Chapter 20
Governance and Regulation of the Urban Water Sector: *Quoi de Neuf*?

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1 Introduction

This chapter examines three broad themes of change in governance and regulation which have emerged in recent decades in the urban water supply, treatment, and wastewater sector – collectively described here as the 'urban water sector'. In brief, these themes are the *devolution* in management and control, increased *sophistication in regulation*, and the re-emergence of *social and environmental concerns*.

The themes of change analysed here are necessarily general, reflecting the variety of forms possible under the particular conditions present in different locations. The themes are drawn from observation of the urban water sector in the developed world, which we take to be Europe, North America, parts of Asia, and the Pacific. Examples and exceptions are included where possible. The experience at each location differs, reflecting particular economic, legal, social, cultural, and environmental conditions.

We provide case studies from Australian and French experience to illustrate how the themes of devolution, sophistication, and social and environmental concerns have evolved in practice. Through the Australian case studies, particularly that of Melbourne in the State of Victoria, we observe an interaction between governance change and extreme environmental stress (drought). French case studies provide

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insight into regulatory evolution in a country with longstanding private sector participation. Together these case studies provide an illuminating exploration of how these themes have manifested under a variety of institutional, regulatory, and environmental circumstances.

Our analysis begins with the premise that government has a strong role in directing the provision of urban water and wastewater services. If its role is not in the ownership and management of assets and delivery services, then there is certainly a role for government in the regulation of services provided by the private sector. More than other network industries such as electricity or telecommunications, the urban water network is a monopoly par excellence (Littlechild 1988; Abbott and Cohen 2010). Government involvement ensures that the quantity and quality of services provided are socially optimal and meet the public interest (Bozeman 2007; PC 2011). Because water is essential for life, the security and quality of its provision are necessary for population health as well as economic development.

Although there is an acknowledged role for government in the urban water sector, changes in what that role is, and how it is performed, are the underlying themes analysed in this chapter. The first theme we examine, *devolution*, is a trend towards reduced direct government ownership, management, and control of water sector assets and services. As governance of the water sector has changed, this has necessitated changes in the regulatory tools of government. The next theme, *sophistication in regulation*, examines the evolution of a greater variety and complexity of regulatory tools used by governments in the water sector. Overlaying changes in governance and regulation, the re-emergence of *social and environmental concerns* have given new dimensions to the activities of the urban water sector.

Particular aspects of the themes contained here can be analysed more comprehensively in isolation, and therefore we draw on the scholarly works of others who have done so. To explore broad themes in a short chapter it is necessary to only outline particular aspects of urban water sector governance and regulation. The cost of this approach in terms of details is outweighed by the benefit of a more integrative perspective. Through analysis and synthesis of these three major themes, we will show how the themes interact and attempt to provide a more meaningful understanding of each in the context of the others.

2 Devolution

One of the most significant changes in the urban water sector over the past four decades has been the reduction of direct government involvement in the provision of service. ‘Direct government’ is used in this analysis to describe elected officials and the offices and departments that directly report to them.

We define ‘devolution’ to be the process whereby some or all management and control functions are delegated from direct government to other autonomous or semi-autonomous bodies. Recipients of delegated functions can be lower levels of government, independent government agencies, or the private sector. A strict

interpretation of devolution would imply delegation to a lower level of government only (such as that used by Wilkins 2003); however we use a broader definition that includes delegation to external organisations such as privately owned firms ('the private sector') or publicly owned, autonomously managed companies. Most devolution is considered temporary, in that it is either of fixed term or made under a legislative process that can be repealed or amended as desired.

Devolution is a distinct and separate process from privatisation, and is a term often conflated with private sector participation. Bakker (2010) uses a broader definition of privatisation to describe redistribution of governance to non-state actors; this definition might approximate our definition of devolution if not for the fact that we see governance being redistributed to other state actors too. Private sector participation in water service provision can be done through contractual arrangements without necessarily redistributing governance. As our analysis illustrates – and is reflected in some degree of literature consensus (such as Bel and Warner 2008; Lobina and Hall 2008; and Bakker 2010) – the merits of privatisation and private sector participation can only be evaluated by understanding their local governance and institutional contexts.

Two global driving forces for devolution have been the spread of neoliberalism and the development of 'New Public Management' principles of public administration. In the late 1970s the neoliberal perspective on the appropriate role and size of government in public service provision found political support in both the UK (under Thatcher) and the US (under Reagan). There are a multiple strands of neoliberal reform that have been applied in varying ways to the water sector, namely privatisation, marketisation, deregulation, reregulation, commercialisation, and corporatisation (Bakker 2007). New Public Management, as a defined approach to government, can be described as adopting principles of compartmentalisation around service functions, accountability, arm's length regulation, competition, and support of private sector management styles (Hood 1991, 1995).

Together these global forces transformed conceptions of service provision by government and led to significant changes in the size and shape of governments for much of the developed and developing world, including of course, government service provision in the water sector. Figure 20.1 illustrates a timeline of major institutional changes in the governance of urban water in a number of global cities over the period 1980–2010.

In practice, the way devolution manifests depends on the initial governance framework and the aspects of management and control which are delegated. Governance and responsibility for urban water services may be held at a national, state, local, or other level of government. Aspects of management and control for devolution may be grouped based on a particular process or location (such as the operation of a water treatment plant), across a particular system (such as maintenance of the sewerage system), at a particular stage in a project lifecycle (such as construction of new infrastructure), or in connection with particular groups or interests (such as interfacing with retail customers). Potentially, there is an endless variety of functions and processes which can be devolved, separately or in combination.

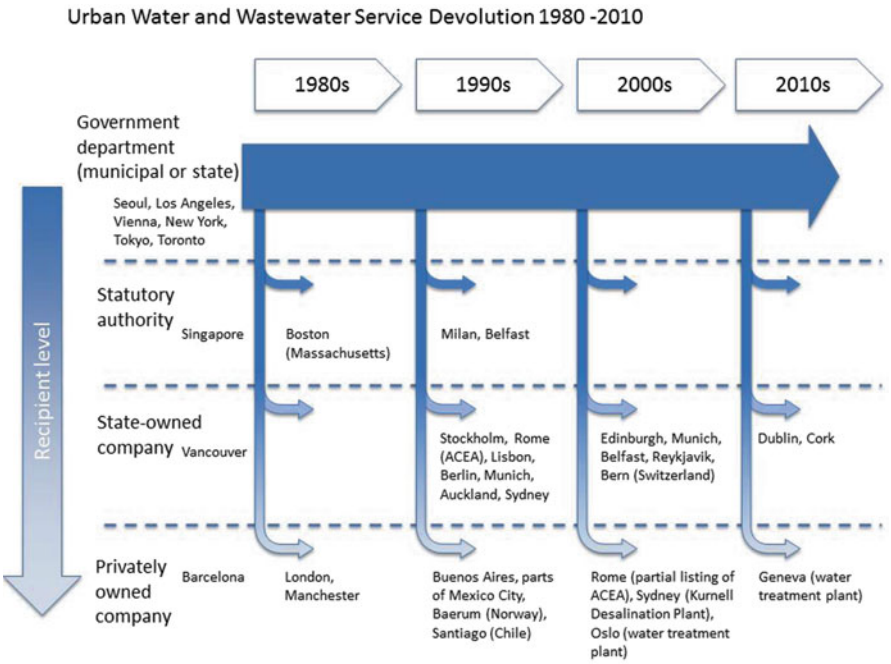

Fig. 20.1 Select examples from global cities of the changes in urban water governance that we have described as 'devolution'. For each of the locations listed the management of urban water services has been delegated to other bodies along a spectrum from statutory authorities to privately owned companies. The locations shown prior to the start of the timeline (1980) are those whose management has not changed

2.1 Australian Experience

From the earliest times, state and territory governments (or their colonial antecedents) have been responsible for providing urban water services in Australia. It was a natural consequence that this level of government should concentrate ownership and management, since it held constitutional jurisdiction over water resources and, at the end of the nineteenth century, it was the only level of government in the country with access to sufficient capital necessary to finance construction (Lloyd et al. 1992, p. 13).

By the mid-1990s, Australian governments, led by the Commonwealth, were focusing on liberalising the Australian economy and increasing productivity. The public water boards were among the first agencies of government to be targeted for reform. This reflected the interest in devolving government services and increasing competition, as identified by the 1995 National Competition Principles (COAG 1995). The primary responses were commercialisation, contracting out, and corporatisation of urban water services (Schott et al. 2008).

The congenital supremacy of the states and territories over Australian water resources has meant that national standardisation and oversight of water sector institutional development and reform has been late and light. After the initial COAG reform attempts in the 1990s, a diversity of institutional structures still exist (Abbott and Cohen 2010). A uniform industry structure may not be desirable, but there remains much research and industry interest in improving productivity and efficiency through institutional reform and increased competition (Crase et al. 2008; Schott et al. 2008; Dollery and Crase 2010). The institutional reform process continues today, nearly 20 years on, even as 'reform fatigue' shows (McKay 2005; PC 2011).

The State of Victoria led Australia in corporatising many government-operated services, even in advance of the National Competition Principles. The Kennett government passed legislation in 1992 to corporatise the water boards, in a never-completed process of privatisation of water retailers (Alford and O'Neill 1994). The Melbourne and Metropolitan Board of Works (MMBW) was broken up into three retail water corporations (South East Water, Yarra Valley Water, and City West Water) and one bulk water supply and treatment corporation (Melbourne Water). In the legislation underpinning the break-up of MMBW and the formation of Melbourne Water, there is explicit guidance that Melbourne Water is not to be an agent of the government for contracting purposes, unlike the former MMBW was (Government of Victoria 1992).

The change in Victorian water governance served as a testing ground for reforms in other Australian states. Not all Australian states vertically separated bulk water supply from water retailing, and some separated waste water from water supply. Table 20.1 shows the emergent structural separation of urban water services in various Australian capital cities as of 2011. With the formation in 2002 of the Northern Territory Power and Water Corporation, all of the Australian capital cities now have corporatised water services. Some states have not gone as far as Victoria in corporatising water services in rural communities, and local government still directly provides water services in much of Tasmania, Queensland, Western Australia, and New South Wales. Even after a few decades of flirtation with privatisation, the urban water sector in all major Australian cities remains firmly within state or territory government ownership and (devolved) management (Edwards 2008).

While ultimate ownership, management, and control of water services has remained with Australian state governments, a substantial proportion of services and capital works has been contracted out to the private sector (Schott et al. 2008). For the water corporations of Sydney and Melbourne, over 90 % of capital expenditure in 2010–2011 was outsourced to the private sector; over the 2006–2011 period, 80 % of Sydney Water's expenditure was for services provided by the private sector (PC 2011, p. 113). The sale of existing state water assets may not have occurred, but the private sector has had an increased role in performing a variety of capital works on behalf of state-owned water corporations.

While general trends of devolution across the Australian urban water sector are visible, it is important to note that trends belie actual paths. The temporary return of direct government management in the sector is illustrated by the Victorian

Table 20.1 Corporations and government offices undertaking functions of urban water management in Australian states 2010–2011

Jurisdiction	Bulk supply	Water retail	Wastewater retail	Stormwater
New South Wales	Sydney Catchment Authority	Sydney Water	Sydney Water	Sydney Water
	Sydney Desalinisation Pty Ltd (subsidiary of Sydney Water)	Hunter Water	Hunter Water	Hunter Water
		Gosford Wyong Joint Water Authority	Gosford Wyong Joint Water Authority	Gosford Wyong Joint Water Authority
	State Water Corporation	105 local water utilities	105 local water utilities	Local governments
Victoria	Melbourne Water	Yarra Valley Water	Yarra Valley Water	Melbourne Water
	13 regional urban water utilities	South East Water	South East Water	Local governments
		City West Water	City West Water	
		13 regional urban water businesses	13 regional urban water businesses	
Queensland	Seqwater	Queensland Urban Utilities	Queensland Urban Utilities	73 local governments
	SunWater	Allconnex Water	Allconnex Water	
	Local government-owned providers	Unitywater	Unitywater	
		71 local water utilities	71 local water utilities	
South Australia	SA Water	SA Water	SA Water	Local governments
		Small local government providers	Small local government providers	Natural Resource Management Boards
Western Australia	Water Corporation	Water Corporation	Water Corporation	Water Corporation
	Busselton Water	Busselton Water	Hamersley Iron Pty Ltd	Local governments
	Aqwest Water (Bunbury)	Aqwest Water (Bunbury)	Some local government providers	
	local government providers	Hamersley Iron Pty Ltd		
Tasmania	Southern Water	Southern Water	Southern Water	8 local government drainage trusts
	Ben Lomond Water	Ben Lomond Water	Ben Lomond Water	
	Cradle Mountain Water	Cradle Mountain Water	Cradle Mountain Water	
Northern Territory	Power and Water Corporation	Power and Water Corporation	Power and Water Corporation	Department of Lands and Planning
				Local governments
Australian Capital Territory	ACTEW	ACTEW	ACTEW	Roads ACT

Source: PC (2011, p. 44) (Productivity Commission report), used with permission. With the exception of Hamersley Iron Pty Ltd, all listed corporations are government owned; Hamersley Iron is a private company that provides water and wastewater services to Dampier, Paraburdoo, and Tom Price, Western Australia

government's response to water shortage in Melbourne (see box below). In a near-opposite response to the same millennium drought, the Queensland government vested water resource planning for the most populous part of the state in an independent statutory authority, devolved from direct government control (Spiller 2008). The Queensland Water Commission was created in 2006 near the peak of the drought and was abolished in 2013. Its policy and planning roles were then subsumed by the Queensland government's Department of Energy and Water. Centralisation of management across a greater geographic area and range of water resources has been a common response to water shortage in Australia (Searle and Head 2011). However, as these examples show, water shortage does not necessarily predicate greater direct government management and control.

Governance Responses to a Water Shortage in Melbourne, Victoria

The 'millennium drought' over south-east Australia was the driest 13 year period since modern records began. Starting in 1996, the average reduction in annual rainfall was approximately 11.4 % (CSIRO 2010). This reduction was a major challenge for Melbourne, Australia's second most populous city, as it receives over 90 % of its water from rain-fed catchments to supply an average annual urban consumption of approximately 450 gigalitres (GL). Historically, these catchments received an average of 590 GL per year in inflows; however, over the 1996–2007 period, inflows shrank to an average of 387 GL (Melbourne Water 2008, 2010) and the water security of the city was threatened (Ker 2009).

From their creation in 1992 and up until 2007, the Office of Water within the then Department of Sustainability and Environment (DSE) had encouraged the state-owned, independent water corporations to plan and implement water strategies to meet Melbourne's water demand–supply balance (Melbourne Water 2006). With the water crisis at hand, and the inadequacy of response apparent, the planning and management of Melbourne's water resources were returned to the Victorian Minister for Water and DSE (Searle and Head 2011). As noted by the regulator, the Victorian Competition and Efficiency Commission (2008, p. 174):

> … responsibility has effectively moved from Melbourne Water and the retailers to DSE … This change in roles reflects a concern that managing the risk of significantly reduced water inflows involves policy choices for which the Government will be regarded as accountable.

Through return of planning and management functions, the Victorian government was able to assert more direct control over water supply planning than it had previously been able to do under the devolved governance structure. Their policy response was a new water strategy for the region, *Our water our*

(continued)

future: The next stage of the government's plan (DSE 2007). The 2007 strategy contained a number of major supply augmentation projects including construction of a new desalination plant and new pipe connections to distant catchments. These were to supply an additional 240 GL by 2011 (DSE 2007), enough to supply half of Melbourne's existing water needs. The original estimated cost of the newly planned supply augmentation projects was A$4.9 bn, approximately $1,225 per capita, but it is understood that actual costs were well above budget.

In 2010, 2 years before the desalination plant was due to commence operation, Melbourne received its highest rainfall in decades. The desalination plant was commissioned in 2012 but has since remained on standby. The decision to invest in such a large and expensive supply augmentation has been roundly criticised since (Barnett and O'Neill 2010; PC 2011).

2.2 French Experience

France has had long experience with private sector participation in the water sector. The first concession was introduced in Paris in 1777: King Louis the XVIth granted the Périer brothers the monopoly right to construct and operate the first water network to serve houses, not just public fountains. Though this first experience ended with bankruptcy (Guérin-Schneider 2011), the private sector's varying participation in public water service provision in France had been established.

Although they retain ultimate ownership and control, the 36,000 individual French municipalities have the capacity to devolve aspects of management and control to the private sector. The diversity of management forms is high, as illustrated in Table 20.2. In practice, there are a large number of intermediate situations (for example, lease contracts – *affermage* – with a concession clause including limited investments) where operations and management roles are split between the local government and the private sector.

Contrasting Australian state-level governance of water services, French municipalities at a local level have always retained responsibility for the provision of water services. However, like in Australia, investment from a higher and more financially capable level of government was critical for the construction of the first urban water networks, as well as in the recovery following the Second World War, after which the French national government maintained a guiding role in water service management. For instance, up until 1982, a standardised contract was required by the national government for *affermage* contracts between local authorities and the private sector. From 1952 to 1986, under an anti-inflation policy, the national government also regulated tariffs, limiting possible increase. In 1982–1983, decentralisation laws launched a devolution process, in the sense of giving more responsibilities to

Table 20.2 Management and contracting types for French urban water services

		Direct public management (*régie*)	Public procurement	Public service delegation (*délégation*)	
Type of contracts		N/A	Management contract	Lease contract (*affermage*)	Concession contract (*concession*)
Approximate duration		N/A	3–5 years	10–12 years	25–30 years
Distribution of functions	Technical and commercial exploitation	Local authority	Private operator	Private operator	Private operator
	Maintenance and replacement of infrastructure	Local authority	Local authority	Private operator	Private operator
	Funding of upkeep of infrastructure	Local authority	Local authority	Local authority	Private operator
	Owner of the infrastructure	Local authority	Local authority	Local authority	Local authority
Payment of the operator		By users	By the local authority, fixed part with incentive remuneration	By users	By users

Source: Guérin-Schneider et al. (2014). Used with permission

local government.[1] From 1983, municipalities became free to tailor their contracts and in 1986 retail prices were deregulated.

The high number of services shown in Table 20.3 – about 31,000 – is due to the extreme fragmentation of French municipalities. Some municipalities can form a so-called 'intercommunality' to combine their means, such as by sharing operation of a combined water network. Conversely, in a given territory, the responsibility for water production, water distribution, wastewater collection, and wastewater treatment can be shared among different public authorities. For instance, production and collection would depend on two different intercommunalities while the distribution and collection would remain municipal: that would count for four services in Table 20.3. The break-down between global and partial services is given in Table 20.4.

Three key factors have encouraged private sector participation in the French water sector. Firstly, in the short term, contracting with the private sector allows local municipalities more financial flexibility than if they provide the water infrastructure or services themselves. Contracting with the private sector allows municipalities to transfer the financial burden to an external organisation – and finally to water

[1] Law No. 82–213 of 2 March 1982 on the rights and freedoms of the communes, departments and regions, followed by other laws in 1983 (No. 83–8 and No. 83–663).

Table 20.3 French urban water service management in 2009

		Délégation contract	*Régie* (direct management)	Total[1]
Drinking water	Number of services	4,470	9,520	13,990
	Fraction of population served	62 %	38 %	100 %
Sewerage	Number of services	4,509	12,847	17,356
	Fraction of population served	44 %	56 %	100 %

Source: Office National de l'Eau et des Milieux Aquatiques (ONEMA)
[1] Note the total number of services counted in Table 20.3 is less than the services counted in Table 20.4 due to a number of municipalities withholding management information

Table 20.4 Organisation of technical responsibilities for French urban water services in 2009

Number of services	Global service	Partial service	Total
Drinking water[a]	12,335	1,704	14,039
Sewerage[b]	12,843	4,524	17,367

Source: Office National de l'Eau et des Milieux Aquatiques (ONEMA)
[a] Global service: production, transfer, and distribution of drinking water
[b] Global service: collection, transfer, and treatment of waste water. A partial sewerage service provides only some of the elements of a global service

customers – rather than borrowing for themselves. This allows local municipalities to improve their debt ratios and preserve more flexibility to borrow for other public service needs and responsibilities. Secondly, through private sector participation, municipalities can gain access to the technical skills and organisational capacities of large private corporations which may otherwise be lacking in small municipal administrations. Thirdly, under certain forms of management delegation, private corporations may be authorised to collect water rates from retail customers directly. The French legal interpretation of water and sewerage as an 'industrial and commercial public service' encourages true cost recovery, and in practice allows private companies to bill water consumers directly rather than relying on municipal governments for payment. As long as water use continues to increase, the sector is considered as stable and profitable, encouraging the participation of private operators (Lorrain 1998).

The balance between the different management modes in France has varied over time. From the Second World War to the beginning of the 1970s, the *régie* (direct public management) was dominant. The delegation of services to the private sector became dominant in the water supply sector through to the 1990s as French municipalities responded to higher European Union water quality standards by employing private sector investment and technical skills. A public outcry during the 1990s over increased water prices (in part, a result of implementation of EU water quality standards) focused on the lack of accountability in private management, which led to strengthening of national regulations and the regrowth of *régie* management. Despite the return of *régie*, the majority of the population still has private sector

provision of water supply (see Table 20.3). The composition of urban water services is likely to remain dynamic because of increased interest and competition from the private sector (Guérin-Schneider et al. 2014).

While the French have a long history of private sector participation, they have only recently used state-owned corporations as a recipient of delegated water services. The national government recently enacted law to enable municipal governments to establish state-owned water corporations (Law no. 2010–559 of 28 May 2010). The new so-called 'Sociétés Publiques Locales' are state-owned companies governed under private law. They can operate water or sewerage utilities on the territory of the shareholder municipalities and no competition is required (allowing municipalities to retain services 'in house'). As of early 2012, only a few municipalities had chosen this form of devolution for water services.

2.3 Synthesis

Devolution of urban water management and operation inherently requires a change in governance and institutional configuration. As we note, the way that this format presents itself will depend on the initial governance and institutional forms and the aspects of government which are devolved. In our case study of Australia, we identify this theme from the granting of responsibility for urban water management to water corporations. In France, it has come from the national government granting more responsibility to local government.

Comprised within the process of devolution is the message from government that water services are to be made more economically efficient. The newly created institutional structures provide incentives for this. Evidence from Australia exists in the creation of corporations to provide water services, which are responsible to both the Minister for Water and the Treasurer. France, with a long history of private sector participation in the water sector, has had in place institutional structures to devolve water service provision from direct government in a manner that encourages economic efficiency (through *affermage* or concessions).

The nature, extent, and merits of private sector participation as a result of devolution will depend on the particular circumstances in each location. Using case study experience, we find an increased role of the private sector in certain functions of the water sector but for different reasons. French municipalities found private sector participation politically and technically expedient, whereas Australia has looked to the private sector as a means to raise productivity through competition.

In observing Australia and France, we note that from different starting points of private sector participation in the water sector, both countries have enabled corporatisation of public water asset operations under private law. The use of corporate vehicles for water services has important implications for exercise of government control and regulation. This evolution and development is the focus of the next section, sophistication in regulation.

3 Sophistication in Regulation

The second theme we observe is the evolution and increasing sophistication of regulation in the urban water sector. As governments have devolved aspects of management and control, there has been a growing need for governments to transition from direct control to more nuanced tools for guiding and regulating the provision of water services. Describing this move as 're-regulation', Bakker (2005) takes a narrow view of the variety of policy instruments that have been implemented. Another conception of this trend is 'free market environmentalism' (Anderson and Leal 2001), but again this takes a skewed, market-based, view of policy innovation. Our view of sophistication in regulation sees it as a broader attempt by governments to achieve political and community desires through alternative means of influence.

Part of the evolution of influence is a re-conceptualisation of 'regulation' in theory and practice. The cleaving of policy making, service provision, and regulation was a feature of New Public Management, an effort to make public service and monopoly provision more accountable and transparent (Hood 1991). It has been pithily described as the separation of 'steering' from 'rowing' (Osborne and Gaebler 1992). In legal terms, regulation has been defined as "a government activity that is intended to affect directly the behaviour of private sector agents in order to align them with the 'public interest'" (Chang 1997). However, as shown in subsequent sections, the recipient of regulation may be a state-owned entity incorporated in the private sector or at a lower level of government. Thus we define regulation as *a government activity that is intended to directly affect the behaviour of public and private sector agents in order to align them with the public interest*.

As established in the first part of this chapter on devolution (Sect. 2), recent decades have witnessed a reduction in direct government management and control in the water sector. The perception of direct or sole government control in the operations of the urban water sector is generally not justified. There are a multitude of actors beyond a minister's office that influence the direction and nature of water service provision. The instrumental approach to governance and regulation recognises that, beyond direct instruction, there are a range of approaches possible to influence people and events (Salamon and Lund 1989; Gunningham et al. 1998). Occasionally, we find explicit recognition of policy innovation in water sector operations, such as in Quebec's water strategy (Government of Quebec 2002). However it is policy and regulatory theorists who have provided the framework for analysis.

The policy classification framework developed by Freiberg (2010, p. 85) serve as a useful foundation for analysing the policy tools applied by governments to manage the urban water sector. The policy instruments classified by Freiberg include economic, transactional, authority, structural, informational, and legal instruments. However, given continued government ownership in much of the water sector, the Freiberg policy tool classification system does not consider a government's ability to command, through ministerial direction, state-owned corporations to act (Thynne 2011). This may reflect different perspectives on regulation taken by scholars of law and of policy. In the analysis here, an additional 'command' tool is added to the

Freiberg policy classification framework, thereby completing, we believe, the classification of government policy tools used in the urban water sector. The categories, explanations, and examples are listed in Table 20.5.

A critical and common feature of the management of water services provided by companies governed under private law is the use of contracts. Water companies incorporated under private law require the use of contracts, which in turn, define relationships in terms of transaction outcomes and expectations. This constitutes transactional regulation under the typology we adopt here. However, using contracts to integrate public interests (such as equity, fair process, and adaptability) with private incentives (such as economic efficiency) is inherently difficult (Collins 1999,

Table 20.5 Government policy instruments for directing water services

Class	Instrument and example
Command	Direct instruction from minister office or central government office to undertake an action using government resources. The instruction in 2007 by Hon. Tim Holding, the Victorian government's Water Minister, for Melbourne Water to build a water transfer between the Murray–Darling Basin and Melbourne is an example
Economic	Actions that create a new market or influence an existing market for a good or service. An example would be the decision by the Victorian government in 2007 to establish a competitive tender for the right to build, own, and operate a desalination plant to supply water to Melbourne
Transactional	Actions which specify the delivery of service in return for payment, or which regulate the form of contract. The former would include government grants or contracts for delivery of water services (such as the delivery of water from a privately owned desalination plant). The latter would include regulating the form and content of contracts between third parties (such as requiring Victorian utilities to allow for hardship terms in customer water bills)
Authority	Actions that grant authority, such as licensing, certification, or permissions. As applied to the water sector, French municipalities may grant the right to private companies to bill water customers
Structural	Policy actions which seek to change the circumstances or environment of decision making so to avoid or reduce harm. In this case, structural separation may include the institutional separation of water supply management from water retail or waste water treatment
Informational	Actions which require disclosure of information, either as publicly released performance indicators, credit ratings, or delivery of specific information at specific times. The publicly available, national performance indicators of France are an example
Legal	Legislative action by governments that proscribe specific outcomes on threat of civil or criminal penalty enforced by courts. This may include primary legislation made by governments or the delegation of standards and rule-making to other authorities (such as health departments). For the water sector, this would include French water quality standards for water supplies, on threat of fine or civil punishment to the operator

Adapted from Freiberg (2010), and Thynne (2011)

p. 305). Global experience in grappling with this challenge has led to innovative governance and regulatory forms with intertwined aspects of public governance and private property (Godden 2008). We note that the French case of *intuitu personae* (see inset) provides an interesting adaptation.

One of the more common means of achieving influence, accountability, and transparency has been the creation of independent regulatory bodies to oversee certain water sector functions. As mentioned previously, the urban water sector is a natural monopoly and thus warrants government oversight. Governments have established external regulators to measure and manage performance in a variety of urban water sector functions. Regulators of health and water quality, economic performance and pricing, and environmental standards abound. Many countries, regions, and even cities have created regulatory authorities which undertake monitoring and regulatory functions ranging from economic performance (Littlechild 1988) through to public accountability and probity (Lovett 2010).

The advantage of independent regulation in the water sector is that politically motivated decisions and poor performance are reviewed transparently and therefore, if unsound, are likely to be avoided or corrected (PC 2011). The disadvantage is that regulation by independent bodies may be overly burdensome, ineffectual if not enforced, and inconsistently applied (NWC 2011). For example, the Australian Productivity Commission recommended a degree of self-regulation within the nation's water sector because of a lower societal cost than heavy-handed external regulation (PC 2011, p. 295).

Descriptions of government attempts to influence the urban water sector will differ depending on location and government priorities. The use of the policy instrument typology in Table 20.5 gives us a framework to encapsulate the variety of approaches found across the developed world. In the next subsections on Australian and French experiences, we provide specific examples of how governments have experimented and developed their policy instruments for management of the urban water sector.

3.1 Australian Experience

The complete separation of policy making, service delivery, and regulation is an apparent goal of Australian state and territory governments. Much remains incomplete, even after 15 years of devolved and corporatised water services. This has not necessarily prevented a proliferation of government attempts to regulate the water sector, and we use the example of Melbourne Water to show the variety of approaches used.

Following the corporatisation of the Melbourne Water through the *Water Industry Act 1994* (Government of Victoria 1994), and subsequent legislative evolution, the directors of the water utility are accountable to both the Treasurer and the Water Minister. The Minister has the ability to appoint directors and introduce government legislation on water matters. Monitoring and regulating the performance of Melbourne Water are the Victorian government's Department of Health, the state

economic regulator (the Essential Services Commission), the state environmental regulator (the Environmental Protection Agency), the Commonwealth government's water, health, and environment agencies, the local governments in whose area Melbourne Water operates, and, of course, the three Melbourne water retailers as customers. Melbourne Water is also required to provide public annual corporate and sustainability reports.

The creation of property, procedural, or service rights has been used in Melbourne as an alternative means of improving water services to residents. Residents can seek redress against water retailers through the Victorian Civil and Administrative Tribunal (VCAT) and representation from the Energy and Water Ombudsman. The Energy and Water Ombudsman was established in 1995, with ongoing funding from energy and water retailers in Victoria (EWOV 2010). The first modern use of a parliamentary ombudsman originated in 1809 in Sweden, but Victoria claims the first energy and water ombudsman.

In addition to state-based reporting of performance, the National Water Commission reports annual performance of water services in Australian capital cities (NWC 2012) and Commonwealth government agencies such as the Productivity Commission will occasionally undertake a review (PC 2011). These national agencies do not have approval or regulatory power over the investment decisions of state governments, but they do provide national public benchmarking and scrutiny.

3.2 French Experience

Similar to the national reporting process in Australia, France has adopted benchmarking and performance reporting through a national office, based on the *Système d'Information sur les Services Publics d'Eau et d'Assainissement* (SISPEA) (Information System on Water and Sewerage Public Services). The legal foundation of the national office was laid in 2006, but operations did not commence until a few years later. The first report was published in 2012 (ONEMA 2012). The evolution of this office will be detailed in the following section; however, compared to the National Water Commission in Australia the performance indicators used are more comprehensive in scope (they include economic, social, and environmental indicators) and technically more detailed. Health and environmental regulation occur at the *préfet* level, but local municipalities have wide scope to use available policy instruments to regulate and influence water service provision from external parties.

France provides an interesting policy lesson in how governments contract for service delivery in a structurally separated water industry under private law. The original concept of *intuitu personae* (see inset) recognises that no contract is complete, regardless of the terms submitted in the tender. The personal choice granted to the mayor allows for, as a factor in selecting a private partner, their relationship and the perception of amenability. Amenability to change in the contract terms is a manifestation of the French public service principle of adaptability. Though occasionally tested, these principles have been maintained beyond the advent of neoliberalism and New Public Management.

Intuitu Personae

The French *intuitu personae* system of public procurement of water services from private sector providers is distinct from the many other systems found in developed nations.

In much of the developed world, public service procurement processes require highly detailed tender criteria and contracting agreements where expectations and obligations are specified explicitly ex ante (that is, prior to agreement). In direct contrast to this, the French employ *intuitu personae* during the tendering process, which allows, to some extent, the use of open tender criteria. In effect, this gives the mayor of the municipality greater freedom to decide which company to contract with. The mayor of the municipality does not need to establish tender criteria with the same level of precision as would accompany other public procurement processes specified under European public procurement legislation.[2] The mayor can choose the preferred private company after a closed negotiation phase and provide a public written report afterwards. This process developed from the original principles in the French water sector of adaptability and trust between government and private companies.

In recent decades the *intuitu personae* process of French water service tendering has been subject to increased domestic and EU scrutiny. Following the public opposition to water price increases in the early 1990s, a national debate on competition and regulation was opened and transparency of contracting became the focus. A new national law (the Sapin Law, No. 1993–122) was introduced in 1993 to increase transparency in contracting without removing *intuitu personae*. However, the improvement in competition and water prices has not been clear enough to close the debate. If consumers in a majority of larger cities obtained better water prices, others, mainly in smaller cities, faced price increases. The market has remained oligopolistic with only three major private companies, and one-third of tendering processes receive only one bidder (Brunet et al. 2003; Guérin-Schneider et al. 2003).

The closed contract negotiation process of French water service tendering is likely to be challenged by future European Union directives. In December 2011, the European Commission[3] proposed a draft directive on concessions which would reinforce transparency obligations. The award criteria were to be defined ex ante, and could not be changed during negotiations. Many southern European countries, not only France, were reluctant to accept this directive requirement. For the moment, water services have been excluded from increased transparency obligations in the directive voted in the European Parliament (Directive 2014/23/EU).

[2] Directives 2004/18/EC, 2004/17/EC, and 2009/85/EC. A directive is a European law that all member states must adopt in their countries.

[3] The European Commission (EC) is an executive body of the European Union. It is composed of one appointed commissioner per member state.

3.3 Synthesis

Governments across the developed world have been experimenting with alternative policy means, beyond direct command and control, for influencing the urban water sector.

As we have noted in this section, the proliferation of policy instruments stems from the devolution of direct government management and operation of the water sector. Other observers have viewed this proliferation as a consequence of privatisation and the adoption of free market environmentalism (Anderson and Leal 2001; Bakker 2005), which we disagree with when noting that the same proliferation of policy instruments has occurred where governments have delegated responsibility to lower levels of government and state-owned corporations.

Australian and French case studies are used to illustrate the experimentation and policy innovation we see across much of the developed world. It is evident that there remain significant challenges and opportunities for development of policy instruments to guide the urban water sector. The physical nature and monopoly qualities of water service provision have not evolved to the same degree as other public service monopolies, such as telecommunications and electricity. Both Australia and France have grappled with issues of public interest and private incentives in the context of the water sector and have responded differently. Australia states and cities have created a variety of regulators to monitor performance of water utilities, but not major supply augmentation decisions, while France has employed *intuitu personae* for adaptability when contracting with the private sector for public water services.

Both Australia and France have developed public reporting systems which have social and environmental indicators. The following section details the emergence of social and environmental concerns which led to this reporting system.

4 Social and Environmental Concerns

The third theme that we identify is the emergence of broader social and environmental concerns. Social concerns are intrinsically present in the water sector, as the provision of safe and secure water supplies and sanitation is a major public health target (Goubert 1986). However, social and environmental concerns acquired a new dimension with the growth of international consciousness about sustainable development (UN 1992) and as a backlash against neoliberalism and its effects on environment and society (Bakker 2005). This theme emerged during the 1990s in both developed and developing nations, although in this analysis we maintain our focus on the developed world.

Urban water supply is indelibly marked with social concern through its original conception as a public health activity (Goubert 1986). Social concerns have re-emerged more recently in response to broader declines in social equity in western

society since the 1970s (OECD 2011) and from research and political interest in social cohesion. In the water sector this has appeared through calls for greater research into social 'structuration' of water use (Syme 2008) and greater participation of citizen-consumers in urban water management (Wong and Brown 2009). Commonly recognised government responses have included the incorporation of community consultation in water planning and management, participatory governance, and attempts to align decision-making scales to catchment scales. The 'water as a human right' catch-cry has been used to lobby legislatures to embed social aspects in water management, with varying success (Bakker 2007).

Environmental concerns in society at large have emerged from a variety of sources, but importantly there has been shared recognition of the problem (particularly at Rio in 1992) and a shared understanding of the necessity to act (Dryzek 1997). In the water sector these concerns have manifested as environmental principles or aspirations, triple bottom line reporting, recognition of environmental services and other water 'users', technical design features such as water sensitive urban design (WSUD), and the allocation of water stocks or flows for environmental purposes.

When we see concurrent rises in social and environmental concerns, we also observe a conflation of the concerns under broad ambiguous titles such as 'sustainability', 'liveability', and 'water sensitive' cities, designs, or resource management. This is not to discount the value of multipurpose infrastructure and programs, but it does highlight the formation of coalitions of interest groups agitating for change in how water is managed in cities (Bakker 2010). Translation of rhetoric into action and change in urban water is not as smooth as many would like, although there are notable champion cities such as Singapore (Brown and Farrelly 2009).

4.1 Australian Experience

Melbourne Water offers a case study of the emergence of social and environmental concerns in Australia. The Melbourne water corporations were established in the early 1990s without sustainability principles, nor social or environmental goals (Government of Victoria 1992, 1994). Mounting national and international interest in environmental and social issues through the 1990s, led by such events as the Rio Earth Summit in 1992, allowed a 2002 Australian government senate enquiry into urban water to conclude: *…management solutions must also be based on the three parameters of environmental, social and economic sustainability* (Commonwealth of Australia 2002, p. xiii) and subsequently included sustainability and urban water as part of a nationally coordinated attempt at water reform (Hussey and Dovers 2006). By 2007 the legislative foundations for Victorian water corporations were amended to include these as 'sustainable management principles' in operations (Government of Victoria 2007) which were subsequently translated into corporate principles for public water companies. For the directors of Melbourne Water, this includes a legal obligation to evaluate actions and report annual performance against (social) *relationships, integrated water management*, and e*nvironmental*

stewardship, alongside *service delivery* and *financial sustainability* (Melbourne Water 2012). These principles of operation have been used to justify a variety of activities which are not strictly in the provision of water supply and treatment, such as school education programs and renovating an 1893 heritage-listed sewer for community use (Melbourne Water 2013, p. 6).

Environmental and social concerns have evolved following the millennium drought and the election of a conservative state government in 2010. Melbourne's water policy has swung away from large infrastructure solutions and towards decentralised supply under the aegis of water sensitive urban design. A new statutory body, the Office of Living Victoria, has been established to oversee water planning and policy with the purpose of promoting 'liveability'. A newly released paper, *Melbourne's Water Future* (OLV 2013), proposes changes in stormwater use and recycling, building codes, and community participation in the water sector.

Competing social, environmental, and economic principles can be a source of conflict for water service providers. In the case of Melbourne Water, the millennium drought caused the corporation to choose between retaining water for urban use or releasing water for environmental flows in the Yarra River. In doing so, the principles of secure urban water supply and environmental health were brought into conflict, a challenge noted by other Australian water authorities with similar conflicts of policy making and service delivery (WAWA 1995). The Productivity Commission in their recent inquiry into the Australian water sector has challenged the efficiency of requiring a water service provider to perform these functions (PC 2011). In essence, this review recommended water corporations retreat from the role of service provider (delivering a suite of environmental, social, and economic outcomes) to become a focused commodity supplier.

4.2 French Experience

Despite its reputation for centralised and regulation-reliant government policy, France has recently started using the national office (SISPEA) for public reporting of environmental and social outcomes in the water sector. This comes on top of European and national legislation prescribing specific technical standards, implemented due to public concerns about the quality of water and wastewater treatment. Social concerns about equity of treatment and continuity have been part of public law doctrine for a long time.[4]

France's response to the rise of environmental concerns deserves an explanation of the history of environmental regulation in the European Union. European Union

[4] In France, as in many Mediterranean countries influenced by Roman law, public and private sectors are subject to separate legislations (public law versus private law). The doctrine of public law relies first on this specific legislation and second on the jurisprudence of the *Conseil d'Etat*, a specific court of appeal for public law. *Equity of treatment* and *continuity* are two fundamental principles of public law deriving from this doctrine.

legislation in the 1980s significantly increased France's water quality and sanitation obligations. As referred to previously, new technical requirements and large investments led to subsequent increases in the water prices paid by households. Increases in water prices provoked large public outcry and debate about water sector regulation through the 1990s. In response to the outcry, the left-wing French government planned to introduce a national regulatory authority with coercive powers over water services. The main objective was to reduce information asymmetry between private operators and local authorities, and to improve local regulation of the price and quality of services. The main issue was transparency and pricing, rather than environmental outcomes. A proposed national regulator was meant to provide local authorities with a national expertise and assist in performance monitoring using a range of indicators on service operation, including an environmental dimension. A political change in 2002 stopped this project of national regulation coming to fruition. However, the concept of a national office for performance reporting (based on SISPEA) was maintained in the 2006 water law. The justification was to create a national information and benchmarking system for self regulation, rather than generate more national regulation. Environmental and social concerns were used to justify the reinstatement of public reporting, including performance indicators. The reporting was made compulsory at the local level, but the transmission of performance indicators to SISPEA remained optional.

It is interesting to analyse this shift. The list of publicly reported indicators is almost the same as those originally proposed for regulation, but the regulatory system (regulation of operators' performance versus information to users) and the role of the national authority (strong support to local regulation versus informing consumers and citizens) has changed. The hybridisation of the two regulatory systems (performance regulation by local authorities and sustainability information for users) has led to imperfection both in regulation of operational aspects and in achieving the desired social and environmental outcomes (Canneva and Guérin-Schneider 2011a). Some publicly reported indicators were selected for the use of experts, and thus are difficult for much of the public to understand. Local authorities are less than conscientious in their data collection for public indicators, and fail to see the importance of a national reporting office which does not assist in the enforcement of regulation (Canneva and Guérin-Schneider 2011b). This frustrated process reflects a disjoint between the two uses of French performance indicators. They were established as a tool for regulatory control over operators, but subsequent implementation has been as a communication tool to restore the environmental and social reputation of operators.

4.3 Synthesis

With the advent of environmental and social concerns in the water sector, Australia (as exemplified in the State of Victoria) and France have applied similar information regulation and legal tools of government to influence the performance of the water sector. The French responded with increased public surveillance of water utility

function, requiring publication of non-financial performance indicators including environmental and social ones. Australia's state ownership of water corporations has enabled jurisdictions to establish requirements, through amendments to legislation, for water utilities to have environmental and social principles which they must report and report on.

This chapter has identified a conflict between inclusion of environmental and social goals and goals of efficient service delivery. This conflict has been noted by previous commentators, particularly from the economic field. We have explored different policy instruments that governments have used to promote environmental and social performance in the water sector.

5 Water Sector Governance and Regulation: Continuously Fluid?

Governance and regulation in the urban water sector is changing in response to a variety of factors. This chapter has reviewed three major themes of change over recent decades and their respective drivers: devolution, sophistication in regulation, and the emergence of social and environmental concerns.

Devolution in direct government management and control in the urban water sector has been a significant and on-going trend. Different initial starting points and interpretations have yielded a variety of structural forms and responses. Private sector participation has increased for a variety of reasons beyond economic efficiency, as French and Australian experience illustrates.

The necessary effect of devolution has been the evolution of government instruments for regulating the urban water sector. Rarely can elected officials now issue instructions for urban water management and operations. A surprising variety of government policy instruments are now used to influence the provision of urban water services by autonomous and semiautonomous bodies. As we argue in this section, much of this expansion in the tools of government is due to the provision of public services through private law incorporated corporations. The similarly wide and varied use of policy instruments in the French and Australian water sectors, despite their different levels of private sector participation, validates this point. The French use of *intuitu personae* provides an illuminating case of public procurement of services from the private sector while attempting to maintain public service principles.

Environmental and social concerns in the water sector have re-emerged from a variety of sources. Integrating these concerns with economic efficiency and service standards has been a challenge for the water sector. We have observed trade-offs between such conflicting concerns and obligations in the Australian urban water sector. We find the use of sustainability indicators to make up for a lack of a greater regulation, as in France, while environmental and social corporate principles have been used in Australia to justify water corporation activities that are not strictly for the supply of water to urban areas.

Necessarily, this chapter has only been able to outline certain aspects of urban water sector governance and regulation. However, by analysing these themes we have illustrated how they interact and given a wide integration of the changes in urban water sector governance and regulation. For example, we have shown how devolution has led to a greater need for, and innovation in, the use of policy instruments to guide the provision of urban water services. We have explored the evolution of a diverse array of policy instruments in their application to emergent social and environmental concerns. This type of analysis is uncommon in the context of academic enquiry into the urban water sector.

Looking ahead, there are other emerging issues for governance and regulation in the urban water sector. Rising costs of energy, impacts of climate change, and the necessity to replace aging infrastructure are issues with potentially large impacts on the urban water sector globally. We expect that the governance and regulation of the urban water sector will continue to be as fluid as the resource it seeks to manage.

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