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Social Issues in the Provision and Pricing of Water Services

Chapter 4

Governance and private sector participation

This chapter examines how social and environmental objectives are being met under different models of water services provision, involving different forms of "private sector participation" in the provision of those services. It provides case studies of different types of water service providers from France (Amiens), Germany (Hamburg), UK (Welsh Water), US (Suburban Water Systems), and Mexico (Mexico City). The chapter also considers some key criteria for evaluating the effectiveness of water service providers in meeting economic, social, and environmental objectives.

CHAPTER 4. GOVERNANCE AND PRIVATE SECTOR PARTICIPATION

4.1 Introduction

This chapter examines how social and environmental objectives are being met under different models of water service provision in OECD countries. The operation of urban water services typically falls under the heading of "public services", even where they are provided by private enterprises. It is not tradition alone that dictates the importance of keeping water management in the "public interest"; it is also the existence of positive and negative externalities, which are not captured by market mechanisms, that defines a role for government. In the past, externalities relating to urban water services have been mainly associated with public health. For example, should sewerage not be effective in removing human wastes from an urban area, epidemics are likely to follow. Disease affects not only those without connection to serviceable sewers, but eventually every citizen who is not immune. Thus, everyone has an interest in effective sewerage service.

Today, environmental externalities have also gained in prominence. It has become important to protect against overextraction of water from natural aquatic systems. When the water table in a catchment area is lowered, it affects vegetation and surface flows, and thus water supply externalities occur. Effective and stable treatment of wastewater is necessary to reduce pollution, and nutrient removal must be carried out to avoid eutrophication.

In addition, urban water service provision is largely indivisible: the technical systems required are complex and must cover long distances, the capital expenditure needed is large relative to operating costs, and so is the marginal cost of connecting an additional user. Hence, it is not economical to build separate supply systems for just a few inhabitants of a city — it is more economic for everyone to be connected to one system. In any case, once a system is in place, it is all but impossible to build a second one. In consequence, urban water systems are usually considered natural monopolies.

In order to ensure that these natural monopolies adequately consider public social and environmental priorities, it is important to have proper forms of governance in place. Regulation, both formal and informal, contributes to establishing and maintaining such governance, most significantly in protecting against abuses of monopoly power. Economic regulation in particular seeks to address the conditions of supply access and prices. Customer service, water quality, investments, profits, and return on capital are also often subject to regulation.

Therefore, irrespective of the type of private sector participation selected (see below), municipalities seeking to reform water services need to select institutional arrangements that are conducive to meeting the following broad goals:

- Achieving minimum service levels, ensuring that services are affordable for all users, and encouraging public participation in tariff modification (social objectives).

- Adequate drinking water quality and sufficient water-based ecosystem protection (environmental objectives).

4.2 Private sector participation

The most pressing of the many challenges associated with reforming urban water services may be grouped under the following headings (Hall, 2001a):

- Infrastructure (reduction in leaking, replacement/expansion of networks, technological innovation).

- Financial (sustainable and equitable tariffs, efficient revenue collection, investment).

- Environment and health (public health needs, conservation, environmental management).

- Socio-political (affordability, transparency, accountability, expansion of coverage).

- Managerial (improving efficiency and productivity, capacity building, efficient procurement).

Few would question the need to address each of these challenges, but there has been considerable debate as to how to do so. One approach to reform of urban water services is private sector participation (PSP). A number of developments have placed PSP at the forefront of discussions on ways to reform water services. These developments have their source in discussions relating to redefinition of the role of the State, the function and size of the public sector, utility management in general and the water industry specifically, and taxation and user charges. Box 4.1 summarises the "drivers" of PSP as a policy option.

Box 4.1. **Factors driving PSP**

Societal: Public agencies have been unable to satisfy basic water needs for all. The context is one of dwindling public funds, increased demand, large investment gaps, ageing infrastructure in need of rehabilitation, and calls for increased decentralisation.

Commercial: The Dublin Water Conference in 1992 established water as an "economic good". This challenged the traditional approach to water service provision, which held that water services were the domain of public agencies alone.

Financial: There is a belief that the private sector can mobilise capital faster and cheaper than the public sector. The expectation that by shifting assets from public control into private ownership and capital markets, economic efficiencies can be unleashed.

Ideological: This refers to the notion that "smaller government is better".

Pragmatic: Inability of governments to finance increasing capital, operation and maintenance costs of municipal water systems. Need to invest in infrastructure, increasing population, and constrained public finances.

Sources: (Hall, 2001b) (Thompson, 2001) (Kraemer, 1998). (Categories taken from Gleick, *et al*., 2002).

A former Argentinean government official, attempting to explain why private sector participation in one public water utility system had been so contentious, said she had told an executive of the multinational water company serving the city of Tucumán that local residents see water as "a gift from God". The executive replied: "But he forgot to lay the pipes." (*New York Times*, 2002). This exchange illustrates the dilemma at the core of any government's need to provide water and sanitation services. With demand for services increasing, public resources shrinking, and infrastructure deteriorating, PSP may be a partial solution — yet it is one that can lead to serious problems related to social acceptability, if not properly managed.

At the heart of this exchange, and more broadly within the debate over introducing PSP into water service provision, lies the conceptual issue of whether water should be treated as a commodity, or as a social service with public good and merit good properties (Rees, 1998). The question is often framed in terms of a trade-off between water's importance as a "substance necessary for life itself" and as a "profit-making business" (*New York Times*, 2002).

On the one hand, PSP is proposed as a solution to perceived government failures that are commonly attributed to State ownership and management. In this view, "most governments do a poor job of delivering water and sewerage services" (*Economist*, 25 March 2000). Those who hold this view mostly point to State organisations that are insulated from competitive incentives and exposed to short-term political interventions

and interest group capture. The argument is that State managers pursue their own utility needs, not those of the public interest (Rees, 1998). It should be noted that those making general references to "State" or "government" often have in mind national or central governments, and not necessarily local or municipal governments.

This view also contends that environmental goals can best be accommodated in the PSP model by incorporating environmental norms into the pricing structure (economic instruments). It further holds that achieving social goals related to water management can best be achieved by redistributing the surplus generated through a more efficient system in the form of social transfers. In short, the accent of this approach is on the economic objective of efficiency as well as the use of economic instruments to promote environmental and social goals.

On the other hand, those concerned about the PSP model stress the implications of private actors' assuming responsibility for social and environmental objectives such as equal access to good drinking water, affordability, and environmental sustainability. Often pointing to the track records of selected private water companies, proponents of this view cite the following risks (Gleick *et al*., 2002), claiming that private actors could:

- Usurp a basic government responsibility.
- Bypass under-represented and underserved communities.
- Worsen economic inequalities and the affordability situation.
- Fail to protect public ownership of water and water rights.
- Neglect to include adequate public participation and contract monitoring.
- Ignore impacts on ecosystems or downstream water users.
- Neglect the potential for long-term water use efficiency and conservation improvements.
- Lessen protection of water quality.
- Weaken dispute resolution procedures.
- Irreversibly transfer assets out of local communities.

PSP is also seen by opponents as leading to recurring patterns of crises by introducing a "vicious circle of instability" into certain types of institutional arrangements. For example, it has been suggested that as public services come to be provided by private enterprises in small areas, mergers and acquisitions gradually lead to a concentration of power (Gomez-Ibanez and Meyer, 1993). Monopoly abuse ensues,

and regulatory regimes (often in the form of price caps or service provision requirements) are instituted. Regulation reduces profitability, leading in turn to undercapitalisation of the industry. The result is a reduction in service quality and scope. At some point, government has to inject large amounts of capital or provide regular subsidies to maintain service standards and levels. The end result is the re-nationalisation of the water industry, where the cycle begins anew (Kraemer, 1998).

4.2.1 Type and degree of PSP

Defining PSP in the context of urban water services requires determining where the responsibility lies for assets, operation and management, risk, and capital investments, as well as establishing the operator's legal status.

Administrative PSP is characterised by public ownership of assets, and public management, operation, investment, and legal status. Separate units, with separate accounts, may be set up within the municipal administration.

Corporative PSP describes cases where a separate public body ("corporation") is formed. The water service provider has both active and passive legislation requiring it to represent itself in any conflicts arising from interference in day-to-day operations. This legal standing enables the provider to minimise political interference more than administrative PSP does. Assets are publicly owned, but investments are received directly by the water provider, not in the form of central budget transfers. The provider has the right to finance operations independently, and often pay as much as the private sector. In both administrative and corporative PSP, operations and management duties may be contracted out to the private sector or other public agents.

Legal PSP takes three basic forms: (i) a municipal enterprise, a private-law body 100% owned by a municipality or territorial corporation; (ii) a public enterprise, with the assets owned by more than one municipality or territorial corporation (both forms of enterprise are subject to company law, and asset/share exchanges occur); (iii) a mixed enterprise. Like the first two, it is a private-law body operating under company law, but in this case 50% or more of the assets are municipally or publicly owned by one or more partners. Private actors control the rest through investment and capital participation.

Under ***PSP by delegation***, assets are public while operations, management, and capital investments may be carried out by a private contractor. Contractual options vary, ranging from leases to concessions to services. The length of contracts may also vary, from three to 30 years. At the end of the contract, assets are transferred back to the municipal or (rarely) to State authorities.

Financial PSP is often called "full privatisation", because 100% of the assets are owned by private investors. It is the rarest form of PSP, found mainly in the **UK** and the **US**, in the form of investor-owned utilities.

Table 4.1. **Classification of urban water supply: institutional arrangements**

Characteristics of PSP	Option/Mechanism	Public Responsibility	Private Responsibility
Financial	Divestiture (sale or transfer)		Asset Ownership, O&M, Capital Investment, Commercial Risk
Delegation	Concessions, BOT	Asset Ownership	O&M, Capital Investment, Commercial Risk
Legal (Muni. Entreprise, Public Entreprise, Mixed Entreprise)	Leasing, Shared Ownership	Asset Ownership, Capital Investment, Commercial Risk, Joint Corporate	O&M, Commercial Risk, Legal Status, Joint Corporate
Corporate & Administrative	Management & Service Contracts (Tech. Assistance, Supply, Civil Works)	Asset Ownership, O&M, Capital Investment, Commercial Risk, Legal Status	O&M

BOT = build, operate, transfer; O&M = operations and maintenance.
Source: Kraemer (1998), Johnstone and Wood (2001).

Drawing on work by Kraemer (1998) and Johnstone and Wood (2001), and definitions used by the World Bank, Eureau, and several regional development banks (EIB, IADB, EADB), Table 4.1 provides a classification of different forms of PSP in urban water services. This classification will serve as the basis for definitions used in the rest of this chapter.

The categorisation is based on service provision, system operation, and legal status. It only loosely corresponds to the spectrum of "more private" to "more public" arrangements, being roughly scaled from "greatest PSP" to "least PSP" (Financial PSP indicating the greatest and Administrative PSP the least). The "Public/Private Responsibility" columns detail the components/elements of the water service provider that are under the private or public domain, based on the type of option or mechanism chosen.

Table 4.2 provides an overview of the situation in OECD countries with respect to water-related PSP institutions. It demonstrates that most OECD countries employ legal and/or administrative forms of PSP. Delegation is often found with administrative PSP. Financial PSP is the exception, predominately found in **England and Wales**, and used

to a limited degree in the **US**, **Australia**, and **Norway**. In **eastern Europe**, **Mexico**, and **Turkey**, mixed-enterprise legal PSP is often the preferred form because of historical State centralisation and dependence on foreign investment and aid, and nascent regulatory frameworks. Very few countries employ a combination of delegation, administrative, and legal PSP (**Spain**, **Belgium**, and **Italy**), apparently because of regional traditions or ambiguous case law.

4.2.2 Reforming municipal water services

To reform municipal water services, public authorities must first look at three critical factors: (i) the organisation of water services (local or regional); (ii) the speed at which the reform is to take place (incremental changes or radical restructuring); and (iii) the degree of local control over water assets. The framework that governs the creation of public and private law corporations is highly significant as well. Where municipal water services can be organised as public law bodies, the choices are typically limited to administrative and corporative PSP, as the other modes would offer few additional advantages. If a municipality lacks the capacity or resources to achieve reform on its own, the option of forming an association with other municipalities may permit some economies of scale to be reached. In the rare event that a municipality is unable to form a public law body but can create a publicly owned private-law body, the main option is legal PSP in the form of municipal, public, or mixed enterprise.

Figure 4.1 illustrates the numerous options available to municipalities seeking to reform the public provision of water services by introducing some form of PSP. It is important to note that in these cases, municipalities or territorial corporations own 100% of the assets.

Where municipalities are unable to form dedicated public or publicly owned private law bodies, the choices are limited to financial PSP (i.e. full privatisation) and delegation. If neither of these is an option, one would expect municipalities to lobby for public sector reforms that would facilitate the creation of dedicated public law or publicly owned private law bodies, or to seek additional help from public sources to build capacity and improve service. Figure 4.2 summarises the options for pursuing reforms with a private partner.

Table 4.2. **PSP arrangements, options, and examples in the OECD**

	Dominant Types of PSP	Common Options & Mechanisms of PSP	Example
Australia	Cor/Del/Fin/Leg	BOT	Sydney Water Corporation
Austria	Adm/Leg	Direct management, public company, co-operatives, association	n.a.
Belgium	Del/Leg/Adm	Direct management, associations, concessions	Antwerp (AAW)
Canada	Del/Leg	Direct management	Montreal/Smith Falls
Czech Rep.	Leg/Fin	Shared ownership, concessions	Brno/Ostrava/Karlsbad
Denmark	Del/Leg	Direct management	Copenhagen Water
Finland	Leg/Adm	Direct management, shared ownership	(municipal)
France	Del/Adm/Leg	Concessions	Grénoble/Paris/Alsace
Germany	Leg/Del	Shared ownership	Berlin/Hamburg
Greece	Leg/Adm	Direct management, shared ownership	Athens
Hungary	Leg	Shared ownership	Szeged/Pecs/Budapest
Iceland	n.a.	n.a.	n.a.
Ireland	Adm	Direct management	Cork County
Italy	Leg/Adm/Del	Service contracts, concessions, direct management	Monza (AGAM)
Japan	Adm	Directs management	Yokohama
Korea	Adm	Direct management	Pusan
Luxembourg	Adm	Direct management, production associations	n.a.
Mexico	Del/Adm	Concession, service and lease contracts	DF/Chihuahua
Netherlands	Adm/Leg	Public company, waterworks	GWA Amsterdam Water
New Zealand	Adm/Leg	Public company	Auckland/Kapati Coast District Council
Norway	Adm/Leg/Fin	n.a.	n.a.
Poland	Leg/Del	Lease	Gdansk
Portugal	Del/Leg	Concession and BOT	Lisbon
Slovak Rep.	(Proposed) Adm/Leg	Proposed corporation, direct management	Water & Sewerage Works
Spain	Del/Leg/Adm	Direct management, shared ownership, concession, lease	Seville
Sweden	Del/Leg	Direct management, shared ownership, limited company	Motala River Basin
Switzerland	Leg	n.a.	n.a.
Turkey	Adm/Leg	Public company, concession	ANSU/Izmit
UK	Fin/Adm	Investor-owned assets, management service contracts	Thames Water Co./London
US	Leg/Fin/Adm	Public company, investor-owned assets, management service contracts	Anaheim/Suburban Water

BOT = build, operate, transfer; n.a. = not available.
Source: ECOLOGIC.

Figure 4.1. **Private sector participation in water services provision: Case 1**

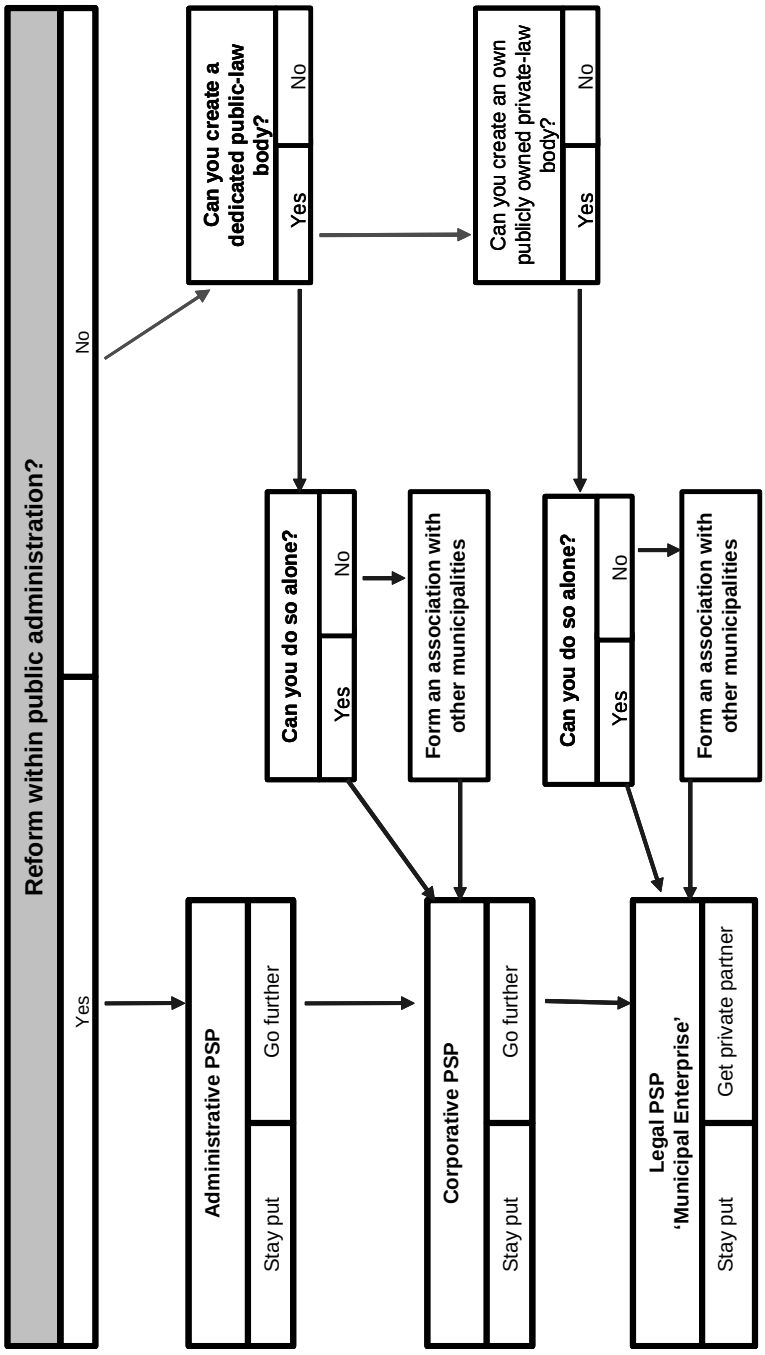
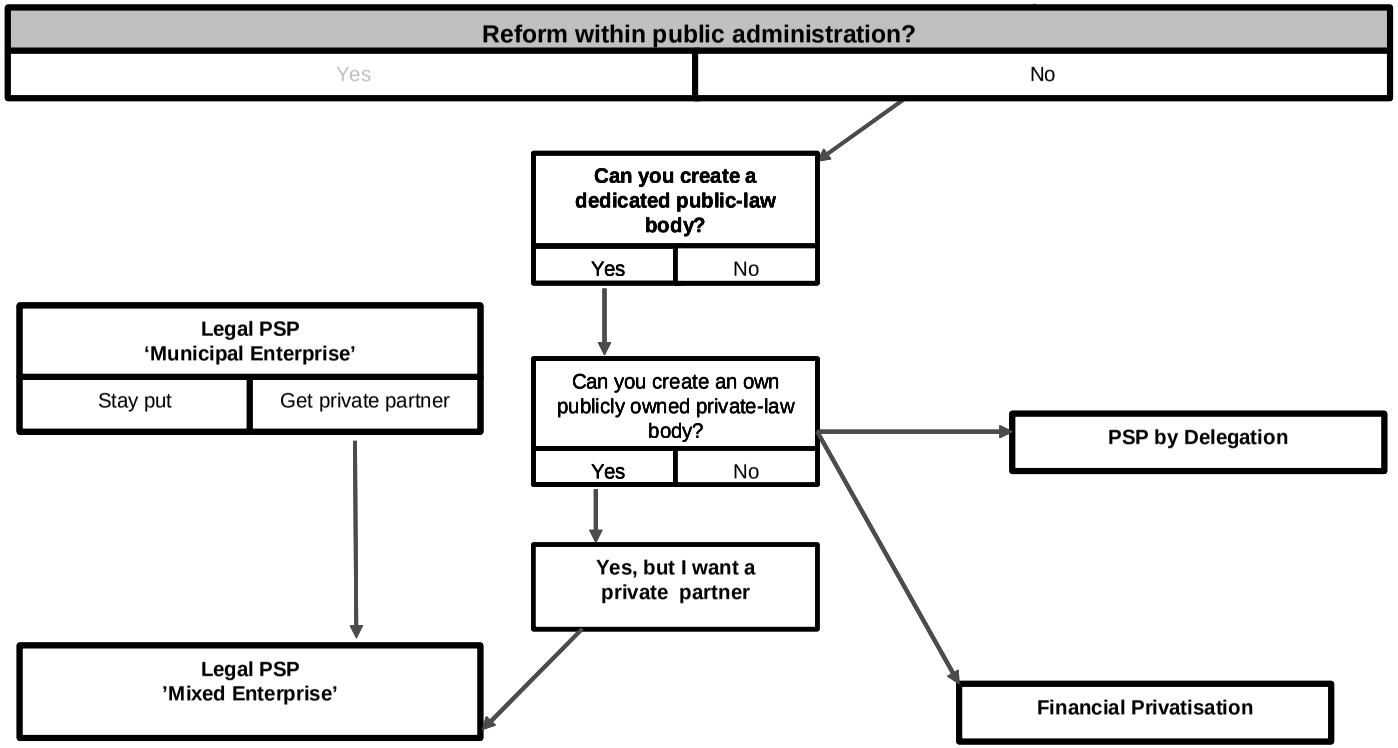


Figure 4.2. **Private sector participation in water services provision: Case 2**



There are other criteria to consider when seeking to reform public services. For example, social or political considerations may make it important to maintain public participation and local involvement in water management decision-making. Increased PSP also implies decentralising public services, and the type of decentralisation chosen may depend on the context of public policy institutions and political decision-making processes in a given country. In established federal systems with well-functioning State and local level governments (e.g. **US**, **Germany**), devolution is built into the relationship that governs public policy. Where the devolution of authorities is still embryonic (e.g. **Mexico**), or where political institutions are highly centralised (**UK**, **France**), deconcentration will be the preferred form of decentralisation. Deconcentration does not typically require changes to the legal structure governing relationships between national and sub-national authorities, since it is merely a transfer in responsibility, not a transfer of authority for public policy making. Administrative, Corporative, and Legal PSP (and occasionally delegation) are viable options here. While any type of PSP has the potential to increase customer satisfaction (assuming cost and quality criteria are met), introducing local decision-making and agenda setting usually requires a path towards devolution, not deconcentration.

4.3 Selected case studies

The following case studies consider the experiences of water service providers with different forms of PSP. Each provides an overview of the structure and organisation of a country's urban water services, followed by the social, environmental, and economic contexts in which they are provided. The cases illustrate different paths to reform and highlight specific elements of private enterprise characteristics that can be incorporated into public services. The cases of **France**, **Germany**, and the **US** are representative of stable water management systems; i.e. policies and reforms are pursued incrementally. The **Mexican** and **Welsh** examples illustrate the process involved in changing management and operations more radically, from one form of PSP to another.

4.3.1 France

The French water sector is under municipal authority, with the possibility of intermunicipal joint boards. The sector comprises around 16 000 water supply utilities, of various sizes, and a slightly greater number of wastewater utilities. The predominant management formula is delegation. All infrastructure is quasi-publicly owned. Private operators provide water to more than 75% of customers in some 60% of municipalities. Three large multinational companies (Vivendi Water, Suez-Ondeo, and SAUR-Bouygues) dominate the market in terms of both municipal contracts and customer share. Around 50 smaller private companies operate at the local and regional levels. Competition for contracts is not limited to private operators but includes local public entities in administrative PSP. The large ones compete with delegated private utilities. For example, the city of Amiens (Box 4.2) provides water services directly to seven smaller municipalities nearby (Barraqué *et al.* 2002).

Box 4.2. **Administrative PSP: The case of Amiens**

The city of Amiens (population 138 000) and 17 surrounding municipalities make up an urban area of 165 000 people. The city provides water and sewerage services on the basis of a "*régie simple*" (direct control of the municipal government) to Amiens and seven nearby municipalities, a total of 145 000 people; the other municipalities in the urban area have delegated the services to one of France's three major private operators. Water service provision is part of Amiens's overall public services and has no financial autonomy or independent legal standing. Limited delegation exists, however: a private company handles calculation and preparation of bills based on meter readings taken by city employees. Bills are sent by the city, not by the company. This illustrates the vast array of possibilities and the flexibility of French-type delegation.

Drinking water and sewerage services in France must be run under two separate accounts in the general budget. These accounts are commonly referred to as "annex budgets", and their receipts must balance out expenditures. This rule also applies to investment budgets, unless the resulting social impact would be excessive. Water service revenue in Amiens comes from water sales to customers (86.3%), water meter rentals (7.4%), and works carried out at the request of private customers (3.9%). The sewerage charges in water bills cover most sewerage costs. The city has built a separate stormwater drainage system, and the former contribution from the general budget for stormwater control has consequently been phased out. The city Treasury unusually allows the water service budget to include depreciation and provisions for rehabilitation work, so water and sewerage revenue has historically been greater than operating costs. The city has used the surplus to decrease debt in the general budget, and in turn the investment costs for new sewage treatment plant to comply with EU directives are included in the general budget. Thus, Amiens shows that it is possible for administrative PSP to allow good economic management that reduces debt, limits the need for loans to cover investment in rehabilitation, and increases municipal financial autonomy. Accounting rules introduced recently by the national government allow depreciation and provisions for investment under public budgets, which will make direct procurement and service provision by public entities more sustainable and more competitive with various forms of delegation.

Amiens built a well, entirely self-financed, to increase its diversification of water sources and improve supply stability. After lead contamination of drinking water came to public attention in 1991, the city began a lead pipe replacement programme, replacing an average of 1 050 connections a year over 1992-96. Environmental Groups in the region of Picardy, of which Amiens is the capital, have been active in the public awareness campaign against lead poisoning, while consumer groups have focused more on water price increases. Even after a rise in prices of EUR 0.15/m^3 to cover lead pipe replacements, water prices in the Amiens area are considered rather low for a city of its size: about EUR 1.80/m^3, against a national average of EUR 2.78 (Barraqué *et al*., 2002). The relatively low prices have not led to over-consumption, however: the annual per capita volume sold is 65m^3 (178l/capita/day), including connected industry and services.

Since the enactment of decentralisation laws in 1982-83, there has been no national water tariff regulation. Under Administrative PSP, a municipality can set rates annually. Where there is PSP by Delegation (under contract with an outside operator), prices are set for the duration of the contract. In either case, public participation in establishing tariffs is indirect, conducted by elected public officials responsible for public budgets (Kraemer, 1998). At regional level, the prefect (representing the central government) is responsible for ensuring that prices follow legally-established accounting rules: if they do not, the case may be referred to an administrative tribunal for legal review. There is no legal basis for tariff setting based on social considerations. On average, fewer than 0.3% of water bills go unpaid, for affordability and other reasons. In recent years the trend has been increasingly to limit the circumstances in which water companies can disconnect users for not paying. Social welfare agencies can provide aid for up to three months to households in certain vulnerable groups having the "*droit à une aide*" — that is, meeting eligibility criteria, as determined case by case (Smets, 1999 and 2002b) (see Chapter 3, Box 3.2).

The Water Laws of 1964 and 1992 supplement a long-established legal framework for water service provision. The polluter pays principle is applied, and water charges take into account the need to improve water quality and prevent system deterioration (IISD, 2002). At national level, the ministries dealing with environment and health are responsible for defining the general rules regarding withdrawal, discharge, and public health. The national government is also responsible for imposing "solidarity taxes" whose revenue is administered by six Water Agencies (*Agences de l'Eau*) and the National Fund for Rural Water Supply (FNDAE). The Water Agencies, which cover the country's six main river basins, function as the executive bodies that manage water resources territorially. They collect the revenue from water bills and provide municipalities and industries with investment aid for wastewater treatment and water resource protection infrastructure (OIEau, 2002a and 2002b).

The Decentralisation Laws of 1982 and 1983 further defined responsibility at the national level to guarantee public health and safety and enforce related legislation. Municipalities or groups of municipalities (called syndicates) are responsible for providing water and wastewater services. To improve the transparency of delegation contracts (lease, management, and concession), tender is required under a 1993 law. Tender must occur at the first delegation and at the end of all contracts for further delegations. Contracts are awarded to the "best value" bidder, whether public or private. A 1995 Law limits water and sewerage concessions to 20 years, and a proposal to lower the limit to 12 years has been made.

France has long adhered to a principle of "equality of customers"; that is, all else being equal, everyone pays the same price. Therefore, while municipalities are not forced to set up services, once they do so, they must serve all residents (Barraqué *et al.*, 2002). No minimal universal service obligation is imposed, but it is uncommon to disconnect services to those who cannot pay.

Under the Local Democracy Law (February 2002), a Consumer Consultative Public Services Committee may be set up for any utility serving more than 3 000 people, and must be established for communities of 10 000 or more, associations including at least one community of 10 000 or more, and syndicates serving at least 50 000 residents. The committee is responsible for improving transparency by providing a forum where accounting, technical options, and prices are discussed. Prices and related customer service matters are not subject to direct regulation, but are indirectly regulated by elected municipal officials responsible for local budgets.

Information must be made available to the public under the 1978 Law on Openness, the 1983 Law on Public Inquiry, and the 1992 Water Law, along with a 1981 decree. This legislation provides for public inquiry about new water management plans, water quality, environmental impacts, and administrative information held by public authorities (Nunes Correira, 1998).

The national government and its representatives at sub-national level, the prefects, are responsible for legislating and enforcing environmental and health standards. Other authorities can also use economic instruments and benchmarking, among other tools, in ensuring that the standards are met. For example, the Water Agencies, by virtue of the investment aid they provide, are in a better position to give economic incentives for more environmentally sustainable use of water than is the ministry responsible for environment. Similarly, municipalities can set prices directly with operators as long as they respect the rules of balanced budgets (compulsory for operations budgets, subject to derogation for the investment budget).

4.3.2 Germany

Municipal enterprises handle water services in many places in Germany. They act like private companies, but are owned by the municipalities, which occasionally seek private participation in capital. Of the approximately 6 000 water companies in Germany, 96% are community owned, 3% are of mixed ownership, and 1% are private. All must achieve full cost recovery, including capital expenditure.

Some companies discourage excessive water use by applying increasing-block tariffs (which rise as volume increases). These charges are set under a framework called the KAG (Kommunalabgabengesetze). Private operators cannot levy such charges; they are limited to municipal-owned or mixed enterprises. Private companies must set their prices according to private law, though in practice they often follow KAG formulas. Charges and prices tend to be based on metering and/or a combination of basic charge and volumetric charge. Customers have an indirect role in setting tariffs via representation on city councils and local utility boards (for both private and public utilities). VAT is charged on water services.

In 1988, the State of Baden-Württemberg instituted a tax called the “water penny”, intended to take environmental externalities into account. By exercising the constitutional right of State-level control over water resources, Baden-Württemberg and

other States, such as the city-State of Hamburg, are using water resource taxes as a complement to traditional direct regulation by prohibition and prescription (Box 4.3).

Box 4.3. **Legal PSP/municipal enterprises: The case of Hamburg**

The Hamburg Wasserwerke (HWW) is one of the oldest public water service providers in Europe. With close to 2 million customers, it is the fourth largest water company in Germany (HWW, 2002). It is a municipal enterprise with a subsidiary, the Hamburg Pool Company (Bäderland Hamburg), which runs 23 public swimming pools. In addition, HWW is involved in consulting on water management and redevelopment of contaminated water sites via another subsidiary — Consulaqua. HWW carries out additional water supply activities in co-operation with the Schleswag power supply company, with which it founded Holsteiner Wasser GmbH in 1993 to acquire a water supply system in the Pinneberg area, north of Hamburg.

Since 1986, HWW's goal has been to maintain a strategic commitment to the safeguarding of sustainable water supply (EAUE, 1998). HWW has concentrated on groundwater resource protection and the introduction of an "economic use" of drinking water to promote sustainability. HWW has a high degree of extraction flexibility through an interconnection system.

To stimulate water savings and more economical use of water, HWW embarked on a programme of installing water meters in dwellings. It targeted multi-family dwellings, equipping apartments with meters in an effort to change consumption patterns. First, over 1986-89, an HWW demonstration project studied the effects of water consumption with and without meters and other water saving devices and techniques. At the end of three years, consumption data from before and after meter installation were collected for 967 households. The results indicated average savings rates of 15% with conventional meters alone and 25% with new meters (including additional water savings devices) (EAUE, 1998). It was on the strength of these results that the city and HWW decided to introduce water meters to the entire distribution area.

The introduction of metering required not only technical innovations but also significant legal changes (particularly with regard to rent laws and water supply regulations). For example, the water company previously could enter into contracts only with property owners, but amendments to the rent laws allowed tenants to become direct customers of the company. In addition, the building code and related laws were changed to make meter installation obligatory. This measure was retroactive, and owners were given ten years (1994-2004) to comply. For multiple dwellings, amendments to national regulatory standards established that water meters could be treated as modernisation and that the costs of meters could therefore be covered by rent increases. Until 1992, the city of Hamburg gave a grant of EUR 51.10 for each meter installed. Since then, HWW has provided financial support to customers for meter installation.

The city-wide meter installation was accompanied by an aggressive water savings campaign that lasted seven years. Public relations activities were conducted at fairs and exhibitions, customer information papers were distributed, teacher education incorporated conservation techniques into the curriculum, and information centres were set up.

Responsibility for payment of water bills in most cases rests with the property owner and not the tenant, so it is highly unlikely that renters would be faced with the immediate threat of having their water services disconnected. There could be exceptions to this, especially since the desire to extend metering has led to reforms of rental laws so that tenants are increasingly becoming the direct customers of the water company. Nevertheless, the consensus is that disconnection of services poses an unnecessary threat to public health; it is generally illegal in Germany to disconnect water services for non-payment. While utilities do not provide discounts, credits, or other relief to those who cannot pay for water, social services provide income support on an individual basis.

The three primary levels of jurisdiction with respect to water management are Federal, State, and municipal. Federal framework laws are implemented through State water laws to take into account local and regional conditions and policy priorities. Legislation, institutions, and organisations vary by State, though in the larger States there are typically a further three levels for enforcement and legislation concerning water: the Supreme Water Authority, Upper Water Authority, and Lower Water Authority. In addition, Water Directors are the most senior officials responsible for water management. They have established a co-ordination network that promotes exchange of information, pooling of resources, and harmonisation of administrative procedures and water laws. The guiding principle for the various institutional arrangements is that water should be managed as part of the environment. Although at first glance, the degree of decentralisation appears to be high (which is logical, given the federal context), a significant amount of sectoral integration exists, along with the process of water legislation and policy formulation.

Wastewater treatment, water supply, and the development and maintenance of local water bodies are deemed matters for self government (*Selbstverwaltung*), which means essentially that local authorities, intermunicipal co-operatives (*Zweckverbände*) and water user associations (*Wasserverbände*), along with industrial and agricultural groups and private persons, are all part of the institutional structure of water management. Water quality management is well integrated with environmental management through these local actors, since environmental management is purely sectoral.

The Federal Information Act permits public access to environmental information held by public authorities. Public access to information is strengthened by the Federal Water Law of 1990 (which provides for public inquiry into major discharges to water) and the Land Water Act.

4.3.3 United Kingdom (England and Wales)

Water management in England and Wales is characterised by strong central control, limited powers for local authorities, statutory public consultation, and extensive private provision of services. The water industry in England and Wales was completely privatised under the 1989 Water Act. This process involved about ten public water companies, and in addition 25 already private companies were brought within the regulatory framework. Mergers and acquisitions followed, so that today there are 26 water or water and sewerage companies, some of which have diversified into non-water services as well.

The privatisation legislation also established an economic regulator, supported by the Office of Water Services (Ofwat). Ofwat sets price caps every five years, establishes standards of service, investigates consumer complaints, and monitors company performance. It must also approve all charge regimes and is responsible for protecting vulnerable customers. The regulated companies file regular returns, which are compiled into an annual return on which the regulator bases its activities. The "June Return", for instance, requires information relating to key outputs, non-financial measures, regulatory accounts, and financial measures. In addition, Ofwat uses information from independent reporting, auditing, and valuation professionals to gauge comparability between companies, statutory accounts, and land prices.

The customer services that Ofwat regulates are those related to operational, drinking water quality, environmental, and service performance (Ofwat, 2002a). Frequency and duration of supply interruptions and incidences of low pressure are evaluated under operational performance standards. The customer service indicators most commonly used are: speed of response to complaints and billing inquiries, meter reading, and ease of telephone contact. Aside from the regulation that occurs at the time of licensing or renewal, each utility is obliged to compensate customers with a cash payment if it fails to meet the service standards stipulated in the contracts.

The national government sets drinking water quality and environmental standards. Wherever an environmental obligation is imposed, the Drinking Water Inspectorate and the Environmental Agency advise the Inspector General on whether prices need to be raised to meet environmental targets. These two bodies also have enforcement powers allowing them to prosecute non-compliant companies. All companies must meet environmental and health standards as outlined by EU Directives and the World Health Organization. Stricter standards can be authorised where customers so prefer.

Customer interests are represented indirectly by Customer Service Committees (CSC) at regional level, which is the water supply companies' level of operation. Ofwat establishes, finances, and maintains the CSCs and appoints their members, in consultation with local governments. CSC duties include investigating customer complaints and representing local customers. The Water Voice (formerly the Ofwat National Customer Council) brings together the ten regional CSC chairmen to facilitate input at national level; it also provides information to the media and the government regarding customers' interests.

Box 4.4. **Corporative PSP: The case of Glas Cymru/Welsh Water**

Welsh Water was a regulated water company, privately owned by investors, serving over 1.1 million household customers in much of Wales and some adjoining areas of England. In November 2002, Glas Cymru acquired Welsh Water. Glas Cymru was formed as a dedicated public law company limited by guarantee, with the sole aim of acquiring and owning Welsh Water. It is owned and controlled by 50 members and organised as a non-profit entity. Board members act as shareholders, but are accountable directly to the Welsh National Assembly. They receive no dividends and hold no financial interest in the company. Glas Cymru is subject to the same regulatory procedures and framework as all other water companies in England and Wales. Financing of assets currently stands at one-third of all revenue (Welsh Water, 2002). Additional financing must come through the issuance of bonds. Financial surpluses must be reinvested in operations. No ordinary dividends are to be issued.

Since Glas Cymru's members serve without traditional shareholder incentives, several features aim to introduce public accountability and efficiency incentives into board decisions. The board is held publicly accountable for performance not only through legislative review but also through the use of benchmarks, published annually by regulators. Benchmarking is also used to ensure that director and manager pay is equivalent to that in the rest of the water industry. Customers have an indirect interest in efficiency, since Glas Cymru must distribute financial surpluses in the form of bill reductions. Finally, the company must comply with reporting and best practices obligations required of companies listed on the London Stock Exchange.

Customers do not own Glas Cymru (it is not a "mutual"), the logic being that this protects them from any financial risks or liabilities in adverse trading conditions. While the company's by-laws prohibit diversification into other activities, outsourcing day-to-day operation of assets and customer services has increased under Glas Cymru from 60% to over 80%.

The Water Industry Act of 1999 prohibits companies from disconnecting households for non-payment of charges. Instead, water companies may arrange a payment plan with the customer directly or use normal civil debt recovery procedures (i.e. sending bailiffs to recover money or goods, seeking payment from a debtor's employer, seeking payment from a bank or building society account, or preventing the sale of the house or land until a debt is paid) (Department of the Environment, Transport and the Regions, 1998b; Welsh Water, 2002).

Members of vulnerable groups who are in arrears may ask the social service department or benefit agency to intervene on their behalf, in which case the water company usually does not proceed with local claims. In addition, the benefit agency pays the water company directly for individuals receiving income support. Low-income working families and disabled persons receive a tax credit to offset utility bills. Customers who have medical certification as disabled or suffering from prolonged illness receive special rates. Recent changes in tariff setting policy have resulted in some cross-subsidisation from higher-income to lower-income users; companies must now offer discounts for larger lower-income families, as well as retired people (who can opt for charges based on average household use rather than meter readings) (Department of the Environment, Transport and the Regions, 1998b). In a recent High Court decision

on the use of Budget Payment Units (in essence, “pre-paid” electronic cards that can be attached to meters), the court ruled that companies may not cut off water supply when credits run out.

When the companies were licensed in 1989, each was given an Instrument of Appointment, imposing conditions that the Director General of Water Services must enforce. One condition is that the company must give customers a code of practice outlining services, charges, billing arrangements, and complaint procedures. There is also a code of practice relating to the provision of counselling if a customer is unable to pay (Jouralev, 2000).

The Environmental Protection Act (1990), Environmental Information Regulations (1992), and Water Resources Act (1991), among other laws and regulations, guarantee public access to information. The legislation usually requires keeping a public register of application for consents, conditions, water samples, incidents, licences, protection zones, orders, and authorisations. Environmental information held by authorities is also to be made public (Santos and Rodriguez, 1998).

4.3.4 United States

Water supply in the US is provided by over 60 000 drinking water companies nationwide, and the sector is highly fragmented (Kzylkhodjeva, 2002). Some 60% of the companies are municipally owned and 40% privately owned. Large municipal utilities serve around 85% of the population, over 228 million customers, while private companies serve the rest. Various forms of private sector participation exist, but Financial and Administrative PSP are the commonest forms (EPA, 2002b). Corporative PSP is increasingly being promoted to encourage financial discipline, as well as greater transparency and public accountability. Unlike for telephone service and electricity, federal aid for water bills exists only where the water utility is municipally owned.

Regulated public utilities can disconnect water services for non-payment. The utility notifies customers of shut-off schedules and makes arrangements for payment. Customers must be given several warnings, and may always dispute charges at the State Public Utility Commission. On average, the period between the first notice of delinquency and the actual shutting off of water is 45 days. Individual utilities may decide to provide financial counselling, forgiveness of arrears, payment discounts, income-based payments, or flow restrictions. Until 1992, a common practice in California was to offer a discount on water services to customers in lower income categories (determined by household size and yearly income). This “Lifeline” programme provided discounted prices on the first block of water, with all subsequent blocks charged at metered rates. According to the California Water Association, however, only two utilities now offer lifeline rates: Seaside Community in Monterrey and Southern California Water in Morongo Valley (see Chapter 3).

Box 4.5. **Financial PSP: The case of Suburban Water Systems**

Suburban Water Systems is a regulated water utility in Southern California, owned by Southwest Water Company. It serves some 300 000 people in a 41-square-mile area of the San Gabriel Valley. Groundwater comes from 14 wells in the San Gabriel and Central basins. Well water is chlorinated. It is often supplemented by water from Covina Irrigating Company, California Domestic Water Company, and the Metropolitan Water District of Southern California. One of the fastest-growing businesses of Suburban's parent company, Southwest, is outsourcing water sources and sub-metering contracts. Southwest has maintained an active presence in contract operation of utilities since 1985, when it began to diversify its operations.

Southwest has been particularly successful in maintaining relatively stable water prices. Between 1996 and 2002, service charges in Suburban's Whittier-La Mirada service areas, for instance, increased from a base of USD 9.60 to USD 9.90 and quantity charges per 100 cubic feet ranged from USD 1.034 to USD 1.093 (Suburban Water Systems, 2002). Charges even fell in some areas, particularly those at higher elevations. This situation is the direct result of a company policy requiring 10% of gross revenue from active projects and 30% from passive projects to be passed back as price reductions to the consumers in the service areas concerned. Under a State ruling in 1999 that sought to lower regulated public utilities' costs of raising capital by letting them offer services not directly related to water supply, Suburban began providing facility space and properties for antenna leasing, for which higher elevations are particularly suited. The company passes back 10% of the gross revenue from this activity to water customers in these areas.

Suburban, like all investor-owned utilities in California, is subject to formal economic regulation by the California Public Utilities Commission. Water charges are based on a metered rate schedule consisting of a fixed service charge and a volumetric rate. Service charges are designed to cover 50% of the utility's fixed costs. Metering costs do not reflect 100% of fixed costs but are meant to cover variable costs and the remaining 50% of the fixed costs. Under normal circumstances (i.e. no severe water shortage), volumetric rates do not vary. During shortages, two or more increasing block rates are established to encourage conservation (they increase as water consumption does). Some customers receive a flat rate based on property size, but under the 1990s legislation all new service connections must be metered.

Utilities can apply for permission to raise rates every three or more years, and can factor in both historical costs (past six years) and projected costs (four years). The Commission can take months to consider revenues, expenses, financial outlook, and quality. Public hearings and evidentiary hearings are permitted. Customer complaints regarding billing practices and prices may be included in evidentiary hearings. (In many cases where a water company has threatened disconnection, the customer may formally challenge the move by requesting arbitration.) An administrative law judge presides over all hearings and hands down a decision for comment; the commission then issues a decision accordingly. The entire process takes about ten months. The Commission also permits water companies to file offset rate increases or decreases after the actual changes in costs are known. In each water district, there are monthly water board meetings, open to the public, where rates, water quality, and customer service issues may be presented (Suburban Water Systems, 2002).

EPA regulates water quality standards at Suburban, with the health department enforcing the EPA quality standards and setting limits for substances that may affect health or aesthetic qualities of water. According to Suburban Water Systems' annual water quality report, all reported substances were below detection levels.

One of the best known cases of tariff structures addressing social and environmental concerns is the Los Angeles tariff reform of the 1990s (OECD, 1999a). The Mayor's Committee on Water Rates proposed the abolition of a minimum charge, cash payments to low-income customers independent of water use, and the establishment of water blocks based on household need and not solely on metered use, plus seasonal rates. The new rates became effective in 1995.

Drinking water quality is subject to Federal, State, and municipal regulation. At the federal level, regulatory jurisdiction is vested with the Environmental Protection Agency (EPA). The Federal Safe Drinking Water Act sets nationwide limits for harmful contaminants and affects certain aspects of construction, operation, and maintenance of systems.

State Public Utility Commissions regulate private water utilities' rates, service, water quality, and operational performance. Government-owned water systems, whether municipal or district, are self-regulated. State health departments monitor drinking water quality standards.

Much of the focus of regulation in the US is on assuring public access to information, especially as concerns fully privatised utilities. EPA also serves an important function in publishing information on service quality performance. By requiring utilities to provide consumers with annual drinking water quality reports ("Consumer Confidence Reports"), EPA introduces a simple and inexpensive measure that complements its other regulatory mechanisms.

4.3.5 Mexico City

The area traditionally known as the Mexico City metropolitan area corresponds to the Federal District (DF) and parts of the State of Mexico surrounding the DF. The DF covers 1 504 km^2 and its official population is about 8.5 million (INEGI, 2001). The water connection level is 98% (connection to house or proximity to a common faucet); the remaining residents get their water from tank trucks or private vendors.

Almost 72% of water used is drawn via wells from the aquifer under the Basin of Mexico, in which the urban area lies. Protection of groundwater quality is of utmost concern. Serious problems are associated with hazardous waste from the large amount of industry in the area. Risks associated with water contamination from agricultural pesticides are also considerable. The Ministry of Health certifies drinking water and issues standards regarding requirements for the water supply system, transportation of drinking water, and sampling. The DF water department is responsible for water quality analysis.

Box 4.6. **PSP by delegation: The case of Mexico, DF**

In October 1992 the Federal District opened bidding for private sector participation in the management of its water distribution. The aim was to reform the sector and improve its poor performance: high network water losses, lax billing, tariff levels covering only 28% of operating expenses and investments, and low labour productivity. Within a year, four ten-year contracts had been awarded to private consortia for rehabilitating and improving the drinking water supply system. There are 16 districts grouped into four zones, with each operator running one zone. The contractors are responsible for operations and commercial aspects of distribution, but not production. The DF retains ownership of infrastructure as well as control over policies.

The contracts are in three phases, each of which can be negotiated separately. Bidders had to provide unit prices for each task specified in the three phases and to establish risk management measures where they could not charge a fee and adjust their direct costs accordingly. The government used a method of net-present value of the costs of actions to determine the number of zones and allocate them to bidders (Haggarty *et al*., 2001).

During Phase one, companies had to take a census, update customer registers, install meters, map the distribution system, and evaluate its condition. Phase two involved setting up the billing and collection system. In the third phase, contractors may purchase and distribute bulk water from the DF and assume responsibility for commercial activities. Between Phases, the DF Water Commission can postpone or cancel projects. The first two phases were structured on a "fee for service" basis. The third will be linked to actual tariff collection (ECLAC, 1998; National Research Council, 1995). Implementation of the first two stages was delayed for various reasons, including Mexico City mayoral elections, a currency devaluation, and contract disputes. Thus, the third Phase had not yet started as of end of 2002. The current general contracts expire in 2003.

To date, results of the reform include an improved information base, with an electronic map for overall network planning and a customer census for identifying unregistered connections. As of 1998, some 1.2 million meters had been installed, and 64% of customers (up from 53%) were receiving metered bills. An additional 16% were billed for the average metered use under a contract provision stipulating that, once metering reaches 70% in a given zone, the remaining non-metered customers can be billed on basis of the average metered use in that zone. Cost recovery slightly improved, from 64% of operating costs to 71%. To some extent, cost recover has been limited by the lack of a payment culture. Operating costs have not decreased (Haggarty *et al.* 2001). Tariff setting was hampered by the low number of actual meter readings, cross-subsidies, and high inflation after the devaluation. The regulatory environment proved insufficient, especially because the number of public organisations in the water sector led to severe co-ordination problems.

As part of a national water sector reform to decentralise regulation, the DF Water Commission was established in 1992. It is responsible for the administration, operation, and maintenance of infrastructure in the DF. It is meant to be the primary agency

responsible for water services, though most of its responsibilities overlap with those related agencies. Water supply management in the DF was fragmented before the 1992 reform, and is still shared among three sets of institutions: the Direction General for Hydraulic Construction and Operation, the 16 political districts of the DF, and the Treasury.

Water charges are designed to take public needs into account regardless of the cost of the resource and delivery. The withdrawal fees that the National Water Commission charges water utilities are often lower than the full economic and resource costs, and require congressional approval. The DF government sets water tariffs for final users. An increasing block tariff schedule is applied, but since only 64% of customers are metered and difficulties associated with bill collection and enforcement remain, many users pay a flat rate based on past use. A form of cross-subsidisation exists between non-household users (including industry) and households, with industrial and commercial users subject to an increasing block rate (National Research Council, 1995). Metering has been more extensive for large businesses than for households, and such enterprises present fewer of the difficulties and high costs associated with installing, reading, maintaining, and billing of domestic meters.

The DF government uses financial measures to ensure that water is affordable, including water charge discounts and arrears forgiveness for those that have difficulty paying their water bills. For example, late payment charges and fines for non-payment over 1995-98 were forgiven after customers paid their bills (Saade-Hazin, 2002). A current programme provides a 50% discount to retirees over 60. In the 1930s, federal health legislation banned the complete disconnection of residential users for non-payment, but the Federal District Financial Code authorises reduction of service to minimum "vital levels" in the event of non-payment.

Recently established regional River Basin Councils are expected to provide a forum for consumer participation regarding water policy. The councils are designed to facilitate open debate among all water users on issues such as pricing, rights, conservation measures, and infrastructure development.

4.3.6 Summary of case study findings

The case of Amiens provides an example of *Administrative* PSP that has not only met standards of financial efficiency but even occasionally contributes to the city budget. Full cost recovery has been achieved, prices are lower than the national average (including comparisons with private operators), and long-term investments are being made to assure adequate supply. Amiens illustrates the potential for publicly owned local water operations to meet environmental and social objectives when the appropriate legal framework, mechanisms for public consultation, and enforceable standards are in place.

Hamburg, with a city-owned, private-law company, provides an example of *Legal* PSP in which the company has chosen to seek economies of scale with other

municipalities. In this case, too, full cost recovery has been achieved and water prices are stable, even as the company embarks on many innovative conservation programmes. Hamburg has also had a high level of success in meeting its social and environmental objectives, with minimum service levels for all users and local public participation in tariff setting. Drinking water standards are met, and water conservation is promoted through water saving devices and consumer education campaigns. Most remarkably, what could have been a contentious social issue — extending metering to all households by reforming rent laws — was resolved with a high degree of acceptance, thanks to consultation and participation of all levels of government and of political and social leaders (e.g. teachers). This success demonstrates the importance of co-ordinating action when managing social transitions.

Suburban Water Systems, a subsidiary of the investor-owned regulated company Southwest Water, is an example of *Financial* PSP. Of particular interest here is the regulatory framework that encourages stable prices and a high level of service quality. *Financial PSP* requires special safeguards against monopoly abuse. The rate-of-return (ROR) method of price regulation has minimised price increases while allowing adequate investment in infrastructure and good quality drinking water. Pressure from consumer protection groups and the media has led to measures such as the EPA-mandated Consumer Confidence Reports, which have been instrumental in encouraging companies to comply with EPA standards and rules. This applies to cleanup efforts as well as compensation based on legal liability for damage stemming from poor water quality. In addition, a well-functioning, independent judicial branch is necessary when addressing incidences of monopoly abuse. The rate-of-return calculations that regulators use to set tariffs focus increasingly on efficient water use and conservation goals via such options as seasonal, increasing block, and lifeline rates. Nevertheless, the continued inattention to meeting minimum service levels is of concern, especially given the link to questions of affordability. Vulnerable groups have no statutory protection and often can suffer as a result of disconnection. The situation of low-income groups is particularly aggravated by the lack of social welfare benefits to help offset utility costs.

The Federal District of Mexico initiated service contracts with private partners in the early 1990s in a unique approach to PSP. The public authorities sought to introduce competition among contractors in their initial bids for service contracts while striving to minimise the risk of contract failure and the high transaction costs associated with public bidding for all stages. A multiple contractor, multiple phase option was chosen in hopes of saving time and starting several short-term projects quickly. The reforms have led to a greater potential for meeting future conservation and affordability goals, chiefly through the expansion of metering. While minimum service levels are still far from acceptable in all districts in the city, the operation and use of customer service centres have improved, as has billing. This case shows the difficulties in implementing a type of PSP that requires supervision without a clearly demarcated regulatory framework. PSP by *Delegation* requires a clear delineation of the supervisory duties of public institutions, something that was lacking in the Federal District. The DF does attempt to assist vulnerable groups through the use of discounts and normalisation of arrears. Caution is needed nonetheless in drawing conclusions regarding the use of PSP by

Delegation to build capacities in the DF; the reform is still very much a "work in progress".

The Glas Cymru (Welsh Water) case demonstrates a novel approach to *Corporative* PSP, the formation of a member-owned public body. What was previously a classic example of a *Financial PSP* utility has been turned into a not-for-profit limited guarantee company that has no officially designated shareholders, but is instead controlled by a group whose members are appointed by the regional Welsh Assembly. Particularly noteworthy is the use of benchmarking for director and executive pay, and the separation of ownership from operation (an example of the need to insulate consumers/community from risk associated with private investment). This form of private sector participation has shown that it can meet economic efficiency targets. When coupled with a responsive customer service approach, lower prices, and social welfare assistance for vulnerable groups, this approach can enjoy considerable social acceptability. The transfer of assets back to the local community received widespread support, largely due to the national sentiment for increased regional decision-making as part of the devolution of authority to Wales.

In summary, the experiences described above indicate that especially where *financial* PSP and PSP by *Delegation* are used, it is important to have established regulatory frameworks that protect consumers from monopoly abuse in the form of low service quality and high prices. Since there is little or no involvement of users in the modification of tariffs, it is essential to have representative political institutions that can intervene on behalf of consumers. While traditional legal systems should in theory provide recourse for customers, given the high costs of reaching agreement, this may be of little practical use in protecting consumers' right to access, especially where disconnection of water services is allowed.

4.4 Regulating municipal water service provision

Where administrative, corporative, or municipal enterprises are the norm, regulation does not always exist in the formal sense. Local control is inherently present when the municipality (or an association of municipalities) owns the assets related to water service provision. A national tariff policy is not necessary to ensure that prices are economically viable. In fact, all the cases discussed above meet full cost recovery criteria, and provide flexibility in decision making and planning. The most common form of assuring accountability comes through indirect political control, namely through the direct election of public officials to municipal and regional authorities responsibility for water management. All these forms of utility management must consider the affordability of services, especially with regard to vulnerable groups, and in the cases discussed above, this condition is generally met through the social welfare system.

Maintaining a degree of collective political control for a potentially monopolistic industry, such as water services, requires regulation to ensure that the following attributes are in place, especially if pursing mixed enterprise or financial PSP in which partial or full ownership of assets lies with private actors:

- *General legal framework:* constitutional rules establishing the jurisdiction and authority of national, regional, and municipal governments.

- *Water resource and environmental laws*: water rights allocation, protection mechanisms, resource conservation, and pollution control agencies must set clear and enforceable standards.

- *Specific legislation*: defining the role of PSP, as well as mechanisms for public scrutiny and consultation.

- *Ability to issue individual contracts or licenses:* including a clear demarcation of company law as applied to different private operators in public services.

The most common areas for regulation in municipal water services include prices, service levels and operating costs, investments, consumer protection, water quality, environmental protection, and safety. Economic regulation has traditionally been the preferred means of balancing the interests of producers and consumers. Introducing different aspects of competition to the water supply industry is also often considered important. There is great diversity in OECD countries regarding the intensity and scope for competition in water service provision.

The "Anglo-Saxon" model is based on centralised public policy making and supervision. It implies limited municipal public policy input, and requires independent regulatory supervision. In the case of **England and Wales** (and to a certain extent in the **US**), there is no direct competition among investor-owned utilities, including no competition for customers or for supply areas. Regulators must therefore evaluate the relative performance of several utilities on a comparative basis. This form of regulation is best suited to cases where there are multiple utilities, so there can be a meaningful statistical evaluation. The regulators also require that natural monopolies be set up as separate profit centres and publish separate accounts. The objective is to limit the likelihood that private operating companies will reduce competition by providing other water goods and services in unregulated areas. In this context, *Financial PSP* requires an active social welfare system to address affordability issues for vulnerable groups, since citizens have no direct role in influencing tariff decisions, and licences are awarded on a long-term basis.

The "French" model builds in competition for monopolies through the use of contracts, in a context of market concentration. Municipal input is permitted, but citizen or consumer influence is limited. While PSP through *Delegation* gives municipalities considerable flexibility, the only basis for public participation in tariff setting comes

through indirect representation at the municipal and regional levels. In **France**, unlike in the UK, competition exists between operators, potential or otherwise. Whereas in the UK, separate accounts are kept to maintain a distinction between operation in the regulated versus unregulated areas, the French case maintains regulation throughout the bidding process (although not so stringently after the granting of the concession). This is similar to the case of the Federal District of **Mexico**, where competition took place at the time of the bidding for the contracts. The Mexican case, however, also introduced competition though benchmarking by designing a three-phase contract and allowing operators to renegotiate contracts at each stage, so that economic regulation can be introduced more often.

The "German" model is based on the principles of industry competition and democratic control through decentralised, autonomous municipalities, along with localised decision making. In **Germany**, there is direct competition among some municipal operators, even though all operators have local monopolies and these are only rarely threatened (e.g. in the form of competition for water-related goods and services). For example, the Hamburg Wasserwerke not only supplies water to the city-State of Hamburg, but also (through the use of subsidiary companies) engages in the running of public pools, redevelopment of contaminated sites, and consulting services in water management. The market is characterised by numerous small– to medium–sized firms seeking to provide services to the increasing number of integrated Querverbund (infrastructure systems). As a result of the dominance of local actors, comparisons of performance are not carried out by external regulators, but take the form of self-enforcing regulation by the operator, or by an external consultant.

4.5 Evaluating the contribution to water governance

When evaluating the effectiveness of meeting social and environmental objectives in urban water management, it is important to see how municipalities and private actors alike contribute to "good governance". Good water governance entails:

- Pursing an efficient allocation of resources.
- Establishing and enforcing the highest water quality standards.
- Pursuing integrated water resource management.
- Increasing stakeholder participation.
- Avoiding irreversible policy decisions.
- Taking into consideration both the willingness and ability of users to pay for water.

The appropriate way to assure an efficient allocation of water is to apply the principle of marginal social cost pricing. Water supply and sewerage fixed costs are high, ranging around 70-90%. Pricing structures should reflect this by having fixed charges that cover at least the fixed costs associated with providing water. For example, where consumption has reached a sustainable level, high fixed charges would be reasonable. Efforts to prevent future increases in consumption could be addressed with increasing block tariffs (Brackemann *et al.* 2002).

Operational efficiency is a necessary but not sufficient condition for efficiency in environmental protection. Efficient operations are more likely to be cost-effective in attaining environmental policy objectives and obtain better results with any given amount of financial resources. When applied to PSP and regulation of urban water supply, which types of management, public and/or private, establish incentive structures that foster efficiency and sustainable development? The tendency to believe that private enterprises will fail to meet sustainability criteria is not without grounds. Given the capital-intensive nature of the water service and contracts that are often based on "cost-plus" arrangements, there may be strong disincentives to reduce water consumption and/or material intensity in the design and construction of technical systems. Rather than invest in low-cost preventative measures to protect water sources, the preferred course of action may be invest in capital-intensive treatment to safeguard drinking water quality.

Another conceptually similar issue relates to water productivity. When compared to other forms of economic activity, water service provision has a high proportion of fixed costs. Given large differences between average and marginal costs, there is a strong incentive to *encourage* water consumption and discourage conservation. The logic is that any reduction in water consumption or sales would have to be followed by commensurate increases in water prices, otherwise fixed costs (such as depreciation and debt service) could not be met. This creates a dilemma, especially with regard to redistributive effects and social and political objectives. In effect, any attempt to promote conservation through higher water prices may meet resistance.

There are two ways out of this dilemma. The first is to increase the *ability to pay* by raising household incomes through subsidies, tariff structures, social transfers and the like. The second is to ensure that public perception of water services and operations remains supportive (in other words, to increase the *willingness to pay)*. If the public believes the revenue from higher prices and charges will be private gains from monopoly rents, raising water prices will be highly unpopular regardless of the degree of support for environmental protection. Similarly, opposition to higher prices is often linked to the frequency of rate increases and not necessarily to their levels.

Important factors that can influence the willingness to pay are linked to the concepts of local control and equity. Local control, in the form of public ownership of assets or democratic accountability, plays a role in increasing the public's sense of responsibility when it comes to protecting local water resources. Such closeness to the issue is important in maintaining transparent and accountable practices. This is the opposite of the "foreign investment syndrome" witnessed in some attempts to introduce

forms of mixed enterprise or Financial PSP that have turned out to be highly contentious politically (and rejected socially). While progressive tariffs, social welfare supports, and cross-subsidies all address affordability, they may have a dampening effect on the levels of willingness to pay by and could be perceived as promoting "free-riding", if not well-targeted.

"Efficiency", as defined in a strict microeconomic sense, is hardly a sufficient criterion for evaluating performance in the provision of urban water supply. For one thing, it fails to take into consideration the significant externalities related to public health and hygiene; for another, it leaves aside questions of equity and redistribution. One important factor has to do with the presence of mechanisms for democratic control (either direct or through representation). This is closely linked to the concept of devolution, where the goal is to maintain localised administration and management, responsive to local demands, with sufficient capacities to maintain and deliver public services. In **Germany** and **Wales**, for example, local elected officials consult with utility managers and regulators to set tariff rates; non-executive members of the board of the utility are also directly accountable to local or regional legislatures. In cases where the utility is public, as in **France**, elected officials are responsible for water management decisions and held accountable by regular elections. The use of appointed officials, either for regulatory agencies or to serve on water utility boards, is also common in **England** and the **US**, and to a certain extent **France** at the regional level, and is a form of indirect democratic control.

Another factor has to do with the independence and flexibility of the management, particularly regarding strategic planning, investment, and development plans. This directly addresses the ability of water service providers to build capacities to a point where they may operate autonomously from higher levels of government (i.e. through the ability to raise finance or to participate in tariff modification). Flexibility to adapt to local changes in demand for services, be they related to quality levels or price, is most frequently found in cases where providers are not locked into long-term contracts or subject to lengthy regulatory processes. For example, Suburban Water Systems in the **US** can adjust prices under ROR regulations that are based not only on the past six years' costs, but also on projected costs. They can also request special rate cases through public hearings in the event of unexpected increases in costs on a yearly basis. Self-enforcing practices within the context of a decentralised system, as is the case in **Germany**, have been particularly useful in promoting flexibility and maintaining autonomous decision making.

Both factors also permit consideration of the stability of the institutional arrangements, particularly since short-term objectives (political intervention) may not always be in line with long-term objectives (returns on capital investments that take several years to manifest). The case studies of water suppliers that rejected radical shifts in the model of water service provision (Amiens, Hamburg Wasserwerke, Suburban Water Systems) all illustrate good track records for full cost internalisation, drinking water quality, and stable prices. In contrast, the degree of uncertainty associated with contract renewal in Mexico City (given institutional changes accompanied by public

sector and electoral reforms) could make it difficult to simultaneously achieve economic, environmental, and social objectives.

Water resource protection is a government responsibility. Groundwater abstraction should not exceed the rate of renewal, and withdrawals from surface water should leave enough water for ecological functions and other sustainable uses of resources. However, given variations in local circumstances, the role of water service providers becomes critical to assuring access to and availability of safe drinking water. Whether water service providers are successful in promoting protection of water resources locally is contingent on three factors:

- The provider must have an *interest in acting* (a service provider dependent on local water sources, when threatened by loss of operational independence in the event these sources become contaminated, is more likely to have a direct interest in mitigating the effects of the pollution).

- The provider must have *the capacity to act* (local water suppliers must have legal recourse and standing to directly challenge the behaviour of polluters).

- The provider should have the *autonomy to act* (local water suppliers must be free from outside interests, political or otherwise, that shift incentive structures towards more capital-intensive drinking water treatment. From a resource protection standpoint, the supplier of this essentially public good is best organised along local production unit lines).

Another indicator of efficient performance relates to the presence or absence of joint operations in technical services at the local level. Horizontal integration will have an impact on the optimal size and scale of operational units for urban water services, since economies of scale at the operational level can be replaced by economies of scope and scale at the company level. PSP that maintains 100% of asset ownership in public hands has the potential to benefit from joint operations that introduce flexibility in management yet secure stable regional solutions to water management.