

ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA

**ASSESSMENT OF THE ROLE OF THE PRIVATE SECTOR
IN THE DEVELOPMENT AND MANAGEMENT OF WATER
SUPPLY IN SELECTED ESCWA MEMBER COUNTRIES**

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Preface

The development and management of water supply for the domestic sector require extensive technical capacity and financial resources, and consequently have become a burdensome public expenditure item in the countries of the region. In addition, population growth is exerting upward pressure on demand for adequate supplies of clean water and improved services, especially in urban areas. In response to this increasing demand from major urban centres, private firms are expected to play a more prominent role in the water sector.

In many parts of the world the private sector is becoming more involved in various aspects of water provision, ranging from supply development or management to full project design and execution. In countries of the Economic and Social Commission for Western Asia (ESCWA) region, private sector involvement has emerged only recently as a potentially viable approach to water delivery, as municipalities have come under increasing pressure to expand their water supply networks and improve services generally.

One of the core functions of the Water Issues Team (WIT) at ESCWA is promoting integrated water resource management (IWRM) approaches and applications that are regional in scope. A number of activities have been planned in that connection, including the promotion of demand management measures in water resource policies and the preparation of IWRM training programmes for various stakeholders in the water sector.

This study is presented as a contribution to the process of capacity building for IWRM and improved demand management. It aims to promote a better understanding of the concept of public-private partnership in water management, focusing on drinking water supply and sanitation services management. It also reviews domestic sector water demand, investment needs and prospects for public-private partnership initiatives in the ESCWA region, and surveys the region's experience with such initiatives, outlining progress to date and describing achievements. In addition, it is hoped that this study will prove useful in providing policy makers, water practitioners and researchers in the region with relevant data and information on water resources and policy issues in ESCWA member countries, as well as a synthesis of lessons learned.

Mervat Tallawy
Executive Secretary

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ABBREVIATIONS AND ACRONYMS

AFD	Agence française de développement
AFESD	Arab Fund for Economic and Social Development
BCM	billion cubic metres
BHWIA	Baalbeck-Hermel Water and Irrigation Authority
BOO	build-operate-own
BOT	build-operate-transfer
CB	capacity building
CDR	Council for Development and Reconstruction (Lebanon)
CI	Capital Investment Programme Directorate
COM	Council of Ministers
CS	civil society
DAI	Development Alternatives, Inc.
DBO	design-build-operate
DGO	Directorate General for Operations
DM	Deutsche mark
EELN	E-Loan Inc.
EIU	Economist Intelligence Unit
EMB	Executive Management Board
EPC	Executive Privatization Commission
ERF	Economic Research Forum
ESCWA	Economic and Social Commission for Western Asia
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment
GAWSIP	Greater Amman Water Sector Improvement Programme
GCC	Gulf Cooperation Council
GDHER	General Directorate for Hydraulic and Electrical Resources
GDP	gross domestic product
GIS	Geographic Information Systems
GS	Water Governorate Support Projects Directorate
GTZ	German technical cooperation
HCP	Higher Committee for Privatization
HRD	Human Resources Development
IBRD	International Bank for Reconstruction and Development
ICRG	International Country Risk Guide
IDA	International Development Association credit.
IDRC	International Development Research Centre
IFA	International financing agencies
IS	Institutional strengthening
IWRM	integrated water resources management
JD	Jordanian dinars
JIC	Jordanian Investment Corporation
JICA	Japanese International Cooperation Agency
JREDS	Jordan Royal Ecological Diving Society
JVA	Jordan Valley Authority
KD	Kuwaiti dinars
KFW	Kreditanstalt für Wiederaufbau
£E	Egyptian pounds
LL	Lebanese pounds
m ³	cubic metres
MC	Management Contract Directorate
MCM	million cubic metres
MDG	United Nations Millennium Development Goals
MENA	Middle East and North Africa
METAPII	Mediterranean Environmental Technical Assistance Programme

ABBREVIATIONS AND ACRONYMS *(continued)*

MEW	Ministry of Energy and Water
MHER	Ministry of Hydraulic and Electrical Resources (Lebanon)
MIS	management information system
MNC	multinational corporation
MSF	multistage flash
MWI	Ministry of Water and Irrigation
NERP	National Emergency and Recovery Programme
NGO	non-governmental organization
NPPPS	National PPP strategy
NWRA	National Water Resources Authority (Yemen)
NWSA	National Water Supply and Sanitation Authority (Yemen)
O&M	Operations and maintenance
ODA	Official development assistance
OECD	Organization for Economic Cooperation and Development
OFWAT	Office of Water Services (UK)
PMU	Programme Management Unit
PPI	private participation in infrastructure
PPP	public-private partnership
PS	Public sector
R&D	research and development
RWE	Rheinisch-Westfälisches Elektrizitätswerk Aktiengesellschaft
SEMIDE	Système euro-méditerranéen d'information sur le savoir-faire dans le domaine de l'eau
SWSSLC	Sana'a Water Supply and Sanitation Local Corporation
ToT	training of trainers
UAE	United Arab Emirates
UFW	unaccounted-for water
UNCTAD	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development.
USP	Utility Support Programme
UW	Unaccounted-for Water Directorate
WA	water authority
WAJ	Water Authority of Jordan
WB	World Bank
WBGS	West Bank and Gaza Strip
WDM	water demand management measures
WEPIA	Water Efficiency and Public Information for Action
WHO	World Health Organization
WPI	Water Poverty Index
WSS	water supply and sanitation sector
WTO	World Trade Organization
YR	Yemeni rials

Reference to the dollar (\$) symbol indicates United States dollars.

Executive summary

Over the past decade, public-private partnership (PPP) has emerged as a widely acclaimed but also highly controversial form of water sector management, especially water and waste water service delivery, designed to address mounting pressure for expanded services, better utility performance and dwindling public resources. Substantial capital investment and institutional reform are urgently needed for the expansion, rehabilitation, operation and maintenance of these services, and it has frequently been argued that the private sector is in a better position to mobilize the resources and provide the technical know-how needed to bring about such changes than the public sector.

The present assessment of the role of the private sector in the development and management of water supply in selected ESCWA member countries is offered as a contribution to the debate over this issue. It discusses various policy options available for PPP and their applications in the ESCWA region with a view to providing policy-makers and water professionals with a synthesis of lessons learned from experience to date, policy guidelines and analytical tools for the formulation of national strategies to promote PPP in the area of water supply and sanitation.

The study is based on a review and discussion of the available literature, including thematic papers, country reports and specific case studies, which present both sides of the argument, for and against privatization, particularly in the ESCWA context. Prospects for mobilizing funds from the private sector are also discussed in the light of ongoing legislative, institutional and economic changes at the global and regional levels. Three case studies, on Jordan, Yemen and Lebanon, analyse in detail measures that have been undertaken to reform the water sector, involving the line ministry, water-related public enterprises and water and waste water utilities. These case studies highlight lessons learned to date, future privatization plans, and prospects for the effective implementation of PPP policies in each of the countries concerned.

The main findings and conclusions of the study are as follows:

(a) *Debate over privatization in water supply*

Privatization initiatives produce both good and bad results, with far-reaching socioeconomic implications in either case. Privatization may bring transparency in the management of utilities and improvements in their performance, in terms of enhanced quality and cost savings. On the other hand, the commodification of water may also lead to social and political unrest as higher water tariffs and the removal of subsidies result in a disproportionately heavy financial burden on lower-income people. This aspect takes the debate over privatization out of the economic arena into the more complex and controversial social and political domain.

There are various options for private sector participation: service, management and lease contracts, build-operate-transfer (BOT), including build-operate-own (BOO) and design-build-operate (DBO), as well as concessions and divestitures. These are distinguished by the way managerial responsibilities and risks, asset ownership and capital investment are distributed between the public and private sectors; in practice, however, hybrid models are the rule, and they often proceed by trial and error.

The main conclusion that emerges from the discussion is that public-private partnership is not about government relinquishing its responsibility of ensuring access to clean and affordable water for its citizens. The whole process of change is about redefining the roles of both the public and private sectors. Experience has shown that efficient, competitive performance by the private sector in providing basic infrastructure, notably water and sanitation services, requires a well defined monitoring and regulatory role by the public sector and the transparent rule of law—namely, a model of “good governance”—relying on an ongoing efficient flow of communication and cooperation between the private and public sectors and civil society.

(b) *Rising demand for water and sanitation facilities in the ESCWA region*

The ESCWA region is one of the fastest-growing in the world, in terms of population increase and urbanization rates. The region’s population is growing by 2.6 per cent per annum on average, and is

expected to continue doing so until 2025. Rapid urbanization and the growth of mega-cities are presenting major challenges in terms of meeting increasing demand for domestic water and adding further constraints to the availability of scarce public resources. Demand for water in the region will continue to increase, particularly over the next 15 years, when growth is expected to accelerate, making the period highly critical in terms of meeting demand.

In general, access to safe drinking water improved in most ESCWA countries during the final decade of the twentieth century. With one or two exceptions, ESCWA member countries provided over 80 per cent of their population with access to safe drinking water, and over 60 per cent with access to sanitation. The GCC countries had the best record in that respect. Nonetheless, the level of population serviced with connections to water is not necessarily a reliable guide to the quality or reliability of the service, particularly in lower-income neighborhoods of major cities such as Beirut, Tripoli, Cairo, Amman and Sana'a, where water cut-offs are endemic, with the result that many residents buy their water from private vendors, often paying more than they would pay for water from the utility.

Water utilities in the region have been unable to cope with the combined pressure of increasing demand and dwindling public funds. In the larger urban centres, distribution systems are generally old, with leakage rates typically in the 30 to 50 per cent range. Funding for rehabilitation is seldom available, with the result that pipes burst, water quality and sanitation services are inadequate, and municipalities' ability to manage all their urban services is undermined.

Cost recovery represents another challenge to water utilities, as water is heavily subsidized. Water pricing, which is a prerequisite for a viable privatization strategy, is still a sensitive issue in most ESCWA countries. People are accustomed to paying a small charge for water or having it provided free of charge through government-owned utilities. But water resource development on a scale sufficient to meet domestic demand during the coming decades will require heavy financial investment that is likely to be beyond the capacity of government budgets, particularly with the slow economic growth characteristic of many member states.

(c) *Resource mobilization and the role of private firms in funding essential investment in the water supply and sanitation sector*

There are several constraints that may act as a brake on progress in implementing public-private partnership in the water supply sector. Domestic capital markets, with their small size and low performance levels, would have difficulty absorbing large capital inflows from the sale of water utilities. The most serious constraining factor is low rates of return resulting from artificially low water tariffs. Reforming the sector would require functional institutions, clear and enforceable laws, and a policy environment that would attract foreign direct investment.

The economic situation of most countries in the region, other than the GCC countries, has compelled them to resort to foreign loans or grants to finance their water sector programmes. During the past decade, the ESCWA region has experienced only limited economic growth, while budget deficits have burgeoned. From 1997 to 1999, the region's budget deficit was the highest in the world, with the combined debt of ESCWA countries reaching \$79.8 billion in the year 2000.

Because of this financial situation and the need for economic restructuring, governments have begun to consider privatization and public-private partnership as means of obtaining the funds and technologies they require in order to meet their growing infrastructure needs. Furthermore, the fact that privatization policies are currently being applied in important infrastructure development sectors such as telecommunications and energy may ease the transition to privatization and private sector partnership in the water supply and sanitation sector.

The quality of the business environment is crucial in attracting private investment. An effective system of governance, characterized by a transparent policy and regulatory regime and stable exchange rates, are essential for an adequate investment climate. The productivity of investment should also be improved. ESCWA member countries should gradually seek to adopt policy reforms designed to liberalize their trade and investment regimes with a view to attracting and facilitating capital investment in water and sanitation.

Uncertainty about tariff structures for water and sanitation services dissuades private investment in a sector that is commonly perceived to be a public good. Establishing a framework or transparent method for calculating tariff schedules might somehow set out towards eliminating this uncertainty and facilitate the formulation of an adequate financing plan, although it must be clearly understood that returns on investment in the water sector require a long-term outlook.

(d) *Approaches to PPP in the ESCWA region*

In recent years, policy-makers in most ESCWA countries have opted for privatization as a strategic choice involving sector-wide reforms, in line with overall structural adjustment programmes aimed at reducing budget deficits and meeting pressing demands for expanded and improved services. Management contracts are being implemented in Gaza, Jordan, Lebanon, Qatar and Yemen, to name only a few, while elsewhere, as for example in Bahrain, Egypt, Kuwait and Saudi Arabia, privatization and PPP options for the development and management of the water supply and sanitation sector are being given serious consideration.

In Jordan, Lebanon and Yemen, privatization has been initiated in the course of the past five years in an effort to redress the imminent supply-demand deficit. In Jordan and Yemen, water demand is increasingly being met through the mining of groundwater resources, while Lebanon's water balance will probably be negative by 2015 if present water consumption and management practices continue. None of these countries has a full-fledged operational PPP strategy in action as yet, but in all three, enabling legislative and institutional measures have been taken, and a pilot project in a major city (Amman in Jordan, Sana'a in Yemen and Tripoli in Lebanon) has been implemented or is under way, providing a useful basis for evaluation.

In Jordan, progress towards privatization was initially slow, but has subsequently gained momentum as more public companies have been privatized. The initial results of privatization have reportedly been satisfactory: LEMA, the private operator, has been able to increase the revenue of the utility, reduce unaccounted-for water (UFW) and improve system maintenance. Twenty per cent of Jordan's GDP was formerly earmarked for cumulative losses in its transport and water sectors; since the adoption of privatization policies, the country's water utilities have moved into the black. However, many challenges remain, such as reducing water losses in newly serviced or restructured areas and changing public attitudes towards illegal connections; the latter is proving to be a slow process. Awareness campaigns have proved to be an effective means of educating the public about the need to rationalize water consumption and encourage conservation. However, resources for these programmes are often precarious and at constant risk of being discontinued.

Yemen is one of the first countries in the region to have initiated a water supply and sanitation (WSS) reform programme. The main features of the reform agenda are the separation of executive from regulatory functions, decentralized service provision and corporatization through the establishment of autonomous WSS corporations, establishment of a regulatory agency, and the introduction of a human resources development (HRD) and capacity building (CB) strategy for the efficient implementation of PPP policies.

PPP is new to Yemen, and there is little local know-how. This means that there is an unlimited scope for building local expertise and learning from experiences with PPP elsewhere prior to any decision on which option to adopt. There is a strong political will in favour of PPP, but there is also strong opposition from utility employees, who are afraid that they may lose their jobs. In addition, consumers fear that the private operators will raise the rates as soon as the contract is awarded. Some consumers, however, are prepared to accept a reasonable increase in rates provided they can be sure that PPP will improve water quality and level of service. Opponents of privatization accuse the government of selling off public assets cheaply and putting responsibility for a vital scarce resource in the hands of the private sector. Clearly, before the process is institutionalized, a good deal of preparatory work will be called for, in the form of training, capacity building, awareness workshops and dialogue with all stakeholders, in order to create a better understanding of the issues at stake and mobilize local support, which is a necessary condition for the success and sustainability of PPP in water service delivery.

Lebanon has a long tradition of active private-sector participation in a range of public services, including water service delivery, mainly in the form of service contracts. The country's water supply and waste water systems are in need of major investments, not only for expansion and upgrading, but for massive reconstruction work, owing to the long years of civil war, which led to large-scale population displacement, interruptions in service, lack of maintenance and hence major infrastructure deterioration. External funding from the private sector and donor agencies has contributed to various infrastructure development projects; what is needed, however, is a regular inflow of investment capital on a much larger scale. The main concern remains the management and operation of the infrastructure once the task of reconstruction is complete.

The privatization of major utilities was endorsed as a strategic choice in the country's reconstruction plan. In the water sector, institutional reforms have been initiated: the Ministry of Water and local water authorities are being restructured, and legislation establishing a regulatory framework for monitoring the performance of private operators has been enacted. Already, management contracts for various regions are being put out to tender, and the Tripoli water authority has signed a management contract with a company known as ONDÉO. It is still too early to evaluate the outcome; however, the contract represents first-hand experience with PPP, and may serve as a model for future private-sector participation in the management of public utilities in Lebanon. Privatization, particularly in the water sector, remains a hotly debated issue, with various interest groups displaying skepticism about the benefits of privatization, the transparency of the process and the implications of introducing reformed water tariffs.

Overall, countries opting for PPP still need to strike a balance between transparency and effectiveness in setting up the institutional framework for privatization. Coordination, consultation and exchanges of information among line ministries and water-related agencies allow greater transparency for contract negotiations, monitoring of the bidding process and the performance of private investors. However, the task of distributing responsibility among stakeholders is a time-consuming exercise which requires a high level of coordination and negotiations among various government departments, public agencies and social actors in the private sector. This is a major challenge that remains to be overcome in the three cases mentioned above.

(e) *An ESCWA perspective for strengthening national PPP strategies in water service delivery*

Government policies and initiatives seeking to encourage private-sector participation in the provision of water-related services should be firmly grounded in a set of priorities identifying groups that are to be targeted for investment. This would alleviate concerns by local stakeholder groups about the risk of water privatization initiatives marginalizing the poor. Any privatization initiative should be implemented gradually so that financial and market mechanisms have time to adjust to the new measures and the necessary legislation and regulatory framework can be developed.

Success in the privatization of water utilities in the ESCWA region will ultimately translate into reduced costs, the establishment of a fair and affordable tariff structure that will serve to minimize wastage, and improved service delivery in terms of quality and accessible quantity. Sufficient experience has now been acquired in various parts of the world for the ESCWA countries to be able to learn from the successes and failures of others and to adapt appropriate water privatization tools for the region. The success of partnership will depend on the formulation of well-conceived strategies which clearly state the objectives and priorities for PPP, with identifiable targets included in tender contracts to ensure that PPP initiatives are appropriately designed. A clear plan of action should emerge from wide-ranging consultations with stakeholders aimed at defining their varied roles and mechanisms for coordination among them. Legislation and the regulatory and monitoring role of the public sector should be clearly seen to serve the purpose of establishing a competitive environment, one that will attract private investment in the sector while safeguarding the interests and rights of consumers and lower-income groups.

The preparation of contracts for private-sector participation in the water sector, the tendering process and the monitoring and evaluation of the performance of contractors add up to a formidable task. Accordingly, if the ESCWA countries are to create expanded prospects for private-sector participation, it will be essential for them to develop the technical capacities of local teams in the areas of contract negotiations and private operator monitoring and regulation. Those skills will be crucial for the success and, to an even greater extent, the sustainability of PPP plans of action.

Introduction

The expanding role of the private sector in the area of water supply is an issue that has moved to centre stage in public debate over the past decade. The privatization of water utilities, which involves transferring the production, distribution or management of water services from public to private entities, is not in itself a novelty. Privately owned utilities and participation by private entrepreneurs in the delivery of water services are long-established phenomena in many parts of the world, including the ESCWA region; indeed, there are privately owned utilities that were established well before Governments took over responsibility for water supply. What is new, however, and worthy of closer investigation is the rate at which countries, in line with the development agendas advocated by contemporary donors, are adopting privatization strategies as solutions to complex problems in the management of water and waste water utilities. It is also interesting to note that private firms, often spearheaded by multinational corporations (MNCs), are showing interest in stepping into this potentially lucrative sector, while concurrently civil society activists (NGOs, environmentalists, labour unions, community groups and the like) are mobilizing public opinion against the dangers of the commodification of water as a good to be traded on international markets, questioning whether the private sector will be capable of providing affordable, accessible, good-quality water in adequate quantities and arguing that water is essentially a social good.

The debate over privatization is particularly relevant in the context of the ESCWA region, which is one of the most severely water-stressed areas in the world: the list of the world's 15 poorest countries in terms of renewable water resources includes eight of the ESCWA members countries. Available per capita water is estimated at 1,066 m³ per year for the region, compared to the global figure of 7 140 m³; some ESCWA countries have less than 200 m³ per capita per year. The ESCWA region is inhabited by 2.5 per cent of the world's population, yet receives less than 0.4 per cent of its annual renewable water resources. Furthermore, the region is characterized by rapid population growth and spectacular urbanization rates of up to 8 per cent per year in the case of some capital cities. Constraints on access to safe water supply and sanitation, which were emphasized in the United Nations Millennium Development Goals in the year 2000, are further amplified by unsustainable patterns of water consumption, misuse, and substantial leakage in existing distribution systems. Limited institutional and technical capacity is compounded by endemic shortages of public funding for the expansion and upgrading of those systems. The private sector can play a potentially useful role in enhancing the performance of water and waste water utilities; however, the prevailing institutional, legislative and political environment is still not equipped to attract private-sector investment, particularly from the domestic market, except in the case of water desalination and treatment plants, which are found mainly in the Gulf countries.

The debate over privatization is also timely for the ESCWA region. Many member countries are in the early stages of adopting or initiating policies that will foster public-private partnership in the management of water resources, and consequently there is an urgent need for critical discussion of privatization, not only as a concept, but also in terms of its policy implications. The available public-private partnership options and their prospective impacts, direct and indirect, on social equity and ecosystem sustainability must be scrutinized in depth. ESCWA member countries could also learn much from experiences with privatization around the world, both successful and unsuccessful, as they endeavour to develop strategies, tools and monitoring mechanisms that are suited to their socio-economic and political conditions.

The aim of this report is to provide water professionals, policy-makers and academics with a synthesis of the experience of ESCWA member countries in adapting public-private partnership policies and strategies in the management and financing of water and waste water utilities, and to summarize the lessons that may be learned from that experience, whether in the form of good practices or in the form of constraints that continue to impede the effective implementation of those strategies.

This study adopts a multidisciplinary approach to the issue of privatization, considering the economic, social, institutional and legislative dimensions which determine the relevance and prospects for the success of public-private partnership in the water sector. In chapter I, the debate over public-private partnership is set in the context of water as an economic and social good. While an expanded role for the private sector in water service delivery may be inevitable and perhaps even desirable, Governments are by no means relieved

of their responsibility for ensuring that service accessibility, affordability, reliability and quality are maintained, and that water development and management practices are fully compatible with ecosystem sustainability.

Chapter II presents a brief overview of the water situation in the ESCWA region, highlighting the seriousness and magnitude of rising demand for water supply and sanitation services, particularly in urban areas, and the inability of the public sector to expand the coverage of those utilities or improve the quality of the services. This puts in perspective the role that the private sector is playing or might play in meeting rising demand for efficiently performing water supply and sanitation utilities.

Chapter III discusses some of the main challenges confronting privatization initiatives in the ESCWA region in terms of mobilizing resources. It is essential to attract a continuous, substantial flow of funds from the private sector to support PPP efforts in building, operating and managing water supply and sanitation networks, which require capital investment on a scale that is beyond the reach of many ESCWA member countries.

Chapter IV discusses trends and progress in privatization initiatives in the water sector in the ESCWA region, focusing on the institutional reforms that are being instituted in order to pave the way for the privatization process.

Chapters V, VI and VII present three country studies, which assess progress made at national level in implementing various modes of public-private partnership in the field of water supply and sanitation. The final chapter contains a synthesis of the material discussed in the previous chapters and suggested guidelines for developing national teams in ESCWA member countries to negotiate, develop and monitor appropriate PPP initiatives for management of the water sector. The paper concludes by identifying specific areas which policy-makers, water professionals and civil society activists need to address in order to ensure the sustainability of PPP, bearing in mind that while the economic value of water cannot be ignored, water should remain first and foremost a social good.

I. THE DEBATE OVER PUBLIC-PRIVATE PARTNERSHIP: WHY AND HOW STAKEHOLDERS IN THE PUBLIC AND PRIVATE SECTORS COULD WORK TOGETHER

The debate over privatization has often been polarized. Proponents of privatization argue that water is a commodity, and as such subject to market forces and competitive pricing. They call for an expanded role for the private sector in the management and operation of water and waste water utilities, on the assumption that the private sector would be capable of improving service quality and efficiency in a context that would reflect the real value of water as an increasingly scarce resource. Skeptics argue that the economic and productive value of water notwithstanding, market mechanisms alone cannot address the many social considerations associated with access to clean water supply and sanitation (Gleick 2002). Both views are valid, and are supported by growing numbers of cases from around the world. Equally valid is the need to acknowledge that water has both an economic and a social value, and consequently the task of managing it requires a holistic approach, in terms of ensuring that it is efficiently allocated among competing sectors and that it is affordable, accessible, available in adequate quantities and safe for end users, particularly the poorer social groups and people living in remote areas.

This outlook is echoed by voices from the international community calling for fresh thinking about sustainable water resources development and management, considering the fact that not only water stakeholders but society as a whole have a collective responsibility for developing, conserving and managing water resources. Table 1 presents the main commitments and principles governing water resources management and sustainable development that have been adopted at major global conferences over the past decade. As will be seen, the key concept is the strengthening of public-private partnership in delivering and managing water resources, including in particular the task of mobilizing funds and capital resources to build, expand or rehabilitate water supply infrastructure.

TABLE 1. FROM DUBLIN TO KYOTO

Year	Event	Outcome
1992	International Conference on Water and the Environment, Dublin	<ul style="list-style-type: none"> - Principle No. 1 - Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment; - Principle No. 2 - Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels; - Principle No. 3 – Women play a central part in the provision, management and safeguarding of water; - Principle No. 4 - Water has an economic value in all its competing uses and should be recognized as an economic good.
1992	United Nations Conference on Environment and Development, Rio de Janeiro	<p>Adoption of Agenda 21.</p> <p>Chapter 18 and other water-related chapters: Protection of the quality and supply of freshwater resources: Application of integrated approaches to the development, management and use of water.</p>
1996	Global Water Partnership and World Water Council	<ul style="list-style-type: none"> - “Water to be managed in a holistic manner”; - Introduction of integrated water resources management (IWRM) as a policy framework for managing water resources.
1997	First World Water Forum, Marrakech	Agreement on conducting a study on global water, including the financial aspect.
1997	World Commission for Water in the twenty-first century	<ul style="list-style-type: none"> - Main global water initiatives; - Investment of \$100 billion needed for the water sector; - Investment to be mobilized from the international private sector; - Development banks and micro-credit mechanisms to be used more efficiently at local level.

TABLE 1 (*continued*)

Year	Event	Outcome
2000	Second World Water Forum, The Hague	<ul style="list-style-type: none"> - Of the seven challenges identified: “value water in all its uses”; - Need to price water to reflect the cost of provision, taking into account equity and the basic needs of the poor.
2000	United Nations Millennium Declaration	<ul style="list-style-type: none"> - “Reduce by half the proportion of people without sustainable access to adequate quantities of affordable and safe water by 2015”.
2001	International Conference on Freshwater, Bonn	<ul style="list-style-type: none"> - “Public–private partnership” where public funding for water can be augmented by private capital; - Making water an attractive sector to invest in, but with good regulation, legal system and transparent contracting procedures to recover the cost of water provision.
2002	International Conference on Financing for Development, Monterrey	<ul style="list-style-type: none"> - Change of trend in international aid for development, including water; - Governments and agencies committed to increase their aid for development by 25 per cent (an extra \$12 billion to be generated per year).
2002	United Nations World Summit on Sustainable Development, Johannesburg	<ul style="list-style-type: none"> - “Reduce by half the proportion of people without sustainable access to adequate quantities of affordable and safe water supply and sanitation by 2015”; - Business action for sustainable development stressed the need for an enabling environment, where aid is to be used for capacity building, all water stakeholders are involved and users consulted, and full cost recovery is promoted.
2003	Third World Water Forum, Kyoto	<ul style="list-style-type: none"> - “Explore all types of financing arrangements including private sector participation in line with national policies and priorities”; - “Identification and development of new mechanisms of public-private partnerships for the different actors involved, while ensuring the necessary public control and legal frameworks to protect the public interests, especially the interests of the poor”.

Source: Compiled from *Report of the World Panel on Financing Water Infrastructure*, 2003.

By the year 2000, at least 93 countries in various parts of the world had initiated some form of privatized water and waste water service delivery, with total contracts awarded to the private sector covering an estimated 10 per cent of water supply services worldwide, serving over 300 million end users. There is thus an international consensus that public-private partnership in water resource management offers some indisputable benefits. At the same time, it is important to understand the drive towards privatization, the benefits and risks associated with the various options that have been adopted or proposed, and, most importantly, who the partners involved are, in terms of their financial and technical standing and their political clout. All these issues are important determinants of the outcomes of privatization.

(a) *Why privatize?*

The trend toward privatization is being driven by a variety of forces. These may be ideological, commercial, financial or pragmatic in nature, or a combination of some or all of the above (Gleick, 2002). One of the main driving forces is the belief that governments throughout the world, and particularly in developing countries, are unable to cope with increasing demand for safe drinking water supply and sanitation services. Lack of managerial and technical skills and limited financial resources restrict the public sector’s ability to implement much-needed improvements in the performance of water and waste water

utilities, which require substantial capital investment for the expansion, rehabilitation, operation and maintenance of services.

Financing thus emerges as one of the key issues in sustainable water resource management. It also provides the private sector with a good entry point into a potentially lucrative sector, not only through contracts and consultancy services, but also through the financing, management and operation of water and waste water utilities. It has frequently been suggested that the private sector is better equipped than the public sector for mobilizing resources; it has easier access to financial markets, and a larger pool of technical know-how at its disposal. Multinational corporations, with their access to international markets in an increasingly globalized world, have the lion's share of the water market, and often overshadow domestic water service companies, especially in developing countries. MNCs such as Veolia (formerly Vivendi Environment) and Ondéo Services (formerly Suez/Lyonnaise des eaux) are expanding rapidly into new markets, either on their own or as joint ventures with other international conglomerates, like RWE (Rheinisch-Westfälisches Elektrizitätswerk Aktiengesellschaft)—Thames Water in the United Kingdom and Bechtel and Enron in the United States. It is interesting to note that 44.5 per cent of the market is located in the Europe/Middle East region, where 135 million people are serviced by the three giant MCNs (Ondéo Services, Veolia, RWE), as shown in table 2 below.

TABLE 2. THE GLOBAL WATER INDUSTRY
(Millions of people)

Company	Ondéo	Veolia	RWE
North America/Caribbean	23.5	10	18
South America	25	7	3
Europe/Middle East	43	57	35
Africa	8.5	9	0
Asia/Pacific	25	19	14
Total people served	125	110	69

Source: Alasdair Roberts 2003.

Donors have been instrumental in expediting privatization as well: their development agendas promote financial, institutional and administrative restructuring in the public sector and the creation of enabling national strategies aimed at greater private-sector participation in the financing and management of infrastructure development projects. The availability, renegotiation or extension of development grants and loans frequently depends on the progress being made by a national government with the administrative and institutional restructuring of its public sector and the rate at which privatization policies are being adopted.

(b) *Is privatization good or bad?*

Privatization initiatives may produce both good and bad results, with far-reaching socioeconomic implications in either case. It may bring transparency in the management of utilities and hence an overall improvement in their performance. It may yield water savings as a result of the introduction of tariffs, and raise awareness of water conservation issues. It may serve as an occasion for civil society to mobilize around the issues of access, affordability and quality in the area of water services, and thereby encourage democratic practices in public life. On the other hand, the commodification of water may also lead to social and political unrest, with the threat of losing national control over vital public assets to the private sector, especially where the private operator is a MNC. Higher water tariffs and the removal of subsidies may impose a disproportionately heavy financial burden on lower-income people, and in some cases small farmers who rely on irrigation and other businesses may be driven out of the market. This takes the debate over privatization out of the economic arena and into the more complex and often murky field of social and political issues. The arguments advanced for and against privatization are summarized in table 3 below.

TABLE 3. POSITIVE AND NEGATIVE ASPECTS OF PRIVATIZATION SCHEMES IN WATER SUPPLY AND SANITATION SERVICES

Concerns	Benefits
<ul style="list-style-type: none"> - Neglect of service expansion in underserved and poor communities; - Monopoly and distrust of multinational corporations; - Foreign control over national natural resources; - Transfer of assets and profits out of the community or country; - Risk of ecosystem degradation, especially with regards to water quality; - Community participation ruled out; - Elimination of subsidies for low-income groups; - Higher water tariffs; - Possible loss of ownership of water; - Neglect of potential for efficient water use and conservation where that would entail foregone earnings. 	<ul style="list-style-type: none"> - Availability of management skills and technical know-how to improve the service; - Flexibility in mobilizing financial resources and greater risk-handling capabilities; - More responsive to community needs; - Enhanced service quality; - Elimination of inappropriate subsidies; - Creation of self-supporting utilities; - Improved cost recovery without risk of political manipulation; - Reduced balance of payments; - Greater financial resources for potential expansion and improvement; - Quick response when system maintenance and repair required.

Source: Compiled by ESCWA from Gleick 2002 and Uitto and Biswas 2000.

(c) *Privatization options*

Growing numbers of case studies of privatization in the water and sanitation sector have been documented in the literature. However, many of the concerns and benefits noted above have yet to be adequately analysed, for contexts in which privatization policies have been in effect over a considerable time-span (10-15 years), and with comparisons between specific countries/regions as a means of evaluating the direct and indirect impacts of those policies. There is still a good deal of confusion surrounding the principles, applications and policy implications of privatization.

Various options for private-sector participation may be distinguished on the basis of the way managerial responsibilities and risks, asset ownership and capital investment are distributed between the public and private sectors. In practice, however, these options are seldom adopted in pure form, and a tendency to proceed by trial and error is commonly observable (Uitto and Biswas 2000).

(a) Service contracts are widely used to secure private-sector assistance, for short periods in performing specific water-related tasks. Such contracts are relatively simple, but confer only limited benefits. At their best, they can be a cost-effective route to a well-managed and commercially viable water utility;

(b) Management contracts are a useful first step toward greater private involvement. These are usually of short duration (four to five years) and may introduce incentives for efficiency by defining performance targets and basing remuneration partially on success in meeting those targets;

(c) Leases are a much bigger first step toward private involvement, and an effective way of enhancing operational efficiency. Leases tend to be used in situations where there is little need or scope for new investments;

(d) BOT contracts work well if the main problem a utility faces has to do with water supply or waste water treatment. There are many variations of BOT, including BOO, DBO and others. The main feature of BOT-type contracts is that capital costs and operation and maintenance costs incurred by a private firm over a period of 20 to 30 years are partially covered by increased charges to users. Full responsibility for

operation and investment is transferred to the private sector. Therefore, this approach has built-in incentives for efficiency in all aspects of utility management and operation;

(e) Concessions are a route to full-fledged private involvement where heavy capital investment is required. Under a concession, the private partner assumes responsibility for investment as well as operation and maintenance;

(f) Divestiture is another route to full-fledged private involvement, with the government being left with nothing but the task of regulation. To date, most governments have been reluctant to resort to this type of PPP. There have been some examples of divestiture, but not many.

The characteristics of these various contracts, the degree of ownership, the type of risk incurred by the public or private sector with each type of contract, and the strengths and weaknesses of each option are shown in table 4. Table 5 presents some examples of public-private partnership in the field of water supply and sanitation from different parts of the world, with some indications of type of coverage, duration and contract status, including positive or negative results, depending on the case.

(d) *Privatization or public-private partnership*

It is no coincidence that most national policy papers and recent literature on the subject have gradually been abandoning the term “privatization” in favour of “public-private partnership” (PPP). The latter term highlights the fact that the changes occurring in the field of water and waste water utilities are not (or at least should not be) about governments relinquishing their responsibility of ensuring that their citizens enjoy access to clean and affordable water. The whole process of change is about redefined roles for both the public and private sectors. In earlier neo-liberal literature from the 1980s, “smaller government” and the dismantling of the welfare state were assumed to be an essential prerequisite for an expanded role for the private sector as service provider in telecommunications, housing production, electricity and water supply networks. However, experience has shown that the private sector will perform efficiently and competitively in those areas only in the presence of a well-defined monitoring and regulatory function exercised by the public sector and the transparent rule of law. In brief, what is required is a model of good governance, articulated around the concept of partnership between the private and public sectors and civil society (ESCWA 2001a).

As the international examples listed above indicate, there are many options for privatization and endless possible outcomes for public-private partnership strategies in water service delivery. As countries are experimenting with new ways of managing, operating and funding services and learning by doing, it is opportune for the countries of the ESCWA region to learn from the wealth and diversity of experience now available and select options that are consistent with their prevailing national conditions and interests.

It is immediately apparent, however, that there are policy environment issues which ESCWA member countries need to address carefully at a very early stage in the process, preferably before turning to the question of the type of public-private partnership they should adopt. These issues include:

(a) Defining the regulatory and monitoring role of the public sector and institutional and legislative mechanisms for efficient implementation. Indeed, the role of the public sector tends to become increasingly complex as managerial and investment responsibilities are progressively shifted to the private sector;

(b) Providing an enabling environment in which civil society, including NGOs, consumers’ rights advocacy groups and the like can play an effective role as watchdogs and ensure transparency in the management of water and waste water service contracts, disbursement of funds and continuous monitoring of service quality;

(c) Maintaining a healthy competitive environment in which private firms, including national and local firms in particular, can compete effectively for water service contracts;

(d) Ensuring that tariff structures and the removal of subsidies are studied and planned in their wider socio-economic context, with a clear focus on their prospective impacts on the various segments of society.

TABLE 4. PRIVATIZATION OPTIONS

Option	Ownership of assets	Operation and maintenance	Capital investment	Commercial risk	Duration	Advantages	Disadvantages	Examples
Service contract	Public	Public and private	Public	Public	1-2 years	<ul style="list-style-type: none"> - Quick gain in operational efficiency - Easy to administer, simple re-tendering process 	<ul style="list-style-type: none"> - City retains all commercial and investment risks 	Madras (India) Santiago (Chile) Mexico
Management contract	Public	Private	Public	Public	3-5 years	<ul style="list-style-type: none"> - Gains in managerial efficiency - Simple tendering process 	<ul style="list-style-type: none"> - Lack of strong, sustained private incentives 	Gaza Trinidad & Tobago Amman
Lease (Affermage)	Public	Private	Public	Shared	8-15 years	<ul style="list-style-type: none"> - Greater operational efficiency gains 	<ul style="list-style-type: none"> - City retains investment risk - Supervision required 	Guinea Gdansk (Poland)
Build-operate-transfer	Private (bulk services)	Private	Private	Private	20-30 years	<ul style="list-style-type: none"> - Efficient delivery of bulk water/sewage treatment service with private investment 	<ul style="list-style-type: none"> - Not a good solution if distribution is in poor condition 	Sidney (Australia) Johor (Malaysia)
Concession	Public	Private	Private	Private	25-30 years	<ul style="list-style-type: none"> - Efficiency gains in O&M and asset management 	<ul style="list-style-type: none"> - Complex tendering process - Needs steady commitment and strong regulatory capacity 	Buenos Aires (Argentina) Côte d'Ivoire Manila (Philippines) Rabat, Casablanca
Divestiture	Private	Private	Private	Private	Indefinite (may be limited by public licence)	<ul style="list-style-type: none"> - High, sustainable efficiency gains and investment 	<ul style="list-style-type: none"> - Requires strong commitment and sophisticated regulation 	England and Wales

Source: Compiled from various sources.

TABLE 5. INTERNATIONAL EXPERIENCE IN PUBLIC-PRIVATE PARTNERSHIP IN WATER SUPPLY AND SANITATION

City	Country	Coverage	Population (Thousands)	Total staff	Form of PPP	Operator	Type	Number of connections	Status ^{a/}
Cartagena	Colombia	78%	850	262	Joint venture 26 years	Aguas de Barcelona (Ondéo)	Water supply	95 000	Ongoing (positive feedback)
Cordoba	Argentina	87%	1 400	436	Concession 30 years	Aguas Cordobesas (Ondéo)	Water supply	223 000	Ongoing (positive feedback)
Cochamamba	Bolivia	93%			Concession 30 years	Aguas de Tunari (Bechtel Corp)	Water supply		Terminated 2001 due to massive riots protesting tariff increases
Buenos Aires	Argentina	74%	10 000	3 754	Concession 30 years	Aguas de Argentina (Ondéo, Veolia)	Water supply Sanitation		Ongoing (problems reported due to devaluation of local currency; no new investment)
Manila, East Zone	Philippines	66%	4 500		Concession 25 years	Manila Water Co. (Bechtel)	Water supply Sanitation		Amended in 2001 after economic problems of country
Manila, West Zone	Philippines	67%	6 500		Concession 25 years	Maynilad (Ondéo)	Water supply Sanitation		Amended in 2001 and under arbitration for termination in 2002
Paris (Left Bank)	France		1 500	84	Lease 25 years	Parisienne des eaux (Ondéo)	Water supply	27 720	Ongoing (positive feedback)
Indianapolis	United States		800	207	O&M 20 years	United Water Services (Ondéo)	Water supply Sanitation	250 000	Ongoing (positive feedback)
Mexico City	Mexico		4 800		Management 10 years	TECSA & IACMEX (Ondéo)	Water supply		Ongoing (positive feedback)
Jakarta	Indonesia	43%	7 500		Concessions	Thames Water, Ondéo	Water supply Sanitation	428 764	Renegotiated in 2001 after change in government
Prague	Czech Republic		1 200	1 812		PVK (Veolia)	Water supply waste water		Ongoing (positive feedback)
Atlanta	United States		3 400		Concession 20 years	United Water (Ondéo)	Water supply		Terminated in 2003 due to heavy losses and unforeseen expenses for operator
Pudong Area Shanghai	China		1 900		Concession 50 years	Veolia	Water supply Sanitation		Ongoing (positive feedback)

Source: Compiled by ESCWA from various sources.

a/ Positive feedback reflects continuity of the contract as planned and no reports of significant problems or conflict between the private company and the government/general public from this PPP experience.

The last and most challenging question is how to ensure parity among partners. Ideally, under a good system of governance, donors, MNCs, local water service companies and associations of water users would all be equal partners in the process. In real life, however, they are seldom equal in terms of access to knowledge, decision-making power, information, financial resources, means of ensuring that laws and regulations are enforced, or even, in some cases, access to the rule of law. This remains the biggest challenge in any debate on governance, including governance in the water supply and sanitation sector.

These questions will be addressed in subsequent chapters, which will review the challenges facing ESCWA member countries in their efforts to upgrade the services provided by WSS utilities, mobilize resources and implement a variety of PPP strategies for managing WSS utilities in the region more effectively.

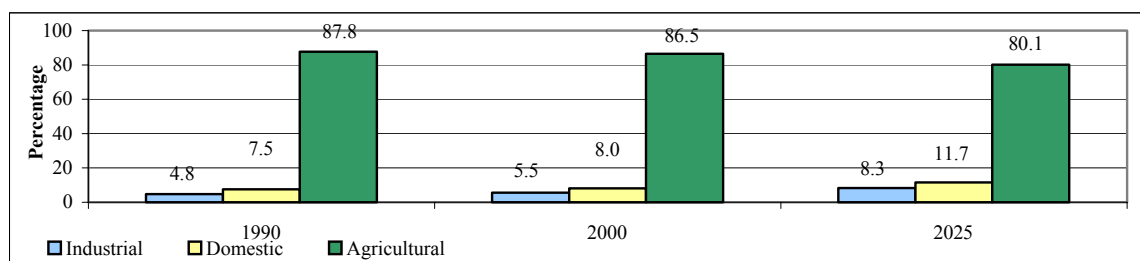
II. WATER DEMAND IN THE DOMESTIC SECTOR IN THE ESCWA REGION

A. TRENDS IN URBANIZATION AND ACCESS TO WATER AND SANITATION SERVICES

The ESCWA region is one of the fastest-growing in the world in terms of population increase and urbanization rates. The region's population is growing by 2.6 per cent on average yearly, and is expected to continue doing so until 2025. Major cities and capitals account for most of this increase. In 1975 only three cities, Cairo, Baghdad and Damascus, had over one million inhabitants. By 1980 the number had grown to four, by 1990 to nine, and by 2000 to 13, with populations that ranged from 1.1 million to 15 million. Trends in urbanization and the growth of major cities in the ESCWA countries are shown in tables 6 and 7. Rapid urbanization and the phenomenon of mega-cities are, inevitably, presenting major challenges in terms of meeting increasing demand for domestic water and other infrastructure facilities and adding further constraints on the availability of scarce public funds. Projections indicate that demand for water in the region is likely to grow rapidly over the next 15 years, but more slowly thereafter. Projected trends in urbanization display a similar pattern. It is clear, then, that the coming 15 years will be critical in terms of meeting water demand in the ESCWA region. Absolute population growth, particularly in urban areas, is itself a major challenge in view of the total quantity of water required to meet the needs of people and sustain their various activities. Water supply and sanitation services involve different types of capital investment for infrastructure at the source and for pipes to carry water to where it is needed, in addition to system operation and maintenance and administrative costs.¹ In order to understand the magnitude of the challenges facing many water supply and sanitation utilities in the region, the breakdown of water allocation to the domestic, industrial and agricultural sectors must be analysed.

Demand for water in the domestic, industrial, and agricultural sectors has grown at differential rates resulting from higher standards of living, changes in lifestyle entailing changes in patterns of water consumption, economic expansion and rising demand from the domestic sector, particularly in urban areas. Competition for water among the various sectors is placing increasing stress on water resources, and the situation is further aggravated by pollution and unsustainable patterns of consumption and extraction. Worldwide, agriculture accounts for 67 per cent of all water consumption, industry for 23 per cent and domestic uses for 8 per cent. In the ESCWA region, irrigation accounted for 85 to 92 per cent of all consumption in 2000, well above the world average, while the domestic and industrial sectors consumed much smaller quantities, ranging between 8 and 15 per cent each. To place these figures in context, in the year 2000 agriculture accounted for 15 per cent of the region's GDP, while industry contributed 29 per cent. As shown in figure I, domestic water consumption represented 8 per cent of total demand in the year 2000 and is expected to climb to 11.7 per cent by 2025. Domestic water demand was estimated at 13.5 BCM (billion cubic metres) in 2000 and is projected to reach 26.5 BCM by 2025, namely to increase at an average annual rate of 3.85 per cent, as a result of population growth and rising per capita consumption.

Figure I. Water demand in the ESCWA region for the industrial, domestic and agricultural sectors



Source: ESCWA 2003.

¹ The cost of water provision is dependent on a number of components and factors which affect the overall cost of production; these are discussed in greater detail in chapter III.

TABLE 6. URBAN AND RURAL POPULATION IN ESCWA MEMBER COUNTRIES AS A PERCENTAGE OF TOTAL POPULATION

Urban	Bahrain	Egypt	Iraq	Jordan	Kuwait	Lebanon	Palestine	Oman	Qatar	Saudi Arabia	Syrian Arab Republic	United Arab Emirates	Yemen	ESCWA
1990	87.6	43.6	69.6	72.2	94.9	84.2	64	92.1	89.8	78.2	48.9	80.2	22.8	54.0
1995	90.3	43.1	68.6	78.3	95.5	87.5	65.4	72.8	91.3	82.9	50	83.7	23.6	54.8
2005	93.5	43	67.5	79.3	96.4	91.2	68.3	78.6	93.7	88.5	53.3	88.9	26.3	56.6
2010	94.4	44	67.7	80.1	96.7	92.1	70	80.8	94.5	90	55.4	90.5	28.5	57.8
2015	95	45.8	68.6	81.1	96.9	92.6	71.7	82.6	95	91	57.9	91.6	31.2	59.3
2020	95.3	48.2	70.1	82.2	97.1	93.1	73.5	83.9	95.4	91.6	60.6	92.4	34.4	61.1
2025	95.5	51.4	72.1	83.3	97.3	93.5	75.2	85	95.7	92.1	63.2	92.8	37.7	63.2
2030	95.8	54.4	73.9	84.4	97.4	93.9	76.9	85.9	95.9	92.6	65.6	93.3	41	65.2

Urban	Bahrain	Egypt	Iraq	Jordan	Kuwait	Lebanon	Palestine	Oman	Qatar	Saudi Arabia	Syrian Arab Republic	United Arab Emirates	Yemen	ESCWA
1990	12.4	56.4	30.4	27.8	51.1	15.8	36	37.9	10.2	21.8	51.1	19.8	77.2	46.0
1995	9.7	56.9	31.4	21.7	4.5	12.5	34.6	27.2	8.7	17.1	50	16.3	76.4	45.2
2005	6.5	57	32.5	20.7	3.6	8.8	31.7	21.4	6.3	11.5	46.7	11.1	73.7	43.4
2010	5.6	56	32.3	19.9	3.3	7.9	30	19.2	5.5	10	44.6	9.5	71.5	42.2
2015	5	54.2	31.4	18.9	3.1	7.4	28.3	17.4	5	9	42.1	8.4	68.8	40.7
2020	4.7	51.8	29.9	17.8	2.9	6.9	26.5	16.1	4.6	8.4	39.4	7.6	65.6	38.9
2025	4.5	48.6	27.9	16.7	2.7	6.5	24.8	15	4.3	7.9	36.8	7.2	62.3	36.8
2030	4.2	45.6	26.1	15.6	2.6	6.1	23.1	14.1	4.1	7.4	34.4	6.7	59	34.8

Source: United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects* (2002 revision).

TABLE 7. POPULATION ESTIMATES FOR MAJOR CITIES IN WESTERN ASIA

City	Estimates and projections (Thousands)							Annual growth rate (Percentage)			Percentage share of country's urban population		
	1985	1990	1995	2000	2005	2010	2015	1985-1995	1995-2005	2005-2015	1990	2000	2015
Aleppo	1 292	1 554	1 870	2 229	2 622	3 046	3 489	3.7	3.4	2.9	25.6	26.8	26
Alexandria	2 826	3 063	3 277	3 506	3 751	4 019	4 330	1.5	1.4	1.4	12.5	12.1	11.2
Amman	782	940	986	1 148	1 309	1 478	1 654	2.3	2.8	2.3	40	29.7	28.4
Baghdad	3 681	4 039	4 433	4 865	5 359	5 923	6 549	1.9	1.9	2.0	33.6	31.4	28.4
Beirut	1 385	1 582	1 823	2 070	2 276	2 416	2 500	2.7	2.2	0.9	69.2	66	64
Cairo	7 666	8 296	8 860	9 462	10 094	10 767	11 531	1.4	1.3	1.3	33.9	32.7	29.8
Damascus	1 562	1 732	1 920	2 144	2 425	2 775	3 170	2.1	2.3	2.7	28.6	25.8	23.6
Dubai	352	478	651	886	1 029	1 145	1 229	6.1	4.6	1.8	29.6	39.2	41.6
Jeddah	1 218	1 743	2 494	3 192	3 859	4 535	5 183	7.2	4.4	2.9	14.5	18.2	17.9
Kuwait City	935	896	859	879	935	1 028	1 136	-0.8	0.8	1.9	44.1	47.8	42.4
Mecca	655	856	1 120	1 335	1 550	1 800	2 063	5.4	3.2	2.9	7.1	7.6	7.1
Mosul	603	744	917	1 131	1 371	1 611	1 835	4.2	4.0	2.9	6.2	7.3	8
Riyadh	1 566	2 326	3 453	4 549	5 589	6 602	7 536	7.9	4.8	3.0	19.3	25.9	26.1
Sana'a	402	678	965	1 327	1 777	2 328	3 028	8.8	6.1	5.3	25.6	29.3	29.3

Source: United Nations, Department of Economic and Social Affairs, Population Division, *World Urbanization Prospects* (2001 revision).

TABLE 8. FRACTION OF POPULATION WITH ACCESS TO SAFE DRINKING WATER AND SANITATION*

Access to safe drinking water	Urban			Rural			Total		
	1990-97 ^{a/}	1990 ^{b/}	2000 ^{b/}	1990-97	1990	2000	1990-1997	1990	2000
Bahrain ^{c/}		100							
Egypt	97	97	99	79	91	96	87	94	97
Iraq	96		96	48		48	81		85
Jordan		99	100		92	84	98	97	96
Kuwait									
Lebanon	96		100	88		100	94		100
Oman		41	41		30	30	85	37	39
Palestine			97			86			86
Qatar ^{c/}		100							
Saudi Arabia	100		100	74		64	95		95
Syrian Arab Republic	95		94	77		64	86		80
United Arab Emirates							97		
Yemen	88	85	85-74 ^{d/} -55 ^{e/}	55	60	64-68 ^{d/} -30 ^{e/}	61	66	69-69 ^{d/}
Access to sanitation									
Bahrain ^{c/}		100							
Egypt	98	96	100	79	80	96	88	87	98
Iraq	93		93	31		31	75		79
Jordan		100	100		95	98	77	98	99
Kuwait	100								
Lebanon	81		100	8		87	63		99
Oman	90	98	98	57	61	61	78	84	92
Palestine			100			100			100
Qatar ^{c/}		100			85				
Saudi Arabia	100		100	30		100	86		100
Syrian Arab Republic	96		98	31		81	67		90
United Arab Emirates							92		
Yemen	88	80-69 ^{d/}	87-89 ^{d/} -45 ^{e/}	55	27-21 ^{d/}	31-21 ^{d/} -10 ^{e/}	61	39-32 ^{d/}	45-38 ^{d/}

Sources: ^{a/} WRI 2001; ^{b/} WHO, UNICEF 2001; ^{c/} Gleick 2002; ^{d/} UNSTAT 2003; ^{e/} Sahoo 2003.

* Variations in figures taken from different sources may reflect differences in the definitions of “improved access to safe water supply” and “improved access to sanitation”. Such differences have persisted despite the efforts of ESCWA on behalf of the adoption of harmonized definitions and more effective data collection.

Urbanization in the ESCWA region, particularly in the case of major cities, has resulted in rapid physical expansion of built-up areas into the peri-urban zone, often to the point of encroaching on agricultural land. Water supply and sanitation networks have had to be extended outward in order to keep pace with urban growth, and this has entailed substantial development and transportation costs. The present low level of cost recovery as a result of subsidized water tariffs, combined with limited funding from central governments, has been a contributing factor in the mediocre performance of those utilities.

The main sources of water for urban centres in Egypt, Iraq and the Syrian Arab Republic are the Nile, the Euphrates and the Tigris respectively, while Lebanon relies on the medium-sized rivers, supplemented by pumping from shallow groundwater sources (ESCWA 1999). Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates depend on seawater desalination facilities supplemented by groundwater from aquifers, both shallow and deep, for their drinking water. In Jordan and Yemen, shallow and deep aquifers are the main sources of domestic water. In both cases, the water is of poor quality and requires further treatment at an additional cost to bring it up to quality standards of the World Health Organization (WHO). Some large cities including Damascus, Beirut, Amman, Mecca, Riyadh, Medina, Sana'a and Taiz are supplied with water from distant sources, a situation that involves substantial transportation costs (ESCWA 1999).

In most ESCWA countries, the percentage of the population with access to safe drinking water rose during the decade 1990-2000, although there are substantial differences between countries, as table 8 above shows. Most people in the ESCWA region now enjoy water supply and sanitation services, with the Gulf Cooperation Council (GCC) countries having the best record in that respect. Nonetheless, the level of population serviced with connections to water is not always indicative of the quality or reliability of the service. This is particularly the case in lower-income neighbourhoods and informal settlements in major cities such as Beirut, Tripoli, Cairo, Amman and Sana'a, where water cut-offs are endemic, with the result that many residents buy their water from private vendors, often at higher rates than those charged by the utilities. Municipalities will frequently undertake some upgrading and maintenance of utilities within their own jurisdictions; however, as long as their role has not been clearly defined in the framework of an official decentralization strategy, giving them more planning, fiscal and decision-making powers, they will be unable to cope with growing demand from their residents for improvements in service.

In the case of Iraq, the West Bank and the Gaza Strip, the situation has deteriorated dramatically, indeed to the point of crisis, over the past decade due to long years of sanctions and two major wars in Iraq, and years of Israeli border closures and Israel's control of water resources in West Bank and Gaza Strip (WBGS). Palestinians are suffering great hardship as a result of their situation of severe water poverty. The prevailing tension is exacerbated by the inequality of access to safe drinking water between settlers and Palestinians: per capita consumption in Gaza City is 139 m³ per year in the case of Palestinians, compared to 1,143 m³ for settlers. In Iraq, the water crisis that has followed the war has led to outbreaks of epidemics of typhoid, cholera and other diseases as a result of the contamination of water supplies and disruption of the supply system. Water supply and sewage systems have been further disrupted by cuts in the supply of electricity, without which water cannot be pumped, nor waste water treated. The challenge in these cases is mobilizing substantial resources from donors to cover large-scale capital investment for the rehabilitation and modernization of water supply and sanitation systems in the wider context of reconstruction strategies.

B. CHALLENGES FACING WATER UTILITIES

The performance of water utilities in the ESCWA region has not been very impressive (see table 9). Water utilities are financed and managed by the public sector, with substantial subsidies from budget allocations. In most cases, the revenues they generate cover only a portion of their operating costs, due to low tariffs and inadequate bill collection. In the larger urban centres, water distribution systems are old, with leakage rates typically in the 30 to 50 per cent range. Funding for rehabilitation is seldom available, with the result that pipes burst, water quality and sanitation are inadequate, and the ability of municipalities to manage all their urban services is undermined. Measured against international benchmarks, water utilities in the region are overstaffed with unskilled and administrative personnel. This situation means that those utilities are inefficient in terms of the ratio of technical employees to the number of connections. Furthermore, in many cases there are no staff development incentives, relevant training programmes or

human resource development strategies worthy of the name, with the result that staff members are lacking in motivation, productivity is low and the needs of clients go unmet.

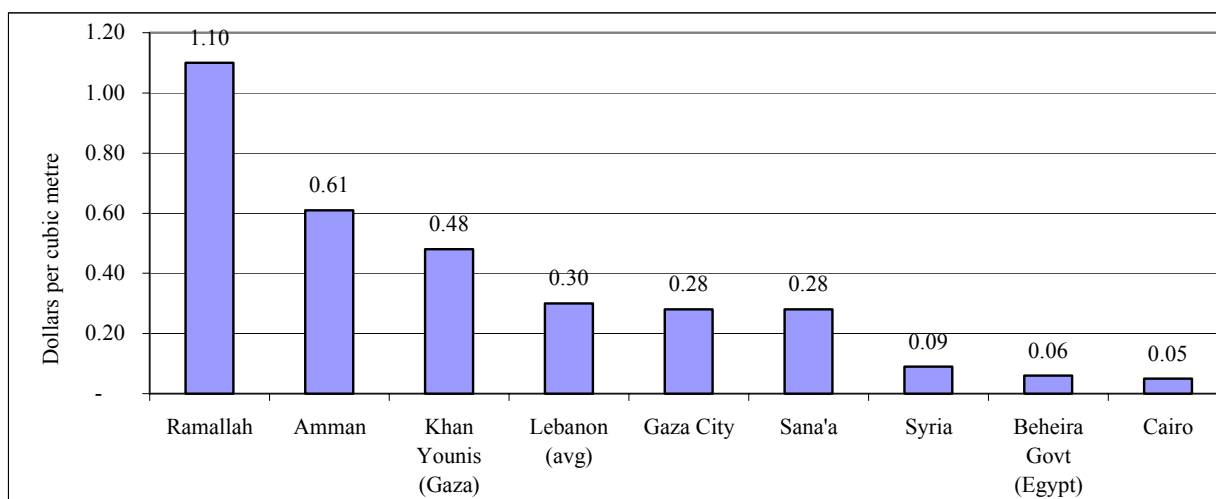
TABLE 9. PERFORMANCE INDICATORS FOR WATER SUPPLY AND
SANITATION UTILITIES IN THE REGION

	Gaza	Amman	Sana'a	USA	London (TW)	Good practice
Unaccounted-for water (UFW)	31%	52%	~50%	13%	23%	<20%
Water coverage	99%	100%	65%	100%	100%	100%
Continuous supply	No	No	No	Yes	Yes	Yes
Per capita water use (litres/day)	70	~80	~80	50	260	> 100
Employees/000 connections	7	5.5	10	10	1.6	< 5
O&M cost recovery	No	Yes	Yes +	(Yes)	Yes +	Yes +

Source: World Bank 2002.

Cost recovery represents another challenge to water utilities, as water is heavily subsidized in most urban centres in the region. Water pricing, which is one of the main components of any efficiently adapted privatization strategy, is still a highly sensitive issue in most ESCWA countries. People are accustomed to paying only a small charge for water or having it provided free of charge through government-owned utilities. For some, the provision of water free of charge is a matter of religious tradition, while others regard it as a government responsibility, especially in countries that enjoy high revenues from their oil and mineral resources. Government subsidies differ from country to country, and are reflected in the wide range of water tariffs. Figure II presents a summary of the situation. The cost of water varies depending on its use (irrigation versus domestic) and on the source (perennial river flow versus groundwater). In any case, the average water tariff for selected countries and cities in the ESCWA region is approximately \$0.36 per cubic metre, which is below the European average of \$0.67 and the North American average of \$0.48 (WHO and UNICEF 2001). The highest rate per cubic metre is charged in Ramallah (\$1.10) and the lowest in Cairo (\$0.05).

Figure II. Status of water pricing in different municipalities in the region



Source: Saghir et al. 2000.

While the issue of water pricing and tariff structures is currently the subject of heated debate among water professionals and policy-makers in various forums, there is still a good deal of confusion over the issue of how fairness and affordability criteria should be established in order to address the needs of lower-income

households. Furthermore, in the absence of reliable socioeconomic data on income and expenditure, reliable surveys on willingness to pay for improved services, and even, in some cases, accurate metering of water consumption, the task of determining an appropriate tariff structure is very difficult. Revenue collection through tariffs also depends to a large extent on the cooperation of the public, which in turn implies the deployment of resources for consumer and end user education and awareness enhancement. All these are elements of a demand management approach, which is something that many countries in the region have not yet properly explored, given the earlier policy emphasis on supply augmentation.

C. OTHER OPTIONS FOR MEETING DOMESTIC DEMAND FOR WATER

Water resource development to meet domestic demand during the decades ahead will require heavy financial investment that is likely to be beyond the capacity of government budgets. Substantial investments will be required for the development of storage reservoirs and distribution networks in all the ESCWA countries. In major urban centres in Egypt, Iraq, Lebanon and the Syrian Arab Republic, investments will be needed mainly for surface water development. In the GCC countries, Jordan and Yemen, there are still groundwater sources that can be developed, but the opportunity cost will be very high. For deep groundwater sources, drilling may be costly, as some of the aquifers lie more than 300 metres down; some of them are located at depths of as much as 1 000 metres. High temperatures and the water's high iron and sulfate content will entail additional treatment costs. In the case of cities in the interior of Jordan, Lebanon, Oman, Saudi Arabia and the Syrian Arab Republic, new groundwater sources are increasingly being tapped, owing to the high cost of piping water from its sources to the places where it is needed: transportation costs may range from \$1 to \$1.5 per cubic metre, depending on topographical and geological factors (ESCWA 2003).

Desalination in the ESCWA region, especially the GCC countries, is a major source of supply for the domestic sector, given the region's limited natural water resources, its financial resources and its cheap energy. In a number of instances, rural areas have also benefited from desalination schemes involving the transport of water over long distances from coastal areas to the interior. Sea and brackish water desalination will continue to be a viable water supply option for many urban centres in the GCC countries, and will constitute a viable option for countries that are developing their tourism sector, especially in view of the steady stream of cost-cutting innovations in desalination technology. This alternative may prove to be a relatively inexpensive supply option by comparison to the development of conventional sources located in remote areas (ESCWA 2001b).

Rising demand for domestic water will require the construction of additional desalination plants, especially in the GCC countries. Sea and brackish water desalination and waste water treatment facilities also require heavy capital investment. To give some indication of the magnitude of the necessary investment, the capital construction costs for desalination facilities range from \$1,100 to 1,800 per day (\$0.55 to \$3.5 per m³), while for waste water the cost may range from \$900 to \$1,500 per day (\$ 0.15 to \$1.50 per m³), depending on the treatment level. Increased concern for the environment would require additional investment to reduce pollution, especially brine disposal and air pollutants (ESCWA 2001b). Once the limits of water conservation measures have been reached, desalination may emerge as a viable option for meeting increasing water demand while also offering potential for expanded private-sector participation.

III. INVESTMENT NEEDS AND PROSPECTS FOR PUBLIC-PRIVATE PARTNERSHIP²

A. COST ASSESSMENT

The planning, designing and implementation of water and sanitation infrastructure call for a detailed investment analysis to estimate the necessary financial resources. Determining the cost of water supply and sanitation services is the first step.

Lee et al. (2001) estimate the initial cost of water supply and waste water infrastructure in developed countries to be, on average, between \$1,000 and \$3,200 per inhabitant, based on an assumed per capita consumption rate of 180-220 m³ per year (490-600 litres/day) and a three person household (Lee et al. 2001). Table 10 shows some global estimates for water supply and waste water treatment infrastructure and also itemizes additional costs related to storm water systems (\$970-1,250 per capita) and environmental protection (\$300-400 per capita). Infrastructure management costs related to financing, operation and maintenance (O&M) and taxes represent an additional \$85 per 100 m³ per year (approximately \$170 per capita annually) for water supply and about \$53 per 100 m³ for waste water treatment on average (Lee et al. 2001). Table 11 provides a more detailed breakdown of these management costs.

TABLE 10. AVERAGE PER CAPITA WATER AND WASTE WATER TREATMENT INFRASTRUCTURE COSTS

Facility	Cost (\$/person)
Water supply (including environmental aspect)	450-1 800
Water supply with connection	750-2 100
Waste water treatment	650-1 400
Storm water	970-1 250
Combination of waste water and storm water	1 000-1 400
Water and waste water connection	200-300
Environmental protection	300-400

Source: Based on Lee et al. 2001.

TABLE 11. BREAKDOWN OF AVERAGE ANNUAL WATER SUPPLY AND WASTE WATER TREATMENT COSTS (DOLLARS PER CUBIC METRE)

Facility	Water supply	Waste water treatment
Capital (financial costs)	0.01-0.40	0.10-0.16
Operation	0.01-0.45	0.25-0.40
Maintenance	0.15-0.60	0.08-0.15
Taxes and miscellaneous	0.03-0.15	0.025
Average	0.85	0.53

Source: Based on Lee et al. 2001.

Fay and Yepes (2003) provide unit costs for new investment in water and sanitation infrastructure in developing countries. On the basis of conservative figures from the World Bank, they estimate the cost at \$400 for water supply delivery and \$700 for sanitation service, for a combined total of \$1,100 per connected household (Fay and Yepes 2003). Based on an average of 5.12 inhabitants per household in the ESCWA region,³ the cost of new investment may be estimated at \$78 per capita for water supply infrastructure and

² Special thanks to Mr. Sami Atallah, consultant to ESCWA, for his contributions to this chapter.

³ This figure represents the average household size for eight participating countries in the Arab region. United Nations Commission on Human Settlements, *Activities of the United Nations Centre for Human Settlements (UNCHS) (Habitat): Progress Report of the Executive Director. Addendum: State of the World's Cities, 1999*. Report No. HS/C/17/2/Add.1, 17 March 1999, table 3. See: <http://www.unhabitat.org/chs17/2add1.htm>.

\$137 per capita for sanitation for a combined total of approximately \$215 per capita.⁴ Maintenance needs are estimated at an additional three per cent of the replacement cost for the capital stock, and in many instances may represent more than double the initial investment cost. The cost of rehabilitation of the existing capital stock is excluded from this estimate in view of the difficulty of collecting adequate data.

While Fay and Yepes (2003) estimate maintenance costs in developing countries at the aggregate level, a more detailed review of O&M costs in the ESCWA region has found that they fall within the range of the estimates given by Lee *et al.* for developed countries. In Jordan, for example, the average capital cost for water supply ranges from \$0.5 to 0.7 per m³, with O&M costing about \$0.28 per m³. Waste water treatment costs in Jordan are estimated at \$0.59 per m³. Table 12 shows average waste water treatment costs for selected ESCWA countries.

TABLE 12. AVERAGE WASTE WATER TREATMENT COSTS IN SELECTED COUNTRIES

Country	Cost (Dollars per cubic metre)	Remark
Bahrain	0.16-0.89	Tertiary treatment 0.13-0.28 reuse treatment cost
Jordan	0.59	
Kuwait	0.4-0.83	
Lebanon	0.80	
Qatar	1.14-1.61	
Saudi Arabia	0.7-1.0	
United Arab Emirates	0.3-0.41	Advanced treatment
Eastern Europe	0.29-0.63	
Cyprus	0.87-0.91	
USA	0.59-2.2	

Source: ESCWA 2001b.

In assessing the cost of capital investment, maintenance, delivery and so on for water and sanitation services in the ESCWA region, it is also important to recognize that these costs are likely to increase over time as a result of the following:

(a) *Increasing water scarcity*, which impacts the accessibility of water supplies; water may have to be extracted from deeper sources and piped over greater distances. In addition, freshwater resources may have to be supplemented with more expensive alternatives such as desalinated water or treated waste water. These alternatives will involve additional capital costs for infrastructure, treatment and distribution, as well as higher annual management costs related to O&M;

(b) *Increasing industrial pollution and agricultural runoff*, which will adversely affect surface water and groundwater quality with heavier loads of chemical and biological pollutants. This is likely to increase the level of waste water treatment (primary, secondary or tertiary) required prior to discharge or reuse;

(c) *Population growth and increasing urbanization*, which result in a more concentrated demand for water related services over a larger geographic area. This in turn increases stress on existing distribution systems, storage and pumping facilities and treatment plants, making earlier rehabilitation and replacement necessary.

World Bank economists estimate that these factors may double or triple the cost of water service provision, while the cost of sanitation is likely to increase even more rapidly (Saghir et al. 2000). Of course, the development of new technologies may lower the capital cost of water supply and sanitation facilities in

⁴ This estimate, which is based on the assumptions used by Fay and Yepes (2003), represents only new investment costs, exclusive of maintenance and other management components related to operation, capital financing, capital depreciation and taxes as well as the cost of rehabilitating existing facilities.

the future. The cost of desalination, for example, has fallen significantly over time (Saghir 2000)⁵ and is expected to decline further in view of current levels of spending on research and development (R&D) aimed at devising more efficient, low-cost approaches at the regional and global levels. However, these savings will be attainable only if adequate support for R&D is forthcoming. The United States maintains a policy of earmarking 0.05 per cent (\$25 million) of its current annual spending on water system capital investment and O&M and using it for R&D in drinking water and waste water industries, in the expectation that this will generate significant savings in the long run (United States Congressional Budget Office 2002). Kuwait and Saudi Arabia maintain advanced R&D programmes in the area of desalination, which contribute to new knowledge and will ultimately translate into lower-cost, more efficient technologies. KISR in Kuwait and ACSAD in Damascus, under the auspices of the League of Arab States (LAS), have important water resource divisions that have done much useful R&D aimed at improving the management of water supply and sanitation. On the whole, however, R&D in that area remains limited at the regional level. In an effort to promote R&D, Saudi Arabia now offers the Prince Sultan Bin AbdulAziz International Prize for Water and Morocco the King Hassan II Great World Water Prize. These are some of the ways the region is addressing the challenge of identifying innovative solutions to its water-related problems (UK Trade and Investment 2003).

B. NEEDS ASSESSMENT

1. *Determining regional needs*

In estimating capital investment requirements for the water and sanitation sector in the ESCWA region to 2025, both current and anticipated needs must be taken into account.

Table 13 summarizes access to water and sanitation infrastructure in the ESCWA member States in the year 2000. Based on these figures, it appears that approximately 17.6 million people in the region currently lack access to an improved water source, and that 19.6 million persons do not have access to adequate sanitation facilities.⁶ Table 13 also provides estimated population levels in 2025: the population of the ESCWA region is expected to increase by roughly 120 million people within the coming quarter of a century.

Thus, by the year 2025, there will be 137 million more people in the region who will need water supply services, and 139 million who will need access to sanitation, as shown in tables 14 and 15. On the basis of these estimates and per capita investment costs obtained from Fay and Yepes (see above), the minimum amount of new investment required to satisfy current and anticipated water supply needs in the ESCWA region until the year 2025 is \$10.7 billion, while over \$19 billion in new investment would be required to meet basic sanitation needs.

Consequently, new investment needs in the water and sanitation sector in the ESCWA region will probably amount to a minimum of \$30 billion in the first quarter of the twenty-first century. Additional costs for the operation and maintenance of new infrastructure and the rehabilitation of existing facilities are likely to more than double, possibly even triple, that figure. Even so, this is a conservative estimate by comparison with World Bank calculations indicating that water and sanitation financing needs for all countries in the Middle East and North Africa (MENA) region are expected to total \$40 billion between 2000 and 2010 alone (10 years).⁷

⁵ For instance, the cost has fallen from approximately \$0.90/m³ in 1989 to approximately \$0.50/m³ in 2000, with the bulk of the savings being due to declining membrane replacement costs and reduced expenditure for O&M. However, those figures are exclusive of fixed costs related to service delivery and transport.

⁶ WHO defines an improved water source as one that provides reasonable access to an adequate amount of water from an improved source, such as a household connection or protected well. Private water vendors are not considered an improved source. Reasonable access means a minimum of 20 litres per person per day from a source within one kilometre from a dwelling. Access to sanitation means access to at least adequate excreta disposal facilities that can effectively prevent human, animal or insect contact with excreta. It does not necessarily mean access to an improved facility.

⁷ It is noteworthy that Saghir (2000) estimates that 45 million people lack access to safe water and 80 million access to sanitation in the MENA region, which includes Algeria, Iran, Morocco and Tunisia in addition to the ESCWA member States.

TABLE 13. PERCENTAGE OF TOTAL POPULATION WITH ACCESS TO WATER AND SANITATION
IN THE ESCWA MEMBER STATES (2000)

	Total population (Thousands)		Population change 2000-2025 (Thousands)	Percentage of population with access to an improved water source	Percentage of population with access to sanitation facilities
	2000	2025			
Bahrain*	640	887	247	100	100
Egypt	67 884	94 777	26 893	97	98
Iraq	22 946	40 298	17 352	85	79
Jordan	4 913	8 666	3 753	96	99
Kuwait*	1 914	3 219	1 305	100	98
Lebanon	3 496	4 580	1 084	100	99
Oman	2 538	5 411	2 873	39	92
Palestine	3 191	7 145	3 954	86	100
Qatar*	565	754	189	n/a	97
Saudi Arabia	20 346	40 473	20 127	95	100
Syrian Arab Republic	16 189	27 411	11 222	80	90
United Arab Emirates*	2 606	3 468	862	97	97
Yemen	18 349	48 206	29 857	69	38
Total	165 577	285 295	119 718		

Source: WHO/UNICEF 2001 and WRI 2001.

* Provided by the United Nations Human Settlements Programme for 1990 (see <http://www.habitat.org/habredd/conditions/westasia>).

TABLE 14. WATER CAPITAL INVESTMENT NEEDS FOR ESCWA MEMBER STATES TO 2025

	Total number of people requiring access to an improved water source by 2025 (Thousands)	Water investment needs (2000-2025) (Millions of dollars)	Percentage share of regional investment in water (2000-2025)
Bahrain	247	19.3	0.18
Egypt	28 930	2 260.1	21.07
Iraq	20 794	1 624.5	15.14
Jordan	3 950	308.6	2.88
Kuwait*	1 305	102.0	0.95
Lebanon	1 084	84.7	0.79
Oman	4 421	345.4	3.22
Palestine	4 401	343.8	3.20
Qatar	189	14.8	0.14
Saudi Arabia	21 144	1 651.9	15.40
Syrian Arab Republic	14 460	1 129.7	10.53
United Arab Emirates	862	67.3	0.63
Yemen	35 545	2 777.0	25.88
Totals	137 331	10 729.0	100.00

Source: WHO/UNICEF 2001 and WRI 2001.

* Provided by the United Nations Human Settlements Programme for 1990 (see <http://www.habitat.org/habredd/conditions/westasia>).

TABLE 15. SANITATION INVESTMENT NEEDS FOR ESCWA MEMBER STATES TO 2025

	Total number of people requiring access to sanitation by 2025 (Thousands)	Sanitation investment needs (2000-2025) (Millions of dollars)	Percentage share of regional investment for sanitation (2000-2025)
Bahrain*	247	33.8	0.18
Egypt	28 251	3 862.4	20.28
Iraq	22 171	3 031.1	15.91
Jordan	3 802	519.8	2.73
Kuwait*	1 343	183.7	0.96
Lebanon	1 119	153.0	0.80
Oman	3 076	420.6	2.21
Palestine	3 954	540.6	2.84
Qatar	206	28.2	0.15
Saudi Arabia	20 127	2 751.7	14.45
Syrian Arab Republic	12 841	1 755.6	9.22
United Arab Emirates	940	128.5	0.67
Yemen	41 233	5 637.4	29.60
Totals	139 310	19 046.3	100.00

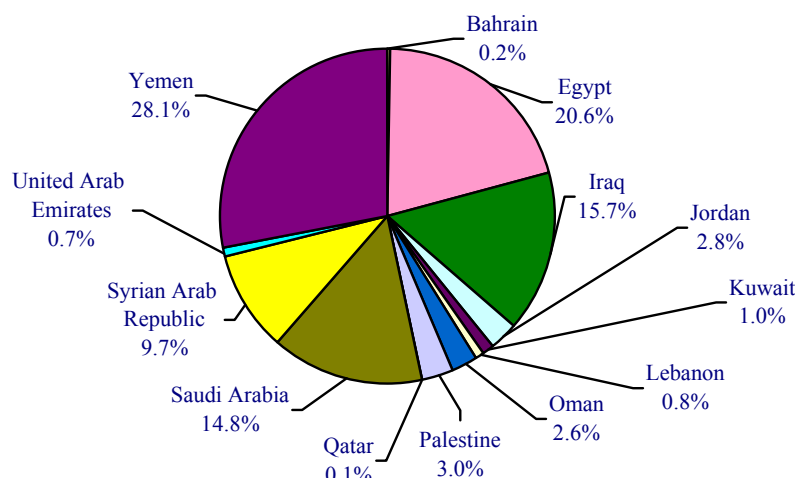
Source: WHO/UNICEF 2001 and WRI 2001.

* Provided by the United Nations Human Settlements Programme for 1990 (see <http://www.habitat.org/habrdd/conditions/westasia>).

2. Disaggregating to the national level

Solely in terms of needs as estimated from existing access shortfalls and anticipated population growth, Yemen will require the largest share of new capital investment in the region at \$8.4 billion for water and sanitation over the next 25 years. Egypt comes second with \$6.1 billion, followed by Saudi Arabia with over \$4.4 billion. In fact, as Figure III below shows, five countries—Egypt, Iraq, Saudi Arabia, the Syrian Arab Republic and Yemen—account for 89 per cent of the region's total investment needs in the water sector.

Figure III. ESCWA Member States' new investment needs in water and sanitation as percentages of regional needs (2000-2025)



In considering these estimates, it is important to bear in mind that the figures represent only new capital costs as an indication of what is required in order to meet the basic needs of the countries concerned. Additional costs for operation and maintenance and the rehabilitation or expansion of existing infrastructure would probably increase the total severalfold. In view of these additional costs, it is important to recognize the extent to which ESCWA member States are already heavily engaged in investment planning and have already committed themselves to water and sanitation rehabilitation and expansion projects. These supplementary projects may prove equally attractive for private investors and service providers.

For example, recent information from Egypt indicates that the cost of rehabilitating the country's water distribution network to eliminate leakage (currently 40-50 per cent) is estimated at \$6.6 billion (20 billion LE),⁸ the cost of renovating the country's 421 water supply treatment plants is estimated at \$462 million (1.4 billion LE), the cost of the rehabilitation of 27 waste water treatment plants is estimated at \$173 million (525 million LE), the corresponding figure for sewerage collection systems is \$792 million (2.4 billion LE), while the rehabilitation of 1500 wells will cost \$58 million (177 million LE), making a total of \$8.05 billion in capital for rehabilitation work in the coming years (ESCWA 2003), namely some 31.5 per cent more than the amount required for new infrastructure. Furthermore, the Government of Egypt is committed to a major water-related multisectoral undertaking in the form of the Touthka project in the Western Desert. Total project costs are expected to amount to over \$100 billion (305 billion LE) by the year 2017. The project's infrastructure is currently being financed through government spending, but the implementation phases, particularly in the case of projects related to agricultural development, are expected to be funded by regional and international private investment.

In Jordan, spending for water projects accounted for about 12 per cent of the Government's annual budget during the period 1976-1990. Planning estimates indicate that spending for improved water service delivery over and above basic needs is expected to amount to \$5 billion between 1998 and 2012 (ESCWA 2003). Similarly, 60 to 70 per cent of the country's annual budget is allocated to the agricultural sector in the Syrian Arab Republic, mainly for irrigation projects and facilities (ESCWA 2003), while spending on new and existing sanitation services is estimated at \$59 million (SP 2.95 trillion) for 2003 alone. The Government is also evaluating the possibility of inviting the private sector to participate in a partnership to provide Damascus with water from the Ein al-Fijih springs. This project may require as much as \$10 billion in new capital (ESCWA 2003).

In the GCC countries, considerable amounts of capital have gone into seawater desalination facilities (ESCWA 2003). In Saudi Arabia, the Saline Water Conversion Corporation (SWCC) estimates that if the

⁸ At the old exchange rate of \$1 = 3.05 LE.

current per capita water consumption rate of 300 litres per day is maintained, nearly \$16 billion in new capital will be needed by the year 2020 to meet the country's demand for water. Despite this red flag signaling the need for a demand-side approach to water resource management, 22 new desalination plants are being planned at locations along Saudi Arabia's eastern and western coastlines to meet current and anticipated demand for water from various sectors of the economy.⁹ For the Arabian Peninsula as a whole, it is estimated that \$30 billion may be needed to replace aging desalination facilities in the near future (UK Trade and Investment 2003).

Spending for waste water treatment also continues. Kuwait has committed itself to a \$390 million sewerage project, while Oman is spending \$600 million to upgrade waste water services in Muscat. Jordan, too, is devoting substantial sums to the rehabilitation and extension of sewerage projects (Saghir 2000).

C. PROSPECTS FOR PUBLIC-PRIVATE PARTNERSHIP

Generally speaking, economic circumstances have compelled all the countries in the region except the GCC countries to resort to foreign loans or grants to finance their water sector programmes. During the past decade, the ESCWA region has experienced limited economic growth, while budget deficits have burgeoned. From 1997 to 1999, the budget deficit of the ESCWA region was the highest in the world, with the combined debt of the ESCWA countries reaching \$79.8 billion in the year 2000.¹⁰ This has left them with little to spend for water supply and sanitation, and has impelled them to look around for alternative sources of financing, including the private sector.

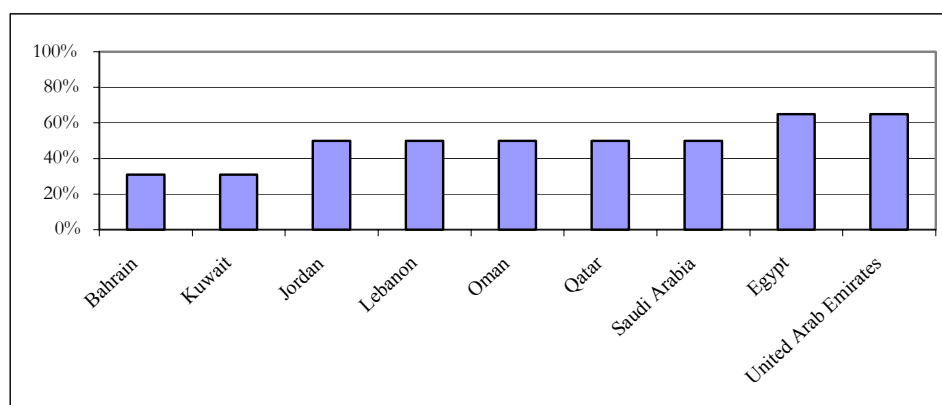
Because of this financial situation and the importance of economic restructuring, governments have begun to consider privatization and public-private partnerships as means of obtaining the funds and technologies they need in order to meet their increasingly acute infrastructure needs. Furthermore, privatization policies are being formulated and privatization is being pursued in important infrastructure development sectors such as telecommunications and energy, and this is enhancing prospects for privatization and private-sector partnership in the water and sanitation sector. Saudi Arabia, for example, announced a privatization strategy in 2002 as a component of a general policy shift toward liberalization of the service sector. The strategy was soon given effect: in November 2002 the Council of Ministers adopted a resolution privatizing portions of the water and waste water sector. The Ministry of Water is currently drafting measures to facilitate public-private partnerships in that sector (UK Trade and Investment 2003). Jordan, for its part, has passed a new privatization law under which an Executive Privatization Commission has been established, with a broad mandate that will enable it to open up opportunities for privatization in various sectors. While it was the telecommunications sector that was initially targeted for privatization, Jordan has subsequently pursued private sector initiatives in the water sector (see chapter V).

Evidence of increasing support for privatization initiatives was also noted in a recent review conducted by the Economist Intelligence Unit. The report concluded that most countries in the ESCWA region were reasonably supportive of privatization alternatives, while Egypt and United Arab Emirates tended to be the ESCWA Member States that were most strongly committed to privatization (see figure IV). However, the study also found that the region was not aggressively pursuing privatization alternatives, particularly when compared to other regions.

Figure IV. Commitment to privatization among selected ESCWA countries

⁹ This capital expenditure trajectory is reminiscent of previous water supply plans. Between 1963 and 1993, spending for water supply and desalination facilities in Saudi Arabia amounted to approximately \$33 billion. During three successive five-year plans (1975-1990), the Government invested \$12 billion in water supply facilities. Between 1996 and 1997, four per cent of the country's annual budget (\$4 billion) was allocated to municipal water projects and services (ESCWA 2003).

¹⁰ Budget deficits for the ESCWA countries have been calculated by ESCWA for the years 1997 to 1999. Iraq and Palestine are excluded from the calculation due to lack of data.



Source: ERF 2002.

A further obstacle to private-sector engagement in the provision of water and sanitation services is the reluctance of the region to open service sectors to private or foreign investment, particularly in the case of services deemed to be public goods. During the 1990s, for example, the region maintained a private to public investment ratio of 2, which is low. That is, private investment was only twice as large as public investment for all sectors. This is considerably below the average rate of 6.6 for OECD countries and 5.1 for the East Asia region for the same period.

However, markets in the ESCWA region are gradually opening and member countries are increasingly seeking to position themselves vis-à-vis globalization and trade liberalization in order to explore possibilities of turning challenges into opportunities in the new context. As markets open up, new opportunities for foreign investment will arise, given a policy environment that is conducive to private sector investment. Negotiations currently under way at the World Trade Organization (WTO) are focusing on the extent to which countries are interested in liberalizing trade in environmental goods and services as well as government procurement policies. Environmental goods are generally being defined as raw materials or manufactured industrial goods that provide an environmental service, such as water pumps, valves and purification systems, or products that may be deemed beneficial for the environment, including organic products (UNCTAD 2003). The term “government procurement” covers a wide range, from the purchase of administrative supplies to tenders multinational corporations.

In Saudi Arabia, the regulations currently in force give priority to locally manufactured products for purposes of public tendering and procurement. Similar regulations are found in other ESCWA countries and countries around the world. This non-tariff barrier to trade and investment reduces incentives for multinational firms to pursue investment opportunities in countries where they may be at a disadvantage relative to local investors, or where they may be forced to rely on locally manufactured products that may not perform as well as analogous products imported from abroad. These considerations are particularly relevant in the case of water and sanitation infrastructure development, which calls for the purchase of environmental services and technologies ranging from basic water pumps to high-tech waste water treatment facilities.

A willingness to liberalize environmental goods and services may be additional evidence of a government’s commitment to greater private-sector participation in water and sanitation services, particularly by foreign companies. Given the region’s growing need for water and sanitation services, the ESCWA countries may prove to be lucrative markets for environmental technology providers from developed and developing countries, which will provide them with larger flows of foreign direct investment, more official development assistance and more efficient and cost-effective water and sanitation technologies.

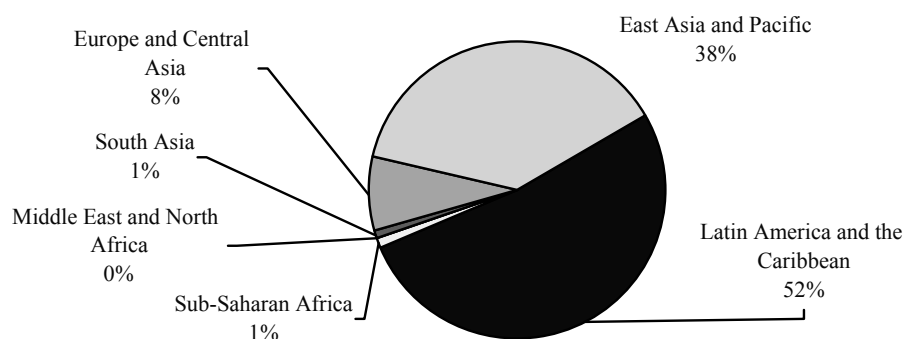
1. *Where is the private sector investing?*

Despite these opportunities, prospects for public-private partnership are less promising than they might be. This is because the ESCWA region has not been so successful as other regions in attracting

private capital for infrastructure development (water, sanitation, telecommunications, transport and so on). Over the past 11 years, global private investment in infrastructure has amounted to \$754 billion (Klein 2003). The lion's share of this has gone to Latin America and the Caribbean, which have attracted \$361 billion, or 48 per cent of the world total. The MENA region attracted only three per cent of all investment in infrastructure between 1990 and 2001 (Klein 2003).

Water and sanitation still account for no more than a small proportion of all private-sector investment in infrastructure. However, an upward trend is discernible. Between 1990 and 1997, private-sector investment in water and sanitation worldwide amounted to approximately \$25 billion, of which 81 per cent (\$20.2 billion) went to Latin America and 13 per cent (\$3.2 billion) to countries of the MENA region (Saghir et al. 2000). By 2001, cumulative investment in water and sewerage projects involving private participation had reached \$40 billion (WB 2003). However, much of this private money had gone to East Asia and the Pacific and the new republics of Central Asia. In 2001, the Middle East and North Africa region attracted less than one per cent of global private-sector investment in water and sanitation, which was a \$40 billion business in that year (see figure V).

Figure V. Global investments involving private-sector participation in water and sewerage in various regions (2001)



Source: WB 2003.

According to World Bank figures, 20 per cent (\$8 billion) of total estimated capital investment needs for water and sanitation services in the MENA region between 2000 and 2010 could be met through private sector initiatives. Furthermore, although private participation in infrastructure (PPI) in the MENA region has been low, a recent upward trend is discernible: the share of the MENA region of total PPI (for all sectors) was 0.1 per cent in 1995, but by 1999 that figure had increased to 3.5 per cent. The ESCWA countries, too, are expected to continue to attract more PPI, given an enabling investment environment in the context of an improving regional security situation.

2. Mechanisms for facilitating investment

In view of the region's mixed success in attracting private-sector investment, it might be advantageous to devise a number of facilitating mechanisms that could supplement public resources and mobilize the interest of private investors. Useful initiatives to that end might include taking advantage of targeted development assistance, engaging in preferential financing arrangements and pursuing more favorable foreign direct investment policies.

(a) Official development assistance

Official development assistance (ODA) in the water sector has traditionally been directed toward no more than a handful of countries. The Organization for Economic Cooperation and Development (OECD)

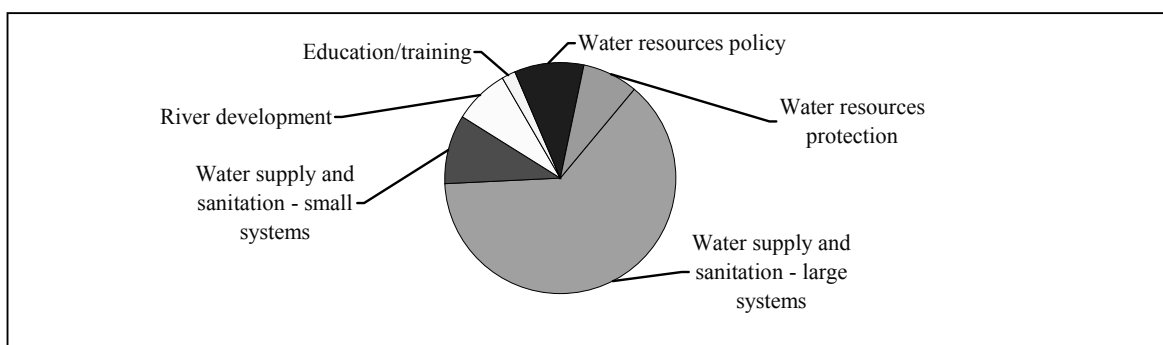
reports that from 1995 to 1996, nearly 75 per cent of all aid in that area went to 10 countries. Greater variety was observed from 1997 to 2001, however, with the largest ten recipients receiving just 48 per cent of donor funds for water-related projects. Egypt has traditionally been among the ten largest ODA recipients in the field of water and sanitation.

Among bilateral donors of assistance for water supply and sanitation services, Japan is by far the world's largest, providing \$999 million between 1999 and 2001, or 33 per cent of all bilateral and multilateral donor aid for WSS during that period (OECD 2003). Germany and the United States came a distant second and third, with \$318 million and \$252 million respectively. France and the United Kingdom have also been important sources of ODA for water supply and sanitation services.

Over 60 per cent of ODA still goes to support large water supply and sanitation projects that service densely populated countries such as Egypt, China and India. However, assistance for the development of small systems and water resources policy may also be available (see figure VI).

ODA provides governments with supplementary resources that enable them to maintain their capital spending in times when public funds are limited. The World Bank estimates that between 1996 and 1999, eight Arab countries, namely Algeria, Egypt, Jordan, Lebanon, Morocco, Tunisia, the West Bank and Gaza and Yemen, spent \$800 million for urban water and sanitation projects, \$500 million of which was covered by ODA (Saghir et al. 2000). ODA project funding is attractive for another reason as well, namely because it helps generate private-sector interest supporting capital projects.

Figure VI. Aid for water supply and sanitation, by sub-sector, 1997-2001



Source: OECD 2003.

(b) *Multilateral financial institutions*

Multilateral financial institutions play an important role in bridging the funding gap that may result from the reluctance of private investors to put their money into politically unstable areas because of security concerns or high-risk conditions. By funding a development project, these institutions strengthen the government's commitment to seeing the project through to completion and demonstrate its capacity to manage investment capital. This in turn builds the confidence of the private sector in such projects and helps mobilize private investment.

To illustrate, the World Bank provides loans for infrastructure development and grants for project preparation. As a rule, however, a significant share of the capital investment involved and also the O&M costs must be covered out of the national budget through a cost-sharing arrangement as insurance that the government will continue to implement the project. During the period 1960-1992, the World Bank provided funding for water projects in Egypt and Jordan amounting to 15 per cent of total foreign loans to those countries. The corresponding figures for Yemen, Iraq and the Syrian Arab Republic were 18, 28 and 49 per cent respectively (ESCWA 2003). The World Bank allocated 79 per cent of its total loans to the region to finance irrigation projects. It has also provided technical assistance and capacity building support in the area

of water resource management, inter alia through water supply management contracts in Amman, Gaza and the West Bank.¹¹

The Arab Fund for Economic and Social Development (AFESD) has also been an important source of financing for water supply and sanitation projects in the region. It has provided \$59 million (18 million KD)¹² in low-interest loans to Yemen to support sanitation systems in Sana'a, which have in turn generated supplementary funding from public and private sources to implement activities under the loan and cover the full cost of the project (20.6 million KD or \$68 million).

(c) *Foreign direct investment*

More than half of the proceeds of privatization accruing to the region have been in the form of foreign direct investment (FDI). On the whole, however, the ESCWA region has failed to attract a representative share of FDI, either in terms of the Arab world or by comparison to other regions. In 1996, the region's share of world FDI was only 0.54 per cent, and by 2000 the figure had declined to 0.16 per cent (see table 16). Moreover, FDI in the ESCWA region is volatile: it peaked at \$6 billion in 1998 and fell again to less than \$3 billion in 2000.

TABLE 16. FDI INFLOWS, 1996-2000
(Millions of US\$ and percentage)

Destination of FDI inflow	1996	1997	1998	1999	2000
ESCWA	2 087	4 801	6 031	1 166	2 974
Arab world	3 309	6 825	7 481	2 221	4 570
ESCWA as a percentage of flows to the Arab world	63	70	81	53	46
All developing countries	152 495	187 352	188 371	222 010	240 167
ESCWA as a percentage of flows to the developing countries	1.37	2.56	3.20	0.53	0.87
World	384 910	477 918	692 554	1 075 049	1 270 764
ESCWA as a percentage of total world FDI flows	0.54	1.00	0.87	0.11	0.16

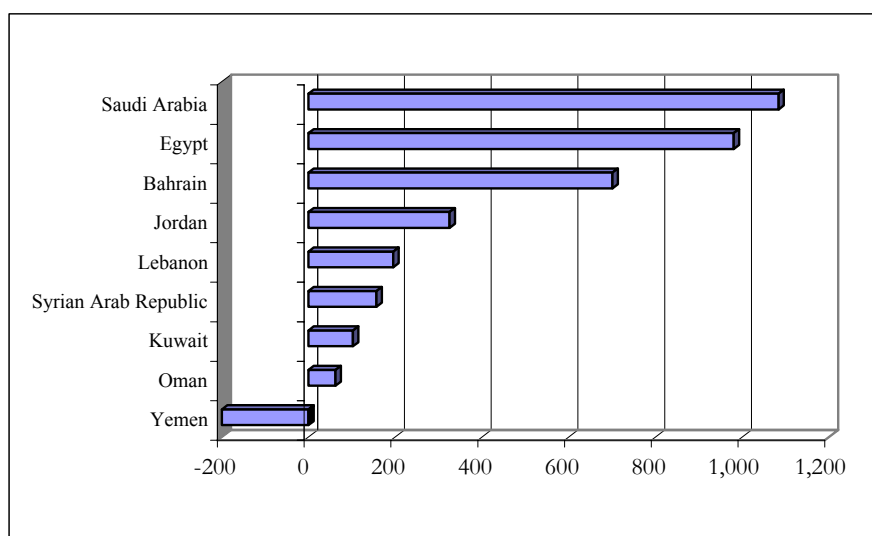
Sources: Eid and Paua 2002, ERF 2002 and WB 2003.

Approximately 70 per cent of FDI in the ESCWA region flows to two countries: Saudi Arabia (43 per cent) and Egypt (28 per cent) (see figure VII). Most of this capital goes to support the petrochemical sector. FDI inflows into other ESCWA countries are limited. Yemen, for its part, was characterized by a net FDI outflow between 1996 and 2000 (although its net official development assistance nearly doubled, from \$247 million to \$426 million, between 1996 and 2001) (WB 2003). This shows why it is essential for the region to create an enabling environment for FDI if it is to have any hope of tapping that source of capital to fund water supply and sanitation projects.

Figure VII. Average annual net FDI flows, 1996-2000 (millions of US\$)

¹¹ Whether the size of loans or grants, qualification criteria and project designs are viable and environmentally and socially sustainable is, of course, another question. These issues are matters for more detailed studies at later stages.

¹² At the current rate of exchange, \$1 = 0.305 KD.



Source: ERF 2002.

D. STRENGTHENING THE ENABLING ENVIRONMENT FOR PUBLIC-PRIVATE PARTNERSHIP

Governments in the ESCWA region need to demonstrate a greater commitment to public-private partnerships if their countries are to attract the private-sector investment they need in order to improve their people's access to water supply and sanitation. To that end, they must show that they are committed to open markets, improve the investment climate, strengthen their productivity and focus on priorities. These issues, however, can be addressed effectively only given a functional regulatory framework and the rule of law.

IV. OVERVIEW OF PRIVATIZATION INITIATIVES IN THE WATER SECTOR IN THE ESCWA REGION

In many ESCWA member countries, socio-economic conditions have not always been conducive to the rapid and systematic implementation of privatization strategies, particularly in the water sector. One of the many factors impeding progress toward the privatization of water supply systems in the region is the weak structure of capital markets and their less than optimal performance. Conditions such as these do not facilitate absorption of the very substantial amounts of capital involved in selling public utilities to private institutions. In most ESCWA member countries, the size of the utilities in question does not justify the fragmentation of production, transport and distribution services. The immediate benefits associated with high subsidies for water production and distribution often outweigh the anticipated benefits of privatization.

The ESCWA countries have been cautious about decentralizing fiscal and managerial functions to water utilities, transferring their assets to private operators and turning over responsibility for the development and management of water supply services to the latter. This caution is rooted in fears of monopoly, the problematic implications of higher water rates, and a lack of confidence in the private sector's ability to meet service and financial requirements. As a result, privatization or PPP has been less widely adopted in the ESCWA region than in other parts of the world, and has usually involved short-term (three-to five-year) service contracts for the management of existing water utilities; contracts of this kind have been awarded in a few cities, including Amman in Jordan, Gaza in Palestine, Doha in Qatar and Tripoli in Lebanon.

In recent years, policy-makers in a number of ESCWA countries have opted for privatization as a strategic choice involving sector-wide reforms, in line with overall structural adjustment policies, in an attempt to reconcile budget deficits in the public sector with pressing demands for more and better services. To that end, management contracts are in effect or are being negotiated in Jordan, Gaza, Yemen, Lebanon and elsewhere, while in other countries, such as Egypt, Saudi Arabia, Bahrain and Kuwait, privatization measures are being seriously considered and evaluated in an effort to determine optimal PPP formulas for the water supply and sanitation sector.

In Egypt, under a project financed by USAID, a private firm is working with an NGO in Cairo, Suez and Ismailia on system inspection, leak repair, and the installation of water meters in residences and government buildings (ESCWA 2003). In 1996, LEKA (a consortium of Ondéo Services and Khatib and Alami) was awarded a four-year water service management contract to help local government service providers and the Palestinian Water Authority upgrade the water and sanitation sector. After three years, UFW had declined from 48 per cent in 1995 to 31 per cent in 1999. Water consumption for the same period was almost 16 MCM, nearly 50 per cent more than in 1995, while per capita water consumption had risen by 50 per cent and collections had increased by a factor of nearly 30 (Saghir et al. 2000).

In many cases where PPP has been initiated in ESCWA countries, various institutional measures have been taken, such as the establishment of inter-ministerial bodies to plan and monitor the privatization process, or the enactment of legislation to enforce policies. While there have been some success stories, it is unfortunate that few other pre-privatization measures have been taken to prepare the ground for such fundamental changes, which affect many aspects of people's lives. There are a number of useful steps that governments could take: spending money to build up the capacity of public enterprises and their personnel to perform their prospective functions of monitoring and regulating the performance of private operators, updating and modernizing their legislation, undertaking detailed assessments of the water sector on the basis of an IWRM approach, and, most importantly, allocating the necessary capital resources, time and political backing to the task of undertaking these preparatory measures.

Privatization does not usually proceed at a regular or systematic pace. In many instances, frequent changes of government, political considerations and pressure from various sources may slow down the process and make it very difficult to introduce controversial changes such as the removal of subsidies. In some cases, water authorities or the government may retain more control than had originally been planned. Furthermore, alternative arrangements such as management contracts, subcontracting and concessions are often used together in various configurations that combine private administration with public ownership.

Partial and gradual privatization is the prevailing trend in PPP at the present time, and in the light of various socioeconomic and political externalities, that approach may be more appropriate than total privatization in many ESCWA countries. Countries that rely on surface and shallow groundwater sources have taken limited and partial steps to implement public-private partnership initiatives in the form of management contracts or concessions. Some PPP schemes that have been implemented in selected ESCWA countries are shown in table 17.

In the GCC countries, PPP initiatives have tended to feature involvement by foreign private investors in the construction, financing and operation (BOT, BOOT) of desalination plants, with the government then purchasing the desalinated water and selling it to the public at subsidized rates. The private sector has played a noteworthy role in waste water treatment plant construction as well. Strictly speaking, these aspects of water supply and sanitation are beyond the scope of the present study, but we may note in passing that they have enabled a number of countries, notably the GCC countries, to acquire a wealth of experience in negotiating with foreign multinational companies, monitoring their work and delivery standards, organizing and managing international calls for tenders, and the like. Their example may place the other ESCWA countries in a good stead.

The first major privatized power and desalination project in the ESCWA region dates from 1998. The contract for construction of the Taweelah A2 project in the Emirate of Abu Dhabi, was awarded to a joint venture involving the EMS Energy Corporation and the Abu Dhabi Water and Electricity Authority in an open international competition. Under the terms of the invitation to tender, the winning firm had a free hand with respect to the design of the power generation facilities, but the multistage flash (MSF) process had to be used for water desalination. A project development company was set up to build the necessary power and water production and storage facilities. The project was 40 per cent owned by CMS Energy and 60 per cent by the Abu Dhabi Water and Electricity Authority. In addition, a French and Finnish consortium (Total and Tractebel) has been awarded a \$1.5 billion contract to expand the Taweelah A1 plant from its current capacity of 48 MCM to 140 MCM within a 24-month period. Total and Tractebel owns 40 per cent of this project, while the Abu Dhabi Water and Electricity Authority owns the remaining 60 per cent (ESCWA 2001). Recently the Water and Electricity Authority has undertaken several other projects in connection with both the prospective Taweelah A2 complex, at a cost of \$820 million¹³ (3 billion dirhams), and the Taweelah B expansion project, at a cost of \$1.64 billion (6 billion dirhams) (*Al Hayat* 2002).

Qatar is also embarking on public-private partnership initiatives in the water supply sector: a power generation and water desalination company known as Ras Laffan has recently been established, with a capital of \$700 million. The company will operate as a joint venture between the Qatari Electricity and Water Company (25 per cent) and international independent power producers (55 per cent), with the government owning the remaining 20 per cent (ESCWA 2001). QEWC will purchase all the electrical power and water.

In Saudi Arabia, the Supreme Economic Council is currently evaluating offers from private firms to put as much as \$2.5-5 billion into building desalination plants. The project will be managed by a joint venture involving the Sumitomo Corporation of Japan and SWCC. A purchase agreement will take the form of a BOO or BOT contract. In Kuwait, a BOT contract has been awarded to the Al-Kharafi Group for a waste water treatment plant in Sulaibiya. The project is expected to cost \$390 million. A company will be formed to operate the plant under a 30-year concession with the Ministry of Finance (*World Water* 2001a). The treated waste water is to be used for non-potable applications. The government is to guarantee an inflow of 300 000 m³/day of waste water to the plant during the first five years, and the State will also purchase all the treated effluent. In Oman, plans for a privately run power station and desalination plant are afoot. This project involves the establishment of a joint-stock company to build, own and operate the plant under a 30-year concession.

¹³ At the current rate of exchange, \$1 = 3.658 United Arab Emirates dirhams.

TABLE 17. PUBLIC-PRIVATE PARTNERSHIP INITIATIVES IN SELECTED ESCWA COUNTRIES (AFTER GROVER 2002)

Country	Location/sector	Type of contract	Public entity	Private partner	Contract period	Value (\$M)	Population served (M)
Egypt	Toshka/I	BO/MC	N/A	Kadco/Saudi Arabia	From 2002	N/A	N/A
	Cairo/WWT	O&M	Waste water Authority	N/A	N/A	N/A	N/A
	Port Said	BOT	N/A	N/A	N/A	N/A	N/A
	Oxyr	BOT	N/A	N/A	2001-N/A	25	N/A
Jordan ^{a/}	Amman/WSD	Management	Water Authority	LEMA Consortium	1999-2004	8.8	2.0
	As-Samra/WWT	BOT	Water Authority	Consortium	2002-2027	150	2.2
Lebanon ^{b/}	Beirut/WSD	BOT	CDR/BMLWA	N/A	2003-2006	200	1.8
	Chekka/WWT	DBO	CDR/NLWA	Ondéo	2003-2008	12	0.12
	Batroun/WWT	DBO	CDR/NLWA	Ondéo	2003-2008	7.6	0.1
	Jbeil/WWT	DBO	CDR/BMLWA	Ondéo	2003-2008	9.5	0.15
	Nabatieh/WWT	DBO	CDR/SLWA	Vivendi	2003-2008	9	0.25
	Chouf/WWT	DBO	CDR/BMLWA	Vivendi	2003-2008	14.5	0.3
	Tripoli/WWT	DBO	CDR/NLWA	N/A	2003-2006	60	0.5
	Tripoli/WSD	BO/MC	CDR/NLWA	N/A	2003-2005	7	0.4
	Baalbeck/WSD	BO/MC	CDR/BWA	N/A	2003-2006	5.6	0.25
	Baalbeck/WWT	O&M	CDR/BWA	N/A	4 years	1.6	0.25
Palestine	Gaza I	Management	Water Authority	LEKA (Ondéo)	1996-2002	N/A	1.0
	Gaza II	Operating	Water Authority	N/A	2003-2007	N/A	1.0
	Southern West Bank	Management	Water Authority	GEKA (Vivdeni)	1999-2003	N/A	N/A

Sources: National Governments; World Bank; Water PPP Database, June 2002 (unpublished), Richard Franceys, Cranfield University.

Notes: CDR = Council for Development and Reconstruction.

SLWA = South Lebanon Water Authority.

BMLWA = Beirut-Mount Lebanon Water Authority.

NLWA = North Lebanon Water Authority.

BWA = Bekaa Water Authority.

Sectors: I = irrigation WSD = water supply distribution

WWC = waste water collection

WT = water treatment

WWT = waste water treatment

Types of Contract: BOOT = Build, Own, Operate, Transfer.

BOT = Build, Operate, Transfer.

DBO = Design, Build, Operate.

O&M = Operation and Maintenance.

BO/MC = Build and operate under management contract.

^{a/} LEMA Consortium for Amman water supply includes: Lyonnaise des eaux plus Montgomery Watson plus Arabtech Jordaneh Consortium for As-Samra waste water treatment plant includes: ONDÉO plus Degremont plus Morgantny.

^{b/} In addition to these ten contracts, Lebanon also has thirteen ongoing contracts, renewable on an annual basis, for the operation and maintenance of pumping stations and water treatment plants.

Gulf Utilities (GU), a consortium that wants to provide Kuwait with water piped in from Iran, is another PPP initiative. GU consists of a group of European and Gulf firms, including Kuwait's Gulf Water Company and a private Iranian firm, the Energy Investment Company. The proposed scheme involves the construction of a pipeline 2.6 metres in diameter running 330 kilometres across Iran and three parallel pipelines 1.6 metres in diameter crossing a distance of 210 kilometres under the Gulf to Kuwait. The source of the water would be the reservoir behind the Karkheh dam. GU has submitted a proposal to the Ministry of Electricity and Water which is reportedly less than 20 per cent of the cost of building a desalination plant with a production capacity of 200 million gallons per day (*World Water* 2001b).

To sum up, it is noteworthy that other developing countries around the world have been able to involve the private sector in much larger numbers of water supply and service projects in recent years. Revenue from privatization has also been lower in the ESCWA region than in other regions. Jordan has probably had the most success in privatizing its public water enterprises. Most ESCWA countries have not yet allowed private operators to charge their customers commercially viable rates, and private firms are reluctant to invest unless they have a reasonable expectation of making a profit. The situation is aggravated by the fact that, in addition, most of these countries are still plagued with unstable and inappropriate political and legal systems that generate uncertainty about the status of private property and state-owned utilities. Given this uncertainty, private companies have tended to restrict their activities to management contracts for water supply facilities and the like, preferring not to risk their capital.

The water supply market is still severely regulated in many ESCWA countries, with tight controls on such aspects as ownership, management and prices. As a result, small firms without sufficient capital and managerial capabilities, especially local firms, have become uncompetitive. This problem has grown to the point where large multinational corporations with enormous capital, such as Veolia, Ondéo Services and RWE, have come increasingly to dominate the market worldwide. However, some countries have begun to take remedial action by looking at possible ways of introducing more competition into the privatization process. Some ESCWA member countries have established special institutions to oversee privatization, and have introduced a legal framework expressly to facilitate the process; others have formulated programmes and schedules for the implementation of their privatization initiatives, and others are still in the preparatory stages of similar initiatives. But few of them have made much headway with their structural adjustment programmes or have achieved any noteworthy progress with respect to privatization.

The following three chapters present an overview of the water situation in Jordan, Yemen and Lebanon, with an emphasis on domestic supply. Legislative and institutional reforms currently under way or in preparation with a view to an appropriate PPP option are discussed, and the main lessons learned in each case are highlighted.

V. PUBLIC-PRIVATE PARTNERSHIP EXPERIENCE IN JORDAN

A. OVERVIEW OF THE WATER SITUATION IN JORDAN

Jordan's water resources consist of limited quantities of surface water from a few small rivers and flood flows and groundwater from shallow and deep aquifers, supplemented by small quantities of treated waste water. Located as it is in an arid to semi-arid region, Jordan is among the world's seven poorest countries in terms of water resources. Its water supply amounted to 960 million cubic metres (MCM) in 2000, a total that is expected to increase to 1,250 MCM by the year 2020. In 1995, the country's annual renewable water resources were 160 cubic metres (m³) per capita; by 2000, that figure had declined to 128 m³ per capita, and it is expected to decline further to 109 m³ per capita by 2020 (Taha Bataineh 2002, ESCWA 1999).

With a population of nearly 5 million in the year 2000 and a growth rate of 2.8 per cent, Jordan's annual water demand was an estimated 1,297 MCM in 2000 and is expected to increase to 1,746 MCM by 2020. As will be seen from table 18 below, there was already a water imbalance in 2000, with supply at 960 MCM and demand at 1,257 MCM, for a deficit of 34 per cent; that deficit is likely to amount to 408 MCM by 2020, a figure which represents an increase of more than 83 per cent since the year 2000 (SEMIDE 2001a, Taha Bataineh 2002). The country's water deficit is increasingly being met through the mining of groundwater sources, a fact which highlights the need for more effective demand management and conservation measures.

TABLE 18. WATER SUPPLY-DEMAND BALANCE
(Millions of cubic metres)

Year	Population	Water supply	Water demand				Water deficit
			Municipal	Industrial	Agricultural	Total	
1995	4.76	882				1 104	(222)
2000	5.1	960	321	54	922	1 297	(297)
2005	5.98	1 169	382	80	981	1 443	(238)
2010	6.97	1 206	435	102	1 002	1 539	(251)
2015	8.04	1 225	520	134	992	1 646	(325)
2020	9.18	1 250	615	168	963	1 746	(408)

Source: SEMIDE 2001a.

Domestic water use accounted for 29 per cent of total water demand in Jordan in 2000, and projections indicate that this figure is likely to have increased to 37 per cent by 2020. Much of this demand is being met from groundwater, which contributed 191 MCM in 2000, and projections indicate that it is likely to be called upon to contribute 270 MCM by 2020. The increase in domestic water demand is attributable to increasing requirements for development activities, the high population growth rate and rapid urbanization. Water availability in major urban centres in Jordan by Governorate and population distribution is shown in table 19 below.

TABLE 19. WATER SUPPLY IN THE VARIOUS GOVERNORATES IN 2000
(Millions of cubic metres)

Governorate	Amman	Zarqa	Mafraq	Irbid	Jarash	Tafilah	Ma'an	Aqaba	Total
Supply per year	91.33	31.81	19.02	30.05	3.56	2.21	7.16	16.49	237.35
Percentage of total	38.5	13.4	8	12.66	1.5	.9	3	6.9	100
Number of residents (000)	1 865	770.8	225.9	874.2	144.1	74.5	95.6	98.5	4 900
Average per capita	134.2	113.06	230.68	94.19	67.67	81.21	205.06	458.62	132.7

Source: Ministry of Water and Irrigation. Available at: <http://www.mwi.gov.jo/wai/>.

On the other hand, projections indicate that the percentage share of the agricultural sector is likely to decrease to 53 per cent by 2020. This decrease is attributable to the fact that farmers are gradually changing their irrigation techniques, abandoning the conventional methods of surface furrow or basin irrigation in favour of more advanced water-saving technologies such as micro-irrigation. Another factor is that as Jordan's cities expand horizontally, they encroach with increasing frequency on agricultural land. The effect is a steady shift in allocation from irrigation to the domestic sector.

B. WATER UTILITY CONSTRAINTS

The water supply network of Jordan loses a good deal of the water it carries; indeed, losses have sometimes amounted to as much as 56 per cent of all water allocated for domestic purposes. The reasons for these losses are major leakage problems, illegal use and unmetered delivery services, especially in the older parts of Amman, Salt, Irbid and Karak. Furthermore, most water distribution systems in Jordan are in dilapidated condition and require replacement, especially in rural areas: the municipal water system that serves Mafrq, for example, is plagued by erosion and illegal connections, owing to the fact that its installations are aboveground (ESCWA 1999).

A recent survey of the drinking water situation in Amman conducted by the Ministry of Water and Irrigation (MWI) found that the water distribution system was affected by a number of problems (Abu-Shams 2002) (Najjar 2003):

(a) Most of the distribution network is more than 35 years old, and consequently cannot cope with growing demands;

(b) Rapid population growth and widely scattered settlement areas are pushing up infrastructure development costs;

(c) Water supply sources are located in remote areas and in some instances may be up to 70 km from the capital. Moreover, the servicing of some areas involves raising the water by as much as 400 metres; this requires more pumping power, entailing higher energy costs and greater overall production costs;

(d) Over half the city's drinking water is unaccounted for, with the result that service delivery is inefficient and the cost recovery rate low;

(e) Irregularities in the supply, especially during the summer, force people to buy water from unofficial vendors at prices that may be as much as ten times as high as those charged by the Ministry.

C. WATER SUPPLY AND SANITATION SECTOR REFORM INITIATIVES

In 1997, MWI developed a water strategy aimed at addressing the mounting problem of supply-demand deficit, strengthening the technical and institutional capacity of water utilities, managing the sector on a limited budget and providing better-quality service to end users. The strategy was based on a review of the water sector that had been conducted by the World Bank, and various stakeholders were involved in its preparation, namely MWI itself, the Water Authority of Jordan (WAJ) and the Jordan Valley Authority (JVA). The strategy was presented to the Development Council for review, and was subsequently endorsed by the Council of Ministers.

The long-term objectives of the strategy were to achieve optimal development and sustainable management of the country's scarce water resources, with priority given to restructuring the institutional framework, building local capacity, improving financial viability and enhancing public awareness and participation. The strategy set important new directions by endorsing water demand management (WDM) measures and expanding the role of the private sector in the development and management of water resources. It included recommendations for strengthening the legislative and institutional context, managing shared water resources, monitoring and improving health standards, encouraging private-sector participation, organizing public-awareness campaigns, mobilizing funds and strengthening research and development (MWI 1997).

The water strategy comprised four major components dealing with water utility, irrigation water, groundwater and waste water management issues. Each component contained guidelines aimed at improving the integrated management of water resources and protecting water quality, enhancing the efficiency of water utilities and increasing private-sector participation in water resource development and management (WAJ 2003, Najjar 2003). Ten major issues were identified as subjects for policy briefs on water utility services and management responsibilities (SEMIDE 2001b):

- | | |
|-----------------------------------|--|
| - Institutional development | - Water quality and the environment |
| - Private sector participation | - Service levels |
| - Water pricing and cost recovery | - Public awareness |
| - Human resources | - Conservation and efficiency measures |
| - Water resources management | - Investment |

Particular emphasis was placed on the importance of mobilizing all available resources to ensure the financial viability and cost recovery potential of water utility operations (Najjar 2003).

1. *Water and water-related institutions*

The water strategy defined the institutional structure and functional responsibilities of MWI and related agencies. The Ministry would be responsible for water policy planning and formulation, decisions concerning water resource allocation, monitoring and studies, and the development and maintenance of integrated water information systems. Water resource management functions were separated from service functions. WAJ would oversee the preparation and signing of the planned water supply contracts with interested private companies, then monitor operations under those contracts. JVA would continue to be responsible for integrated development in the Jordan Valley, but a focus on tourism, industry, manufacturing and advanced technologies was planned for the near future (SEMIDE 2001b).

Also in 1997, MWI established a Programme Management Unit (PMU) within WAJ to monitor progress made in the Greater Amman Water Sector Improvement Programme (GAWSIP), with the possibility that its mandate would be extended in due course to include oversight of other projects in other Governorates. PMU was co-financed by the European Commission. In 1999, it was made directly answerable to an Executive Management Board (EMB) headed by the Minister of Water and Irrigation (PMU 2003).

The Directorates within PMU handling the execution of GAWSIP include the following:

- Unaccounted-for Water (UfW) Directorate;
- Governorates Support (GS) Directorate;
- Capital Investment (CI) Directorate;
- Management Contract (MC) Directorate.

An interministerial committee headed by the Prime Minister was established to steer the overall privatization plan in Jordan. All State-owned enterprises involving public infrastructure, and other investments by the Jordanian Investment Corporation (JIC), are ultimately to be privatized.

Tasks of GAWSIP

- Monitoring of private-sector operation of water services in Greater Amman;
- Re-structuring and rehabilitation of the water supply in Greater Amman by mobilizing funds from various donors;
- Development of proposals for improvements in the Governorates under the supervision of WAJ;
- Promotion of private-sector participation;
- Development of strategies for quantitative reduction of unaccounted-for water across Jordan.

2. Legal framework

Law No. 25, enacted in 2000, laid the groundwork for all privatization transactions in Jordan. It defined the objectives of privatization and the responsibilities and powers vested in the Privatization Council, and established the Executive Privatization Commission as a financially and administratively independent body reporting directly to the Prime Minister's office. The same law contemplated the creation of a privatization proceeds fund to be used by the Council of Ministers (EPC 2003b). It constitutes a solid foundation for making appropriate use of the proceeds of privatization to serve the economy by paying down the Government's debts and making financial resources available for new investments in infrastructure that will generate economic and social returns, thereby fostering sustainable public infrastructure development.

Law No. 25 further stipulates that the Commission shall publish in daily newspapers and in the Official Gazette all requirements and conditions relating to privatization transactions, including a detailed report on every transaction as soon as the final papers have been signed. It also includes a general prohibition on direct or indirect participation by any member of the Council or Commission, consultant or member of a committee of experts connected to a privatization transaction; the prohibition also applies to their spouses and descendants and to anyone who has a business relationship with any of the above (EPC 2003b).

The Higher Committee for Privatization (HCP), the Executive Privatization Commission (EPC) and the Privatization Steering Committee were mandated to draft laws and regulations and to oversee and implement privatization programmes. As we shall see, an adequate regulatory framework remains the greatest challenge and the touchstone of the effectiveness of legislation designed to protect consumers' and investors' interests.

3. Water tariffs and financial measures

The water strategy had stipulated that municipal and waste water tariffs should be adequate to ensure recovery of operation and maintenance costs, and the recovery of capital costs was also to become part of the pricing structure. Differential water prices were to be considered, with profitable sectors such as tourism and industry required to pay the full cost of water provision (Taha Bataineh 2002).

Before 1997, there were special municipal water tariffs for Amman and other Governorates, while in the Jordan Valley special rates were set for rural users. The pricing structure for municipal water, as of October 1997, was based on operating and maintenance cost recovery. Under the new water tariff structure, minimal essential consumption is guaranteed at a subsidized fixed price per cubic metre, and the subsidies are recovered from higher-consuming customers. A progressive pricing method is used to ensure that water is affordable for the poor and also to cut down on wastage (Taha Bataineh 2002). In a word, water tariffs have been restructured on the basis of type of service provided and type of use.

Records of performance show that by October 1998, one year after the new municipal water tariff structure had been introduced, the water revenues of WAJ had increased by 30 per cent and its revenue from waste water and drainage service fees by 61 per cent, while the consumption of municipal water had decreased by three per cent. However, accounts receivable were up by 15 per cent, as customers found it more difficult to pay on time (Taha Bataineh 2002). Table 20 shows how drinking water and waste water rates are calculated. It should be noted that even though the mandate of MWI requires it to set water tariffs at rates that are adequate to cover operation and management costs, it heavily subsidizes customers who use up to 20 m³ per quarter. This was deemed to be the minimum quantity that poor families needed in order to survive. Users in this category pay a lump-sum amount that is less than the cost of producing the water. To offset this subsidy, heavy domestic users and the industrial and business sectors are charged a premium. The subsidy ranges from 80 per cent for users who consume up to 40 m³ per quarter to only three per cent for users who consume from 141 to 150 m³ per quarter, while users who consume from 501 to 1,000 m³ per quarter are charged a premium of 24 per cent (Taha Bataineh 2002).

TABLE 20. CALCULATION OF TARIFFS FOR MUNICIPAL WATER AND WASTE WATER IN JORDAN
(OCTOBER 1997)

Consumption bracket (m ³)	Meter charge (JD)	Total billed value of water (JD)	Total billed value of waste water (JD)
Amman water and waste water tariff, residential (bill calculation)			
0 – 20	0.300	2.000	0.600
21 – 40	0.300	0.14(q) – 0.8	0.04(q) – 0.2
41 – 130	0.300	0.006556(q2) – 0.12224(q)	0.002889(q2) – 0.07556(q)
131 – more	0.300	0.85(q)	0.35(q)
Other Governorates and Jordan Valley tariff, residential (bill calculation)			
0 – 20	0.300	1.300	0.600
21 – 40	0.300	0.075(q) – 0.2	0.035(q) – 0.1
41 – 185	0.300	0.004517(q2) – 0.10568(q)	0.001828(q2) – 0.038103(q)
> 185	0.300	0.85(q)	0.35(q)
Commercial rates			
6 – more	0.300	1(q)	0.5(q)

Source: Water Authority of Jordan, 2002. q = quantity. 1 JD = 1 000 fils = \$1.412.

4. Raising public awareness

Awareness campaigns are viewed by the Ministry of Water and Irrigation as crucial for reaching out to the public and explaining the proposed restructuring of the sector and the need for introducing tariffs, among other things. At the Government's invitation, civil society, and NGOs in particular, are playing an expanded role in a series of awareness campaigns that MWI has initiated with the help of national and international NGOs (Academy for Educational Development, DAI, JREDS, WEPIA, Red Crescent and others) with funds contributed by various donors, notably USAID. These campaigns promote efficient water use and focus on water saving techniques. They have included meetings, seminars, workshops and the production of promotional material for television and radio, as well as brochures, pamphlets, stickers and posters aimed at changing individual behaviour in water use and water saving techniques and encouraging water conservation at the household, business and farm levels. These campaigns have targeted different audiences, with programmes tailored for various stakeholders, such as young people, businesses, women, policy-makers and the private sector (USAID 2003).

D. REVIEW OF PPP CHOICE IN JORDAN

1. Management contract for Amman and Zai Governorate

On 31 July 1999, a four-year management contract was signed by WAJ and LEMA. LEMA is a consortium consisting of the French company Ondéo Services (then called "Lyonnaise des eaux"), which owns 75 per cent of LEMA's shares, a British company known as Montgomery Watson and a Jordanian company, Arabtech Jardaneh, with 25 per cent of the shares between them. The contract stipulates that LEMA shall manage, operate and maintain water and waste water services and facilities in the Governorate of Amman and Zai. After signing the contract, LEMA had to supply water to a population of 1.8 million and manage the 1 600-member staff of the Greater Amman Water utility (David Roberts 2001).

2. Financial arrangements

The terms of the management contract are as follows (Abu-Shams 2002):

(a) LEMA will be paid a fee of \$8.8 million for its services. This amount will be used to pay for the management of utility staff for a period of 4 years and is being financed by the World Bank;

(b) LEMA will manage an operating expenditure account, financed by WAJ, to cover expenditure for staff salaries and benefits, all materials and supplies, and other associated operating expenses;

(c) An incentive fee of five per cent of the incremental cash flow will be paid to LEMA for improved performance of the water utility;

(d) LEMA is to use an operating investment fund to operate and rehabilitate water supply and waste water systems in Greater Amman and to purchase vehicles, water meters and computers; this fund is being financed by the World Bank.

3. Performance criteria

The performance standards agreed upon between WAJ and LEMA are as follows (Abu-Shams 2002):

(a) A 25 per cent increase in accounted-for water in the service area between the starting date of the contract and the end of the fourth year;

(b) Regular supply to subscribers during peak and normal periods;

(c) Repair and replacement of water meters within an average period of 60 days following discovery of a malfunction during the first year, and thereafter within an average period of 30 days;

(d) Replacement of 50,000 water meters that have been in service for more than five years by the end of the first year, and replacement of a total of 200,000 water meters by the end of the contract period;

(e) A 20 per cent reduction in non-functional water facilities awaiting repair by the end of the first year, whereby that figure is expected to increase progressively to 80 per cent by the end of the fourth year of the contract;

(f) A 20 per cent reduction in the non-functional waste water facilities awaiting repair by 20 per cent by the end of the first year, whereby that figure is expected to increase progressively to 50 per cent by the end of the fourth year;

(g) A progressive reduction in the time taken by the operator to respond to subscribers' complaints about water leaks from 24 hours initially to six hours in the fourth year;

(h) A progressive reduction in the time taken by the operator to respond to subscribers' complaints about waste water service from 12 hours in the first year to six hours in the fourth year;

(i) A 30 per cent improvement in accounts receivable for the service area in the first year, and a further 20 per cent improvement by the end of the term of the contract.

4. Contract auditing

WAJ, with the financial support of USAID, has engaged an international firm to audit and evaluate LEMA's performance. The firm in question is to coordinate with WAJ in assessing the contractor's performance and bonus calculations. The cost of its services will be \$0.9 million over the life of the contract. It should be noted that the contract also stipulates that WAJ may withhold payment to LEMA in the event that it should fail to meet the agreed performance standards by direct deduction from the fixed management fee and the performance incentive fee (Abu-Shams 2002).

Within WAJ, the Management Contract Directorate in PMU is responsible for the improvement of water and sanitation services under contracts. The tasks and activities performed by the MC Directorate fall into two categories. In the first place, it is required to devise a suitable performance monitoring and control mechanism for management contracts, assist in the bidding and evaluation process, participate in contract negotiations, train and build up the necessary monitoring capabilities within PMU, and prepare the necessary contract data and documentation.

In the second place, once a contract has been signed, MC covers WAJ's contractual obligations vis-à-vis the contractor. It must monitor and control the contractor's technical and financial performance, approve budget plans, and verify and pay the contractor's invoices. In the case of LEMA in particular, the MC Directorate will also check and approve the consortium's non-operational activities such as computerized database updating, maintenance, inventory control system, leak detection programme, repair data base, training, emergency operations, customer services and the like (PMU 2003).

E. PROGRESS ACHIEVED WITH PUBLIC-PRIVATE PARTNERSHIP INITIATIVES

By the time LEMA's contract had run its course, it was clear that the consortium had achieved satisfactory results (the contract has now been renewed to the end of 2005). LEMA succeeded in increasing the utility's revenue and reducing UFW. It was also able to cut response time and improve the maintenance and repair situation. In addition, the consortium invested heavily in improving staff training (55 000 staff hours) and motivated staff members by raising their wages and introducing incentives and bonuses based on individual performance. Extensive use of computerized techniques and information technology also improved the utility's overall performance and helped enhance LEMA's credibility in the eyes of customers.

More water and waste water connections were installed throughout Amman, improving people's access to safe water and sanitation. Illegal connections were removed. Geographic information systems (GIS) were used for route mapping, with the result that the efficiency of meter readers, bill distributors and collectors was enhanced. Under LEMA's management, moreover, better payment records were kept, and there were fewer rumours about politicians refusing to pay large bills for watering gardens and filling swimming pools. On the contrary, LEMA levied premiums on heavy users in the rationing season, thereby generating more income for repairs (see table 21 for a summary of the consortium's accomplishments).

Despite LEMA's success in improving the water supply and waste water situation in Amman and Zai Governorate, many challenges remain. The company, in its laudable zeal to collect its bills, will have to learn not to be too quick to disconnect consumers who have difficulty in paying. The hoped-for change in the public's attitude toward illegal connections has been slow to materialize, especially in the Southern Amman area. The task of reducing water losses in newly serviced or restructured areas is another challenge.

The water awareness campaigns proved to be effective in educating the public about the water situation in Jordan and in promoting rational consumption and encouraging conservation. However, these programmes have suffered from lack of continuity, since the Ministry does not budget for activities of this kind, but rather relies on funding from grants and aid, which is not always available. Furthermore, civil society's ability to nudge public behaviour in the direction of more sustainable water use practices is limited: as long as more proactive forms of collective or legal recourse against undesirable practices are not available, awareness-raising will be all there is (USAID 2003).

TABLE 21. ACHIEVEMENTS OF A PUBLIC-PRIVATE PARTNERSHIP INITIATIVE (LEMA)

Type	Result
Staff improvement	<ul style="list-style-type: none"> - Staff training, including training of trainers. - Number of staff members per connection reduced. Number of remaining staff 1,116. Redundant staff members were reabsorbed by WAJ. - A performance allowance of 10 per cent of total salary for each employee, and a bonus of up to 25 per cent of salary granted every three months, depending on individual performance and efficiency in carrying out assigned tasks.
Water supply	<ul style="list-style-type: none"> - Water allocated to Amman increased by 10 per cent due to wells refurbished by LEMA in northern Amman, and inauguration of the Azraq Corridor project. - Old and defective meters of various sizes replaced throughout Amman. - Rationing of water during the peak season will no longer be necessary once a restructuring project aimed at the replacement of all pipelines has been completed.
Operations	<ul style="list-style-type: none"> - The cost of treated water had been reduced by 10 per cent by the year 2000. - Water pumping costs have been reduced by 10.4 per cent.

	<ul style="list-style-type: none"> - Essential safety measures have been introduced to protect staff members and equipment; several drills have been conducted to inculcate awareness of the importance of those measures. - Special courses on the operation of water utilities: efficiency of operating staff enhanced.
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TABLE 21 (*continued*)

Type	Result
Unaccounted-for water	<ul style="list-style-type: none"> - UFW cut from 54 per cent in 1999 to 47 per cent in 2000. - In a separate initiative, a \$210 million network-restructuring project designed to improve UFW management was undertaken.
Revenues	<ul style="list-style-type: none"> - After a deficit of 9 058 JD in the first year, LEMA recorded a surplus of 4 493 550 JD by the end of its third year of management.
Network maintenance and repairs	<ul style="list-style-type: none"> - Complaint response time has been reduced from 72 hours to 6 hours. - A call centre featuring an automatic call distribution management information system has been established.
Use of GIS and IT	<ul style="list-style-type: none"> - GIS has been used to map networks and routes to help meter readers, bill distributors and collectors improve their efficiency. - 100 per cent of the city's water mains have been digitized into GIS; 270 000 customer meter locations, waste water mains and all repair data are now digitized into GIS. - An IT system has been installed, connecting all staff through a local network. E-mail is now widely used at all levels to share data and run internal reports.
Public awareness and increased credibility	<ul style="list-style-type: none"> - Advertising and direct responses to customers' questions and demands via TV, radio and newspapers. - Customers' bills are now in line with international standards.
Customer information systems	<ul style="list-style-type: none"> - Customer information is now regularly updated in the interests of correct billing, revenue reporting and better customer relations. This information includes such data as meter number, meter location, building reference number and the like.

Source: Compiled from Abu-Shams 2002.

F. LESSONS LEARNED AND FUTURE TRENDS

Public-private partnership in the water sector was an unavoidable option for Jordan in view of the losses that it was sustaining in many of its public enterprises. Furthermore, the Government's decision to accept partnership with the private sector meant that significant resources became available in the form of international loans and grants, which enabled it to fund a number of essential projects. Before these transactions were concluded, Jordan's economy was hamstrung by a lack of public funds for basic infrastructure development. We may note here that before its water utilities began to show profit, 20 per cent of Jordan's GDP was earmarked to cover the cumulative losses of its transport and water sectors (EPC 2003a). Public-private partnerships are making funds directly available to the utilities concerned, and are making Jordan's assets liquid in financial terms while simultaneously mobilizing private investment capital, both foreign and domestic.

Progress towards privatization was initially slow, but has since gained momentum as more public companies have been privatized. The first of these was Jordan Cement Factories. This transaction, which secured \$112 million for a 33 per cent share, went off very smoothly, and consequently was favourably viewed by the private sector. The result has been further involvement by private firms in other public enterprises, notably in the water and sanitation sector. The problems of redundant labour, rate increases and the social and economic implications of the removal of subsidies have slowed down progress in implementing privatization strategies for obvious political reasons. Another major factor has been the need to find a balance between transparency and effectiveness in setting up an appropriate institutional framework for privatization. Coordination, consultation and regular exchanges of information among the ministry concerned, water-related agencies and EPC have resulted in greater transparency in contract negotiations and the monitoring of the bidding process and the performance of private investors. However, the task of

distributing responsibility among stakeholders is a time-consuming exercise which requires a high level of coordination and even negotiations among various government departments, public agencies and social actors in the private sector. This is a major challenge that remains to be overcome.

Nowadays, water is flowing more regularly to customers, less is being lost through leakage and illegal connections, infrastructure is being replaced and modernized to cope with increasing demand, and, most importantly, consumers have more reliable access to water and are sharing the cost of water supply more equitably. The future of this partnership, however, is still uncertain. After the extension period, will operation and management functions revert to WAJ, or will the Government continue to operate and manage this utility in partnership with the private sector, and if so, what form is that partnership likely to take?

Under plans for future privatization initiatives in Jordan, projects will be divided into three categories: technical assistance projects, water supply projects, and waste water projects. An estimated \$103 million is projected for technical assistance projects between 1997 and 2011. Planned activities in this area include feasibility studies on water supply and waste water treatment, design and assessment studies, and institutional restructuring. Water projects fall into three sub-categories: major water projects, estimated at \$1 703 million, small-scale projects, which are expected to cost approximately \$385 million, and upgrading and expansion projects, \$635 million. The “major” sub-category includes a groundwater development project known as the Disi-Amman Conveyor. This conveyor is designed to supply, on average, 100 MCM of good-quality water per year from the Disi aquifer. Another major project is the Mujib Weir, which will make the base flows and flood flows of Wadi Wala and Wadi Mujib available for industrial, touristic and agricultural purposes (WAJ 2003).

Waste water projects are also divided into three sub-categories: major waste water projects, on which \$908 million is to be spent, small-scale projects, which will cost \$465 million, and waste water upgrading and expansion projects, which will cost \$55 million. There are a good many of these projects, since Jordan is looking at alternative sources of water for agriculture and some municipal functions. The generation of water from waste water treatment will release a similar amount of freshwater for domestic use, mainly as drinking water. Concurrently, consideration is being given to the option of abandoning some of the country’s traditional crops in favour of crops that can use this source of water safely and generate more income for farmers. There are also plans for a number of projects involving the upgrading and extension of waste water systems in several major cities (including Mafraq, Ma’an, Karak, Tafila, Madaba, Ramtha and Abu-Nuseir) in response to rapid population growth (WAJ 2003). Some donor-led water supply and sanitation projects are listed in table 22 below.

TABLE 22. LIST OF DONOR AGENCIES AND SOME PROJECTS FUNDED TO DATE

Donor agency	Project	Funding ^a
German Government 1-KFW 2-GTZ	Water loss reduction in Irbid and Jerash	DM 30.7 million
	Deir Alla-Dabouq water pipeline	DM 44 million
	Amman Water Supply II	DM 63 million
	Irbid waste water projects	DM 215 million
French Government - Ministry of Finance and Foreign Affairs	Amman Water and Sanitation Management Project (AWSM)	\$149.2 million
	Disi-Amman Water Conveyor (DAWC)	\$730 million
World Bank	The Amman Water Improvement Project	€5 million
	Water Sector Intervention Project	€13.8 million
	The Greater Amman Rehabilitation Project	\$17 million
European Union	Construction of 3 waste water treatment plants for the camps and surrounding villages of Jeresh, Talbieh and Sukneh	\$22 million
	Construction of the Naur waste water treatment plant	\$14 million
Italian Government	Improvement of Water Supply System to Greater Amman	\$70 million
	Water supply system for Greater Amman	\$80 million
JICA	Water supply system for Greater Amman (audit firm)	\$1.5 million
USAID	Ma’an treatment and pipeline project	\$91 million
	Wadi Moussa water and waste water project	\$28 million
	Water cost analysis and tariff setting	\$4 million
	Restructuring and rehabilitation of 16 water distribution zones in Greater Amman	\$80 million
	Aqaba waste water facilities expansion	\$30 million

Source: Compiled by ESCWA from USAID/Jordan 2003.

a/ At current rates of exchange, \$1 = 1.711 DM and \$1 = €0.875.

VI. PUBLIC-PRIVATE PARTNERSHIP EXPERIENCE IN YEMEN¹⁴

A. OVERVIEW OF THE WATER SITUATION IN YEMEN

Yemen's water sources consist of surface water from renewable seasonal flood flows, shallow groundwater, non-renewable deep groundwater, and, to a limited extent, treated waste water. With annual renewable water resources of 2.5 billion cubic metres (BCM) and annual extraction of 3.2 BCM, the country's groundwater resources are being overdrawn by a matter of 36 per cent. In some endangered basins, groundwater mining may be as much as 150 per cent; water tables in some places are sinking by seven metres per year. There are 80,000 wells extracting groundwater in Yemen, including 13,000 wells in the Sana'a basin alone. At the present time, domestic water wells in Sana'a must be sunk to a depth of 800 metres. The country's water deficit is the result of increased demand in all sectors. Seven per cent of Yemen's water resources are used for domestic and industrial purposes and 93 per cent for agriculture.

The total cultivated area under rainwater spate irrigation decreased from 1 million hectares in 1976 to 650,000 hectares in 2002, while the total area irrigated by groundwater increased from 35,000 hectares to 450,000 hectares—more than tenfold, with irrigation efficiency under 40 per cent.

Demand for water from all sub-sectors has increased because of rapid population growth, particularly in urban areas. In 2000, the country's population was approximately 18 million; growing as it is at a rate of 3.2 per cent annually, it is expected to reach 40 million by 2025.

Total water demand was estimated at 3 520 MCM in 2000 and is expected to reach 4 050 MCM by 2010 and 4,770 MCM by 2025. Domestic water demand is expected to increase from 36 MCM in 2000 to 552 MCM by 2010 and 840 MCM by 2025 as a result of rapid urbanization. Domestic water supply service coverage is 45 per cent in urban areas and 30 per cent in rural areas, while sanitation service coverage is estimated at 30 per cent in urban areas and about 10 per cent in rural areas (see table 23).

TABLE 23. WATER RESOURCES AND INVESTMENT NEEDED FOR THE PERIOD 2001-2025

	2000		2025	
	Urban	Rural	Urban	Rural
Water service coverage (per cent)	55	30	90	80
Sanitation service coverage (per cent)	45	10	90	80
Percentage of total renewable water resources needed for domestic purposes	5		21	
Total investment needed (millions of US\$)	5 500			

Source: Sahooley 2003.

B. WATER UTILITY CONSTRAINTS

Before the reform process got under way, the urban water sector in Yemen was dominated by a centralized body, the National Water and Sanitation Authority (NWSA), which was mandated to formulate and implement drinking water and sanitation policies and to allocate the available resources in providing service. For a long time the performance level of the service was low, and pressure mounted for reform to avoid total collapse. Water supply and sanitation services for the capital, Sana'a, are provided by the Sana'a Water Supply and Sanitation (WSS) Corporation. Most of the city's water consists of groundwater from shallow and deep aquifers. Sana'a's water supply and sanitation characteristics, including resource availability and waste water generation and connections, are outlined in table 24.

¹⁴ Our special thanks to Mr. Anwer Sahooley, consultant to ESCWA, for his contribution to this chapter. A slightly different version of this material has been published as "Public-Private Partnership in the Water Supply and Sanitation Sector: the Experience of the Republic of Yemen", *International Journal of Water Resources Development* (published by the Third World Centre for Water Management), 19, 2 (June 2003).

TABLE 24. WATER SUPPLY AND SANITATION SERVICES PROVIDED BY THE SANA'A
WSS CORPORATION

Population of Sana'a	1 800 000
Annual population growth	8 per cent ^{a/}
Average daily consumption	31 000 m ³
Daily per capita consumption	60 litres
Reservoir capacity	30 000 m ³
Number of water connections	75 000
Water supply service coverage (approximately)	45 per cent
Total number of wells	90
Approximate yield	900 litres/second
Number of sewer connections	28 000
Sewerage treatment plant capacity	50 000 m ³ /day
Progressive block tariffs are applied for two categories: (1) domestic and (2) commercial, industrial and government. The price per cubic metre ranges between \$0.34 and \$1.57 (YR 63 and YR 288) ^{b/}	

a/ The rapid growth of the population of Sana'a is largely the result of in-migration from rural areas.

b/ At the current rate of exchange, \$1 = YR184.

The WSS utility of Sana'a was facing significant management and financial problems and pressing demand for water, and consequently was given priority in the initiation of the reform process. These problems included the low performance level of the utility's project implementation, its inadequate service coverage, the inability to operate and maintain its facilities or recover the cost of the limited operation and maintenance work it undertook, the misuse of its financial and human resources, in addition to low employee morale and customer satisfaction.

In 1999, an evaluation of the Sana'a WSS utility revealed the magnitude of the problems listed above, with the result that the Government adopted a policy of water and sanitation sector reform and developed a strategy agenda. In particular, the assessment indicated that the utility's personnel possessed little technical or managerial expertise, that it was overstaffed, with more than 10 employees per 1,000 connections, that approximately 50 per cent of its water was unaccounted for, that its revenue collection efficiency was low, with some of its accounts receivable as much as eight months in arrears, and that its water resources were inadequate to enable it to provide reliable service.

C. WATER SUPPLY AND SANITATION SECTOR REFORM INITIATIVES

To address the above challenges, a reform strategy for the WSS sector has been initiated. The main features of the strategy are as follows:

- (a) Decentralization of the old national delivery structure through the creation of new local utilities with more of a regional focus and greater independence;
- (b) Commercialization of the newly created independent utilities;
- (c) Introduction of specific water tariff reforms and full cost recovery;
- (d) Progressive corporatization of the decentralized utilities;
- (e) Introduction of public-private partnership initiatives.

The strategy covers a 25-year period (2001-2025) and is aimed at providing drinking water and sanitation services to about 90 per cent of both rural and urban Yemenis. This ambitious target will require \$5.5 billion in new spending and an increase in the allocation of water for domestic use to 21 per cent by 2025, up from its present level of five per cent. To implement the reform, the Cabinet adopted resolution

No. 237 in November 1997. This resolution envisaged a 10-year time frame comprising three main phases, as shown in figure VIII, including:

Phase 1: Decentralization of the regional branches of the public utility, NWSA. Under the reform, they are mandated to achieve full cost recovery through appropriate tariff rates, assume full control over their income and expenditure, and have freedom to recruit their own staff with the exception of the top management positions.

Phase 2: Transformation of the larger NWSA branches into local corporations under local management and run in accordance with commercial business principles.

Phase 3: Each of the newly created local corporations will incorporate an appropriate PPP option following feasibility studies.

Figure VIII. WSS sector reform policy and strategy implementation

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
* Policy and strategy formulation	■														
* Awareness campaigns and consensus building	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
* Pilot case of decentralization Rada'a WSS utility		■	■												
* Government approval of reform agenda, Cabinet decree No. 237 (1997)			■												
* Implementation of reform agenda -phase1- decentralization				■	■	■	■	■	■	■	■	■	■	■	■
- phase 2 - corporatization					■	■	■	■	■	■	■	■	■		
- phase 3 - private sector participation						■	■	■	■	■	■	■	■	■	■

1. Water and water-related institutions

Before the reform process was initiated, responsibility for allocating water resources among the various consuming sectors was divided among many water-related institutions. In 1995, the National Water Resources Authority (NWRA) was established as the sole water agency, reporting directly to the Prime Minister, and was entrusted with a mandate to prepare a water resources strategy aimed at water conservation, raising public awareness, and drafting and subsequently enforcing legislation and regulations dealing with water.¹⁵

2. Legislation

Comprehensive water resource development and management legislation was formulated by NWRA, and was approved by Yemen's Parliament as recently as September 2002. The issues of supply sector reform and privatization initiatives were addressed in a Cabinet resolution (No. 237, which was adopted in November 1997) approving a 10-year reform timetable. The Prime Minister also issued a specific decree establishing an executive board for Sana'a. In 2000, the Sana'a Water Supply and Sanitation Local Corporation (SWSSLC) was established in accordance with Presidential decree-law 35 of 1991.

¹⁵ Following a Cabinet reshuffle in May 2003, a new Ministry for Water and Environment was established and is currently being restructured.

D. STEPS TOWARD PUBLIC-PRIVATE PARTNERSHIP INITIATIVES

The Government of Yemen requested a PPP option study as part of the Sana'a water supply and sanitation project, financed from an International Development Association credit. A team of IDA experts worked together with the Chairman of the Technical Secretariat for WSS sector reform and the Ministry of Electricity and Water. The study was the subject of presentations at a number of workshops held in 1999. The participants in those workshops were:

- (a) The Prime Minister of Yemen with a selected number of ministers;
- (b) Representatives of the Ministry of Electricity and Water, the Technical Secretariat, NWSA, the Sana'a branch utility and the National Water Resources Authority;
- (c) Representatives of the Federation of Yemen Chambers of Commerce and Industry, local private firms and private suppliers of potable water in Sana'a.

1. Government Prerequisites for PPP

These prerequisites were as follows:

- (a) SWSSLC to be legally established by 2001 as an autonomous WSS corporation having no further connection with NWSA;
- (b) The utility to achieve operational improvement and efficiency gains;
- (c) A PPP option study aimed at recommending an appropriate option, which must take interests of consumers into account.

2. Main reasons for bringing a private operator into a PPP arrangement

- (a) A pre-qualified operator should have encountered and resolved all kinds of problems under previous contracts of this kind and have sufficient experience to be able to take quick and appropriate measures for the benefit of consumers by applying its accumulated knowledge of WSS industry management;
- (b) A private operator should be able to produce operating surpluses through greater collection efficiency and reduced costs, thereby enhancing the Government's ability to co-finance future investment in the sector;
- (c) A private operator should bring its own financial resources, the scale of which will depend on the option selected;
- (d) A private operator would create competition with other government service providers, which would lead to lower costs and improved service quality;
- (e) The separation of regulation and service provision will make the government regulator more vigilant with respect to the relationship between service quality and WSS tariffs. A contract with a private operator should bring into the open risk analysis and risk allocation issues that are often absorbed without much thought by public operators.

3. Common PPP options

A number of PPP options have been implemented in various countries with conditions similar to those obtained in Yemen, and these can serve as examples; however, every contract should be treated as a unique case, since what is appropriate for Sana'a may not necessarily be appropriate option for Aden, even though both cities are located in Yemen. The PPP options available are:

- (a) Service contracts;
- (b) Management contracts;

- (c) Lease contracts;
- (d) Build, operate and transfer or build, operate and own;
- (e) Concession;
- (f) Complete sale of assets (divestiture).

4. PPP options considered for SWSSLC

Management contract: this option was considered, but the World Bank's international experience suggested that it would not be suitable for Sana'a, as the estimated cost would be about \$2 million per year, while revenues would be approximately \$3 million.

Concession: Sana'a's water resources are scanty, and there is no assurance that its present supply will last for 30 years, which is regarded as a reasonable payback period under a concession contract. Accordingly, this option would probably be unattractive to a private operator. Another telling argument against a concession is the fact that Yemen, as one of the least developed countries, receives grants and can borrow from donors' concessional funds at very low rates of interest, whereas a private concessionaire would have to borrow in world capital markets at high rates, and this would tend to exert upward pressure on WSS tariffs. Lastly, reliable data on the condition of the fixed assets indicate that a concession would be somewhat risky for private concessionaires, whose tenders might be either non-responsive or expensive as a result.

Lease contract: Under a lease contract, the State owns the assets and remains responsible for further capital investment, while the private partner operates and maintains the system. With a contract of this type, the Government retains full title to the infrastructure, while the private partner obtains temporary possession during a specified period. The operator is in charge of day-to-day operations, directly manages the cash, and is paid a fixed fee out of the utility's revenues. Lease contracts commonly run for terms of eight to 15 years. In the case of the Sana'a WSS Corporation, the option study recommended a lease contract for a period of 12 years. The option examined the Corporation's current financial situation, and found that cash generation was running at least 100,000,000 Yemeni rials (US\$ 1 = YR 184) behind projections of 30 June 1999. For that reason, it recommended that tariff increases should be phased in over the next three years.

5. General conditions of the proposed lease contract

The prospective increase in operating and financial efficiency and the potential for a substantial increase in cash flow under a lease contract are apparent in table 25. The specific terms of the lease contract cannot be specified at this early stage, but the general terms are outlined in table 26 below.

TABLE 25. SANA'A WSS CORPORATION: ANNUAL IMPACT OF SELECTED IMPROVEMENTS IN OPERATIONAL AND FINANCIAL EFFICIENCY AT THE PRESENT TIME (WITHOUT PPP) AND AS PROJECTED FOR 2008-2010 (WITH A PRIVATE OPERATOR)

Item	Present	2008/2010	Estimated annual impact (Thousands of YR)*
UFW	50%	25%	275 000
Service connection	19 000	80 000	400 000
Collection (per cent)	60%	90%	600 000
Gains in power efficiency	1.5 Kwh/m ³	1.2 Kwh/m ³	100 000

* YR: Yemeni rial (\$1 = 184 YR).

TABLE 26. CONTRACT TERMS

Term	Description/condition
Duration of contract	10 years
Scope of contract	Water supply delivery, waste water collection and treatment, customer billings and collections
Ownership of assets	Government

TABLE 26 (*continued*)

Term	Description/condition
Tariff	Set annually by the government, according to a formula specified in the contract. Typically, during the first five years, increases are capped at the rate of inflation and rises in electricity costs. After five years, tariffs are usually negotiated annually
Operation and maintenance	Responsibility of the operator
Working capital	Typically provided by the operator for the first years of investment
Financing of operators	From revenues collected, with “gap” financing from the government/donors possible during the initial years
Commercial risk	Operator bears all risk for collecting revenues and paying expenses
Raw water risk	Government provides “sufficient” raw water to the operator
Capital investment	Government provides financing, taking advantage of cheap donor funding. In the best practice, the operator implements the capital investment programme on the government’s behalf

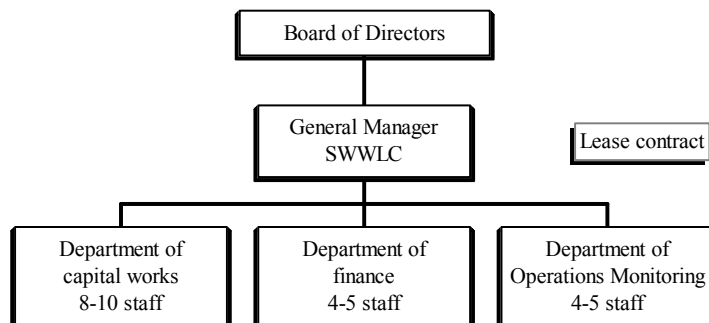
Source: Sahooley 1999.

6. Proposed institutional configuration for the Sana'a lease agreement

(a) The exact institutional and organizational setup varies from case to case, but for the Sana'a lease agreement, the configuration shown in figure IX is almost exactly the one that will govern the relationship between the management of SWSSLC and the operator;

(b) Implementation of the lease contract.

Figure IX. The restructured SWSSLC



7. Approval of the Government of Yemen

The Government of Yemen gave its approval in 2000, and the Technical Secretariat was given responsibility for preparing the terms of reference and recruiting an international consultancy firm with experience in the preparation of the necessary legal documents on PPP.

8. Recruitment of a legal expert

(a) The Technical Secretariat, the World Bank (IDA), the Ministry of Electricity and Water and SWSSLC worked together to prepare terms of reference for the assignment of a legal expert to draft an invitation to apply for pre-qualification and a request for proposals;

(b) A short list of three international firms competent in this field was agreed upon with the IDA, and the short-listed firms were asked to submit quotations. An independent international expert was engaged to evaluate the offers received. A Canadian legal firm (Blakes, Castle and Groydon) was selected.

9. The IDA's contribution to the lease contract

The IDA has agreed that the \$10 million from a new urban water supply and sanitation credit that it is securing may be allocated for the lease contract. This sum will be used for infrastructure rehabilitation during the first five years of the contract. The operator will develop a proposal for an annual rehabilitation programme covering major sections of the network and the replacement of major systems and equipment, with no single work costing more than \$10,000. The operator's proposal will be submitted to SWSSLC for consideration and approval. After the proposal has been approved by the SWSSLC Board of Directors, the operator will be responsible for implementation of the rehabilitation programme in accordance with IDA procurement guidelines. The IDA credit will also be used to purchase water meters for SWSSLC. Since new consumers pay for meters, revenues from the sale of meters will be placed in a separate account to be used for the replenishment of the utility's stock of meters.

10. Timetable for development of the lease contract documents

The legal expert, the Ministry of Electricity and Water, SWSSLC and the IDA joined forces to prepare a detailed timetable (see table 27). However, the timetable has been revised in response to requests from interested bidders for extension of the deadlines for submission of applications for pre-qualification and proposals.

TABLE 27. SANA'A CORPORATION LEASE CONTRACT: ESTIMATED TIMETABLE FOR DEVELOPMENT OF THE CONTRACT

Proposed date	Milestone
<i>Preliminary work, preparations and pre-qualification document</i>	
21 July 2001	Review of "key decisions" document and briefing session with the SWSSLC Board of Directors
9 October 2001	Videoconference with the contract development team, to review the draft pre-qualification document
12 October 2001	Blakes* prepares and submits second draft of the pre-qualification documents
26 November 2001	Government to submit pre-qualification documents to World Bank for approval
10 December 2001	Distribution of pre-qualification documents to prospective applicants (contract development team)
<i>Drafting of request for proposals documents (including the draft contract)</i>	
30 January 2002	Close of pre-qualification period – applications for pre-qualification submitted (applicants)
8 February 2002	First draft of request for proposals and contract documents circulated for comments (Blakes)
7 March 2002	Government submission of short list of pre-qualified firms to World Bank
7 March 2002	Request for proposals and contract documents approved by Government and submitted to World Bank for no objection (Government, World Bank)
<i>Request for proposals</i>	
22 May 2002	Distribution of the request for proposals documents to the short-listed firms
22 May 2002	Data room opens
10 June 2002	Videoconference to discuss questions from bidders and to discuss preparation of responses (Blakes, contract development team, World Bank)
15 June 2002 (Mission number 3)	Pre-bid conference
3 July 2002	Videoconference to discuss final response to questions document (contract development team, Blakes, World Bank)
14 August 2002	Submission deadline for bidders
<i>Evaluation of proposals and contract signing</i>	
14 August to 15 September 2002	Evaluation of bids (technical and financial) complete (contract development team)
September/October 2002	Review and approval of "successful bidder" by the IDA and Government
October 2002	Award and signing of contract

* Blakes: Blakes, Castle and Groydon (Canadian legal firm).

The most important milestones are the work on development of the documents, which began in July 2001, the distribution of the request for proposals to pre-qualified operators, scheduled for May 2002, the pre-bid meeting, scheduled for June 2002, and the award and signature of the contract, scheduled for October 2002. But the original timetable proved to have been too ambitious: there were unforeseen delays, and the date of distribution of the request for proposals was postponed to August 2002, and the date for negotiation and signing of the contract was deferred to March 2003.

11. *Contract development team*

Due to the complexity and importance of the task, both parties agree that it is essential to appoint a Yemeni contract development team, whose functions are to work with the international legal expert, the SWSSLC Board of Directors, the IDA and the Ministry of Electricity and Water and assist in the tasks of reviewing key decisions, reviewing draft contract documents, briefing the Board of Directors on important contract documents, placing the necessary advertisements and evaluating applications for pre-qualification and bids. A detailed list of the functions of the contract development team is shown in table 28.

TABLE 28. TASKS OF THE CONTRACT DEVELOPMENT TEAM

Preliminary preparations/pre-qualification document	
(1)	Review "key decisions" document and provide responses
(2)	Assign technical experts (technical and local legal) to assist the contract development team
(3)	Review preliminary information questionnaire and, with the assistance of technical experts, complete the preliminary information questionnaire
(4)	Review drafts of the pre-qualification documents
(5)	Provide briefings to the Board on the pre-qualification documents
(6)	Submit pre-qualification documents to Government and Board for approval
(7)	Place advertisement for pre-qualification process
(8)	Distribution of pre-qualification documents to prospective applicants
<i>Preparation of the request for proposals and the lease contract documents</i>	
(9)	Supervise completion of the performance standards, appendix and incentive compensation appendix by technical experts
(10)	Complete performance standards appendix and incentive compensation appendix
(11)	Complete facilities appendix
(12)	Complete service area in appendix (a map of the service area)
(13)	Review first and all subsequent drafts of the request for proposals and contract documents
(14)	Provide briefings to the Board on the request for proposals and contract documents
(15)	Submit request for proposals and contract document to the Government and Board for approval
(16)	Evaluate proposals (or delegate to an evaluation committee)
(17)	Distribute the request for proposals documents to the short-listed firms
(18)	Carry out evaluation of proposals (or delegate to an evaluation committee)
(19)	Supervise the development and management of the data room
(20)	Supervise the preparation of the response to questions document
(21)	Review drafts of the response to questions document
(22)	Manage site visits (with the assistance of the technical experts)
(23)	Manage pre-bid conference (with the assistance of the technical experts)
(24)	Review draft of the addenda (to the request for proposals and contract documents)
(25)	Recommend "successful bidder" to the board and government

Since this is the first PPP experience in Yemen, two months were devoted to the task of forming a contract development team. The Chairman of the team is a member of the SWSSLC Board of Directors, and the other members are persons with experience in various technical, financial, legal, economic, institutional and project management fields.

12. Main features of the request for pre-qualification document

The pre-qualification document states that applicants should have the following minimum requirements:

- (a) Experience in operating and maintaining WSS systems similar to those of SWSSLC serving at least 100,000 connections for not less than three years during the past 10 years;
- (b) Experience in managing at least two billing and collection systems, each serving a population of at least 500,000 residents;
- (c) Experience in repair, rehabilitation and construction supervision for at least three projects, each at a value of not less than the equivalent of \$500,000 within a period of not less than 10 years immediately prior to the issuance of the request for proposals;
- (d) Average annual turnover of not less than the equivalent of \$15 million in any given year;
- (e) Provide audited balance sheets or financial statements for the last five years, acceptable to SWSSLC;
- (f) Demonstrate, to the satisfaction of SWSSLC, that it has adequate sources of finance to meet cash flow requirements during the term of the contract;
- (g) Supply general information on the firm's management structure and the curriculum vitae of personnel slated for key positions, who should have at least 10 years' relevant experience;
- (h) Provide accurate information about any litigation or arbitration on contracts completed or ongoing for the past five years;
- (i) Provide accurate information on additional legal matters in respect of labour relations practices, criminal law violations and environmental offences.

13. Evaluation of applicants for pre-qualification

Five bidders submitted pre-qualification documents, which were evaluated on the basis of "pass" or "fail" criteria in line with the main issues mentioned in the request-for-proposal document. The evaluation process resulted in the pre-qualification of three applicants, to which the request for proposals was submitted.

Main features of the request-for-proposal document:

- (a) The laws of the Republic of Yemen shall be applicable;
- (b) The private operator shall perform all services, provide all equipment, materials and supplies and employ all staff necessary for the management, operation, maintenance, repair, replacement and rehabilitation of water supply and waste water systems of SWSSLC;
- (c) The operator shall continue to employ all current SWSSLC staff except personnel whom SWSSLC may decide to retain for purposes of supervising the contract and implementing future capital projects. A list of staff members shall be made available to pre-qualified bidders prior to the bid submission deadline;
- (d) The contract shall be for a period of 12 years from the date of signing of the contract;
- (e) SWSSLC shall turn over to the operator all assets and facilities except those which it decides to retain for purposes of supervising the lease contract and implementing future capital projects;

(f) The parties shall resolve all disputes by mutual consultation. If they fail to do so, the matter shall be referred to an adjudicator to be appointed upon agreement between the parties;

(g) SWSSLC shall provide a data room where all documents, studies, the master plan, the financial model, any relevant laws and regulations and other material shall be available in both hard copies and software versions. All pre-qualified bidders shall have access to the data room and shall have the right to make photocopies of any document;

(h) Every pre-qualified bidder shall submit a staffing plan and a financial model showing how it has reached the amount of its bid;

(i) The operator shall pay the running costs of the restructured SWSSLC, which are estimated at \$400,000 per year;

(j) Every pre-qualified bidder shall submit a \$200,000 bid bond, and the winning bidder shall submit a \$10 million performance bond, to be renewed annually, in addition to an operator's payment bond in the amount of \$400,000, to be renewed annually;

(k) A contract supervision unit shall be formed from the restructured SWSSLC to supervise the operator.

E. PROGRESS TOWARD THE AWARDING OF A LEASE CONTRACT

Bidding documents were distributed to the three pre-qualified bidders, and a pre-bid meeting was held on 10 October 2002. The meeting was attended by SWSSLC, the contract development team, the IDA and the private bidders' local representatives. One bidder visited the data room, made site visits and gathered substantial quantities of financial, technical and staff-related information. For the pre-qualified bidders, the submission deadline was extended to February 2003; there were a number of reasons for this extension including security concerns in the region. Prior to the bid closing date, a letter was received from one of the firms involved, announcing its withdrawal from the bidding process. On the bid opening date, no bids were submitted. One of the bidders sent a letter stating that it could not enter into a lease contract for Sana'a's water utility, but would be interested in a management contract.

F. LESSONS LEARNED AND FUTURE TRENDS

1. The process of PPP is new to Yemen and there is limited local know-how in that field. Accordingly, donors would be well advised to assign high priority to the task of building local know-how to enable local stakeholders to learn from experience with PPP elsewhere before reaching a decision as to which option to adopt.
2. There is strong political backing for PPP, but there is also strong opposition to it from some members of the management of the utility.
3. SWSSLC staff members fear that the private operator will render many of them redundant.
4. Consumers fear that the private operator will lose no time in raising rates once the contract is awarded. Some consumers, however, are prepared to tolerate a reasonable increase in rates if they can be assured that PPP will result in improved water quality and better service.
5. The opposition parties (outside the government) are arguing that the government is selling off public assets cheaply and putting responsibility for a vital scarce resource in private hands.
6. It is clear from the above discussion that much preparatory work should be done well in advance through training, capacity building, awareness workshops and dialogue with a broad range of stakeholders in order to create a better understanding of the process and pave the way for a successful, sustainable PPP initiative in the area of water service delivery.

VII. PUBLIC-PRIVATE PARTNERSHIP EXPERIENCE IN LEBANON

A. OVERVIEW OF THE WATER SITUATION IN LEBANON

Lebanon is a relatively water-rich country compared to other countries of the ESCWA region, with reasonably plentiful seasonal rainfall and snowfall. Lebanon has renewable water resources that are estimated at 2,000 MCM/year, available in the form of river flow and shallow groundwater aquifers. In 2000, water demand was 1,392 MCM; it is expected to increase to 1,905 MCM by 2010 and to 3,069 MCM by 2025. By 2015, Lebanon will be confronted with a water deficit of 1 069 MCM, as will be seen from table 29. Total demand for water in all sectors will exceed the available supply. Domestic water demand was 312 MCM in 2000 and is expected to grow to 876 MCM by 2025. As drinking water is regarded as a national priority, substantial investment to rehabilitate and expand the country's water supply infrastructure will be required.

TABLE 29. WATER SUPPLY-DEMAND BALANCE FOR THE PERIOD 2000-2025

Year	Water demand (MCM)				Water supply (MCM)	Water balance (MCM)
	Domestic	Industrial	Irrigation	Total		
2000	312	205	875	1 392	2 000	+608
2010	460	445	1 000	1 905	2 000	+95
2015	570	516	1 200	2 286	2 000	(286)
2020	660	598	1 350	2 608	2 000	(608)
2025	876	693	1 500	3 069	2 000	(1 069)

Source: El-Fadel and Zeinati 1999.

Although most dwellings in urban areas (90 per cent) and in some rural areas (up to 80 per cent) are connected to public water supply systems (see table 30), service to subscribers is unreliable. Discrepancies in connection to water supply networks and effective water supply are due mainly to common supply interruptions throughout the country.

TABLE 30. WATER COVERAGE IN MAJOR CITIES IN LEBANON

City	Population	Coverage ratio (per cent)		Annual water demand
		Water	Sewerage	
Greater Beirut	1 300 000	90	80	178
Tripoli El-Mina and suburbs	487 000	90	80	66.6
Zahle and suburbs	86 000	90	40	11.78
Saida and suburbs	167 000	90	80	22.87
Zgharta	35 000	90	80	4.79
Sour and suburbs	102 000	90	60	13.97
Nabatiye	42 000	90	60	5.75
Baalbeck and suburbs	99 255	90	50	13.59
Bcharreh	35 000	90	60	4.79
Jbeil	24 000	90	10	3.29
Jounieh and district	117 000	90	80	16.02
Chhime	24 000	90	50	3.29

Source: CDR.

B. WATER UTILITY CONSTRAINTS

Long years of civil war have left Lebanon with a water supply infrastructure that is inadequately maintained and relatively old, much of it dating back to the late 1960s (Jaber 2000). It has been estimated that approximately 60 per cent of all distribution systems are in need of rehabilitation. Furthermore, unaccounted-for water losses amount to more than 50 per cent for the country as a whole. Although water

supply coverage is estimated at close to 90 per cent in the main cities, the water is of poor quality and the service unreliable (WB 2001). This may be attributable to the fact that few utilities have standby pumps and generators to maintain water supply distribution in the event of a power failure (ESCWA 1999, A. Geadah 2002). Furthermore, an estimated 80 per cent of Lebanon's public water supplies are polluted, while water distribution systems are poorly designed and undersized, and consequently will be unable to sustain the additional load that will be generated by growth in demand (WB 1998). The technical constraints besetting the water sector are further compounded by the uneven distribution of the country's population that has resulted from large-scale demographic shifts to localized areas, creating zones of excessive stress on the system.

Inadequate accounting and collection systems have contributed to low rates of return, financial mismanagement, and low collection rates and water tariffs. Collection rates have been as low as 10 per cent in some instances. The main accounting constraints affecting water authorities in Lebanon (WB 1998) may be summarized as follows:

- (a) Inadequate and unreliable information and the absence of a comprehensive database on the financial situation of the sector;
- (b) No systematic auditing by independent auditors;
- (c) Inadequate funding for the maintenance and rehabilitation of water distribution systems;
- (d) The pricing of water has not been properly reviewed and updated for decades;
- (e) Tariffs cover neither capital costs nor full operation and maintenance costs;
- (f) Inadequate collection of fees and tariffs from consumers.

C. WATER SUPPLY SECTOR REFORM INITIATIVES

National economic development and reconstruction master plans have been formulated for Lebanon, and these plans have included the water sector. In 1990, the government developed a national reconstruction strategy for all public sectors (roads, telephone, water, electricity and so on), and in 1993 implemented a recovery programme. In 1994, a national emergency and reconstruction programme (NERP) was initiated with support from external donors, focusing on the rehabilitation, reconstruction and expansion of the country's infrastructure with a view to establishing a basis for the private sector to play a leading role in Lebanon's attempt to reestablish itself as a regional hub for trade and services (UNDP 1997). However, the policy environment has not been conducive to the enactment of privatization legislation, nor have Lebanese institutions been able to address the problem of devastated infrastructure, and consequently private firms have participated only to a slight extent in the development of the various public sectors. Institutional constraints such as lack of coordination and reluctance to cooperate among water authorities and the drawing of jurisdictional boundaries according to geopolitical rather than hydrographic criteria have hindered the development and implementation of a coherent national water strategy and relevant legislation.

1. *Water and water-related institutions*

Under Law No. 20 of 29 March 1966, the Ministry of Hydraulic and Electrical Resources (MHER) was given responsibility for water resource development and management. The Ministry's main functions were to be exercised through two general directorates: the General Directorate for Hydraulic and Electrical Resources (GDHER) and the General Directorate for Operations (DGO).

MHER was thus in charge of formulating and implementing national policies for the development and management of water resources and electricity, besides providing drinking water and irrigation services throughout Lebanon. GDHER, for its part, was in charge of the planning, assessment and implementation of water and electricity resource development and management projects, while DGO was entrusted with the task of supervising all government institutions operating in the field of water resources and electricity, such as the country's 21 water authorities (WAs). The role of these authorities was to provide technical support in the event of any incident that might occur in the water supply network or water utility plants. However, for

any significant infrastructure repair costing more than \$2,000 (LL 3,000,000),¹⁶ clearance from the Ministry was required before any repair work could be undertaken. Furthermore, the WAs were assigned the task of collecting subscribers' water bills.

2. Legislation

Lebanon's existing water legislation is based on the old Ottoman civil code, the *Mejelle*, and French codes. Recently, however, a national privatization law has been enacted expressly to encourage private-sector participation in all sectors, including water and electricity. The new law (Law 228) was approved by the Lebanese Parliament and subsequently promulgated by the President of the Republic on 31 May 2000. Law 228 establishes a framework within which future public-private partnership initiatives will be able to:

- (a) Regulate the economic sector in question;
- (b) Identify regulatory bodies to oversee public-private transfers and monitor privatized projects;
- (c) Specify the duration of the transaction pursuant to Article 89 of Lebanon's Constitution.

The privatization law includes a number of articles designed to prevent monopolistic practices on the part of private firms and to make the rights of consumers an integral part of pricing policies. However, it allows a private firm to recover its investment over a relatively short period of time. The law also contains provisions relating to the settlement of disputes between the parties concerned: they are to be brought before the appropriate Lebanese court in cases where the private firm involved is Lebanese, and before the International Arbitrage Court in cases where the private firm is a transnational corporation (Movement Social 2003). The law also contains many provisions for the monitoring of privatization transactions with the following ends in view:

- (a) To ensure competition in activities where competition is beneficial;
- (b) To protect, through established regulatory bodies, consumers' rights in terms of the prices and quality of goods and services in areas where competition is difficult to achieve and monitor;
- (c) To ensure labour rights for civil servants working in projects that are taken over by private firms;
- (d) To protect the public interest through a fair and reasonable assessment of publicly owned property and by requiring privatization schemes to adhere to international financial and economic norms while guaranteeing transparency and providing information upon request;
- (e) To widen participation in ownership and capital by giving civil servants the opportunity to participate in the ownership or management of public projects and prohibiting share monopolies;
- (f) To attract participation by private investors in privatization projects under the applicable laws.

Under the law, the Lebanese Government reserves the right to own, for a specified period, a golden share in any firm that is monopolistic in nature, or one whose size is such that it may affect the national economy. The golden share grants the Government exceptional voting rights in matters related to the distribution of share holdings and major changes in the management of the economic activity involved. However, the law does not clearly define the working relationship between the Government and the private company or companies, nor does it include a clear statement of the conditions that may be imposed on private firms, but only general provisions on purchasing power and a requirement that in any given instance, the social impact of the privatization transaction shall be taken into consideration.

The enactment of this particular law represents one of many activities undertaken by the Government as part of its preparations for joining the WTO, and is in line with the structural reforms that are routinely recommended by the World Bank and the International Monetary Fund (IMF) when offering structural adjustment programmes and sector development loans (Jaber 2003).

¹⁶ At the current rate of exchange, \$1 = LL 1,500.

Under Law 228, the Higher Privatization Council (HPC) was established as a regulatory body. The Prime Minister serves as the President of the Council, while the other members are the Ministers of Justice, Finance, Economy and Trade, and Labour, and also Ministers whose portfolios include matters relating to transactions. The main functions of the HPC are the planning and execution of privatization programmes and transactions. Members of the HPC and other regulatory bodies are prohibited from divulging any information to which they have access by virtue of their positions, even after they have resigned or left their positions. Other articles of the law are concerned with the arrangements and conditions adopted by the Council in implementing privatization transactions; specific details associated with the implementation of such transactions are to be determined by a decree approved by the Council of Deputies. This provision has frequently been criticized by opponents of privatization on the grounds that it denies taxpayers and the general public their right to be informed about activities taking place in the context of the privatization process.

In line with the continuing trend toward privatization, Law 221—adopted in 2000 for the purpose of restructuring MHER (which became the Ministry of Energy and Water (MEW)) and the 21 Was—provides a solid foundation for initiating privatization measures. This law was originally enacted on 29 May 2000, and was subsequently amended by Law 241 of 7 August 2000. The role of MEW was redefined to include the following tasks:

- (a) Planning and formulation of hydraulic resource projects so as to allocate water among the domestic and irrigation sectors at national level;
- (b) Preparation of a National General Water Master Plan;
- (c) Designing, studying, implementing and operating large water facilities and works such as dams, artificial lakes, tunnels, watercourse rectification structures and the like;
- (d) Monitoring and supervision of the work of Water Authorities and other water-related bodies, enhancement of their performance and evaluation of that performance.

Law 221 also consolidated the 21 existing water authorities into four, each with jurisdiction over one of the country's four major geographic regions, as follows:

- Beirut-Mount Lebanon Water Authority;
- North Lebanon Water Authority;
- Bekaa Water Authority;
- South Lebanon Water Authority.

According to this law, greater autonomy is to be delegated to these Water Authorities to allow them more flexibility in discharging their technical and financial responsibilities, including the recovery of their operation and maintenance expenditures and capital outlays. Water Authorities are to operate under their own regulations. Every Authority is to be managed by a Board of Directors consisting of a Chairman and six members. The Chairman of the Board will act as the executive manager. A summary of the responsibilities of the four Water Authorities is as follows:

- (a) Conducting studies, operating and maintaining existing systems, carrying out rehabilitation work or implementing new domestic and irrigation water distribution projects that fall within the framework of the General Water Master Plan or in accordance with the terms of a pre-approved permit from the Ministry to use public water resources;
- (b) Recommending tariffs for domestic and irrigation water services and collecting fees from subscribers to cover their expenses;
- (c) Monitoring the quality of water distributed for domestic and irrigation purposes;
- (d) Seeking financing agencies to carry out projects within their jurisdiction.

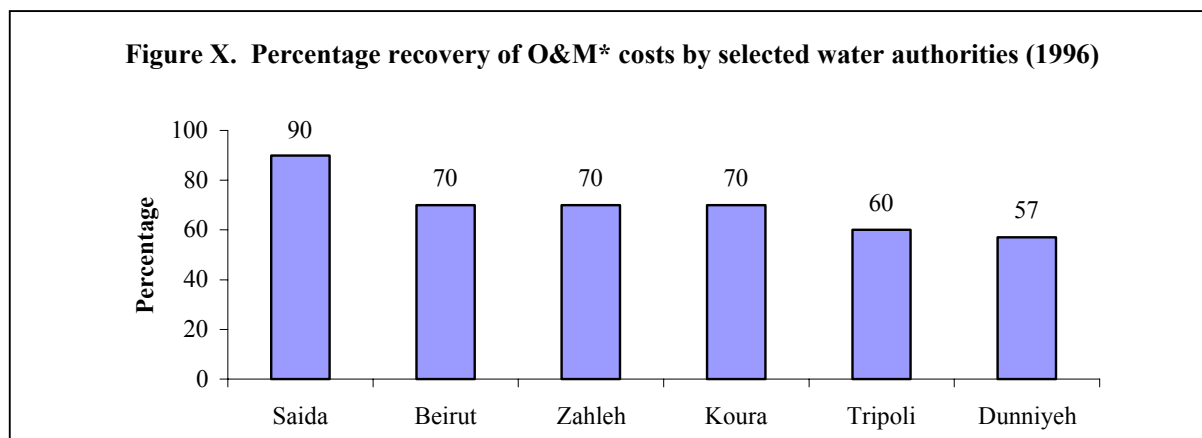
D. STEPS TOWARD PUBLIC-PRIVATE PARTNERSHIP

Private-sector involvement is not a novelty in Lebanon. As far back as the time of the Ottoman Empire, concessionary contracts were awarded to private firms, including the Water Company of Beirut, the Electricity Company of Beirut, the Water Company of Zahleh and the Water Company of Bhamdoun (Mallat 1998). Similar contracts were awarded under the French mandate, although every new concession (imtyaz) was subject to the approval of Parliament. During that period, the electricity companies introduced various new technologies and the water companies made service available to individual houses. However, the First World War had a negative impact on the performance of these firms, and the situation was aggravated by the Second World War. As a result, this type of privatization measure was not suitable for the social and economic conditions prevailing during the war and the immediate postwar period.

In the late 1940s and early 1950s, the Government began to buy back concessions. The first publicly owned water authority, the Beirut Water Authority, was established in 1951, and by degrees all the private water utilities were converted into State-owned institutions. As it became increasingly apparent that the performance of water authorities in Lebanon was unsatisfactory in terms of service and financial viability, the Government decided to introduce some restructuring of the water service sector. As we have seen, the Ministry of Hydraulic and Electrical Resources was established by Law No. 20 of 29 March 1966 and subsequent amendments thereto, and was divided into two General Directorates.

After 1993, the World Bank began to lend money to the Lebanese Government for the rehabilitation and development of water and waste water systems. Other donors also became involved, some through bilateral agreements and others through various agencies and development banks. However, donors came to have serious concerns about the management and operation of facilities and projects after their completion. Accordingly, the World Bank and other donor agencies recommended that the country should begin laying the groundwork for privatization.

In view of the growing demand for water, the cost of expanding the network and the need for improved service, private-sector participation was clearly essential, as the government lacked the financial, managerial and technical capacity to respond adequately. It was generally acknowledged, however, that the sector was financially viable. Most utilities recovered 50 to 70 per cent of their operation and maintenance costs (see figure X).



Source: WB 1998.

* Operation and maintenance costs exclusive of depreciation.

At the Paris II meeting in 2002, Lebanon committed itself to increased private-sector involvement in water utility services. Projected actions to that end to December 2002 are outlined in table 31. To date, however, little progress has been made. Only the Tripoli WA has taken steps to award a private operator a service and management contract to upgrade its water supply service.

TABLE 31. PROPOSED PRIVATIZATION INITIATIVES IN THE WATER SUPPLY SECTOR

Action	Impact	Status
<ul style="list-style-type: none"> - Beirut Water Authority concession approved by Council of Ministers (COM) - Beirut Water Authority concession ratified by Parliament - Tripoli Water Authority concession approved by COM - Tripoli Water Authority concession ratified by Parliament 	<ul style="list-style-type: none"> - Enhanced cost recovery - Revenue generation - Enhanced efficiency 	<ul style="list-style-type: none"> - Draft legislation allowing concessions approved by Cabinet

Source: Interview with Mr. Bassam Jaber, consultant to ESCWA.

1. The Wadi Jilo service contract

The first private service contract signed in Lebanon was one that made a private firm responsible for operating and maintaining water utilities in Wadi Jilo. The contract was divided into three parts: (a) staff salaries, (b) consumables and administrative expenses and (c) maintenance of buildings and equipment. The project was a success, and MEWR found the outcome sufficiently encouraging to enter into similar contracts for 12 other projects.

TABLE 32. SELECTED SERVICE CONTRACTS FOR WATER UTILITIES LOCATED IN DIFFERENT REGIONS OF LEBANON

Description of tasks	Budget (Millions of LL) ^{a/}	Starting date	Contractor
Management, operation, provision and maintenance of pumping stations in Wadi Jilo and Chahabiyeh	672	26/8/2003	World Wide Company
Management, operation, provision and maintenance of Lucy well pumping stations	192	18/9/2003	Yammine Company
Management, operation, provision and maintenance of Wadi Fakhreddine wells - Nabatiyeh	384	23/10/2003	Nazih Al-Breideh Institution
Management, operation, provision and maintenance of pumping and treatment stations in Bass and Rass El Ain	460	1/7/2003	Saba Makhoulf Institution
Management, operation, provision and maintenance of filtration plant in Zahleh	385	11/3/2003	Mamco Company
Management, operation, provision and maintenance of pumping plant in Chekka	260	17/2/2003	Imenco Company Chartouny & Rawileh
Management, operation, provision and maintenance of two pumping plants in Bmariam	315	18/2/2002	Yammine Company
Management, operation, provision and maintenance in Kousba	377	1/10/2002	Saba Makhoulf Institution
Management, operation, provision and maintenance in Kfarhalda	660	10/2/2003	Saba Makhoulf Institution
Management, operation, provision & maintenance of pumping plants in Nabi Chitt	864		Nazih Breideh Institution

Source: MEWR 2003.

^{a/} At the current rate of exchange, \$1 = LL 1,500.

2. Contract for the management of the Tripoli Water Authority

(a) Service management contract

The privatization of the Tripoli Water Authority is still in the initial stages, as it began only in February 2003. Law No. 401, enacted on 5 June 2003, approved public participation in the management of the Tripoli Water Authority, the main objective being defined as “the conclusion of a service and management contract with a private contractor to strengthen the Tripoli Water Authority”. This law approved two concessionary loans for a total of \$22,857,000 (€20,000,000)¹⁸ from the French development agency known as l’Agence française de développement (AFD) under an agreement signed in Beirut on 16 November 2001 for the purpose of upgrading the city of Tripoli’s drinking water supply (ICEA 2003). Specifically, the proceeds of the loans were to be used to implement a service and management contract with a private contractor to strengthen the Tripoli Water Authority. Under that contract, the Authority retains its administrative and legal responsibilities. The contract represents the first direct example of private-sector participation in water service provision. As such, it will serve as a model for participation by private firms in the management of other public utilities in the future.

(b) Tripoli Water Authority constraints (ONDÉO 2003)

- (i) Lack of full understanding of the wider socioeconomic context;
- (ii) Lack of a comprehensive vision for its water resources;
- (iii) Personnel deficient in technical and managerial skills: the Tripoli Water Authority has 75 employees and daily workers. The average age of its employees is 55, and their numbers are inadequate to meet service management requirements;
- (iv) Problems with revenue collection;
- (v) Limited autonomy;
- (vi) Absence of indicators and customer satisfaction mechanisms;
- (vii) Technical problems: age of the system, distribution by gauges (calibrated orifices or defective meters).

(c) Proposed solutions

- (i) Rehabilitation of the facilities;
- (ii) Creation of a customer services section;
- (iii) Greater autonomy;
- (iv) Human resources development through recruitment of specialized personnel, including technicians, electromechanical experts and financial auditors;
- (v) Gathering of socioeconomic data.

The Tripoli Water Authority’s contract with ONDÉO was drafted with a view to the following objectives:

- (i) Improvement of the Tripoli Water Authority’s financial management through enhanced efficiency in the area of operation costs (energy, maintenance and personnel);
- (ii) Gradual application of cost recovery schemes designed to recover part of the firm’s investment;
- (iii) Introduction of a financial system conforming to national accounting norms and international standards;
- (iv) Training of finance section personnel;

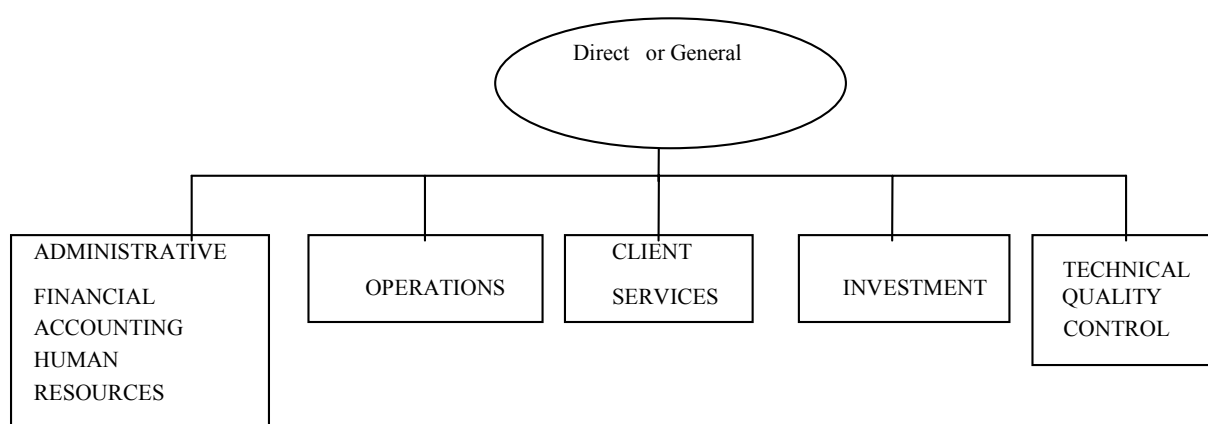
¹⁸ At the current rate of exchange, \$1 = €0.875.

- (v) A capacity building programme to upgrade the technical, financial and managerial skills of staff members;
- (iv) A clearly defined remuneration policy.

The contractor must assume responsibility for piping water from intake points to storage reservoirs and from the storage reservoirs to the water pressure gauges of subscribers continuously and under satisfactory pressure conditions. In the area of client services, the contractor is required to enhance customer satisfaction, prepare and regularly update an inventory of illicit consumers and suspend service to consumers refusing to subscribe. It is also required to improve the services and efficiency of employees whose work brings them into direct contact with clients. Other tasks include handling registration requests, signing registration contracts and organizing information campaigns on water conservation for the general public.

(d) *Organization chart*

Figure XI. Organization chart of the service provider



Source: ONDÉO, Lebanon.

During the first year of the contract, the service provider is required to prepare a plan describing procedures for the maintenance of the utility's production facilities. In addition, the service provider is responsible for establishing protection zones for the utility's wells and other water sources, identifying sources of pollution, formulating proposals aimed at reducing such pollution by means of waste water collection and solid waste disposal systems, and submitting those proposals to the municipal authorities.

3. Contract for management of the Baalbak-Hermel Water Authority:

The Council for Development and Reconstruction has engaged a consultant with a mandate to prepare tender documents with a view to contracting out the management of the Baalbeck-Hermel Water and Irrigation Authority (BHWIA) to a private firm. The terms of the prospective management contract are expected to be similar to those of the contract that has been concluded with the Tripoli Water Authority.

E. LESSONS LEARNED AND FUTURE TRENDS

Planned future activities will ultimately result in complete restructuring of the water sector in an effort to enhance the development and management of water resources throughout Lebanon. Those activities will include measures aimed at greater private-sector involvement in the development and management of the domestic water supply sector (see table 33).

TABLE 33. FUTURE ACTIVITIES

Action	Status
Restructuring of MEW and WAs	Prepared but pending approval
Corporatization and commercialization of WAs	Planning stage
Capacity building for MEW and WA personnel	Planning stage
Public-private partnership	Planning stage

1. *Restructuring of the Ministry of Energy and Water and the Water Authorities*

A draft law has been prepared but has not yet approved by Parliament and the Council of Ministers. Regulations made under this law will include an organization chart and a regulatory framework for MEW and the Water Authorities.

(a) *Organization chart*

The purpose of the organization chart is to decentralize the water authorities to the *mohafaza* (regional administration) level while maintaining a central coordination unit in each *mohafaza*. The unit will be responsible for the development, implementation, financing, accounting and administration of water projects. However, in each region a client services department will be established to be responsible for the distribution of water and other related services such as billing, collecting and claims.

(b) *Regulation*

Under the financial regulations, the credit available to the Board of Directors of each Water Authority is to be increased from LL 1,000,000 to LL 50,000,000 (\$666 to \$33,000) for the Director, and from LL 3,000,000 to LL 200,000,000 (\$2,000 to \$134,000) for the Board. This measure will give the WAs more financial flexibility and make it easier for them to implement projects. WAs will also be allowed to recruit qualified staff members and establish new departments to be responsible for such matters as projects, client services, IT support (software and hardware), quality control and the like.

(c) *Corporatization*

This essential action is the preparation of a business plan accompanied by an implementation schedule. The plan should include tariff adjustments to recover costs, and analysis accounting to show the costs of the various tasks undertaken by the Authority.

(d) *Capacity building*

A number of workshops and seminars have been organized for the Ministry's technical personnel; however, these are not planned systematically as part of a comprehensive HRD strategy. Attendance is voluntary and sporadic. One promising initiative in this area was a skills development programme under which MEW engineers received training in related areas such as hydraulics. In addition, MEW and Water Authority employees have sometimes attended workshops or short courses in technology. If MEW is to play its monitoring and regulatory role effectively, it will have to adopt a more serious approach to capacity building, regardless of the PPP option selected.

VIII. AN ESCWA APPROACH TO THE DEVELOPMENT OF NATIONAL PUBLIC-PRIVATE PARTNERSHIP STRATEGIES IN THE WATER SECTOR

A. REFORMS IN THE WATER AND SANITATION SECTORS IN THE ESCWA REGION

1. *Main challenges confronting effective PPP in the water sector in the ESCWA region*

Over the past decade, most ESCWA countries have been characterized by similar trends in the field of water supply and sanitation, and similar institutional, technical and financial challenges have arisen across the region. These may be summarized as follows:

- (a) Natural water scarcity and unsustainable water utilization patterns;
- (b) High population growth and rapid urbanization;
- (c) Absence of a water policy or a strategy based on an integrated resource management approach;
- (d) A weak investment environment that is unable to generate much-needed funds;
- (e) Weak institutional arrangements with dispersal of responsibilities and inappropriate coordination mechanisms between the various ministries and agencies involved;
- (f) An outdated legislative framework;
- (g) An irrigation sector that consumes large quantities of water inefficiently to generate small economic returns; inequitable water allocation;
- (h) Mining of renewable and non-renewable groundwater resources;
- (i) Dwindling resources as a result of increased pollution levels;
- (j) Overcentralized WSS sectors characterized by low technical efficiency in terms of their operation and maintenance records, high unaccounted-for water rates, low service coverage and inadequate water quantity and quality;
- (k) Low level of managerial efficiency, namely, small revenues, overstaffing, low client satisfaction levels, inadequate financial and career advancement incentives.

Certainly the ESCWA member countries have made some progress in the development of their water resources in recent decades, with large outlays for infrastructure to secure water supplies from surface and groundwater sources, desalinated seawater and treated waste water. However, the sustainable management of water resources has not received the attention it merits, concerning in particular the application of sound approaches to integrated water management. While there have been marked improvements in water supply provision, pressure for more and better services remains high, while public funding to meet existing and projected demand for water and sanitation services are subject to progressively greater constraints.

It is clear that the sector is in need of restructuring in the interests of better-performing and more efficient water utilities, the introduction of appropriate pricing mechanisms, and wider participation by stakeholders in the decision-making process, including in particular private firms, which can potentially mobilize funds for the expansion and rehabilitation of distribution systems and improve the performance of WSS utilities.

There are a number of constraints which have had a negative impact on progress in the adoption of PPP arrangements in the area of water supply. Owing to their small size and unimpressive performance, domestic capital markets would have difficulty absorbing large capital inflows from the sale of water utilities. Effective PPP will require sector-wide reforms, including functional institutions, clear and enforceable laws, and a policy environment that will attract private investors operating on a competitive basis.

Urgent remedial measures are thus needed to redress the present shortcomings of the water sector and ensure that water utilities are managed in accordance with the principles of integrated water resource management (IWRM) and that appropriate water sector strategies and laws and regulations are in place. Revitalization of the water supply and sanitation sector will also entail reforms designed to ensure that the principles of decentralization, commercialization, corporatization and private-sector participation are adopted within the region's prevailing socioeconomic, administrative, cultural and religious structures.

2. Factors for success

The success of privatized water utilities in the ESCWA region will fundamentally be measured by reductions in the cost of water, the establishment of a fair and affordable tariff structure that cuts down on wastage, and improved service delivery, in terms of quality and accessible quantity. In addition, a successful privatized water utility should engage in capacity building and human resource development through appropriately designed training programmes and challenging employment opportunities. Sufficient experience from other parts of the world is now available to enable the ESCWA countries to learn from both satisfactory and unsatisfactory initiatives elsewhere, and to adapt appropriate water privatization tools for their own region. One prerequisite for success in any PPP initiative is a well-conceived strategy containing clearly formulated objectives and priorities, and another is an enabling policy environment that addresses the four crucial aspects outlined below.

(a) Political will

Political will at the highest level is the most essential element for the introduction of a sustained process of reform in the water sector. Any reform process entails the mobilization of resources and a commitment to change which may not yield immediate benefits. Groups with vested interests that may have to relinquish some of their privileges as a result of the reform process often resist change; bureaucratic inertia may be a factor as well. Political will can overcome these obstacles.

Public debate on the objectives and benefits of various options for PPP in the management of water supply and sanitation systems, and on the associated constraints, is something that should be strongly encouraged by the political establishment. At first sight, public debate may seem to generate confusion and allow skeptics to mobilize public resistance to privatization; however, informing stakeholders, engaging them in consultations and educating them about the merits and challenges of privatization are essential determinants of a successful and sustainable PPP initiative. Participation by stakeholders can convince people that it is worthwhile to pay more in return for better services; it also allows policy-makers to fine-tune their strategies for responding more effectively to the socioeconomic, political and environmental concerns of various groups, notably the poor.

(b) Management of various privatization options

There are two basic approaches to the management of privatization. The first is to decentralize the process and establish independent, autonomous WSS utilities that work closely with the Ministry responsible for water supply and sanitation. This type of approach, which can be initiated gradually, beginning at the local level and subsequently proceeding to the national level, facilitates the assessment of PPP options from a technical standpoint before the issue moves up to the policy level, where there is a risk that it will become politicized. There may be a central authority to set privatization policies and objectives, with a privatization committee reporting to the Prime Minister, while the regional offices of Ministries or public enterprises, working under the guidance of the privatization committee, perform the actual work of implementation. This approach seems to be more common in those ESCWA member countries that have initiated privatization programmes.

The alternative is to centralize the process, namely by establishing a privatization agency expressly for that purpose. Control over enterprises that are to be privatized is transferred from existing regional offices of Ministries to the privatization agency. That agency assumes responsibility for any necessary restructuring of the enterprise prior to privatization. The managers of the enterprise report to the privatization agency rather than to the regional office of the Ministry, as in the past. Managing privatization through regional offices of

Ministries is likely to exert a braking effect on the process, owing to lack of incentives, political will and appropriate managerial skills at that level. It has also been argued that with multiple agencies having to review and approve each case of privatization, redundancy becomes a problem and the privatization process tends to advance more slowly.

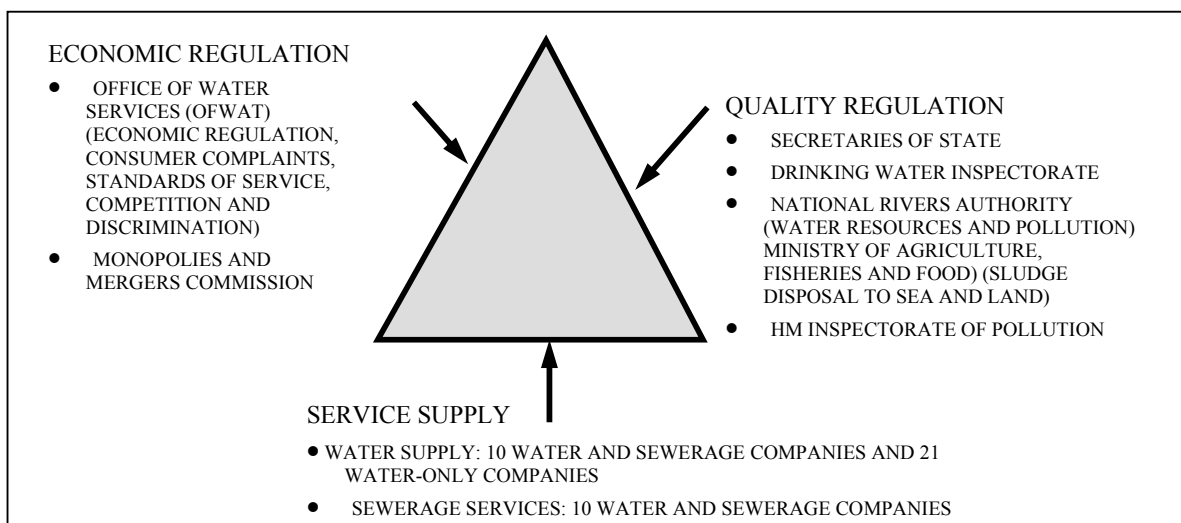
(c) *Transparent competitive bidding*

The use of a simple transparent bidding process, from pre-qualification to tendering to award, will expedite the privatization process. The single selection criterion applied should be that the new private operator shall be the one who is willing to pay the highest price in a transparent and competitive bidding process. Such a method is perceived as fair and equitable, even though most citizens may not actually participate in the bidding or become owners of the privatized companies. A wide range of investors should be encouraged to bid for the assets, within clearly defined criteria, with no distinction between foreign and domestic investors. This method is conducive to economic efficiency, as the highest bidder is likely to be the firm that is best able to upgrade the efficiency and profitability of the enterprise and bear the risks inherent in the transfer of functions or assets from the public to the private sector.

(d) *Regulatory framework*

The public agency should retain overall control to ensure compliance with standards and objectives, mandated by a strong independent authority. The mobilization of funds from the private sector should be accompanied by an appropriate mechanism to ensure that the risks are fairly shared, or at least to define an acceptable level of risk to be borne by the public sector. Appropriate, effective safeguards must be in place to prevent monopolies from abusing the public in terms of charges and service reliability and quality. The regulatory framework should address the interests of end users within the context of the contract with the private operator, focusing in particular on the aspects of cost and service quality and reliability (namely, quantity provided). By way of an example, figure XII below shows the structure of the regulatory regime in England and Wales.

Figure XII. Structure of the regulatory regime in England and Wales (OFWAT 1992)



B. GUIDELINES FOR PREPARING NATIONAL PPP STRATEGIES

Suggested steps towards the establishment of a sound public-private partnership in water supply and sanitation services are as follows:

1. Preparation of a database

It is vital to prepare a reliable database for the water supply and sanitation sector at the national and local utility levels. Technical baseline studies, an inventory of assets, personnel management information systems and socioeconomic and affordability studies should be the backbone of the national WSS strategy.

2. Reform programme

A national WSS strategy and programme should be adopted and in place before any specific PPP options are initiated. Since it is difficult to enter into a PPP arrangement for the whole country, the process of decentralization should begin with the creation of financially and administratively autonomous WSS utilities at the local level. Capacity building, including a comprehensive HRD programme, and institutional strengthening (IS) should be integral parts of the reform plan, as these are key elements for sustained WSS sector reform.

3. Institutional options and PPP

Countries should study institutional reforms in the WSS sectors and PPP options that have been adopted in other countries around the world. These studies should be presented at a national workshop attended by international experts in the field, representatives from utilities and civil society, stakeholders, decision-makers, parliamentarians, consumer representatives and the media. The outcomes of such studies will be useful to policy-makers in drafting a national PPP strategy.

4. Development of sub-sectoral strategies

Separate strategies for sub-sectors such as water resources, water supply and sanitation, irrigation and the like should be prepared and approved by the government before a national PPP strategy is developed. These strategies may include ideas about the introduction of PPP, but will not formulate a comprehensive PPP strategy for the country as a whole. In cases where the entire water and irrigation sector is under the responsibility of a single Ministry, it is advisable for the Government to produce a single strategy paper on policy for the whole sector.

5. Utility support programmes

In certain cases, some utilities may need assistance in the form of a “utility support programme” (USP) by way of preparation for whatever PPP option is ultimately adopted. One or two USP experiences will be useful to the national policy-makers responsible for drafting the national PPP strategy and will help utilities manage the selected PPP option.

6. Legal framework

Investment law: It is important to draft and enact an investment law that is unambiguously designed to attract local and international investors. This law may be either general or specific to the WSS sector. It should include incentives and tax exemption options for a reasonable period of time, and should cut through the red tape inherent in government agencies to facilitate the licensing of potential investors.

Privatization law: In addition to the investment law, it is advisable to draft and enact a privatization law expressly aimed at attracting private firms to the WSS sector. Sufficient incentives, guarantees and safeguards should be clearly set forth in this law.

Regulations: Every law must be supplemented with clear and detailed regulations designed to facilitate its implementation and enforcement. Regulations also serve as a tool for resolving conflicts, so that legal action and arbitration are used only as a last resort.

7. Regulation

The Government should regulate various aspects of the development and management of water resources. It is particularly important to establish a regulatory authority, regardless of whether water supply and sanitation services are provided by public utilities or private firms. Water utilities should be subject to the rules of an independent regulatory system. This function should be exercised by a regulatory agency that is independent of both the management company and the Ministry responsible for water supply and distribution. The private operator must be assured that it will be free to manage the utility and deliver services at the level required by the regulator. A fair regulatory system is needed to protect consumers and also to deal with operational difficulties in accordance with the relevant contracts, while at the same time affording sufficient flexibility to accommodate changes in technology and standards. The regulator's duties include the monitoring of the operator's tariffs and the enforcement of environmental quality standards. The establishment of an effective regulatory system is an essential component of a national PPP strategy.

To improve the performance of privatized water utilities, the PPP strategy should include the possibility of engaging qualified experts from the private sector to evaluate and monitor existing water utilities and conduct financial and accounting analyses. In some instances it may be desirable to convert the outside expert's team into a regulatory agency.

In cases where the Government decides to initiate PPP before establishing a regulatory authority, it is possible to arrange for the work of regulation to be done under contract, but this should be only a temporary measure, and immediate steps should be taken to establish a permanent regulatory body. We may note at this point that establishing "independent" regulatory authorities in developing countries is a challenging task, given the weak institutional structure of public enterprises in general and WSS utilities in particular. The regulatory authority should encourage participation by NGOs in water users' and consumers' associations so that the private operator will receive continuous feedback on its performance in the area of service quality.

8. Governance

Good governance relies on an efficient flow of communication and active participation on the part of a broad range of stakeholders from the public, private and civil society. Good governance is consensus-oriented, accountable, transparent, responsive, equitable and inclusive and follows the rule of law. With good governance, corruption is minimized, the views of minorities are taken into account, and the most vulnerable groups in society have a voice in decision-making. Table 34 shows how various stakeholders can participate in the development of PPP strategies.

9. Capacity building

Capacity building, including both HRD and IS should be introduced at an early stage in the development of a national PPP strategy for WSS utilities. A CB programme should include actions in respect of:

- (a) An HRD and training needs assessment as required for successful implementation of the reform agenda and preparing employees for the introduction of PPP;
- (b) Identification of immediate needs and crash training programmes;
- (c) Preparation of training modules and training materials;
- (d) Identification of local and regional training providers;
- (e) Preparation of an HRD budget in the form of clearly defined packages for convenience in fund-raising.

(a) *Institutional strengthening*

The aim of IS programmes is to enable utilities to operate on a decentralized basis and apply commercial practices in accordance with the principles of the national reform agenda, and to prepare them for effective participation in any future PPP option, which can then be introduced at any time.

During implementation of the reform agenda it is strongly advisable to consider a series of IS programmes, which should include, but are not necessarily limited to, the following aspects of CB:

- (i) Continuous training in modern management techniques for senior managers;
- (ii) Organization culture and change management;
- (iii) Commercial accounting, tariff calculation and application;
- (iv) Community participation and public awareness;
- (v) Information technology through the introduction of user-friendly computer software for accounting, billing, inventory and payroll;
- (vi) Introduction of benchmarking and performance indicator reporting, and, in due course, development of a comprehensive management information system (MIS);
- (vii) Initial steps in the development and application of a complete GIS-MIS in pilot utilities;
- (viii) Arranging for a series of national workshops on all aspects of reform and PPP;
- (ix) Study tours to learn from other countries' experience in the field of WSS sector reform and PPP.

(b) *Creation of an experienced local PPP team*

Experience has shown that it is vital to create, train and motivate a team of local experts in the field of PPP. This includes knowledge of all PPP options, experience in the region and worldwide, success stories and failures, PPP option studies, preparation of pre-qualification documents and requests for proposals, preparation of contract documents, and negotiations. This team should include experts with competence in the fields of law, technology, economics, finance, institutional issues, tendering negotiations and contracting.

C. BASIC ELEMENTS OF A PUBLIC-PRIVATE PARTNERSHIP CONTRACT

Finally, as part of its capacity to regulate the work of private operators and monitor the progress of PPP strategies, the local team should develop expertise in the drafting, management and negotiation of contracts. Essential points that should be addressed in contract preparation include the following:

- (a) The contract should be worded in clear and concise language, specifying a quantified target determined on the basis of the minimum need the utility is required to meet;
- (b) Underserved poor communities to be covered by any service expansion;
- (c) Prospective increases in water rates to be situated within a specific time frame;
- (d) Water tariffs to be based on sound economic principles and social affordability, subsidies for low-income groups to be taken into consideration where full cost recovery is contemplated;
- (e) Economic incentives should be included to encourage the operator to adopt low-cost options for consumers;
- (f) Clear house connection specifications and quantitative performance indicators should be included so that the company's performance and customer satisfaction with respect to service and water quantity and quality can be monitored; benchmarks must be used to track public complaints and service interruptions;

TABLE 34. STAKEHOLDERS' PARTICIPATION IN THE PREPARATION OF PPP NATIONAL STRATEGIES

Activity/stakeholder	Utilities	Donors	Civil society ^{al}	Media	Water and water related Ministries	Private operators/private investors	Local communities
Preparation of a database	Action to provide basic information and identify development priorities and data and information requirements	Technical assistance, funding support, action to facilitate exchanges of information in standardized format	Participation in the tasks of setting the conceptual framework and data collection, processing and analysis. Organization of seminars and workshops at all stages of preparation and assessment	Awareness campaigns to ensure accuracy, transparency and sharing of data	Action to set guidelines and a framework for studies, allocate resources, plan and monitor progress, ensure widespread participation by stakeholders	Support for data collection and sharing as part of contract	Response to surveys and an efficient two-way flow of feedback
Reform programme, Institutional options and PPP	Participation in the work of identifying needs, setting priorities and determining areas where CB is most needed	Support in the form of development grants for safety net programmes, transfer of know-how, best practices and lessons learned	A public debate on reform: direct and indirect implications (social, economic, political, and so on), assessment of strengths and weaknesses of proposed reform and PPP options	Action to help clarify public debate and present the various opinions	Coordination and streamlining role: monitoring of progress of reform in WSS and other departments	Technical expertise input through contracts	Mobilization to ensure coordinated action and adequate representation of interests among various stakeholders

TABLE 34 (*continued*)

Activity/stakeholder	Utilities	Donors	Civil society ^{a/}	Media	Water and water related Ministries	Private operators/private investors	Local communities
Development of sub-sectoral strategies and utility support programmes	Factual knowledge and information about challenges facing utilities and development needs; participation in the task of defining the future role and responsibilities of utilities	Knowledge sharing and exchange, sponsorship of study tours, seminars and training workshops	Support in the form of data and information, feasibility studies and the preparation of specialized reports	Presentation of different opinions and action to help focus public debate	Action to provide an enabling environment, ensure that policy reforms and legislation are in place and enforceable, mobilize resources and prioritize the issue	Technical expertise input through contracts	Mobilization to ensure coordinated action and adequate representation of interests among various stakeholders
Capacity building	Action to build local teams with technical and managerial capacity, with a client-oriented perspective	Action to make the accumulated wealth of international experience, documentation and cases studies available, provide access to resources, training materials and support programmes, and facilitate linkages among stakeholders and membership of relevant global and regional networks	Action to facilitate CB as providers, assess CB programmes and evaluate impact	Action to publicize best practices, facilitate access to information and organize panel discussions through media channels	Creation of an enabling policy environment; institutionalization of CB within local departments and public enterprises as part of an ongoing process of water sector management and development	Support for the delivery of training programmes through contracts	Development of proposals for CB programmes to ensure that the special needs of marginalized groups are accommodated

Source: Produced by ESCWA.

^{a/} NGOs, universities and research institutes, associations of water users, professional associations and unions.

- (g) Performance and planned activities to be publicly reported;
- (h) The ecosystem's water requirements to be met, and environmental protection with minimum downstream impact to be guaranteed;
- (i) Provision for dispute resolution mechanisms to resolve any potential conflicts;
- (j) Qualified internal staff with excellent experience and technical and managerial skills to be retained, subject to stated conditions;
- (k) The size of the prospective transfer of public assets should be stated and the attendant conditions spelled out;
- (l) Changes to existing water rights and water ownership should be explicitly spelled out;
- (m) Provision should be made for a monitoring and oversight mechanism to allow the regulator to monitor the operator's performance and compliance with standards;
- (n) Provision should be made for water tariff regulation mechanisms to ensure that water is provided at reasonable rates, and a ceiling should be placed on the operator's return on investment in order to avoid exploitation of consumers;
- (o) Responsibilities of the public and service providers should be clearly stated;
- (p) Well articulated awareness campaigns and an information campaign in preparation for the transfer to a private service provider;
- (q) Imposition of sanctions for failure to deliver;
- (r) Provision of adequate financial security to create confidence in the sustainability of the contract;
- (s) Command and control to be vested in legislation, regulations and standards;
- (t) The taxation regime should be clearly spelled out;
- (u) Compensation to be paid in the event of premature cancellation of the contractual arrangement.

The creation of an enabling environment aimed at encouraging private-sector participation will entail a shift in the role of the public authority from that of water provider to that of regulator and enforcer. Rules and guidelines must emphasize transparency and accountability for both public and private parties, and also the protection of natural resources. The legal framework must include such features as corporate law under which the initiative may be subject to limitations, contracts are enforceable and investments are adequately protected. Finally, it is always advisable for any privatization initiative to be implemented gradually so that the country's financial and market mechanisms can adjust to the new measures and the necessary regulations and legislation can be enacted. In order to enhance private-sector involvement, governments should create an enabling environment in terms of strong, sustained political support, appropriate regulations and legislation, fair valuation of existing assets, and provision for adjustment to a changing environment.

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