

THE ROLE OF KNOWLEDGE TRANSMISSION IN WATER DIPLOMACY

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Key takeaways

- Effective transboundary water management requires drawing upon different types of knowledge held by diverse actors at different scales, including perspectives from vulnerable groups such as women and youth.
- Knowledge transmission required for transboundary water management occurs at multiple levels, including at multiple governance scales, particularly at local, national, and transboundary levels, and across sectors.
- Both formal (through formal institutionalized processes) and informal (such as capacity building, dialogues, advocacy, and informal meetings) forms of knowledge transmission are important and can shape cooperation over water.
- A wide range of tools and mechanisms that can facilitate knowledge transmission can be useful for water cooperation, including Strategic Environmental Assessment, shared visioning and collaborative modelling, cross-sectoral coordination through Integrated Water Resources Management, adopting a nexus approach or Source to Sea approach, among others.

Introduction

Managing transboundary water (TBW) is a complex business, not only involving different countries and jurisdictions but also sublevels of those jurisdictions within each country, as well as various sectors and different communities along transboundary water bodies. Often, different types of knowledge, information, and data exist within these different groups. Knowledge and information can be critical in fostering transboundary water cooperation. Information and data exchange is often considered as one of the first steps in fostering cooperation. While many tend to think it is the relatively straightforward initial step, such an exchange can also be politicized, making things challenging for many.

What are the best ways for TBW managers and relevant riparian governments to govern the shared water while taking all the different knowledge into account? What are the mechanisms for knowledge to effectively transmit across different scales and sectors? Knowledge transmission related to transboundary water management can take place at different levels of multi-governance,

Table 17.1 Knowledge area

<i>Knowledge area</i>	<i>Description</i>
Know-how	Knowledge area that supports the ability to produce action, know how to do something
Know-why	Knowledge that refers to the understanding of reasons, such as perspectives, assumptions, and paradigms
Know-what	Information necessary to make decisions or things that are necessary to take the next action
Know-who	Relationships, contacts, networks, and competencies that are necessary to undertake a task
Know-where	Knowledge that allows one to navigate through and select the right information required for a task.
Know-when	Knowing the frequency and opportune moment for instigating, changing, or ending something.

Sources: Collison and Parcell (2001) and Delfau (2018).

among different sectors, as well as cross-basins. This chapter aims to provide key tools and approaches to overcome this challenge.

Types and areas of knowledge

There is a wide range of valuable knowledge for water diplomacy and transboundary water management. It ranges from data, information about specific basin's biophysical and socioeconomic characteristics to management practices, lessons learned, as well as different perspectives and opinions raised by a wide range of stakeholders. Knowledge can be practical (i.e., resulting from on-the-ground interactions), prescriptive (i.e., best practices), or discursive (i.e., a framework for addressing different values) (Mukhtarov and Gerlak 2014; Delfau 2018). In management and decision-making processes, it is also useful to be aware of different areas of knowledge, such as when to apply the knowledge, how, understanding the background to why, as well as who, where, and what knowledge can be applied when (see Table 17.1) (Collison and Parcell 2001; Delfau 2018).

In the management of transboundary water, a combination of these different areas of knowledge is needed by different decision-makers and stakeholders. In addition, it is also important to take note of how knowledge is generated. With the nature of shared resources, knowledge related to water allocation over transboundary water, for instance, is best created through joint monitoring and assessment (UNECE 2021a). This chapter explores different types and areas of knowledge that are useful for transboundary water management, focusing on their pathways and how they are transmitted.

Knowledge transmission across scales: Multilevel governance

The successful management of transboundary water requires not only an awareness of the multiple levels of governance involved but also an ability to leverage the cascading knowledge pathways that go up, down, and through these various levels. This requires an understanding of the production, refinement, and transmission of knowledge, whether at the local, provincial, national, or even transboundary/intergovernmental scale.

Intergovernmental level

When there is a formal transboundary/intergovernmental organization or institutional structure, such a body would play a key role in knowledge transmission. There are three typical types of formal arrangements. The most common institutional arrangements are river basin organizations (RBOs) or institutions established to manage a specific transboundary water body. Some of these RBOs also play the role of managing transboundary aquifers that are hydrologically connected to surface water through conjunctive management of surface and groundwater. An example of such an arrangement is the Orange-Senqu River, which is hydrologically connected to the Stampriet transboundary aquifer system (STAS). The Orange-Senqu River Commission (ORASECOM) houses the Ground Water Hydrology Committee and is linked to the STAS multicountry cooperation mechanism.

Another type of arrangement is a bilateral commission that oversees transboundary waters shared between two countries more broadly rather than focusing on one specific water body. One such example is the Binational Commission for Integrated Water Resources Management (IWRM) in the Ecuadorian-Peruvian basins, established through an agreement signed between the two countries in 2017 and includes nine transboundary basins shared between the two countries. Another example is the Joint Rivers Commission between India and Bangladesh, which is based on the Statute signed in 1972 and covers 54 transboundary rivers shared between the two countries.

The third type of formal process at the intergovernmental level is regional commissions, where countries agree to jointly work on transboundary water cooperation. An example of such a process is the Southern African Development Community (SADC), which includes 16 member countries sharing 21 transboundary rivers and 14 aquifers (Pietersen et al. 2010). SADC member countries signed the SADC protocol on shared water¹ in 1995 and revised in 2000 (SADC 2000), which aims to foster cooperation for sustainable, coordinated, equitable, and reasonable management of shared watercourses within the region. The protocol also supports the establishment of shared watercourse agreements and basin organizations, such as ORASECOM shared between Botswana, Lesotho, Namibia, and South Africa, as well as Limpopo Watercourse Commission (LIMCOM) shared between Botswana, South Africa, Zimbabwe, and Mozambique (ORASECOM 2022).

Cascading knowledge down and up within multilevel governance structure

Knowledge generated or shared among these intergovernmental processes needs to cascade down through national, provincial, local, and community levels. This cascading down to the national level typically takes place through national focal points to intergovernmental processes. These national focal points are typically national ministries with a mandate to manage transboundary water, such as ministries of water resources, environment, as well as foreign affairs. Subsequent cascading down of knowledge through formal channels depends on each country's formal governance structure. Typically, knowledge will cascade through different subnational governance systems, for example, national to the provincial government, then to the district, commune, and village levels.

Informal processes

Knowledge transmission across multilevels of governance can also take place through informal processes. One such example is a basin dialogue, which often takes place in the form of

multistakeholder dialogues, basin-wide knowledge exchange events, or symposiums. Different actors can foster transboundary basin dialogues, including government, NGOs, international organizations, and academia. Such dialogues have taken place throughout the world at multiple levels. For example, in South Asia, the Brahmaputra dialogue² was initiated by nonstate actors, including NGOs and academic institutions in India and Bangladesh. Initially, dialogues took place as exchanges between India and Bangladesh at provincial levels. This was subsequently expanded, engaging stakeholders from all riparian countries (including China and Bhutan) as well as jointly facilitated with government officials who acted in their personal capacity, thus evolving the dialogue from a track 3 process to a track 1.5 (SaciWaters 2014; World Bank Group 2018; Barua 2018). The Indus Basin dialogue, which took place in another major transboundary basin within South Asia, engaged policymakers and opinion-makers representing different riparian countries in the form of the Indus Forum. The dialogue was later turned into the Indus Basin Knowledge Forum, which strengthened the knowledge–policy–action interface (World Bank Group 2022). One of the key features of this type of basin dialogue is in knowledge and personal exchanges throughout the basin, which can often lead to creating communities of practice among basin practitioners. Generally, the more diverse participants are for these dialogues, the more diverse views and opinions can be captured through dialogues, provided that they are well facilitated, allowing different voices to be heard. The role of neutral facilitators and convenors becomes important in these dialogues (Yasuda et al. 2022).

Advocacy by interest groups, NGOs, and other nonstate actors can also serve as an informal way to disseminate and exchange knowledge across different scales. When a controversial issue arises, such as plans for hydropower dam construction, in addition to official information from governments or hydropower companies, civil society groups and academia typically publish their own reports about possible impacts of the dam. These incidents can actually catalyze knowledge transmission across basins and at times lead to exploring new aspects of value related to shared water from various stakeholders (Yasuda 2015). Training events for basin management that take place through various channels are also another way where knowledge transformation occurs.

Knowledge transmission across sectors

Another key dimension of knowledge transmission for improved management of transboundary water is the cross-sectoral aspect. One of the key concepts that promotes cross-sectoral coordination is the IWRM.

Integrated Water Resources Management

IWRM is a process that “promotes the coordinated development and management of water, land, and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” (GWP TAC 2000). By nature, IWRM requires an intersectoral approach to the management of water. At rivers or lake basins and aquifer levels, IWRM would require coordinating management and optimizing equitable use of water, land, and related resources within the limits of basins without compromising the long-term sustainability of ecosystems (GWP and INBO 2009).

For a transboundary river, lake basin, or aquifer, this coordination and optimization needs to span different national jurisdictions and sectors. While cross-sectoral and cross-border coordination is often complicated to manage, it is critical to facilitate the level of knowledge transmission required for the effective management of transboundary water (UNEP 2021).

IWRM has four key dimensions. In a transboundary context, these translate into:

- 1 Establishment of an enabling environment, such as transboundary water agreements, policies, and plans adopted by countries to ensure cross-sectoral coordination of shared waters;
- 2 Institutionalization of participatory water governance and management, including the formation of basin institutions and cross-sectoral coordination mechanisms that integrate inclusive stakeholder engagement practices;
- 3 Development of management instruments such as pollution control, water availability monitoring, data and information sharing;
- 4 Arrangement of financing agreements that ensure countries pay their share for transboundary water institutions or the securing of finance from various sources to foster cooperation and joint action (UNEP 2021; INBO and GWP 2012).

Knowledge transmission across sectors is a key aspect of IWRM and the sustainable management of transboundary waters more generally. This transmission can take place through formal and informal processes. One such process is inter-sectoral committees and arrangements linked to transboundary water agreements or arrangements.

For instance, the Mekong River Commission³ (MRC), established by the 1995 Mekong Agreement between Cambodia, Laos, Thailand, and Vietnam, is a primary intergovernmental coordination body among these countries. The MRC consists of the Council of Ministers, the Joint Committee, and the MRC Secretariat. Cross-sectoral knowledge transmission at the inter-governmental level takes place through these formal mechanisms. It is also institutionalized through procedural rules agreed upon and signed among countries. For instance, the Procedure for Data and Information Exchange and Sharing specifies the types of data each country needs to report, including various sectoral information such as natural resources, agriculture, flood management, infrastructure, environment, and socioeconomics (Mekong River Commission 2001). At a basin scale, MRC developed IWRM-based basin development strategies and plans that ensure cross-sectoral linkages and allow national plans to address the long-term sustainable development of the Lower Mekong River Basin. MRC also fosters joint projects on various cross-sectoral topics, including agriculture and irrigation, climate change, fisheries, floods, and droughts (MRC 2022b).

At the national level, each country has a National Mekong Committee (NMC), which consists of all agencies relevant to the Mekong cooperation from each country. The NMC consists of different sectors concerning the Mekong water use (Mekong River Commission 2022a). For instance, Cambodia's NMC consists of 17 national ministries and authorities, including the Ministry of Foreign Affairs, Ministry of Water Resources and Meteorology, Ministry of Mines and Energy, and Ministry of Planning (Cambodia National Mekong Committee 2017). This intersectoral nature of the NMC provides an institutionalized mechanism for knowledge transmission across sectors.

Knowledge transmission across regions and basins

The effective management of transboundary waters sometimes requires knowledge transmission beyond the boundaries of a single transboundary basin.

Regional institutions can often play a role in catalyzing knowledge exchange across borders. In West Africa, 15 member countries of Economic Community of West African States (ECOWAS) share many transboundary waters and are dependent on each other in terms of water resources.

The Water Resources Coordination Unit of ECOWAS leads dialogues among member countries, facilitating the establishment of the Volta Basin Authority⁴ (INBO and GWP 2012).

Regional dialogues are effective ways to transmit knowledge among governments as well as among stakeholders from the same region that may include several shared water bodies. They often catalyze the creation of “communities of practice” among key government officials and nonstate actors, joined together by a set of common interests or concerns. The working relationships that naturally form in these communities can lead to broader collaboration on concrete projects related to transboundary water bodies. For instance, regional dialogue fostered in Southeast Europe has resulted in spin-off basin-level cooperation at five transboundary water bodies (Yasuda et al. 2022). In Central America, the Central America Commission for Sustainable Development and GWP Central America fostered regional dialogues where countries have agreed to develop a regional guideline on transboundary waters (GWP Central America 2022).

Regional training initiatives can also transmit knowledge across basins. For instance, the annual Pan Africa Water Governance and International Water Law training⁵ that has taken place since 2015 facilitated learning across different basins. Learning from these training initiatives has resulted in participants influencing concrete policies and processes related to transboundary water, including the drafting of the IGAD Regional Water Resources Protocol in 2017, the development of the Water Convention of the Volta Basin, as well as the establishment of an RBO for Incomati and Maputo River Basin, to name a few (GWP Africa 2020).

Learning across basins can also take place on a global scale. The Water Convention hosted by the UNECE fosters various events and workshops that shape communities of practice of primarily governments and RBO practitioners. The Global Environment Facility’s (GEF) International Waters (IW) Learning Exchange and Resource Network (LEARN)⁶ program provides another avenue for cross-basin exchanges of knowledge and best practices among GEF IW project managers and partners. GWP’s IWRM Toolbox⁷ and its online communities allow multiple stakeholders to exchange general knowledge and insights related to IWRM, including transboundary water. Transboundary Water Knowledge Exchange Hub⁸ is an online community particularly established for this purpose.

Stakeholder engagement

Expanding the opportunities for stakeholders to effectively participate in dialogues and decision-making on water issues affecting them is critical to effective water management. Stakeholder engagement is particularly critical in transboundary contexts, where cooperative management is essential to reducing potential conflict over international watercourses by ensuring the sustainable accrual of mutual benefits (Earl and Malzbender eds. 2006). This is because stakeholders can bring a wide range of knowledge and information that may not necessarily be within reach of government actors but are nevertheless critical to the successful long-term management of transboundary waters.

Transboundary basins tend to be larger than domestic basins and have additional complexity in their jurisdictional layers. Both of these factors complicate the assembly of a stakeholder community that represents the entire transboundary basin. One of the solutions is to identify different representatives from different sectors (e.g., agriculture, fishery, and environment), roles (e.g., government, academic, civil society organization, and community), and scales (such as national, provincial, local, and community levels). It’s also important to ensure that these different groups have a legitimate way to choose their representatives (INBO and GWP 2012).

River Basin Organizations can play a crucial role in stakeholder engagement. For example, the Nile Basin Initiative⁹ (NBI)'s stakeholder engagement strategy categorizes stakeholders into the following groups (Nile Basin Initiative 2018):

- NBI's core governance group (regionally structured to directly guide and supervise the work of NBI's three centers);
- The extended governance group in national ministries;
- The primary stakeholders (external groups whose direct contributions are essential to successful NBI strategy implementation);
- The secondary stakeholders (groups with the potential to shape the constructive implementation environment for NBI's agenda).

Engagement strategies are developed with these different groups and topics in mind.

Also, across the Nile Basin, the Nile Basin Discourse¹⁰ (NBD) is another institutional mechanism working to strengthen civil society participation in the Nile Basin development processes, projects, programs, and policies. The NBD has evolved into a vast network with membership from over 600 civil society organizations throughout the Nile Basin (Nile Basin Discourse 2022).

Inclusion of vulnerable groups

When speaking about stakeholder engagement, one also needs to pay attention to the inclusion of vulnerable groups, including Indigenous communities. Indigenous communities existed long before state boundaries in many parts of the world. Since these communities and their water-related activities commonly span international borders, their livelihoods are directly affected by the use and management of transboundary waters.

Indigenous communities

Key legal and policy practices support Indigenous people's participation in decision-making. At the global level, the United Nations Declaration on the Rights of Indigenous People lays out key principles to enhance harmonious and cooperative relations between the state and Indigenous peoples (United Nations. 2007). These include the right to participate in decision-making that affects their rights (Article 18) and the obligation for states to consult and cooperate in good faith with the Indigenous people (Article 19). It also includes the right of Indigenous peoples to use and maintain spiritual relationships with their traditionally owned land and resources, including water (Articles 25 and 26), and the state's obligation to establish and implement processes that recognize and adjudicate the rights of Indigenous peoples pertaining to their lands and resources (Article 27).

An example of policy and practice of inclusion of Indigenous groups at the transboundary basin level can be seen at the International Joint Commission¹¹ (IJC), which was established to manage shared waters between the USA and Canada. The IJC houses the International Watersheds Initiative¹² (IWI), which aims to find solutions to transboundary watersheds through local communities and stakeholders. IWI projects are implemented at the watershed level, where a board is created that consists of representatives from local communities, Indigenous groups, industries, regulators, dam operators, and other stakeholders. It aims to ensure all relevant stakeholders have a seat at the table when discussing solutions. These boards will make recommendations based on

scientific research, joint fact-finding initiatives, and consensus established through collective dialogue. For example, at Rainy River, the IWI initiative worked closely with the Seine River First Nations to undertake studies assessing the adverse impacts of water level changes on livelihoods and food supplies, including wild rice, walleye, and lake sturgeon. These studies fed into decision-making processes regarding the management of the river (International Joint Commission 2015, 2023). This example demonstrates the feasibility and importance of including Indigenous voices in collaborative research and decision-making over transboundary waters.

Modern society can also learn and adopt practices from traditional Indigenous communities' practices for sharing resources. No formal mechanisms exist for such knowledge transmission, but the research community and their knowledge outputs can play a crucial role. For instance, Wolf (2000), through his research on Indigenous approaches to water conflict negotiations, provides five key aspects of Indigenous knowledge that transboundary water managers can utilize.

They include:

- 1 Allocating time, not water;
- 2 Prioritizing different demands and sectors;
- 3 Protecting downstream and minority rights;
- 4 Pursuing alternative dispute resolution;
- 5 Adopting a practice of forgiveness (e.g., the *sulha*).

Younger generations

Youth participation in decision-making is another aspect of inclusion not to overlook. This was formally recognized in Agenda 21, a global policy document adopted in 1992.¹³ Agenda 21 indicates that governments should establish procedures allowing for consultation and participation of youth in decision-making processes related to the environment (United Nations 1992). After 30 years, several initiatives linked to Agenda 21 remain active. At a global level, there are global youth networks, such as the Youth Parliament for Water and the Water Youth Network, aiming to connect youth to decision-making processes. At transboundary basin levels, there are initiatives to institutionalize youth at specific basin/region scales, such as the Kura-Araks Youth Network¹⁴ and Danube Youth Council.¹⁵ In Asia, the Lancang-Mekong Youth Exchange and Cooperation Center¹⁶ is hosted at Fudan University.

The degree to which these networks provide concrete input into formal decision-making varies depending on their operational model. Nevertheless, these mechanisms can create potential pathways for knowledge transmission from younger generations to basin practitioners and vice versa. There are also activities empowering youth through capacity building and mentorship, such as Water Academy for Youth¹⁷ (WAY), implemented by GWP in various parts of the world. WAY provides opportunities for young professionals to jointly participate in capacity-building programs, create peer-to-peer community networks, and establish relationships with older generations through mentorship.

Women

More structured approaches are prevalent in empowering female participation in decision-making and ensuring gender equity in development. *The action piece on Gender equality and inclusion in*

The Role of Knowledge Transmission in Water Diplomacy

water resources management published by GWP provides four key action areas to ensure gender mainstreaming in various organizations and initiatives. These action areas include (Grant 2017):

- 1 Institutional leadership and commitment by making gender equality and inclusion a core business goal;
- 2 Conducting gender and inclusion analysis that drives change;
- 3 Ensuring meaningful and inclusive participation in decision-making and partnerships;
- 4 Providing equal access to and control of resources.

These principles underlie several gender mainstreaming strategies utilized at transboundary basin levels. For instance, the Zambezi Watercourse Commission (ZAMCOM) has a gender mainstreaming strategy that includes three dimensions in addressing gender. The first is the structural dimension, where ZAMCOM institutionalizes gender mainstreaming by creating enabling policies and organizational frameworks. The second dimension is the personnel dimension, where ZAMCOM aims to build the capacity of all its organs to mainstream gender effectively. The third one is the output dimension, ensuring gender equity in the establishment and operations of the National Stakeholder Coordination Committees and decentralized basin management structures in the riparian countries, integrating gendered approach in programming, and implementing gender-responsive monitoring and evaluation systems allowing effective tracking of gender responsiveness of policies, processes, projects, and related outputs/outcomes (ZAMCOM 2018).

A similar gender mainstreaming strategy was also developed by ORASECOM (ORASECOM 2019). The prevalence of these strategies in Southern Africa may be influenced by the adoption of the SADC Protocol on Gender Mainstreaming (SADC 2008), which provides a specific mandate to member states to enshrine gender equality and equity in their constitutions as well as to implement an equivalent legislative measure by 2015. This structured approach can enhance knowledge transmission on gender perspectives by ensuring gender equity in institutional structures and input from key stakeholders of shared waters.

More broadly, there are a growing number of initiatives to empower women's participation in water diplomacy and transboundary water management, including the Women in Water Diplomacy network in the MENA region and Women in Water Diplomacy Network beyond the Nile (GWP-MED and Geneva Water Hub 2021; SIWI 2022).

Additional tools and mechanisms for knowledge transmission

There are a number of tools and mechanisms that allow knowledge transmission across sectors and scales. This section introduces some of them but is not an exhaustive list.

Strategic Environmental Assessment (SEA)

SEA¹⁸ aims to evaluate the environmental impact of programs, policies, or plans as well as their alternatives at an early stage, which is to be taken into consideration in decision-making. It is intended to minimize potential negative impacts and offset any negative impacts that cannot be avoided. At the transboundary level, the Kyiv Protocol on SEA¹⁹ encourages SEA in transboundary contexts (GWP 2022a). One such example of SEA in a transboundary context is from the Mekong River, where the MRC commissioned a SEA of 12 hydropower dams planned for the mainstream of the lower Mekong basin (ICEM 2010). The result of the SEA study was utilized during the debate among member states and stakeholders after Lao PDR notified other MRC member states

of its intention to build the Xayaburi hydropower dam, the first mainstream hydropower dam on the Mekong (Yasuda 2015).

Shared vision planning and collaborative modeling

Shared Vision Planning (SVP) and collaborative modeling (CM)²⁰ facilitate knowledge transmission among different sectoral stakeholders at multiple levels of governance by focusing on the collective establishment of joint understandings and the collaborative development of a common vision (Figure 17.1). This is in stark contrast to the traditional basin planning process, where models are shaped by technicians and plans are made by key sectors or government agencies.

CM and SVP allows different sectoral stakeholders to jointly build a model that accounts for the parameters recognized by the stakeholders as being important (GWP 2022b). This promotes stakeholders from passive recipients of modeling results to active participants in the modeling process. The negotiation between the USA and Canada over the treaty to manage water levels of the Great Lakes provides a useful example of CM in practice. The bottleneck was uncertainty in resolving different sectoral interests involving two nations, several subnational authorities, tribal governments, and local and city governments. The CM approach was used to bring stakeholders and technical experts together to support the planning process in a more structured manner (GWP 2017).

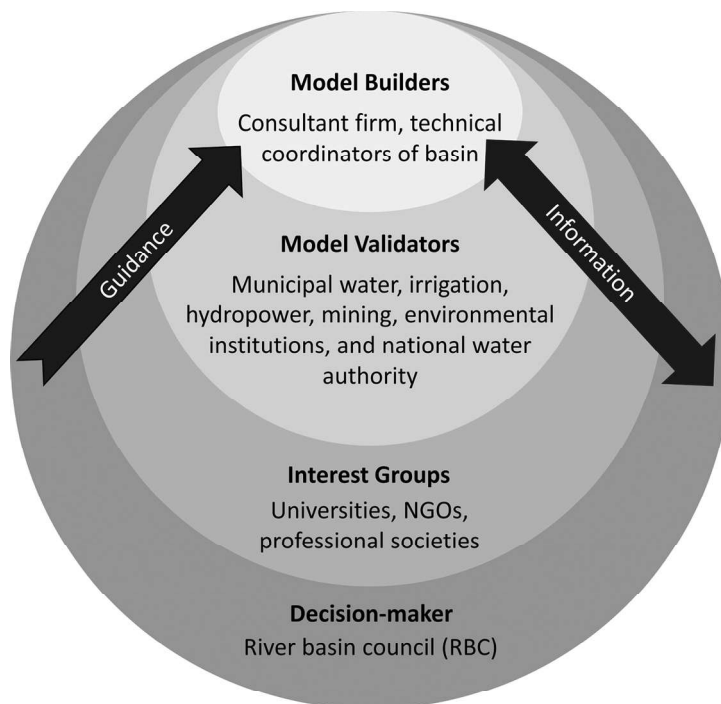


Figure 17.1 Circles of influence during Shared Vision Planning developed by the Global Water Partnership.

Promoting cross-sectoral approaches in basin management

There are also other approaches and techniques to promote cross-sectoral approaches in transboundary water management.

Nexus approach

The nexus²¹ approach brings intervention benefiting more than one sector, which often aims to bring a win-win solution in the context of limited resources. It enables coherent sectoral and national policies to reduce resource management trade-offs and reconcile multiple uses of resources. By focusing on the intersection, interaction, and mutual dependencies of multiple sectors, the water–food–energy–ecosystem nexus is often seen as an enlarged negotiation space capable of providing more win-win opportunities than a single-sector approach would provide. For instance, efficient use of water for food production can also reduce agricultural pollution. A multipurpose dam can produce energy, supply water for irrigation, and provide flood control. A nexus approach recognizes the importance of intersectoral dependencies and highlights the need for coordination and joint management to ensure sustained mutual benefit. Knowledge transmission among different countries and sectoral stakeholders is critical to a successful nexus approach (UNECE 2021b).

Source-to-sea (S2S) approach

The S2S²² approach aims to understand water resources management holistically as a network linking land, water, delta, estuary, coast, nearshore, and ocean ecosystems. When taking an S2S approach, one needs to trace water as it moves throughout the entire water cycle and the entire watershed. In tracing the flow of water, it is critical to understand how natural and anthropogenic processes transform water quantity and quality at each stage and how these transformations impact natural and human systems downstream. The S2S approach recognizes that taking stock of these interactions from a single vantage point is impossible and encourages knowledge transmission and stakeholder engagement across sectors and along the entire watercourse. This knowledge-sharing establishes a more comprehensive vision of how water flows through the watershed, benefiting some and causing harm to others. It identifies areas of concern for equity and justice but also highlights low-hanging opportunities for mutual gain through better water management (Mathews et al. 2019).

Conclusion

This chapter explored different approaches to knowledge transmission relevant to transboundary water management. At the very least, the management of transboundary waters often requires that national governmental actors play key roles in ensuring that knowledge coordination systems are in place. However, transboundary waters typically cross multiple jurisdictional levels and affect various sectors. Therefore, knowledge coordination must often extend beyond national governments. This chapter has discussed several formal and informal mechanisms for multilevel and multi-sectoral knowledge transmission. It has also highlighted the importance of inclusive stakeholder engagement, including the equitable representation of vulnerable groups. This recommendation comes not only on humanitarian grounds but also because these groups have access to critical knowledge often missing from the larger conversation due to the historical exclusion of their voices. Sustained, inclusive, and collaborative efforts to share knowledge are essential for the successful sustainable management of transboundary waters.

Disclaimer

The views expressed in this chapter do not necessarily represent the official views of the organizations the author is affiliated with.

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Notes

- 1 Read more: www.sadc.int/document/revised-protocol-shared-watercourses-2000-english
- 2 Read more: <https://web.archive.org/web/20230608050840/http://saciwaters.org/brahmaputra-dialogue/>
- 3 Read more: www.mrcmekong.org/.
- 4 Read more: <https://abv.int/en/abvhome/>
- 5 Read more: www.gwp.org/en/GWP-Eastern-Africa/ABOUT-GWPEA/press-room/News/gwpea-hosts-training/
- 6 Read more: <https://iwlearn.net/>
- 7 Explore the IWRM Toolbox at: www.gwp.org/en/learn/iwrn-toolbox/About_IWRM_ToolBox/
- 8 Explore the Transboundary Water Knowledge Exchange Hub at: <https://iwrnactionhub.org/group/42/strcam>
- 9 Read more: www.nilebasin.org/
- 10 Read more: www.nilebasindiscourse.org/
- 11 Read more: <https://ijc.org/en>
- 12 Read more: www.ijc.org/en/iwi-iibh
- 13 The full text is available at: www.un.org/esa/dsd/agenda21/
- 14 Read more: <https://youthforwater.org/action/the-kura-araks-youth-network-is-launched/>
- 15 Read more: <https://danube-region.eu/danube-youth-council/>
- 16 Read more: www.fudan.edu.cn/en/2021/0408/c344a108392/page.htm
- 17 Read more: www.gwp.org/en/gwp-SAS/WE-ACT/change-and-impact/News-and-Activities/2022/gwp-sas-way/
- 18 Read more: <https://iwrnactionhub.org/learn/iwrn-tools/strategic-environmental-assessment>
- 19 Full title: 2003 Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context.
- 20 Read more: <https://iwrnactionhub.org/learn/iwrn-tools/shared-vision-planning-and-collaborative-modelling>
- 21 Read more: <https://iwrnactionhub.org/learn/iwrn-tools/nexus-framework>
- 22 Read more: <https://iwrnactionhub.org/learn/iwrn-tools/source-sea-management>

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