CHAPTER VIII: OPERATIONALIZING TRANSBOUNDARY WATER ALLOCATION: PROCESSES, MECHANISMS AND EXAMPLES

SUMMARY:

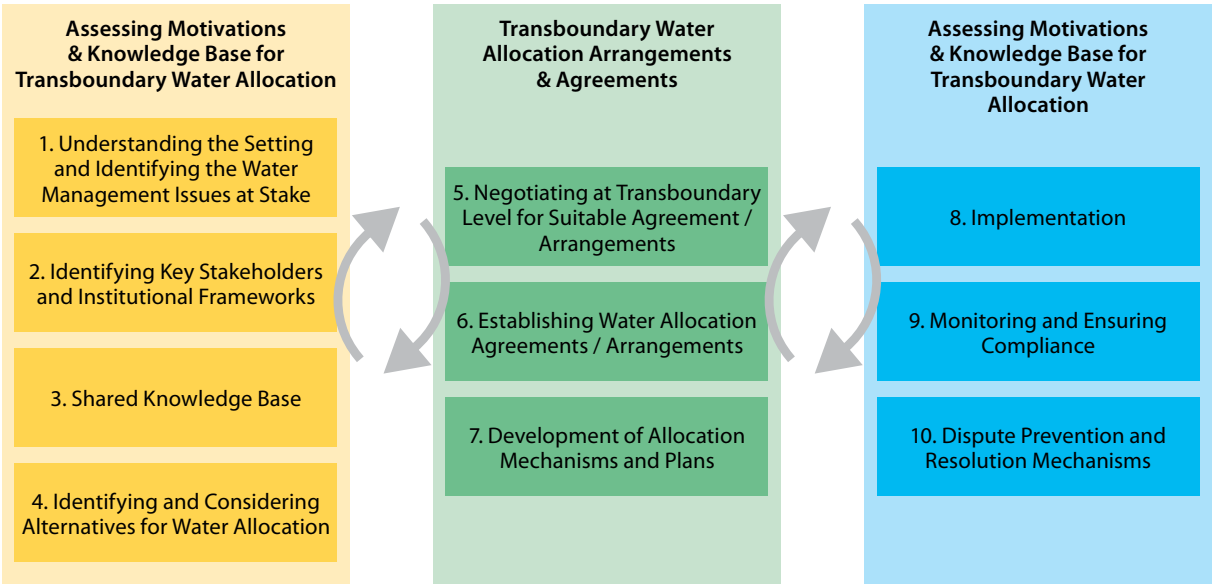
This chapter outlines a set of technical, legal and institutional water allocation approaches, mechanisms and arrangements that can be adapted and applied to various transboundary contexts. A three-phase, 10-step modular process is presented that provides a variety of options for operationalizing water allocation. The chapter provides some guidance for measures to operationalize water allocation principles and objectives presented in previous chapters.

As discussed in the previous chapters, transboundary water allocation may be understood as both part of the water cooperation process and an outcome of that process. This chapter focuses on the process characteristics of allocation. It covers the different steps and elements of transboundary water resources management and governance leading to joint agreements, bodies and other mechanisms determining how much water, of what quality, where and when is shared between two or more States or other jurisdictions.

The chapter presents 10 steps along the transboundary water allocation process, grouped into three general phases, as illustrated in Figure 18. The first group of steps details the reasons/motivations and knowledge base required for establishing a new allocation arrangement, or revising existing arrangements, where appropriate. These steps help define whether allocation is even a solution to a given water issue, or

FIGURE 18

The 10 general steps across three phases of transboundary water allocation



Source: Finnish Environment Institute, 2021.

whether the issue is better addressed with other means of transboundary cooperation or national measures. The second group tackles the foundations of transboundary negotiations for suitable arrangements or agreements, including development of allocation mechanisms and plans. The third group focuses on implementation after an arrangement or agreement has been reached, including national implementation, monitoring and ensuring compliance, and dispute prevention and resolution mechanisms. Importantly, the 10 steps are modular in that they are not always operationalized chronologically, can be non-linear in their assessment and application, and not all steps may be necessary in every context. Given the evolving nature of both water resources management and transboundary water cooperation, there may be feedback loops necessary between the steps, the steps may be prioritized differently, and/or information on some aspects may initially be missing.[446] Ultimately, this chapter seeks to provide a modular suite of options for co-riparian States to assess and adapt to their specific context in order to operationalize transboundary water allocation.

1. Phase 1: Assessing Motivations and Knowledge Base for Transboundary Water Allocation

a. Step 1: Understanding the setting and identifying the water management issues at stake

The process for transboundary water allocation might be motivated by a variety of issues and changing policy priorities and requirements (see Chapter II and Chapter III). The target water-related issues to be addressed should be carefully considered from the perspective of whether they are best addressed with allocation measures in consideration with their limitations and complementary approaches (see Chapter IV), and whether their management has transboundary impacts and interdependencies and should therefore be treated as a matter of transboundary concern and cooperation. The knowledge base required to tackle these two aspects may build on water resource and availability assessments, analyses of environmental requirements and use and impact assessments, preferably in different scenarios, as described in detail in Chapter VII and Step 3 below. The Shared Vision Model of the International Joint Commission between Canada and the United States demonstrates a participatory process helping to reach consensus on the transboundary water management issues at stake (see Case Study 38).

b. Step 2: Identifying key stakeholders and institutional frameworks

Stakeholder analysis and engagement methods

The primary actors in transboundary water allocation processes are typically the co-riparian States with their representative organizations. This may include subnational entities (see Chapter VI, subsection 5b) sharing a surface or groundwater basin. To understand the differing views and forms of knowledge linked to water allocation, it is also advisable to identify and engage other key stakeholders relevant for the process and outcome, including the general public (see Figure 19).[447]

As discussed above (Chapter V, section 4; Chapter VII, subsection 1c), public participation can bring several benefits to the allocation process, including an improved knowledge base and enhanced equity and sustainability of the arrangements. While the United Nations global water conventions do not provide a definition for the "public" to be engaged, the Aarhus Convention defines "the public concerned" as "the public affected or likely to be affected by, or having an interest in, the environmental decision-making". One

446 See, for example, Le Quesne, Pegram and Von Der Heyden (2007), p. 19, where it states that "The water allocation system should be flexible, and should be reviewed and adapted as the iterative nature of the process identifies requisite improvements or additions. Adjustment to the system as a result of trial and error is a legitimate feature and the legal obstacles borne out by practice and experience should be removed through a process of reform."

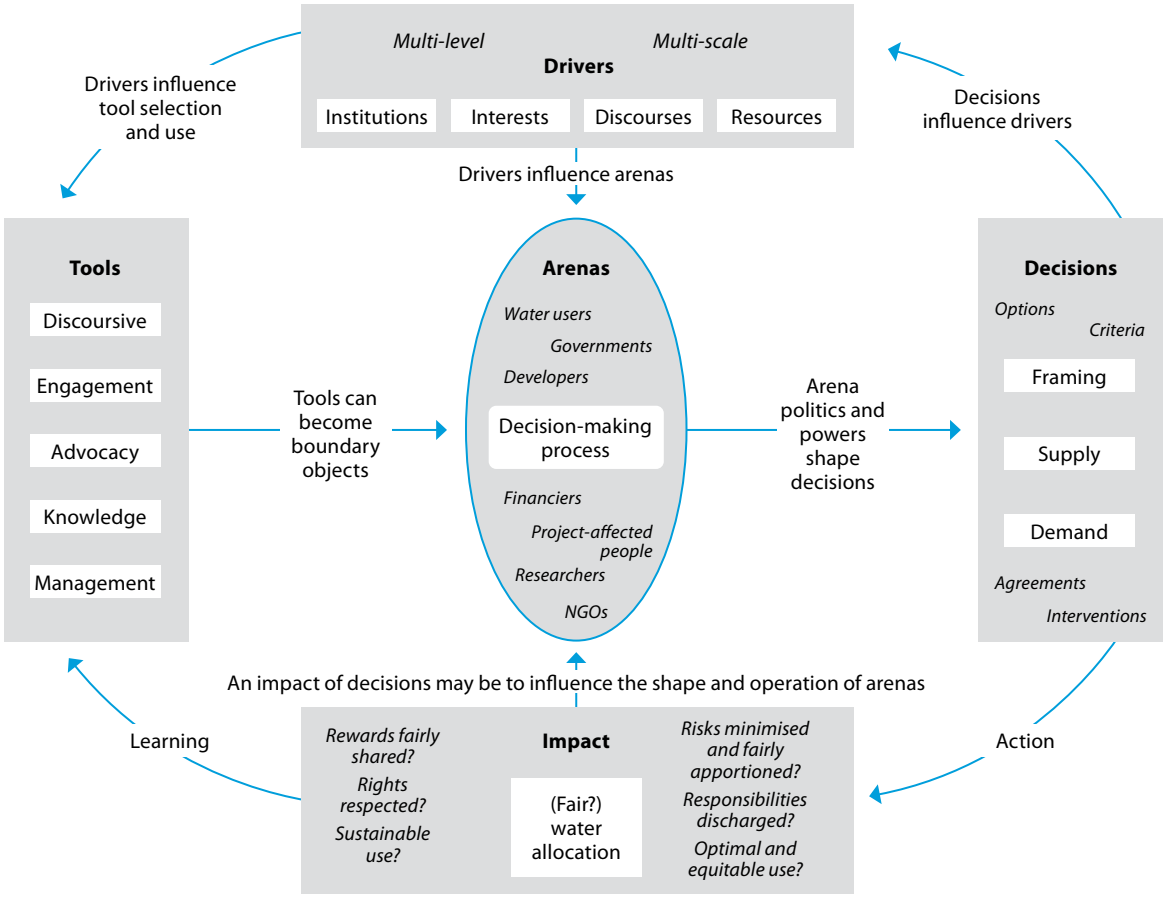
447 See, for example, Marian J. Patrick, "The cycles and spirals of justice in water-allocation decision making", *Water International*, vol. 39, No. 1 (2014), p. 63–80.

way to identify the relevant stakeholders is to categorize them at different scales (e.g. regional, national and local) and by relevant sectors of the society (typically, public, private, civil society and research institutes) (see also Figure 5 in Chapter II). At a regional level (i.e. transboundary basin), the key stakeholders include possible joint bodies and other regional organizations and networks. Such organizations and networks are usually public sector driven, but may also include representatives from the private sector, civil society and/or academia. At a national or State level, key stakeholders typically consist of relevant public authorities (e.g. ministries and line agencies) but may also include, for example, companies responsible for the operation of hydropower or other large-scale infrastructure. Similarly important may be the relevant civil society organizations and research institutes that have knowledge on, for example, water, energy and agriculture policies, as well as the environment.

At a local level, the key stakeholders may include different citizen organizations and networks (public and non-public) as well as other relevant organizations from different sectors of the society. Local communities, including Indigenous peoples, and those with water-using businesses, such as farmers, often represent the ultimate water end users. Engaging these communities and individuals early in the design phase of water allocation and reallocation processes enhances their participation and representation of their views and values. Due to the historical underrepresentation of Indigenous groups in particular in water governance processes, and power asymmetries between them and other parties, including in transboundary settings,

FIGURE 19

Conceptualizing actors and tools involved in water allocation processes

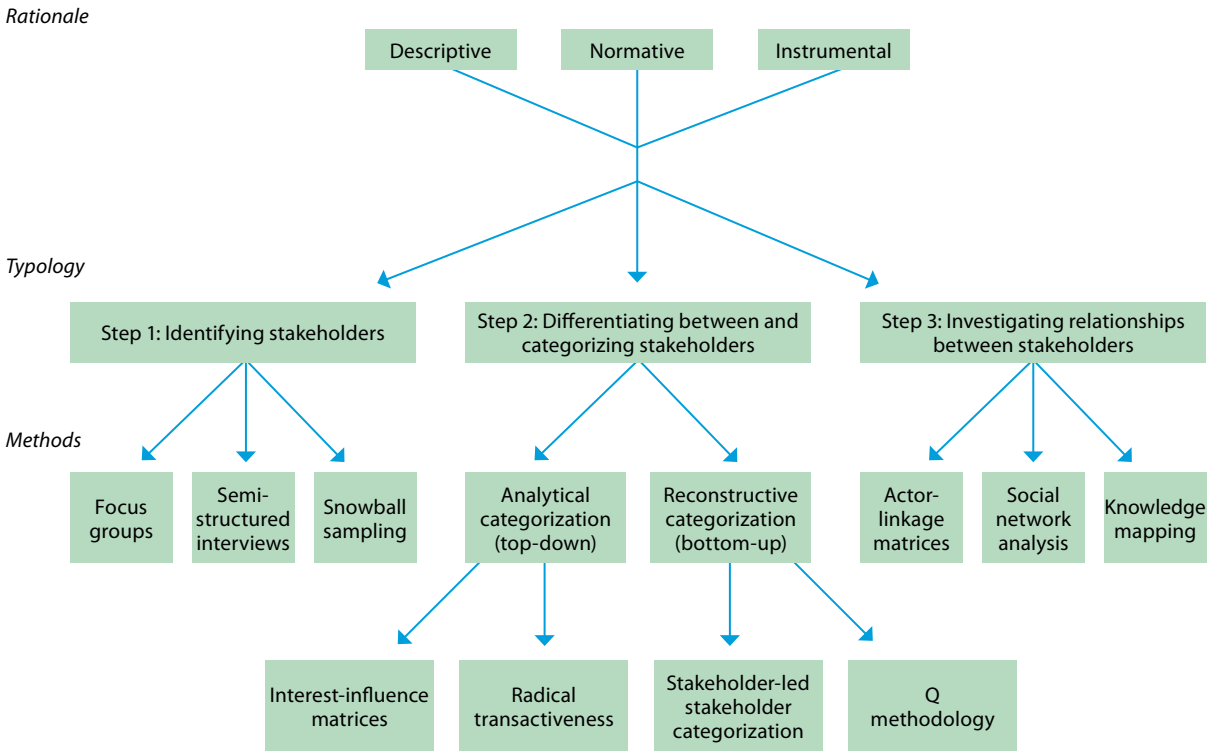


Source: "The water allocation complex: an explanatory framework" in John Dore and others, *CPWF Project Report: Improving Mekong Water Resources Investment and Allocation Choices, Project Number 67* (n.p., CGIAR Challenge Program on Water and Food, 2010).

room should be made for targeted stakeholder learning, and capacity- and trust-building.[448] Stakeholder analyses can be classified by their rationale and whether they aim at identifying, categorizing or investigating relationships between stakeholders, with associated methods (Figure 20).[449] Stakeholder analysis and engagement methods that have been tailored especially for water resources management in a transboundary context are provided by the Global Water Partnership (GWP) IWRM toolbox[450] and International Network of Basin Organizations (INBO),[451] for example.

FIGURE 20

Rationale, typology and methods for stakeholder analysis



Source: Mark S. Reed and others, "Who's in and why? A typology of stakeholder analysis methods for natural resource management", *Journal of Environmental Management*, vol. 90, No. 5 (April 2009).

448 Rosalind H. Bark and others, "Adaptive basin governance and the prospects for meeting Indigenous water claims", *Environmental Science & Policy*, vols. 19–20 (May–June 2012), p. 169–177.

449 Mark S. Reed and others, "Who's in and why? A typology of stakeholder analysis methods for natural resource management", *Journal of Environmental Management*, vol. 90, No. 5 (April 2009), p. 1933–1949.

450 GWP, "Stakeholder analysis (C3.02)", 3 March 2017.

451 INBO, *The Handbook for the Participation of Stakeholders and the Civil Society in the Basins of Rivers, Lakes and Aquifers* (Paris, 2018).

CASE STUDY 38: **Public participation and consensus-building in water management for the Great Lakes Basin**

With more than 44 million people living within the Great Lakes Basin shared between Canada and the United States, it is difficult to satisfy the need to preserve critical ecosystem functions, protect riparian landowners and business from flood damage and drought impacts, and provide appropriate flows and lake levels for navigation, hydropower production, recreation and fishing and the many other beneficial uses. Public engagement is critical as is ensuring the decision-making process is consensus based and transparent.

The International Joint Commission (IJC) was established by the Boundary Waters Treaty of 1909 between the United States and the United Kingdom relating to boundary waters between the United States and Canada. The Treaty requires uses, obstructions or diversions of boundary waters to be permitted by the authority of the United States and Canada within their respective jurisdictions and with the approval of the IJC. The IJC considers applications for projects such as dams which impact on water levels on the other side of the boundary. Conditions for the operation and maintenance of projects affecting boundary waters are provided in Orders of Approval. In the Great Lakes, the IJC has issued Orders of Approval for works at: Sault St. Marie, Ontario and Michigan; the outlet of Lake Superior, on the Niagara River; and the Moses–Saunders Dam at the outlet of Lake Ontario in Cornwall, Ontario and Massena, New York. Following multi-year binational studies, the IJC issued updated Orders of Approval for the regulation of water levels and outflows for Lake Superior and, in 2016, for Lake Ontario and the St Lawrence River. The International Upper Great Lakes Study[452] and the Lake Ontario St Lawrence River study both used a Shared Vision Model for reaching consensus-based decisions in developing recommendations for revisions to conditions in the applicable Orders of Approval.

The Shared Vision Model is the name of the computer model developed in the context of water-level studies to integrate the results from each of the technical work groups in one place. With this Model, various regulation plans could be run through an evaluation process and the results compared between interests and locations. The IJC uses an adaptive management and climate change framework to periodically review its Orders of Approval to evaluate whether the models used in formulating the regulation plans responded as anticipated over time. Detailed information is available in the Great Lakes Adaptive Management (GLAM) Committee's short- and long-term strategy documents.[453] Studies relating to the impacts of a changing climate, extreme events of floods and droughts, degradation of ecosystem functions and impacts on the many changing beneficial uses within the Basin are considered in the adaptive management strategy. The GLAM Committee reports to the IJC Great Lakes boards—the International Lake Superior Board of Control, International Lake Ontario–St Lawrence River Board and the International Niagara River Board of Control. The IJC consults with the United States and Canadian Governments on recommended revisions to regulation plans. The Orders must be consistent with United States and Canadian laws.

Under the Shared Vision Model, the IJC brings together an equal number of experts, decision-makers and stakeholders from both countries to create a system model that connects science, public preferences and decision-making criteria. It consists of five basic steps:

1. Establish binational working groups/committees. These working groups must be inclusive and balanced and include local interests and experts from within the basin areas:

452 See Watershed Council, "International Upper Great Lakes Study", available at www.watershedcouncil.org/international-upper-great-lakes-study.html.

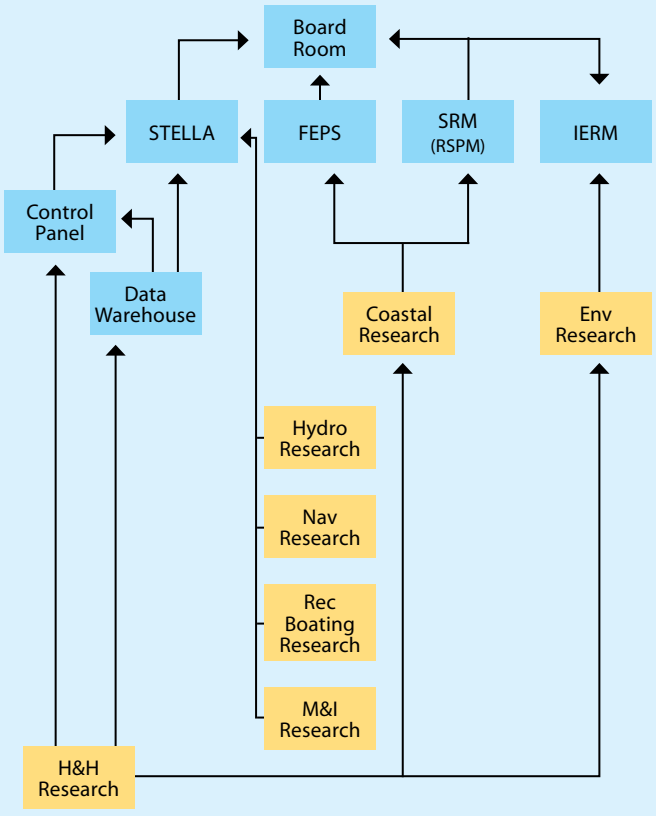
453 Great Lakes-St Lawrence River Adaptive Management Committee, *Short-term and Long-term Strategy: For Evaluating and Improving the Rules for Managing Releases from Lakes Ontario and Superior* (n.p., 2020).

- A science group consisting of the best experts from the private sector, academia and governments to oversee the creation of the scientific foundation for negotiations;
- A citizen advisory group representing community leaders, public interest groups and businesses.

2. The groups work together to define the issues and options to address in the negotiation process.
3. The groups become comfortable with the technical information and methods used.
4. The groups collect data and operate models to show the trade-offs between the various economic values for uses and important environmental indicators. They work together to refine models, options and outcomes.
5. The groups ensure that the process and outcomes are transparent and open to the public for the duration of the negotiation process.

Final outcomes and reports will be submitted to the United States and Canadian Governments for review and approval.

The success of the IJC's Shared Vision Model approach highlights the importance in transboundary allocation arrangements of obtaining public and political acceptance of the outcomes of these models that show the trade-offs among the various economic values for beneficial uses and important environmental indicators.



ABBREVIATIONS

STELLA – Model programming software

FEPS – Flood and Erosion Prediction System

SRM (RSPM) – St Lawrence River Model

IERM – Integrated Ecological Response Model

H&H – Hydrology and Hydraulics

Env – Environment

Hydro – Hydropower

Nav – Commercial Navigation

Rec – Recreational Boating

M&I – Municipal, Industrial and Domestic Water Uses

Institutional analysis

Besides the water issues at hand and stakeholder views and needs, pre-existing agreements and institutional arrangements can often frame the development of transboundary water allocation plans between co-riparian States (see also Figure 1 in Chapter 1). The United Nations global water conventions and pre-existing transboundary agreements provide an overall framework for the arrangements and guide definition of the actual process for determining transboundary water allocation or reallocation in the given context. Other international agreements and arrangements related to, for example, flood protection, energy production and hydropower development, or environmental conservation and restoration, are equally important to consider as they may set prerequisites for the quantity, quality and timing of shared water.

At a national level, domestic legislation, strategies and guidelines inform the priorities and procedures of the allocation mechanisms and their implementation. At a local level, water management plans and practices define the ultimate water end use. Regardless of the level of stakeholder interaction of water governance, allocation processes require adequate institutional capacity to succeed.[454] Transboundary water allocation arrangements and official agreements require significant effort to accomplish. Sufficient levels of institutional, technical (including ability to do assessments and monitoring) and legal capacity are needed for all riparian States in order to carry out a functional transboundary water allocation process.[455] In addition to capacity, political will from all riparian States is essential in ensuring commitment. The national water allocation "health check" provided by OECD provides several aspects that are also applicable in the transboundary context for the institutional review of current allocation arrangements or estimating the need for new ones.[456] Chapters II, V and VI and steps 3 and 4 below present in detail the institutional elements of transboundary water allocation.

BOX 6: THE OECD "HEALTH CHECK" FOR WATER RESOURCES ALLOCATION

Check 1. Are there accountability mechanisms in place for the management of water allocation that are effective at a catchment or basin scale?

Check 2. Is there a clear legal status for all water resources (surface and ground water and alternative sources of supply)?

Check 3. Is the availability of water resources (surface water, groundwater and alternative sources of supply) and possible scarcity well understood?

Check 4. Is there an abstraction limit ("cap") that reflects in situ requirements and sustainable use?

Check 5. Is there an effective approach to enable efficient and fair management of the risk of shortage that ensures water for essential uses?

Check 6. Are adequate arrangements in place for dealing with exceptional circumstances (such as drought or severe pollution events)?

Check 7. Is there a process for dealing with new entrants and for increasing or varying existing entitlements?

Check 8. Are there effective mechanisms for monitoring and enforcement, with clear and legally robust sanctions?

454 Speed and others (2013).

455 Ibid.; OECD, *Water Resources Allocation: Sharing Risks and Opportunities* (2015).

456 OECD, *Water Resources Allocation: Sharing Risks and Opportunities* (2015).

Check 9. Are water infrastructures in place to store, treat and deliver water in order for the allocation regime to function effectively?

Check 10. Is there policy coherence across sectors that affect water resources allocation?

Check 11. Is there a clear legal definition of water entitlements?

Check 12. Are appropriate abstraction charges in place for all users that reflect the impact of the abstraction on resource availability for other users and the environment?

Check 13. Are obligations related to return flows and discharges properly specified and enforced?

Check 14. Does the system allow water users to reallocate water among themselves to improve the allocative efficiency of the regime?

Source: OECD, *Water Resources Allocation: Sharing Risks and Opportunities*, OECD Studies on Water (Paris, 2015).

c. Step 3: Shared knowledge base

A shared knowledge base building on joint monitoring and assessment systems and commensurate data is essential for sustainable and equitable transboundary water allocation decision-making. As discussed in Chapter VII, the knowledge base ideally includes reliable time series assessments of available surface water and groundwater resources, environmental requirements (including e-flows), impact assessments and water uses and needs assessments. At the beginning of an allocation or reallocation process, a joint scientific foundation built by an international group of experts based on the latest available knowledge may help in building trust and enhance the robustness of arrangements (see Case Study 38). Due to constantly evolving circumstances, it can be helpful to put in place mechanisms and tools such as DSS, which allows for evaluation of the sufficiency and easy updating of data (see Chapter VII, section 5). Technical tools and approaches for determining the water needs of different sectors and users may range from national monitoring, mass balance modelling and estimation utilizing proxies, to water footprint assessments (see Chapter VII, subsection 3b).[457] In assessing future development of demands, combined demographic, socioeconomic and climate scenarios help in identifying possible future trajectories. When current or future water availability and demands do not meet, to reach a sustainable balance, supply and demand management options, including any potential for efficiency gains in different sectors, need to be carefully investigated.

CASE STUDY 39: **Jointly developed knowledge-based management of the transboundary deep thermal groundwater body in the Lower Bavarian/Upper Austrian Molasse Basin**

By 1990, intensive uses of the thermal groundwater in the transboundary Lower Bavarian/Upper Austrian Molasse Basin had led to decreasing water pressures, due to use for geothermal energy in Austria and use of thermal water for balneological purposes in Germany (Bavaria). The sustainable, harmonized and closely cooperative management of the transboundary deep thermal groundwater body was needed to avoid overexploitation and guarantee sustainable use of the thermal water. The legal framework for cooperation between the two States concerned was provided by the Regensburg Treaty (1987) on Water Management Cooperation in the Danube River Basin between Austria and Germany, which is the basis for a Permanent Bilateral Water Commission. A bilateral Expert Group "Thermal Water" was

457 See, for example, Peter Droogers and others, "Water allocation in 2050: Tools and examples", in Primot and others, eds., *Green Growth and Water Allocation: Papers presented at a workshop held on 22–23 November 2012 in Wageningen, the Netherlands* (2013), p. 101–117.

established 1992, with representation of the key authorities from the German federated State (Land) of Bavaria and Austria. The Expert Group developed scientific knowledge and a combined and balanced monitoring programme with regular data exchange and appropriated tools, notably, a numerical groundwater model, to support the transboundary management of the groundwater body. In order to maintain the natural pressure level as far as possible, the obligatory reinjection of geothermally used water into the groundwater body is an essential management principle. Guidelines for the use of thermal water were developed to provide management principles and technical harmonized regulations, including concerning harmonized exploitation and monitoring for sustainable use of the transboundary deep thermal groundwater body.

d. Step 4: Identifying alternatives and addressing diverging understandings

MCDA and DSS are two main methods, along with their accompanying technological systems, that may assist in identifying transboundary allocation options, relevant broader approaches and related alternatives, and, even more so, helping to decide which is the most effective choice or combination of choices. MCDA can provide the transparent and systematic evaluation of possible alternatives from different perspectives.[458] Carrying out the MCDA process in close collaboration with relevant stakeholders enhances social learning and enables inclusion of the public values and concerns in the process, increasing participants' trust as well as the process quality.[459] Various MCDA software tools and DSS technologies have been developed to support the application of MCDA methods in practice.[460] Graphical user interfaces, for example, offer various possibilities to visualize the process and the results. There are several ways and supporting tools to gather information for the MCDA process. Stakeholders' preferences can be collected via postal or online questionnaires, in a group meeting or in personal or small group interviews. In some cases, experts' preferences can be used when they are judged to sufficiently represent certain viewpoints. Joint bodies are best positioned to apply the MCDA methods and DSS in practice (see Chapter VII, section 5). In general, joint bodies have a central role in addressing diverging understanding among States, sectors and other stakeholders due to their commonly acknowledged mandate and because they provide a platform for continuous exchange and cooperation.[461]

Economics is a narrower basis of analysis for water allocation in a transboundary context, but one that can also support decision-making regarding potential options and alternatives. As stated by FAO, "[e]conomics contributes towards improved allocations by informing decision-makers of the full social costs of water use and the full social benefits of the goods and services that water provides. The main approaches that form the methodological basis for strategic economic appraisal are cost-benefit analysis and cost-effectiveness analysis."[462] Cost-benefit analysis is the more common tool, which "provides a rational and systematic framework for assessing alternative management and policy options. It entails identification and economic valuation of all positive and negative effects of alternative options. This involves the translation of all benefits

458 Gregory A. Kiker and others, "Application of multicriteria decision analysis in environmental decision making", *Integrated Environmental Assessment and Management*, vol. 1, No. 2 (April 2005), p. 95–108; Ivy B. Huang, Jeffrey Keisler and Igor Linkov, "Multi-criteria decision analysis in environmental sciences: ten years of applications and trends", *Science of The Total Environment*, vol. 409, No. 19 (September 2011), p. 3578–3594; Speed and others (2013), p. 149.

459 Ahti Salo and Raimo P. Hämäläinen, "Multicriteria decision analysis in group decision processes", in *Handbook of Group Decision and Negotiation*, D. Marc Kilgour and Colin Eden, eds., Advances in Group Decision and Negotiation, vol. 4 (Dordrecht, Springer, 2010); Alexey Voinov and others, "Modelling with stakeholders – next generation", *Environmental Modelling & Software*, vol. 77 (March 2016), p. 196–220.

460 Jyri Mustajoki and Mika Marttunen, "Comparison of multi-criteria decision analytical software for supporting environmental planning processes", *Environmental Modelling & Software*, vol. 93 (July 2017), p. 78–91.

461 See Schmeier and Vogel (2018); see, generally, Kittikhoun and Schmeier, eds., *River Basin Organizations in Water Diplomacy* (2020).

462 Turner and others (2004).

and costs into monetary terms, including, where possible, non-marketed environmental, social and other impacts. It is based on the underlying assumption that individual preferences should determine the allocation of resources among competing uses in society"[463] (see Case Study 25 on the Lesotho Highlands Water Project for how this was implemented in allocation options decision-making). However, there are recognized constraints to this approach, particularly concerning intrinsic environmental and cultural values that perhaps cannot be quantified and monetized (see Chapter V, sections 1 and 4). Hence, for cost-benefit analysis to be used effectively to support transboundary water allocation decision-making, its limitations should be factored into any assessments of options, and any underlying assumptions appropriate to a specific situation should be explicitly acknowledged in order to ensure that the results are contextual, valid and reliable.[464]

Dealing with limited data and uncertainty

Lack of data is a common and critical problem in transboundary water resources management and allocation, Data accuracy, timeliness and completeness are often the issues. Notwithstanding this, all data is not always required. Sharing information and coproducing knowledge may already help unlock potential conflicts and provide understanding of shared benefits.[465] When dealing with limited data, it is essential to build in mechanisms and capacity to deal with uncertainty in the allocation arrangements. Furthermore, regardless of the availability of data, some level of uncertainty is always present and robust decision-making is possible under uncertainty. To deal with uncertainty, allocation decisions should avoid limiting future options but also allow for responding to unprecedented events, such as through uncertainty and sensitivity analyses, respectively.[466] Further approaches for dealing with uncertainty may include:

- adopting a precautionary and conservative approach in assessing available water resources and its allocation to different parties and users (see Chapter II, section 4);
- applying a mechanism recognizing inter- and intraannual variability in availability;
- establishing contingency allocations for exceptional and changing circumstances;
- strengthening adaptability of allocation arrangements (or enabling adaptability of allocation arrangements to changing circumstances) (see Chapter VI, section 4);
- ensuring environmental flows in different scenarios (see Chapter III, subsection 3a).[467]

Identifying and Assessing Alternatives for Water Allocation

Establishing and implementing a transboundary water allocation arrangement is a major undertaking that should not be executed without proper consideration of the actual need for, and alternatives to, allocation. Identifying both the alternatives *of* transboundary water allocation, as described above, and the alternatives *for* water allocation should build on the knowledge base on shared waters and their use, and a structured process to recognize possibilities to address different needs and interests. The arrangements require and benefit from reconsideration or greater formalization, especially when water resources availability, uses and needs and their prioritization change, or when conflicting views arise regarding the status of these. The strength of water allocation is its concrete, measurable and verifiable focus on water quantity, quality and timing. At the same time, successful use of shared waters does not necessarily require water allocation; it may also take place through other means. In general, there are two main categories of alternatives for water allocation: broader alternatives and practical alternatives. Broader alternatives indicate the utilization of water

463 Ibid.

464 Ibid.

465 UNECE, *Policy Guidance Note on the Benefits of Transboundary Water Cooperation* (2015).

466 Speed and others (2013), p. 149–150.

467 Ibid. See also, Nikita Strelkvskii and others, *Navigating Through Deep Waters of Uncertainty: Systems Analysis Approach to Strategic Planning of Water Resources and Water Infrastructure Under High Uncertainties and Conflicting Interests*, IIASA Research Report (Laxenburg, Austria, International Institute for Applied Systems Analysis, 2019).

resources management frameworks, river basin plans, a water-food-energy-ecosystem nexus approach or similar broader approaches to address water use and allocation in the given context (see Chapter IV). Practical alternatives consist of more focused arrangements, such as demand management measures, sharing benefits from hydropower dams or joint water quality management (see Chapters III and IV).

2. Phase 2: Transboundary Water Allocation Agreements and Arrangements

a. Step 5: Negotiating at transboundary level for suitable arrangements and agreements

The United Nations global water conventions set a framework for negotiating bilateral and multilateral transboundary arrangements or agreements. According to the Water Convention, the riparian countries must cooperate on the basis of equality and reciprocity and, in particular, through bilateral and multilateral agreements (Art. 2.6). They must hold consultations on the basis of reciprocity, good faith and good neighbourliness and these consultations must aim at transboundary cooperation (Art. 10). The Watercourses Convention requires that, when adjustments and applications of the provisions of the Convention are needed, States must consult with a view to negotiating in good faith for the purpose of concluding a watercourse agreement (Art. 3.5). In general, each riparian State has the right to participate equally in the negotiation of transboundary water allocation arrangements and agreements.[468] The Watercourses Convention requires that every riparian country ("watercourse State") is entitled to participate in the negotiation of, and become a party to, any transboundary agreement that applies to the entire transboundary watercourse. If a water agreement applies to only a part of the watercourse or to a particular project, programme or use, a State whose water use may be affected to a significant extent by the agreement is entitled to participate in consultations and negotiation in good faith with a view to becoming a party to the agreement (Art. 4).[469] The good faith principle is fundamental to the negotiation process and refers to carrying out consultations with honest intent, fairness, sincerity and no intention to deceive.[470]

Furthermore, as expressed by the International Court of Justice, States concerned "are under an obligation so to conduct themselves that the negotiations are meaningful".[471] According to the Water Convention, the bilateral and multilateral agreements or arrangements need to embrace relevant issues covered by the Water Convention (Art. 9). The provisions of the United Nations global water conventions can be applied in, and tailored to the specific needs of, different kinds of transboundary river basins. Additionally, some of the provisions of the Water Convention are quite precise and specific.[472] While the riparian countries have considerable discretion to consider how the principles of international water law and of the conventions shall be applied between and among them, under the Water Convention, a transboundary water agreement "would not preclude the inequitable, therefore illegal, nature of a use that would be unsustainable, such as a use that would irreversibly affect the environment to the extent of impairing present or future vital human needs of the people living along the basin, or beyond."[473]

Negotiating for water allocation agreements and other arrangements should not be viewed as a non-recurring process, but, rather, as a part of ongoing transboundary water allocation cooperation. Cooperation is often a step-by-step process and it may only be possible to start with simple steps, for example, by organizing regular joint meetings between the relevant agencies of the co-riparian States

468 See Rieu-Clarke, Moynihan and Magsig (2012), p. 89; UNECE, *Guide to Implementing the Water Convention* (2013), p. 33.

469 See Rieu-Clarke, Moynihan and Magsig (2012), p. 96–99.

470 Ibid., p. 91.

471 International Court of Justice, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment of 20 April 2010, para. 146.

472 See UNECE, *Guide to Implementing the Water Convention* (2013), p. 24–25.

473 See Ibid., p. 25.

concerned. The Water Convention specifically refers to the possible revision of existing agreements (Art. 9) and the assessment of equitable water use and allocation may need to be revised at a later stage if the circumstances and other relevant factors related to water allocation change.[474] States may also consider providing for public participation, including non-governmental organizations (NGOs), in the negotiation of transboundary water allocation agreements. The public may be granted access to the draft agreements or other arrangements and allowed to comment on them. Moreover, NGOs may be invited to observe and comment on intergovernmental allocation negotiations.[475] Depending on the consent of the co-riparian States involved, third parties may also be invited to play a role as facilitator, mediator or observer during the negotiation of transboundary allocation agreements, as did the World Bank in facilitating the Indus Waters Treaty between India and Pakistan (see Case Study 40).

CASE STUDY 40: **Role of a third party in negotiating the Indus Waters Treaty**

Several factors contributed to the success of third-party facilitation efforts in support of the Indus Waters Treaty negotiations between India and Pakistan. Ultimately, the success of negotiations is primarily an achievement of the negotiating parties. The first determining factor was continued active involvement at the highest level. From the outset, Eugene Black, the then President of the World Bank, was personally and directly involved in the attempts to resolve the dispute. The Prime Ministers of India and Pakistan had jointly sought the good offices of the Bank. The Bank appointed Mr. Raymond Wheeler, an engineering adviser, to assist with negotiations; later, Mr. William Iliff, then Assistant to the President of the Bank, was engaged as the chief mediator, and it was he who signed the Treaty on behalf of the Bank.

The Bank did not come with a fixed blueprint for the resolution of the dispute. Its initial approach was to develop joint planning for the Indus irrigation system. However, when it became clear to the Bank that this approach was not acceptable to the parties, and that division of the rivers of the Indus System was the only practical solution, the Bank abandoned that approach. With inputs from the two parties, the Bank developed its own proposal, which called for the allocation of the eastern rivers to India and the western rivers to Pakistan. Another reason for the success of the negotiations and third-party mediation was the willingness of both State parties to compromise. When negotiations were halted, the Bank threatened that, if negotiations were not resumed, the Bank would end its mediation and make the reasons known publicly, thus extending its powers of persuasion to exerting pressure.

At that time, the development plans of the two countries depended to a large extent on loans from the Bank, which gave the Bank more leverage and influence on them. Moreover, the Bank was successful in mobilizing the funds needed for implementation of the Treaty and creation of the Indus Basin Development Fund, which amounted to approximately $800 million. The ability to raise those funds, largely on a grant basis, no doubt gave the Bank tremendous strength in successfully concluding the mediation process. The Bank was willing to accept a wide range of responsibilities in the implementation of the arrangements agreed upon under the Treaty. Because of those responsibilities, the Bank is a signatory to the Indus Waters Treaty for the purposes specified in Articles V and X, and Annexures F, G, and H of the Treaty.

b. Step 6: Establishing water allocation agreements or arrangements

Joint arrangements, agreements and joint bodies established by riparian countries are key elements of well-functioning transboundary allocation systems, granting certainty and legal weight in the long-term. As emphasized throughout this Handbook, there are no universally accepted criteria for allocating transboundary waters or establishing arrangements and agreements for this purpose. The principles and objectives of water

474 See Ibid., p. 24–25, 33.

475 Ibid., p. 66.

allocation need to be interpreted in the context of each transboundary basin's unique setting. However, some guidelines can be drawn from the principles, objectives and mechanisms of transboundary water allocation, as presented in Chapters II, V, VI and VII. For example, the role of transboundary water governance institutions is important for water allocation and those institutions should be strong. New transboundary water allocation agreements and other arrangements must be designed to be adaptable in the medium and longer term in response to changing hydrological, climatic and other related factors (socioeconomic, geographical, cultural, etc.).

States may also consider revising existing water allocation agreements and other arrangements, or adopting subsidiary instruments (e.g. minutes; see Case Study 41), to make them more adaptable, in accordance with the general principles of treaty law. In doing so, it may be useful to jointly review pre-existing usage patterns and any transboundary allocation arrangements on which they are based in order to adapt to evolving conditions and demands. Such review should be based on equity and sustainability, especially as regards upstream and downstream water use allocations, including for the environment. In some cases, technical solutions, or informal or temporary arrangements may be instrumental in reaching a negotiated and acceptable short-term solution for allocation in a transboundary context.

CASE STUDY 41: **The International Boundary and Water Commission's use of Minutes for adaptable transboundary water governance: updates governing the Colorado River**[476]

The United States and Mexico established the International Boundary Commission (IBC) on 1 March 1889 as a temporary body to apply the rules that were adopted by the Convention of 1884. The IBC was extended indefinitely in 1900 and is considered the direct predecessor to the modern day International Boundary and Water Commission (IBWC).

Pursuant to the United States–Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, signed 3 February 1944 (1944 Water Treaty), the IBWC has the status of an international body and consists of a United States Section and a Mexican Section. Each Section is headed by an Engineer Commissioner. Whenever there are provisions for joint action or joint agreement of the two Governments or for the furnishing of reports, studies or plans to the two Governments, it is understood that those matters will be handled by or through the Department of State of the United States and the Ministry of Foreign Relations of Mexico. Each Government affords diplomatic status to the Commissioner designated by the other Government. The Commissioner, two Principal Engineers, a legal adviser and a Secretary, designated by each Government as members of its Section of the Commission, are entitled in the territory of the other country to the privileges and immunities appertaining to diplomatic officers. The IBWC and its personnel may freely carry out their observations, studies and field work in the territory of the other country. Each Government bears the expenses of its respective Section; joint expenses, which may be incurred as agreed by the IBWC, are to be borne equally by the two Governments.

Decisions of the Commission are recorded in the form of Minutes. Minutes are binding agreements of the IBWC intended to implement the 1944 Treaty and they take effect once approved by both nations' foreign affairs ministries. There are 325 Minutes to date. Under the Minute system, the two Governments reached agreement for the solution of a long-standing problem regarding the quality of the Colorado River water allocated to Mexico under the 1944 Water Treaty, which was incorporated in Minute No. 242 of the IBWC dated 30 August 1973.

476 Source: International Boundary and Water Commission (www.ibwc.gov/About_Us/history.html; www.ibwc.gov/Files/CF_CR_Minute_323_102517.pdf). United States and Mexican Government officials were given the opportunity to update the text.

Under the 1944 Water Treaty, for the Colorado River, the United States is to deliver to Mexico a volume of 1.5 million acre-feet per year. When there are surplus waters, Mexico may receive an additional 200 kaf (1 kaf = 1,000 acre-feet). Mexico diverts most of its allocation at Morelos Dam. Under the terms of the Treaty, in extraordinary drought, Mexico is to receive reduced deliveries in proportion to reductions in the United States. To date, however, the United States has always met its delivery obligation.

A Joint Cooperative Process began on the Colorado River. Seven United States Basin States and the two federal governments asked the IBWC to convene stakeholders whereby four work groups were established in 2008. Minute No. 317 (2010) formalized those work groups and a framework for United States–Mexico Cooperation. Minute No. 318 (2010) allowed Mexico to store water in the United States system until it could fix earthquake damage. As a result of the Joint Cooperative Process, Minute 319 (2012) was signed on 20 November 2012. It was a five-year agreement in force through 2017, incorporating seven sections: Extension of Minute 318; Distribution of Flows Under High Elevation Reservoir Conditions; Distributions of Flows Under Low Reservoir Conditions; Intentionally Created Mexican Allocation (ICMA); Salinity Management; Water for Environment and ICMA/ICS (Intentionally Created Surplus) Exchange Pilot Program; and International Projects.

With Minute 319 scheduled to end on 31 December 2017, work between the United States and Mexico began in 2015 on a new agreement based on Minute 319. This new Minute was informed by Minute 319 and evolving basin conditions. A Minute Negotiating Group (MNG) met monthly, with meetings held in the United States and Mexico. There were also domestic consultations between binational meetings. Work groups were formed to assist the MNG: Salinity Work Group, Projects Work Group, Environmental Work Group and Hydrology Work Group. The Minute 319 Work Groups also helped.

Minute 323 was subsequently signed on 21 September 2017 in Ciudad Juarez, Mexico, and entered into force on 27 September 2017. Under previous Minutes, Mexico deferred deliveries after an earthquake because of damaged canals. Under Minute 323, Mexico's Water Reserve allows Mexico to defer water delivery on account of earthquakes, emergencies, conservation or new water sources projects. The water is available for subsequent delivery to Mexico, gives Mexico flexibility in water management and boosts Lake Mead elevation to the benefit of all users.

Minute 323 also dealt with specific areas of importance as listed below:

- **SURPLUS SHARING**
  - Provides additional Colorado River water to Mexico during high elevation reservoir conditions
- **SHORTAGE SHARING**
  - Principle that when one country is in shortage, the other country should be in shortage
  - Annual reductions to Mexico of 50–125 kaf based on three low elevation tiers at Lake Mead
  - Mexico may use its stored water to offset shortage, subject to limitations
- **BINATIONAL WATER SCARCITY CONTINGENCY PLAN**
  - Requires water savings earlier to shore up drought-affected reservoirs
  - Commitment to reduce water orders at certain reservoir elevations
  - Water savings could be delivered in the future when reservoirs refill
  - Based on elements of the United States Lower Basin Drought Contingency Plan

- **SALINITY**
  - Minute 242 (1973) requires salinity of deliveries to Mexico to be similar to water quality at Imperial Dam
  - Applies a salinity formula that is fair to both countries
  - The United States and Mexico will operate a system to minimize salinity impacts of Minute 319 actions
  - Improved salinity monitoring
- **FLOW VARIABILITY**
  - Treaty provides for a monthly delivery schedule to Mexico
  - Mexico users concerned about daily flow variability of deliveries
  - Minute 323 considers potential regulating reservoirs
  - Establishes water order and delivery targets to minimize daily variability
- **ENVIRONMENT**
  - Generates water for the environment
  - 210 kaf+ of water for the environment
  - Water for the United States Government share through United States investment in Mexico to cover one third of this volume
  - Mexico and NGOs provide the remaining two thirds, split equally
  - Focus on water for habitat restoration sites
- **PROJECTS**
  - $31.5 million from the United States for projects in Mexico
  - Mexico derives long-term benefits from waters conserved from United States investment
  - 109 kaf for water agencies, 70 kaf for the environment and 50 kaf for system storage
  - Consideration for future new water sources projects
- **BENEFITS OF MINUTES 319 AND 323**
  - Provides certainty for water planning, especially in shortage
  - Storing Mexico's water boosts system storage in the United States
  - Cooperation and transparency benefits all parties
  - Avoids conflicts

The mandates of transboundary joint bodies should be broad and governance should have enough capacity to adapt to changing circumstances. Concerning the actual allocation, the riparian countries should be able to determine allocable waters and current allocation, establish clear allocation rules and take into account annual flow variation, flow forecasts, environmental flows and future water use needs, for example. Water allocation mechanisms can be divided into three subcategories: direct mechanisms, indirect mechanisms and principle-based mechanisms (see Table 12).[477]

c. Step 7: Development of allocation mechanisms and plans

Transboundary water allocation arrangements and agreements often need to be further specified through developing allocation mechanisms and plans. The arrangements and agreements may be more or less detailed and water allocation mechanisms may differ in the clarity of the guidelines for allocation they

477 Drieschova, Giordano and Fischhendler (2018); Giordano and others (2014).

provide. The mechanisms and plans are needed at the transboundary level, as well as the national and local levels of management of transboundary waters.

Historically, the focus of allocation mechanisms has been on sharing surface water. With growing attention to and interest in the shared management of groundwater, there is a need for groundwater allocation mechanisms that are based on the unique properties and physical characteristics of groundwater and that take into account the interactions with surface water. Therefore, in addition to separating allocation mechanisms for surface and groundwater, several groundwater-specific explanatory clauses have been established for how groundwater is physically divided between States (see Table 6). These include using pumping rates, water table levels and spring outflows to monitor or determine quantities for allocation, and pumping restrictions close to transboundary rivers and international borders, as well as mechanisms that divide water based on the pore space or storage capacity of an aquifer rather than the volume of water itself. However, many of these clauses have not been applied in existing agreements. In addition to the allocation mechanism, the purpose of water allocation can be specified in an arrangement or agreement (Table 11). For example, an agreement might divide water using a fixed volume or flow rate for the purpose of irrigation, or the riparian States may identify a percentage of flow that needs to be maintained to meet a basin's minimum environmental needs. Other potential contexts for allocation include minimum flows, hydropower and navigation.

TABLE 11

Purpose or context of transboundary water allocation mechanisms

Purpose of Water Allocation	
Purpose or Context of Mechanism	Minimum flow: not specified/undefined purpose
	Minimum flow: navigation
	Minimum flow: environmental needs
	Minimum flow: hydropower
	Minimum flow: tourism/recreation
	Environmental/in-stream flow
	Aesthetic/tourism/recreation
	Intrinsic/cultural/spiritual
	Hydropower
	Agriculture/irrigation
	Navigation
	Support of fish habitat and stocks/fishing rights
	Domestic and/or municipal uses
	Border/territory maintenance
	Pollution, such as a specific volume for dilution purposes
	Undefined purpose
	Other—if other, the purpose is described in detail in the Allocation Summary Code

Source: M. McCracken and others, "Typology of Transboundary Water Allocation: a look at global trends in international freshwater agreements" (forthcoming).

Transboundary agreements with water allocations should be able to accommodate and react to possible future changes in water availability. This can be done by including percentage allocations, escape clauses (i.e. special provisions for special situations such as extended droughts) or periodic reviews of usage and allocations. Arrangements and agreements should define procedures for negotiation or renegotiation of

water allocations. If such procedures are not in place when circumstances previously defined as extreme and temporary become "the new normal", the risk for implementation problems and disputes grows.[478]

TABLE 12

Water allocation mechanisms

Water Allocation Mechanisms	
Direct Mechanisms	Fixed quantities: A set volume of water to each riparian party, once, annually or at other defined intervals
	Fixed quantities to only a subset of the riparian parties: A set volume of water is allocated to only some of the riparian parties and the undefined quantity of the remainder is allocated to other parties
	Percentage of flow: Percentages of flow are allocated to riparian parties
	Equal division: Water is divided equally between the parties; equal division could be in fixed quantities, percentage, by time, etc., or undefined
	Variable by water availability: The allocation is dependent on the availability of water, includes inter- and intraannual variability (i.e. allocations for low or high flow, drought or flood)
	Variable according to time of the year: The allocation is dependent on the time of year, e.g. a monthly or seasonal schedule
	Water loans: This covers allocations that are recoupable in later periods if not met (e.g. when a riparian party is unable to meet a delivery, it can be delivered at a later period) and allocations that are able to be borrowed from another riparian party and paid back at a later time
	Allocation of entire/partial aquifer/river: Allocation is based on sole use (e.g. States are allocated sole use of an aquifer/river or sole use of segments/portions of an aquifer/river within their territory)
	Allocating time: Flow is allocated to a riparian party for a defined period of time
	Cap, limit, or no allocation allowed: Clearly defined cap or limit on the allocation allowed for the resource, and/or the text explicitly does not allow for any diversions from the resource
Indirect Mechanisms	Prioritization of uses: Allocation is divided based on the priority of use (e.g. domestic use first, hydropower second)
	Consultation and/or prior approval: Riparian parties consult or seek prior approval/consent of other riparian parties to determine allocations, make changes to allocations already defined, or for short notice/temporary changes to allocations, such as if one party requires a higher water use than usual because of the construction of an irrigation system
	River basin organization, commission and/or committee: Allocation mechanism is to be determined by a river basin organization, commission and/or committee; this could include an existing body or a newly established body with a broad mandate, as well as an existing or newly established body for the specific purpose of establishing and managing allocations

478 Tuula Honkonen and Niel Lubbe, "Adapting transboundary water agreements to climate change: experiences from Finland and Southern Africa", *South African Journal of Environmental Law*, vol. 25, No. 1 (2019), p. 5–41.

Mechanisms Based on Principles	Benefits sharing: The benefits of the allocated water are shared between/among parties (e.g. hydropower, flood control or other benefits that could be given a monetary value, which is shared); this is not an exchange of water with a non-water linkage (this is captured in a separate code: B.P. Non-Water Linkages)
	Historical or existing uses: Allocation mechanism is based on the prior, historical or existing uses of the riparian party or parties
	Equitable use: Allocation mechanism is defined using the principle of equitable and reasonable use
	Sustainable use: Allocation mechanism defines sustainable use for the aquifer/river, or allocates water based on the principles of sustainable use
	Market-based: Allocation mechanism uses a market instrument, such as a water market, to allocate water
Not Defined	Unclear: Allocation mechanism exists, but it is not clearly defined.
Groundwater-specific Mechanisms	Pumping rates: allocation mechanism specifies particular rates for abstraction from wells
	Water table impact: allocation mechanisms refer to or are limited by the groundwater table height (e.g. abstractions are prohibited if the water table falls below a certain level in monitoring wells)
	Spring outflow: Allocation mechanism is related to the spring outflow (e.g. the volume of allocation is dependent on the level of spring outflow)
	Aquifer: Allocation mechanism is related to or addresses the pore space and/or storage capacity of the aquifer, not the groundwater itself

Source: M. McCracken and others, "Typology of Transboundary Water Allocation: a look at global trends in international freshwater agreements" (forthcoming).

The *direct allocation mechanisms* include both fixed and flexible allocation mechanisms. Fixed allocations set a volume of water to be delivered, for example, from a dam. Flexible allocations can be based on percentage shares of available flows, for example, and allow water allocation regimes to respond to changes in water availability. Flexible allocation requires flexible infrastructure, effective operating rules and regular communication and data-sharing.[479] It is also possible to combine fixed allocations with percentage allocations to provide a predictable and flexible water allocation mechanism. Particular principles of water allocation, such as equity, rational use, no-harm and sustainability, may also be combined with this kind of arrangement.[480] A predefined sequence of priority of uses, as well as different kinds of cooperative arrangements between the riparian countries, can be used as *indirect allocation mechanisms*. The prioritization of uses sets out the priority of access to water according to types of uses or users. It may guide the overall allocation of water entitlements or be applied only during exceptional hydrological circumstances. Arguably, the mechanisms based on principles may provide guidelines for allocating water while maintaining the spirit of the underlying agreement at the same time.[481] However, using a mere principle instead of a clearly established allocation rule may not be the most feasible approach in the long run. Instead, a mechanism that prescribes both flexibility based on principles and specificity in the allocation of water seems to contribute positively to sustained cooperation among riparian States.[482]

479 Cooley and Gleick (2011) p. 715.

480 UNECE and INBO (2015), p. 21.

481 Sanchez and Roberts, eds. (2014), p. 66.

482 Shlomi Dinar and others (2015), p. 23.

Existing frameworks for developing transboundary allocation mechanisms

Transboundary water allocation planning must follow the principles and objectives discussed in Chapters V and VI such as equitable and reasonable utilization, no harm and cooperation. Speed and others (2013) provide 10 "golden rules" of basin water allocation planning based on international experience, all of which can generally also be applied in a transboundary setting:

1. In basins where water is becoming stressed, it is important to link allocation planning to broader social, environmental and economic development planning. Where inter-basin transfers are proposed, allocation planning also needs to link to plans related to that development.
2. Successful basin allocation processes depend on the existence of adequate institutional capacity.
3. The degree of complexity in an allocation plan should reflect the complexity and challenges in the basin.
4. Considerable care is required in defining the amount of water available for allocation. Once water has been (over)allocated, it is economically, financially, socially and politically difficult to reduce allocations.
5. Environmental water needs provide a foundation on which basin allocation planning should be built.
6. The water needs of certain priority purposes should be met before water is allocated among other users. This can include social, environmental and strategic priorities.
7. In stressed basins, water efficiency assessments and objectives should be developed within or alongside the allocation plan. In water-scarce situations, allocations should be based on an understanding of the relative efficiency of different water users.
8. Allocation plans need to have a clear and equitable approach for addressing variability between years and seasons.
9. Allocation plans need to incorporate flexibility in recognition of uncertainty over the medium to long-term in respect of changing climate and economic and social circumstances.
10. A clear process is required for converting regional water shares into local and individual water entitlements, and for clearly defining annual allocations.[483]

The need for water allocation planning is connected with the management of system-wide allocation challenges. Accordingly, a river basin management plan can set out a clear framework for allocation. A clear and transparent process to facilitate stakeholder engagement in planning is also often needed. The required scale of planning depends on the particular water allocation challenges and may vary from the basin to subcatchment and aquifer level.[484]

483 Speed and others (2013).

484 OECD, *Water Resources Allocation: Sharing Risks and Opportunities* (2015), p. 121.

CASE STUDY 42: **Regional recommendations on transboundary water allocation from Central Asia and the neighbouring States**

Contributing to the preparation of the Handbook, the International Water Assessment Centre (IWAC) in Kazakhstan led with Kazakh partners a parallel regional project for Central Asia and neighbouring States on transboundary water allocation. The process was initiated by the Government of Kazakhstan's formal outreach to the countries with an invitation to engage, and led to development of two technical reports, on water allocation in a transboundary context and assessment of environmental flows. The conclusions and selected case studies were integrated into the global Handbook. The IWAC convened two online meetings for the States concerned to discuss the case studies and lessons learned.

The group of experts that was formed compiled and published a regional study on transboundary water allocation with inputs from Afghanistan, China, Iran, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan, Turkmenistan and Uzbekistan.

The broad range of conclusions included the following:

- When planning new bilateral or multilateral water allocation agreements, it is recommended to use well-established principles of international water law, such as equitable and reasonable use and the obligation not to cause significant harm. To this end, cooperation and membership in relevant international and regional conventions are recommended.
- To increase the chances of success, bilateral or multilateral water allocation agreements should not only be declarative, but should always include mechanisms for monitoring and control, as well as an effective enforcement mechanism.
- Guaranteeing of environmental flows shall feature in transboundary water allocation agreements, recognizing the need to harmonize the level of environmental flows by seasons and years, depending on weather conditions and water availability.
- Implementation of an approach to managing water, energy, land and ecosystem services based on a system of relationships (nexus approach), aimed at the efficiency and sustainability of the use of these resources.
- For the Aral Sea basin, the existing water sharing cooperation structures, such as the International Fund for saving the Aral Sea (IFAS) and its regional commissions the Interstate Commission for Water Coordination of Central Asia (ICWC) and the Interstate Commission on Sustainable Development (ICSD) need reforms to make them fully effective and guarantee the unconditional participation of all countries sharing water resources. For any regional agreement, the key is to establish an open dialogue on water allocation and ensure participation of the energy sector.

The full set of conclusions can be found in IWAC, *The Allocation of Water Resources in a Transboundary Context to Strengthen Water Cooperation between Eurasian Countries* (Nur-Sultan, Kazakhstan, 2021).

The European Union Water Framework Directive provides an example of river basin management planning that can be applied in a transboundary setting. The Directive requires that Member States aim at producing an international river basin management plan when a transboundary basin (international river basin district) is located entirely in the area of the European Union. Member States must also endeavour to produce such a plan with non-member States when transboundary waters extend beyond the boundaries of the European Union (Art. 13). Related to water quantity, the plan must include, for example, estimation of pressures on the quantitative status of water, a summary of the economic analysis of water use, a report on the practical steps and measures taken to apply the principle of recovery of the costs of water use, and a summary of the controls on abstraction and impoundment of water (Annex VII).

Main points to consider

The development of allocation mechanisms and plans may provide flexibility for transboundary water allocation. Flexibility is required because uncertainties and changing circumstances, as consequences of climate change and other pressures affecting transboundary waters, may render stationary water allocation arrangements largely meaningless.[485] At the same time, the approach to transboundary water allocation should be holistic and give recognition to long-term perspectives instead of responding impulsively to a series of new projected impacts and scenarios.[486] Overall, when developing allocation mechanisms, the following points should be taken into consideration:

- How to develop specific and adaptive allocation mechanisms and plans based on transboundary agreements and other arrangements;
- Different scales of allocation mechanisms and plans;
- Examples of allocation planning at different scales, local, national and basinwide;[487]
- Key factors to consider when developing an allocation plan—physical characteristics of the resource, how water is accessed, how the resource pool is defined, etc.;[488]
- The role of the private sector and operators of water systems.

3. Phase 3: Implementation of Transboundary Water Allocation Arrangements and Agreements

a. Step 8: Implementation

The implementation of transboundary water allocation agreements follows similar steps outlined for the implementation of the main principles of the United Nations global water conventions. First, States must enact national law and regulations and enter into cooperative arrangements, such as establishing joint bodies. Second, States need to adopt sufficient administrative measures. Third, States need to make sufficient human, financial and technical resources available for implementation.[489] While allocation mechanisms may be formally enshrined in treaties and related mandates of RBOs, the plans and systems for implementation of water allocation arrangements may be more informal, depending on the arrangement. Such arrangements may take the form of policy documents and subsequent policy or legal/regulatory instruments. However, their implementation often requires the same steps as for the agreements.

CASE STUDY 43: **Joint management of Doosti Dam by Iran and Turkmenistan**

Following decades of planning during the Soviet period, in 1999, Turkmenistan signed an agreement with Iran to jointly construct a dam on the border Harirud River. The purpose of the dam and reservoir is to reduce the flood risks and provide regulated flow for development of irrigated agriculture in the two countries. Construction of the 78 m-high earthen Doosti dam was financed jointly by Iran and Turkmenistan and the countries have rights of equal shares of the water available.

For joint management of the dam, the Doosti Dam Common Coordinating Commission (DCC) was established in 2000 with equal representation from the local water management authorities of both countries. The DCC is in charge of implementation of the operational and maintenance manual for the

485 Honkonen (2017), p. 3.

486 Ibid., p. 9–10.

487 Speed and others (2013).

488 OECD (2015).

489 See UNECE, *Guide to Implementing the Water Convention* (2013), p. 8.

dam and the downstream Shirtape diversion dam. It conducts joint measuring and monitoring and is also in charge of guaranteeing the environmental flow of approximately 30 million m^3 per year.

While an adequate transboundary legal framework brings predictability and allows for stability, practical experience show that a legal basis is not always necessary for transboundary cooperation, depending on the countries and their relationships. A common understanding and/or shared interests can also provide a functioning basis for practical cooperation. Moreover, when interests are aligned, national policies in the upstream country may, to a large degree, also respond to the needs of a downstream country, as may be the case for a flow regulation regime that serves multiple purposes, provided that there is good communication between the parties. In some cases, where political relations are tense (e.g. there is a territorial issue), informal technical-level realization may be the only possible way to implement the measures that might be necessary, for example, for safety reasons.

The implementation of the Water Convention already provides a comprehensive set of implementation measures at the national and international levels. These measures can be specified and complemented in transboundary water agreements and other arrangements. The Convention requires countries to take many national-level implementation measures related to water allocation, such as:

- promotion of sustainable water resources management;
- application of EIA and other means of assessment;
- prevention, control and reduction of the emission of pollutants at source (Art. 3.1);
- monitoring of the conditions of transboundary waters (Art. 4).

Concerning implementation measures at the transboundary level, the Water Convention stipulates that the agreements and arrangements must provide for the establishment of joint bodies and sets the following tasks, for example, for these joint bodies:

- elaboration of joint monitoring programmes concerning water quality and quantity;
- establishment of warning and alarming procedures;
- exchange of information on existing and planned uses of water and related installations that are likely to cause transboundary impact (Art. 9.2).

Depending on the State system, national water allocation is further divided into basin-level and regional water allocation. The transboundary shares are usually allocated to subnational jurisdictions, administrative regions and management entities that decide and grant water entitlements, permits and licences to individual water users and abstractors.

Main points to consider

Implementation of transboundary water allocation arrangements and agreements at national and subnational levels often requires the following elements:

- water allocation planning at different levels, from transboundary basin to subcatchment and aquifer;
- regional limits on water abstraction;
- water entitlement or licensing systems that take the limits into account;
- annual water allocation process that assesses available waters and allocates them among different regions or uses;
- other water management systems such as hydrologic modelling, data collection, monitoring and measures to guarantee compliance and enforcement.[490]

490 See Speed and others (2013), p. 91–97.

b. Step 9: Monitoring and ensuring compliance

Compliance is a central element of the implementation of water allocation arrangements and agreements. It can be defined as a State's behaviour in accordance with its commitments stemming from the allocation agreements. A compliance system includes rules and procedures such as a compliance review that assess, regulate and ensure compliance. Monitoring compliance is an essential element of that system. Non-compliance may be a result of a State's unwillingness and/or inability to meet its commitments but can also relate to ambiguity and indeterminacy in agreement language.[491]

Monitoring and assessment under the United Nations global water conventions

The United Nations global water conventions include many provisions that aim at monitoring and ensuring compliance with the conventions as well as transboundary arrangements and agreements based on them. The Water Convention requires States to establish programmes for monitoring the conditions of transboundary waters (Art. 4) and the riparian countries to elaborate joint monitoring programmes concerning water quality and quantity (Art. 9.2). The riparian countries shall also exchange information on transboundary waters and impacts (Art. 13), as well as inform each other about critical situations and set up warning and alarming systems (Art. 14). According to the Watercourses Convention, riparian countries shall exchange data and information on the conditions of transboundary waters (Art. 9). The Convention includes a specific Part III on planned measures that may have an effect on the conditions of transboundary waters (international watercourse in the Convention). Accordingly, States shall inform and consult and negotiate with each other on these effects and, if needed, provide other States with timely notification thereof. In addition, the Convention includes provisions on the reply to the notification and on consultations and negotiations concerning planned measures (Arts. 11–19).

Concerning transboundary water allocation arrangements and agreements, active reporting and regular exchange of information is an essential measure for monitoring and ensuring compliance. Joint bodies are often charged with a monitoring task when compliance review and support mechanisms are included in the arrangements. Joint bodies may play an important role in the compliance review process, for example, through monitoring of action plans and the efforts of States to meet objectives, standards and targets.[492] Often, there is a higher risk of experiencing transboundary conflict if water allocation agreements and other arrangements do not contain follow-up monitoring and enforcement mechanisms.[493] However, compliance mechanisms should be different from dispute prevention and settlement measures between co-riparian parties as contained in any allocation framework. Any compliance review procedure should be without prejudice to dispute settlement.[494]

Monitoring and the exchange of data and information should enable assessments of quantity and quality of transboundary waters, and their variability in space and time. It should support decision-making on transboundary water allocation, including in critical situations.[495] In general, the analysis of water allocation issues and challenges guides the specification of information needs related to water uses, their impacts and varying environmental circumstances, such as flooding and drought, sedimentation, salinization and pollution. Monitoring and the exchange of information increases transparency and thus promotes compliance. Ideally, a water allocation regime creates incentives for voluntary compliance with the arrangement or agreements.

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491 UNECE, Geneva Strategy and Framework for Monitoring Compliance with Agreements on Transboundary Waters (MP.WAT/2000/5), Annex I, paras. 3–4.

492 MP.WAT/2000/5, Annex I, paras. 3–7.

493 Patricia Wouters, "Universal and regional approaches to resolving international water disputes: what lessons learned from state practice?", in *Resolution of International Water Disputes: Papers Emanating from the Sixth PCA International Law Seminar, November 8, 2002*, International Bureau of the Permanent Court of Arbitration, ed. (The Hague, Kluwer Law International, 2003), p. 111–154.

494 MP.WAT/2000/5, Annex I, para 29.

495 UNECE, *Strategies for Monitoring and Assessment of Transboundary Rivers, Lakes and Groundwaters* (2006).

These incentives may be linked, for instance, to State reputation or benefits under the regime. In general, the lack of an explicit enforcement mechanism in a transboundary water agreement may discourage voluntary compliance by the parties.[496] In reality, however, compliance monitoring by joint bodies is rarely imposed, and mechanisms for enforcing decisions and responding to monitored non-compliance are even rarer.[497]

UNECE published the Geneva Strategy and Framework for Monitoring Compliance with Agreements on Transboundary Waters in 2000. It is based on the following premises:

a. The parties agree to monitor compliance with their agreement(s) on transboundary waters through the establishment of a compliance review process. This commitment of States may be found in the agreement on transboundary waters, or in subsequent instruments or mechanisms, including, for example, a decision of the Meeting of the Parties or activities of joint bodies;

b. The compliance review process should be based on mechanisms designed to enhance, improve and ensure compliance, rather than on compliance control and enforcement tools and traditional judicial mechanisms. To this end, the regime created should focus on positive measures and incentives aimed at facilitating compliance;

c. The instrument embodying the compliance review procedure should be, ideally, legally binding. The obligations subject to compliance, however, may arise out of non-legally binding instruments, for example, guidelines, voluntary measures, targets and objectives, and may relate to assessment of efforts undertaken, and not only of results achieved;

d. The compliance review procedure is greatly enhanced by the elaboration of clear primary rules, objectives or targets; the elaboration of compliance information systems; the involvement of an institutional mechanism; a response to problems with compliance that, in the first instance, is positive, forward-looking, non-confrontational and non-judicial, and is supplementary to, and independent from, any settlement regime.[498]

Water Convention Implementation Committee supporting parties with implementation and compliance issues

Under the Water Convention, the Implementation Committee's objective is to "facilitate, promote and safeguard the implementation and application of and compliance with the Convention". The Committee is meant to deal with specific cases of difficulties with implementing the Convention and is intended as an alternative to a dispute settlement procedure. As a dispute prevention and resolution mechanism, it is intended to be simple, non-confrontational, non-adversarial, transparent, supportive and cooperative in nature, building on the distinctive collaborative spirit of the Convention. Concerning compliance with the Convention, the Committee may serve as a means to prevent situations from evolving into a dispute.[499] The Committee consists of nine members elected by the Meeting of the Parties. The members serve in their personal capacity. The Committee has specific advisory, submission, own initiative and information-gathering and consultation procedures.[500] The Committee may, for example:

- consider any submission relating to specific issues concerning difficulties in implementation and compliance;

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496 Richard Kyle Paisley and Alex Grzybowski, "Some reflections on the resolution of state-to-state disputes in international waters governance agreements", *International Journal of Rural Law and Policy*, No. 1. (2011), p. 1–18.

497 Schmeier (2013).

498 MP.WAT/2000/5, Annex I, para 8.

499 Johan G. Lammers, "The implementation mechanism and committee established under the UNECE Convention on the Protection of Transboundary Watercourses and International Lakes", in *Research Handbook on International Water Law*, McCaffrey, Leb and Denoon, eds. (2019), p. 319–339.

500 UNECE, Decision VI/1 on support to implementation and compliance (ECE/MP.WAT/37/Add.2), available at https://unece.org/sites/default/files/2021-05/DECISION%20VI-1ece.mp_.wat_.37.add_.2_eng.pdf.

- consider undertaking a Committee initiative;
- examine, at the request of the Meeting of the Parties, specific issues of implementation of and compliance with the Convention;
- take measures, including recommendations.

To support implementation and to address cases of non-compliance the Committee may take the following measures, for example:

- suggest or recommend setting up and strengthening domestic regulatory regimes;
- request and assist the party or parties concerned to develop an action plan to facilitate implementation of and compliance with the Convention;
- invite the party concerned to submit progress reports to the Committee on the efforts that it is making to comply with its obligations under the Convention;
- recommend to the Meeting of the Parties to take specific measures such as to recommend that parties provide capacity-building measures or issue a statement of concern or declarations of non-compliance.

c. Step 10: Dispute prevention and resolution mechanisms

Dispute prevention

Cooperative management of a transboundary freshwater basin has considerable potential to prevent conflicts and to promote regional stability.[501] Cooperative management on the basis of the United Nations global water conventions and water allocation arrangements and agreements between the riparian countries aims to reconcile water uses and alleviate challenges stemming from, for example, water scarcity, pollution and flooding.[502] Environmental changes due to climate change and other pressures are likely to sharpen possible conflicts over water and trigger new ones.[503] Trust-building and the maintenance of legitimacy among the riparian countries are essential requirements for conflict prevention. In general, dispute prevention and resolution mechanisms in water agreements and arrangements can be seen as a sequence of steps that may include procedures for cooperative management, clarifying facts, negotiation, mediation and, as the last resort, dispute resolution.[504]

Joint bodies can play an important role in preventing water allocation disputes between the riparian countries. They can manage the use of shared water resources and stipulate rights and obligations in support of the underlying agreements and arrangements, and thus prevent disputes from escalating.[505] Many transboundary water regimes rely on joint bodies to prevent disputes, or to act as pragmatic conflict resolution facilitators.[506] Joint bodies often have expertise and enough neutrality to act in both conflict prevention and dispute settlement within shared basins. In practical terms, the following elements of transboundary water allocation can be central in preventing disputes:

- routines of water allocation and information exchange that create predictability;
- flexibility to adapt to changing circumstances;
- open communication and gathering of and access to information.

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501 Benjamin Pohl and others, *The Rise of Hydro-diplomacy: Strengthening of Foreign Policy for Transboundary Waters* (Berlin, Adelphi, 2014).

502 See Vinogradov and Wouters (2013).

503 See, for example, Pohl and others (2014).

504 See Paisley and Grzybowski (2011), p. 116–134.

505 See Jaroslav Tir and Douglas M. Stinnett, "Weathering climate change: can institutions mitigate international water conflict?", *Journal of Peace Research*, vol. 49, No. 1 (January 2012), p. 211–225.

506 Wouters (2003).

In some cases, possible water allocation disputes between/among the riparian countries may relate to the interpretation of water allocation agreements and the United Nations water conventions. Concerning the interpretation of the Water Convention, the Implementation Committee (see subsection 3b above) may serve as a non-adversarial means for preventing situations from evolving into a dispute. An advisory procedure under the Implementation Committee is a unique tool that distinguishes this body from other similar mechanisms and enables it to engage with countries seeking to resolve water issues in a non-confrontational manner.[507] Aimed at facilitating implementation and application of the Convention through the provision of advice by the Committee, an advisory procedure shall not be regarded as alleging non-compliance. Options that are open to the Committee in resolving an issue via an advisory procedure are:

"a) To provide advice and facilitate assistance to individual Parties and groups of Parties in order to facilitate their implementation of the Convention, which may include:

(i) Suggesting or recommending that domestic regulatory regimes be set up or strengthened and relevant domestic resources be mobilized as appropriate;

(ii) Assistance in establishing transboundary water cooperation agreements and arrangements for strengthening cooperation and sustainable management of transboundary waters;

(iii) Facilitating technical and financial assistance, including information and technology transfer, and capacity-building;

(iv) Assistance in seeking support from specialized agencies and other competent bodies, as appropriate;

(b) To request and assist, as appropriate, the Party or Parties concerned to develop an action plan to facilitate implementation of the Convention within a time frame to be agreed upon by the Committee and the Party or Parties concerned;

(c) To invite the Party concerned to submit progress reports to the Committee on the efforts that it is making to implement its obligations under the Convention."[508]

Dispute resolution

According to the Water Convention, parties to a dispute about the interpretation or application of the Convention must seek a solution by negotiation or by any other means of dispute settlement acceptable to them. Thereafter the dispute may be submitted to the International Court of Justice or arbitration for a compulsory dispute settlement if the parties have accepted such an option (Art. 22). The Watercourses Convention provides a list of options available to States in order to settle their possible controversies. Disputes concerning the interpretation or application of the Convention's provisions shall initially be the object of negotiations. If no negotiated settlement is found within six months, the States parties to the dispute shall, at the request of any of them, seek a settlement by diplomatic methods such as good offices, mediation or conciliation, or use the services of any joint watercourse institution entitled to deal with such disputes, or agree to submit the dispute to arbitration or to the International Court of Justice (Art. 33).

The Watercourses Convention stipulates, furthermore, that where the matter is not resolved by using traditional means of dispute settlement, the parties may resort to compulsory fact-finding by an ad hoc commission composed of one member designated by each party and a national of a third State chosen by the members already designated. The non-binding recommendations of the commission are aimed at achieving "an equitable solution of the dispute, which the parties shall consider in good faith" (Art. 33).

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507 See the example of Montenegro and Albania engaging in an advisory procedure: UNECE, "Water Convention's Implementation Committee provides advice to Albania and Montenegro on the transboundary Cijevna/Cem River", 11 February 2021.

508 See ECE/MP.WAT/37/Add.2, Annex I, V, para. 22.

CASE STUDY 44: **Indus Waters Treaty dispute resolution mechanisms**

The Indus Waters Treaty governs allocation between India and Pakistan on their areas of the Indus Water System. The Treaty is rare in that it has survived various periods of disagreement between the parties since 1960. It includes unique dispute resolution mechanisms divided into three sequential streams: Questions, Differences and Disputes.[509]

The first mechanism concerns any question that arises between the parties in relation to implementation or application of the Treaty, or existence of any fact that one party considers a breach of the Treaty. This shall be examined by the Permanent Indus Commission at first instance. If the Commission does not reach an agreement on any of the Questions referred to it, then a Difference shall be deemed to have arisen.

Differences shall be dealt with as follows: any Difference which, in the opinion of either Commissioner falls within the provisions of Part 1 of Annexure F of the Treaty shall be dealt with by a Neutral Expert, in accordance with the provisions of such Annexure. The Neutral Expert shall be a highly qualified engineer and shall be appointed by agreement by the two parties, or by a third party agreed upon by the two parties. If the two parties are unable to agree on a Neutral Expert, or on a third party to appoint the Neutral Expert, then the World Bank will appoint the Neutral Expert after consultations with the two parties. The decision of the Neutral Expert is final and binding on the parties. It is not appealable to the Court of Arbitration or any other body. If, in the opinion of either Commissioner, the Difference does not fall within the provision of Part 1 of Annexure F, or if the Neutral Expert decides that the Difference shall be treated as a Dispute, then the Difference will be treated as a Dispute.

For a Dispute, either government may invite the other government to resolve the dispute through negotiations. The two governments may agree to enlist the services of one or more mediators acceptable to them. A Court of Arbitration shall be established to resolve the Dispute: (i) upon agreement between the two parties; (ii) at the request of either party, if, after negotiations have begun pursuant to Paragraph (4), in its opinion the dispute is not likely to be resolved by negotiation or mediation; or (iii) at the request of either party, if, after expiration of one month following the invitation to resolve the dispute through negotiations, that party comes to the conclusion that the other government is duly delaying the negotiations. Unless otherwise agreed, the Court of Arbitration shall be composed of seven arbitrators: two arbitrators shall be appointed by each of the two parties. The three remaining arbitrators (called umpires) shall include the Chairman of the Court, an engineer, and an international lawyer, the three to be appointed in accordance with detailed procedures set forth in Annexures G of the Treaty. Such procedures involve the United Nations and the World Bank for the selection of the Chairman; the Massachusetts Institute of Technology and the Imperial College of Science and Technology in London for the selection of the engineer member, and the Chief Justice of the United States and the Lord Chief Justice of England for the selection of the legal member of the Court.

Since 1990, 61 per cent of international river basin agreements have incorporated some sort of dispute resolution mechanism.[510] Five different mechanisms and their shares of the total are: the use of diplomatic channels (39 per cent); arbitration (32 per cent); the creation of special commissions for conflict resolution (28 per cent); the agreement to submit a dispute to an existing permanent judicial organ, such as the International Court of Justice (8 per cent); and third-party involvement (6 per cent).[511] It is important that the mechanisms are clearly defined, applied in a timely manner and can bind disputing parties to a settlement

509 This is a matter of Treaty interpretation. The Permanent Court of Abritration *Indus Waters Kishenganga Arbitration (Pakistan v. India)* decision differs from this specific view.

510 Giordano and others (2014).

511 Ibid.

that ensures their equal contribution to the solution.[512] The parties to the dispute need to feel that they have been treated fairly, the dispute has been handled impartially and effectively and the resolution is based on correct information and has come about through a legitimate process.

CASE STUDY 45: **Dispute prevention and settlement provisions in the Mekong River Agreement**

Within the Mekong River Agreement, the joint treaty body must take the initiative to resolve disputes between parties in matters covered by the Agreement. In the words of the Agreement, it is the task of the Council of the Mekong River Committee (MRC) "to entertain, address and resolve issues, differences and disputes referred to it [. . .] on matters arising under the Mekong Agreement". Furthermore, the Joint Committee of the MRC is asked to "address and make every effort to resolve issues and differences that may arise between regular sessions of the Council, referred to it [. . .] on matters arising under the Agreement". The dispute can be considered resolved only if "the concerned parties are satisfied". Only after the Commission has proved unable to resolve a dispute in a timely manner shall the case be referred to the governments of the States for resolution through diplomatic channels. The Commission is the first instance to resolve disputes.

Dispute resolution mechanisms in international water agreements can be structured as a sequence of progressively intensive steps or elements from fact-finding to negotiation and dispute resolution:[513]

- **Negotiations.** Within transboundary water regimes, negotiation is the primary mechanism for resolving disputes between the parties. Negotiations may take place through diplomatic channels or meetings of experts and can be assisted by a joint body. Negotiations may lead, for example, to the creation of a memorandum of understanding between the parties
- **Mediation and good offices.** Mediation involves a neutral external party that guides the negotiation process and helps to identify potential solutions to the dispute. The role of a mediator may range from encouraging the parties to resume negotiations and facilitate dialogue (i.e. good offices) to the investigation of the dispute and active participation in finding a solution.[514] Mediation may only be undertaken by mutual agreement by the parties.
- **Conciliation.** In conciliation, an impartial person or a formal impartial commission studies the facts of the case, establishes the applicable law and makes solution proposals for the parties.
- **Fact-finding and inquiry.** An impartial person or commission investigates factual or technical matters.
- **Compulsory fact-finding.** According to the Watercourses Convention, a fact-finding commission can be established and it can make "such recommendation as it deems appropriate for an equitable solution of the dispute". However, the parties to the dispute are not bound by the commission's recommendation and may still invoke compulsory dispute settlement procedures, such as arbitration or adjudication (Art. 33).
- **Arbitration.** Arbitration means that a dispute is submitted to a third party for resolution. The arbitrator is always a neutral expert and is not involved with the parties or the governing organization of the regime within which the dispute has arisen. Arbitration requires the prior consent of each

512 Susanne Schmeier, "Resilience to climate change: induced challenges in the Mekong River basin: the role of the MRC", Water Papers, No. 61810 (Washington, D.C., World Bank, 2011).

513 Paisley and Grzybowski (2011).

514 Ine D. Frijters and Jan Leentvaar, "Rhine case study", IHP-VII Technical Documents in Hydrology, PC-CP Series, No. 17 (Paris, UNESCO, 2003).

party to the dispute. In the Watercourses Convention arbitration is provided for in Article 33 and complemented by the Annex that sets out the rules for the establishment and operation of an arbitral tribunal. Arbitration can be a voluntary or mandatory forum (based on jurisdiction to hear the matter being accepted by the disputing parties) for dispute settlement, the outcome/decision of which is final and binding.

- **Dispute resolution by a joint body.** The role of a joint body in preventing and managing disputes largely depends on its characteristics, operating environment and tasks. The regulatory and implementation powers of joint bodies vary, as does their capacity to manage and prevent conflicts. An effective joint body is generally more akin to a multi-issue body that is able to adopt a balanced approach to issues and resolving conflicts. Sometimes a joint body may be designated as the first or primary actor to resolve a dispute between the parties.
- **Specific organizations.** Some organizations serve the conflict management needs of several transboundary water treaty regimes.
- **Adjudication.** It is sometimes possible to refer the dispute to a national or international court. Concerning the International Court of Justice, its general mandate includes the settlement of legal disputes submitted to it by States. No State can be brought to the Court without its prior consent.
- **Permanent international tribunals.** Unless otherwise agreed, a settlement of a dispute by a permanent international tribunal is final and binding and based on rules of international law.

Transboundary water regimes should be able to determine the conditions for dispute resolution. These include matters such as who may trigger a mechanism, what kinds of issues may be dealt with through it and what is the role of a joint body in dispute resolution. One example of a dispute resolution process mandated by treaty which related to transboundary water allocation occurred in 2010, when Pakistan instituted arbitral proceedings regarding India's Kishenganga Hydroelectric Project. In the matter of the *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, the Court of Arbitration was constituted in accordance with the provisions in the Indus Waters Treaty and it then rendered a partial award on 18 February 2013.[515] In general, the use of a dispute resolution mechanism may be possible after a breach of the agreement, when its interpretation or application is uncertain, in the course of a periodical review, or when a sudden change in physical conditions of transboundary waters has taken place.[516]

CASE STUDY 46: **Mechanism for settling differences and compensation in the Finnish–Russian cooperation framework**

An example of a river basin organization (RBO) that has been actively involved in settling different, sometimes diverging, interests between the parties is the Finnish–Russian Commission on the Utilization of Frontier Waters. The underlying Agreement Concerning Frontier Watercourses generally provides that the parties may agree to refer any matters concerning the prohibition of pollution or altering the course or flow of a waterway to the joint Commission for a decision or opinion. This appears to also include possible matters under dispute between the parties. If the Commission fails to reach consensus on the matter, or if the consequences of the said measure on the territory of the other contracting party are significant, the matter must be submitted to the governments of the two States for consideration.

The role of the Commission in conflict resolution is further affirmed by Article 19 of the Agreement, which states that the Commission shall settle any differences of opinion arising from the interpretation or application of the Agreement. If this route proves unsuccessful, the matter will be settled by a Joint

515 For further information, see Permanent Court of Arbitration, *"Indus Waters Kishenganga Arbitration (Pakistan v. India)"*.

516 Charlotte De Bruyne and Itay Fischhendler, "Negotiating conflict resolution mechanisms for transboundary water treaties: a transaction cost approach", *Global Environmental Change*, vol. 23, No. 6 (December 2013), p. 1841–1851.

Board consisting of representatives of both governments. If the occurrence of transboundary harm cannot be avoided under the Finnish–Russian transboundary water regime, i.e. when the execution of certain measures by one contracting party causes loss or damage in the territory of the other party, the contracting party that permitted such measures can be held liable. The changes in water discharge volumes are agreed in the Commission, and parties may agree on reparation and the Commission shall decide upon any possible compensation to be paid to the party that has suffered losses.

The most significant test so far of the liability regime under the Agreement was a case in which a Finnish hydroelectric power station incurred losses due to construction of a dam and a hydroelectric power station in Svetogorsk in the Russian Federation. The Commission actively participated in settling the issue of compensation.