1. Introduction

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1.1 WATER SUPPLY CHALLENGES – A CRISIS OF GOVERNANCE

Water is essential to life and while access to improved water supply and sanitation services are vital to human health and well-being, it also plays a crucial role in determining the development of a country or region. According to the World Health Organization and United Nations Children's Fund's report on 'Progress on Sanitation and Drinking Water: 2010 Update', in 2010 about 87 percent of the global population (about 5.9 billion people) and 84 percent of the people in developing regions had access to piped water supply through house connections or to an improved water source, including standpipes, water kiosks, protected springs and protected wells. However, about 14 percent (884 million people) did not have access to an improved water source and had to use unprotected wells or springs, canals, lakes or rivers for their water needs.

Over the years, access to water as a basic human right has been mentioned in a number of international documents of varied normative value. It was first implicitly mentioned in the Universal Declaration of Human Rights (United Nations, 1948), which stated in Article 25 that 'Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care'. Although not legally binding, it has been considered as customary international law and has been reasserted in many international agreements. Article 12(1) of the 1966 International Covenant on Economic, Social and Cultural Rights (ICESCR) stated that 'The States Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health' and Article 6(1) of the 1966 International Covenant on Civil and Political Rights (ICCPR) mentioned that 'Every human being has the inherent right to life. This right shall be protected by law. No one shall be arbitrarily deprived of his life'. These two legally binding covenants have once again mentioned

water implicitly, as it is assumed that water is a fundamental necessity for enjoying good health.

Beginning in the 1970s, a series of international environmental or water conferences have taken on the issue of access to basic resource needs and marked the transition towards a more explicit recognition of the right to water. Resolution II on 'Community Water Supply' of the 1977 United Nations Water Conference, held in Mar del Plata in Argentina, recognized water as a right for the first time, declaring that 'All peoples, whatever their stage of development and social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs'. The 1979 Convention on the Elimination of Discrimination against Women and the 1989 Convention on the Rights of the Child serve as two binding instruments that oblige national governments, as signatories to the conventions, to protect and realize the rights of women and children to water.

The challenges of water provision and pricing started to gain increased attention during the 1990s, when the focus of the international community shifted to sustainable development with greater emphasis on the economic and environmental aspects of growth. In 1992, the International Conference on Water and Sustainable Development, held in Dublin, Ireland, recognized the increasing scarcity of water and stated in Principle 4 that: 'Water has an economic value in all its competing uses and should be recognized as an economic good. Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price' (Dublin Statement, 1992).

In the same year, Chapter 18 of Agenda 21, an outcome of the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, endorsed the resolution of the Mar del Plata Water Conference and called this 'the commonly agreed premise'. These statements, followed by others, gradually affirmed the role of national governments and international organizations, to take responsibility to fulfill the stated 'right to water' (United Nations, 1992). The 1999 UN General Assembly Resolution (A/Res/54/175) 'The Right to Development' stated in Article 12 that 'in the full realization of the right to development, inter alia: (a) The rights to food and clean water are fundamental human rights and their promotion constitutes a moral imperative both for national Governments and for the international community'. In 2002, the General Comment 15 of ICESCR provided guidelines for the interpretation of the right to water, framing it within two articles, Article 11, the right to an adequate standard of living, and Article 12, the right to the highest attainable standard of health. In paragraph 1 it stated that 'The human right to water is indispensable for leading a life in human dignity. It is a

pre-requisite for the realization of other human rights', and in paragraph 2 it mentioned that 'The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses.'

The various international declarations made after the Dublin Statement and UNCED confirm that water has an economic value and when pricing water, factors such as public right to access to water, the need to maintain affordability, and reduction of wastage, need to be taken into consideration. For example, the Ministerial Declaration of the 2nd World Water Forum organized by the World Water Council, held in The Hague in 2000, declared *inter alia* that:

> To manage water in a way that reflects its economic, social, environmental and cultural values for all its uses, and to move towards pricing water services to reflect the cost of their provision. This approach should take account of the need for equity and the basic needs of the poor and the vulnerable. (World Water Council, 2000)

The Ministerial Declaration of the 3rd World Water Forum, held in Kyoto in 2003, declared *inter alia* that:

> Funds should be raised by adopting cost recovery approaches which suit local climatic, environmental and social conditions and the 'polluter-pays' principle, with due consideration to the poor. All sources of financing, both public and private, national and international, must be mobilized and used in the most efficient and effective way. (World Water Council, 2003)

All the conventions, conferences, declarations and action plans discussed so far aimed to address the problems ensuring safe water supply to all. The most notable of these was the United Nations Millennium Declaration 2000, which addressed eight Millennium Development Goals (MDGs) that all 193 United Nations member states and at least 23 international organizations have agreed to achieve by the year 2015. Target 7C under Goal 7 aims to halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation. Moreover, to emphasize the urgency of dealing with water security issues, the UN General Assembly issued a number of resolutions. In 1992, it declared March 22 of each year as 'World Water Day', in 2000 it proclaimed the year 2003 as the 'International Year of Freshwater' and in 2003 it decided to mark 2005–15 as the 'International Decade for Action – Water for Life'. The goal of the decade has been to provide greater focus on water-related programs and projects to achieve the internationally agreed, water-related goals. Finally, in July 2010, the UN General Assembly adopted

a resolution that 'recognized the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights' (A/RES/64/292). Following this resolution, in September 2010, the Human Rights Council took a further step by specifying that the right to water and sanitation is legally binding.

The progress towards meeting the MDG target in developing countries in terms of access to safe drinking water is uneven. Most of the improvements are in China and India, while sub-Saharan Africa is lagging behind, with only 60 percent of the population using improved sources of drinking water. There is also wide disparity between urban and rural water supply, and currently while 94 percent of the urban population of developing countries uses improved sources of water, it is only 76 percent of the rural population. Since 1990, 1051 million people in urban areas have gained access to improved drinking water sources. However, during the same period, the world's urban population rose by 1090 million people; resulting in a net 39 million increase in the urban population that rely on unimproved drinking water sources, most of whom live in the cities and towns of developing countries (WHO/UNICEF, 2010).

In the document 'Towards Water Security: A Framework for Action', prepared by the Global Water Partnership (GWP) for presentation at the Second World Water Forum, it was stated:

> The water crisis is mainly a crisis of governance. Working towards effective governance requires an enabling environment and appropriate institutional structures that allow stakeholders to work together for the effective water management. Financial practices must be realigned to support the sustainable use of water resources (GWP, 2000).

The term 'water governance' has no universally accepted definition. According to several agencies of the United Nations (UNDESA/UNDP/UNECE, 2003) and the Global Water Partnership (Rogers and Hall, 2003), 'water governance' refers to 'the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society'. This definition appears broad enough to encompass the various relevant systems, the role of such systems and the end-users. However, it does not adequately address issues such as governmental obligations to the people, setting priorities for water policy, identifying minimum water requirements and allocation of water, and sourcing the necessary financial and technical inputs for development and management of water infrastructure facilities.

Given the modern forms of government, increasing population and the need for decentralized systems of administration, public participation and

decentralization are integral elements of governance of public resources such as water. Bakker (2003) defines 'water governance' to include 'the range of political, organizational and administrative processes through which communities articulate their interests, their input is absorbed, decisions are made and implemented, and decision makers are held accountable in the development and management of water resources and delivery of water services'. According to Lewis (2004), 'adequate governance can decrease political and social risks, as well as institutional failures and rigidity. It can also improve capacities to cope with shared problems'. In these circumstances, water governance is no longer considered from the narrow perspective of water resource management through the political and administrative instruments of a government.

Recent research on water governance has observed a direct correlation between the lack of access to water services and poor governance structures, especially in developing countries where water is a scarce resource (Lewis, 2004; Lenton et al., 2005; WSP, 2007). Camdessus and Winpenny (2003) argue that even if more financial assistance is given to developing countries, it is unlikely that the funding will translate into improved service outcomes unless wider governance issues are also simultaneously addressed. In many developing countries, the governance of the water sector as a whole is in a state of confusion and dysfunction with little responsiveness or accountability to citizens (Tropp, 2005). The key reasons are lack of institutional clarity, uncoordinated approaches towards water management by different state entities, and lack of proper legal regulatory framework to provide a sound foundation for water governance. According to the UN (2006), the key reasons for poor water governance in most countries are fragmented institutional structures, lack of clarity of roles and responsibilities, inefficient resource allocation, ineffective financial management, lack of management know-how, weak accountability of policymakers and implementing agencies, unclear or non-existent regulatory environments, and unpredictability in the investment climate that discourages private sector investment.

Hence, capturing all the different dimensions of the concept, the term 'water governance' refers to the power and authority of public sector entities as well as cooperation and collaboration between public sector, private sector and the community, and the various legal, institutional, administrative and technical mechanisms established to facilitate water resource management, delivery of water to people and sustainable water use, which together encompass the water governance architecture. Successful and sustainable water governance architectures require the participation of the public sector, the private sector and the community. This does not necessarily mean that only market-based mechanisms with private sector

participation and competitive pricing policies will be successful. Water governance under strict public administration regimes can also succeed if the support of end-users as well as private sector participation in some form, for example, the provision of technology, is available.

This book is an outcome of the research project titled 'Water Governance: An Evaluation of Alternative Architectures' conducted by the editors for the Institute of Water Policy at the Lee Kuan Yew School of Public Policy in the National University of Singapore, in collaboration with the Public Utilities Board, Singapore. It compiles the work of academics, researchers and experts, working in various sectors of water management, from different institutions and universities across the world. Other than this introductory chapter and the concluding chapter, the book consists of 13 chapters revolving around the basic theme of urban water governance, where the authors discuss the various types of water governance structures being used across the world as well as identifying trends, challenges, gaps and opportunities, and the recent shifts in management and perceptions. Many chapters are specifically dedicated to outlining and analyzing the urban water supply scenarios in selected countries, with specific focus on legal, policy and institutional frameworks governing water supply provision. The book comprises separate chapters on water governance in the United Kingdom, France, Spain, India, China and Australia as well as the Middle East and North African region as a whole. Section 1.2 of this chapter provides a comprehensive overview of the various water governance mechanisms in place and thus provides an understanding of the basic terms and types of contracts that have been dealt with in this book. A detailed discussion on the evolution of public and private water governance architectures over the last two centuries is provided in section 1.3. Section 1.4 provides an outline of each of the chapters, including their main focus and findings.

1.2 OVERVIEW OF ALTERNATIVE WATER GOVERNANCE ARCHITECTURES

Most urban water supply services around the world are provided by public entities, although there is no agreement as to the exact division of public governed services, public–private partnerships (PPP) and totally privatized entities. Approximately 90 percent of the global water supply is in the hands of public sector entities and the balance is provided by private or mixed public–private companies under various contractual and procurement arrangements (UNICEF, 2010; Wolff and Palaniappan, 2004; Kishimoto, 2009; Marin, 2009). According to the *Pinsent Mason's*

Table 1.1 Governance architectures for urban water supply

Governance Mechanism	Description	Examples
Public	Public water utilities	Porto Alegre (Brazil)
	Public–public partnerships	UN's Water Operators' Partnership and Waternet (Amsterdam, The Netherlands)
	Small-scale water cooperatives	Gramastetten (Austria)
	Corporatized water utilities	Singapore, Saudi Arabia and Egypt
	Autonomization	Uganda and Zambia
Public–private	Public–private partnership	Several countries, such as The Philippines
Private	Privatization	United Kingdom (nationwide), Chile, and the Czech Republic

Water Yearbook 2011–2012 (Pinsent Masons LLP, 2011), in 2011 about 909 million people or about 13 percent of the global population was provided with water supply and sanitation services either entirely by the private sector or by some form of PPP. As far as developing countries are concerned, according to the Third World Centre for Water Management (TWCWM), the private sector currently serves about 3–6 percent (estimates vary) of urban water consumers. This percentage is likely to increase in the coming years, but not rapidly. TWCWM predicts that under all foreseeable conditions, a vast majority of domestic consumers in developing countries are likely to continue to be served by publicly run water companies in the next decade.

In urban areas, the water supply service is provided by water utilities, which often differ from each other in terms of their geographical coverage relative to administrative boundaries, sectoral coverage, ownership structure and governance arrangements. Many water utilities provide services in a single city, town or municipality, while in some federal countries a single utility is often responsible for providing water supply services to an entire state. In case of some smaller developed countries, the entire country or at least all the large urban areas are provided with water and sanitation services by one service provider. Water supply providers can be public, private, mixed or cooperative and there can be many forms of governance arrangements for both public and private utilities. Table 1.1 summarizes the different forms of water governance architectures currently in place,

with totally publicly owned and managed water utilities and totally privatized utilities at two ends of the continuum. Sections 1.2.1 to 1.2.7 below present a brief analysis of each of the seven alternative water governance architectures described in the table under three main governance mechanisms.

1.2.1 Public Water Utilities

Traditionally, the government has been responsible, partly or fully, for the provision of water and the development and management of related water infrastructure facilities. As noted above, even today, public entities continue to provide most of the water and wastewater services worldwide, although the number of end-users served by the private sector entities has increased.

Under the totally public managed water governance model, a formal public authority or authorities (local, regional or national) is responsible for the provision of water services (including infrastructure development and funding, operation of the supply system, regulating tariffs, billing and collection of tariffs (if they are raised), and system management and maintenance). The public sector also retains full ownership of the related water infrastructure. Where this model thrives or is strongly supported due to political reasons such as the fear of public criticism for removing heavy state subsidies for water, private sector involvement has been considered inappropriate given the public good and basic need (or merit or beneficial good) characteristics of water supply, and the inherent monopolistic tendency of water systems due to economies of scale in service provision (Johnstone and Wood, 2001).

There are successful public water utilities. In Porto Alegre, the capital of the south-most state of Brazil, Rop Grande do Sul, the Municipal Department of Water and Sewerage (DMAE), a public-owned water utility, has become a model for successful public management of water for those who are opposed to private participation in water services (Maltz, 2005). The Transnational Institute (The Netherlands), Our Water Commons (United States), Food and Water Watch (United States), Blue Planet Project (Canada), Centre for Human Rights and Law (India), and the Red Vida (Latin American water justice network) are some organizations that strongly advocate retention of public management of water. These entities, and scholars such as David Hall of the Public Services International Research Unit (PSIRU) of the University of Greenwich, United Kingdom, advocate public sector control of water on several grounds, the main ones being that water is a public right, public sector management is capable of preventing exploitation of consumers by

profit-driven private entities, and the wealth of experience and knowledge that exists in public sector given that the vast majority of water operators in the world are in the public sector.

Despite the strong case made for the continuation and/or reclaiming of public management of water, there are many cases where public management has been unsuccessful. Urban water supply in particular requires the adoption of expensive engineering solutions due to reasons such as high population, high concentration of industrial and business entities, and lack of clean and adequate water resources within close proximity to urban settlements. Sourcing sufficient financial and technological resources for developing and maintaining urban water services thus becomes a major challenge for those in charge of urban governance. Additionally, the demand for large government subsidies renders investments in the development and management of urban water facilities unprofitable public burdens. Furthermore, if the public entity integrates the responsibility for water supply into its administration of an urban area, city, town or municipality there is also the risk of water tariff revenue being diverted for other purposes. Other concerns relate to high levels of inefficiency, low levels of coverage (and equity concerns because richer neighborhoods are the primary recipients of subsidized water services), faulty incentive structures, politicization of personal appointments and management, and other bureaucratic weaknesses. These risks are particularly high in developing countries. As a result, the effectiveness of public management has been questioned.

Based on lessons learnt from successful public utilities across the world, Chapter 15 in this volume provides a detailed analysis of the factors that determine the ability of a public utility to excel.

1.2.2 Public–Public Partnerships

A public–public partnership is a collaboration between two or more public authorities or organizations (international or national), based on solidarity, to improve the capacity and effectiveness of one partner in providing public water services, which encourages sharing of experiences and knowledge, cross-subsidizing, and twinning and other not-for-profit cooperation (Hachfeld et al., 2009). Public–public partnerships have often been described as 'a peer relationship forged around common values and objectives, which exclude profit-seeking' (Hall, 2010). Their key functions include training and developing human resources, providing technical support on a wide range of issues, improving efficiency and building institutional capacity, financing water services and improving community participation (Hall et al., 2009).

According to Hall et al. (2009), public–public partnerships avoid the risks of public–private partnerships, such as transaction costs, contract failure, renegotiation, and the complexities of regulation, commercial opportunism, monopoly pricing, commercial secrecy, currency risk and lack of public legitimacy. Thus, financial and logistical support comes mainly from mutual arrangements between public entities with the same country or between public entities of different countries. For example, in 2010, the European Union earmarked funding, under the ACP-EU Water Facility, to support public–public partnerships between public water operators in the European Union, and Africa, Caribbean and the Pacific. The water partnership aims to transfer 'expertise, knowledge and learning' from water and sanitation utilities, local authorities and other water sector organizations (PSIRU, 2010).

Hall et al. (2009) documented more than 130 public–public partnerships in around 70 countries. Their success is demonstrated by Hall (2010) pointing to the fact that over 70 countries have implemented public–public partnerships in the water sector, compared to the 44 countries which have introduced private sector participation in the water sector. Since the 1980s, K-Water, a state-owned bulk water supplier in South Korea, has assisted local governments and municipalities with capacity building and technical consultancy for their water supply systems. After the termination of the Azurix-led concession contract in Greater Buenos Aires, Argentina, the provincial government set up Aguas Bonaerense SA (ABSA) as a public sector water company, which is co-owned and operated by the workers' cooperative '5 de setiembre S.A.'. In Peru, the social movement organization FREDEAJUN (Frente de Defensa del Agua de la Region Junín) and one of its members, the local sector trade union SUTAPAH (Sindicato Único de Trabajadores de Agua Potable de Huancayo), established a public–public partnership between SEDAM, the public utility for Huancayo in the department of Junín, and the Argentinian public water operator ABSA. In The Netherlands, Waternet has been active in twinning and other international not-for-profit cooperation, through WereldWaternet. The company currently has projects aimed at sharing expertise and experience to improve drinking water supplies in Suriname, Egypt, Indonesia, Palestine and several other countries (Hachfeld et al., 2009).

However, the number of countries which have implemented public–public partnerships alone is insufficient evidence to demonstrate its success. This is because they are soft, non-binding understandings between public entities to assist public management of water services, thus vulnerable to changing government policy and economic situations. In other words, their greatest weakness lies in the fact that they are non-contractual

and thus non-binding. In the circumstances, unlike in the case of PPPs, the parties involved in public–public partnerships would lack the legitimate right to demand the performance of obligations during the agreed period of partnership and press for legal remedies in the event of failure to do so by either party.

It should be noted, however, that the creation of public–public partnerships does not necessarily have to rule out private sector participation. Concerned about the risk of missing the water and sanitation targets in the MDGs, the Water Operators' Partnership was established in November 2010 under the mandate of UN-HABITAT to enable water operators (including private operators) to systematically communicate amongst themselves and to share their experiences and learn from each other on a not-for-profit basis. It is based on the premise that establishing direct and effective partnerships and networking among operators at global, regional, subregional and national levels and facilitating a process of 'learning by doing' amongst them is an urgent necessity for better equipping the key players in the water sector to meet the challenges of attaining the MDGs on water supply (UN-HABITAT, 2008).

For example, Empresa de Servicios Sanitarios del Paraguay (ESSAP) – Paraguay's state-owned water operator – signed an agreement with Brazilian operator Companhia de Saneamento de Minas Gerais (COPASA) in September 2007 for the provision of technical assistance on a not-for-profit basis, which was aimed at helping ESSAP reduce water leakage in the Paraguayan capital Asunción and its metropolitan area, to increase ESSAP's water provision capacity. However, water operators' partnerships may negate the goal of public–public partnerships to protect against privatization of public services and dilute the initially progressive alternative concept.

1.2.3 Small-scale Water Co-operatives

Small-scale water co-operatives are special forms of public water companies, which are licensed by the government and are allotted a limit as to the amount of water they are allowed to extract and supply to the community. The cost and investment of running small-scale water co-operatives is low (but the unit cost is high). In some cases, the municipalities may support their establishment and provide operational assistance. Rural areas in Austria and Finland are serviced by a large number of small-scale water cooperatives. In the federal district of Oberösterreich (Austria), where the government supports decentralized water services, more than 10 percent of the population is served by around 1500 co-operatives. One example is the Wassergenossenschaft Gramastetten, which was founded in 1947 and

provides drinking water to about 2000 people. It was one of the largest water cooperatives with 569 members in 2008. Membership is connected to the ownership of real estate and apartments and a connection fee has to be paid to access the water network of the co-operative. All relevant information is available to everyone and important decisions are taken by the general assembly of all members. The administrative work and most of the technical work are done on a voluntary basis. The regional association of water co-operatives provides expertise, quality control, and training. They charge low prices for water, follow the principle of strict non-profit management, use local water sources and their administrative costs are low due to voluntary work by the members. However, while they have been successful on a small scale, it may not be possible to replicate this model on a larger scale and therefore, water co-operatives have limited application for urban water supply (Hachfeld et al., 2009).

1.2.4 Corporatized Public Water Utilities

Corporatization refers to the transformation of state assets or agencies into state-owned corporations in order to introduce corporate management techniques to their administration. It is one form of new public management initiatives implemented in some countries to improve the efficiency of water governance by transforming a public water agency or utility into an independent corporation. The key aim of corporatization is to mimic the structure and efficiency of private corporations while assuring that social objectives are still emphasized through public ownership (Harding and Preker, 2000). It is, therefore, a suitable model for increasing efficiency of governance in public water utilities and a viable alternative to total privatization, which often attracts public criticism and political opposition.

Under corporatization, managers are given virtually complete control over all inputs and issues related to production of services and thus are not subject to day-to-day management controls by the state. Efficiency is achieved by accountability over a range of service-related and economic targets, which in effect mimic the effective governance structures that are associated with private companies. However, the risk of political interference in tariffs and employment, as well as incentive problems, cannot be ruled out.

Several African countries have implemented a hybrid solution of public ownership and private sector efficiency by transforming the public entities in charge of water provision into state-owned corporate business undertakings. A good example of this model can be found in Burkina Faso, formally known as the Republic of Upper Volta, a small landlocked

country in West Africa, which is considered to be the third poorest country in Africa. After the country was established in 1958 as a self-governing French colony, for almost two decades, water services were provided by a private operator, which focused on a few rich neighborhoods of the capital, Ouagadougou (Marin et al., 2010). The contract was terminated in 1977 and the responsibility for water services was transferred to municipalities until 1985, when the Office national de l'Eau et de l'Assainissement (ONEA) was established as the new public sector entity responsible for provision of urban water supply services (Marin et al., 2010). Early performance of ONEA was typical of inefficient public enterprises in charge of public utilities in most developing nations. As a result, by the early 1990s, when the subject of water governance was evaluated, it was evident that the urban water sector had made little progress as more than one-third of the urban population lacked access to piped water and household connection coverage stood at only 24 percent in urban areas (Marin et al., 2010).

In order to introduce reforms to improve water management, ONEA was transformed from a quasi-public agency into a 100 percent government-owned limited liability company in 1994, converting it into a state-owned business entity governed by private law (Marin et al., 2010). In the year 2001, ONEA entered into an innovative performance-based service contract with Veolia, to provide more efficient services to the urban households (Marin, 2009). ONEA's management now operates based on an arm's-length relationship with the government, which enables it to appoint, promote and terminate its employees based on performance. Further, it can disconnect water services for non-payment of bills without being hindered by typical restraints on public sector-run utility providers such as the lack of legal authority to terminate water connections as a result of applicable laws on public rights. All these changes have helped ONEA to become one of the few well-managed public water utilities in sub-Saharan Africa. In December 2008, ONEA became the first public water utility in sub-Saharan Africa to be IS0 9001 certified (Jagannathan et al., 2009).

Public water supply institutions in Arab countries have also undergone various reforms, shifting more towards client-oriented service provision with improved institutional capacity to pursue the principles of efficiency, transparency, accountability and equity in delivering services to the people. According to the World Bank (2007), these transformations have been designed to address the problems afflicting these public-run water utilities, 'such as unclear lines of responsibility for operations, low tariffs, difficulties retaining qualified personnel, and political interference in staffing policies and other aspects of operations'. A good example of such reforms can be seen in Egypt, where the government has separated service provision

from regulation in the water supply and sanitation sector. The holding company (HC), established in 2004, now has autonomous authority and is managed by a board consisting of a wide range of stakeholders. It operates at the local level through companies responsible for service provision and day-to-day operation and maintenance of the networks. The work of these companies is monitored monthly against a set of performance indicators to ensure that they strive to achieve excellence and efficiency. Along with the HC, Egypt has also established a Water Regulatory Agency to provide economic regulation for the sector, which links the government, society, and the HC to ensure the effective implementation of national policies and regulations concerning water (Jagannathan et al., 2009).

Other examples of corporatized public water utilities include Aqaba Water Company (Jordan), AQUA (Poland), COPASA (Brazil), Johannesburg Water (South Africa), National Water and Sewerage Company (Uganda), Public Utilities Board (PUB) (Singapore) and Sydney Water (Australia). PUB in Singapore, which has successfully managed the water services in the city-state with approximately 4.5 million people but with scarce freshwater resources, is considered a role model for sustainable water management by the international community. In Saudi Arabia, all key sector functions were formerly the direct responsibility of the Ministry of Water and Electricity. There was no separation between institutions in charge of policy and regulation and service provision. In 2008, the National Water Company was established to take over service provision, and it has contracted private companies to operate the water infrastructure in large cities (Riyadh, Jeddah, Mecca and Taif) under management contracts.

It should be noted that there is also a growing interest in India towards corporatization of public water entities. The Center of Excellence for Change, a think tank established as a result of collaborative effort of officials across hierarchies from the drinking water utilities, water resource organizations, agricultural engineering and livelihood organizations, and academia across India, is currently spearheading the efforts to promote reforms in the public sector water governance through 'change management', a structured approach to transitioning public organizations from the current state to a desired future state by empowering employees to accept and embrace changes in their current approaches to management. In other words, this is a process by which public entities plan to be as efficient as private sector entities.

1.2.5 Autonomization

Autonomization refers to the empowering of local governments and other public sector water operators' statutory autonomy to function

independently from strict public sector control with the objective of allowing them more autonomy and flexibility in managing some services, as well as to raise resources through tariffs and fares (Kuhlmann and Fedele, 2010). Unlike in the case of corporatization, the intention is not to transform a typical public sector entity into a government-owned business undertaking that operates almost like a private sector corporation, but to increase the level of autonomy of the public sector water operators by clarifying and strengthening the legal framework within which they function.

Autonomized public water utilities operate according to institutional arrangements and management practices associated with the private sector. This model was adopted by the Dar es Salaam Water and Sewerage Corporation in Tanzania following the termination of a lease contract. Namibia, Uganda and Zambia have adopted the model without any previous experience of private sector participation in urban water supply. These reforms have been promoted by sector professionals, donors and lending agencies in an environment marked by the declining interest of the large international water companies to venture into these countries. Table 1.2, which is based on Schwartz (2008), evaluates the characteristics of the model in Uganda and Zambia.

The prerequisites for success of the autonomized model include: leadership of top management, strong institutional culture, degree of professionalism of the staff, and the level of support from the Ministries and the international donors and lending agencies. However, the model has been criticized for reshaping public water utilities into profit seeking entities. The success of the model is also heavily dependent on government grants and donor funds, which may be withdrawn or reduced, and therefore the long-term sustainability of the model is questionable (Schwartz, 2008).

1.2.6 Public–Private Partnerships

Until about the mid-1980s, the provision of water-related services to the people remained strictly within the domain of the public sector because of the public good aspect and the natural monopoly inherent in water supply infrastructure. There was a change in water governance when countries began to feel the need to overcome the inefficiency of public management and the inadequacy of public funds and technology to develop and maintain facilities to cater to the growing demand for new and efficient services. Various forms of private sector participation in the development, maintenance and operation of water services were pursued as a solution. The reluctance of public sector entities to totally relinquish control over a sector in which they had absolute monopoly, and the public and political opposition in many countries to total privatization, led to the development

Table 1.2 Characteristics of autonomization in Uganda and Zambia

Characteristics	Uganda	Zambia
Increase in autonomy	The legal framework under which the National Water and Sewerage Corporation (NWSC) operates was strengthened. The NWSC was reorganized into an autonomous corporate body with institutional and financial autonomy.	A new institutional framework for the water sector was adopted, which included the concept of commercially operating public utilities.
Separation of service provision and regulatory tasks	The Board of Directors of the NWSC holds the management accountable using the performance targets set in the performance contracts between the NWSC and the Government of Uganda.	The National Water Supply and Sanitation Council (NWASCO), an independent regulatory agency, is responsible for the regulation of all water utilities.
Creation of quasi-competition	Internally Delegated Area Management Contracts (IDMACs) between the NWSC Head Office and the Area service providers reward good performance.	NWASCO facilitates a benchmarking exercise.
Increase tariffs to cost recovery levels and increase customer orientation	Customer care and service training; Customer charter; Annual customer surveys; Strategic alliance meetings (involving customers).	Consumer water watch groups
Increase accountability for results	Performance contracts; IDMACs	NWASCO develops guidelines for service levels and is authorized to enforce them. It also implements a Performance Incentive Scheme.

of public–private partnership (PPP), an arrangement under which public sector entities could continue to retain the permanent ownership of facilities but share the financing, development, maintenance and revenue responsibilities with the private sector.

The term 'public–private partnership' is used to describe a variety of contractual arrangements between public sector and private sector entities to develop and/or deliver public services in partnership, a model that is widely used for developing infrastructure facilities, including water. PPPs are based on the idea that the private sector is better positioned to generate the capital investment required to undertake network rehabilitation or maintenance, and expansion. The private sector's potential for increased efficiency is also emphasized. In practice, however, there may be other reasons for the introduction of PPPs, including loan conditionalities imposed by international development banks and a government's ability to dismiss public opinion, such as in the case of a country under military rule.

However, from a legal and project procurement perspective, a public–private partnership is seen as an altogether different concept from outright privatization, discussed below. In fact, it provides a structure which exploits some of the lessons countries have learned from privatization. Compared to total privatization, the slower, balanced process of PPP is felt to enhance government value and provide long-term continuing government participation in functions of public interest. Furthermore, PPP provides the flexibility that governments lack in privatization as it allows them to engage the private sector to develop and operate facilities whilst having some control in projects as partners. Moreover, if structured properly, PPPs can create a fair distribution of wealth, avoiding the financial windfalls often criticised in privatization (Lovells Lee & Lee, 2008).

There exists a spectrum of PPP models for urban water supply depending on several factors, including the distribution of decision and property rights and risks and incentives between the public and private entities (Finger and Allouche, 2001).

Service contract

A private entity provides specific services, such as leak detection, meter reading, billing or collecting invoices, and water quality measurements, for a short time period. The fees are fixed per unit of work. The private entity is required to make very limited capital investment, and these are short-term contracts. In this situation, the private sector bears very little risk and there is very little uncertainty around the expected outputs (Kauffmann, 2007). This form of PPP allocates the least responsibility to the private operator. The government retains ownership, control and responsibility (and risk).

Management contract

A private operator manages and maintains the water facility for the contract period without any investment obligations. A management contract can be used to bring in new management systems, organizations and skills, or as a preliminary step to restructure a dilapidated utility before a concession. The government compensates the private operator (costs-plus-fee). The government retains most of the operational and commercial risks, though some risk-sharing may be built into the contract using performance bonuses or contingent fees. The success of this model largely depends on the manner in which the commercial risk of the operation is allocated. For example, where the management fee to the private operator is fixed at the outset, the commercial risks of the operation are borne entirely by the public sector. However, if the management fee is linked to the performance of the managed utility, the private operator bears the commercial risks relating to operations.

Lease contract

The government leases the right to operate and maintain a water system, and to collect user charges to a private operator, and the latter is compensated with an agreed portion of the revenues. The private operator takes on the operational risk but the public authority retains ownership and responsibility for system finance and expansion, and replacement of major assets, and it recovers part or all of its costs from its own share of user charges. The lease holder may also administer investment funds as an agent of the municipality, without taking related risks. If the payments from users recovered by the private sector operator cover more than the operator's agreed remuneration, the operator is generally supposed to return the difference to the lessor (public entity) in order to cover the cost of the investments under the latter's responsibility (Kauffmann, 2007).

Greenfield contracts (BOT/BOOT/BOTT contracts)

A greenfield contract is similar to a lease except that the private operator is responsible for investment and network expansion as well. Under this approach, the public entity delegates the right to provide water services to the private sector, yet retains some control over the sector by incorporating terms and conditions, including the rights and obligations of the service provider and the term and scope of private sector operation, in a concession contract or license. These contracts often involve take-or-pay provisions, that is, revenue guarantees that subject governments to contingent liabilities. The terms BOT (Build–Operate–Transfer), BOOT (Build–Own–Operate–Transfer) and BOTT (Build–Operate–Train–Transfer) are project financing and procurement mechanisms often associated with

greenfield contracts. Under these schemes, the private sector operator obtains the capital needed for construction, builds and operates the infrastructure for an agreed period of time (anywhere between 15 and 30 years) and then transfers ownership back to the relevant public entity. Under the BOTT model, the private sector has the additional specific responsibility of training local staff before handing over the project to the public entity at the conclusion of the concession period.

These contracts are also often called concession contracts. However, in some cases, a concession describes a contract where the public authority transfers ownership and control of the entire water system, which is already constructed, to a private operator for a given period. The private operator assumes responsibilities for operation and maintenance as well as investment and service obligations. The operator bills and retains user charges for the concession period and the government retains ownership of the assets.

Joint venture

The private company forms a legal entity with the public sector, and both parties share responsibilities and investment obligations. Thus the public sector entity can share ownership with private shareholders. The joint venture company itself may either own the assets or (most often) be given a franchise by the local government. Compared to other PPP models, joint ventures are seen as project development and operation vehicles in which both the public and private sectors are expected to play an active joint role in project management.

Table 1.3 describes the allocation of key responsibilities between public and private entities, in the different models of PPPs for urban water supply, and their duration (World Bank, 1997).

Several examples and cases of PPPs in the water sector have been provided throughout this volume, and Chapter 15 contains a detailed analysis of the factors which determine the extent of success of a PPP.

1.2.7 Privatization

In a general sense, 'privatization' is said to have taken place when a specific function is handed over to the private sector and regulatory control remains a public sector responsibility. Therefore, in some cases, the terms 'privatization' and 'PPP' are used interchangeably. The term 'private sector participation' is also used sometimes instead of PPP but it does not highlight the important role of the public authorities.

In the strict sense, privatization implies a full divestiture or the sale of public assets to a private operator, and therefore the main property and

Table 1.3 Allocation of key responsibilities between the public and private entities in different types of PPPs

Type of PPP	Asset Ownership	Operation and Maintenance	Capital Investment	Commercial Risk	Duration
Service contract	Public	Shared	Public	Public	1–2 years
Management contract	Public	Private	Public	Public	3–5 years
Lease/ *affermage*	Public	Private	Public	Shared	8–15 years
Build–operate–transfer (BOT)	Shared	Private	Private	Private	20–30 years
Concession	Public	Private	Private	Private	25–30 years
Joint venture	Shared	Private	Private	Private	Indefinite

decision rights are transferred from the public entity. This is rare in the water supply sector (except in the United Kingdom and Chile). The privatization of water supply in the United Kingdom in 1989 is discussed in detail in Chapter 4.

In Chile, the privatization of the water companies was preceded by decades of institutional and policy reforms in the water sector. Under the military rule from 1973 to 1989, the existing economic paradigm changed from one where the state must ensure the optimum allocation of resources to one where market forces dictated efficient allocation. During this period, the national agency, Servicio Nacional de Obras Sanitarias (SENDOS), was responsible for providing water and sanitation services to most parts of Chile as well as for regulatory and supervisory functions. In 1981, the enactment of the Water Code separated water rights from land ownership to make the former fully tradeable, and the water market flourished as a result in large urban and agricultural areas. In 1990, the sector was transformed with the establishment of 13 regional water companies and the creation of a separate regulatory agency, Superintendency of Sanitary Services (SISS). The ownership of the regional water companies was transferred to Corporación de Fomento de la Producción de Chile (CORFO), a government organization established in 1939 to promote economic growth, and they were authorized to function as private enterprises with concessions to service particular communities and urban areas. An innovative model of tariff regulation was borrowed from the Chilean

electricity and telecommunications sector; efficient cost levels were estimated for an imaginary model company and used as a benchmark to set tariffs for the utilities. Means-tested subsidies (that is, subsidies that are granted only to those that have demonstrably limited means) were also introduced at the same time to cushion the effect of the tariff increase on the poor (Hearne and Donoso, 2005; Bitran and Arellano, 2005).

Privatization of water companies in Chile was brought about in stages between 1998 and 2005 under democratically elected governments. During 1998–2001, five of the 13 companies, serving more than 75 percent of all users, including those in the three large urban centres (Santiago, Valparaíso and Concepción), were privatized by selling 51 percent of their shares to private stakeholders. After 2001, instead of selling the assets to private stakeholders, the government awarded concession contracts to the private companies for management of water services in the remaining seven regional companies. All seven companies that were privatized in this second way merged in 2005, assuming the name ESSAN. Unlike the massive failures of PPP projects in other Latin American countries, privatization has been quite successful in Chile because of the reforms preceding the privatization, which allowed the public companies to improve efficiency and financial sustainability before being handed over to the private sector.

In most other cases, however, total privatization of water has met with stiff resistance in both developed and developing countries. Privatization was seen as too blunt and abrupt a technique to involve the private sector in the provision of public services that were previously strictly within state control (Lovells Lee & Lee, 2008). The difficulty of selling the idea of privatization to the public who have got used to free or heavily subsidized services from the public sector is one of the key reasons for the failure of privatization in many countries. International financial institutions (IFIs), which used to support water privatization, have now adopted a more cautious approach.

1.3 EVOLUTION OF WATER GOVERNANCE ARCHITECTURES

An analysis of the historical and current patterns of financing and managing urban water supply services reveals that both public and private players have important roles to play. The major challenge is allocating these responsibilities in ways that best address the needs of the people in the local context (Gentry and Auyuan, 2000). While private sector participation in the water industry can be traced back to the late eighteenth century, there have been fluctuations in the level of involvement of private

actors and these variations have largely been shaped by the international ideologies dominant during each period of time. Moreover, the nature of private sector involvement has evolved in terms of sharing of risks and responsibilities as determined by the different contractual arrangements and also in terms of market share in developed and developing countries. The following section outlines these changes in water governance over time with reference to major events in the water industry and the global development agenda. A timeline of the events is also summarized in Figure 1.1.

1.3.1 Late Eighteenth to Early Nineteenth Century: Emergence of Privatization in the North

In the eighteenth century, rapid urbanization in North American and European cities created demand for establishment of water networks, mainly driven by the need for fire-fighting and public health concerns (Prasad, 2007; Bakker, 2010, p. 83). In New York in 1795, poor quality of water sold by vendors and polluted public wells led to a major epidemic of yellow fever, which pressurized the city authorities to seek private sector investment for providing clean drinking water. However, poor performance and corruption by the private operator, the Manhattan Company, and a series of mishaps (large fire and cholera outbreaks) between 1828 and 1835, forced the government to take over the water supply system (Prasad, 2007). Private companies also supplied water to Boston, Philadelphia, New Orleans and other big cities in the United States until the mid-nineteenth century. However, most of them were eventually returned to municipal ownership as private operators, driven by the profit motive, were reluctant to increase coverage outside wealthier communities and also failed to provide water for cleaning streets, public fountains and fire hydrants (Hanson, 1959). Hence, compared to 93.8 percent of waterworks (one in 16 waterworks) being owned by the private sector in 1800 in the United States, the proportion of privately owned waterworks fell to about 30 percent (2950 out of 9850 waterworks) in 1924 (Masten, 2004; Baker, 1899).

Similarly, by the beginning of the nineteenth century, private water companies had already been serving the city of London for more than two centuries (Gentry and Auyuan, 2000). However, after the major cholera outbreak in 1840, these became regulated entities and, over time, the provision of water and sewerage services in the United Kingdom (UK) came to be dominated by the public sector. In 1861, the private sector served about 60 percent of the population in larger towns and the share decreased to 20 percent in 1881 and 10 percent in 1901 (Prasad, 2007). During the period from 1900 to 1974, municipalities were mostly in charge of water

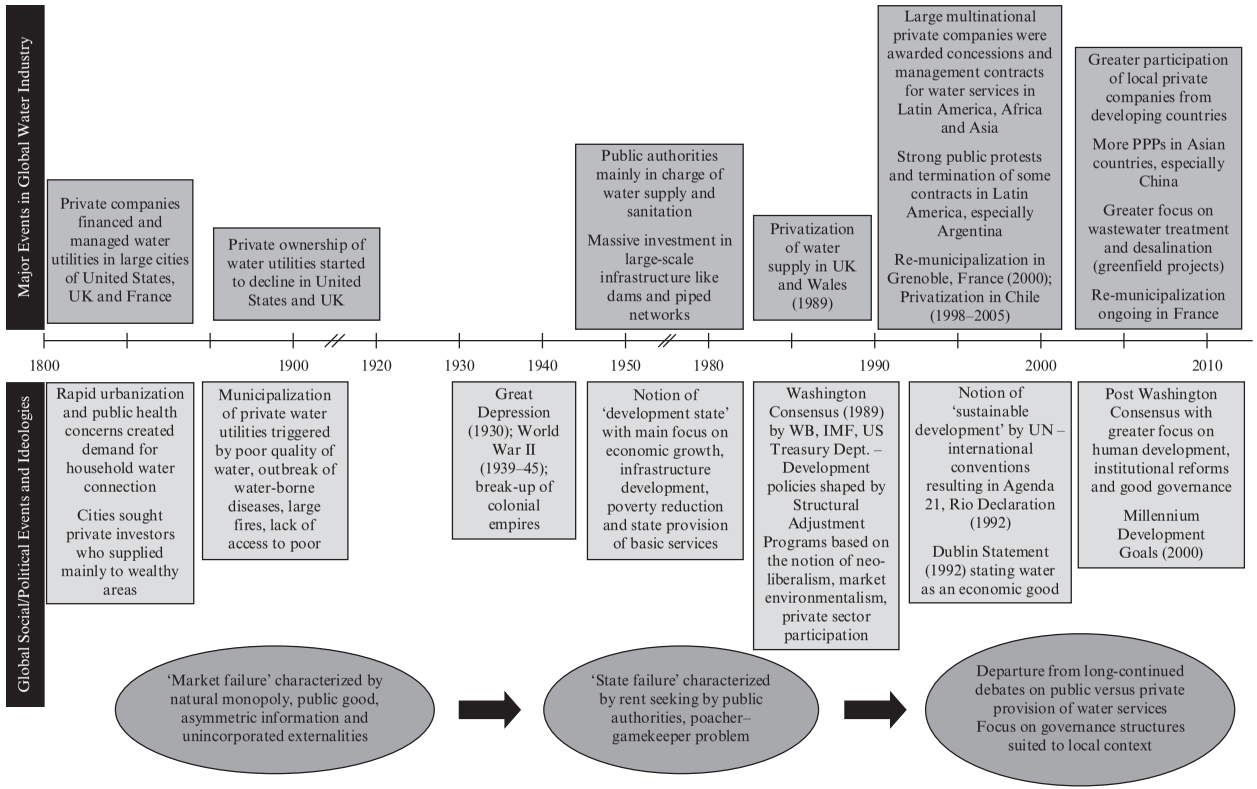

Figure 1.1 Timeline illustrating major events in the global water industry along with changing international perceptions

supply. There were ten government-owned regional water authorities supplying water and sewerage services, and 29 statutory water companies supplying water only. Following the introduction of the Water Act in 1989, the UK privatized its ten regional water and sewerage authorities by selling their assets and liabilities (OFWAT, 1993).

In France, private sector participation in the operations of water systems started in 1782 when a company founded by the brothers Perrier was granted a license to supply piped water in an area in Paris for 15 years (Roth, 1987). This was followed by the first municipal contract won by Generale des Eaux (currently Veolia) in 1853 under the reign of Napoleon III (*Financial Times*, 1999). Unlike the UK, which opted for complete divestiture, France used the 'delegated management' model, under which municipalities retain ownership of infrastructure and the right to impose tariffs, while private companies bid for long-term contracts to provide the services (*Financial Times*, 1999).

1.3.2 Post-World War II: Emergence of Development States

As discussed above, by the late nineteenth century and early twentieth century, many privately owned utilities in the United States and the UK had been municipalized as the governments were thought to be more judicious in providing water. The Great Depression in the 1930s, the end of World War II and the break-up of colonial empires pushed many governments in both developed and developing countries to play a more active role in providing utility services (Gunatilake and San Jose, 2008). The post-World War II period was characterized by the notion of the 'development state' where governments were considered to be prime movers of economic development. The central philosophy was that rapid economic growth can only be fostered by diverting factors of production from primary sectors typified by traditional technology, low productivity and decreasing returns to industrial sectors that would yield higher productivity and increasing returns (Adelman and Yeldan, 1999). Hence the 'big push' strategy, based on the assumption that developing countries could achieve rapid economic development by following the path taken by the West, was adopted. Under this model, development organizations such as the World Bank and governments focused on financing large-scale infrastructure to stimulate production (Bakker, 2010).

During this time the World Bank, as the largest multilateral lender, played a leadership role in shaping water policy and lending, and targeted investment towards large water dams that could support agricultural modernization, urbanization and industrialization. This move away from the private sector towards greater state involvement was justified by the

supposed existence of 'market failures', such as natural monopoly and environmental externalities, along with the reluctance of the private sector to invest in these highly capital-intensive and less profitable projects. Moreover, it was expected that governments could use cross-subsidies to expand water services to the poorer customers (Bakker, 2010, p. 85).

1.3.3 Washington Consensus: Emergence of Neoliberalism

Although large sums of international aid and multilateral loans were granted since the 1950s, public authorities only focused on central affluent urban areas, leaving the peripheral and rural areas underserved (Winpenny, 2003). Moreover, it was realized that governments acting as both owners and regulators of water utilities were prone to the 'poacher–gamekeeper' problem, leading to deteriorating performance, corruption and inefficiency due to lack of incentives (Bakker, 2010, p. 43). These 'state failures' were accompanied by the public sector's indebtedness and lack of access to commercial finance.

By the end of the 1980s, a decade designated as the International Drinking Water and Sanitation Decade, international actors in the water sector started to reach a new consensus that private sector participation could address the problems of water supply and sanitation in developing countries (Budds and McGranahan, 2003). During this period, the earlier view of governments as the prime movers in economic development was replaced by the perception of governments as 'the problem' or cause of underdevelopment (Adelman and Yeldan, 1999). Using their leverage as creditors, the International Financial Institutions, especially institutions such as the World Bank and the Asian Development Bank, aggressively promoted neoliberal reforms to indebted governments of developing countries, through structural adjustment policies that advocated reduction of state spending. These reforms, termed the 'Washington Consensus' in 1989, emphasized that economic development should be undertaken by the private sector within free markets, with the state playing a facilitating and regulatory role without direct involvement (Budds and McGranahan, 2003). Moreover, the official development assistance (ODA) for water supply and sanitation started to decline in the 1990s, preceded by three decades of steady increase (Bakker, 2010, p. 73).

1.3.4 Post-Washington Consensus: Emergence of Sustainable Development

Meanwhile, in the 1980s, the environmental myopia of the mainstream multilateral and bilateral institutions met fierce criticism, which led to the

'greening' of these organizations. The response to these criticisms and the resulting changes to the discourse and priorities of multilateral agencies are discussed in Chapter 13 in this volume. As mentioned in the latter, these reforms were linked to the ascendance of the notion of sustainable development in environmental policy (Bakker, 2010, p. 88). Besides the World Bank, other international institutions such as the United Nations (UN) and the Organisation for Economic Co-operation and Development (OECD) began to have substantial impact on the water sector. As discussed earlier in section 1.1, a series of international conferences, declarations, resolutions and action plans all focused on the need to address sustainable development of water resources and to ensure access to clean water for all.

1.3.5 Resurgence of the Private Sector: Emergence of Concessions and Management Contracts

The privatization of the water industry in the United Kingdom in 1989, which is discussed in detail in Chapter 4 in this volume, was of strategic importance as it convinced many governments that private sector financing for water services was a viable option. Having gained experience in the domestic market, the large French and British companies such as Generale des Eaux (Vivendi/Veolia), Suez Lyonnaise des Eaux, Thames Water, Anglian Water, United Water and Biwater were willing to enter the international market (Gentry and Auyuan, 2000). Moreover, the water crisis in the low- and middle-income countries, which presented a huge market and hence high profit potential, acted as a pull factor for these large companies.

The formation of PPPs for the provision of water supply and sanitation services gained initial momentum in the late 1980s in Latin America, as the region was undergoing widespread economic liberalization and was in dire need of massive investments for infrastructure development. According to Marin (2009), between 1991 and 2000, the number of developing countries with PPP projects increased from four to 38, and by the end of 2000 about 93 million people were being served by private operators across the world. Latin America itself accounted for 45 percent of the population served by private operators and Argentina became the largest market for PPPs, with more than 18 million people served by private operators. Most of the contracts in Latin America have been concession agreements in which private operators were required to make large capital investments, and there was almost no government or donor funding. These private operators were foreign companies who invested in United States (US) dollars, but could only earn revenue in the local currency from consumer tariffs. Hence,

devaluation of the local currencies led to serious debts for these operators, which in return limited their ability to make further investments. They had to periodically request the government to raise the tariffs to cover their costs, and whenever this happened there were widespread protests from the local people. Moreover, while the contract demanded expansion of service coverage to poor areas at low costs, the private operators had little incentive to do so, as poor households would be paying lower tariffs. When the fees for new connections were increased, in order to earn revenues, this again resulted in social resistance.

In response to growing public unrest and criticism of private sector-operated water utilities, the governments decided to terminate the contracts. The private companies which had invested and developed or operated such facilities went for dispute settlement before forums such as the International Centre for Settlement of Investment Disputes (ICSID), claiming compensation (see Table 14.2 in Chapter 14 in this volume for outcomes of some of these cases). This was followed by mass exit of the multinationals, which either tried to sell their shares to local private operators or had to hand over control to the public sector. Chile is the only country in Latin America that had privatized its entire water supply and sanitation sector during the period from 1998 to 2005 (see section 2.7).

Between 2000 and 2007, although the population served by PPPs fell sharply in Latin America, it rose steadily in other regions such as Eastern and Central Asia, sub-Saharan Africa, the Middle East and Eastern Europe (Marin, 2009). PPPs have managed to increase water supply and sewerage facilities in many of the poor urban areas of Africa. Unlike in Latin America, the PPPs in Africa were mainly management contracts and leases in which the ownership of capital assets remained with the government, with significant capital input from foreign donors. The private operators were thus not required to make significant investments and hence faced lower risks. Tariff reforms were initiated before signing the contract and the private operators received a fixed remuneration for each cubic meter of water sold, depending only on the average tariff, not the social tariff. In most cases, the governments conducted preparatory workshops and promoted public participation to convince stakeholders that private sector participation was the right approach, although these involved large transaction costs. In cases where there were combined power and water supply concessions, private operators were able to finance a large portion of their investment programs for water by reinvesting, each year, a portion of the cash flows collected from tariff revenues from the power sector. Following a specific model that evolved from the French standard *affermage* approach, private operators were awarded penalties or incentives for failing or achieving their targets, respectively. Some *affermages* relied

heavily on public borrowing through an asset-holding company, until the company becomes self-financed with customer tariffs supporting both the operation and maintenance (O&M) cost and the government's debt service (Gunawansa and Hoque, 2012).

1.3.6 Re-municipalization of Water Utilities

In certain cases, failure of the private sector to meet contractual obligations, in terms of expanding coverage, increasing investment and enhancing efficiency, coupled with rise in water tariffs and popular discontent with the private sector, have led to re-municipalization of water utilities, sometimes through early termination or upon expiry of contracts. A detailed discussion of the key reasons and outcomes of re-municipalization is provided in Chapter 14 in this volume. According to the Water Re-municipalization Tracker, this change in ownership and management from the private sector back to the public sector is occuring at the municipal and community level (as in France or the United States), at the regional level (as in Buenos Aires and the Santa Fe provinces in Argentina) and also at the national level (as in Uruguay and Mali). Based on their analysis of five examples of re-municipalization – in Paris (France), Dar es Salaam (Tanzania), Buenos Aires (Argentina), Hamilton (Canada) and a series of Malaysian municipalities – Pigeon et al. (2012) concluded that re-municipalization can yield positive results in terms of equity, transparency, efficiency and sustainability. However, the transition to public hands is fraught with difficulties, even in the presence of strong political will and financial and technical capacity. This is due to loss of institutional memory, degraded assets, political and legal difficulties created by private operators, and the need to bring change in service delivery cultures and ideological reforms.

As discussed in Chapter 14 in this volume, in Paris the decision to regain management and ownership of the water utilities from the two powerful water companies (Suez and Veolia) upon contract expiry was purely a political one, with little pressure from the public. Massive tariff increases of about 265 percent between 1985 and 2009, which enabled the private companies to earn huge profits, coupled with audit reports showing potential of financial savings, led to this decision. In the very first year, the city had savings of €35 million and an 8 percent reduction in tariff (Pigeon et al., 2012). According to Anne Le Strat, the Deputy Mayor of Paris, the successful re-municipalization initiative in Paris is providing food for thought for other municipalities as well, and with 75 percent of delegated water services contracts in France up for renewal by 2015, councils are mulling whether to consider in-house management (Le Strat, 2011).

In the case of Buenos Aires, the decision to terminate the contract half way led to legal consequences, as Suez claimed compensation before the ICSID. This decision was the result of the failure of the company to meet its contractual targets for expanding coverage and improving quality, accompanied by repeated calls for renegotiations to increase tariffs. Since 2006, the new public company, Aguas y Saneamientos Argentinos, owned 90 percent by the Argentine government and 10 percent by the workers' union, has produced impressive results, particularly in terms of increasing access to water and sanitation in poorer neighborhoods. In Dar es Salaam, Tanzania's high dependence on international donors forced the government to award a ten-year lease to City Water Services (CWS) in 2003; however, due to the private company's poor preparation, difficult relations with staff and shareholder in-fighting, the government abruptly terminated the contract in 2005. The new public company Dar es Salaam Water and Sewerage Corporation (DAWASCO) has managed to reduce water leakages and to extend coverage, although only partially. As the transition was highly controlled by donors promoting neoliberal policies, the previous institutional set-up is still there and the World Bank continues to determine DAWASCO's priorities (Pigeon et al., 2012).

1.3.7 New Generation PPPs: Emergence of New Markets, New Contract Types and Innovative Financing Mechanisms

Learning from experiences with PPPs in the 1990s and 2000s, recent contracts are taking more innovative, context-specific approaches that are better suited to developing-country circumstances. Moving beyond the sterile debates about public versus private ownership and management, the water sector is now focusing on more concrete discussions about how to ensure the best possible service under a given set of resource limitations (Anderson and Janssens, 2011). Over the last decade, private sector activity has boomed in the water treatment market, and of the total 337 projects, most have been implemented in China (286), followed by Latin America (20) and the Middle East and North Africa (MENA) (12) (Perard, 2012). Reforms in the Chinese water sector over the last decade, which are discussed in detail in Chapter 9 in this volume, resulted in the implementation of 318 PPP projects in the country, of which most were sewerage treatment plants (224), followed by potable water treatment plants (55) and water utility without sewerage (22) (Perard, 2012). Moreover, India is showing an interest in private sector participation in water supply with a number of new projects in development (Perard, 2012). Chapter 2 in this volume provides a detailed region-wise overview of the extent of PPPs in the water sector across the world. At the same time, there has been increased

activity in the water desalination market, with projects being implemented or under development in some cities. Most of these projects are greenfield projects, particularly build–operate–transfer (BOT) contracts, since water treatment or desalination plants require significant capital investment, but present a narrower range of risks for private companies as the projects are focused on a single client rather than utility operations that require ongoing engagement with multiple consumers and stakeholders (Anderson and Janssens, 2011).

Recent press releases are indicating that public authorities are exploring new types of partnerships with private companies, through which they can benefit from the experience of the private sector without handing over assets or management responsibilities. For example, the New York City Department of Environmental Protection, the largest municipal water and wastewater utility in the United States, has signed a US$36 million 'partnership contract' with Veolia Water, under which the latter will evaluate the performance of the city's existing water and wastewater systems and identify opportunities to reduce costs. Under this project, named 'Operational Excellence', the city aims to achieve annual savings of between US$100 million and US$200 million from its operations and maintenance budget. According to the contract terms, upon completion of that evaluation, the city will decide whether or not to appoint Veolia to oversee the implementation of those efficiency and cost-reduction measures (Veolia Water, 2012). This partnership is similar to the 30-year 'Design Build Assist' contract signed between the city of Winnipeg and Veolia in 2011, under which both parties will collaborate on capital improvements and provide ongoing strategic advice and guidance on design, construction, technology and operational needs for three wastewater treatment and biosolids facilities in Winnipeg (Veolia Water, 2011).

One of the main rationales for involving private companies in the water sector was to mobilize funds to secure financial investment. However, according to Marin (2009), although the private sector has contributed to improved service delivery, there is general acknowledgment that the financial investments were overstated and not fully realized. Consequently, the sector now requires more creative financing options to overcome low tariff levels and a backlog in infrastructure development and maintenance. Some reports (Vaidya and Vaidya, 2008; Ministry of Urban Development, Government of India, 2008) provide a useful analysis of these emerging options and outline opportunities to mobilize market-based repayable financing mechanisms such as loans, bonds and equity. In fact, pooled financing has already been used by Indian cities in the states of Tamil Nadu and Karnataka to expand water services (Hoque, 2012).

According to the *Pinsent Mason Water Yearbook 2010–2011* (Pinsent Masons LLP, 2011), the last few years have been marked by an increase in the number and quality of local companies. In 2007, it was estimated that 42 percent of the population in developing countries was being served by 'home-grown' companies rather than foreign companies that were required to establish local companies as their subsidiaries (Marin, 2009). Hall (2010) criticizes this report and states that the emergence of 'local companies' is a myth. According to him, apart from a few cases of actual local or national companies (such as Tata 'company town' in Jamshedpur, India, or WSSA, the company set up in South Africa under the apartheid regime), the rest are private companies which are descendants of the multinationals, with similar performance problems.

As mentioned in Chapter 9 in this volume, domestic water companies have significantly expanded their activities in the Chinese water market. Being either former state-owned enterprises with former government officials holding managerial positions, or having the state as the major shareholder, these domestic companies have close association with water-related bureaus of local governments, which facilitates access to market information. The increasing role of national local private sector as well as informal water vendors has been discussed in Chapter 13 in this volume.

1.4 OVERVIEW OF THE CHAPTERS

This section provides a brief synopsis of all the chapters in the book, highlighting the main areas of focus, the major topics of discussion and the key findings and recommendations.

Chapter 2, titled 'Private sector participation in water supply: a global perspective' by Edouard Pérard, provides an in-depth overview of the level of engagement of the private sector in providing water services in high-, middle- and low-income countries across the world. The author mentions that contrary to the popular belief that private sector participation (PSP) is a new phenomenon that gained momentum during the 1990s, it is a governance mechanism that has been in place for more than 200 years. Moreover, during the last two centuries, the level of PSP in water supply in countries has been fluctuating with periodic upward and downward trends, showing that the choice between private and public delivery of services is not a one-time decision. Unlike other sectors like energy and telecommunications, where high-income countries predominantly opt for privatization, the scope of PSP is highly heterogeneous among countries, irrespective of their income levels. Of the 84 countries in the world which have introduced PSP in the water sector, only 16 are high-income

countries while the rest are middle- or low-income countries. Overall, the chapter concludes on the note that despite the highly publicized termination of several contracts, the review of the evolution of private sector participation over the recent years clearly indicates that the level of private sector participation has been expanding and not declining. However, it is true that most of the new private activity concerns mostly water treatment and wastewater treatment facilities rather than water supply.

There has been long-continued debate regarding the effectiveness and appropriateness of public versus private sector participation in the provision of water supply services in urban areas. In Chapter 3, titled 'Good governance: the key to solving Asia's water supply challenges', Alex Wong argues that the solution to the water crisis faced by the growing cities of Asia does not depend on a particular type of management structure; rather, it can be achieved through either public or private sector participation, provided the system of governance is not weak and flawed. The chapter explores a diverse range of successful urban water supply cases under both public and private management and contrasts them with relatively unsuccessful cases in similar situations. The relatively successful concession for East Manila granted to the Manila Water Corporation by the Metropolitan Waterworks and Sewerage System (MWSS) in the Philippines is compared to a similar concession granted in West Manila to Maynilad. Moreover, the relative success of the public water utility, Phnom Penh Water Supply Authority (PPWSA), in Phnom Penh in Cambodia presents a further contrast against a similar public utility in neighboring Ho Chi Minh City in Vietnam. Finally, the chapter discusses the case of Singapore, which involves a water strategy that revolves around both tight central public utility-type control and the leasing of water delivery infrastructure to the private sector through long-term PPPs. The chapter concludes with the thought that although there are political, cultural and financial barriers, it is not impossible to achieve the provision of adequate safe water for Asia's urban population. The examples of Singapore, Phnom Penh and Manila illustrate that setting the right policies and strategies coupled with changes in behavior (in terms of valuing water both physically and fiscally) and financial resources to implement these goals are the tripartite keys to success – but the final piece that is always needed to complete the puzzle is, undoubtedly, good management.

Chapter 4 on 'The UK water industry: infrastructure, governance and procurement' by Akintola Akintoye and Suresh Renukappa deals with the status and the different business models that are used for the provision of water and wastewater services in the United Kingdom (UK). Water and wastewater services in England and Wales are fully privatized, compared with water and wastewater services in Scotland and Northern Ireland,

which are provided by public operators, albeit controlled by private law. Although the UK water industry has been generally considered a success, it faces a number of challenges including: rising demand and increased pressure on supply in the South and East due to climate change causing drier summers, decreased river flows and less predictable supply; maintenance and renewal of ageing network infrastructure combined with the need to meet European Union (EU) environmental standards; and increasing need for expenditure on flood defence infrastructure. The chapter proposes three different procurement models for water-related infrastructure development, that is: a pure public sector model, a public–private partnership model and a pure private sector model. Given the current challenges, the water industry needs to shift from its traditional governance mechanisms and develop solutions with the public sector to create new physical infrastructure procurement models that will underpin mutual goals and deliver products and/or services in an economically viable, socially responsible and environmentally sustainable manner.

Chapter 5, titled 'Performance of urban water governance in France' by Eshien Chong, provides an empirical and statistical assessment of the performance of PPPs and in-house provision for delivering water services. The chapter particularly looks into the organization of water supply services in France, since the country has a long experience with PSP in public services and a large variety of organizational structures for water services, ranging from in-house provision or direct public management to concession contracts. Using data collected by the French Institute of Environment from 3600 municipalities, a simple econometric analysis has been carried out. When only price is considered as a measure of performance, the results indicate that on average consumers pay a higher price when water services are organized as a PPP in France, and it is shown that, controlling for specific characteristics of a municipality's water services and situation, the higher price premium associated with services run under a PPP still persists. Interestingly, the estimations show that by making call for tenders compulsory when a municipality seeks to outsource its water service through a PPP, the Sapin Law has a moderating effect on the size of this premium.

In Chapter 6, titled 'Water governance in Spain: a dynamic system in transition', Belen Olmos Giupponi provides an overview of the Spanish water policy, underlying the main turning points in its evolution and the features of the current water governance system. In Spain, the water sector has undergone a deep-rooted change in its management paradigm and the water laws have adjusted to the new water policies. However, this transition has not been an even process, especially when the implementation of the EU Water Framework Directive raised various complex issues relating to the

limited capacity of the institutional set-up to face the new challenges. Spain exhibits a long experience in increasing the participation of stakeholders, users and regional and local government agencies in water institutions (basin authorities), taking into account their essential role in the process. With respect to new challenges, water management in Spain faces problems such as environmental degradation, growing water demand, climate change and agricultural policies, and the importance of regional initiatives in the area of water pricing and environmental policies have been underlined in this regard. After the 'privatization wave', there have been significant changes in urban water supply, in particular concerning the emergence of various PPPs. Nevertheless, there is a need to provide information about the performance of private corporations in charge of water supply.

In Chapter 7, titled 'Urban water challenges in the MENA region: integrating Islamic principles with demand management strategies', Arani Kajenthira and Sharmila Murthy explore the evolution of urban water governance in the Middle East and North Africa (MENA) region and specifically consider the historical role that Islam has played in developing state-centered, centralized water ministries in the region. Based on the nature of water availability across the MENA region, the chapter examines how water scarcity has fostered supply-centered policies, the role of new technologies for augmenting supply and the potential impacts of climate change. Moreover, the recent trends in urban water utility reforms that rely on demand management principles, which promote greater decentralization, private sector participation and increasing tariffs as a way to promote financial viability and foster water conservation, have been highlighted. It has been suggested that urban water reform cannot be understood without considering the role of agricultural water management. Finally, the chapter presents a case study of Saudi Arabia, a hyper-arid country that has made significant progress in reforming its urban water governance framework, but still faces significant challenges in developing a sustainable water management strategy.

Chapter 8, titled 'Implementing PPP programs in the urban water and sanitation sector: some insights from the Indian experience in selected states' by Ashwin Mahalingam, first aims to illustrate the tight linkage between project delivery mode choice and the robustness of the institutional environment to support PPPs. The choice of project delivery mode is not based on the features of the project alone. Rather, the ability of the institutional environment to support the delivery mode is a key consideration. The author uses examples of PPPs from Tirupur and Alandur in Tamil Nadu to show that although the projects themselves were not unlikely candidates for BOTs, the inability of the institutional environment to support the complexity of the project structure led to their

downfall. In Tirupur, an inability to enforce public sector commitment, poor project structuring capacity and a lack of stakeholder awareness were some of the environmental capability gaps that led to project failure. In Alandur, the inability of the project sponsor to monitor and govern a concession led to turbulences during the operations phase of the project. Then, the chapter suggests that governments should select PPP modes that can survive within their environments and 'upgrade' these modes in step with measures to strengthen the institutional environment. For instance, the DBO model requires a less mature institutional environment as compared to a BOT project, and thus fits well within Tamil Nadu. These lessons are particularly important in the context of developing countries with growing economies. The rate of infrastructure growth that is required to sustain economic growth in these countries is so large that governments are likely to have no choice but to turn towards the private sector to deliver infrastructure services. However, if governments choose forms of PPP that cannot be supported within their environment, they risk jeopardizing the overall service delivery goals.

Chapter 9, titled 'Urban water governance in China: legal and policy framework' by Lovleen Bhullar, provides an outline of the legal framework in China related to water infrastructure, together with a discussion on the various institutional and regulatory problems with regard to private sector participation. China has adopted a problem-oriented and 'develop first, control later' approach towards the urban water supply sector, which has resulted in the lack of a robust regulatory regime that is suited to China's specific institutional characteristics. Hence, interested private investors will have to adjust their expectations concerning China's urban water supply sector. Moreover, as the sector is driven by local provincial policies and approvals rather than the decisions of the central government, it is important to abandon the focus on the water sector as a whole in favor of a local or regional approach. The scope of PSP is restricted and in order to enter this lucrative market, the water multinationals have entered into joint ventures with domestic or regional private investors in the urban water sector in China. The government possesses limited financial capacity and know-how to proceed with the required investment to modernize and develop its water supply plants and networks and it is technologically backward in water treatment and production. It relies on international companies to provide the best and most up-to-date equipment and the latest innovations for a competitive price. This is expected to lead to a shift in the nature of private sector participation, from water supply and wastewater to development of advanced water technologies.

Chapter 10, titled 'Development of public–private partnerships in the water sector in Singapore' by Robert L.K. Tiong, Zheng Sha and Abu

Naser Chowdhury, presents the development and procurement of PPP in the water sector in Singapore. The chapter provides an overview of four PPP water projects: SingSpring desalination project, Second Tuas desalination project, Ulu Pandan NEWater project and Changi NEWater project. Based on the analysis of the time taken from the issuance of Request for Proposal (RFP) to reaching financial closure and commencing construction, the authors conclude that the procurement duration has decreased with each subsequent project as a result of experience gained from previous ones. The chapter also includes a case study on the Tuas Desalination Plant, which has been contracted out on a design–build–own–operate (DBOO) model, and details of the project features, organization structure and risk allocation are discussed. Based on the analysis of these PPP projects, the authors conclude that the successful implementation of PPPs in Singapore results from: (1) a clear policy framework and strong institutional capacity that results in a transparent and fair tendering process; (2) strong government commitment in terms of water policy and planning and implementing PPP projects; and (3) the presence of local private companies with expertise in the water sector.

Chapter 11, titled 'Urban water governance in Australia: the private sector at the margins' by Michael Paddon, provides an overview of the involvement of the private sector in the provision of water supply services in Australia, a country in which government provision remains dominant. While the major responsibilities for water service delivery have not been contracted out or privatized, contracting out of specific services by urban water utilities is widespread, particularly in the metropolitan areas, and there has been extensive engagement between public and private sectors in schemes to build infrastructure to meet requirements at certain points in the supply chain. The chapter discusses the concession arrangements for the city of Adelaide, which have been in operation since the mid-1990s. While public policy has largely rejected a model of extensive private provision of water or funding of water services, there have been a range of reforms since the 1990s intended to refocus the ways in which public water utilities operate through a 'corporatization model' (under the National Competition Policy), which are reviewed critically in the chapter. It also suggests that the drivers for change may have been modified in water governance, with less emphasis on investment in supply, with more extensive demand side considerations.

Chapter 12, 'Risks in urban water reforms: a challenge to public–private partnerships' by Claude Ménard, deals with the multiple risks faced by reforms in the urban water sector, with a particular emphasis on institutional risks. Indeed, important fluctuations in investment as well as protective contractual clauses suggest that innovative solutions such as

private sector participation and their accompanying regulation might also generate new sources of uncertainty and vulnerability for the management of water utilities. The chapter identifies different types of risks involved with particular attention to the specific risks faced by private operators and the resulting factors of vulnerability plaguing contractual agreements. It emphasizes the difficulties in evaluating these risks *ex ante*, although such evaluation is central to legitimize the choice of public–private partnership over alternative arrangements. It also examines the sensitive issue of allocation of these risks between public authorities and private operators, and the key role of enforcement in determining if PPP was the right choice. The chapter concludes with some insights on the ambiguous role of regulation as an institutional response to the vulnerability of parties facing these risks.

Chapter 13, titled 'Public and private interfaces: changing international perceptions of public–private partnerships in water services' by Håkan Tropp and Camelia Dewan, explores the gradual change in perceptions among bilateral and multilateral organizations regarding the need for and efficacy of the private sector in the development process. In the 1980s, organizations such as the World Bank and International Monetary Fund began to promote a set of structural adjustment policies, known as the Washington Consensus, that prescribed liberalization, privatization and deregulation to bring about reform in crisis-wrecked developing states. This spurred the momentum of privatizing the water supply sector in many countries, characterized by long-term concessions and divestitures. However, the focus on sustainability brought about by the multilateral conventions of the 1990s, and the increasing criticism of the Washington Consensus because of its relative neglect of the provision of production-oriented infrastructure and services needed to supply profitable work opportunities for poor people, led to a contrasting paradigm called the Post-Washington Consensus. The latter emphasized the need for different institutions in different economies and recognized cases in which governments had to intervene to control the market interventions. It focused on poverty reduction, emphasizing the need for delivery to the poor, of social services such as education and health care, by government and civil society. Moreover, the failure of PPPs in terms of increasing tariffs, lack of service extension to poor areas and mass exit of multinationals resulting from loss due to local currency devaluation, in many countries, has led to a pragmatic shift regarding the role of the private sector. The authors have identified three emerging trends with regard to private sector involvement in the water supply sector. Firstly, there is now a trend towards short-term management and service contracts, where the private sector is responsible for operation and management while the investment risks lie with the

public sector. Secondly, national companies and informal water vendors are now playing increasing roles as private players. Finally, private sector water users, such as large corporations, are perceiving water as a strategic resource whose management is critical, both as part of their corporate social responsibility (CSR) policies and, more importantly, as part of their long-term business plans.

Chapter 14, titled 'Re-municipalization of water utilities: back to the public fold' by Asanga Gunawansa and Vanessa Garcia, provides a detailed insight into the emerging trend of re-municipalizing water utilities that were previously managed by the private sector via different types of PPPs. Using relevant examples from various countries, the authors have highlighted some of the key reasons that have compelled governments in both developing and developed countries to take the responsibility of providing water and sanitation services back to the public sector. Large-scale public protests arising from poor quality of service and increased tariffs and failure of the private companies to meet contractual obligations in terms of improving technical efficiency, expanding network coverage and increasing investments are often the main reasons for early termination of contracts. However, changes in government, often accompanied by changes in ideological notions and sectoral reforms brought about by legal and policy changes, are also crucial factors stimulating the transition from the private to the public fold. Moreover, lack of good governance practices, including lack of transparency and accountability by the private companies, corruption by both public and private authorities, and lack of effective regulation, are also evident in many contracts. Finally, the authors use three case studies from France, Malaysia, and Trinidad and Tobago to highlight different scenarios of re-municipalization. This is followed by a discussion on the scope of achieving better management of water utilities after returning to public hands.

Chapter 15, the concluding chapter, titled 'Good governance of water: the final analysis' by Sonia Ferdous Hoque and Asanga Gunawansa, aims to articulate the discussions and analysis made in each of the chapters of this book, supported by evidence provided in other studies. Section 15.2 of the chapter examines the ideological notions usually set forward by proponents of public or private sector in relation to the outcomes perceived so far. Further, in this final chapter, an attempt has been made to outline the crucial parameters required for successful management both by the public and the private sector, respectively, using examples of good practices from selected utilities across the world.

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