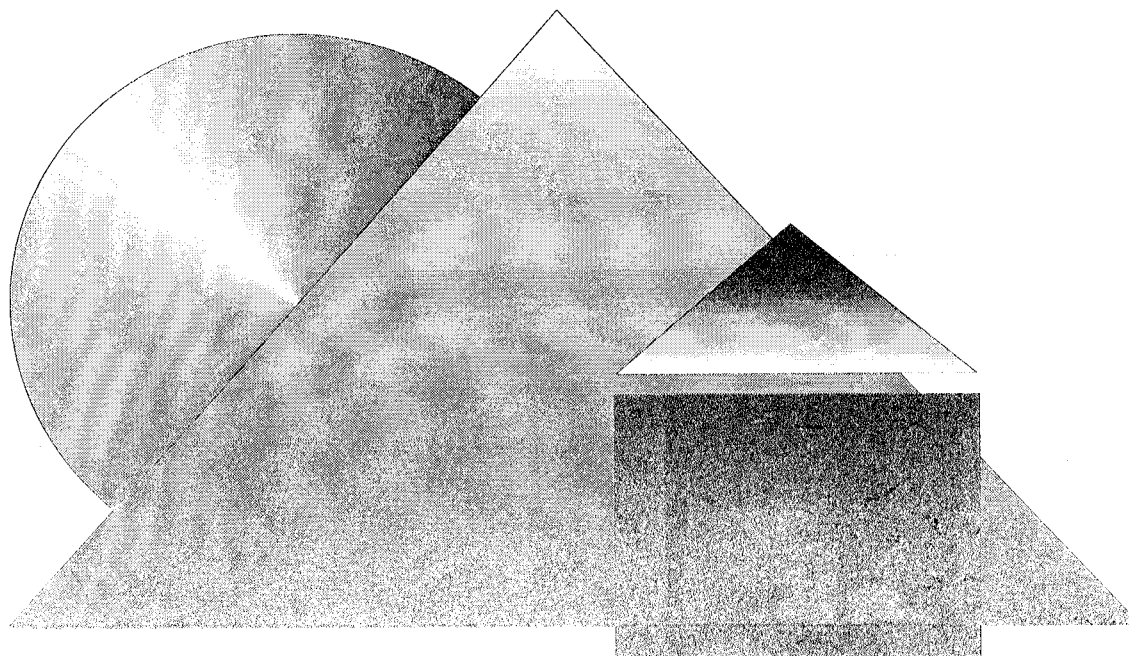

ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN
SERIE MEDIO AMBIENTE Y DESARROLLO 2

**PRIVATE PARTICIPATION IN THE PROVISION
OF WATER SERVICES**

**Alternative means for private participation
in the provision of water services**

Terence R. Lee
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**UNITED NATIONS
ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN
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ABSTRACT

This is the first of a series of papers discussing different aspects of private participation in the provision of water services in Latin America and the Caribbean. Since the 1970's, the governments of the region have been transferring, in one form or another, public companies and other state institutions to the private sector. Privatization has now extended to all sectors of the economy, including the provision of basic water services. It is generally accepted that privatization can have considerable economic benefits. This paper focuses on the benefits of the privatization of water services and on the range of alternatives available for private participation in their provision. These alternatives are analyzed and their possible application in the countries of Latin America and the Caribbean is assessed on the basis of examples from the region and from other parts of the world.

The alternatives discussed include divestiture, the various forms of franchising, such as contracting out, management contracts, lease contracts and concessions, including the many "build, operate and transfer" (BOT) arrangements, and joint public-private arrangements. The strengths and weaknesses of each alternative are discussed in some detail, in particular the demands their implementation is likely to make on the public sector.

In the countries of the region, most of the existing arrangements for private participation in water-based public services are of hybrid nature, that is, they exhibit characteristics of two or more of the alternative forms discussed. Moreover, the privatization of water services requires a readjustment of the role of the state in water management. The state will have to withdraw from some activities and take on new ones, often of a very different character. Most importantly, whatever the alternative chosen all the experiences show that privatization does not stop with the transfer of assets. There is a need for continuing managerial actions in particular for regulation and, therefore, for on-going government responsibility for the provision of basic water services, even when the operators of such services are private companies.

INTRODUCTION

Since the 1970's, and beginning in Chile, the governments of Latin America and the Caribbean have been transferring, in one form or another, many public companies and other state institutions to the private sector. Such transfers have been especially marked in manufacturing and other directly productive activities, but privatization has extended now to almost all sectors of the economy, including the provision of basic water services.

Privatization is often conceived in terms of the sale of public property, a factory, a mine, an airline to a private investor. A more general definition of privatization relates to the transfer of the rights to the net profit generated by an enterprise from the public to the private sector, which need not involve a change in ownership (Hemming and Mansoor, 1988).

Under this definition, there are many forms of transferring activities from the state to the individual and not all of them involve the transfer of physical assets. A change in the law may do as much or more to reduce the role of the state in the economy as any transfer of physical assets. For example, the removal of exchange restrictions or restrictions on the transfer of land received through a process of agrarian reform may completely change the state-individual relationship and greatly extend the area of the economy in which the market rules. In water management, the most significant act of privatization may be the granting of property rights over water.

In most countries of the region, there has been a wholesale shift in the line dividing the public or state from the private or individual. The nature of the change depends on the previously prevailing situation, but in all countries the shift has been significant. Water management, the water resource and the services based on water have not been excluded from this process. On the contrary the transfer of the responsibility for water-related goods and services and their management has formed in many countries an important part of the total privatization process.

The focus of this present paper is on the alternatives available for the privatization of water services and the experience of governments with these different alternatives. Considerable emphasis is given to the number and variety of alternatives available for structuring private participation in the management of water services and for institutional reform in the public sector. A lengthy discussion of these aspects is justified, and of particular importance for the water sector, because the development of the idea or concept of water management in Latin America and the Caribbean has occurred within a context where the major users of water were within the public sector and where the private sector was excluded from participation in management (Lee, 1990; ECLAC, 1994a). There were some significant exceptions, however, particularly in irrigated agriculture.

The privatization of the basic water services completely changes the demands on the water management institutions and also requires a thorough reconsideration of the policies that have been adopted towards water management in the past. Too often, the discussion of the role of privatization in water management is limited by the inherited framework for water management which considerably hampers innovations in structural arrangements which go beyond the mere transfer, in one form or other, of institutions from public to private management.

The privatization of water services forces a reconsideration and readjustment of the role of the state in water management. It demands not only that the state withdraw from many activities but, that it takes on new ones, often of a very different nature and requiring different skills and knowledge of the public sector personnel. In water resources, all the experiences show that privatization does not just stop with the transfer of assets, but requires continuing managerial actions within the public sector.

This can mean, and has meant, the restructuring of ministerial responsibilities - for example, the transfer of the supervision of water supply and sanitation companies from the Ministry of Health or Public Works to Economy or Finance - in line with the new role of government in the regulation of private companies instead of their direct control through public ownership. It can mean the disappearance of activities from the public sector, as private operators take over responsibilities such as, for example, energy planning when the supply of new facilities is left to be determined through competition and the market, the supervision of cultivation plans for irrigation districts when the individual farmer decides on production or the determination of release schedules for reservoirs where the operators are privately-owned electricity generating companies.

Before, however, discussing in detail the alternatives for the involvement of the private sector in the management of water services, it is necessary to give some consideration to why governments in Latin America and the Caribbean provide water services. Historically, many water-based services were provided through the private sector, especially electricity generation, but, commonly, both drinking water supply and irrigation, as well. It is only this century, and since the 1920's, that governments decided that water services should be provided by the public sector and only since the 1940's that such services should normally be provided by agencies of the central government rather than by states or municipalities (Lee, 1990).

The reasons for this expansion of the public sector into the provision of water services are complex, but basically arose from the decision of governments and international institutions that decisive government intervention in the economy was required to maximize economic welfare through economic growth. Since the 1970's, however, opinion has changed to place emphasis on maximizing the role of the private sector (ECLAC, 1994b). Again, the reasons advanced are varied. A recent study by ECLAC advances nine arguments used by governments, both structural and pragmatic for undertaking privatization programmes (ECLAC, 1994b). The basic reason is, however, a change in perception and it is now accepted that the private provision of productive services is the more effective tool for bettering economic welfare. It is the general opinion that the replacement of public

monopolies by regulated private monopolies can significantly both increase economic efficiency and have a positive impact on social welfare (see Box 1).

Water services, especially the provision of water supply and sanitation, tend to be natural monopolies, where the provision of the service by a single firm results in lower costs than its provision by two or more firms. Natural monopolies pose a special challenge for public policy insofar as market forces fail to generate an economically efficient outcome. The management of monopoly services by the private sector raises, therefore, the need for control or regulation. There are several options open to government for the regulation of natural monopolies managed or owned by private companies whether water-based services or in other areas of the economy.

Firstly, a government might decide that monopoly rents are worth accepting and do nothing. Even though this approach implies that society will sustain a loss in economic welfare, there may be cases where this loss is worth taking and users may prefer paying monopoly prices for a high quality service rather than going without or making do with an inferior supply.

Moreover, where under-provision of services and their poor quality are the major problem, as in many Latin American and Caribbean countries, concerns about the imperfections of service provision by an unregulated private monopoly may be of little importance compared with the existing losses from poor provision. Furthermore, losses due to monopoly pricing by unregulated privatized natural monopolies are likely to be modest and at least some of them would be offset by the advantages given by size and integration (see Bradburd, 1992).

Secondly, a government might decide to continue the provision through a public enterprise, although this option is likely to be unattractive in the present circumstances and lead to the continuance of the problems of efficiency, capital shortage, etc. which have prompted the reconsideration of such an alternative.

Thirdly, cooperatives are potentially an interesting option. There is considerable experience in Latin America and the Caribbean with autonomous, self-governing, voluntary cooperatives, particularly for small electricity or drinking water supply systems. However, cooperatives seem to work best only for smaller systems in rural areas and small towns.

Finally, a government might decide, as most governments in the region now have, to transfer services to private management and to use regulatory policy as a means of influencing private sector behaviour. This requires the establishment of an appropriate system of incentives to guide economic decisions in the private provision of water-based services under conditions of natural monopoly. In regulated utilities, the regulator acts as a substitute for the market, taking on some of the functions of competitors, attempting to provide similar incentives to improve efficiency by regulating aspects of the firm's conduct (Helm, 1994).

Another concern of governments who turn over water sector services or facility operation to the private sector is loss of control due to inadequate regulatory capacity. When

Box 1

What reasons are there to believe that private enterprises will be more efficient than public enterprises?

A number of different arguments suggest that, in the water sector, the regulation of privately owned and managed monopolies would increase economic efficiency.

Reduced political interference

Experience in Latin America and the Caribbean demonstrates that there is a relationship between public ownership and political interference and that much of the blame for the poor performance of the public enterprises in the water sector can be attributed to continual political interference, politicization of key decisions regarding tariffs and personnel administration, and lack of managerial autonomy.

Most countries have heavily subsidized the provision of most water-based services. This practice has led to the waste and overuse of water, misallocation of scarce resources, and serious distortions in the financial prices faced by producers and consumers which bias their production and consumption decisions away from welfare improvement. Tariff levels have been usually kept low bearing little or no relationship to the cost of the services provided, the financial needs of the utility or to the consumer's willingness and capacity to pay. In addition, attempts to accommodate various special interest groups have sometimes led to complex and distorted pricing policies, taxation and regulations, which coupled with frequent tariff and policy revisions gave little incentive to save water or energy and to reduce costs, but a strong incentive to exert political pressure.

It is commonplace to see how state-owned enterprises are used to pursue goals that are unrelated to their entrepreneurial role. In many cases public enterprises have become a vehicle for political patronage, corruption, nepotism, misappropriation of public funds and indeed an instrument for furthering the political and material interests of the ruling parties, *inter alia*, through investments in prestigious projects with little or no returns in view.

Privatization insulates the enterprise from inefficient political influences because it increases the

transaction costs of government intervention in enterprise decision-making. The critical change springs from the costliness of such intervention: first, in order to attract private capital, privatization requires an institutional framework that protects private property and hence commits the process of government intervention to a mechanism that ensures non-negative expected returns; and second, privatization creates a separation between government regulators and the enterprise, making it relatively more expensive for the government - largely because of the asymmetry of information between the regulators and the regulatees - to alter the activities of the enterprise in its interests.

Political interference and inefficient management are not inevitable, there are some examples of public water utilities working effectively. The problem is that governments find it difficult to commit to good behaviour. The end result is that many countries have found it difficult to reform public utilities, except as part of a move to privatize them, i.e. privatization is increasingly seen as a way not only to increase efficiency but also to lock in the gains.

Changing property rights

Property rights theory suggests that public ownership attenuates property rights, reducing incentives to minimize costs and that privatization will restore them. Under private property, property rights are transferable and sellers of the rights can capture the capitalization of efficiency gains. The ownership of private firms is concentrated among identified individuals, and thus the owners have incentives for continuously seeking improvements in efficiency and controlling management to ensure efficiency in the production of goods and services.

Since under public ownership, public utilities and their managers and employees are not made the claimants of residual (profit) rights, they have little incentives to operate efficiently. Moreover, public ownership is diffused among all members of society, and member do not have the right to sell their shares. There is little economic incentive, therefore, for any owner to promote the adoption of more efficient service provision.

(continued)

The diffuse nature of public property also facilitates the capture of the benefits of public services by small and well organized interest groups such as politicians, bureaucrats and other influential persons with an active role in the management and control of the services. This characteristic of public property gives these groups the capacity, opportunity and a strong incentive to usurp a disproportionate share of the service for themselves at the expense of the population at large.

Regulatory capture

It is very difficult to solve the principal-agent problem that exists between the state as an owner and the managers of the state-owned enterprises without privatization (concentration of ownership). When utilities are in the state sector, they have a comparative advantage in capturing the regulatory framework, i.e. they are able to acquire regulation which benefits them. As a result, their managers face little market competition and lack incentives to operate efficiently.

In addition, in the public sector, the principal has several voices with different objectives (public firms are expected to serve a variety of social and economic goals) that are not always consistent. The mandate of the managers is unclear and responds to multiple, often conflicting, demands. This gives rise to great ambiguity in the contract between the principal and the agents and creates incoherence in managerial decision-making, and also makes evaluation and monitoring of managers difficult. The diffuse nature of public property makes the principal-agent problem more difficult to solve in state-owned enterprises. Private sector managers, in contrast, are better able to pursue efficiency because their objectives are more clearly articulated.

More effective financial management

Private companies have to raise resources in the capital market. This means that they are subject to the discipline imposed by the private capital market and the market for corporate control. Public utilities, in contrast, obtain their financing through the state. Even when they raise funds through the capital market, they have the explicit or implicit guarantee of the state. Thus the discipline imposed by the capital market is lost.

In addition, private sector managers have a direct personal stake in the profitability of their enterprises, something that is lacking in the public sector, where commercial objectives are subordinated to political goals and the threat of bankruptcy is absent. Public sector managers lack financial rewards resulting from increases in portfolio values. Consequently, their planning horizon would be short, i.e. until the next election, and the enterprises they manage would be characterized by a shorter time frame of reference foregoing investments yielding longer-term returns in favour of short-term investments yielding immediate and visible benefits. The short planning horizon also makes them more vulnerable to short-sighted political pressures.

The largely administrative orientation of the public sector, gives little reward for personal initiative and innovation. Rewards are based on longevity of service rather than on performance and contribution to the organization's objectives, compliance with rules is given greater recognition than innovation. There may be specific disincentives for those who try to work hard, try out new ideas, and search for change and dynamism. In short, governments find it difficult to adequately reward success and punish failure.

Source: most data from Bhaskar (1992), Bitran and Sáez (1994), Briscoe (1993), Caves and Christensen (1980), Haile-Mariam and Mengistu (1988), Hemming and Mansoor (1988), Lambert, Dichev and Raffiee (1993), Murray-Rust and Merrey (1994), OECD (1991), World Bank (1992), and Willig (1993).

the public sector is no longer involved in the direct operation of a utility, it does not have the same control over its operations (e.g. level of production, quality, compliance with environmental standards, etc.). It also has no control over the contractor's inability to uphold the terms of the contract, such as unscheduled service interruptions or bankruptcy. If the partnership involves operation of a profitable utility, government may be concerned about the fiscal consequences of private sector participation.

In deciding on a policy of introducing private sector management into the provision of public services such as drinking water supply, hydroelectricity generation or irrigation infrastructure, governments have many options. This paper presents and analyses the variety of forms which are available, and which are being applied in the region, to attract and regulate private participation in water-based services.

INSTITUTIONAL ARRANGEMENTS FOR PRIVATE PARTICIPATION IN THE WATER SECTOR

Most attention in recent discussions on the private sector participation in water resource management has been devoted to the benefits of "formal privatization", i.e. sale or transfer of state owned enterprises to private owners, or to the problems which are likely to emerge as a result of such a sale. However, this emphasis obscures the many other ways in which the private sector can participate in the water sector (see Tables 1 and 2).

A broad range of institutional alternatives exists for private sector participation in the water sector. The options fall along a continuum between the extremes of almost completely public sector responsibility (e.g. management and service contracts) through joint responsibility (e.g. concessions, leases, joint public-private arrangements) to completely private responsibility (divestiture) (see Figure 1). Obviously, these options are different, may overlap or be combined. Three broad models can be distinguished, however, through which the private sector can participate in the water sector: full privatization or divestiture, fixed-term franchises and similar arrangements, and other forms of private sector participation (e.g. specially negotiated contributions and joint public-private arrangements).

Table 1

A comparative framework for evaluating alternative forms of private sector participation in public utilities

	Alternative forms of private sector participation			
	Divestiture	Concessions	Contracting out	Joint private-public arrangements
Capital funding off-budget	Full	Full	None	Part
Management Control	None	None	None	Part
Strategic control	None	None	Full	Full/part
Risk to public sector	None	None/some	None	Part
Need for regulation	Yes	Yes	Direct supervision	None
Efficiency incentives	Yes	Yes	Yes	Some
Improved competition	Limited	Limited	Yes	No

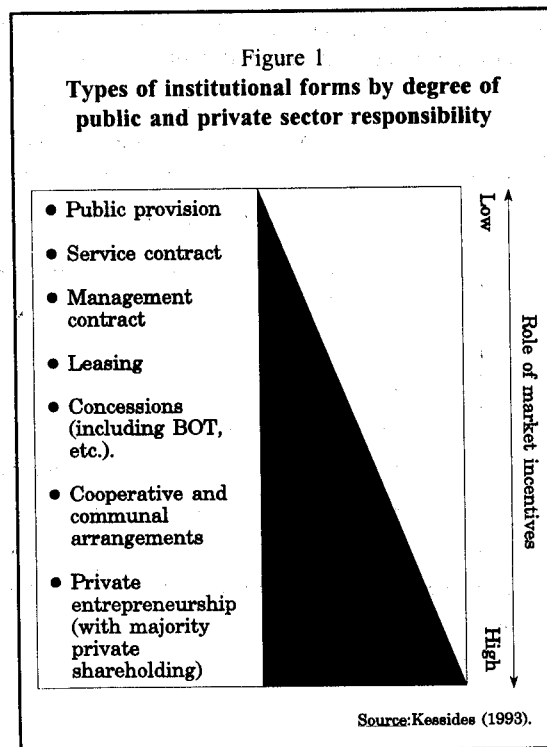
Source: adapted from OECD (1991).

Table 2

Distribution of responsibilities under different forms of private sector participation

Responsibility	Private or cooperative	Concessions (including BOT)	Leasing	Services contracts	Management contracts
Ownership of assets	Private	State or mixed	State or mixed	State or mixed	State or mixed
Investment planning and regulation	None or state agency	State negotiated with contractor	Contractor or separate state agency	Contractor or separate state agency	Contractor or separate state agency
Capital financing	Private	Private	Public	Public	Public
Working capital	Private	Private	Private	Public	Public
Execution of works	Private	Private	Public	Private as specified	Public
Operation and maintenance	Private	Private	Private	Private as specified	Private
Management authority	Private	Private	Private	Public	Private
Commercial risk	Private	Private	Private	Public	Mainly public
Basis of compensation	Privately determined	Based on results	Based on results	Based on services rendered	Based on services and results
Duration	Indefinite	10-30 years	5-10 years	Less than 5 years	About 3-5 years

Source: adapted from Kessides (1993).



I. DIVESTITURE

The direct involvement of the public sector, other than municipalities, in the operation of water-related infrastructure is a relatively recent phenomenon. Until the late 1950's, the power sector in most Latin American and Caribbean countries was privately owned (Santos, 1993); prior to 1950, it was not uncommon to see private provision of drinking water supply and sanitation services (Richard and Triche, 1994); and the private sector has maintained an important role in the development of irrigation in most countries (ECLAC, 1994a).

The most commonly used methods of divestiture are the sale of shares, the sale of physical assets, opening a state-owned company to new private investment, and a management or employee buy-out (see Vuylsteke, 1988). Sale of shares can be public or private. Under a public offering of shares, the state sells all or part of its shareholding in a wholly or partly owned state-owned enterprise to the general public. Under the private sale of shares, a method commonly used for electricity generating plant sales, the state sells to a pre-identified single purchaser or group of purchasers all or part of its shareholding in a state-owned enterprise. A government may sell assets rather than shares, as the Chilean government has been doing with mining concessions held by Corporación Nacional del Cobre (CODELCO). Again, assets may be sold individually or be sold together as a new corporate entity. Opening equity participation in a state-owned enterprise to the private sector, has also been used in a number of Chilean state-owned enterprises. Management/employee buy-out involves the acquisition of a controlling shareholding in a company by a small group of managers and/or by employees.

It is generally accepted, in economic theory, that the transfer of public companies to private ownership can bring substantial improvements in productive efficiency. The findings of empirical research conducted by the World Bank and Boston University in which twelve cases of privatization were comprehensively analyzed (most of the enterprises in the sample were monopolies or oligopolies) in four middle-income and developed countries indicate that privatization can bring substantial gains (Galal and Shirley, 1994). In eleven of twelve cases, the gains were positive and large, amounting to an average 2.5% permanent increase in GDP.

This empirical evidence is supported by several theoretical arguments which suggest that divestiture could be an attractive option for the achievement of greater efficiency (see Box 1). Although none of these arguments unequivocally implies that privatization will significantly increase productive efficiency, some improvement is likely to result. It is useful to distinguish two broad groups of industries: *first*, industries which could - and in many cases, do - operate in competitive product markets free from substantial market failures, and *second*, industries which cannot operate in competitive markets or exhibit substantial market failures (see Box 2).

Box 2

Competitive markets and market failure

It is useful to distinguish two broad groups of industries: industries which could - and in many cases, do - operate in competitive product markets free from substantial market failures and industries which cannot operate in competitive markets or exhibit market failures.

Competitive markets

Overall, evidence suggests that privatization of industries operating in competitive industries free from substantial market failures generally leads to significant efficiency gains and that private ownership is preferable on efficiency grounds. The studies suggest, however, that competition and market structure may be a more important influence than ownership and that the benefits of competition can overcome a tendency toward inefficiency resulting from public ownership. Studies of contracting out of publicly financed services, previously performed by the public sector to the private sector, which implies an immediate increase in competition, reach similar conclusions.

One example is the privatization of CHILGENER, an electricity generating company in Chile. The ownership of CHILGENER was transferred to the private sector in 1987. The company operated with essentially the same generating equipment and under the same regulatory environment both before and after privatization. A recent analysis of the welfare consequences of the privatization concluded that the gains in productivity were large enough to make the divestiture of CHILGENER welfare-improving by an amount equivalent to 21% of the value of the company at the time of privatization.

Non-competitive markets

Privatization of industries which do not operate in competitive markets or have substantial market failures has been limited, and experience with the impacts of recent ownership transfers is very mixed and does not yet permit firm conclusions to be drawn: some studies give the advantage to public ownership, others to private ownership, and yet others fail to find any significant difference between the two.

Empirical studies of the relative performance of public and private enterprises have been undertaken in the United States, where the two types of ownership coexist in similar market conditions. These studies provide conflicting results concerning whether water utility efficiencies vary systematically with type of ownership (see Byrnes, Grosskopf and Hayes (1986), Feigenbaum and Teeple (1983), and Lambert, Dichev and Raffiee (1993)). It should be mentioned, however, that these utilities operate under a strict regulatory regime.

The general conclusions that can be drawn from these studies are: (i) that under certain circumstances privatization can bring substantial efficiency gains even in the industries with natural monopoly characteristics, but a careful case-by-case evaluation of the various trade-offs is in order; and (ii) that where utilities face little competition and are extensively regulated, there is no generally decisive evidence in favour of one or other form of ownership - both have similar performance and face similar problems, i.e. the ownership question does not seem to be critical under relatively strict regulation regimes.

Source: most data from Stevens and Michalski (1993), Vickers and Yarrow (1991), Caves and Christensen (1980), Galal (1992), Kay (1993), and Vickers and Yarrow (1988).

The theoretical arguments and the practical benefits of divestiture are strongest in the tradeable goods industries operating in competitive markets free from substantial market failures, where market liberalization, restructuring and reduced transportation costs can be counted on to supply the beneficial pressures of direct product market competition and of contestability which will autonomously perform a major part of the regulatory function and reduce the need for the more detailed and intrusive forms of regulation and the potential of associated government failure.

In the water sector, this would include activities which either already operate in competitive markets (e.g. many irrigation projects) or can be restructured prior to the transfer to ensure effective and undistorted competition (e.g. electric power generation). Many of these industries produce tradable outputs for which there is a wide range of substitutes. The divestiture of industries with these characteristics will generally have a positive impact on economic efficiency, and may be welfare improving, because it enables benefits to be realized of the strengthening of private rationality under competitive pressure from the product market and from the capital market. Many formerly publically-owned hydroelectric generating plants have been sold to private investors in recent years. Irrigation management transfer is also underway in many countries.

The benefits of divestiture are more questionable in the industries which do not operate in competitive markets or have substantial market failures. In the cases where the divestiture process does not change the imperfectly competitive market structures that prevailed prior to the transfer process, the problem arises of the conflict between the application of private rationality and the non-competitive situation, which will reduce the gains in efficiency drawn from the operation (Bouin and Michalet, 1991). Transfers of natural monopolies to the private sector, insofar as the transfer process will not result in effective and undistorted competition, call for permanent and detailed public regulation.

Studies of industries with natural monopoly elements and other market failures provide some indication that the regulation of private firms is, in itself, imperfect and can distort incentives causing their performance to fall short of that of corresponding public enterprises. Regulation is intrinsically imperfect largely because of the basic informational asymmetry between the regulator and the firm.

At the current stage of technology, the supply of drinking water and the provision of associated wastewater services to a given area constitute a local natural monopoly within the geographical boundaries of each company. The scope for direct product market competition is, therefore, limited. Because of the lack of competition, detailed and intrusive government regulation is indispensable to prevent the natural monopoly from exercising its monopoly power; and unless this detailed and intrusive regulation is carefully exercised, it may cause the performance of the private firms to fall short of that of corresponding public utilities. Empirical studies demonstrate this tendency (see Box 2).

These considerations help explain, at least in part, why in spite of the fact that divestiture of public enterprises has become an increasing practice in many Latin American and Caribbean countries, complete private ownership of drinking water supply and sewerage

systems is still mainly limited to small enclave systems serving high-income residential, tourist or industrial complexes.

In England and Wales, however, in 1989 drinking water supply and sanitation services were entirely privatized (see Box 3). Unfortunately, there is little systematic evidence on the relative performance of the previously public and now private firms in England and Wales. Many authors consider the experience notable in terms of the levels of investment that have been achieved (Haarmeyer, 1994), as well as in other aspects.

The British government decided on divestiture rather than some form of concession or franchising as the best means of transferring responsibility for drinking water supply and sewerage to the private sector. The option to use franchising or concessions was rejected: (i) because since long franchises may be required to provide incentives to undertake large investment programmes efficiently, competition between water companies might have been very infrequent and limited (Armstrong, Cowan and Vickers, 1994; Bishop, Kay and Mayer, 1995); (ii) because of the recognized problem of underinvestment by the franchisee (Armstrong, Cowan and Vickers, 1994); and (iii) because of the government's anxiety that under a franchise system it might still have de facto some residual liability to finance parts of the huge capital investment programme foreseen as necessary (Kinnersley, 1990). Franchising, however, has been suggested in Scotland (Bishop, Kay and Mayer, 1995).

Nevertheless, the form of divestiture chosen for the water industry in England and Wales has some features of franchising because each of the companies holds an "appointment" for its area of responsibility. Each appointment runs for a minimum period of 25 years and may be terminated by the government at any time on or after the expiry of that period, provided at least ten years' prior notice has been given. On this view, the force of the regulatory work in the industry may depend in practice on how realistic any risk of appointment revocation appears to operating companies (Kinnersley, 1990). Another function of the appointment is to specify the obligations imposed on companies and to bind them to comply with them (as a sort of compulsory contract).

Whether or not Latin American and Caribbean countries can successfully follow the example set by the divestiture of the water industry in England and Wales will depend both on their ability to create an appropriate institutional and regulatory environment, and to ensure its continuity and credibility which are essential to attract private capital. The sunk nature of water and sewerage investments and the higher cost of capital (e.g. because of political or regulatory risk associated with the lack of regulatory experience in most Latin American and Caribbean countries and a high degree of uncertainty regarding sector institutional arrangements) could make private ownership of drinking water supply and sewerage utilities unattractive in many Latin American and Caribbean countries, at least in the near future.

Box 3

Privatization of drinking water supply and sewerage in England and Wales

Prior to the recent divestiture process, the drinking water supply and sanitation sector in England and Wales consisted of 10 public sector regional water authorities and 29 statutory (privately owned) water companies.

The regional water authorities were responsible for drinking water supply and wastewater treatment and disposal, environmental regulation, land and highway drainage, flood control, wildlife conservation, and amenity, and recreational use of water. The statutory water companies, serving 25% of the population, were not involved in sewerage and were subject to strict regulatory controls.

Under the Water Act of 1989, the regional water authorities were converted into ten water service companies responsible for both drinking water supply and sewerage services in their appointed areas and their shares were sold in a public floatation. The companies are free both to borrow on the private capital market and to raise fresh equity, although they have not done so on any scale. The 1989 legislation also lifted dividend control from the former statutory water companies - they were brought under the same regulatory framework as the rest of the industry - and allowed them to become conventional public-liability companies.

In its White Paper on the privatization of the water industry in England and Wales, the British Government set out a number of arguments to justify the transfer, including: freeing the companies from government intervention in day-to-day management and from political pressures; releasing the companies from the constraints on financing that public ownership imposes; providing access to private capital markets will encourage the pursuit of effective investment strategies; the ability of the financial markets to compare the performances of individual companies with other companies will provide the financial spur to improved performance; the design of a system of economic regulation will ensure that the benefits of greater efficiency are passed on to customers; the privatization will provide a clearer strategic framework for the protection of the environment; private companies will have greater incentive to ascertain the needs and preferences of customers, and to tailor their services and tariffs accordingly; private companies will be better able to compete in the provision of various commercial services; private companies will be better able to attract high-quality managers; an opportunity will be provided for wide ownership of shares; and most employees will be more closely involved with their business and more motivated to ensure its success.

The reasons for privatization were partly political and partly financial, particularly huge investment requirements and the need to reduce the financial contribution of the water industry to the public sector borrowing requirement. Before privatization, many drinking water supply systems and more than one fifth of wastewater treatment plants did not meet compliance standards. Capital spending programmes totalling some US\$ 40 billion between 1989 and 1999 or double the expenditure in real terms of the preceding decade, were estimated to be required to meet European Community water quality standards. Almost as important a reason for privatization was the recognition of the stresses created by the principal-agent problem that resulted from combining regulation and operation in a single body with limited financial resources.

Each of the companies has been granted a license - appointment - for its area of responsibility. Appointments run for a minimum period of 25 years and may be terminated by the government at any time on or after the expiry of that period, provided at least ten years' prior notice has been given. Companies are required to cover all costs through user charges.

At privatization, regulation was separated from the operation of drinking water supply and sewerage services. The principal agencies involved in the regulation are: the Drinking Water Inspectorate, responsible for drinking water quality control; the National Rivers Authority (NRA), responsible for water quantity, pollution control, flood defence, etc.; and the Office of Water Services (OFWAT), responsible for economic regulation.

The primary duty of OFWAT is to secure that the functions of water and sewerage companies are properly carried out and to ensure that the companies are able, in particular, by securing reasonable returns on their capital, to finance the proper carrying out of their functions. Other responsibilities include: (i) to ensure that the interests of all actual and potential customers are protected in respect of water charges and, in particular that the interests of rural customers are protected and that there is no undue preference or discrimination in the fixing of prices; (ii) to ensure that the interests of consumers are protected in respect of other terms on which services are provided and in respect of service quality; (iii) to promote economy and efficiency on the part of companies in the carrying out of their functions; and (iv) to facilitate effective competition. OFWAT has a staff of about 130 and the cost of operation was about US\$ 11.6 million in 1992.

(continued)

The water companies have their prices controlled through "price cap" regulation. They must restrict the rate of growth of the price of a basket of their services by the Retail Prices Index (RPI) plus a factor, known as K. The K factors may be positive or negative. They vary across companies and across time, and are designed to allow companies to finance their investment programmes, while encouraging them to be efficient. The length of the

review period is 10 years, although either OFWAT or the company can apply for a review after 5 years. To cover the industry against unforeseen changes, reasonable extra costs can be passed through to consumers via a change in the K factor outside a formal periodic review. OFWAT can use the same procedure to reduce K factors under some circumstances.

Source: most data from Armstrong, Cowan and Vickers (1994), Booker (1994), Cowan (1993), Haarmeyer (1994), Jeffery (1994), Kay (1993), Myers (1995), and Ramanadham (1989).

II. FRANCHISING AND RELATED ARRANGEMENTS

A franchise agreement is an agreement in which a public entity awards, usually, through a competitive qualification process, a fixed-term monopoly right to provide a service within a geographical area to a private firm. There may also be nonexclusive, competitive franchises.

Franchising attempts to harness market forces and to increase efficiency through an auction of the right to operate a natural monopoly (a franchise or concession). The main advantage of franchising is that it may reduce the need for the more intrusive forms of regulation and yet ensure that a natural monopoly does not charge a monopoly price. Governments can implement franchising through leasing, concessions and other institutional arrangements for private sector participation.

A. Franchise bidding for natural monopolies in the water sector

1. *The basic arguments*

Franchising can introduce the characteristics and mechanisms of free markets that are associated with efficiency even in natural monopoly situations where direct competition is not possible. In a natural monopoly situation, only one firm will produce the good (*ex post*), even though many firms are capable of producing it (*ex ante*). In order to exploit this competition among the firms that could produce in the industry, the regulator announces that it will accept bids from all qualified parties and the winner will become the monopolistic supplier of the good. Where many parties facing the same technology and production costs enter non-collusive bids for the right to be the monopolist - obtaining a monopoly is itself a competitive activity (Posner, 1975) - the competition for the market among the *ex ante* producers will hold in check the potential monopoly power of the *ex post* supplier through the competitively determined terms of the franchise contract (service level, quality, and price charged). This competition will increase efficiency and bid down price of the product to the point where it does not reflect the monopoly power of the eventual holder of the franchise.

Franchising can also be justified on the grounds that with franchising and related contractual forms it is possible to isolate those areas within a public utility where market failures are significant and contract them while privatizing others. It can also be defended under the theory of contestable markets.

Firstly, market failures are not pervasive in water services, but rather are associated with some, very specific, elements of market structure. This means that by isolating the activities with natural monopolies characteristics, their damaging consequences can be quarantined and competition can be introduced in the market segments where it is

possible and desirable. This objective is achieved by detaching, by means of restructuring (functional separation) or franchise arrangements, the potentially competitive activities from those which are natural monopolies and opening them to various forms of competitive provision.

In Latin American and Caribbean countries, water utilities have been usually heavily vertically integrated to a degree that they include all operational and support functions, including those which do not exhibit natural monopoly characteristics. Many utilities could realize substantial cost savings and enhance efficiency through vertical separation by means of franchise arrangements with private firms.

Secondly, the theory on "contestable markets" (see Baumol, Panzar and Willig, 1982) holds that in a perfectly contestable market, i.e. where entry and exit are costless, competitive pressures supplied by the mere (perpetual) threat of entry can enforce good conduct by incumbents, precluding excessive profits and prices as well as waste and inefficiency (Baumol and Lee, 1991). According to Baumol and Lee (1991), a market can remain highly contestable if an entrant can achieve contractual relations with prospective customers, which render it immune from incumbent's retaliation. Where this is true, the incumbent can foreclose entry opportunities and protect its market share only by behaving well all along, i.e. providing customers with all the benefits that an entrant could be expected to bring.

In the water sector, public authorities can use franchising and other contractual arrangements to create an environment of contestability. They can facilitate contestability by encouraging new private operators to be formed or to enter the market and ensuring that they can compete on fair terms with incumbents. Other measures include the promotion of leasing and the development of a domestic market for reselling capital equipment. Although there may remain some barriers to entry and competition imposed by protectionist policies, lack of adequate regulation (e.g. regarding access on a fair basis to network facilities) or other factors (e.g. access of potential entrants to capital markets and to foreign exchange), these barriers may be addressed separately as long as an activity is contestable in principle (Kessides, 1993).

2. Advantages of franchising

Fixed-term franchises offer important advantages over divestiture. Firstly, it can provide a means to institute regulation gradually, a factor particularly important in countries with little experience in formal regulation. Franchising allows incremental private sector participation. One advantage of this incremental approach is that private sector forces can be introduced without having to set up a completely new regulatory framework, while the uncertainty about the future regulatory framework and other risks can be addressed through a series of long-term contracts between the government and the contracting companies (Liétard and Santos, 1994). Franchising reduces opportunities for regulatory capture and lessens the scope for political interference in the management of water sector utilities, as in most cases there would be no need for ad hoc government intervention (Guasch and Spiller, 1994). Regulatory interference would occur only as issues that are not covered in the contract arise.

Franchising, also, reduces the need for the most intrusive forms of regulation. In comparison with divestiture under which it is necessary to subject the private service providers to highly centralized regulation, franchising can offer scope for regulation to be both more localised and less complex, basically because the degree of private ownership is less complete, and the possibilities for loss of the franchise are greater than for loss of ownership (Kinnersley, 1990). In addition, competition between informed potential franchisees may reduce the problem of asymmetrical information at the moment of granting a franchise.

It is important to note, however, that franchising does not eliminate the need for regulation completely. The franchise mechanisms has important limitations. Unfortunately, many water resource management activities are particularly prone to such difficulties. As a result, franchising usually entails an important degree of continuing regulation for all but the simplest products and services (Kay, 1993). It should be seen not as an alternative to regulation but as a means of harnessing some of the information and incentive advantages of competition.

It is possible to conceive of franchising as an interim arrangement in the transition to longer-term or permanent and more comprehensive forms of private sector participation. During the term of the franchise contract, the franchisee has an opportunity to assess the firm's viability and make an offer based on its knowledge of the firm's financial situation and potential (Bouin and Michalet, 1991). This is a very important consideration given that in most Latin American and Caribbean countries there is a general lack of knowledge about the conditions of the existing asset base and of patterns of consumption. The downside is that the incumbent will have a considerable advantage over other potential bidders and also over the regulatory agency, particularly if it does not divulge all the available economic and financial information about the company.

Lack of knowledge about the conditions of the existing asset base is an important impediment to greater private sector participation in the water sector, because without a detailed knowledge of the existing asset base, private firms cannot be expected to make a rational decision on whether to participate or not, and cannot conduct meaningful negotiations or formulate a credible financial and technical offer if they decide to participate. In Mérida, Venezuela, for example, there is a lack of detailed knowledge of the distribution system because the technicians of the National Institute for Sanitation Works (Instituto Nacional de Obras Sanitarias - INOS), a nation-wide autonomous agency which had been responsible for drinking water supply and sanitation until a few years ago, did not register changes made in the original design (Grigg, 1993). The privatization of drinking water supply and sewerage services in Buenos Aires, Argentina, Mexico City, Mexico and the attempted privatization in Caracas, Venezuela (see Box 4) faced similar problems.

Where outright divestiture is not possible for political or other reasons, franchising allows the reaping of most of the benefits commonly associated with private property and of avoiding the problems posed by divestiture procedures, because it provides a means to transfer many of the prerogatives, e.g. the right to use facilities, and responsibilities, e.g. for

Box 4

The Caracas contract

For many years the administration of the drinking water supply and sewerage services in Caracas had been the responsibility of the National Institute for Sanitation Works (INOS). INOS was one of the largest bureaucracies in Venezuela and its uncontrolled growth led to one of the largest deficits in the government's budget.

INOS concentrated on the construction of large infrastructure and neglected rehabilitation, management, and operation of systems and customer service. As complaints multiplied, the water infrastructure aged and deteriorated without proper operation and maintenance, and lack of planning was increasingly evident, crisis management became to occupy most of INOS's management efforts. The catalogue of deficiencies was extensive. In Caracas an estimated 30% of all connections were not registered in the commercial system. Extensive areas of the city suffer from intermittent services, while the production capacity of the water treatment plants has been reduced by about one-third due to lack of adequate maintenance. For years, water tariffs remained very low, and charges were collected for only a fraction of the water used. In 1988, INOS only collected a quarter of its bills. From 1982 to 1991, water tariffs declined in real terms from US\$ 0.58 to US\$ 0.04 per cubic metre, which represented only a fraction of operating costs.

In 1990, in response to this situation, the government of Venezuela embarked on a complete restructuring of the water sector. One of the objectives of the reorganization was to encourage private sector involvement. It was envisaged that private companies would be able to administer water supply and sewerage systems, as well as to lease them or to operate them under a franchise.

In 1991, the government announced its intention to grant a 25-year concession to a private operator for water and sewerage services in Caracas. Under the terms of the concession, the private operator would have been responsible for operation and maintenance as well as for the investments necessary to achieve specified service quality and coverage targets. The operators would have been subject to the regulatory authority of an association

of the affected municipalities in the Caracas metropolitan area.

The arrangement chosen for private sector participation, the preparation process, the quality of existing operational and commercial information, the bidding process, and several other features of the privatization programme were similar to those of Buenos Aires. A number of large foreign private water companies showed interest in the Caracas concession and five international consortia prequalified. When the deadline passed in August, 1992, none submitted, however, a responsive bid. Several features of the Caracas situation seem to have contributed to this outcome:

First, the proposal to set up a regulatory agency composed of municipal representatives did not give sufficient confidence to bidders. The Caracas municipalities did not reach any agreement on the arrangement and their relations were fraught with tension. High-level political support for the reform capable of overcoming this problem was lacking.

Second, the poor quality of existing operational information and insufficient knowledge about the actual condition of the asset base made it impossible for firms to decide whether to bid or not, as well as to formulate a credible proposal if they do bid. The government did not avail itself of external assistance, nor did it attempt to upgrade information on the Caracas system.

Third, tariffs were extremely low. Although the proposed plan called for a gradual increase in tariffs this did not reflect the investment schedule, and would have left contractors financially exposed. The higher overall level of risk of Venezuela and the fact that all exchange rate risks would have been assumed by the operator were additional disadvantages.

Fourth, some contract terms also seemed to undermine the effort. Specifically, the investment programme was not specified, final disposal of sewage was not included in the proposed concession, and the possibility of negotiations following the award of the contract was strictly excluded.

Source: most data from Richard and Triche (1994), Triche, Mejia and Idelovitch (1993), and Grigg (1993).

investment, operation and maintenance, to private operators without transferring ownership itself.

Management and service contracts are particularly attractive as interim stages towards the development of more comprehensive forms of private sector participation through leasing, concessions and, eventually, full privatization. In addition, franchising, particularly BOT (build, operate and transfer) and other similar schemes, permit the public sector to make good use of the advantages the private sector is considered to have in the identification of investment opportunities.

Franchising is very flexible and can be adapted to virtually any situation. Franchises can range from contracts which are fairly limited in scope and cover a specific activity (e.g. data processing or equipment maintenance) to comprehensive contracts which transfer responsibility for operation, maintenance and even for major investments to the private sector.

Depending on the nature of the arrangement, franchising may be able to capitalize on a number of private sector advantages: (i) if the private sector provides financing (e.g. concessions), the pressure on government budgets can be reduced and economically necessary but politically dispensable water-related infrastructure expenditure can be protected from general budgetary pressures; (ii) if the private sector participates in the operation and management of a utility (e.g. service and management contracts and leases), efficiency savings can be realized and scarce public sector managerial capacity freed for areas of the public sector which are not appropriate for privatization; (iii) if the private sector participates in construction activities (e.g. BOT contracts), the procurement and construction methods it typically employs can provide significant cost savings and often have a shorter implementation time; and (iv) finally, due to specialized expertise and entrepreneurship talent, the private sector can provide higher quality services than would be otherwise available to the public sector.

3. Factors to be taken into account

Experience shows that the success of franchising depends on many factors, including, inter alia, the nature of the services to be awarded under a franchise agreement; the conditions of the franchise-awarding process that must seek to promote competition but also recognize the capabilities and limitations of the private sector and the peculiarities of the goods and services to be provided under an agreement; contract formulation; subsequent monitoring and regulation of service provision; financial arrangements, particularly regarding compensation; ability to establish a close working relationship and detailed information exchange with private contractors.

(a) When is franchising appropriate?

The nature of the services to be awarded under a franchise agreement is the single most important condition on which the success of franchising depends.

Contractual relationships are known to be more effective when dealing with observable and verifiable outcomes (Holtram and Kay, 1994). Franchising is more appropriate for well-defined technical or infrastructure products and services where there is little technological and market uncertainty and whose performance specifications and procedures to monitor their provision can be adequately described in a contract in terms of measurable service outputs. The contract should be simple and complete, i.e. specify pricing structures, services quality levels, etc. for every contingency. Complex or incomplete contracts increase the need for contract monitoring, enforcement, and renegotiation, i.e. regulation. The attractiveness of franchising increases where the activity in question is sufficiently similar to an existing private sector operation, where there are many potential competitors with the requisite skills, and where sunk costs are low (Kay, 1993).

Franchising is much more difficult to implement in industries where there is significant technological or market uncertainty in relation to the product and where sunk costs are high. Franchising also tends to be less efficient where contracts must be formulated in terms of service inputs, because this impedes assessment of service quality and increases the costs of monitoring. This would make franchising less appropriate for social services or for ensuring responsiveness to consumers (OECD, 1987).

Since some forms of franchising are more appropriate for less capital-intensive activities, the realization of its full potential may require functional separation of the activities that have different capital intensities such as between the provision of network infrastructure and the supply of services over the network (Armstrong, Cowan and Vickers, 1994). Franchising may work better where a natural monopoly can be horizontally separated because where several firms operate under similar conditions and the same regulatory framework, the regulator has at its disposal multiple sources of information, and this makes it possible to implement a more efficient regulatory framework based on benchmark or yardstick competition.

No one contractual arrangement is clearly superior or is right in all circumstances. Each has its own advantages and disadvantages which depend on the incentives imbedded in the contract design that make them suitable to particular circumstances. The actual choice of the most appropriate institutional arrangement will depend on three factors: *effectiveness*, which depends on the comparative advantages and disadvantages of individual institutional arrangements vis-à-vis each other and on the strength of the managerial and technological skills supporting the particular arrangement; *availability*, because the most effective institutional arrangement may not be available; and *acceptability*, which depends on a number of factors, including government policy towards private sector participation, the nature of the enterprise, its importance, responsibilities and political visibility, identity of prospective private sector purchasers or investors, etc. (Hegstad and Newport, 1987).

One reason why a government might find divestiture a more attractive option than franchising could be its anxiety that under franchise contracts it might still have de facto some residual liability to fund parts of any foreseen capital expenditure (Kinnersley, 1990). However, given the strategic importance which governments may attribute to some aspects of water-related infrastructure, it seems in practice inconceivable that private owner would

be allowed to default (Kay, 1993). For example, it is difficult to imagine that ownership of a large city's drinking water supply and sewerage facilities could be allowed to default and pass into the hands of a receiver or liquidator. On this view, since competition is essentially about fearing loss of market share and monopoly about being free of such fear, divestiture may fail to realize its expected benefits if it gives both government and operators a lasting sense of security (Kinnersley, 1990).

(b) Awarding franchises

Public authorities can achieve greater efficiency gains from franchise arrangements through competitive bidding. Competitive bidding helps ensure that contracts are granted to the lowest cost and most efficient providers and guarantees satisfactory behaviour on the part of the winner. There should be a clear and formal separation between the public provider and bidders. Evaluation of submitted tenders and award of contracts need to be fair and based on uniform, transparent and competitive procedures. Control of collusion is obviously of paramount importance.

Awarding a franchise to the highest bidder merely transfers the benefits of any monopoly power the successful bidder may enjoy to the government, but will not protect consumers from the costs of its exploitation (Kay, 1993). In order to maximize productive and allocative efficiency, franchises should be awarded to the bidder who proposes to charge the lowest prices or to offer the best services. The state by means of contract specification ensures that the firm maximizes allocative efficiency whereas the firm devotes itself to maximizing its profits which should result in cost minimization behaviour.

Since bidders know far more about industry conditions, particularly conditions of technology and demand, than the regulator, it is generally neither feasible nor advisable to specify technological solutions in the contract. Bidding and negotiations should focus more on the cost and quality of service to the customer and less on the details of the technology involved or a break-down of construction and operation costs. The contract design itself should provide the incentives for firms to seek out and use the least-cost methods and the most appropriate technological solutions.

In many recent contracts, the so-called "double envelope" method has been used. At prequalification, bidders are required to demonstrate that they meet the qualification requirements relating to technical experience and financial capacity. For the technical phase, service quality and coverage targets are established and bidders are invited to present technical solutions to meet the target goals. This can be useful, for example, to eliminate those bidders who propose risky or untried technological solutions. For the financial phase, the contenders are asked to submit the lowest price bid. Such an approach has been used in all public works contracts in Chile.

Prior to bidding, it is advisable for the public authorities to devote considerable attention: to establishing the actual condition of the facilities and to ensuring that the information, even if merely fragmentary, is accessible to all potential bidders; to detailing feasibility studies to demonstrate financial viability over the life of the proposed project to

potential bidders (in this respect it is important to remember that ultimately only the certainty of a sustainable adequate earnings stream determines project viability and attractiveness from the point of view of private investors); to analyzing the possibility of restructuring the proposed project to promote competition so as to facilitate regulation and monitoring and to make it more attractive to potential investors; to developing the detailed specifications of the tender documents to ensure that bids are comparable; and to designing the contract to ensure that it serves the public interest.

In general, contracts should contain comprehensive specifications, including clear, well-defined goals, standards, service standards, and dates for goals to be reached. If these parameters are not clearly specified in the contract, firms cannot make a rational decision on whether to bid, and can provide neither a credible technical nor financial offer if they do bid (Richard and Triche, 1994). The standards and goals should be set in light of the tariff situation, the amount and nature of investments that can realistically be expected as well as reflect the condition of the existing asset base.

Direct negotiation may be appropriate for some contractual arrangements, i.e. management contracts, where non-price considerations, such as technical know-how and experience may override cost considerations (Triche, 1990). The costs of competitive bidding significantly exceed those of negotiating a contract directly making it less appropriate for smaller projects. Discretionary procedures carry, however, the danger of a lack of transparency (Vuylsteke, 1988).

(c) Ensuring competition in the tendering process

To achieve greater efficiency gains from franchising, it is essential to create effective competition in the tendering process to ensure that the most efficient firm wins the auction, to reduce the rent obtained by that firm, as well as to weed out inefficient operators and to curb the potential for corruption. There should also be effective competition on each occasion when the contract comes up for renewal. This is difficult to achieve: since rivals realize that the incumbent has a much better information about the actual value of the franchise than they do, they would be reluctant to outbid the incumbent.

One method used to increase competition and to make contractors more accountable for the cost and quality of the service is to subdivide larger projects. On the other hand, given the high fixed costs associated with bidding, establishing a contract, and carrying out service provision (e.g. the costs of uprooting and transferring personnel), a contract may be too small to attract private providers (Richard and Triche, 1994). Consolidation may be required if small projects are to reach international markets (Sedelnik, 1994).

In some areas and for some services the number of potential service providers may be insufficient for competition. For this and other reasons, such as the likelihood of service disruption, it may be desirable to compare private bids against those of the public sector (alternatively, government may take steps to foster the development of competitors). With this in view some countries retain a capacity to compete with the private contractors, or to

provide a residual means of performing essential functions should the contractor fail (Kessides, 1993a).

(d) The main limitations of franchising

Despite its many attractive features, franchising arrangements do have limitations.* Water resource management activities in which government control problems are greatest can be especially prone to such difficulties. Most of the problems discussed below are important potential constraints, but many can be resolved or, at least, mitigated through well-specified contract design.

The danger that bidding for the franchise may fail to be competitive. Bidding for a franchise might fail to be competitive. For example, the provision of most water-related services requires specialized expertise, so there may be very few competitors due to scarcity of requisite skills. There is always a danger of collusion between bidders, especially if they are few in number and in countries which do not have a history of competitive markets. Franchise bidding assumes non-cooperative behaviour between firms as an auction is aimed at extracting a maximum surplus from firms. A natural reaction is to protect against this through collusion (Laffont, 1994). An additional limitation is the fact that an incumbent franchisee might enjoy such strategic advantages that would deter challengers. These advantages could arise from the experience gained from operation of the franchise or asymmetries of information on costs and demand conditions in relation to potential others.

Problems associated with the observability and transferability of investment (asset handover) may distort incentives to invest and the nature of competition for the franchise. The valuation of physical assets is more difficult in the water sector than in other sectors. Water sector assets usually have a longer productive life and a higher component of sunk costs than most other industrial assets, and their valuation is complicated. Due to the extreme length of productive life and the unobservable nature of investments, it can be difficult to estimate the exact life and cost of the pipe and other assets of the water service to give them an appropriate financial value. This may distort competition between the incumbent and rivals. Although attempts have been made to solve this problem by finding different ways to compensate the outgoing franchisee for sunk investments, the valuation of these investments can create monitoring problems, allows room for discretion and distorts incentives to invest (Bitran and Sáez, 1994). There is also the problem of not fully transferable investments such as investments in human capital. In addition, the expense of bargaining or arbitration regarding the appropriate valuation can be considerable.

Given the difficulties of asset handover, some authors suggest that the institutional arrangements which leave the responsibility for major investments in the hands of the public sector (e.g. leases) may have advantages over those that transfer this responsibility to the private sector. Such an arrangement can generate even more problems in practice. For example, retaining responsibility for investment in the public sector, allows market forces

* This discussion draws on Kay (1993), Vickers and Yarrow (1988 and 1991), and Williamson (1976).

to act only to a limited extent, and the separation of investment from operation and maintenance decisions can lead to undesirable losses of coordination and distort incentives to invest. It also leaves open the question of how the franchiser determines the level of facilities to be provided. In addition, this approach may have little attraction at a time of overstretched public finance and will confront governments with difficult decisions on how to finance service expansion and how to raise the efficiency of investment.

The difficulties of contract specification and administration. If there is technological or market uncertainty in relation to the service in question, then contract specification will be a complex task. Since in the water sector it would be impossible to cater for every eventuality that might occur in the life of even a medium-term contract and to foresee how they will relate to investments or costs, for all but the simplest of services, there will be generally a continuing role for the public sector in contract administration - monitoring, administering and enforcing the contract during its lifetime and bargaining over unspecified contingencies. This also underlines the need to include in franchise contracts clauses allowing both parties to renegotiate terms in the event of significant unexpected changes and the importance to be able to count on a capable and independent judiciary or other mechanism to arbitrate disputes between the government and the utility.

The difficulties of contract specification suggest that short-term contracts may have advantages, because fewer future contingencies then need to be catered for. Longer-term franchise contracts provide, however, opportunity for greater efficiency gains and have other advantages, e.g. longer contracts give contractors more time to recover costs and enable them to increase the scope of services and to offer employment to displaced public workers. A more important problem is that a shorter term contract may reduce incentives for maintenance and deter the incumbent from making investments in sunk assets resulting in underinvestment.

The organization of frequent auctions involves major costs and all the problems occur more often. In addition, if the term of franchise contracts is too short, the water sector will frequently be in a state of turmoil. Short-term contracts also reduce procedural pressure on the contractor's behaviour, thus increasing the risk of mediocre performance (Bouin and Michalet, 1991).

Agreements on how to resolve conflicts during renegotiation should be established. Given the inability to contractually cover all contingencies and the fact that franchise contracts in the water sector often run for a decade or more, clauses allowing the parties to renegotiate in the event of unforeseen circumstances should be built into the contract (Guasch and Spiller, 1994). Common contract clauses simply stating that under certain conditions either party may request a renegotiation of the terms, with no criteria given as to what events can trigger a renegotiation or how the new terms should be set are potentially damaging and may foster rent-seeking behaviour. This underlines the need to incorporate in the contract incentives to dissuade frivolous, rent-seeking renegotiation attempts.

One of the obstacles to a wide adoption of contracting arrangements is lack of experience in development of contract conditions and of data and guidelines upon which contract specifications should be based. In order to overcome this difficulty, in several countries, governments provide their dependencies with advice about different contractual arrangements, such as a list of standard specifications which should be built into contracts.

Another important barrier to private sector participation arises from the difficulty of establishing a level playing field between public and private companies. The reason for this is that the private contractor's costs are often different from those taken into account for provision by the public sector. Private service providers normally are at a competitive disadvantage with the public sector since they have to recover all their costs as well as pay taxes and make a reasonable profit. Public utilities in contrast often operate at a loss, receive subsidies in the form of grants, concessionary loans, use of public land, staff time and other resources, usually do not pay taxes, and receive abundant assistance in project planning, design, and financial packaging from the external lending institutions (McCullough, 1992). Competition may be infeasible unless public utilities are placed on a non-subsidized, full-cost recovery basis.

Aspects of the broader legal and regulatory environment for public works can also act as significant barriers to franchising. For example, accounting laws and practices, laws governing construction contracts, public works laws and conventions, etc. may be inappropriate for private sector participation and should be carefully reviewed and, if necessary, amended or modified to accommodate and encourage it.

Distortions in the overall incentive environment (tax regime, import restrictions, labour laws, and banking, foreign exchange and foreign investment restrictions) and excessive regulation and restrictions can also inhibit private sector participation. The cumulative effect of regulation is of profound importance. A single restriction or barrier may not constitute a particularly important impediment, but the cumulative effect of many even indirect barriers can be such as to deter active entry of new entrants (Stewart-Smith, 1995).

B. Characteristics of alternative franchising arrangements

Franchising is widely used in the public services in many countries and is developing rapidly in some Latin American and Caribbean countries. In France, for example, municipalities are responsible for the provision of the drinking water supply and sanitation services which they provide either directly or by delegation - under a wide variety of contractual arrangements - to a private operator (see Box 5).

A key feature giving the franchise system some of its competitive characteristics is that the assets of the sector will always revert to the public sector, and thus options for choosing a different private operator or of direct public sector management will open at intervals (Kinnersley, 1990). There is also competition among the various management options under which the responsibility for service provision can be transferred to the private sector (Haarmeyer, 1994).

Box 5

Private sector participation in the provision of drinking water supply and sewerage in France

The provision of the drinking water supply and sanitation services in France is the responsibility of the municipalities or *Communes* (of which there are about 36 500). The *Code des Communes* stipulates that water distribution and wastewater disposal and treatment are industrial and commercial public services of the *Communes*. The municipalities have a wide degree of flexibility in the selection of contractual arrangements for service provision. They can exercise their monopoly over the provision of drinking water supply and sewerage services either directly ("régie direct") or by delegation (delegated management) under a wide variety of contractual arrangements to a private operator. They may also create joint bodies such as inter-communal associations, urban communities, and districts with neighbouring municipalities, to which they delegate their powers. At present, there are more than 4 600 inter-communal services.

Today, private companies provide drinking water supply services to about 75% of the population and sewerage services to about 40%. These percentages are roughly double what they were 40 years ago. Delegated management does not involve the transfer of assets, these remain the property of the municipality, even when they are financed by the private operator. The most common arrangements are management contracts ("gérance" or "régie intéressé"), leases ("affermage") and concession contracts. The difference between a gérance contract and a régie intéressé contract is that under the former the operator receives a lump sum payment and under the latter the operator also receives payment based on results. These formulae have, however gradually been replaced by leases and concession contracts.

The most widespread is the lease contract, which usually lasts for up to twelve years, in which the operator ("fermier") is responsible for management while the

municipality is responsible for building new structures. In contrast, in a concession contract, usually much longer, the holder is responsible not just for managing the service, but also for financing and building structures. Concessions are more common in drinking water supply and leases in sewerage. For both types of contracts, the government prepares model or typical specifications sheets that provide a framework for drawing up the contracts. The municipalities adapt them to their own characteristics and needs. The legality of the contracts is checked by the government.

The initial contracts for delegated management are generally awarded following a call for tender. Three companies control 70% of the drinking water supply market: the Compagnie Générale des Eaux has 39% of the market, the Lyonnaise des Eaux - 21%, and the Saur of the Bouygues group - 10%. Although there is often fierce competition for the initial right to a franchise, the incumbent franchisee often wins contract renewals and it is very rare for an incumbent franchisee to be displaced. When the contract reaches the expiration date, its extension, with any modifications, is generally renegotiated with the current operator. The contract may be terminated by the municipality, but this is extremely rare. The fact that the municipalities retain the option of taking over the operation creates a margin of competitive pressure.

Tariffs are determined on the basis of a forecast operating statement submitted by the operator in support of the bid. The contracts may include a formula for tariff adjustment on the basis of price indexes for salaries and social charges, energy, chemicals and other items. There are also provisions for periodic reviews and procedures for certain agreed-on costs to be passed on to the municipality.

Source: most data from Chéret (1994), Haarmeyer (1994), Kay (1993), Kessides (1993), Olmedo (1995), and Roth (1987).

1. *Contracting out*

Contracting out (service contracting or subcontracting) is a transfer, by means of a fixed-term contract, of responsibility for specific services or elements of infrastructure operation and maintenance. Service contracts are usually fairly limited in scope and cover specific activities, such as meter reading or equipment maintenance (Triche, 1990).

The contractor is paid for service delivery. Compensation may be on a cost-plus, fixed-fee, lump-sum, or unit costs basis, on a time basis or percentage or proportional to some physical parameter. The fees are usually not directly linked to operational efficiency or cost control.

The public utility retains overall responsibility for the system, except for the specific services contracted out, and it finances working capital and fixed assets. The utility bears the full commercial risk for service provision. Control is exercised through setting performance indicators, detailed performance specifications and procedures for monitoring quality, evaluating bidders, supervising contractors, applying contract sanctions, paying an agreed fee for the services, etc.

Service contracts are usually for short periods, normally less than five years, but can be much shorter. Contracts can be renewable. Duration is particularly important for services which require substantial initial investment, for example, where specialized equipment must be bought. In such cases, the contract must allow for capitalization and for the depreciation of capital expenditures. This argument may not apply for well-developed markets in which substantial competition and private sector participation already exists or where large markets exist for the leasing and resale of capital equipment, and should be carefully weighted against monopoly potential if contracts are for a long time period.

The potential benefits of service contracts include cost savings and efficiency improvement, better access to technology, equipment and expertise whose acquisition cannot be justified due to insufficient levels of use, the possibility of adapting operation and maintenance systems to varying demands, etc. Service contracts are particularly appropriate for occasional demands, such as studies, engineering designs, construction, or when in-house demand is too small for efficient scales of production (World Bank, 1995).

Many activities can be contracted out, as the proposals for Asunción illustrate (see Table 3). It is very common for auxiliary activities (cleaning, food catering, security, vehicle leasing, etc.), administrative, commercial, training, technical assistance and standard professional services (auditing, accounting, procurement, legal matters, payroll, data processing, such as preparation of optimization models for reservoir operation, recruitment, etc.) and for managing non-core assets and activities. Contracting out of non-core activities allows the company management to concentrate its efforts and resources on core issues of business and to let secondary concerns be taken care of by specialized companies (Nellis and Roger, 1994).

Table 3

**Activities proposed for private sector contracts in
the Asunción Sewerage Project, Paraguay**

Area	Activity	Contract
Technical	Operation	Operation and maintenance of systems
	Expansion	Elaboration of projects Execution of works Project management
Administrative/financial	General services	Cleaning Security Transports Equipment repair Building maintenance
	Human resources	Selection of personnel Evaluation of staff performance
	Financial	Accounts receivable Payment of salary
Commercial	Collection	Meter reading Delivery of bills Data processing
	Cadastre	Updating and maintenance
	Others	Connections Meter replacement

Source: World Bank (1995).

Note: The activities which have been proposed for private sector operational management contracts in the Asunción Sewerage Project, Paraguay. Private participation would be carried out through two kinds of contracts according to the following criteria: the first, on a unit price basis, for general contracts of services; and the second, on a case-by-case basis, concerning contracts for services for specific purposes.

Most core activities can also be contracted out, such as construction, billing and collecting, meter reading, and operation and maintenance. In *El Salvador*, for example, the privatization of the drinking water supply and sewerage services has begun with contracting the operation of metering services to a cooperative set up by former employees of the National Water Works and Sewerage Administration (WR, 1995a).

Contracting out can result in considerable savings, for example, in Bogotá, *Colombia*, it costs five times as much for the public agency to read a water meter than it costs when it is contracted out to private meter readers (Briscoe, 1993).

Contracting is standard everywhere for the design and construction of major capital works given the obvious benefits of specialized engineering knowledge and construction skills. Contracting out of maintenance has also long been an established practice. In some cases, practically all of the core functions of public agencies can be contracted out to the private sector leaving the agency with only a basic staff to award and monitor the contracts (Kessides, 1993).

Care needs to be taken in separating core activities, such as water production, treatment and distribution, and wastewater treatment, to ensure effective coordination, controls and supervision. Contracting out of activities which require close coordination and quality control, tends to be more demanding but is also possible and even advisable if adequate monitoring and coordination can be ensured. Services not appropriate for contracting out, in themselves, can often be divided by function to permit their sub-contracting.

In *Chile*, the provision of drinking water supply and sanitation services is through concession. Concessions are granted for an indefinite period of time and are transferable only with the authorization of public authorities (ECLAC, 1994c). However, water companies may contract with third parties for the execution of any of the functions that fall within their concessions (Richard and Triche, 1994; Guasch and Spiller, 1994). The privatization of public companies is under discussion, and the government encourages service contracts to improve service efficiency. In Santiago, the drinking water and sanitation utility, EMOS has contracted out the maintenance of the drinking water supply and sewerage networks and other functions since 1977 (Puratich, 1989). Contracts are usually awarded for one or two years under competitive bidding for meter reading, billing, system maintenance, vehicle leasing, and other activities (Easter and Hearne, 1993). As a result, EMOS has the highest staff productivity among the five Latin American drinking water supply and sewerage companies considered among the best run in the region, even when an imputed labour cost for contracted services is taken into account (see Table 4) (Yepes, 1990). A similar approach has been adopted more recently in Lima, *Peru* (Calderón, 1993) and in São Paulo, *Brazil* (World Bank, 1995).

Table 4

The Metropolitan Sanitary Works Company (EMOS), Santiago, Chile

	EMOS	Region as a whole
Urban water supply (1992)	100 %	80 %
Urban sewerage (1992)	95 %	74 %
Rural water supply (1992)	75 %	53 %
Unaccounted for water (about 1990)	28 %	34 % in the well-run companies and from 40 % to 60 % in other companies.

Source: EMOS (1994), PAHO (1992), and Yepes (1990).

2. Management contracts

Under management contracts, the owner passes management and operational control of an enterprise to an unrelated manager for an agreed period (this discussion draws on Hegstad and Newport, 1987). Unlike service contracts which tend to be fairly limited in scope and cover a specific activity only, management contracts transfer full managerial control, with the freedom to make day-to-day management decisions (Triche, 1990). Management contracts run usually from three to five years, although they can be longer and are often renewable.

Under a management contract, the owner retains full ownership and is responsible for capital expenditures, maintenance, and working capital, while the private firm supplies only management and technical skills. Sometimes, however, the manager may take an equity position.

Examples are afforded by the Mexico City contract in *Mexico* (see Box 6), which has some features of a management contract, and the contract for the management of water supply in *Dominica* (see ECLAC, 1990).

The manager may be an individual or group of individuals with the skills and expertise required for the operation of the enterprise, but usually it is a private company drawn from the same sector. Under a management contract, the private manager may have wide powers over existing personnel, although they commonly remain employees of the original enterprise and subject to public sector pay scales and conditions (Vuylsteke, 1988).

The success of a management contracts is dependent on (Hegstad and Newport, 1987):

- the viability of the project;
- the existence of a supportive external policy environment;

The Mexico City contract

In 1993, the Federal District Water Commission (CADF) awarded 10-year contracts to four private consortia to renovate and improve the drinking water supply and sewerage services in Mexico City. These contracts, among the largest of their kind, are together potentially worth up to US\$ 10 billion. The authorities expect, by this means, to reduce water demand in Mexico City from 35 to 25 m³/sec and to have a balanced budget in approximately eight years.

The Federal District has good coverage of services - approximately 97% of households have drinking water supply and about 95% sewerage. Costs, were out of control however, and an enormous amount of water was wasted mainly as a result of a deficient billing system based on fixed fees, rates which had lagged well behind costs and a leaky and haphazard delivery system, with losses estimated to be between 30 and 50% and contamination of delivered water. Metering was limited and many meters were defective or inoperative, with one-third more than 20 years old. As a result, over half the bills were based on estimates, 15% of customers did not receive a bill at all and 50% of bills issued were not paid. A large number of illegal water connections further compounded the situation.

Very little was known about the asset base, the extent of its disrepair, or the number of connections. Estimates varied on how much it would cost to overhaul the system. According to some estimates, the annual federal subsidy to the Federal District for water and sewerage services was more than US\$ 1 billion a year, equivalent to 0.6% of national gross domestic product or the annual sector investment needed to supply the total population of Mexico with adequate water and sanitation services by the end of this century.

To address these problems, Mexican authorities launched a programme to involve the private sector in distribution and commercial activities. The private sector was expected to bring in the best technical and managerial know-how available, to improve efficiency through increased accountability and better incentives, and to arrange financing on favourable conditions for the ambitious investment programme envisaged. The two main objectives of the effort to introduce private sector participation in Mexico City's drinking water supply and sewerage services were to improve cost recovery and to radically improve the water distribution infrastructure.

The Federal District has been divided into four similar-sized zones and contracts awarded to a separate contractor for each zone, although, in the short-term, the

selection of only one contractor could have produced the lowest cost. The division into separate service zones affords, however, opportunities for the implementation of a more effective regulatory incentive structure - based on comparative yardsticks or benchmarks - than that feasible when there is only one contractor. In addition, having several contractors carrying out essentially the same activities in different service zones makes possible a constant revision of the technology used. Moreover, competition could result in more efficient management and it was believed to be so large that no single company could complete and manage the system quickly and efficiently. Having several contractors reduces the risk of service disruption.

A call to interested private parties to undertake distribution and commercial activities in Mexico City was announced in 1992. Selection of the contractors followed a two-stage process. In the first, contenders were prequalified on the basis of their technical, administrative and financial capacity. In the second, contenders bid on prices for undertaking the tasks planned for the three phases of the contract. Bids were received in 1993 and assessed on the basis of lowest cost. There followed a period of contract documentation in which the chosen consortia and the public authorities worked out detailed task descriptions and agreed on costing. The general contracts give the holders the exclusive right to negotiate specific contracts to conduct the work planned for each of the three phases without re-bidding each time.

Under the present contract, private operators are concerned only with operations and commercial aspects, but not with production. The city retains ownership of the infrastructure and control over the policies, including the implementation of the new billing system. It is a staged contract, so as to allow the private companies to raise the level of information and to gradually assume more responsibility prior to entering into a full incentive contract.

The three phases of the contract are:

- **Phase I** provides for the contractors to conduct a census of who receives and of who pays for water, to update customer registers, to install meters for all customers, to map the distribution system, to identify illegal connections, to measure water losses, to determine the condition of the system, and to identify the repairs required. The information will be used to optimize the capital expenditure programme.

(continued)

- *Phase II* provides for the contractors to develop and implement a billing and collection system that will provide the information necessary to evaluate current and future patterns of water demand. This phase will serve to evaluate the customer reaction to the introduction of metering and more rigorous billing, although the actual water tariff is not expected to go up.
- *Phase III* provides for the contractors to assume full responsibility for distribution and commercial activities, including collection of water bills, maintenance and rehabilitation of the water distribution network.

The high fixed costs associated with bidding and establishing a contract constitute one reason for linking the three phases together. This is particularly so considering the limited profitability of the first two phases of the contract and the risk of bidding solely for distribution and commercial operations given the absence of reliable information on the asset base. The fact that the billing and collection record had not been good and that the water rates had lagged behind costs for too long were other reasons for choosing a phased approach.

Phases I and II were structured as fee-based service contracts under which the contractors are compensated on a fee-for-service basis. The third stage will be structured as a lease or concession contract under which the contractors would take on the operations and maintenance of the water system and be paid on the basis of actual collections, thus assuming commercial risk.

Phases I and II are designed to address the problems of billing, collection and cost recovery. To protect the contractors and to build confidence in the government's commitment to run the services in a commercially viable way, the Federal District will continue to collect tariffs thus assuming the commercial risks associated with revenue shortfalls. In addition, investments in the first two phases are to be underwritten by the Banco Nacional de Obras y Servicios Públicos (BANOBRAS), the Mexican public works bank, which

has opened a line of credit to pay the contractors, in the event of liquidity problems. The metering and billing system to be installed during the second phase will provide prospective operators a better understanding of the market and will make it possible to evaluate public response before the contractors assume any commercial risk.

Only in Phase III will the contractors assume commercial risk. In this phase, their compensation will depend on the difference between the block rate and the tariffs charged at a retail level. The price for bulk water and the difference between this price and the price at the retail level will be determined only after the operating costs, the level of unaccounted for water, and other indices have been observed for a significant period of time under the fee-based contract. Under the planned scheme, each consortium will have an incentive to be more efficient than the average, because over time the government will adjust the tariff according to the best practices of the participating contractors. Even under Phase III it is not currently envisioned that the contractors will be allowed to cut-off the water supply of users who do not pay (this right will be reserved for CADF). To provide the contractors with additional protection, in the even of non-payment, the contractors will be paid by CADF. To give CADF a strong financial incentive to improve the collection rate, its budget will be separated from that of the Federal District and will depend on tariff collection.

The phased approach will allow the Federal District to control the rhythm of contract implementation and will reduce the financial uncertainty and political risk for both the public authorities and the contractors. The participation of experienced foreign operators ensures that the consortia can draw on their knowledge and experience of operation as well as on state-of-the-art technologies. The employment of these advanced technologies will facilitate the renovation and upgrading of the deteriorated water infrastructure in a timely and cost-effective manner and with minimal disruption of traffic and minimal inconveniences to businesses and customers.

Source: most data from Richard and Triche (1994), Casasús (1994a) and (1994b), Fraser (1993), Michaelson (1994), Smith (1994), and World Bank (1992 and 1994a).

- the willingness of the owner to support and delegate to the manager sufficient control and authority to manage the enterprise, including the key functions that affect productivity and service quality.

Management contracts can be awarded through a competitive process or direct invitation from a list of eligible firms and individuals. Since consultant services, unlike goods and works, are not standard in nature and are therefore less subject to evaluation on the basis of price, non-price considerations, such as competence, experience and the client-consultant relationship are the principle factors to be considered in choosing managers (Triche, 1990).

Various compensation packages are used in management contracts including an annual fixed fee; a fixed fee plus costs; a fee as percentage of profits, sales or production; incentive payments based on increased production, profitability, input conservation, plant and equipment efficiency and availability, achievement of localization targets, etc.; commissions, used largely for purchasing, marketing, ancillary operations; and other non-financial benefits (e.g. opportunities for direct investment, dividends).

Where the owner retains full operational and commercial risk, the contracted manager has few incentives to increase efficiency, especially when compensated on a fixed-fee basis. This disadvantage can be mitigated through profit-sharing arrangements and other forms of performance incentives. This approach is possible but unusual (Triche, 1990), as it also leaves the way clear for government interference in day-to-day decisions or actions that affect productivity or quality (World Bank, 1995).

The purpose of management contracts is to acquire the contractor's expertise and knowledge while preparing the company's staff to run the operation. Basically, the management contractor's assignment is to perform certain functional responsibilities related to the operation of the project and to make certain that its corporate resources and skills are available to the enterprise during the contract period (United Nations Centre on Transnational Corporations, 1983).

The scope of the management company's role can include activities, such as general management, financial administration, personnel administration, production management and technology transfer, staff-training, and marketing and distribution.

A management contract provides a legal framework to achieve these aims while allowing retention of ownership and overall policy setting and budgetary control responsibilities by the owner. The drawbacks of management contracts include a loss of day-to-day operational control and the need to monitor the performance of the manager to ensure that overall policy direction is maintained. Management contracts can also be difficult, time consuming and expensive to design and structure properly as well as to implement, both absolutely and relative to other options.

Management contracts represent an attractive option where institutional capacity is weak, reforms of the regulatory framework for the sector are underway, establishing

regulatory arrangements will be difficult and/or where private capital is not readily available or does not find it an attractive proposition to take up equity or otherwise participate in a public enterprise. Management contracts also offer a vehicle by which the private sector or foreign private capital can become established in markets otherwise closed it.

Obviously, management contracts are most effective when addressing predominantly management-related problems. The use of management contracts is most effective when the public owner wants to address such problems while retaining ownership and overall policy direction; and when applied to operations which are relatively straightforward and easily duplicated. Where the problems are of a more fundamental nature, more comprehensive institutional arrangements, such as leases or concessions, would normally be required.

Management contracts can be very useful as an intermediate step on the road to other forms of private sector participation. In a typical situation of this kind, a government would use management contract to return the enterprise to a reasonable level of performance in order to attract investors. This could be very attractive in Latin America and the Caribbean where poor managerial capabilities often constitute a major constraint. For example, the Government of *Trinidad and Tobago* is transferring the responsibility for the provision of drinking water supply and sewerage services to a private operator (ECLAC, 1994c). The transfer will be carried out in two stages. An interim operator will be contracted to manage the service. Once the system is better managed, a long-term concession will be granted. The stage 1 operator will be given a preference in the concession. The basis of the contract is a performance related fee.

Frequently management contracts are combined with other agreements; this may alter both the scope of the manager's responsibilities as well as the nature of rewards (United Nations Centre on Transnational Corporations, 1983). For example, management contracts may be combined with technical assistance contracts, construction and engineering agreements, licensing agreements, production-sharing arrangements, joint venture agreements, training contracts, although the short-term nature of management contracting may hinder extensive training, franchising agreements, etc; the management company might also provide some equity or have a buyer-supplier relationship with the project.

3. *Lease contracts and related systems*

A lease contract is an agreement where one agent (the lessee) obtains the use of property owned by another agent (the lessor) for a given period of time in return for an agreed charge which is generally paid in periodic instalments (Pearce, 1984). At the end of the contract, the property usually must be returned to the lessor in good repair, although in some leases, its title may pass to the lessee for a nominal charge.

It is possible to lease equipment and machinery, buildings, land, etc., as well as entire plants. For a lessee, the main advantage of leasing is as a means of avoiding capital expenditures. It is also a less risky method of finance on the part of a lessor, as he or she continues to own the tangible asset.

(a) Leasing: public lessor and private lessee

(i) *Lease contracts*

In lease contracts (also called service concession, affermage, and farming out) the public lessor accords to a private lessee an exclusive right (sometimes referred to as a franchise or license) to use facilities to conduct business on his or her own account for a specified period at a specified rent. The lessee receives full operational and financial control of the assets essential for the operation of the facilities.

Public authorities can also use leasing to grant to the lessee exclusive rights to provide services in a given area or to operate a particular transportation route. This may be particularly relevant where there are concerns to provide socially desirable but unprofitable services (Kessides, 1993).

Since the lessee must pay a rent to the owner and cover its own costs, however the financial situation develops, a lease contract can transfer maximum commercial risk to the lessee for day-to-day operation and maintenance. The transfer of the commercial risks to the contractor offers the advantage of strongly motivating the contractor to improve the efficiency and reduce costs. Lease contracts must be carefully designed and the public sector must be capable of fulfilling the essential monitoring and regulatory functions if the risk is to be actually transferred.

The lessee rents the facilities and the contract does not transfer ownership. The lessee is not responsible for capital expenditures for major new investments, but normally has to finance working capital, maintain and repair the assets in use or share in the cost according to an agreed schedule, and finance the replacement of capital components with a short economic life.

The responsibility for fixed investment, such as system expansion, and the financial cost remains with the owner. This makes leases particularly suitable for hydroelectricity generation, drinking water supply, wastewater treatment, etc., which require periodic large capital investments, and where responsibility for operation and maintenance can be separated from that for major investments.

The separation between major investments and operation and maintenance may, however, distort investment incentives, but it makes it easier to evaluate the lessee's performance and ensures government control over the expansion of the system (Roth, 1987). Full cost recovery can help prevent the distortion of investment incentives. When both the lessor and the lessee have to recover costs from the same source, there is a strong incentive for them to cooperate in making sound investment decisions. At the same time, the separation of ownership from the responsibility for system operation and maintenance can be an important advantage in that leasing can yield many of the benefits of privatization, but usually does not require any special legislation because the public sector retains de jure ownership (World Bank, 1995). It may avoid the complexities involved in dealing with the

financial markets or having to obtain legislative approval. Service and management contracts have the same advantage, but are much more limited in scope.

The lessee assumes responsibility for regular maintenance of the facilities. It is necessary that the condition and rehabilitation needs be specified in a detailed inventory, that efficient mechanisms and strong incentives are incorporated into the contract to ensure that adequate maintenance will actually be carried out and that a viable asset base is returned at the end of the contract. Public authorities must exercise effective control by including in the contract comprehensive specifications for the maintenance required, for the performance criteria to be used for evaluating service quality, for enforcement and dispute resolution procedures, for the penalties for non-performance; etc.

The duration of lease contracts can vary depending on the nature of the facilities involved. They run usually from six to ten years, although they can be longer (sometimes up to 20-30 years). Lease contracts are typically renewable. Long-term lease contracts may expand towards a concession or partial concession or other similar arrangements involving investment, particularly after most of the costly investments have been completed. As a general rule, the length of lease contracts should correspond to the amortization period of the components under the responsibility of the lessee.

Under a lease, the lessee may hire personnel or integrate existing personnel into its work force, but usually the lessee has complete freedom of choice (Vuyksteke, 1988).

Leasing arrangements exist in electricity generation, drinking water supply and sewerage, ports, river transport and other sectors. In both France and Spain, it has been an established practice for decades in urban drinking water supply and sewerage (Kessides, 1993). In the United States, there is a new interest in leasing, particularly, for wastewater facilities either in their entirety in smaller cities or for specific functions in larger system (Rogers, 1992, 1993a and 1993b).

(ii) *Lease buy-back*

Lease and lease buy-back arrangements are similar contractually but have distinct market niches. In leases the emphasis tends to be placed on the management of an already existing system. Lease buy-back contracts, in contrast, focus more on the building and engineering of new projects.

Lease buy-back schemes rely on the capacity of the public sector to finance large-scale construction (Israel, 1992). Under this approach, the public sector finances the construction of a facility which is then leased to the private sector for operation and maintenance in return for a fee to cover the amortization of the initial debt burden. The applicability of this practice is particularly large in sectors characterized by elevated up-front costs, high risks to the private sector, and where it is essential to ensure accountability and operational efficiency.

(iii) *Hire purchase*

In effect, leasing is a form of hire purchase (Bannock, Baxter and Rees, 1978). In hiring contracts, the public owner provides equipment on hire to a private contractor, particularly when the contractor only requires equipment for a short period. It is particularly suitable in cases where equipment lies idle while, at the same time, contractors lack the capital needed to acquire equipment (Chandavarkar, 1994).

(b) Leasing: private lessor and public lessee

(i) *Lease contracts*

The leasing or renting of buildings, equipment or other assets by the public sector is similar to contracting out a service (Kessides, 1993). The public sector can reap the benefits of using assets without the burden of capital expenditures. For the public sector, leasing or hiring particular equipment, is one way to reduce the costs and liability associated with ownership, particularly for civil works. Under certain circumstances, leasing can be an attractive alternative to the debt-financing of components of water-related projects.

The leased assets are usually contained in the balance sheet of the lessor and not in the balance sheet of the lessee. Therefore, leasing is essentially a form of off-balance sheet financing, an aspect which may be important in some situations (Behrens and Hawranek, 1991).

In an operating lease contract, the lessor is usually responsible for maintenance and insurance. In the case of financial leasing, in contrast, maintenance and insurance are usually the responsibility of the lessee (Behrens and Hawranek, 1991). Financial leasing is usually applied for equipment, particularly that required by a civil works contractor.

(ii) *Lease-back*

An interesting, but frequently overlooked, form of leasing is lease-back - an agreement in which a company sells all or part of its assets to another company and simultaneously leases the property back under a long-term lease (Greenwald, 1973). The purpose of such an arrangement is to free capital tied up in buildings, land or equipment for other uses (Bannock, Baxter and Rees, 1978; Greenwald, 1973).

In a typical sale-leaseback transaction, the public authority sells property, say a wastewater treatment plant, to an investor and simultaneously executes an agreement to lease the property back from the buyer under a true lease or a lease-purchase arrangement (Doctor, 1986).

4. *Concessions and related systems*

(a) Concessions

Under a concession contract, the public owner grants to a private firm an exclusive right to operate and maintain the whole system or self-contained parts thereof for a specified period. A concession contract transfers the responsibility for financing major investments to the contractor. This implies that all commercial risks and most financial risks are shifted to the contractor. A concession contract may or may not transfer ownership of facilities to the contractor. In either case, the contractor must return them in good condition at the end of the contract period. The public authority maintains control over service provision through reviewing of investment plans and their implementation, monitoring service quality, regulating tariffs, etc.

A specific version of concessions are build, operate and transfer contracts (BOT). In concessions the emphasis is usually placed on the management and expansion of an already existing system, and the concession consortia are usually led by a utility company (Israel, 1992). BOT contracts, in contrast, focus more on the building and engineering, but are also used to expand utilities or to capitalize specific operations within utilities (McCullough, 1992), and BOT consortia are usually headed by a major construction or engineering company.

Concession contracts are designed to be long enough to allow the concessionaire to depreciate investment and to provide a reasonable return to the equity investors, typically from 15 to 30 years, and are often renewed.

Concessionaires may be private or mixed public-private companies. A mixed form of ownership may be preferable in certain areas because it may be more politically acceptable and may reduce the risks for the private partner. Where it is politically possible to use purely private concessionaires this would in general be preferable so as not to dilute accountability and the incentives for the private firm (World Bank, 1994a). A mixed ownership has a major disadvantage in that it can leave the way clear for government interference in day-to-day management.

Concessions would generally be preferable to lease contracts because there are obvious advantages to assigning responsibilities for operations, maintenance and investments to a single entity (Triche, 1990 and 1993). The main reasons for this are twofold. Making investment decisions in isolation from commercial considerations usually leads to inappropriate investments and wrong technical solutions. The concessionaire is in the best position to forecast demand and make investment and technical decisions that will meet demand in a commercially viable fashion. Secondly, ownership of physical assets gives the concessionaire a much stronger incentive for adequate maintenance.

In most concession projects, the public sector is the sole seller of the input of the project or the sole source of its logistical support. Even more crucial, it may often be the sole purchaser of the output of the project (Augenblick and Custer, 1990). Since an assured

revenue stream is essential to persuade the private sector to commit funds, in such cases, the government will normally be required to enter into a binding long-term output-purchase agreement with the concessionaire, under which it is required to pay, even if it is not in a position to accept the product or service. In the case of a drinking water supply project, for example, where the concessionaire depends on water sales to recover the capital invested, the government may guarantee a minimum level of water sales independent of usage fluctuations (Neri, 1994). In many cases, the proper use of government guarantees can be an effective and low-cost measure to lower project risks and to turn borderline undertakings into financially viable projects.

Excessive insulation of the private investor from commercial risks can, however, reduce motivation for cost-minimization and create other undesirable incentives. On the other hand, while the private contractors must, almost certainly, seek some guarantees with respect to the availability of project inputs and the possibility to sell its output, they must be prepared to accept the construction and completion risk (Rowe, 1994). The largely non-exportable nature of project output implies that for projects in the public utilities sector, repayment and dividends depend primarily on convertibility and transferability of currency and the stability of the foreign exchange market (Traverso, 1994).

Concessions are not new, they have been widely used in the drinking water supply sector since the 18th century in France and since the 19th century in Spain (Ringskog, 1995a). The concession formula can be applied to any sector of the economy and is capable of meeting all of the objectives of private sector participation. In Latin America concessions are being increasingly used to improve the management of drinking water supply and sewerage systems. For example, concessions are in general use in *Argentina* since 1993 when the drinking water supply and sewerage system serving the Federal Capital and surrounding municipalities of the Province of Buenos Aires was transferred in a 30-year concession contract to Aguas Argentinas, a consortium of several companies led by Lyonnaise des Eaux Dumez of France (see Box 7).

(b) Build, operate and transfer (BOT) contracts

Under BOT contracts, public authorities grant to a private contractor a long-term concession contract, during which the government has a regulatory and monitoring role, to finance, build and operate works (this discussion draws on Augenblick and Custer, 1990). The contractor is usually a private "project company" in which, private investors typically have a complete or majority ownership (the company may include passive equity investors and even a minority equity participation of the host government). At the end of the contract, the project company transfers the system to the public sector, usually at no cost, although the transfer may include a final payment to the equity investors. Typically a consortium is formed including major construction and engineering companies and suppliers of heavy equipment, but it may also include a separate management company and, portfolio investors, such as financial institutions.

BOT projects have a number of advantages:

Box 7

The drinking water supply and sewerage concession in Buenos Aires, Argentina

Drinking water supply and sewerage services in the Buenos Aires Metropolitan Area leave much to be desired. 45% of the population do not have access to drinking water supply and 61% have no sewerage. In addition, 79% of pipes have exceeded their useful life, treatment technology is obsolete and only 15% of connections are metered and virtually all sewage is discharged without treatment. Moreover water pollution, particularly from industrial sources, has increased the cost of water treatment.

Little was known of the basic state of the system. Progressive reduction in funding had a debilitating effect on the business both in limiting expansion of the customer base and in maintaining and upgrading the assets. Preventive maintenance regimes had been abandoned, standards had fallen, there was an increasing risk of major breakdown, and a lack of replacement and repair of deteriorating assets led to spiralling water losses.

In 1989, the Government of Argentina began profound economic reforms which were accompanied by one of the widest-ranging privatization programmes in Latin America. The Government announced its intention to arrange a private concession for drinking water supply and sewerage services in the Buenos Aires Metropolitan Area. The objective was to introduce private sector participation so as to expand coverage at a time when the government budget could not provide adequate finance. Private sector participation was also expected to increase efficiency.

The arrangement chosen for private sector participation was a 30-year concession. The selection of the concessionaire followed a two-phase process, technical phase and financial. Bidding documents for the contract outlined in broad terms the proposed regulatory regimes and the membership of the proposed regulatory agency, but its structure and operational procedures were not detailed in advance. Although there was some uncertainty over the powers of the regulatory agency, the delineation of authority appeared sufficiently clear and the contract was felt to provide an adequate protection to the operator from arbitrary decisions by public authorities. In addition, confidence was expressed that local courts could be counted on to treat the concessionaire fairly. Risks associated with exchange rate

devaluation have been removed, at least temporarily, by the government's commitment to sustain full convertibility at a fixed rate.

The process from bid preparation to award took about two years, including a year to prepare bidding documents and draft the legal documents. One of the main problems was the inadequate quality of existing operational and commercial data. For example, revenues could not be audited; little historical data was available about the volume of the water pumped, of unaccounted for water, and of the water actually consumed; as a result, calculations have been used; and as maintenance had been inadequate, little was known about the condition of the system and requirements for rehabilitation and expansion.

The government devoted considerable attention, effort and resources to overcome these shortcomings. All records were made available for bidders to review and personnel were available to answer questions regarding the system. A wide range of external consultants were engaged to develop background documentation and to promote the concession and identify potential investors. The cost of this preparatory work was about US\$ 4 million.

Specifically, officials were able to provide a reasonable historical record of tariff payment (with a collection rate of about 80% of those actually billed), even though the percentage of those billed was low. This record, together with other evidence of consumer willingness to pay for services (e.g. the collection record in the power sector) and a clear authorization of the contractor to disconnect non-payers, gave prospective operators confidence that they would be able to collect bills and would be protected in the event of non-payment.

Labour representatives were also involved in the preparation of the concession and although the work force was considerably reduced, by about 45%, those retained have negotiated with the concessionaire improvements in conditions of employment.

Six bidders purchased prequalification documentation and five submitted prequalification information. Two bidders subsequently joined forces

(continued)

before submitting concession offers. At prequalification, bidders were required to demonstrate that they met the requirements relating to technical experience and financial capacity. For the technical phase, service quality and coverage targets were established and bidders were invited to present technical solutions to meet the target goals. They were also required to submit detailed proposals of their intentions over the life of the contract, including an investment plan for the rehabilitation and expansion of the physical system. At this stage, one bidder, which proposed to employ an innovative water treatment technology was eliminated because the technology was judged too uncertain. For the financial phase only the financial proposals of those bidders which passed the technical evaluation were considered.

The financial selection criterion was the proposed consumer tariff. Since the pre-concession average charge of about US\$ 0.40 per cubic metre already covered the operating and maintenance costs of the system and it was assumed that the private operator would be more efficient, bidders were expected to offer initial rates lower than the existing tariff. A baseline tariff was specified and the bidders were asked to submit a price bid expressed as a percentage with reference to the baseline tariff.

In December 1992, the Government of Argentina awarded a 30-year concession contract to Aguas Argentinas, a consortium led by Lyonnaise des Eaux Dumez, which includes several other European companies as well as Argentinean companies. Aguas Argentinas took over operations in May, 1993. It won with a bid which would reduce residential user tariffs by about 27%. Under the contract, the Company assumed full responsibility for the entire drinking water supply and sewerage system. It must finance and execute

investments necessary to achieve service targets as specified in the contract approaching US\$ 4 billion. The company must return the property in good condition to the public sector at the end of the concession contract.

The investment programme provides for extensive investment in civil engineering and electro-mechanical works, including rehabilitation of two water treatment plants, drinking water trunk mains and tunnels and rationalization of the distribution network through the service area; the construction of new trunk sewers; an extensive upgrade of the sewerage network; the construction of new wastewater treatment facilities, involving screening, primary and secondary treatment.

The regulation framework is modelled on that in England and Wales and involves regular and specific reporting on the financial and technical performance of the company supported by independent commentary to a regulatory body to protect consumers' interests. The regulatory body, known as the Tripartite Sanitary Works and Services Authority (ETOSS), has representation from the federal, provincial, and municipal governments. Its mission is to ensure enforcement of the contract, including the conditions of service, investment plans and allowable tariffs.

Specific parameters describing water quality standards are set out in the Regulatory Framework Law which also defines the regulatory authority of ETOSS. The concession contract stipulates tariff rate-making provisions, specifically the use of 14 operating cost components to calculate a cost index by which the tariff can be adjusted. Every five years, the regulator will adjust the index to account for new investments and their effects on operating costs.

Source: most data from Richard and Triche (1994), Triche, Mejia and Idelovitch (1993), Dumbleton (1994), Walton, Bateman and Heinrich (1994), and World Bank (1995).

- The contractor controls project design, construction, operation and maintenance from the beginning which combined with the long-term equity commitment required, attracts private sector capital and can be expected to lead to significant cost efficiencies. In addition, the planning, development and management of the project by the contractor may save the utility considerable development, overhead and management costs.
- As the loans are made to the project company and not to the utility owner, BOT arrangements, if properly structured, can circumvent debt service restrictions.
- BOT contracts may provide both greater training benefits and more continuous transfer of technology than a publically owned project.

Most BOT projects involve a combination of equity investment, typically from 10 to 30%, and debt financing raised by the project company from commercial sources and from bilateral and multilateral lenders. Debt financing is typically on a non-recourse basis, that is, the lenders will have no financial recourse for repayment of their loans against either the project sponsors or the host government, i.e. financing is raised against project income. Government guarantees may be necessary.

BOT contracts are usually for a fixed term, typically 15 to 25 years, but may also have a movable transfer date, with later transfer if the project company has not reached projections because of factors beyond its control, or a shorter concession period if it exceeds projections earlier than expected. It is important for BOT contracts to be of sufficient length so that their amortization periods correspond closely with the life of the facilities.

BOT contracts can be applied to virtually any sector, including urban and rural drinking water supply, sewerage, wastewater treatment, hydroelectricity generation, etc. provided that there is a clear and certain source of revenue that will be sufficient to pay the debt incurred and to provide a reasonable return to the equity investors over the proposed project life. The revenue can come either directly from customers or from a government-owned purchaser or even the general government budget. There are many variations of BOT contracts which are commonly used for infrastructure projects built with private sector participation (see Box 8).

BOT contracts require extensive support and are exceedingly complex from legal, technical and financial points of view. They do not absolve public authorities from the basic responsibilities for planning, policy-setting, regulation, etc. BOT contracts require carefully developed specifications, particularly for regular maintenance requirements.

BOT schemes are attractive for some aspects of private sector participation in the water sector, but there have been few such contracts to date in the water sector in Latin American and Caribbean countries. This can mainly be explained by the fact that BOT contracts are not the most useful when the objective of private sector participation is to improve the efficiency of the operation of the existing water-related infrastructure. This approach is more appropriate for the situations where the problem is the lack of facilities. Currently it is estimated that in Latin American and Caribbean countries only 5 to 10% of the sewerage systems have some degree of treatment (WHO/PAHO/EHP, 1990). On the

Variants of BOT and related schemes

There are many variations of BOT contracts which are commonly used for infrastructure projects built with private sector participation including: AOO (add, own and operate), BBO (buy, build and operate), BLT (build, lease and transfer), BOMT (build, operate, maintain and transfer), BOO (build, own and operate), BOOS (build, own, operate and supply), BOOST (build, own, operate, subsidize and transfer), BOOT (build, own, operate and transfer), BROT (build, rent, operate and transfer), BTO (build, transfer and operate), CAO (contract, add and operate), DBFO (design, build, finance and operate), DBO (develop, build and operate), DBOM (design, build, operate and maintain), FDBOM (finance, design, build, operate and maintain), LDO (lease, develop and operate), RLT (rehabilitate, lease and transfer), and ROT (refurbish, operate and transfer) contracts.

AOO contracts allow the government to retain ownership of existing facilities while the expansion is financed and owned by the sponsor.

BBO contracts, under a BBO contract, a sponsoring consortium buys the assets from the government, expands their capacity and then operates them.

BLT contracts. Under these contracts private companies build facilities, lease them for a number of years and finally transfer them back to the government.

BOMT is equivalent to BOT.

BOO contracts, also known as a perpetual franchise, do not have the "transfer" feature of BOT arrangements. In a BOO project, a private firm, usually through turnkey contracting, builds, owns and operates a water-related infrastructure system. BOO contracts may be useful as interim arrangements that allow the government to gain experience with and promote new entry prior to engaging in a more comprehensive deregulation. BOO scheme shifts full commercial risk to the private sector whose long-term ownership guarantees against the problems caused by the politically motivated BOT projects and provides strong incentives for adequate maintenance and investment. Because of their indefinite

term, BOO projects may be cheaper for the public sector than similar BOT contracts, at least over the initial period. Over the long term a BOO contract is unlikely to produce cost savings of any significance.

BOOT is equivalent to BOT.

BTO contracts do not involve private ownership. This method is used when governments are not committed to privatization, but is also useful when limiting legal risk is a major concern. There is often public participation in funding and the government sometimes pays for maintenance of the facilities.

CAO contracts are used in cases where private ownership is not allowed even for private sector financed expansion. It has been used for waste treatment plant expansion projects.

DBO contracts involve a private company that is financially accountable for building and operating an infrastructure system within performance specifications. The company does not assume commercial risk initially, but assumes it in increments and conditionally as the government sets up appropriate regulations and capital markets.

LDO contracts are similar to BBO contracts, except that the government retains ownership rights avoiding full privatization. The government receives cash flows as specified in a lease agreement and existing facilities are financed by the lessee.

Reverse BOT approach calls for initial public sector financing, followed by private enterprise construction and operation, leading to ultimate full private enterprise acquisition of the facilities through periodical payments. In comparison with conventional BOT projects, reverse BOT approach has the advantages of lower risk, smaller construction and insurance costs, lower product price and more efficient operations.

ROT contracts are used when a project company refurbishes an old plant, brings it on line and transfers it back to the government.

Source: most data from Cao (1993), Augenblick and Custer (1990), Israel (1992), Kessides (1993), and World Bank (1995).

whole, less than 10% of the wastewater from the urban population and industries of the region is treated before it is released into watercourses (PAHO, 1992). Many governments have announced extensive programmes of expansion of wastewater treatment and it can be expected that, in the next few years, BOT contracts will be used for wastewater treatment plants due to the lack of experience with wastewater treatment technology in the region and an overall absence of wastewater treatment plants for any but the most toxic industrial wastes.

Such contracts are already being used for the construction of wastewater treatment plants in *Mexico* (see Table 5) (Druz, 1994; World Bank, 1995). Concessions in the water and wastewater sector have primarily attracted equity from local construction companies, although foreign companies have teamed with local counterparts to supplement domestic equity contributions (Darche, 1995). Many wastewater treatment plant concessions have attracted foreign equity investments from specialized environmental venture capital funds and large institutional investors. Domestic banks, usually supported by a liquidity guarantee by the Banco Nacional de Obras y Servicios Públicos, account for the bulk of debt financing.

On a different scale, in *Belize*, a group of private developers is implementing the Mollejon hydroelectric project under a BOT arrangement with the Government and Belize Electricity Limited (IFC, 1993; World Bank, 1994b; EIU, 1994 and 1995a). The Government granted a franchise to a joint venture of two U.S. companies to construct and operate this hydroelectric plant as well as a transmission line in 1991. The developers formed the Belize Electricity Company Limited (BECOL) which has a power purchase agreement with Belize Electricity Limited (BEL), a local utility in the process of being privatized. The plant is run-of-river hydroelectric power development at Mollejon on the Macal river. It will generate 25 megawatts of electricity.

5. The advantages of leases and concessions

Unlike service and management contracts, concessions and lease contracts have the important advantage in that they provide strong incentives to increase efficiency because they transfer maximum commercial risk to the private contractor for operation and maintenance (lease contracts) or for operation, maintenance and investment (concessions). Under a lease or concession, the private firm has to manage the service efficiently in order to earn a profit.

In lease and concessions contracts, the private firm is compensated through tariff revenues, although the tariff level is usually regulated. The firm usually collects charges directly from customers and retains an agreed portion to cover expenses, depreciation and to provide a return on equity. In some cases, however, there may be no direct contractual relationship between users and the private firm and the public authorities will be responsible for levying user charges (OECD, 1991). The rate and other conditions established in the contact may be subject to periodical review to reflect changing cost conditions or renegotiation. In lease contracts, the lessee pays a rental fee to cover the owner's operating expenses, debt service and the investment programme. In concession contracts, the concessionaire may have to turn over a part of revenues to the public authority, particularly if it has contributed to capital costs. The profit for the firm is the portion it retains less its

Table 5

Mexico: build, operate and transfer (BOT) contracts for wastewater treatment plants

Build, operate and transfer (BOT) contracts which have been already awarded						
State	Locality	Capacity (litres per second)	Population	Millions of US dollars		Tariff (US\$ per cubic metre)
				Investment (plant)	Cost of infrastructure per cubic metre	
Chihuahua	Ciudad Juarez		789 522			
	• North	2 500		21.9	8.8	0.11
	• South	1 000		11.7	11.7	0.12
	Chihuahua		516 153			
	• North	1 200		14.2	11.8	0.14
	• South	2 500		23.3	9.3	
Guanajuato	León	2 500	758 297	34.6	13.8	0.12
Jalisco	Puerto Vallarta	750	93 503	19.6	26.1	0.25
México	Toluca		863 844			
	• East	1 000		19.1	19.1	0.16
	• North	1 250		21.0	16.8	0.14
Morelos	Cuernavaca	600	279 187	18.5	30.9	0.20
Sonora	Ciudad Obregón		219 980			
	• North	800		8.4	10.5	0.09
	• South	700		8.0	11.5	
Veracruz	Coatzacoalcos	500	198 817	9.5	19.0	0.09
	Minatitlán	350	142 060	4.8	13.6	0.10

Build, operate and transfer (BOT) contracts in the process of being awarded				
State	Locality	Capacity (litres per second)	Population (inhabitants)	Estimated investment (million US\$)
Puebla	Puebla Metropolitan Area	3 500	1 174 975	92.7
Sonora	Hermosillo	2 500	428 590	32.2
Tamaulipas	Matamoros	850	285 844	
	Tampico	1 600	456 645	8.7

Source: Mexico/CNA (1993).

Note: the rate of exchange used is 3.1059 new pesos per US dollar, which corresponds to the end of the fourth quarter of 1993 (IMF, 1995).

expenses. The fact that the contractor is able to retain all savings from the efficiency improvements achieved during contract execution, or at least until the next review, provides incentives to improve efficiency and reduce costs, although revenue protection clauses may reduce incentives for efficiency.

The lease-contractor rate or the concession rate is usually calculated as a portion of revenues per unit of output (this discussion draws on Triche, 1990). Reductions in unit costs, water losses or improvements in collection ratios, therefore, increase profits. Part of these benefits might accrue to society as a whole when the lease-contractor rate or concession rate is eventually adjusted or renegotiated. This, however, would not necessarily reduce the incentive to improve the efficiency and reduce costs, since this would give the contractor a stronger position in competing for contract renewal. In addition, if services were growing to meet unsatisfied demand, or if demand were expanding, total profits might increase even though profits per unit decreased. Depending on the elasticity of demand, the lower tariff could induce an increase in consumption, which could offset the reduction in unit profits (Triche, 1990).

Another advantage of the lease and concession system is that, like divestiture, it can be used to exploit the comparative advantage which private entrepreneurs are considered to have over the public sector in identifying new investment opportunities. Governments cannot accept unsolicited proposals from a sponsor, however, without evaluating alternatives. Competitive bidding and the bringing-forward of new proposals are not easy to reconcile (OECD, 1991).

Most lease and concession contracts involve an element of monopoly and, therefore, the private contractor is usually subject to regulatory controls. Private contractors are increasingly inclined to insist that the public authorities should bear a part of the project risk, e.g. in the form of a guarantee of revenues or asset values, because changes in regulation involve a degree of risk to private capital (OECD, 1991).

Many public utilities operate at a loss and will not quickly become profitable. In such cases, concession and lease contracts could generally be bid either on the basis of an explicit, pre-specified subsidy, with the winning bidder quoting the lowest tariff, or on the basis of a given tariff, with the bidder quoting the lowest subsidy (World Bank, 1994a). Another possibility would be to transfer control in several phases, with the transfer process being structured so that long-term financial performance forms the basis for a final valuation, while an interim sale price is based on short-term performance (Hemming and Mansoor, 1988). For example, a government could enter a management or service contract with the private sector, keeping compensation and risk exposure low, and, later, transform the contract into a concession or lease, with the concession rate taking account of any improvement in performance.

Lease and concessions contracts share a common disadvantage in that they require meticulously developed specifications for the regular maintenance requirements that the contractor must provide, as well as for the final condition in which the facilities revert to the public owner upon completion of the contract. Without detailed specifications, it would be

advantageous for a contractor to run down the facility towards the end of the contract period or to design it with a planned obsolescence matching the schedule for transfer. Disincentives for proper maintenance toward the end of a contract can be reduced by making contracts of sufficient length so that their amortization periods correspond closely with the life of the facilities and by permitting the incumbent to compete for contract renewal.

Concessions have some advantages over leases in coincidence of ownership and the responsibility for major new investments with that for system operation and maintenance. The separation, found under leases, may distort investment incentives and reduce incentives for maintenance and routine repairs. The integration of the design and construction with the responsibility for operation and maintenance, which characterizes concessions and BOT contracts, provides strong incentives to design the facility to minimize operational and maintenance requirements and mitigates against designs and technological solutions which subsequently lead to costly and unnecessarily complicated operating and maintenance procedures (Rowe, 1994).

Leases, as well as service and management contracts, fail to relieve public investment budgets because they leave the entire burden of infrastructure financing in the public sector, unless the entity is self-financing. However, when concession arrangements are not feasible, due to the low borrowing capacity of the private sector or to an unstable political and economic situation, the public sector might have to assume responsibility for investment (Triche, 1990). In these cases, a lease contract becomes the appropriate commercial arrangement, but once obstacles to a concession have been removed, it may be possible to convert a lease contract into a concession under which the private company makes limited future investments and pays a rental fee on completed investments (Triche, 1990).

Finally, in many countries, leasing and similar contracts are subject to differences in tax treatment which can make these arrangements advantageous from the private viewpoint because of the reduction of the effective cost of capital. It should be remembered, however, that whenever cost-benefit analysis from the national accounting stance is attempted, direct transfer payments, debt service, subsidies, taxes, etc., must be excluded from the calculation, as they represent only a form of income redistribution. This implies that the effect of preferential tax treatment would be to transfer the burden of meeting finance costs from the project beneficiaries, assuming full cost recovery, to the general tax-payer.

III. OTHER FORMS FOR PRIVATE SECTOR PARTICIPATION

A. Joint public-private arrangements

1. *Joint public-private organizations and ventures*

Joint public-private arrangements are based on commercial principles, with more or less complete autonomy, where public sector administrative and financial regulations do not apply. The government retains the ability, however, to guide and to control activities so as to ensure that the public interest is served.

Such arrangements offer a number of advantages. Firstly, they provide innovative means of cooperation between the public and private sectors with the potential to improve efficiency through the introduction of the business-style management, private sector capital, particularly when the private partner can readily raise bonds or issue notes, and has know-how and expertise, e.g. in raising project finance, in business management and in the assessment of project risks and market feasibility.

Secondly, joint public-private arrangements enable the public sector to act in a more flexible manner than if a service were entirely in the public domain and to play a role which it cannot usually adopt, e.g. relaxing standards or earning profits to raise funds for investment in infrastructure or for direct service provision (OECD, 1987).

In addition, joint public-private arrangements may provide a means of avoiding public sector borrowing controls, although this would not probably be possible in the countries which operate strict centralized controls on public borrowing because in these countries mixed enterprises would probably be classified as public sector organizations (OECD, 1991). Finally, this approach may be attractive when it is not feasible, for political reasons, to transfer assets or full responsibility for service provisions to the private sector (World Bank, 1995).

A possible shortcoming is the risk for governments of conflict of interest problems, particularly, if it is simultaneously regulator and owner (World Bank, 1995). In the case of partial privatization, governments can be tempted to apply internal regulation instead of external regulation (Bös and Peters, 1988). When there is a lack of separation between regulatory and operational activities one of the most essential principles of regulation is violated. This usually results in a great deal of inefficiency because governments usually find it irresistible to meddle with day-to-day administration of the utilities. On these grounds, leases, concessions or full divestiture, that provide for the separation of responsibilities have considerable advantages.

The contributions to equity investment of the public sector may take a variety of forms as well as financial, including land, possibly in the form of a long-term lease, development permission, the lifting of restrictions on private participation in the revenue-generating activities, guarantees to provide elements of infrastructure, access to loans on favourable terms, etc.

Although joint public-private arrangements can take multiple forms, most of them can be classified as of two types (OECD, 1991):

- organizations with responsibility for a particular component of water-related infrastructure;
- organizations charged with responsibility for the development of a particular parcel of land, usually publically owned, where the organization provides water-related infrastructure.

Joint public-private organizations offer lesser exposure to risk than joint ventures between the public and private sectors. In most arrangements of the former type, public bodies are largely protected against the risks of default by their private partners. In joint ventures, in contrast, public and private bodies enter into the business as equivalent equity partners and each stands to lose part or all of its equity contribution if the project is unsuccessful (OECD, 1991).

Joint organizations will only be an interesting proposition to the private sector, however, when both the public sector agency involved and the project itself are financially sound; when there are clear lines of authority between levels of government and within the proposed enterprise; and when there are clear indications of the government policies on regulation, on the necessary flexibility to adapt to changing needs and market conditions, on freedom of action, etc.

Joint public-private arrangements can be appropriate for various water sector activities, they are particularly suitable arrangements where the public and private sectors have interdependent interests and needs. One example is provided by the services characterized by the combination of large-scale, high-demand sectors and small-scale, low-demand needs, i.e. where the large-scale demands make diversity to meet other needs difficult, but the potential profitability of these "extra" services make them attractive to the private sector (OECD, 1987).

A financing arrangement where a private or mixed company contributes capital for new investment, with part of the return obtained through the right to develop real estate owned by the public sector can be attractive. This technique, which requires large land holdings and a sophisticated property development sector, makes it possible to internalize some of the positive externalities of new infrastructure investment by giving the private investor the right to develop adjoining property (Israel, 1992). For example, in drinking water supply and sewerage projects, particularly in urban areas, there can be benefits from mixed use of the land rights of way for the laying of pipes and maintenance works (Kessides, 1993).

Examples of joint ventures include a geothermal power plant at Soufrière, *Dominica*. Caribbean Powers, a United States company, will invest almost US\$ 10 million in the project and will hold a 51% stake (EIU, 1995b).

Brazil's new concessions law has been recently applied to the construction of a 210 MW hydroelectric generating station at Igarapava, on the Rio Grande which is scheduled to begin operations in 1998. The plant will be built by a mixed consortium formed by four private companies which hold 50.5% of the project and two parastatals which hold the remaining 49.5%. Power to be generated by the plant will be proportionally shared among consortia participants, who may consume it or sell as independent power producers (IPP) upon the approval of the IPP legislation. The project is the first application of the new concessions law in the hydroelectric generating sector and may provide a model for other similar projects, because several other hydroelectric projects have been delayed for lack of investment.

2. *Partial privatization of equity*

Joint public-private arrangements where the private sector owns a minority share of an enterprise, can lead to highly positive results, especially if it is combined with other measures to improve efficiency and reduce political interference.

The experience of privatization in many countries in the world suggests that strategic investors do not insist on majority ownership of the companies whose shares they acquire, if adequate contractual arrangements are in place to give them management control and to prevent undue interference by the state as majority shareholder (Ahmad and Mainster, 1995). Under specific conditions, investors are prepared to acquire minority stakes even in companies where they do not have management control, provided that they are profitable and there is no undue government interferences in the day-to-day running of the companies.

In addition to being a good revenue-generating exercise - this makes this method particularly appropriate for dealing with funding problems of under-capitalized enterprises or when the objective is to strengthen the state owned enterprise which the government intends to keep in the state sector (Vuylsteke, 1988), the sale to private owners of a minority share of an enterprise can provide positive incentives for efficiency and have a powerful behavioral effect on the firm's performance. It fosters independent decision making and compels management to be more accountable for its performance. Furthermore, in order to be listed on the stock exchange, the enterprise may have to introduce important changes in internal operations in order to comply with legal, financial and disclosure requirements, governed by the applicable laws of the country of offering and usually enforced by a securities and exchange commission or similar agency (Vuylsteke, 1988). Moreover, because the stock price is quoted daily, its managers would want to be leaner, cleaner, and meaner in order to demonstrate to the public that their company is a profitable investment (Nellis and Roger, 1994). Private minority ownership or minority control can be very useful as interim arrangements prior to more comprehensive forms of private sector participation.

Even selling very small proportions of companies can be beneficial. Less than 1% of the shares in the two largest drinking water supply and sewerage utilities in *Chile* are traded on the stock exchanges. The companies are, however, registered companies and managed under such rules rather than as public enterprises. They are generally considered to be among the most efficient companies of the region (see page 35).

B. Developer contributions and other forms of private participation

1. *Developer contributions*

Developer contributions are widely used for land development and redevelopment, where developers under development or building standards and codes are required to install at their own expense infrastructure such as paved streets, drinking water supply and sewer lines, flood protection and storm drainage, electricity distribution, etc., as well as the major extensions of and connections to existing public trunk lines. Although developer contributions are usually mandated in accordance with prescribed schedules, individual contributions may also be negotiated (OECD, 1991). Developer contributions can take the form of financial payments, but contribution in kind is often preferred because this approach provides stronger incentives for developers to seek out and use the least-cost methods and the most appropriate technological solutions. The cost can be capitalized into the price of the developed land or housing and ultimately paid by the home purchaser (this discussion draws on Peterson, 1991).

Developer contributions have an important advantage in that they provide a means of tapping private capital to help finance local water-related infrastructure providing relief to the public sector investment budget. In addition, a shifting of these costs from the general public budget to developers and ultimately to higher-income consumers is likely to contribute to a more progressive distribution of cost burdens.

A wider application of this approach, particularly in the low-income areas, requires more than new building, development and subdivision standards or codes. One alternative would be to provide publicly held land so that developers can install infrastructure and sell serviced lots on the private market. Alternatively, government could preserve more control over the allocation process by buying back (some form of leasing could be another alternative) the serviced lots at a previously established price. This would shift the task of initial capital accumulation and the risk during the construction to the private sector.

Some Latin American and Caribbean countries require developers to bear the costs of local infrastructure. Though in practice these regulation apply almost exclusively to developments for the middle and upper income housing, the same approach can also be applied to low-income areas, particularly sites and services projects.

The volume and extent of the contribution to water-related infrastructure development that can be extracted from the private sector is potentially large in most Latin American and Caribbean countries. The prime incentive for the private sector participation

in these schemes is the extreme difference in land prices between areas with and without water-related infrastructure services. This difference often far exceeds the cost of bringing infrastructure to new areas; it rather reflects the scarcity value associated with water-related infrastructure services. In Santa Cruz, *Bolivia*, for example, land with access to piped water, rudimentary wastewater removal, flood protection and other services has been reported to sell at 10 to 15 times the price of comparably located land without these services (Peterson, 1991). Large price differentials have also been reported in other countries.

2. *Other forms of private participation*

Specially negotiated contributions are payments or contributions in kind negotiated between the public authorities and the private sector (this discussion draws on OECD, 1991). They entail only the provision of finance or infrastructure in kind, while responsibility for management and investment remains with the public authorities.

Unlike more generally applied schemes, such as capital and developer contributions, which are based on a formula of general application and can be regarded as an exercise in public sector pricing policy, rather than as a method of attracting private capital, specially negotiated contributions reflect ad hoc considerations. A typical specially negotiated contribution is a one-off payment, negotiated between the public sector and the private sector. While in some cases it may set a precedent, usually there is no automatic mechanism for ensuring that equivalent or similar contributions will be made in the future. Successful application of this approach depends on the public authorities having sufficient negotiating authority.

Incentive zoning. The system of "incentive zoning" is an intermediate form which falls somewhere in between developer contributions and specially negotiated contributions. Under the systems of incentive zoning, public authorities grant additional development rights to developers in return for specific contributions of public interest (OECD, 1991).

Capturing development gain. This technique enables the investor in new infrastructure projects to take advantage of positive externalities associated with the project, e.g. granting the investor the right to develop adjacent property in order to benefit from higher property values in the future (Neri, 1994).

Financially reimbursable contributions. In *Chile*, one of the forms of transferring ownership to private shareholders of state-owned enterprise was a mechanism of financially reimbursable contributions (Aportes de Financiamiento Reembolsables) (Arestizábal and Palominos, 1993). Under the regulatory legislation for electricity and drinking water supply and sewerage services introduced in the 1980's, the public utilities can request contributions, reimbursable, inter alia, in shares, from new clients to finance service extension (Bitran and Sáez, 1994). This mechanism was used in the privatization of one of the electricity generating companies (Undurraga, 1994).

Offset. One frequently overlooked form of tapping the benefits of privatization is "offset" which can be defined as a commitment by a company to do something beneficial

to the economy of the country, as a condition of winning a contract (this discussion draws on Kingsbury, 1994). National offset policies have been introduced in a number of countries as a way of furthering economic objectives and obtaining a range of benefits for a country as a condition of awarding public sector franchises.

There are three principle ways in which an offset programme can be used (Kingsbury, 1994):

- **Joint ventures**, i.e. a contractor discharges its offset obligations through establishing joint ventures with local partners and, thereby, the local firms acquire expertise and new technologies.
- **Funding of infrastructure projects**: a contractor discharges its offset obligations by investing in, managing, or arranging finance for an infrastructure project which otherwise would have to be publicly financed.
- **Direct investment in privatization candidates** as a condition of winning a contract, an investor is required to invest in a less attractive candidate from an approved list.

One examples is afforded by Panama where since the termination of the monopoly held by the Water Resources and Electrification Institute (Instituto de Recursos Hidráulicos y Electrificación - IRHE) in electricity generation, from 11 February 1995, any company can enter the electric industry, but the law also specifies that companies winning generation licenses will have to reinvest at least 5% of their profits in the communities around their new installations (LAEB, 1995).

CONCLUSIONS

The transfer of water-based services to the private sector, with the exception of electricity generation in Chile, is too recent a phenomena to be evaluated more than superficially as to its levels of achievement. It is generally accepted, however, that the transfer of public companies to private ownership can bring substantial welfare gains. Recent empirical research by the World Bank and Boston University in which twelve cases of privatization were comprehensively analyzed in four middle-income and developed countries indicates that privatization did bring substantial welfare gains. In eleven of the twelve cases, the gains were both positive and large, amounting to an average 2.5% permanent increase in national income (Galal and Shirley, 1994).

The theoretical arguments and the practical benefits of divestiture are strongest in the tradeable goods industries operating in competitive markets. In these industries, free from substantial market failures, market liberalization, restructuring and reduced transportation costs can be counted on to supply the beneficial pressures of competition and of contestability which reduce the need for the more detailed and intrusive forms of regulation (see Table 6). Franchising arrangements provide a means to harness some of the information and incentive advantages of competition to industries which do not operate in competitive markets or have substantial market failures. It can introduce the characteristics and mechanisms of free markets that are associated with efficiency even in natural monopoly situations where direct competition is not possible. Franchising provides a means in the water sector to institute regulation gradually and reduces opportunities for regulatory capture and lessens the scope for political interference in the management of water sector utilities.

There is anecdotic evidence of the positive results from involving private contractors in the provision of public services. For example, in the Vallejo area of Mexico City, rising water prices and potential water shortages forced a group of companies to seek an alternative to water supplied by the public utility (World Bank, 1992). The companies came to the conclusion that the treatment of wastewater flows could provide a cost-effective and reliable source of industrial water. As a result, 26 companies created a new for-profit firm to rehabilitate an old municipal wastewater treatment plant. This project was financed by the participating industries with each shareholder contributing equity on the basis of its water requirements, with total equity amounting to US\$ 900 000.

As this review of the alternatives shows the means for incorporating private enterprise into the provision of water services are very varied. The policies being pursued by the Government of Bolivia show the extent of innovation possible when companies are transferred out of the public sector (see Box 9). The most appropriate selection will depend entirely on circumstances, but there is considerable evidence that in the case of natural monopolies some type of franchise arrangement is easier to manage than direct divestiture. It must be repeated, however, that in the cases where service is deficient, common in Latin

Table 6

Alternatives for private sector participation in different water-based services

	Drinking water supply and sewerage	Hydroelectricity generation	Irrigation and drainage
Unregulated private ownership	<p>No</p> <p>Might be acceptable where there is a large unmet demand.</p>	<p>Yes (most probable)</p> <p>With large market size in relation to the minimum efficient scale of generation, an interconnected system, an access on a fair basis to the grid, and a developed capital market.</p>	<p>Yes (most probable)</p> <p>With strong local institutions, clearly established water rights and conflict resolution arrangements, and a liberalization of the foreign trade regime.</p>
Regulated private ownership	<p>Yes</p> <p>With an appropriate institutional and regulatory framework, a strong regulatory capacity and low regulatory risk.</p>	<p>Yes</p> <p>Where some of the above conditions are absent.</p>	
Concessions	<p>Yes (most probable)</p> <p>Due to the sunk and long-term nature of investments, the difficulties of effective regulation, and high regulatory risk.</p>		
Leasing	<p>Yes (under special circumstances)</p> <p>Where there is an inadequate regulatory framework or political and economic instability.</p>		
Management and service contracts	<p>Yes</p> <p>Possible transitional or wherever they are effective alternatives under any ownership arrangement.</p>		

Box 9

The Bolivian Capitalization Programme

The Capitalization Law of 1994 provides the legal framework for an ambitious programme the objective of which is the fostering of private sector investment through both large scale investment by local and foreign strategic investors and the savings of private individuals.

The government has chosen for capitalization under the programme the six largest state-run enterprises in Bolivia, which account for approximately 12.5% of GDP. Additionally, the programme might be expanded to other companies. Smaller, less strategic companies would likely go through the traditional privatization route. In the case of the less appealing companies, only part of the company may be capitalized.

The strategy of the programme is to transfer half of the shares in the companies to private investors who will commit to investments and gain management control. The capital contribution will go directly, therefore, to the enterprise in the form of an infusion of capital to fund investment programmes and not to general government revenues.

The other half of the shares will then be distributed among all Bolivian citizens of legal age by crediting individual capitalization (retirement) accounts with shares in each of the six companies. These accounts will be administered by private pension fund management companies. The end result of the programme will be mixed-capital corporations.

The Empresa Nacional de Electricidad S.A. (ENDE) was the first company to be capitalized. ENDE has been responsible for generating and transmitting electricity for the country's main distribution systems. In recent years, it has had a performance contract with the Government in an attempt to improve its efficiency.

Under Bolivia's New Electricity Law passed in 1994, electricity companies must disaggregate generation, transmission and distribution activities. In 1995, ENDE was separated into four parts: three generation companies (one hydro and two thermal) and a distribution company. Its three generating units have been auctioned off for some US\$ 140 million or 40% more than the official valuation of the assets. Dominion Energy Inc. of the United States was awarded control of the hydro generating company and committed itself to investing US\$ 59 million. The distribution company is to be privately sold along with other assets, including the transmission grid and isolated electric systems.

Under the programme, the workers of the companies have the opportunity to become shareholders. In the case of ENDE, the result has been very positive.

There is considerable interest in the capitalization of other non-water-related companies and in the creation of a private pension fund system. The government expects to attract investment commitments totalling some US\$ 2 billion from the capitalization of another five state-owned companies.

Source: most data from Ahmad and Mainster (1995), Conradt (1994), PI (1995), Sedelnik (1995), and WR (1995b).

America and the Caribbean, the danger of monopolistic practices may be less costly than the existing poor levels of service. Moreover, the investment needs are so large, according to a recent World Bank estimate, annual investment needs for water supply and sanitation alone in the 1995-2000 period are approximately US\$ 12 billion at 1993 prices or 0.9% of regional GDP more than three times the historical levels (Burki and Edwards, 1995; Ringskog, 1995b), that attracting private investment may too outway the problems posed by private ownership of natural monopolies.

Not surprisingly, most of the arrangements that can be found in the region for private participation in water-based public services are hybrid in nature. Management contracts incorporate elements of concession, concessions are often in part contracts or leases. There are examples of partial divestiture through the formation of joint public-private companies and there is the unique model being applied in Bolivia. The reality of public utilities in Latin America and the Caribbean is complex and the arrangements that are being made to improve their management reflect this complexity. There is no valid universal recipe.

None of the alternatives, however, eliminate the need for regulation or for on-going government responsibility. The failure of the privatization of water supply and sanitation company in Venezuela indicates the need for serious preparatory work within the responsible public agencies. The public sector must be capable of supervising the private providers of services. Unless entry costs are low, a franchisee or contractor is always in a strong position either to amend the contract or disregard it. Close monitoring is required to ensure that private providers meet their obligations under all alternatives. This, in itself, is a considerable challenge for the public sectors of the countries of Latin America and the Caribbean.

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