

Chapter 2

Water Policy—From Panaceas Towards Embracing Complexity

The waxing and waning of paradigms discussed in the previous chapter has also been reflected in developments in water policy. This chapter summarizes major global trends in water policy over the past half-century with reference to scale, dominant rationality and logical reasoning, and the role of different societal groups in shaping and implementing water policy. The developments reflect the overall shift in our understanding of the role of government as the central actor in water policy to one that is embedded in a more comprehensive notion of water governance (Ingram 2011; Pahl-Wostl et al. 2006). This is exemplified by European water policy. Its evolution reflects the general trends of shifting from command and control as the guiding principle towards more market-based and, in recent years, more participatory approaches. Furthermore we observe a gradual shift from the promotion of simplistic panaceas for water governance reform towards more context-sensitive approaches. The chapter closes with some reflections on the state of scientific understanding of environmental governance and the ability of the scientific community to address the challenge of developing context-sensitive advice for water governance reform.

2.1 Major Trends in Water Policy Over Last Few Decades

In the 60s and 70s water policy was characterized worldwide by the strong role played by central government and central regulation, in essence a hierarchical top-down command and control approach. The late 80s and 90s saw a shift towards the principles of subsidiarity, decentralization and privatization, and the market became a key instrument for water management. The trend was particularly pronounced in urban water supply and sanitation. The late 90s and 2000s saw an upsurge in participatory approaches. Central roles were delegated to community groups and water user associations, a shift that was especially noticeable in irrigation management. Developments in water management over the last few decades have seen changes in the role of three major social agents: government, market/economy (production, consumption), and civil society/community (individual citizens and organized groups outside of government and market, i.e. public voice).

In the 60s and 70s, economic activities were responsible for creating water management problems. Government was in the role of problem solver and service provider acting in a hierarchical governance mode (cf. Chap. 5) and pursuing a command and control approach. Water governance and management were in the hands of bureaucrats and technicians. Civil society was not actively participating—unless fundamental failures gave rise to public protest. In the subsequent phase government was ascribed the role of instigator of problems. Lack of efficiency, effectiveness and rent-seeking by powerful elites were diagnosed as reasons for the failure to deliver adequate water services and to address increasing water problems. The market economy was seen as the problem solver. Civil society had a role as an arena for mobilizing protest and voicing lack of satisfaction but was still not a major player in shaping policy. In a third phase, the 1990s and early 2000s, direct community involvement was supposed to make up for the failure of governments and markets. Civil society was assigned a leadership role in making progress towards more equitable, sustainable and effective resource governance.

However, roles have become increasingly blurred. Government, the economy and civil society all play a role of contributing to the problems associated with resource management, albeit to varying degrees and for different reasons. And, at the same time, in various kinds of collaborative partnerships they are all part of the problem-solving process. This blurring of roles and the emergence of diverse hybrid forms of governance are typical of a more all-encompassing understanding of societal steering both from a descriptive and a normative perspective.

Governance activities and responsibilities are increasingly distributed across spatial levels. The introduction of the river basin principle added to this complexity. The basin principle implies that the functionally-specific governance institutions are given jurisdiction over the hydrologically-defined spatial scale of the river basin in order to address the spatial ‘misfit’ between resource management issues and governance scales (Young 2002a). However, as pointed out by Moss (2003) problems of spatial misfit have often been solved at the expense of the interplay between institutions. On one hand, introducing another layer of bureaucracy is always associated with frictions. On the other, water is now governed at a different spatial scale than other sectors such as agriculture. This is not necessarily beneficial to the goal of increased integration of issues and cross-sectoral collaboration and poses considerable challenges to vertical and horizontal coordination.

The trends identified are global and manifest themselves in similar ways in numerous water policy frameworks in developed and developing countries. They are exemplified by the development of European water policy over the past decades.

2.2 Evolution of the European Union’s Water Policy

The European Union (EU) is a unique political construct in the political world. It comprises 28 member states that give up part of their national sovereignty by being placed under binding EU laws. Member states retain considerable autonomy though

and are represented in the major decision-making bodies at the EU level. The development of EU policy thus largely reflects developments in national policies and the priorities of a large number of European countries.

EU environmental policy in general and water policy in particular developed in the 1970s. Initially it was based on a clear command and control. The first phase of EU policy emphasized the prescription of binding water quality norms mainly to protect water for human uses (e.g., Surface Water Directive 1976; Bathing Water Directive 1976; Shellfish Water directive 1979; Drinking Water Quality Directive 1980) (Aubin and Varone 2004). These directives also prescribed methods of analysis and monitoring. They left little freedom to member states to tailor policy implementation to their national conditions. Furthermore, the number of specific directives illustrates the piecemeal and fragmented approach of the first phase of EU water policy that dealt with problems one by one in isolation.

In the late 80s the focus on immission standards was replaced by an emission-based policy¹ (Aubin and Varone 2004). Subsequent directives prescribed instruments to achieve water quality norms in order to improve the unsatisfactory progress in the implementation of directives already in place. The key problem to be tackled was eutrophication of freshwater bodies due to excessive nutrient loadings. Correspondingly, the two main directives implemented during that period focused on the major sources of nutrient inputs—domestic wastewater and agriculture. The Urban Waste Water Treatment Directive (Council Directive 91/271/EEC—1991) had domestic wastewater as a clear target, whereas the Nitrates Directive (Council Directive 91/676/EEC—1991) targeted diffuse pollution from agriculture. The instruments chosen revealed a slow drift away from a command and control approach by also allowing voluntary instruments such as the code of good agricultural practice. However, implementation proved to be difficult casting doubt on the effectiveness of decentralized and voluntary measures. Changes in the Common Agricultural Policy leading to a reduction in agricultural subsidies further undermined the willingness of farmers to comply with voluntary standards. EU member states felt the financial burden of implementation, in particular regarding the Urban Waste Water Directive. Some countries, in particular the UK, responded with privatization hoping to attract private capital into the urban water sector. Furthermore privatization was seen as a remedy to cure the inefficiencies and ineffectiveness of governmental policies. Implementation was lagging behind expectations leading to a number of court cases and triggering a rethinking which resulted in significant reforms in water policy.

The European Water Framework Directive (WFD) which came into force in 2000 (European Parliament 2000) reflected a clear change towards a more

¹Immission-based policies refer to the upper limit of a concentration of a pollutant in the environment. Water quality standards may, for example, prescribe upper thresholds for the concentration of a pollutant in the aquatic environment. Emission-based standards refer to the amount of a pollutant that can be released into the environment. Water quality standards may, for example, prescribe concentrations of pollutants in the effluents of wastewater treatment plants can discharge to the environment.

comprehensive understanding of multi-level governance embracing a range of instruments and leaving more freedom to member states in policy implementation. This policy initiative promotes an integrated management approach with the goal of achieving “good status” for all European waters (surface waters and groundwater). The WFD introduced the basin principle by prescribing water management at a river-basin scale and has put an end to the increasing fragmentation of water policy in terms of both objectives and means. The WFD promotes sectoral integration and encourages trans-boundary cooperation in international river basins. River basin management plans are to be revised every 15 years, supporting an adaptive approach to developing and implementing measures. The WFD is also the first major European directive to formally prescribe the involvement of stakeholders and the public at large. In fact, consultation of organized stakeholder groups was openly invited by the Commission during development of the directive. Arguably, the process favoured well-organized and resourced interest groups. At the least, open consultation made the omnipresent government lobbying a more transparent process.

Despite its innovative character, implementation of the WFD has also encountered obstacles. A major loophole has resulted in delays in the implementation process and stems from the fact that the WFD allows exemptions to the achievement of a good state for water bodies classified as heavily-modified. Classification of water bodies is based on a concept of water quality that includes hydro-morphological, chemical and ecological indicators (Mostert 2003). The approach measures the multi-criteria quality status of a surface water body on a five-point scale, and requires member states to report on improvement in quality towards at least a “good” state through a programme of monitoring and restorative measures. However, quality targets are negotiable, as exemptions can be sought for ‘heavily-modified water bodies’ if costs for improvement would be excessive. As initial experience with the classifications of water bodies by member states has shown, exemptions abound (European Environmental Bureau 2010). A mechanism upon which to base such decisions using an explicit analysis of trade-offs is still lacking.

Furthermore, a good state is particularly compromised by hydro-morphological and ecological indicators. The WFD classification revealed major ecological deficits in water quality. For example, while 88 % of the surface water bodies in Germany have reached good chemical status only 10 % of these water bodies have good ecological status. As many as 34 % are classified as poor and 23 % have bad ecological status (BMU 2010). Improvements of the chemical status could largely be achieved by technical and often end-of-pipe measures even when high investments (e.g. wastewater treatment) were needed. Improving ecological status requires a profound shift towards more holistic landscape management integrating across sectors and among issues that influence aquatic ecosystems. Such a shift encounters considerable barriers since it requires significant transformations in institutional settings, actor networks and power constellations (Pahl-Wostl 2006, 2007).

This example of European water policy illustrates that despite undeniable progress and evolution towards more sophisticated policies, water policy reformers cannot

pride themselves on having achieved comprehensive institutional transformation and substantial breakthroughs in halting the deterioration of aquatic ecosystems. This experience casts doubt on the prospects for implementing an effective policy framework to bring about a fundamental change. I argue that one major obstacle is the fact that the water policy community does not excel in learning from experience and has largely ignored the need to develop capacity for structured learning.

For long time water policy has been characterized by a waxing and waning of simplistic panaceas without much reflection on the conditions for success. Idealized design principles based on institutional and technological panaceas have been applied to water issues without long-term monitoring of their performance and effectiveness, and without revision and critical reflection on the practices that would have ensured the appropriate responses to failures at a much earlier stage (Gleick 2003; Meinzen-Dick 2007; Ingram 2011).

2.3 Neither Privatization nor Community Governance Can Meet the Water Governance Challenge

Regarding the various widely-praised water governance principles of hierarchical centralization, coordinated river basin planning and management, devolution and decentralization, markets and privatization (Ingram 2011), the push towards privatization and liberalization has been particularly controversial. In the 1990s, decentralization became the guiding principle of water policy reform. In particular the World Bank was instrumental in supporting and enforcing such trends (World Bank 1993). According to the principle of *subsidiarity*, the authority and responsibility for decision making and operations were transferred from national government to lower-level governmental organizations, community organizations and/or the private sector. Neoliberal thinking led to the connecting of such decentralization with deregulation and privatization (e.g. Achterhuis et al. (2010)). Market-based approaches were supposed to overcome the perceived lack of efficiency and effectiveness of governmental command and control policies and the failure of governments to deliver water services.

Decentralization of water governance to increase effectiveness and efficiency of water management was, for example, a centrepiece of water governance reform in many Latin American countries (Wilder and Romero Lankao 2006; OECD 2012). However, the huge costs of infrastructure exceeded governmental financial budgets even in developed countries. The anticipated costs for infrastructure for wastewater treatment to meet the standards set by the European Urban Wastewater Directive were, for example, a major driver of privatization in many European countries (Aubin and Varone 2004). Engaging the private sector was linked to the expectation of attracting external sources for financing infrastructure development.

Privatization did not meet the expectations that had been placed in it. Experience has been quite varied with some striking failures—notably in developing countries (Bakker 2010). As discussed by the various contributions in Boelens et al. (2010), decentralization—if guided by neoliberal thinking only—may have detrimental consequences and lead to distortions in power structures. Furthermore, such reform does not solve a systemic governance problem (Brown and Cloke 2004, 2005; Soliman and Cable 2011)—high levels of corruption and the dominance of informal institutions with goals that are often in conflict with sustainable resource management. In the absence of effective regulation and in the presence of rent-seeking elites in government, particularly in developing countries, privatization leads, in most cases, to dissatisfaction among both consumers and private enterprise. Furthermore, water infrastructure does not lend itself easily to private ownership and management. This has become particularly evident in the urban context. Due to the high costs of investment in building and maintaining urban water infrastructure with long-time scales for amortization it is difficult to make profits from water delivery services at a price that is affordable for all societal groups. The price of water is mainly determined by sunk costs of infrastructure rather than the amount of water provided to customers. Since water possesses the characteristics of a natural monopoly and has little competition governmental regulation is required. Otherwise companies may maximize profits by exploiting and not maintaining available infrastructure and by delivering services only to those privileged societal groups who can afford it.

Such developments characterized the privatization of drinking water supply in Cochabamba, Bolivia, a striking example of the failure of privatization (Shultz 2009). With the strong encouragement of the World Bank, the Bolivian government granted a concession to an international company to supply drinking water and wastewater treatment services to the city of Cochabamba in 1999. Shortly afterwards a law was passed to regulate the water supply and sanitation sector with an emphasis on promoting privatization. Many local communities regarded this law as a threat to their access to water resources. A massive increase in water tariffs enacted by the new private water supplier triggered massive protests in the whole country. As a result, the contract with the private water supplier had to be retracted. Cases such as Cochabamba mobilized those groups that had from the beginning opposed privatization in the water sector. Critical voices were as undifferentiated in their opposition as proponents had been in their advocating of the principle of privatization. Critical voices had always argued against the market system for the delivery of natural resources since they were not designed to guarantee fairness and adherence to just criteria for access to basic needs such as water, a common good essential for life. However, in many countries governments have not proven to be much better in allocating this resource. Hence another solution has had to be identified and pleas have been made for more direct community involvement in the distribution of urban water (Bakker 2009). Such pleas reflect general trends in a stronger reliance on participatory approaches in water governance and environmental governance in

general (Lemos and Agrawal 2006). There is a real danger though that this “commons approach” is mistakenly seen as a panacea for all problems.

In a comprehensive review Bakker (2009) analysed various forms of the role of “community” that have been advocated as alternatives to private sector management of urban water supply. She makes the distinction between community ownership and community governance. Ownership and self-management by community groups is facilitated by the increasing popularity of low-cost, small-scale infrastructure. Large-scale cooperatives that own centralized water supply infrastructure are rare though. Community-based governance gives communities a central role through the establishment of customer service boards or community watershed boards and similar management structures. Bakker’s analysis of the water supply sector demonstrates that the often-held assumption of changing behavioural patterns by introducing community-based management, thus solving all governance problems, is highly mistaken. She comes to the overall conclusion that *“‘ownership’ (i.e. public versus private) is less important than institutions (rules, norms, and laws) and governance (decision-making processes); it follows that the imposition of ‘public’ or ‘community’ management is not a sufficient condition for better water services.”* (Bakker 2010, p. 245). Again, these findings are a clear indication that moving to another panacea—in this case, community governance that delivers what governments and markets failed to do—cannot provide a universal solution to problems originating from complex and intertwined governance systems.

2.4 Environmental Governance—Shifting Away from Panaceas and Towards the Mastering of Complexity

As a response to the urgent need for effective water governance reform the OECD launched the OECD water governance initiative in 2013.² This initiative has established an international multi-stakeholder network from public, private and not-for profit sectors whose members gather regularly to share on-going reforms, projects, lessons and good practices in support of improved water governance. The OECD has also launched a series of comparative studies on water governance and the preparation of in-depth individual country reports (OECD 2011, 2012).

What can science offer to assist such developments and the urgent need to develop an improved knowledge base? Science has been slow in addressing the challenges posed by developments in environmental governance, in general, and water governance in particular. On one hand, water governance has not been a well-respected topic for scholarly work in the social sciences and has thus been established by a number of resolute scientists as its own field of expertise only in

²<http://www.oecd.org/env/watergovernanceprogramme.htm>.

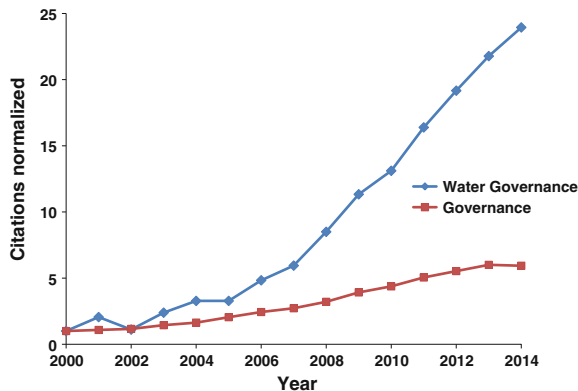


Fig. 2.1 Number of publications in peer reviewed journals containing the search terms “Water Governance” and Governance respectively in either title, abstract or keywords. In order to present the results on the same scale the number of publications in a given year was normalized to the number of publications in the year 2000 which was 18 for Water Governance and 1081 for Governance (SCOPUS Data Base 25.05.2015). The change in the number of publications referring to governance is shown as a benchmark for the development of scholarly work on governance in general

recent years (cf. Fig. 2.1). On the other hand adequate concepts and methods to deal with the complexity of governance systems are missing in general.

The most relevant conceptual frameworks in the social sciences are weak in their ability to analyse the complex, context-dependent dynamics of governance systems. Most governance analyses focus on static descriptions and embrace only some of the important processes (e.g. the focus on institutions) from a disciplinary perspective. Looking back on the achievements of a decade of research under the umbrella of the IDGEC (Institutional Dimensions of Global Environmental Change) research program Young (2008) noted that “*Knowledge regarding the nature of change in the institutional dimensions of socio-ecological systems remains relatively underdeveloped*” (ibid, p. 140).

The work of Oran Young and the IDGEC program in general had a strong influence in shaping the scholarly field of environmental governance. Young’s work has been central to the development of international environmental governance and regime theory. As early as 2002, he promoted the importance of **institutional diagnostics** taking into account the need for institutions to fit the nature of the problem to the biophysical and societal settings in which they are assumed to operate (Young 2002b). In a contribution to a special issue summarizing the main achievements of his work over the past decades (Mitchell 2013), Young summarized the major insights that he could derive from his work and the main challenges that he foresees for future work on environmental governance (Young 2013). He noted that governance without government is quite common at all levels. Spontaneity and self-organizing properties are important characteristics of institutional dynamics. He argues in favour of a more integrative and comprehensive

approach to studying environmental governance to overcome the still prevailing fragmentation of different water governance approaches. Research on the impacts of governance regimes on the behaviour of actors can be largely classified into two approaches: alleviating collective action problems based on utilitarian rational choice or influencing actor behaviour through the development of social practices (Young 2001). These two approaches are largely distinct and are sometimes even seen as being mutually exclusive. But more integration would be beneficial for a more in-depth and grounded understanding of the impacts of institutions on human behaviour. Young acknowledges that regimes are influenced by the dominant world view—the paradigm. The influence of paradigms became quite evident from the historical account of the evolution of water policy showing a succession of changes with respect to the role of government, of markets and so forth (cf. Sects. 2.1 and 2.2). One of the major contributions of Young's work was the research on fit and interplay. The success of regimes hinges on their fitting into the major biophysical and socioeconomic setting in which they operate. Young is clearly dismissing institutional panaceas and advocates a diagnostic approach. He highlights in particular the importance at the international level of the ability of governance regimes to deal with complexity and uncertainty and to adapt to rapid change and unexpected developments. He identified four key challenges for environmental governance: *“(1) How can we deepen our understanding of the complex causality involved in the operation of environmental governance systems? (2) How can we integrate the collective-action and the social-practice models of environmental governance? (3) How can we address needs for governance arising in the Anthropocene? (4) How can we improve our ability to design effective environmental and resource regimes?”* (Young 2013, p. 100).

Another pioneer and highly influential intellectual leader in the field of governance of social-ecological systems (SES) was the late Elinor Ostrom. In contrast to Young, she focused largely on the local level. Elinor Ostrom laid the foundations of scholarship on the governance of common pool resources. Vincent and Elinor Ostrom introduced common pool resources as a fourth type of good alongside public, private and club goods (Ostrom and Ostrom 1977). Common pool resources are characterized by subtractability of uses and thus competition. At the same time it is difficult to exclude potential users. This makes them different from private goods with private ownership and use rights. Water-related resource use possesses the typical properties of common pool resources—e.g., groundwater use or fisheries.

Despite being a political scientist by training, Elinor Ostrom received the Noble prize for Economics in 2009. Her prize-winning lecture “Beyond Markets and States: Polycentric Governance of Complex Economic Systems” conveys the essential pillars of her work (Ostrom 2010). Elinor Ostrom was less a theoretician than a sharp analytical observer. In numerous well-designed studies she provided evidence for the ability of local communities to self-organize and develop effective rules which contradicted conventional wisdom and Hardin's influential paper on the tragedy of the commons (Ostrom 1990). Her work paved the way for the increased recognition of community-based governance. In line with economic thinking, she

embraced a rational choice model of human behaviour. But in contrast to mainstream, neo-classical economic approaches she addressed complexity by, among other things, identifying seven different types of rules in use in local settings (Ostrom 2005). Furthermore she demonstrated the importance of trust and reputation for cooperation and collective governance processes. From numerous studies of local user communities she distilled design principles for effective collective choice arrangements (Ostrom 1990, 2005). However, she was always strong in arguing against panaceas and recognized the need for rules to be tailored to the setting in which they operate (Ostrom 2007). One condition for ensuring the effectiveness of rules proved to be that communities need to develop the rules themselves.

Despite their different theoretical standpoints and levels of analysis both Ostrom and Young embrace complexity and acknowledge the importance of self-organizing processes in governance systems. Both have worked on governance systems where government is often absent. There exists no government at the international level with a global jurisdiction. Government is also often absent or ineffective at the local level. Both make strong pleas against panaceas and simplification and argue in favour of a generic but contextual diagnostic approach. Such approaches should take into account the complexity of social-ecological systems in a systematic fashion and support context-sensitive analysis and a transferability of insights among similar classes of problems and contexts. Such an analysis requires a systemic and interdisciplinary approach in the social sciences and across the social-natural science interface. In her later work, Ostrom made an attempt to move in this direction and suggested organising variables of interest in the study of SES in a nested, multi-tier framework (Ostrom 2007, 2009).

Another stream of interdisciplinary research has focused on an improved understanding of the requirements for adaptive resource governance, since the ability to respond to uncertain developments and surprise together with learning are considered as essential for governing social-ecological systems (Dietz et al. 2003; Folke et al. 2005; Pahl-Wostl 2009). Folke et al. (2005) point out that adaptive governance systems often self-organise as social networks with teams and actor groups that draw on various knowledge systems and experiences for the development of a common understanding and policies. Empirical evidence has shown that the formation of informal networks plays an important role (Olsson et al. 2006; Nooteboom 2006). Ostrom (2001) highlighted the importance of polycentricity for adaptive governance. Polycentric systems combine decentralization of power with effective coordination among the multiple centres of decision-making. They are assumed to enhance innovation, learning, adaptation, trustworthiness, level of cooperation among participants, and the achievement of more effective, equitable, and sustainable outcomes at multiple scales (Ostrom 2010; Pahl-Wostl and Knieper 2014). Pahl-Wostl (2009) developed a conceptual framework to analyse the adaptive capacity of resource governance systems and highlighted the importance of multi-level interactions, polycentric system architectures and the interplay between formal and informal networks. Armitage et al. (2008) deplored the fact that work on adaptive governance of SES did not sufficiently take scholarly work in the

more traditional social science disciplines into account. To remedy this situation they pointed out the links to political ecology by addressing the importance of power, scale and levels of organisation, the positioning of social actors and social constructions of nature, which might explain certain barriers to change and learning.

Despite such promising conceptual developments and an increasing number of case studies to exemplify them, empirical evidence is fragmented, and the different conceptual and methodological approaches for studying resource governance in SES are barely comparable. The field of water governance lacks both a systematic empirical base and theoretical understanding of governance systems. To date scarcely any large-scale comparative studies acknowledging the complexity of water governance and management systems exist. Notable exceptions are the study by Saleth and Dinar (2004) using an institutional economics approach to conduct an analysis of the performance of national water policy reform and the study by Pahl-Wostl et al. (2012) who conducted the first comprehensive comparative analysis of the performance of complex water governance and management systems in national river basins.

2.5 The Challenges Ahead

There is an urgent need to take stock of experiences with water policy reform in order to support learning and build capacity for transformative change. Science is not yet up to the challenge of playing a major role in this.

A major bottleneck for using the governance concept in scientific theorizing and analysis and in water policy reform seems to lie in the lack of sound conceptual foundations for an integrative approach that embraces the various dimensions of governance systems. Furthermore, a lack of analytical rigour and comparability in empirical analyses prevents the development of a sound and cumulative knowledge base.

A diagnostic approach seems to point to a middle way between simplistic governance panaceas applicable to all circumstances and the uniqueness of specific governance settings determined by societal and environmental context without transferability of lessons learned from one case to another. A diagnostic approach identifies links between characteristics of governance systems and the degree to which they fulfil their societal function taking into account the influence of context and path-dependence on these relationships. Diagnosis should also identify and suggest pathways to improvement. The results of this diagnosis should not provide blueprints for the properties of an ideal governance system, but strategies for implementing change which take into account historical context, and biophysical and societal characteristics.

It is a key challenge for science to move away from the quite static approaches still prevalent in governance research to an approach which focuses on an understanding of the dynamics of governance systems and the governance of transformation.

Key questions that need to be addressed include: To what extent can governance regimes be purposefully designed and steered in a particular direction? To what extent can one refer to intentionality in a governance system? How can science best capture the dynamic relationship between structure and agency? How can science support the fundamental transformations required for making significant progress towards sustainable water governance and management? These questions will be addressed in subsequent chapters of this book.

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