

9. Transboundary water governance

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The effective management of water across borders is central to overcoming the challenges of water scarcity. Transboundary management requires water managers to respond to outcomes that result from interactions beyond their borders. This can involve decisions on polluting activities positioned near downstream borders that have impacts experienced outside the jurisdiction, the consequences of a dam for cross-border flows, or how much water should be extracted for irrigation upstream.

To achieve the goal of better transboundary water management, governments need to understand the biophysical characteristics of water and the varying relationships that different people and interest groups have with it. The challenge for decision-makers is the uncertainty about the likely effects of policy choices when there are likely to be long-term benefits. Further, environmental systems are frequently subject to thresholds and cumulative impacts that result in significant loss when they occur, but which are hard to predict and difficult to reverse.

Role of national governments

National governments have a number of important and unique attributes. First, their capacity to make laws and enforce them. Second, their access to funds (including the capacity to tax), research and management. Third is the greater jurisdictional capacity to assess issues from a catchment-wide perspective (at least within their borders) and distribute costs and benefits between different stakeholders, particularly upstream and downstream. Finally, there is the potential for a higher degree of corporate consistency over the long term than is possible for most other institutions. To illustrate the issues of transboundary governance within a federal state we briefly review the history of water governance for the Colorado River.

The Colorado River

The role of the US federal government in the negotiation of the 1922 Colorado River Compact is a good example in coordination across multiple jurisdictions at the sub-national level. Bringing together the seven upper and lower Colorado Basin states, Hubert Hoover, the national government-appointed facilitator,

brokered a water-sharing arrangement that has proved surprisingly resilient over the subsequent 90 years. One of the first products of the new compact (a voluntary agreement made under the implied threat of an externally imposed solution) was the Hoover Dam funded by the federal government and completed in 1935. The capacity of the dam to provide hydropower and regulate river flows has underpinned the development of the south-west of the United States since the 1930s.

The central government of the United States (defined in its wider sense so as to include national institutions, such as the Supreme Court) has subsequently shaped development in the region by funding strategic projects, such as the Central Arizona Project; influencing water-management plans through legislative requirements, such as the 1973 *Endangered Species Act*; and arbitrating disputes between the Colorado Basin states. More recently, using an approach that hints at how its role could evolve to deal with the predicted disruptive impacts of climate change, the central government pressured the lower Colorado states to negotiate between themselves an exceptional circumstances drought-management plan to share water that would protect key assets, such as the major cities. The four states acted in response to the threat by the national government that if they did not come to an agreement it would impose its own water sharing plans on them.

International transboundary water governance

National governments have significant coercive power to set water policy across sub-national jurisdictions. In theory, replicating the same structure at the next level up, international transboundary water governance, would require some form of international government with executive power to force negotiations and resolutions, as in the case of the Colorado River. But the collection of institutions that most nearly resembles an 'international government' is the United Nations (UN) and its various agencies. The UN is, by and large, a consensus-based organisation that is ill-equipped to solve contentious trade-offs. The sovereignty of nation states is a key principle of the UN and, in practice, the General Assembly and other UN bodies are not vested with the power to make or enforce decisions on how particular countries use transboundary waters.

In the absence of an overarching authority to further the collective interest by enforcing rules, making investments and distributing costs and benefits, a wide range of actors exert influence in the international sphere, such as the World Bank; powerful nongovernmental organisations, such as the World Wide Fund for Nature; large commercial companies; and, various UN agencies.

National governments are the foundation upon which international society is built and agreement on transboundary waters unavoidably requires agreement

by sovereign governments. Nevertheless, the power and authority of national governments is circumscribed by multiple interests and other layers of government. Consequently, compared to the sub-national level governments, there is a more heterogeneous arrangement of frameworks within which national governments pursue their individual and collective interests related to transboundary waters. This chapter demonstrates the complex nature of these frameworks and provides examples of their components through five sections covering a range of different issues.

Overview of chapters

In this section Warner, Zeitoun and Mirumachi (Chapter 10) discuss the power dynamics underlying transboundary governance between nation-states. They argue that transboundary relations are typified by a mixture of cooperation and conflict. In contrast to common preoccupations concerning military and economic instruments of 'hard power' to resolve water disputes, they demonstrate the importance of nonviolent, co-optative instruments of 'soft power', from side payments and bribery to persuasion and inciting desire to emulating success. The long-held disagreement between Egypt and Ethiopia over the latter's plans to dam the upper Nile provides a demonstration of these points, as well as the fact that, no matter how hegemonic or dominant a state, its hard and soft power are ultimately fluid.

A well-established means of achieving cooperation between nation states is the adoption of shared legal frameworks or agreements. Treaties, for example, may stipulate the rights and obligations of signatories in the joint management process and, importantly, place restrictions on actions that may harm other signatories. International water law advanced significantly during the twenty-first century and, although a proposed universal treaty (the 1997 Convention on the Law of Non-Navigational Uses of International Watercourses) has received insufficient support to come into force, there is a large and increasing number of legal agreements between states. In this chapter Gerlak, Lautze, and Giordano (Chapter 11) analyse an important aspect of such agreements: the sharing of data and information concerning the state of shared water resources. They find that states are engaging in greater data and information exchange, but uncover a reluctance on the part of many states to legalise formal schedules for exchange.

Another prominent method for governing international water resources, and one that can be a product of formal legal agreements, is river basin organisations (RBOs). These multilateral organisations provide a framework for states to make decisions, resolve disputes, share information and generate knowledge. In this chapter, Schmeier (Chapter 12) observes that success varies greatly between different RBOs and suggests that differences in institutional design and, in

particular, the organisational set-up and water-governance mechanisms an RBO provides, can contribute to its success. Understanding which characteristics work, and in what context, sheds important light on how to achieve improved cooperation and collective outcomes in the reform of existing RBOs and design of new ones.

The legal and geopolitical context prompting states to sign an international transboundary water agreement is the subject of Villar and Ribeiro's (Chapter 13) contribution to this section. Notably, cooperation was achieved in the authors' example without prior conflict. The authors show how the process leading to the 2010 Agreement on the Guarani Aquifer, encompassing Argentina, Brazil, Paraguay and Uruguay, began with scientists recognising the shared nature of the aquifer and the need for its joint management and was supported by multilateral institutions, such as the World Bank. The essay is a valuable survey of the key passages in the agreement text, particularly those relevant to the main principles of the UN Law of Transboundary Aquifers: sovereignty, the equitable and reasonable use of water resources, the obligation not to cause harm, cooperation and the exchange of data and information.

The final chapter in this section is a case study in potential conflict. Wirsing (Chapter 14) details the plans of China and India to exploit the Brahmaputra River for hydropower and water diversions for agriculture and other uses. The author views the lack of existing agreements with concern, arguing that, even if water is not the issue at the centre of these emerging powers' difficult relationship, their respective water insecurity means that disputes over exploitation of the Brahmaputra could have much wider impacts.

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