Services (CNES).

Kessler, T. (2004). The Pros and Cons of Private Provision of Water and Electricity Service: A handbook for evaluating rationales. Takoma Park, Maryland: Citizens' Network on Essential Services (CNES).

Kessler, T. and Alexander, N. (2003). Assessing the Risks in the Private Provision of Essential Services. Geneva, Switzerland: Discussion Paper for G-24 Technical Group. CNES.

Khaleej Times (2003). "Good assets needed to tap Arab funds in West". Khaleej Times Online. 5 February, Dubai. http://www.khaleejtimes.co.ae/ktarchive/050203/finance.htm#story2

Kinnersley, D. (1994). Coming Clean: The politics of water and the environment. London: Penguin Books.

Kohl, B. (2002). "Stabilizing neoliberalism in Bolivia: popular participation and privatization". *Political Geography*. Vol. (21): 449-472.

Korn, A., Bisanz, M. and Ludwig, H. (1999). "Privatization of dual-purpose seawater desalination and power plants - structures, procedures and prospects for the future". *Desalination* Vol. (125): 209-212.

Kumar, R. (2005). Research methodology: A step-by-step guide for beginners. London: Sage Publications.

Kyung, H. K. (1997) "Housing and infrastructure finance". *Urban Studies* Vol. (34), 10: 1597-1620.

Langley, P. (1987). Doing Social Research, a guide to coursework. Ormskirk, Lancashire: Causeway Press Ltd.

Lee, T. R. (2000). "Urban water management for better urban life in Latin America: Regional review". *Urban Water* Vol. (2): 71-78.

Lee, T. R. and Jouravlev, A. (1997). Private Participation in the Provision of Water Services: an alternative means for PSP in the provision of water services. Santiago, Chile: Environment and Development Division of Economic Commission for Latin America and the Caribbean (ECLAC) Discussion Paper No. 2 Series MEDIO.

Legge, D. (1993). Water Privatisation: A new framework for old ideas. Faculty of Law. Sheffield, University of Sheffield. Unpublished Ph.D. thesis.

Levy, B. and Spiller, P. T. (1994). "Regulation, Institutions, and Commitment in Telecommunications: A Comparative Analysis of Five Country Studies". In: Cook, P.

and Kirkpatrick, C. (Eds.) Privatisation in Developing Countries Vol. II. Cheltenham: Edward Elgar Publishing Inc.: 63-100.

Lindfield, M. (1997). "Planning for the Private Financing of Urban Infrastructure: Transaction costs and cross-market analysis". *Third World Planning Review* Vol. (19), No. 1: 1-20.

Lokiec, F. and Kronenberg, G. (2001). "Emerging role of BOOT desalination projects". *Desalination* Vol. (136): 109-114.

Marvin, S., Graham, S. and Guy, S. (1999). "Cities, regions and privatised utilities". *Progress in Planning* Vol. (51), No. 2: 91-165.

Marvin, S. and Guy, S. (1997). "Consuming Water: Evolving strategies of water management in Britain". *Journal of Urban Technology,* Vol. (4), No. 3: 21-45.

Mason, J. (1996). Qualitative Researching. London: SAGE Publications.

Mathers, N., Fox, N. and Hunn, A. (1998). Trent Focus for Research and Development in Primary Health Care: Using Interviews in a Research Project. Sheffield: Trent Focus Group.

May, T. (1995). Social Research: issues, methods and process. Buchingham: Open University Press.

Mazzucchelli, S. A., Pardinas, M. R., and Tossi, M. G. (2001). "Private Sector Participation in Water Supply and Sanitation: Realising Social and Environmental Objectives in Buenos Aires". In: Johnstone, N. and Wood, L. (Eds.) Private Firms and Public Water: Realising Social and Environmental Objectives in Developing Countries. Cheltenham: Edward Elgar: 55-116.

McCaffrey, S. (1997). "Water scarcity: international and legal responses". In: Brans, E., Haan, E., Nollkaemper, A. and Rinzema, J. (Eds.) The Scarcity of Water. London: Kluwerlaw.

McCracken, G. D. (1988). The Long Interview. Newbury Park: SAGE Publications.

McDonald, A. and D. Kay (1988). Water Resources Issues & Strategies. London: Longman.

McDonald, D. A. and Ruiters, G. (Eds.) (2005). The Age of Commodity: Water Privatization in Southern Africa. London: Earthscan.

McDonald, D. A. and Ruiters, G. (2005). Theorizing water privatization in Southern Africa. In: McDonald, D. A. and Ruiters, G. (Eds.) The Age of Commodity: Water Privatization in Southern Africa. London: Earthscan: 13-42.

McGranahan, G., Jacobi, P., Songsore, J., Surjadi, C. and Kjellen, M. (2001). The Citizens at Risk: From urban sanitation to sustainable cities. London: Earthscan.

Milliken, J. and Taylor, G. (1981). Metropolitan Water Management. Washington, D.C., American Geophysical Union.

Ministry of Municipal and Rural Affairs (1996) The National Spatial Strategy: an executive summary. Arriyadh, Saudi Arabia. (in Arabic)

Ministry of Municipal and Rural Affairs (2003). The Ministry administrative organisation. http://www.momra.gov.sa/specs/about02.asp.

Ministry of Planning (1985) Fourth Five-Year Development Plan. Arriyadh: Saudi Arabia

Ministry of Planning (1990) Fifth Five-Year Development Plan. Arriyadh: Saudi Arabia

Ministry of Planning (1995) Sixth Five-Year Development Plan. Arriyadh: Saudi Arabia

Ministry of Planning (1999). Hundred Years of Development. Arriyadh, Saudi Arabia. (in Arabic)

Ministry of Planning (2000a) Seventh Five-Year Development Plan. Arriyadh: Saudi Arabia

Ministry of Planning (2000b). Statistical Yearbook. Arriyadh, Saudi Arabia: Central Department of Statistics.

Ministry of Planning (2000c). Achievements of the Development Plans 1970-2000. Arriyadh, Saudi Arabia.

Mohorjy, A., and Grigg, N. S. (1995). "Water-Resources Management System for Saudi Arabia". *Journal of Water Resources and Management* Vol. (121), No. 2: 205-215.

Montagu, C. (1985). Industrial Development in Saudi Arabia, Opportunities for Joint Ventures. London: Committee for Middle East Trade (COMET).

Montagu, C. (1994). The Private Sector of Saudi Arabia: A Personal View on its Role in the Kingdom's Economy. London: Committee for Middle East Trade (COMET).

Mumssen, Y. U. and Williamson, B. (2002). "Comparative Analysis of Regulation: Water and Other Network Industries". In: Seidenstat, P., Haarmeyer, D. and Hakim, S. (Eds.). Reinventing Water and Wastewater Systems: Global Lessons for Improving Water Management. New York: John Wiley & Sons, Inc.: 31-62.

Musalam, L. (2003). Water and Wastewater Sector Restructuring: privatization progress. Riyadh: MOWE.

Nauges, C. and Thomas, A. (2000). "Privately Operated Water Utilities, Municipal Price Negotiation, and Estimation of Residential Water Demand: The case of France". *Land Economics* Vol. (76), No. 1: 68-85.

Nellis, J., Menezes, R. and Lucas, S. (2004). Privatization in Latin America: The rapid rise, recent fall, and continuing puzzle of a contentious economic policy. Washington D.C: Center for Global Development. Series: Washington Contentious: Economic policy for social equity in Latin America

Nickson, A. (1997). "The public-private mix in urban water supply". *International Review of Administrative Sciences* Vol. (63): 165-186.

Nijkamp, P. and Perrels, A. (1994). Sustainable Cities in Europe: A comparative analysis of energy-environmental policies. London: Earthscan Publications.

Ogden, S. G. (1995). "Transforming Frameworks of Accountability: The case of water privatisation". *Accounting Organizations and Society* Vol. (20), No. 213: 193-218.

Ogden, S. G. and Glaister, K. W. (1996). "The Cautious Monopolist Strategies of Britain's Privatized Water Companies". *Long Range Planning* Vol. (29), No. 5: 663-674.

Oppenheim, A. N. (1992). Questionnaire Design, Interviewing, and Attitude Measurement. London: Pinter Publishers.

Othman, M. N. (1983). Water and the Development in the Kingdom of Saudi Arabia. Jeddah: Tihama Publications. (in Arabic)

Pakarinen, T. and Ylinen, H. (Eds.) (1995). Are Local Strategies Possible? Scrutinising sustainability. Tampere, Finland: Tampere University of Technology.

Patton, M. Q. (1987). How to Use Qualitative Methods in Evaluation. Thousand Oaks, CA: Sage Publications.

Postel, S. (1997). Last Oasis: Facing water scarcity. London: W. W. Norton & Company.

Public Citizen (2003). Fiascos: Jakarta, Indonesia. Washington DC: Public Citizen organization.

Punch, K. F. (2003). Survey Research, the Basics. London: SAGE Publications.

Qusti, R. (2003). New Cabinet Unveiled. *Arab News*. 1 May, No. 8920. London.

Rached, E., Rathgeber, E. and Brooks, D. (Eds.) (1996). Water Management in Africa and the Middle East: challenges and opportunities. Ottawa: IDRC.

Rajab, D. (1982). "Urban growth and water resources in Arriyadh". *1st Symposium on the future of water resources in the Arabian Peninsula.* Vol. (4): 9-64. Kuwait University.

Riyadh Daily (2003). "King Names New Cabinet Five New Ministers". Arriyadh, 01 May No. 12732.

Robinson, P. B. (2002). "'All for some': water inequity in Zambia and Zimbabwe". *Physics and Chemistry of the Earth.* Vol. (27): 851-857.

Robson, C. (1995). Real World Research, A resource for social scientists and practitioner-researchers. Oxford: Blackwell Publishers Inc.

Rogers, P. (1994). "The agenda for the next thirty years". In: Rogers, P. and Lydon, P. (Eds.) Water in the Arab World: perspectives and prognoses. Cambridge: The Division of Applied Sciences, Harvard University: 285-316.

Rogers, P., de Silva, R. and Bhatia, R. (2002). "Water is an economic good: How to use prices to promote equity, efficiency, and sustainability". *Water Policy* Vol. (4), No. 1: 1-17.

Rogers, P., and Lydon, P. (Eds.) (1994). Water in the Arab World: perspectives and Prognoses. Cambridge: The Division of Applied Sciences, Harvard University.

Rubin, H. J. and Rubin, I. (1995). Qualitative Interviewing: the art of hearing data. Thousand Oaks, CA: Sage Publications.

Ruiters, G. (2005). The Political Economy of Public-Private Contracts: Urban Water in Two Eastern Cape Towns. In: McDonald, D. A. and Ruiters, G. (Eds.) The Age of Commodity: Water Privatization in Southern Africa. London: Earthscan: 148-167.

Sagane, R. (2000). "Water management in mega-cities in India: Mumbai, Delhi, Calcutta, and Chennai". In: Uitto, J. I. and Bisawas, A. K. (Eds.) Water for urban areas: Challenges and perspectives. Tokyo: United Nations University Press: 84-111.

Sajwani, T. (2002). The privatization of power and desalination sector in the Sultanate of Oman. *Symposium of Infrastructure Financing and Provision.* Arriyadh, Saudi Arabia: Arriyadh Development Authority.

Sall, D. S. and Parker, D. (2000). "The Impact of Privatization and Regulation on the Water and Sewerage Industry in England and Wales: A Translog Cost Function Model". *Managerial and Decision Economics.* Vol. (21), No. 6: 253-268.

Saline Water Conversion Corporation (1999). Annual Report. Arriyadh, Saudi Arabia.

Saline Water Conversion Corporation (2001). Annual Report. Arriyadh, Saudi Arabia.

Saline Water Conversion Corporation (2004). Annual Report. Arriyadh, Saudi Arabia.

Salti, N. (2005). "Sky's the Limit for Saudi Stock Market". *Arab News*. London. 24 May, No. 9673

Samba Financial Group (2005). The Saudi Economy at Mid-Year 2005. Riyadh, Saudi Arabia.

Satterthwaite, D. et al (Eds.) (1994). "Basic Services: new approaches; new partnerships?" *Environment and Urbanization* Vol. (6), No. 2: 3-8 (Editors' introduction).

Saudia-online (2003). "Investment in Saudi Arabia". http://www.saudia-online.com/index.htm

Saudi Arabian General Investment Authority (2002) Foreign Investment Policy. Arriyadh. (in Arabic)

Saudi Arabian General Investment Authority (2003). Privatization in Saudi Arabia. Privatization Unit. Arriyadh. (in Arabic)

Saudi Arabian Monetary Agency (2000). Thirty-Sixth Annual Report. Arriyadh: Research and Statistics Department.

Saudi Arabian Monetary Agency (2004). Fortieth Annual Report. Arriyadh: Research and Statistics Department.

Saudi Gazette (2003). "Five new faces in Saudi Cabinet". Jeddah. 1 May, No. 537

Schilling, K. E. and Porter, E. (Eds.) (1990). Urban Water Infrastructure. NATO Advanced Science Institues Series. London: Kluwer Academic Publishers.

Schwartz, G. (1995). "Privatisation in Eastern Europe: Experience and preliminary policy lessons". In: Cook, P. and Kirkpatrick, C. (Eds.) Privatisation Policy and Performance: International Perspectives. London: Prentice Hall Harvester Wheatsheaf: 31-47.

Seidenstat, P. (2002). "Global Lessons: Options for imroving water and wastewater systems". In: Seidenstat, P., Haarmeyer, D. and Hakim, S. (Eds.) Reinventing Water and Wastewater Systems: Global Lessons for Improving Water Management. New York: John Wiley & Sons, Inc.: 459-482.

Seidenstat, P., D. Haarmeyer and Hakim, S. (Eds.) (2002). Reinventing Water and Wastewater Systems: Global Lessons for Improving Water Management. New York: John Wiley & Sons, Inc.

Seidman, I. E. (1991). Interviewing as Qualitative Research. New York, Teachers College Press.

Seppala, O. T., J. Hukka, and Katko, T. S. (2001). "Techniques, cases and issues: PPPs in water and sewerage services. Privatization for profit or improvement of service and performance?" *Public Works Management and Policy* Vol. (6), No. 1: 42-58.

Shedivy, S. L. (2004). "Factors that lead some students to continue the study of foreign language past the usual 2years in high school". *System* Vol. (32), No. 1: 103-119.

Sheikh, B., Al-Dukair, A., Walker, C. and Zahid, W. M. (1998). A Vision of 2021: Introducing Water Reuse to a World Capital. (Working Paper): High Commission for the Development of Arriyadh.

Silverman, D. (2001). Interpreting Qualitative Data: Methods for analysing talk, text and interaction. London: SAGE Publications.

Stephenson, D. (2005). Water Services Management. London: IWA Publishing. Pp: 264-287.

Stottmann, W. (2000). "The role of the private sector in the provision of water and wastewater services in urban areas". In: Uitto, J. I. and Bisawas, A. K. (Eds.) Water for Urban Areas: Challenges and perspectives. Tokyo: United Nations University Press: 156-199.

Supreme Economic Council (2002). The Privatization Strategy in Saudi Arabia. Arriyadh: Secretariat General.

Swain, A. (Winter 1998). "A new challenge: water scarcity in the Arab World, precious water: growing demand and increasing scarcity". *Arab Studies Quarterly* Vol. (20), No. 1: 1-10.

Swainson, N. A. (1976). "Defining the problem: the institutional arrangement for water quality management". In: Swainson, N. A. (Ed.) Managing the Water Environment. Vancouver: Westwater Research Centre & University of British Columbia Press: 1-30.

Swann, D. (1988). The Retreat of the State: Deregulation and Privatisation in the UK and US. Harvester, Wheatsheaf: Hemel Hempstead.

Swyngedouw, E. (1995). "The contradictions of urban water provision: a study of Guayaquil, Ecuador". *Third World Planning Review* Vol. (17), No. 4: 387-405.

Trade partners (2000). "Saudi Arabia: the investment climate". http://www.tradepartners.gov.uk/

Twitchell, K. S. (1947). Saudi Arabia: With account of the development of its natural resources. Princeton, New Jersey: Princeton University.

Uitto, J. I. and Bisawas, A. K. (Eds.) (2000). Water for Urban Areas: Challenges and perspectives. Tokyo: United Nations University Press.

Ujang, Z. (2006). Strategy and planning of sewerage infrastructures for developing countries: experience of Malaysia. In: Ujang, Z. and Henze, M. (Eds.). Municipal Wastewater Management in Developing Countries: Principles and Engineering. London: IWA publishing: 46-69.

Ujang, Z. and Henze, M. (Eds.) (2006). Municipal Wastewater Management in Developing Countries: Principles and Engineering. London: IWA publishing.

Ujang, Z. and M. Henze (2006). Sustainable sanitation for developing countries. In: Ujang, Z. and Henze, M. (Eds.). Municipal Wastewater Management in Developing Countries: Principles and Engineering. London, IWA publishing: 1-16.

United Nations Development Program (2003). Human Development Report. New York.

United Nations Children's Fund (2001). The State of the World's Children. New York: 80-101.

United Nations (10th Dec. 2002). "International Year of Freshwater 2003". New York (Press Release).

United Nations Development Program (2002). Arab Human Development Report. New York.

Vickers, J. and Yarrow, G. (1985). Privatisation and Natural Monopolies. London: Public Policy Centre.

Victorio, A. (1995). "Water Demand and the Pricing of Common Property". *Journal of Public Sector* Vol. (18), No. 4: 20-23.

Walmsley, J. (1985). Joint Venture in the Kingdom of Saudi Arabia. London: Graham and Tortman.

Ward, S. (1989). "Infrastructure- the lessons of history". *Town and Country Planning* (May): 136-137.

Watson, N., Mitchell, B. and Mulamoottil, G. (1996). "Integrated Resource Management: Institutional arrangements regarding Nitrate pollution in England". *Journal of Environmental Management and Planning* Vol. (39), No. 1: 45-64.

White, R. (1994). Urban Environmental Management: Environmental change & urban design. Chichester: Wiley.

Winpenny, J. (1994). Managing Water as an Economic Resource. London: Routledge.

World Bank (1997). Toolkits for private sector participation in water and sanitation. Washington, DC: Transport, Water and Urban Development Department.

World Health Organization (2000). Water for basic needs. 2002.

Yin, R. K. (1989). Case Study Research, Design and Methods. Newbury Park: SAGE Publications.

Zhang, X. and Kumaraswamy, M. M. (2001). "BOT-Based Approaches to Infrastructure Development in China". *Journal of Infrastructure Systems* Vol. (7), No. 1: 18-25.

Appendix I

Letters used by the researcher to facilitate the task of information collection, from the researcher's supervisor in Newcastle University and from the Architecture and Planning College in King Saud University in Arriyadh-Saudi Arabia.

UNIVERSITY OF NEWCASTLE

School of
Architecture, Planning and Landscape
Claremont Tower
University of Newcastle
Newcastle upon Tyne NE1 7RU

1st November 2004

Dear Sir,

TO WHOM IT MAY CONCERN

I am writing on behalf of my doctoral research student Mr Abdualelah Al-Mayouf who is now engaged on fieldwork as a necessary part of his research towards his Ph D which is sponsored by King Saud University His fieldwork is a survey of water services management in Saudi Arabia, and possible changes in the supply of water services This fieldwork is a major and important part of his research study

He is seeking the points of view of relevant government departments, as well as the private sector, to provide a vital insight and understanding of possible changes to water supply provision

Therefore, I would be extremely grateful if you could assist Mr Al-Mayouf in his research, to enable him to fulfil his mission and accomplish his desired objectives, by coordinating and directing him to relevant individuals within your organisation who may be able to provide him with information.

Yours faithfully,

K G Willis

Professor K G Willis

Telephone +191 222 5401
Switchboard +191 222 6000
Fax 0191 222 5811

Kingdom of Saudi Arabia
Ministry of Higher Education
King Saud University
College of Architecture & Planning
Dean's Office

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك سعود
كلية العمارة والتخطيط
مكتب العميد

No الرقم

Date التاريخ

إلى من يهمه الأمر

السلام عليكم ورحمة الله وبركاته ... وبعد

نفيدكم علماً بأن المهندس/ عبدالإله بن محمد المعيوف أحد مبتعثي الكلية ويقوم حالياً بالتحضير لنيل درجة الدكتوراه في حقل يتعلق بإدارة خدمات المياه في المدن سريعة النمو من جامعة ليوكاسل ببريطانيا.

وكجزء من خطته الدراسية في هذه المرحلة التي تتطلب حصر ومراجعة عدد من الحالات الدراسية وإجراء لبعض المقابلات فإننا نرجو منكم التكرم بتزويد الباحث بما يحتاجه من معلومات وتقديم العون اللازم له مما سيساهم في مساعدته على إنجاز مهمته

شاكرين ومقدرين لسعادتكم حسن تعاونكم معنا

وتفضلوا بقبول خالص تحياتي وتقديري، ،والسلام ،

عميد كلية العمارة والتخطيط

أ.د محمد بن عبد الله بن صالح

بواسطه

P.O. Box 57448 Riyadh 11574 ☎ 467 7144 Fax 467-5775

The Correspondence Interviews (personal correspondence in Arabic):

بسم الله الرحمن الرحيم

الاسم: (اختياري) .....

المنصب أو المسمى الوظيفي: .....

السلام عليكم ورحمة الله وبركاته،

أمل من سعادتكم التكرم بتقديم إجابتكم على الأسئلة التالية والتي تندرج تحت أربعة مواضيع عامة ذات صلة بمجال تقديم خدمات المياه في المدن السعودية. لقد صيغت الأسئلة بطريقة تتلاءم و أغراض البحث العامة والذي أقوم بإعداده كجزء من متطلبات مرحلة الدكتوراه. إن تقديمكم لإجابات وافية وتفصيلية قدر الإمكان ناتجة عن الخبرة التي تمتلكون سيكون لها دور مهم في إثراء وتحسين نتائج البحث قيد الأعداد. شاكرا لكم حسن تعاونكم سلفا، وتقبلوا فائق تحياتي وتقديري...

الباحث

١- الإدارة المحلية

١١ ما هو أثر ضعف أو انعدام الاستقلالية الإدارية والمالية للأجهزة الحكومية المعنية بتقديم خدمات المياه على القطاع بشكل عام؟

.....

.....

.....

.....

.....

وهل يمكن اعتبارها إحدى المسببات لعدم تحقيق الكفاءة في القطاع؟ ولماذا؟

.....

.....

.....

١٢ إذا كانت الأجهزة البلدية والإقليمية المعنية بتقديم خدمات المياه يجب أن يدخل عليها بعض الإصلاحات كجزء من متطلبات الاستثمار في القطاع ما هي باعتقادك التغييرات الرئيسية المطلوبة؟

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١٣ مبدأ الشراكة بين القطاعين العام والخاص في تقديم خدمات المياه تم تطبيقه عالميا، ما هي الدوافع الحالية أو المستقبلية التي قد تشجع على تطبيقه محليا؟

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وهل سيكون تبني مثل هذا المبدأ مفيدا للمستهلكين بخاصة وقطاع خدمات المياه بشكل عام؟

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١٤ مسئولية تقديم خدمات المياه يمكن نقلها جزئيا أو كليا إلى مستويات بلدية/محلية أو إلى هيئات مستقلة حكومية أو شبه حكومية كبديل لعملية التخصيص الشاملة، باعتبار الأوضاع الحالية للقطاع أي من مناهج وسبل الإدارة التالية يمكن أن يحقق الإدارة الفعالة ولماذا؟

Deregulation: يعني إزالة العوائق الإدارية والمؤسساتية غير الضرورية من الهيكل التنظيمي.

Decentralisation: نقل مسئولية صنع القرار وتقديم الخدمات والإنتاج من الجهات المركزية على المستوى الوطني إلى عدد من الجهات على المستويات المحلية أو في بعض الأحيان الإقليمية.

Corporatisation: تحويل المرافق الحكومية إلى مؤسسات عامة ذات استقلالية مالية تامة تهيئ لرفع اعتماداتها من الميزانية العامة للدولة، من منطلق أنها ستحصل على عوائد مالية من تقديم الخدمات لتنفقها على مجالات التشغيل والصيانة والتوسع.

Commercialisation: يتم من خلال تطبيق وتحصيل رسوم كافية على استخدام الخدمات تغطي بها التكاليف الحقيقية لتقديمها. هذا المبدأ يزيد من كفاءة قطاع الخدمات ماليا ويجعله جذاب لاستثمارات القطاع الخاص في المستقبل.

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٢. التحضر ومعدلات النمو المرتفعة

إن معدلات التحضر المرتفعة من الممكن أن تؤدي إلى زيادة كبيرة في تكاليف تقديم خدمات المياه في المناطق العمرانية مسببا انخفاضا في قدرة المدن على الوفاء بمسئولياتها تجاه ساكنيها. لذلك وعلى سبيل المثال فإن إمدادات المياه لا يمكنها ان تواكب الطلب المتزايد باعتبار التدهور المتوقع في انظمة المياه الحالية في حال حدوث انخفاض حاد في الاعتمادات المالية لبرامج الصيانة وقلة في الاستثمارات الموجهة للقطاع بشكل عام.

٢١ كيف يمكن تجاوز مثل هذه المشكلة؟

٢٢ في حال تحقق نجاح في تطبيق سياسات فعالة للحد من النمو المضطرد للمدن والحواضر، هل سيؤدي ذلك إلى تحجيم الطلب المتزايد على إمدادات المياه؟ ولماذا؟

٢٣ ما هو الدور الذي يمكن أن تقوم به برامج ترشيد استهلاك استخدامات المياه لتجاوز مشكلات التحضر؟

٣. دوافع التخصيص

إن السعي نحو تبني برامج الخصخصة يتم توجيهه من خلال الخطة الطموحة للحكومة السعودية لمنح ٢٠ مرفقا الفرصة في مشاركة القطاع الخاص من ضمنها قطاع تحلية المياه الناجحة بهدف تخصيف الأعباء المالية على ميزانية الدولة ومعالجة مشكلة الدين العام وإيجاد مصادر جديدة لتمويل مشاريع المرافق العامة كخيار استراتيجي.

٢٤ إن انظمة المياه في السعودية ستتطلب ما يقارب ٣٠٠ بليون ريال خلال العشرين سنة القادمة بحسب تقديرات هيئة الاستثمار مخصصة لمشاريع التوسعة والصيانة والتشغيل. ما هي البدائل المحتملة للتعامل مع هذا الوضع؟ وكيف يمكن تطبيقها؟

٢٥ المعايير المستخدمة في تقييم مشاركة القطاع الخاص في تقديم خدمات المياه يجب ان تشتمل على مستويات محددة من القدرة على التوسع في تغطية الشبكة coverage targets، جودة المياه water quality، برامج الكشف عن التسربات leakage detection، إعادة تأهيل نظام الخدمة بشكل عام system rehabilitation، كيف يمكن تحديد ومراقبة تطبيق هذه المعايير؟

هل يمكنك الإشارة إلى معايير أخرى مهمة؟

٢٦ في حال تبني صيغة مشاركة القطاع الخاص لتقديم خدمات المياه ما هو الأساس الذي يجب ان يقوم عليه قرار منح الرخصة؟ (سعر وحدات المياه المقدمة، التقنية المستخدمة، الخ).

٢٧ هل تحسين كفاءة الأداء في قطاع المياه (خلال تقنيات حديثة في التشغيل وجذب استثمارات جديدة تعتبر عوامل مقنعة لتبني التخصيص؟

هل هناك عوامل أخرى يمكن الإشارة لها؟

٣٣ باعتبار إجابتيكم السابقتين، هل يمكن للشراكة بين القطاعين العام والخاص أن تكون بديل ناجح لتقديم خدمات القطاع؟ وكيف يمكن أن يتم ذلك؟

٣٤ حيث أن المؤسسات المالية والبنوك المحلية لا يمكنها بمفردها توفير التمويل اللازم للاستثمارات المطلوبة لمشاريع المرافق التحتية، ما الذي يجب القيام به لتشجيع الاستثمارات الجديدة وتحفيز تحالفات وشراكات جديدة؟

٤. قضايا الأنظمة والضوابط

٤١ تباين وتعدد مستويات التدخل الحكومي لتنظيم خدمات المياه فيما يتعلق بحماية البيئة والصحة العامة ومنع احتكار تقديم الخدمة يمثل أحد المعوقات لمشاركة فعالة للقطاع الخاص في هذا المجال، هل يمكنك تقديم مرئياتك حول هذا الجانب؟

٤٢ ما هي الجوانب المهم توفرها في ضوابط تقديم خدمات المياه والمتعلقة بالمراقبة monitoring، الأنظمة الملزمة enforcement duties، قوانين تنظيم عمليات التعاقد laws to regulate the contractual process، المنافسة في مجال تقديم الخدمات competition، الخ؟

٤٣ إن مشاركة القطاع الخاص في تقديم خدمات المياه يجب أن يقابلها وجود منظم regulatory agency تتمتع بالفعالية، الاستقلالية، الشفافية مع وضوح في عملية اتخاذ القرارات. ما هي المواصفات الواجب توفرها في منظم الخدمات بشكل عام؟

٤٤ في أي مستوى من المستويات الحكومية (الوطني، الإقليمي، المحلي/البلدي) لصنع القرار يفضل أن تمنح الصلاحيات المتعلقة بتطبيق الضوابط لضمان (نجاحها؟ ولماذا؟

٤٥ كيف يمكن أن يوفر المنظم ضمانات كافية للمستثمرين ويحافظ في نفس الوقت على مصالح المستهلكين على المدى الطويل من خلال الالتزام باشتراطات عقد المشاركة؟

٦.٤ فيما يتعلق بهيكل التعرفة الحالي لاستخدامات المياه، هل يمكنه أن يعطي تكاليف تطوير قطاع الخدمات؟ أم هل يجب إدخال تعديلات جذرية على هيكل التعرفة؟

٧.٤ كيف يمكن للتعرفة أن تحدد لتتيح استرداد كامل للتكاليف المتعلقة بتقديم الخدمات مع توفير عائد مقبول على الاستثمارات المبذولة؟

٨.٤ أخذا بالاعتبار إجابتكم على السؤال السابق، كيف يمكن تبني صيغ لقدرة المستهلكين على دفع الرسوم willingness of consumers to pay ؟

٩.٤ هل الأنظمة الحالية تتمتع بقدرة لدعم إدخال تعديلات على طريقة إدارة المياه؟

وهل يمكنها تقديم ضمانات كافية لتشجيع مقدمي الخدمة المحتملين لقبول مخاطر استثمارية لتفادي مشكلات التدخل الحكومي، استقرار في المناخ الاستثماري، ثبات في معدل سعر صرف العملة، تسعير ملائم للخدمات؟

١٠.٤ هل نظام سوق المال، القوانين التجارية، والأوضاع المحلية بشكل عام ملائمة للتحول إلى خصخصة لقطاع المياه؟ ولماذا؟

٥. نموذج لمشاركة القطاع الخاص

١٥ تقوم الدولة بالسعي لإشراك القطاع الخاص في بناء وتطوير محطات التحلية كسبيل لتلبية الطلب المتزايد على إمدادات مياه الشرب عن طريق أحد أنماط امتيازات البناء والتملك والتشغيل. بالنظر للتسلسل التالي:

- تبدأ الجهة الحكومية مرحلة "طلبات التأهل" للشركات أو التحالفات الراغبة في المشاركة بالمشروع.
- تقوم الشركات أو التحالفات المختارة من المرحلة السابقة بتقديم "request for proposal" متضمنا تفاصيل فنية وإدارية ومالية.
- التوافق مع المواصفات التي تضعها الجهة الحكومية والتي تحتوي معايير وإجراءات للتقييم كالسعر والجدوى الاقتصادية والقدرة التقنية.
- مرحلة تقييم "proposals" في ضوء معايير ومتطلبات محددة مسبقا مالية وتقنية وقانونية.
- تحديد قائمة مصغرة من الشركات المتأهلة.
- مفاوضات تفصيلية مع القائمة المصغرة لإزالة أي غموض متعلق بالجوانب المالية للتوصل إلى قرار بشأن اختيار ومنح العقد.

ما هي ملاحظاتك على مثل هذا التسلسل؟ وماذا يمكن أن يضاف إليه؟

٢.٥ هل هناك اشتراطات عامة يجب توافرها خلال مرحلة التأهل والاختيار ثم التعاقد؟

٢٥ في تحقيق قدر كافٍ من المناضة بين المشاركين المحتملين على الفوز بالعقد خلال مثل هذا التسلسل يعتبر من الأمور المهمة، ما الذي يمكن أن يحققه في نظرك؟

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٩. المشاركة الشعبية

١٦ إلى أي مستوى يجب أن تتاح مشاركة المواطنين في عملية التخطيط لإصلاح قطاع مرافق الخدمات العامة وقطاع المياه بشكل خاص؟

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٢١ هل تشجيع منظمات مدنية ذات صلة بحيث يشترك ممثلين عن المواطنين في نقاشات مباشرة مع الجهات التي تقدم الخدمات حول خططهم المطروحة كإجراء مؤسس يمكن أن يحقق الاتزان والنجاح في عملية صنع القرار؟ ولماذا؟

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٧. هل تعتقد أن هناك بعض القضايا الهامة كان يجب التطرق لها في هذه الأسئلة؟ أرجو التكرم بحضرها..

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تقبلوا كل الشكر والتقدير

Name: (optional) .....
Position/occupation: .....

Greetings.
I would be grateful if you could kindly provide your ideas and opinions about the following key issues by answering the questions below. This is a principal element of the data collection stage for my PhD research programme. These questions serve the aims and objectives of the research which is concerned with water services provision in Saudi cities. Your views are extremely important in this, since detailed answers will shed light on the issues under investigation and greatly improve the validity of the research results. Your statements will be treated as confidential and will only be used for the purpose of this research. Please accept my sincere thanks for taking the time to complete this questionnaire, and for your valuable cooperation.
Regards...
The researcher

1. Efficient Approaches to Management

1.1 Does the lack of management and financial independence of the public organisations responsible for water have any effect on the sector?

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Does that contribute to deficiencies in the sector?

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1.2 If municipal and/or regional bodies are to be reformed in response to investment requirements, what alterations might be considered as essential?

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1.3 If partnership between public and private sectors in water services provision is to be considered by the government, in your opinion what are the motivating factors for implementing such a proposal in the Saudi context?

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Is such a partnership going to be beneficial to the customers, and to the sector itself?

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1.4 The responsibilities of water services provision could be partly or wholly transferred to the local/municipal level, or some other entities, as a different approach from privatisation. Considering the following means, what approach might be useful for the water sector given its existing circumstances?

Deregulation: concerned with removing unnecessary administrative, institutional or bureaucratic barriers from the organisational structures.
Decentralisation: concerned with devolving responsibility for policy making, provision of services and production from centralised agencies at the national level, to a number of agencies at local and regional levels (regionalisation/localisation).
Corporatisation: a method by which public services are transformed into financially independent organisations, being consequently taken off the general budget after eliminating their allocations. On that basis, these organisations would receive the revenues from service provision to fund their operations, maintenance and system expansion tasks.
Commercialisation: a process based on imposing full cost recovery for the services used. Consumers are obliged to pay user fees that cover the actual costs in order to have access to these services. The commercialisation of services should result in making them financially efficient and more attractive for potential future investment by the private sector.

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2. High Growth Rates and Problems of Urbanisation
High rates of urbanisation can lead to increased costs for providing urban water services, which could preclude governments from satisfactorily fulfilling their responsibilities towards their residents. As a result supply will not meet the growing demand, this being accompanied by system degradation and inadequate maintenance due to chronic under-investment in water services thus producing problems of water loss.

2.1 How might such a problem be overcome?

2.2 If the development of large cities could be successfully controlled, would that break the escalation in demand for water supplies?

2.3 What role could effective programmes for water conservation play in solving this problem?

3. Motives for Privatisation

The course of privatisation in Saudi Arabia is being guided by a new strategy for this purpose. Indeed, the government has introduced a plan to privatise 20 vital economic sectors, including water desalination. This was intended to ease the burden on the national budget and to tackle public debt. It may be assumed that in general, the shortage of financial resources essential for the delivery of water services represents one element in the issue of under-provision, along with the limited availability of resources.

3.1 The country will require a vast amount of investment (nearly SR300 billion over the next 20 years) to maintain, improve and extend existing systems for water provision. What are the possible alternatives to deal with this situation? And how might they be implemented?

3.2 Among the criteria used to assess PSP in water services provision are coverage targets, water quality, leakage detection and system rehabilitation. How might it be possible to ensure adequate application and monitoring of such criteria?

Are there any other important criteria?

3.3 If PSP is to be introduced to the water sector, on what principles should the contract be based? (Price of water units, technology used, etc.)

3.4 Are improved efficiency, the introduction of new technology and being able to attract new financial investments convincing factors for privatisation?

Are there any other significant factors?

3.5 Considering the possibility that water services costs will rise, and that the government has limited funds for development, can PSP be a feasible alternative and in what way?

3.6 Local banks may not, or do not want to be the sole providers of funds to cover the enormous investment required by the water sector. What action should be taken to promote additional investment by means of incentives offered to new strategic alliances?

4. Regulation Issues

4.1 Disparity and multi-level government intervention in the regulation of water services represent an obstacle for effective PSP. What are your views concerning this issue?

4.2 What aspects are important for the regulation of water services provision? (Monitoring, enforcement duties, new legislation to regulate the contractual process, competition, etc.).

4.3 PSP in water services provision would require a regulatory authority that demonstrated the qualities of efficiency, independence, transparency and a clear decision-making process. In your opinion, what other characteristics would be needed by such an authority?

4.4 At what level of government might such regulatory duties best be undertaken, to ensure adequate control? Why?

4.5 How can adequate guarantees be offered to protect investor's rights and at the same time protect the rights of consumers in the long term, through commitment to participation in the agreement?

4.6 Can the existing tariff structure cover the costs of planned improvements, or is there a need to impose new changes to the tariff?

4.7 How can tariffs be set to allow for cost recovery of services provided, with a reasonable return on investment for the provider?

4.8 Taking into account your previous answers and considering the existing tariff levels, how can the government adopt the principle of willingness of consumers to pay?

4.9 Does the existing structure of regulations have the capacity to support changes in the way water services are managed?

5.2 Are there any important requirements that need to be made available during the pre-qualification and contracting stages?

5.3 A proper degree of competition among potential bidders to win a contract through this sequence is desirable. What are the possible outcomes of such a competitive process in your view?

6. Public Participation

6.1 To what extent should the citizens be involved in government planning to reform public services, and the water sector in particular?

6.2 Should their involvement be through citizen-based institutions? Where are the representatives engaged in dialogue about such plans as an established procedure? Why?

7. Are there any other important issues that should have been included in this questionnaire?

Thank you very much for your cooperation

And at the same time offer guarantees or incentives that encourage providers and operators to take the risk of investment?

4.10 Are the current stock market system, commercial law and local conditions overall appropriate for a move to PSP? Why?

5. A model for PSP

5.1 The government may seek the participation of the private sector in the development of desalination plants as one approach to meet the growing demand for water, and this could follow one of the BOT arrangements. Please consider the following order:

- The government starts the process by submitting a Request for Qualification document to interested companies.
- The appropriate government department provides qualified developers with a Request for Proposal that includes the technical, administrative, financial and legal details of the project.
- The government department prepares detailed documents to follow, including evaluation methods, construction specifications, production unit price, economic feasibility and technical capacity, etc.
- The developers submit proposals that should match the specifications laid out by the government department.
- The government department makes a shortlist of the qualified developers.
- There are detailed negotiations with the short-listed developers, to eliminate any uncertainty about financing and in order to reach the final selection and award the contract.

What are your observations regarding this sequence? Could anything be added to it?

Appendix II

Samples of the spreadsheets which were used during the analysis stage:

Topic [1]: **Efficient management approach**

Q [3]: If the global approach to public-private partnerships in water services provision is to be considered by the government, what are the driving forces for such a proposal in the Saudi context? Is this type of partnership going to be beneficial to the public, and to the sector itself?

Respondents	Cat.	No.	Answers/Statements A1 The vast amounts of capital investment required	A2 Increasing demand for water due to population growth/ Availability of investment opportunities in the sector	A3 Improving the sector quality & efficiency by the introduction of private sector experience	A4 Developing sustainable wastewater reuse programmes, considering the water scarcity issue
	Government Officials	1	Yes			
		2		No, depnds on gov comt.		
		3	Yes for cons./quality.			
		4			Yes	
		5	No			
		6	No for cons. Yes for sect			
		7		Yes		
		8	Yes			
		9			Yes	
		10			Yes, appropriate prtnr	
		11				Yes
		12		Yes		
		13	Yes			
		14				Yes for cons.
		15			Yes	
	Private Sector	16			Yes	
		17			Yes	
		18		Yes for certain catego.		
		19	Yes			
		20			Yes	
		21			Yes, good implementn	
		22			Yes	
		23	Yes			
		24			No for consum.	
		25				Yes
	Academics & Researchers	26			Yes	
		27	Yes			
		28				Yes for sector
		29		Yes		
		30	Yes			
		31	New job yes			
		32	Yes if laws in place			
		33				
		34				Yes, for both

Topic [2]: **High growth rates and problems of urbanisation**

Q [2]: If the development and growth of the cities is shaped and restrained, will that break the escalation in demand for potable water?

Respondents	Cat.	No.	A1 Water demand is linked with population growth, that is irrelevant to spatial distribution	A2 High residential density could control the demand but other users (industry/agriculture) will contribute to increasing demand	A3 Effective management of water systems will reduce water loss (e.g. leakage)/ Water conservation & alternative resources (e.g. water reuse programmes) will improve water saving
	Government Officials	1	Yes		
		2		Yes	
		3	No		
		4			Yes
		5			
		6		Yes	
		7	No		
		8			No
		9			Yes
		10			Yes
		11			Yes, relatively
		12			
		13	No, aditnl infra. for other regions		
		14			
		15	No		
	Private Sector	16	No, use can be affected in cities		
		17	Yes		
		18	No		
		19	No		
		20			Yes
		21			
		22	No, demand will shift to other places		
		23	No		
		24			No
		25			Yes
	Academics & Researchers	26		Yes	
		27			No
		28			Yes, to certain extent
		29			
		30			
		31			
		32			
		33	Yes		
		34		No, Better use of system capacity	

Topic [3]: **Motives for privatisation**

Q [1]: The country requires a vast amount of investment to improve, extend and maintain the existing water services systems. What are the possible alternatives to deal with this situation? And how could they be implemented?

Respondents			Answers/Statements			
	Cat.	No.	**A1** Introduction of a PSP option to the sector, simultaneously improve conditions to maintain equality & fairness for providers & consumers	**A2** Allocating more funds from the general budget/ PSP can be in resources development and production functions	**A3** Implementation of effective policies to manage demand/ Introduction of new techniques to improve the sector efficiency	**A4** Reconsidering the existing tariff & any necessary legislation as a condition to a successful PSP in the long term
	Government Officials	1				
		2				
		3				
		4				
		5				
		6				
		7			Control Agri. demand	
		8			Increase tariff	
		9				
		10				
		11	+ reuse of water			
		12	+ water conservation			
		13	Goven. support in 1phase			
		14	Consider low income			
		15			Control agri. demand	
	Private Sector	16				
		17				
		18				
		19				
		20				
		21				
		22				
		23				
		24		Increase tariff		
		25				
	Academics & Researchers	26				
		27				
		28		Budget can finance		
		29				Reconsidering tariff
		30				
		31				
		32				
		33				
		34				Consider low income

Topic [4]: **Regulation issues**

Q [4]: At what level of government might such regulatory duties best be undertaken, to ensure adequate control?

Respondents	Cat.	No.	Answers/Statements A1 Powers at national level to examine policies in line with water resources/ Supervisory role to the municipal councils	A2 Regional, given the 13 regions we have that suits the regime and the existing regional councils	A3 Local, to expedite decision making/ also due to the disparity of conditions from one place to another	A4 Clarity of responsibilities & granted powers are to define what level/ Also separation of production & distribution processes
	Government Officials	1				
		2				
		3		governing admin regime		
		4				
		5				
		6				
		7	be compatible w vision			
		8				
		9				
		10				
		11				
		12				
		13				
		14	knowledge of locality			
		15				
	Private Sector	16				Depends on responsties
		17				
		18				
		19				
		20				
		21			accelerate deciin making	
		22				
		23				
		24				
		25				
	Academics & Researchers	26	Facilitate overseeing			
		27				
		28				
		29				
		30				
		31		benfit frm prvincil concl		
		32				
		33				
		34				

Appendix III

1. Types of Pubic-Private Partnerships

Build-Operate-Transfer (BOT) or Build-Transfer-Operate (BTO): In this a private partner builds a facility according to the terms set by the public authority, operates the facility for a certain time period under a contract or franchise agreement with the authority, and then transfers the facility to the authority at the end of the agreement. Ordinarily, the private partner will provide the finance either partially or completely, therefore the duration of the contract should allow sufficient time to maintain a reasonable return on the investment through user charges. When the franchise period is terminated, the public partner can take up operating responsibility for the facility, renew the operations contract to the initial franchise holder, or grant a new contract to a new private partner. The BTO has one difference from the BOT scheme, since the transfer of ownership to the public sector occurs on completing the construction rather than at the end of the franchise period.
The acronym BOT was first used in the early 1980s by Turkey's Prime Minister Targut Ozal. However, the arrangement itself can be traced back to Hong Kong in the late 1950s when a privatised vehicle tunnel was first discussed (Grimsey and Lewis (2002).

Build-Own-Operate (BOO): A private partner builds and operates a facility without transferring ownership to the public sector. Legal rights to the facility remain in the hands of private partner. However, the public sector is free from any obligation to purchase the facility or take legal right.

Buy-Build-Operate (BBO): A BBO is a scheme emerged from asset sale which could include rehabilitation, expansion of an existing facility, or improving the performance of production. The government sells the asset to the private investor, which then carries out the essential improvements (which can be stated in the agreement) to operate the facility in a profitable manner.

Contract Services: A public partner (national or local government authority) contracts with a private partner to operate, maintain and manage a facility or a service system. Under this option the public partner retains ownership of the facility or system, but the private party may invest its own capital in the facility or system. Any private investment is carefully calculated in relation to its contributions to operational efficiencies and savings over the term of the contract. Generally, the longer the contract term the greater the opportunity for increased private investment, because there is more time available in which to recover any investment and make a reasonable profit.

Design-Build (DB): This scheme is based on providing of both design and construction of a project by the private partner to the public authority. The public partner owns the assets and has the responsibility for operation and maintenance. This sort of partnership could benefit the public sector in terms of time-reduction, money-saving, should it acquire implementation guarantees and allocate additional project risk to the private sector. It might also reduce conflict and disputes, as the responsibility to the public owner for the design and construction is placed in a single entity.

Design-Build-Maintain (DBM): This scheme has some similarity with DB, apart from the facility maintenance which is the responsibility of the private partner for a specified period of time. The same benefits can be attained from DBM as in DB, besides which maintenance risk will be allocated to the private partner and the guarantee expanded to include maintenance.

Design-Build-Operate (DBO): In this scheme the design, construction, and operation tasks are awarded in one contract. The ownership of the facility remains in public hands, which is the main difference between this scheme and design-build-operate-transfer (DBOT). This scheme may include several sub-contracting processes for design with an engineering entity, then a contract for project construction, subsequently taking over the responsibility through an agreement to operate the project. Conversely, carrying out the development of a facility project separately could create a problem associated with potential delay and overlapping in the development phases, because the responsibilities are distributed among a number of players. Placing all three responsibilities for design, construction and operation into a DBO scheme would promote private involvement and finance for new public projects.

Private Finance Initiative (PFI): Through this arrangement, service providers assume responsibility to fund the construction costs of the developed service and then rent the finished project back to the public sector. By this, the government can provide its people with the needed services without increasing the burden on general budget. However, it can be argued that the government is just postponing payments, since the long-term cost of paying the private sector to participate in these schemes is more than it would cost the public sector to develop them itself. Such scheme would lead to a dramatic increase in the quality of public services, if accompanied by performance standards that are enforced by suitable penalties in case of under-performance, which can ensure a continuing of improvement.

2. The Role of Ofwat In England and Wales [1]

Ofwat (the Office of Water Services) is a non-ministerial governmental department that plays the role of regulating the economics of the water industry in England and Wales and it is responsible for supervising the provision of good-quality, efficient services at a fair price.
Ofwat enforce water companies to carry out all functions of water services according to the Water Act. It also has the capability to finance these duties through acquiring reasonable levels of revenues on the invested capital. The supervision process can be looked at through controlling the charges levels for customers that are applied by companies; encouraging water companies to follow the Water Industry Act 1991 as a major responsibility; and

[1] This is based on the Ofwat website (www.Ofwat.gov.uk), on 26/08/2003.

supporting new forms of efficiency and high standards of services in parallel with appropriate introduction of competition in order to improve the level of performance.

Therefore, Ofwat checks that water companies charge within the limits set by Ofwat and in the same time considering that individual charges are fair to all customers categories: those having meters or not, small or large, and in urban or in country areas. Nonetheless, Ofwat controls the charges of services in the light of their relation to the costs of providing them in the first place. This means all the water services bills should cover the cost of supplying clean water, collecting wastewater and draining water from areas around houses. With respect to economy and efficiency, Ofwat has a role to play in encouraging water companies to improve drinking water and to protect the environment in England and Wales, and to improve their services by being more efficient, not just by putting up their prices. Additionally, Ofwat calls for water companies to reduce leakages from the distribution networks, as well as encouraging the wise-use of water and offering necessary repairs services. Another objective is protecting customers through the approved 'codes of practice' in order to achieve a better provision of services to customers.
Although some problems might occur, publishing information about the performance enables Ofwat to take action against companies with poor levels of delivery. Ofwat set a standards scheme to reflect the consumers' needs. It also guarantees compensation payment for customers if the company does not fulfil its obligations stated in the license, such as appointments within agreed times, answering questions about customers accounts and their written complaints, passing information about planned supply interruptions that exceeds four hours and the time to get water back, payments in case houses were affected by flood or sewer, and payments in case of failure to maintain a minimum water pressure. To achieve these aims, Ofwat set up 10 independent regional Customer Service Committees (CSCs) that have their own legal duties to represent customers' interests. These committees perform through close working-relation with Ofwat and through organizing public meetings. Each committee is formed by members from local people from different backgrounds, supported by small full-time staff.
However, to supervise the customers' interests at the national and European levels, there is a council called National Customer Council (ONCC) set up by Ofwat formed by all chairs of regional Customer Service Committees. The meetings of this council are attended by the director of Ofwat, and among its duties is to develop customer-friendly policies, to protect public interests with regard to water services and to put forward any concerns by consumers before agreement is reached on new European directives. The director of Ofwat has many duties to carry out under his prime responsibilities such as (1) Comparing companies' performances, to identify the necessary improvements, (2) Giving companies incentives to reduce operating costs which will benefit customers at the next price review in the form of lower prices that occur every 5 years according to the Water Act 1999, (3) Introducing competition between suppliers and potential ones, ensuring that the regulatory framework is in support for this, (4) Exercising the requirement to further the conservation and enhancement of the environment and to maintain the preservation of public amenities, such as access to the countryside and seaside, and (5) setting *"the annual price increase, or 'K' factor, for each company to reflect what it needs to charge to finance the provision of services to customers"*. Other duties of the director of Ofwat cover; determination of the amount charged for new water connections and identification of certain areas that are effectively drained by public sewers. Licences for water companies with imposed conditions are granted by the Secretaries of State for the Environment, Transport and the Regions and for Wales to provide water and sewerage services in England and Wales. *"Changes to a Licence can be made by the Director with the company's agreement, or following reference by him to the Competition Commission on public interest grounds."* While in case of disagreements and possible failure to meet the standards by a company, the director of Ofwat has powers to secure compliance by means of an Enforcement Order. The director through the High Court can assign a particular administrator to control the company until arrangements can be made for a new company. Regarding public interest and monopoly, when a company acts against the public interest, the director can refer the case to the Competition Commission, which might lead to an Order from the Trade and Industry Secretary requiring remedial measures or an end to the practice.
Finally, it should be noted that Ofwat does not alone put forward environmental standards, it rather coordinates for this task with the Environment Agency which regulates water quality in inland, estuarial and coastal areas and with the Secretaries of State that regulates drinking water quality through the Drinking Water Inspectorate.

3. Restructuring the electricity sector of Oman

The state of Oman has gone through a radical restructure of its electricity sector, which also involves seawater desalination processes. The first privatized project was at Menah (Phase I) through a BOOT contract for a period of 20 years from 1996, by which the United Power Company contracted to co-generate electricity and desalinated water to almost five regions. After the success of the Menah project the government decided to create an advisory group, to prepare a comprehensive strategy to privatize the co-generation of electricity and desalination. The restructuring proceeded by separating the three processes of generation, transmission and distribution. For decisions to be taken effectively and independently and for efficient supervision over the sector, a regulatory body was established. The separation of the provision processes was by founding a number of companies. They are; (1) generation and desalination companies, in which existing plants were made into joint-stock companies owned by the government and which will be sold in future; (2) one company for transmission and dispatch, to transmit 'high voltage' supplies, and to manage and displace the loads according to certain technical, economic and contractual standards, and (3) a joint-stock company for distribution and supply with a 'Power and Water Procurer', which will be privatized afterwards. The regulator would carry out a number of responsibilities such as managing the licensing system, examining performance in terms of transmission and distribution, monitoring compliance with laws and regulations, dealing with any disputes that occur and inspecting the market, reporting to the government on a regular basis. There are also some wide-ranging obligations on the regulator such as maintaining an adequate and efficient supply of electricity and water, protecting consumers' and investors' rights, conserving the environment, and keeping market competition impartial (Sajwani, 2002; Al-Aswaq, 2002).

4. The US Model of utilities regulation

The regulation model in the USA is based on a clear distinction between responsibilities due to some separation among the different levels of government. First, the federal level takes the responsibility to set health and environmental standards for the industry through the two main Acts. (1) The Safe Drinking Water Act to determine the maximum levels of pollutants for drinking water, and (2) The Clean Water Act that identify the permissible level of

effluent discharged into water bodies. The federal authority responsible for bringing these Acts into effect is the Environmental Protection Agency. Second, the regulatory commissions on the states' levels taking the role of regulating privately owned water and wastewater utilities. The responsibilities include monitoring standards of performance and rate setting. On the other hand, local or municipal governments regulate the sector's utilities owned by public sector, which mainly involve the approval of rate increases proposed by the utility's management, in order to set customer tariffs per the guidance and appeals of the utility itself (Mumssen and Williamson, 2002: 47).