

Global Water Governance

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Introduction: Global Water Challenges

About 80% of the global population faces a human security challenge in relation to water (Vörösmarty *et al.* 2010). The amount of water available per person is shrinking because of the growing demands of a consumer society as well as a growing population base. This problem is exacerbated by governance failures in controlling the use and abuse of water while protecting the water system so that it can sustainably provide the wealth of ecosystem services (supporting, provisioning, regulatory, and cultural) that society has always depended upon.

This failure is not only about inappropriate water use and water abuse, but also poor land use management, including deforestation, non-sustainable agriculture, mining, rampant urbanization, and atmospheric pollution, and is connected to almost all sectors of society.

Water is a complex issue. Water can be fresh surface water, groundwater, ocean water, grey (waste) water, green water (water in leaves and plants), and virtual water (water embodied in products). Water is essential for ecosystems and human life; it is used for almost all human activities. Although globally there is enough water, aquatic and other ecosystems are degrading rapidly and water is not always available in the quantities and qualities needed in specific areas to sustain human life. Global wetlands have decreased by half in the last 100 years, and the number of freshwater fish species has decreased by 50% in the last 40 years (WWAP 2009). Although water includes ocean water, this chapter limits itself to fresh water (on the marine environment, see Chapter 4).

Good water management calls for (a) maximizing, and creatively and equitably sharing, the ecosystem services derived from water as it flows; (b) ensuring inclusive and participatory processes; and (c) promoting resilience and flexibility in the

governance process so that the impacts of climate change can be taken into account (Postel 2011). This requires (a) an integrated transdisciplinary framework; (b) massive advances in education, training, and learning across institutions; and (c) enhanced communication (Sivakumar 2011). At the international level, the key issues are (a) ensuring sustainability, equitable utilization, and coherence as well as contextual relevance in the management of the 263 transboundary rivers (TFDD 2008) and 273 transboundary aquifers (UNESCO 2009); and (b) ensuring that international rules which are relevant to water management (environment, human rights, trade, and investment) are in line with, and supportive of, an integrative and multilevel water management framework.

From a systemic perspective, local, national, and transboundary water issues can also be seen as global in scope: first, the hydrological system is a unitary system; second, the driving forces that influence water use, abuse, and impacts may be global in nature (e.g. climate change); third, the cumulative effects of local problems/solutions may lead to serious global trends; and finally, qualitative and quantitative changes in water may have global impacts – such as on migratory birds and fish species (Pahl-Wostl *et al.* 2008). Nevertheless the subsidiarity principle should also be applied within the increasingly important context of multilevel governance systems.

Against this briefly sketched background, this chapter provides an overview of global governance on water issues. Water governance has long been on the international agenda. Governance arrangements have evolved along three tracks in the fresh water regime: the development of organizations to manage transboundary and global water issues; the evolution of water (and related) law over the centuries; and the advancement of water policy and management over the last 60 years. To some extent these tracks overlap and match, but – more often than not – progress in the field has been fragmented along policy and law lines. The fragmented nature of water governance has led to a discussion on how water should be organized within the UN arena.

There is no easy way to structure the information around water governance. In the main sections of this chapter I have chosen to discuss the organization of water governance; key policy decisions on water; relevant legal issues; the debate on the likelihood of a water war; and then to draw some conclusions.

The Organization of Water Governance

The Phases of Governance

The recent history of global water governance can be divided into four phases: phase 1: transboundary institutionalization experiments (pre-1960); phase 2: global water policy initiatives (1960–1992); phase 3: hybridization of policy initiatives (1992–2003); and phase 4: attempt at system-wide coherence (2003–2012). These phases are briefly explained below.

Phase 1: Transboundary Institutionalization Experiments (pre-1960)

In the early phase of water governance, pre-1960, interstate treaties and transboundary water commissions were established to govern transboundary water issues. Since

1873, the International Law Association (ILA) (consisting of legal professionals) has been actively engaged in promoting the development of water law. Hundreds of water basin agreements have been concluded over the centuries (TFDD 2008), many establishing transboundary river commissions. The Rhine, for example, has been managed for nearly two centuries – since the 1816 treaty that established the Rhine as a navigable river and defined rules regarding its use. Since then, treaties on the Rhine have been adopted, *inter alia*, to protect salmon and prevent pollution. In 1950, the International Commission for the Protection of the Rhine was set up. Water matters on the Danube can be traced back to the Belgrade Convention of 1948, and currently a Danube Commission manages water issues. The International Joint Commission of 1909 regulates rivers between the USA and Canada; the International Boundary and Water Commission between the USA and Mexico of 1944 builds upon governance relations initiated as early as 1889. In Asia, the Mekong Committee was established in 1957 and the Mekong Commission was established in 1995. The 1960 Indus Commission regulates the Indus. The establishment of boundary water commissions is a key institution of water management today.

These transboundary commissions initially regulated navigation, subsequently water use, then pollution, and more recently they have also taken ecosystem services into account. Increasingly, new commissions have been set up in different parts of the world from the Aral Sea to the Southern Africa Development Community (SADC) region. Based on early experiences and communications, the ILA adopted the *Helsinki Rules on the Uses of International Rivers* in 1966 (ILA 1966), which has had an enduring influence on transboundary water governance since then (see the section in this chapter on “The Law Arena”).

Phase 2: Global Water Policy Initiatives (1960–1992)

In the second phase (1960–1992), many intergovernmental agencies that were in one way or another linked to fresh water use undertook individual interventions in the water arena to promote governance. UNESCO launched the International Hydrological Decade (1965–1975) to promote the systematic collection of knowledge about hydrological systems, which led to the establishment of the International Hydrological Programme at UNESCO in 1975. A few attempts were made to create coherence in the water governance field through policy-making via global declarations, beginning with the Stockholm Conference on the Human Environment in 1972 and culminating in detailed policy elaboration in Chapter 18 of Agenda 21 in 1992 (see the section in this chapter on “The Policy Arena”).

Phase 3: Hybridization of Policy Initiatives (1992–2003)

In the third phase (1992–2003), the limited effectiveness of – and vacuum in – water governance led to the birth of a number of hybrid organizations willing to take the lead in governance. The International Conference on Water and the Environment in Dublin in 1992 was initiated by certain countries that wished to push the water governance agenda further. Subsequently, growing frustration with the rampant development of large dams (from 5000 to about 50 000 between 1950 and 2011: Postel 2011) and the lack of an authority at the global level to develop policies

with respect to these dams, led to the establishment of a hybrid body – the World Commission on Dams – by the World Bank and the International Union for the Conservation of Nature (IUCN) in 1997. This body had the mandate to assess the lessons from completed dams and to draw policy implications from past experiences (see the section in this chapter on “The Policy Arena,” especially the subsection covering the years 1992 to 2003).

The global water governance vacuum also created the conditions for the development of the World Water Council in 1996, an international multi-stakeholder forum aiming to stimulate knowledge, awareness, commitment, and action. It does so primarily through the World Water Forum that has occurred once every three years since 1997 in Morocco, Netherlands, Japan, Mexico, Istanbul, and Marseille thus far.

Phase 4: Attempt at System-Wide Coherence (2003–2012)

The fourth phase (2003–2012) was characterized by a perceived need to create coherence in the water field. In 2003, the UN established UN Water as a coordinating mechanism and in 2004 it established the Secretary General’s Advisory Board on Water and Sanitation. The former replaced the UN ACC Subcommittee on Water Resources which was expected to implement Agenda 21. UN Water aims to promote system-wide coherence on water issues and improve the visibility and credibility of UN action on water. It has around 30 members from UN agencies and programs, and a growing membership from non-UN bodies. With an annual budget of about US\$2 million, it has four programs: a joint monitoring program to oversee progress towards meeting the Millennium Development Goals (see the section in this chapter on “The Policy Arena,” especially the subsection covering the years 1992 to 2003); a World Water Assessment Programme which prepares the World Water Development Report; and Programmes on Capacity Building and Advocacy and Communication. Five task forces create greater awareness and coordination of information. Although this body has coordination aspirations, its relatively small size and influence implies that, while it has some impact in achieving awareness-raising and monitoring, its influence falls short of actual coordination of UN-wide activities in the water field (Schubert 2010). The question that now arises is whether a UN Water (Lite) is adequate to address the issue of system-wide coherence.

The Policy Arena

Introduction

In the global policy arena, policies were essentially developed in the second to fourth phase of water institutionalization and correspond to (a) the ad hoc development of individual policy ideas in the UN in the first phase; (b) the ad hoc development of policy ideas within and outside the UN and in hybrid agencies in the second phase; and (c) some attempts at creating coherence in the third phase.

1960–1990

The 1972 UN Conference on the Human Environment adopted a declaration and recommendations (Stockholm Declaration; UN Conference on the Human Environment

2002). Principle 21 of the Stockholm Declaration established that although states were sovereign entities they should not cause harm to other states. Furthermore, Recommendation 51 of the Stockholm Action Plan defined a duty of notification to other states when contemplated domestic water activities would have transboundary effects and laid down that water should be used carefully, pollution should be minimized, and that the benefits of transboundary water regimes should be equitably shared by riparian states.

The first global water conference in Mar del Plata in 1977 led to the adoption of a plan which called on countries to assess their water resources; use water efficiently; ensure regular environmental, health, and pollution control; undertake policies, planning and management efforts; implement measures to deal with natural hazards; educate and train the public while encouraging water-based science; and promote regional and international cooperation (UN Water Conference 1977). As a follow-up to this declaration, the 1980s were declared the International Drinking Water Supply and Sanitation Decade, and supply to rural and urban residents increased by 240% and 150% (totaling 1.3 billion people), while access to sanitation improved for 750 million people. But billions were still without access to water (1.2 billion) and sanitation (1.7 billion) at the end of the decade (Sivakumar 2011: 541).

Following the end of the Cold War, it was expected that greater resources could be devoted to social and environmental issues. Twenty years after Stockholm, the United Nations Conference on Environment and Development adopted a set of 27 principles that could have a bearing on water issues (Rio Declaration; UN Department of Economic and Social Affairs 1992). Furthermore, chapter 18 of Agenda 21 (1992) emphasizes the need for effective integrated management of water. It recognizes the necessity to satisfy basic human needs as a priority (Agenda 21 1992: section 18.8). The other seven programs include water resources assessment, protection of water resources, water quality and aquatic ecosystems, drinking water supply and sanitation, water for sustainable urban development, water for sustainable food production and rural development, and impacts of climate change on water resources. The document included a number of targets to be reached by 2005, but most have not been achieved.

1992–2003

A significant landmark is the International Conference on Water and the Environment and its Dublin Principles (Dublin Declaration 1992). These principles include the recognition of water as a “finite and vulnerable resource, essential to sustain life, development and the environment”; the promotion of a participatory approach concurrently at all levels of governance; taking into account the role of women in the “provision, management and safeguarding of water”; and that water “should be recognized as an economic good.” These principles have been very influential in shaping water governance.

In 2000, the World Commission on Dams concluded that although large dams contributed significantly to development, the achievements regularly came at an unacceptable and often unnecessary price in terms of social and environmental costs (WCD 2000). The Commission recommended greater integration of externalized costs and transparency (WCD 2000). It did not, however, deal with dam renewal, interbasin water transfers, or the growing need for dams both to mitigate and adapt

to climate change. Since the commission no longer exists, there is no natural home for discussions of dam-related policy.

The World Water Forums (WWF) have also contributed to ideas for water policy. The second meeting in 2000 identified common global water problems such as meeting basic needs and securing food supply, protecting ecosystems, sharing water resources, managing risks, valuing water, and governing water wisely. To address such problems, it called for integrated water resources management, collaboration, and partnership at all levels. The third meeting emphasized that water is a driving force for sustainable development and focused on the role of local authorities and communities, and the need for good governance, capacity-building, and financing. The fourth meeting committed itself to the concept of integrated water resource management and the role of actors at all levels of governance in achieving this. The fifth meeting reached new political heights, as many heads of state attended and committed themselves to taking action based on solidarity, security, and ensuring adaptability. An Istanbul Water Consensus was drawn up and cities were invited to sign up to it if they were willing to develop action plans in accordance with the consensus. The World Water Forums provide a centralized venue to discuss water policy and develop political vision and commitment. But whether this will develop into something more substantial – like legally binding decision-making – remains to be seen (Sivakumar 2011).

In an effort to prioritize global development issues, the UN General Assembly adopted the Millennium Declaration (2000). Focusing on the uneven distribution of the benefits of globalization, the Declaration included a target on water:

To halve, by the year 2015, the proportion of the world's people whose income is less than one dollar a day and the proportion of people who suffer from hunger and, by the same date, to halve the proportion of people who are unable to reach or to afford safe drinking water (Para III 19).

Two years later, the World Summit on Sustainable Development reiterated the goal of halving the number of people without safe access to drinking water and sanitation by 2015, and the need to develop integrated water resources management and water efficiency plans by 2005 (Johannesburg Declaration; UN Department of Economic and Social Affairs 2002).

The policy process has thus far made three major contributions to water: first, the need for an integrated water resource management approach; second, the emphasis on water as an economic good; third, the gradual emphasis placed on access to water and sanitation. However, there is a lack of long-term planning and ground-breaking ideas, incoherence in the policy process, and no systematic progress towards legally binding policy (Sivakumar 2011; cf. Gleick and Lane 2005).

The Law Arena

Phases

During the first phase of transboundary institutionalization experiments, hundreds of transboundary agreements were adopted. In the second phase (1960–1992) there

was a gradual codification of water rules. In the 1960s, the UN General Assembly requested the International Law Commission (ILC) to make a draft treaty on transboundary waters. In 1966 the ILA drafted the Helsinki Rules on the Uses of Waters of International Rivers (ILA 1966). This academic document was very influential in helping countries design their national and transboundary water policies (Bourne 1996). The ILC eventually presented its draft convention to the General Assembly in 1990. The third phase corresponds to the phase in which regional (UNECE 1992) and global-level institutionalization of legal norms through treaties occurs (Watercourses Convention of 1997). It is not clear if the global community is already in a fourth phase in law. This section discusses water law principles, global and regional treaties, the Berlin Rules, supranational and transboundary agreements, zooms in on groundwater issues and the human right to water, and discusses critical court cases and other legal regimes that influence water governance.

Principles

Prominent water principles include the sovereignty principle. While some countries have in the past, and continue till today, to claim absolute territorial sovereignty (the Harmon doctrine, as formulated by Mr Judson Harmon, an Attorney General of the USA), many make concessions in practice (Islam 1987; McCaffrey 2001). In contrast, other states have argued in favor of absolute integrity of state territory, which implies that an upstream country cannot alter the quantities and qualities of water flowing into the downstream country (Max Huber, cited in Berber 1959: 20). As a compromise, some jurists have promoted the concept of community of property in water, which calls on states to treat international rivers in an integrated fashion (Lipper 1967: 38). However, probably the most dominant principle is that of limited territorial sovereignty, which restricts the harm states can cause to other states (*Trail Smelter* Arbitration 1941; Stockholm Declaration 1972; Rio Declaration 1992).

Furthermore, principles regarding the navigational uses of transboundary water include the principle of freedom of navigation and of commerce for riparian states; the freedom of commerce, but not of navigation of non-riparian states; and the duty to consult and settle all matters concerning navigation by common agreement among riparian states.

The UN Watercourses Convention

Governing non-navigational uses of watercourses is more complex. In 1966, the Helsinki Rules (ILA 1966) codified the law on international watercourses (see the subsection on “Transboundary Institutionalization Experiments (pre-1960)” in the section in this chapter on “The Organization of Water Governance”). The Watercourses Convention of 1997 based on the International Law Commission’s draft was quite similar in content. This Convention has yet to enter into force. The World Wide Fund for Nature launched a campaign in 2006 to promote its ratification and entry into force.

This Convention focuses on transboundary (surface and ground) watercourses that flow into a common terminus. It elaborates on the rights and responsibilities of

states in managing and sharing the watercourse; and what should be undertaken in the event of a dispute. Two critical elements should be pointed out: the duty not to cause harm to other states; and the need to equitably utilize the water body according to six criteria, including natural factors such as geographical or ecological conditions, social and economic needs; the effects of the use of watercourses by one state on another state; existing and potential uses; conservation, protection, development, and economy of the use of water and the costs of measures taken to that end; and the availability of alternatives (McCaffrey 2001).

UNECE Convention

In 1992, the UN Economic Commission for Europe (UNECE 1992) also adopted a Convention on the Protection and Use of Transboundary Watercourses and International Lakes (38 parties), which is in force. This Convention includes surface and groundwaters. It obliges all parties to prevent, reduce, or control transboundary impacts, enforced through a combination of standards, limits on discharges, and monitoring. The use of waters needs to be ecologically sound and embody rational water management, the conservation of water resources, and environmental protection. Reasonable and equitable use is promoted, and the precautionary, polluter pays, and sustainable development principles are included.

The Protocol on Water and Health (25 parties) (UNECE 1999) focuses more on the individual and collective human health aspects, including access to good-quality water and sanitation services. The Protocol includes the precautionary, polluter pays, intergenerational equity, preventive, sovereignty subject to duty, subsidiarity, access to information and public participation, the catchment area, equitable access to water, and protection of vulnerable people principles (UNECE 1999: Article 5). Discussions on whether the UNECE Conventions should become gradually more universal are ongoing.

Berlin Rules

The ILA, in the meanwhile, adopted the Berlin Rules in 2004 (ILA 2004). These aim at a comprehensive water regulatory approach more appropriate to the twenty-first century. These rules, which are not legally binding, cover the management of waters in general and drainage basins in particular. They include rules for transboundary waters and groundwater, discuss the rights of individuals to sufficient, safe, acceptable, physically accessible, and affordable water on a non-discriminatory basis, and elaborate on state responsibility, navigation issues, and the protection of water and water installations in times of armed conflict. Unlike the Helsinki Rules, environmental issues are more explicitly taken into account, the role of stakeholders in management is accounted for, and remedies for damage are suggested.

Supranational and Transboundary Agreements

Supranational policy on water is made primarily by the European Union (EU). Water policy and law within the EU has undergone three phases (Castro 2009): in the first phase (1973–1988), the law coordinated water quality, resulting in directives on

drinking water, bathing water, and others; in the second phase (1988–1995), emission and water treatment standards with directives regulating manure, cadmium, and urban waste water were adopted. Since 2000, the focus has been on comprehensiveness with the EU's Water Framework Directive (EC 2000) and the Marine Strategy Framework Directive (EC 2008).

The Water Framework Directive provides a framework for action by all member-states to achieve “good status” for surface- and groundwaters in the EU by 2015. The steps to achieve good status include assessing the pressures and impacts on a river basin to implementing a program of specific measures. This Directive aims at providing a comprehensive approach to water management and integrates past governance efforts that focused on individual issues such as drinking water, urban waste water, and so forth. It sees the river basin as a unit and tries to control water pollution and achieve qualitative objectives for water. Although the quality of the implementation varies in different countries (EC 2007, 2009; Kelly *et al.* 2009), this Directive is extremely important in shaping fresh water policy in the EU. The Marine Strategy Framework Directive aims at a good environmental status for the marine waters of the EU by 2020 and establishes European Marine Regions.

Groundwater Rules

Although groundwater is often seen as comprising 97% of the world's fresh water resources (Brölmán 2011), water fluxes are more important than storage (Koutsoyiannis 2011). Annual surface water fluxes are 44,700 km³ compared to 2200 km³ for groundwater fluxes to the oceans – a difference of 20 times (Shiklomov and Sokolov 1985, cited in Koutsoyiannis 2011). Around 273 transboundary aquifers exist globally (UNESCO 2009). Thus far, relatively limited attention has been paid to groundwater governance both at the national and international level. The law governing transboundary aquifers draws from the law on shared natural resources as well as the law on shared water resources.

Ideas for groundwater governance emerge from the work of epistemic communities. The Helsinki Rules (ILA 1966) covered groundwater to the extent that it was part of a hydraulic system that included surface water and flowed into a common terminus. Twenty years later the ILA developed rules on confined groundwater in its Seoul Rules (ILA 1986). The 2004 Berlin Rules also dealt with groundwater (ILA 2004).

The first legally binding agreement covering groundwater was the UNECE Water Convention, which includes all kinds of groundwater as long as it interacts with transboundary waters (UNECE 1992). In 2000 the UNECE prepared its Guidelines on Monitoring and Assessment of Transboundary Groundwaters. The International Law Commission's Draft Articles on the Non-Navigational Uses of International Watercourses also covers groundwaters when they are part of a hydrological system that includes surface waters and flows into a common terminus. In 2008, the ILC adopted its Draft Articles on the Law of Transboundary Aquifers (ILC 2008). At regional level a number of agreements have been made recently. The Nubian sandstone aquifer system states concluded agreements in 2000; the North-Western Sahara Aquifer countries reached an agreement in 2002; Niger, Nigeria, and Mali signed a comprehensive agreement on the Iullemeden Aquifer system in 2009; and in 2010

an Agreement on the Guaraní Aquifer was signed by Argentina, Brazil, Paraguay, and Uruguay.

The trends in groundwater governance include a focus on aquifers and not only groundwater; call for protection, preservation, and management of the resource; equitable and reasonable utilization as well as equitable and reasonable sharing of the benefits; the obligation not to cause harm to others; recognition of the sovereignty of the state over its own part of the aquifer; and provisions on limitations on, or notifications of abstractions – but there is still a long way to go in developing groundwater law at transboundary level (Mechlem 2011; Tanzi 2011).

The Human Right to Water

As of 2011, 1–2 billion humans lack access to either potable water or sanitation facilities. This violates human dignity. The discussion on human rights can be traced back to the Human Rights Declaration of 1948 and covenants of 1966. A limited recognition of the human right to water for women (CEDAW 1979) and children (African Charter 1999) was adopted in legal treaties.

Globally economic, social, and cultural rights have progressed relatively slowly. In the area of water, discussions on this right can be traced back to the 1972 Stockholm Declaration, which discusses equitable use of water, and the Mar del Plata Conference Plan (UN Water Conference 1977), which explicitly recognized the need to create the right to drinking water (UN Water Conference 1977: Resolution II, 66). The Rio Declaration (UN Department of Economic and Social Affairs 1992) included 27 principles but no human right to water, although Agenda 21 (1992) emphasized the human need for water and sanitation services. Despite the gradual increase in the momentum as global conferences (Declaration of the International Conference 1994; UN Human Settlements Programme 1996) emphasized the human right to water, the UN Watercourses Convention (UN General Assembly 1997) did not mention this right.

The Millennium Declaration (2000) addressed basic needs issues including water. The UN Committee on Economic, Social and Cultural Rights' General Comment No. 15 on the Right to Water in 2002 and a number of regional conferences (the 2007 Asia Pacific Water Summit and the third South Asian Conference on Sanitation in 2008) paved the way for the UN Human Rights Council to adopt this topic for a three-year study in 2008 and for the UN General Assembly (2010) to adopt a Declaration on the Human Right to Water and Sanitation that was accepted by 122 nations. In 2010, the UN Human Rights Council adopted a resolution on the human right to access safe drinking water and sanitation.

The current status of the human right to water and sanitation is that there is political recognition, and it is arguably legally binding. Such a right creates enforceable rights and responsibilities and in the process may empower the vulnerable. However, it is not self-enforcing and it still requires a legally aware pro bono community and a justice system that can help implement these rights (Gupta *et al.* 2010).

Court Cases on Water

Adjudication has been another source of legal precedent in the water area (Castillo-Laborde 2009).

Key principles of international water law are the notions of freedom of navigation and community of interests of riparian states in a navigable river, arising from the decision of the Permanent Court of International Justice (PCIJ) in the *River Oder* case (1929) between Poland and the downstream countries. It argued that nature gives rise to the transboundary relationship and this leads to obligations of states to cooperatively manage the transboundary river. This principle was recognized also with respect to non-navigational uses in the International Court of Justice's (ICJ) judgment of the *Gabčíkovo–Nagymaros* case (1997) between Hungary and Slovakia. Such cooperation is required for all parts of an international river – the tributaries and sub-tributaries, the navigable and non-navigable parts.

The right to equitable use of waters was recognized by the PCIJ in the *Diversion of the Meuse River* case (1937) between Belgium and the Netherlands and once more in the *Gabčíkovo–Nagymaros* case (1997). The right to use waters is accompanied by the no-harm principle and requires that states notify others of potentially harmful activities (*Lake Lanoux* Arbitration 1957 between France and Spain) and repair that harm if it occurs (*Gut Dam* case of 1968 between the USA and Canada).

In relation to the Kushk River, a boundary river between Afghanistan, present-day Turkmenistan, and Russia, a commission held in 1893 that the boundary between Afghanistan and Russia was the thalweg in the river. This rule is still often used today in navigational boundary rivers. With respect to the Zarumilla River (between Peru and Ecuador), a Brazilian arbitral award of 1945 held that the thalweg in a canal to be constructed between the islands in the river would be the boundary between the two countries.

On water quality, the 2004 *Protection of the Rhine against Pollution by Chlorides* Arbitration (between the Netherlands and France) held that the concept of “legal community” meant that pollution should be addressed and ordered France to compensate the Netherlands for its excess costs in dealing with the pollution. In the 2010 *Pulp Mills* case between Uruguay and Argentina, the ICJ ruled against Argentina and allowed Uruguay to continue with the mills. Subsequently, the two governments set up a joint commission to address pollution problems in the river.

Other Legal Regimes with an Impact on Water

Three other regimes influence water governance: climate change, investment, and trade regimes.

Environmental agreements (e.g. biological diversity, desertification, wetlands, and climate change) have implications for water. I will briefly focus on climate change. Climate change impacts water through the increased risk of glaciers melting and influencing surface water flows; changing rainfall and evaporation patterns influencing the local availability of water; and the increased likelihood of extreme weather events such as droughts, floods, and cyclones (Intergovernmental Panel on Climate Change 2007). A historical overview of the progress made in terms of implementing the climate convention (Gupta 2010) shows that the problem is far from being addressed and it is now time to climate-proof fresh water agreements and governance worldwide (Cooley and Gleick 2011).

With the recognition of water as an economic good, interest in privatizing some water services has risen. This has led to foreign investment in water. Such foreign

investments are generally regulated by investment law, which protects the interests of foreign investors. Investment law includes bilateral and multilateral investment treaties. Such treaties between countries encourage foreign investors to invest in one another's territories in return for protecting their rights. The proliferation of bilateral treaties led the OECD to try and consolidate these treaties in the Multilateral Agreement on Investment, but this failed (Werksman and Santoro 1998) and the proliferation continues. These treaties generally define which investments are covered by them, prescribe equal treatment between nationals and foreigners (national treatment clause) and between investors from different countries, stipulate fair and equitable treatment of the investors, require free transferability of funds into and out of the country and compensation in case of an expropriation or damage to the investment, and establish specific dispute-settlement mechanisms. These mostly call for arbitration under the Convention on the Settlement of Investment Disputes between States and Nationals of Other States (ICSID Convention 1965) or the Rules of the Permanent Court of Arbitration. These treaties often imply that, once the water sector is open to private investment, governments cannot differentiate between local and foreign investors; that the contracts drawn up are confidential and not subject to public control; and that in the event of a dispute, international confidential arbitration may take the subject matter out of the control of the host country. There have been several arbitration cases thus far and their judgments tend to have an impact on water law (Tecco 2008).

Global trade law also influences the water sector. The World Trade Organization (WTO) and regional trade agreements regulate trade, and to the extent that water is a traded commodity, it too falls under this jurisdiction (Barlow and Clarke 2002). When member countries trade water, they need to respect the national treatment principle. This may lead to foreign investors exporting water for profit even if the host state sees water as critical for its domestic interest.

The “Water Wars” Debate

Finally, I reflect briefly on the “water wars” debate. Towards the end of the last century, two emerging schools of thought developed about whether countries and peoples will see water as so critical for their survival and identity that they will be willing to engage in conflict. Water is important, scarce, poorly distributed, and shared, and these four characteristics make it subject to being a source of stress (Gleick 1993; Myers 1993; Kaplan 1994; Villiers 2001; cf. Stalley 2003).

Others argue that water (or environment) is generally only one of a series of variables and it would be difficult to isolate which conflicts could be attributed to water shortage (Levy 1995; Gleditsch 2001). Homer-Dixon (1994) argues that such wars occur only in very exceptional circumstances, for example, following a history of military antagonism. Wolf (1995) argues that the cost of a war far outweighs the costs of desalination plants or other infrastructures to deal with water problems and that makes war unlikely. Based on case-study work, Kalpakian argues that “serious conflict is reserved for matters that touch peoples’ identities such as their language, history, heritage and self image” (2004: 1).

What is not disputed is that water scarcities can trigger tensions and, in combination with other factors, may create conditions that could potentially escalate into

diplomatic disputes if not outright war. However, there is a much stronger case to argue in favor of the role of water in promoting cooperation between peoples and countries and to ensure that the institutionalization of negotiating and diplomatic processes leads to greater peace globally.

Key Issues in Water Governance for the Twenty-first Century

This chapter's overview raises some questions. First, should water be regulated at the global level? While water issues are clearly often mostly local or fluvial in nature, a systemic approach may call for seeing the hydrological system as one, and globalization has increasingly led to the establishment of production, distribution, and consumption patterns and governance processes that imply that even so-called local issues are often influenced by global demand and supply, processes, and knowledge systems. There seems to be clearly an increasing need to have some degree of global governance on water.

Second, water issues are dispersed throughout the UN and non-UN system. While UN Water tries to harmonize some of the activities of global actors on water issues, it has a relatively small mandate, few resources, and little authority. The competing processes at global level have led to different trajectories for governing water – a policy trajectory that UN Water plays a role in, a law trajectory where legal instruments, arbitral and court awards, and legal epistemic communities shape the debate, and a human rights trajectory that is being pushed in the UN Human Rights Council and the General Assembly.

Third, there are defining moments which have led to the birth of new ideas – the Helsinki Rules in 1966 and its articulation of equitable sharing of water, the Dublin Declaration in 1992 and the birth of integrated water resources management, as well as the notion of water as an economic good, and the UN General Assembly Resolution of 2010 and the coming of age of the human right to water and sanitation.

Fourth, behind the dispersed and competing governance trajectories, confusion exists regarding the discourses that should help shape water governance. The liberalization discourse focuses on private sector participation in water, confidential water contracts, trade, and investment law; the good governance discourse emphasizes transparency, legitimacy, accountability, and participation; the water governance discourse has evolved from the hydraulic mission with its emphasis on optimizing water use through infrastructure development to equitable sharing of water; the water management discourse is shifting from sectoral through integrated water resource management to, possibly, adaptive management; the human rights discourse promotes a focus on the human right to water and sanitation, and indigenous people's rights; environmental discourses are centered on sustainable development, environmental protection, and ecosystem services; and the new scientific framing discourses focus, *inter alia*, on concepts like virtual water trade (Gupta 2009)! Not all of these discourses are reconcilable, and each is being promoted actively at the global level by specific advocacy coalitions. While some see the growing number of dams as redesigning waterscapes and landscapes (Postel 2011), others regard them as necessary to meet water, food, and energy needs in the twenty-first century (Koutsoyiannis 2011). While some see water as an economic good (Dublin Declaration 1992), others argue that it should be seen as a heritage, a human right (Gleick 2003;

Gupta 2010), or a political good (Schouten and Schwartz 2006). There is a lack of critical evaluations of the usefulness and usability of concepts such as sustainable development, integrated water resources management (see Conca 2006), good governance, decentralization vs. centralization, stakeholder participation, private sector participation, the role of bi- and multilateral aid in water policy, even the role of science in water policy. Diffuse policy processes with limited authority or legitimacy and restricted access to quality scientific assessments are unable to generate information and consensus about which of these ideas, norms, and concepts is most likely to be consistent with sustainability and within which specific contexts. Little policy work has been conducted on the conditions for sustainable water transfer from one basin to another, the potential of sea-water desalination and transfer of icebergs, and the sustainability of both small and large dams, among others. Here, too, two schools of thought have emerged. Some advocate a centralized approach to managing water, while others favor a light, coordinating approach.

Fifth, the legal arena is dense with bilateral and regional agreements that either directly relate to water or are in fields that have consequences for water. This has not been integrated into one comprehensive framework. Although this may or may not be necessary, depending on one's perspective on the need to centralize and formalize, a priority now is the need to climate-proof transboundary water agreements in the coming years (Cooley and Gleick 2011).

Sixth, whether one accepts the hypothesis that countries may be willing to go to war on water issues or not, what is clear is that the maldistribution of water is likely to be a source of tension and create human insecurity and calls for better water governance.

Water is a critical resource for countries, not just because of its role in meeting basic needs and its contribution to the national economy, but also because of the significant cultural, religious, and aesthetic function of water. The density of governance on water is both pluralistic and fragmented, embodying competing value systems. The question for the future is whether a harmonized, comprehensive water management system (including an organizational framework and law), is more likely to successfully address the critical water challenges of the twenty-first century? Or, if such an agreement is politically possible, will it merely imply the superimposition of certain values over other values and create greater inequities at the local level? Or should the global community try and prioritize a few issues first and try to regulate those as a priority? Clearly, governance at the global level needs to co-develop with a comprehensive multilevel system of governance that is coherent where possible while being contextually relevant in the diversity of localities where it is to be implemented.

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