17. Cross-border water management

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17.1 INTRODUCTION

This synthesis presents multiple narratives to support the evolving democratic settings of cross-border water governance in many regions, particularly in the Global South. Starting with the hypothesis that existing measures of transboundary water cooperation at multiple scales, such as the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and similar agreements and arrangements, support provisions of legally binding instruments/institutional mechanisms to promote the better management of shared water resources and the implementation of related Sustainable Development Goals (SDGs).

Two key points are explained: first, that water declarations and agreements managing the shared water systems exist at all levels – from global to local – and regional social policies and cultural processes may not always conform to cooperation agreements. That said, by promoting regional and international hydrodiplomacy – the diplomatic process under which water sources are managed through multi-level consensus-based cooperation that engages stakeholders from all levels of government including state, provincial, municipal, and civil society towards equitable, stable, and peaceful sharing and conservation of water resources (Schmeier, 2018) – opportunities for cross-border cooperation can be created. Second, while hydrodiplomacy faces unique regional diplomacy challenges depending on the localised context, it also functions as a crucial component of international relations.

In addition, by employing a set of case studies we will explain how the growth of scientific and technological knowledge and the willingness to embrace innovation to outline sector-specific transformative pathways offer the possibility for creating robust regional cooperation and cross-border water management projects, plans, and policies. After a detailed introduction giving the context and background as well as an overview of intersections in the field, this chapter will develop on the above-highlighted points by applying a mixed method approach, i.e., conceptual analysis and case study examples and taking reference of the guiding questions listed below:

1. What theoretical/normative contexts relate to regional cooperation and/or integration in cross-border water management settings? Why do we need cooperation? Could enhancing cross-border water governance help to boost the regional arrangements?
2. Where is cross-border water management implemented and how do regions where cross-border water management is implemented and regional cooperation and/or integration schemes are put in place operate differently to where such mechanisms are limited or absent?

3. What does the empirical evidence reveal as to the effects and effectiveness of cross-border water management, hydro-diplomacy in regional cooperation and/or integration? Have these arrangements ensured water, human, and political security?

17.1.1 Context and Background

Water is an environmental asset and a fundamental human right crucial to the socioeconomic development of states and communities. Ecological degradation, land use modifications, climate change, and a suite of other environmental changes impact water availability, access, and quality, rendering the water needs of the people and riparian communities unmet. Such settings are particularly challenging when the water resources are shared between and across nation-state territorial regimes. A large proportion of global surface and subsurface water (groundwater) crosses political boundaries as there are more than 260 river basins that form or cross international borders and cover nearly 50 per cent of the world's land area (Wolf *et al.*, 1999; Sadoff and Grey, 2002, 2005). The rivers and lakes, aquifers, and riparian regions all face complex management challenges, and often, as a result, the communities that rely on them for survival, livelihoods, and income generation are exposed to vulnerable settings. Managing shared water resources, including transboundary water systems (hereafter TWS), has long been a source of tension and conflict, as much as it has also been an example of cooperation and integrative approaches and frameworks (Ovodenko, 2016). The emerging body of academic literature on cross-border water management emphasises the need to look beyond conventional measures of managing this dynamic natural resource as not only essential but a critical requirement for regions and states to ensure ongoing and future stability (Nagabhatla *et al.*, 2021).

Shared water systems and transboundary waters are among the most fundamental sources of common-pool resource problems globally, referring to situations where access to and consumption of such natural resources can be limited as a result of costs or measures to manage formal or informal allocation/sharing arrangements (Gardner *et al.*, 1990). When water resources such as rivers, lakes, wetlands, seas, and aquifers are shared within and at the regional scale between states, the arrangements and agreements for sharing occur through various channels. Regional cooperation or integration also requires written treaties that describe the areas of cooperation in detail and the coordinating arrangements to implement that agreed plan. Sayan *et al.* (2020), referring to the proposed Interbasin Water Transfer (Transaqua) intervention between Lake Chad and the Congo River, stress that governing TWS requires cooperation between the different state and non-state actors, including those directly and indirectly impacted by these shared systems. More often, existing arrangements and mechanisms of cooperation operate at the regional scale. For instance, the Amazon Basin region is governed by two multilateral conventions, i.e., the Amazon Cooperation Treaty adopted in July 1978 and enforced August 1980, and the Amendment Protocol to this treaty, signed in December 1998, that created the Amazon Cooperation Treaty Organization (ACTO) with Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela as the member states. Also, the legal procedures applied to water management, water rights, and regulatory frameworks often differ across borders, including subnational boundaries. Some well-known regional-scale arrangements and frameworks addressing TWS include the Nile Basin Treaty, the Mekong River Commission, and the International Joint Commission (for managing the shared Great Lakes between Canada and the United States).

Global affairs and hydrodiplomacy often intersect at the centre of regional discourses besides trade, economics, security, and policy matters. The emerging hydrodiplomacy discourse supports calls for integrated regional agendas like *The Africa Water Vision for 2025: Equitable and Sustainable Use of Water for Socioeconomic Development*, and presents a hopeful setting for boosting TWS management reforms.

17.1.2 Intersections: Climate Change, Water Security, Hydrodiplomacy, and Regional Cooperation

As demand for water increases due to an expanding and urbanising world population, new pressures on food production, energy, and water systems are apparent. Nagabhatla *et al.* (2012) argue how, along with seasonality dimensions and climate change impacts, the lack of equitable, effective, and efficient multilateral agreements jeopardises the security and sustainability of basin scale resource systems, including TWS. Towards meeting this need, an efficient regional cooperation or integration strategy could allow multiple processes through which nation-states agree to cooperate and work closely together to achieve peace and well-being for their citizens, and to ensure geopolitical stability and sustainability/SDGs implementation in tandem. Most of the existing TWS collaboration norms fall within the purview of regional integration. Such an agreement usually begins with water-sharing rules that often take existing water-use norms as their starting point. It could continue to include integrating economic interests like navigation through a water channel, a food and water security agenda, and climate change adaptation planning, if there is consensus, need, and political will. The scale of the agreement and scope of stakeholders are important components in any integration strategy. To this end, we look at the regional integration in the water sector within the purview of challenges and opportunities underlined in the water security conceptual framework by UN Water (2013) (see the visual shown in Annex 17.1), which defines water security as:

> The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.

By referring to the concept and guideline derived from the UN's Decade for Action deliberations on Water 2005–2015 (Water for Life Decade), a water security agenda was deemed as a global effort to promote the fulfilment of international commitments in the water sphere. This framework provides a proposal for dialogue/discussion towards addressing multiscale water challenges while pointing to intersections with regional cooperation and the climate crisis, emphasising the centrality of water and hydrodiplomacy to achieving peace and political security, sustainability, development, and human well-being. As a global-scale visioning exercise aimed at raising the profile of water in global and regional agendas and drawing focus on water governance programmes and projects, this exercise also helped with the inclusion of water security in the post-2015 development agenda (SDGs); in particular, SDG 6 (water for all) certifies the idea of clean water and sanitation and calls on governments to address challenges in cross-border water management amid other targets related to riparian ecosystems restoration, community participation, wastewater management, etc.

Water cooperation frameworks and approaches, more specifically water sharing, are studied by many experts and scholars, including hydrologists, historians, international development

experts, environmental scientists, political scholars, geographers, economists, and beyond – in which the multidisciplinary nature of cross-border water cooperation mechanisms is inherent. Several factors act simultaneously, and many experts acknowledge the economic attributes of water. In this context, water has distinctive dimensions, including (a) heterogeneous characteristics in quality, uncertainty, place, and time; (b) a combined perspective as a private and public good; (c) production-consumption dynamics; (d) unpredictability in the space-time continuum; and (e) manoeuvrability (Hanemann, 2006). Basin countries have a strong incentive to obtain a sufficient volume of water to run their economic activities, such as agriculture, international trade, investment, exports, and imports. However, geopolitical asymmetries at the regional scale, particularly for states in the upstream and downstream water systems, present a complex setting for cooperative discourses.

Taking note of the above-stated arguments, this chapter examines selected global and regional water-sharing agreements and highlights key challenges in regard to shared waterways and dependent communities, taking note of the socioeconomic impacts and focusing on the examples of the regional water-sharing frameworks in the Nile and Ganges-Brahmaputra-Meghna (GBM) river basins. Besides, the case of study from Africa, more specifically, the situation around Lake Chad and the Congo Basin reflects how regional arrangements and approaches to water cooperation embrace or discount current challenges and future opportunities for regional integration. Overall, the synthesis offers an overview of cross-border water systems and the socioeconomic implications that apply, and showcases selected water cooperation arrangements.

17.2 CROSS-BORDER WATER FRAMEWORKS AND AGREEMENTS

17.2.1 What Are They and Why Are They Needed?

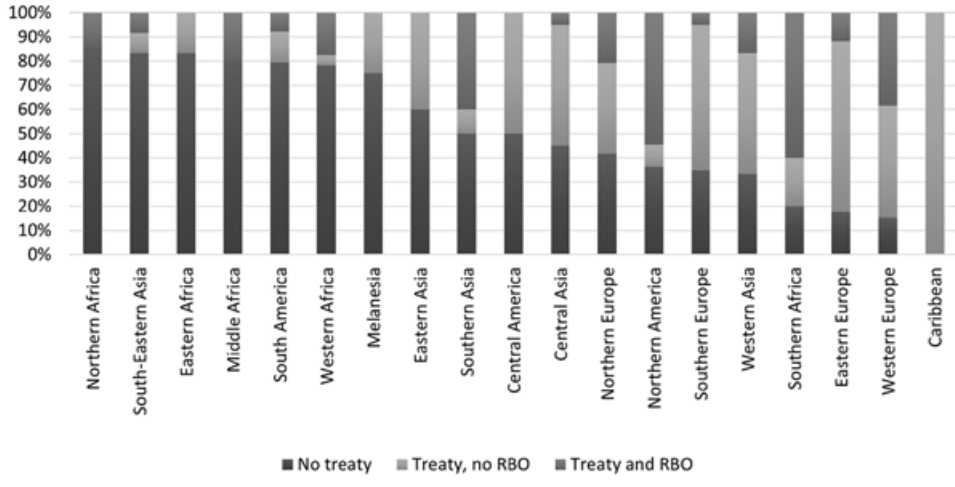
Cross-border management mechanisms can vary in different socioeconomic, sociocultural, and sociopolitical relations between riparian states in the basin or the region. Such mechanisms can range from bilateral agreements (between two states even if the basin is shared across more than two), arrangements (cultural norms and informal principles to share common property resources between communities), legal procedures put in place by states in consultation with other parties sharing the resource, or policies on water sharing and cooperation implemented by regional and financial cooperation agencies like the African Union (AU). For example, in February 2021 in Addis Ababa, Ethiopia, the AU facilitated an assembly (34th Ordinary Session) of heads of states for the formal adoption of the Continental Africa Water Investment Program (AIP), as part of the second phase of the Programme for Infrastructure Development in the Africa Priority Action Plan (PIDA-PAP 2) with a pledge to ensure water security planning in/for member states and cooperation towards regional geopolitical security, as a crucial measure for operationalising cross-border water management. PIDA is an African Union Commission initiative, in partnership with the African Union Development Agency (AUDA), the African Development Bank (AfDB), and the United Nations Economic Commission for Africa (UNECA). The AIP represents a call for action following the High-Level Panel on Water, convened by the United Nations (UN) Secretary-General and President of the World Bank Group in 2018.

At the basin scale, river basin organisations (RBOs) are an example of a regional scale association of actors, institutions, and agencies usually set up by political authorities or created in response to stakeholder demands. RBOs are also tasked with developing cooperative frameworks for the managing of water and the implementation of Integrated Water Resource Management (IWRM) – a framework that can be operationalised at multiple scales. The four key components of IWRM are: (a) to create an enabling environment; (b) to steer institutional effectiveness and stakeholder participation; (c) to manage instruments and frameworks of water cooperation; and (d) to coordinate and support the financing of water management. The framework echoes some of the guiding principles of regional integration and holds the potential to guide regional governance mechanisms for the equitable use of transboundary water (Huitema and Meijerink, 2017); for example, formal agreements organised by RBO could help in coordinating water use (or avoiding over-allocation of water) and build trust and good relations between watercourse states and non-state actors, besides offering assistance with the design and funding of joint infrastructure projects and other measures needed to manage water-related challenges equitably and effectively (Dourojeanni, 2001).

A recent study indicates that a lack of formal contracts or a poorly constructed treaty can cause chaos in water allocation, use, and distribution arrangements (Nagabhatla *et al.*, 2020). The impacts of such can affect not only countries that directly border the water system but also those who indirectly rely on the socioeconomic output tied to the system. The outcomes could be conflicts, migration, and displacement, as elaborated in the UN World Water Assessment Report (WWAP, 2019). While formal, informal, or traditional cooperation mechanisms continue to exist in some of the world's cross-border water systems (see Figure 17.1), a better understanding of social, cultural, and political dimensions can further help these arrangements operate effectively at the regional and local scale. Two points of relevance in the context include: first, the socioeconomic benefits of cross-border water management depend on the sustainable, efficient, and effective use of available water. Thus, treaties, agreements, frameworks, and institutional settings are crucial since interventions in shared resources are challenging for basin nations to design and implement actions. Second, informal cooperation may have functioned in the past, however growing demand for water resources from expanding populations and socioeconomic development, ecosystem degradation, and climate-change-induced hydrological variability is steering nation-states and riparian communities to organise formal treaties for the use of shared water systems.

Mukhtarov and Gerlak (2013) note that RBOs have become a primary mechanism for the effective management of critical water systems in regions and countries worldwide as well as becoming a fundamental first point of negotiation in the case of conflicts related to water quality or water quantity aspects, while also being the site of power consolidation through regional diplomacy. In terms of limitations, they outlined some challenges that RBOs could face in creating effective regional frameworks and shared water resource management approaches – one such is the influence of external funding sources. Quoting the example of the Asian Development Bank (ADB) funded project that led to the creation of the Red River Basin Organisation (RRBO) in Vietnam, Mukhtarov and Gerlak comment that donors' funding and other externalities could be a leverage point in negotiations of resource distribution and water allocation.

Formal arrangements (RBOs) and clear agreements (treaties) for shared water resources can help manage conflicts. Conversely, inadequately designed compacts can exacerbate regional tensions and lead to disagreements and the worsening of relations between parties.



Source: Various data sources until 2018, including transboundary cooperation module Global Water Security, Water Learning Center, UNU, accessed at https://wlc.unu.edu/courses/course-v1:UNU-INWEH+INWEH-01+2019/about.

Figure 17.1 Regional distribution of water cooperation arrangements globally

Noteworthy is the 1973 Treaty between Iran and Afghanistan when the Kajaki Dam was built on the Helmand River. When tensions increased between the two nations in the late 1990s, the Taliban diverted the dam's flow into a canal and cut off the water supply to Iran. The completion of the Kamal Khan Dam (a hydroelectric and irrigation dam project located on the Helmand River) after decades of regional tensions between the states, including episodes of prolonged droughts and variability in the hydrological and geopolitical regimes, points to the relevance of the water sharing treaty that was signed is the 1970s as a mechanism that should be continuously observed and revisited by the parties in order to mitigate future tensions and instability (Rasmussen, 2017). Another example of a deficient treaty design in regional diplomacy is the case of the Grand Ethiopian Renaissance Dam (GERD), which has recently increased tensions between Ethiopia and Egypt, with the latter claiming that such intervention can have the negative consequence of endangering their water security. Details on this case are explained in a later section (17.3.1: Case Study 1). In general, while existing regional treaties have met with mixed results, they hold the potential to be reformed with the aim of addressing the challenges of present times and moving towards establishing more cooperative, equitable, and sustainable water-sharing agreements. Such an agenda could be supported by frequent communication and information sharing to establish and shape effective relations between various nation-states, states, and non-state actors (WWAP, 2015).

17.2.2 Can the Global Governance Agenda Facilitate Cross-Border Water Management?

The UN Water Decades reflect the momentum in international cooperation on water affairs. In fact, some of these global declarations are fundamental to creating, fostering, and encouraging regional discussions. The UN agencies have been steering water for decades, aiming

to improve sanitation, sustainability, and development in the water sector. The declaration of the first United Nations International Drinking Water Supply and Sanitation Decade (1981–1990) or the First Water Decade targeted access to clean drinking water. The measure of success helped bring water to more than a billion people and sanitation provisions to nearly 770 million people. The decade promoted the creation of organisations within countries to implement programmes, use appropriate technology, and strengthen capacity and financial commitments. The second Decade for Water (2005–2015), with the vision 'Water for Life', endorsed efforts to fulfil international obligations in the water sector. It supported cooperation between governments and other stakeholders, nations, and various communities while outlining an integrated agenda to address economic interests, ecosystem needs, and communities' well-being. A key point is that during the implementation of this Decade the number of people with access to improved water facilities grew by 60 per cent of the global population (UN Water, 2013). In September 2015, the UN General Assembly agreed on the SDG agenda and SDG 6 outlined the goal of ensuring the 'availability and sustainable management of water and sanitation for all'. The partnerships that the Decade has enabled since then are helping to boost focus on water-related SDGs, including but not limited to SDGs 13 (climate action), 14 (life below water), and 15 (land).

The most recent Water Decade (2018–2028), the International Decade for Action on Water for Sustainable Development resolution, was adopted by the General Assembly in December 2016. Created to accelerate efforts towards meeting water-related challenges, i.e., access to safe water and sanitation, the water needs of ecosystems, and the mitigation of risk from droughts and floods (UN, 2017), such international water cooperation mechanisms stimulate states and communities to energise the implementation of existing programmes and agendas such as the SDGs, Sendai Framework for Disaster Risk Reduction, and 2015 Paris Agreement, and help the integrated management of water resources at multiple scales. The integration of social, economic, and environmental objectives in water management agendas could only be achieved through cooperation and partnership-based models for the water sector, where these global agendas operate at national, basin, and regional scales. However, despite many international efforts, states and non-state actors face a suite of challenges in managing shared water agreements, with 276 international rivers globally. At the same time, only about half (47%) have a legal agreement (treaty) in place. For more than 600 shared aquifers worldwide, only a single treaty exists – South America's Guarani Aquifer Agreement. The development of cross-border frameworks and formal agreements calls for all parties to be engaged and contribute, including but not limited to water users and managers, local and indigenous populations, and those who are directly and indirectly affected by the water system as a source of livelihood and income generation.

At the global scale, these governance tools could provide a booster for promoting regional harmony in water management, as the SDG target 6.5 calls for the implementation of IWRM and transboundary cooperation at all levels with progress to be measured by indicators 6.5.1 and 6.5.2, which track the degree of IWRM implementation and the proportion of transboundary basin area with an operational arrangement for water cooperation. IWRM implementation will essentially involve formal agreements, and could immensely benefit from existing economic or political regional integration structures and processes.

17.2.3 Why is Cross-Border Water Management Needed to Focus on Regional Integration and the Economic Agenda?

Ansink and Houba (2014) explain transboundary river management's economics, illustrating that resolving water-sharing challenges through the implementation of effective water allocation agreements between riparian states is imperative. Their analysis applied a game theory model to analyse strategic aspects of allocation in shared systems and emphasise efficiency, fairness, and sustainability. In cross-border arrangements at regional and territorial levels, the interplay between conflict and cooperation is apparent. For instance, unilateral actions for water use in one basin country cannot achieve success without transparent consultation with the sharing parties, as conflicting upstream-downstream water management arrangements and resulting cross-border consequences related to water availability and allocation can negatively impact agriculture and energy production, among other water resource uses. Hydroelectricity production is a crucial economic dimension in water-sharing negotiations. As a valuable energy source, water's contribution to the energy domain is well researched. Bhutan in South Asia offers a good example of a country formulating its economic development plans to export hydroelectricity. Its multiphase project, Punatsangchhu-I, began power generation in 2019 and Punatsangchhu-II was initiated in 2013 (Dini *et al.*, 2020; Lescohier, 2020). Both these projects stemmed from bilateral regional agreements on the cross-border river system between India and Bhutan. Bhutan is expanding its capacity for hydroelectric utilisation, compared to the past, when the lack of technical knowledge and economic ability was a limitation (Ogino *et al.*, 2019).

In another example from the Asian region, China's plan for dam construction north of Arunachal Pradesh (a border province in India), where the Yarlung Zangbo (Brahmaputra in India) river flows through a gorge, has been concerning for India and Bangladesh. They raised a number of concerns about water availability, the ecosystem, and biodiversity conservation, plus making the argument that the region, in general, is vulnerable to earthquakes and raising a concern about reservoir-induced seismicity (Dornadula, 2020). Narratives on the economic agenda, scientific assessment, and political discourse in such a case could be different; however, it is clear that the status of regional water diplomacy is still in its juvenile stage and is yet to mature. In an ideal setting of effective regional integration of the water sector, technologically developed basin nations such as India and China could contribute to improving the technical capacity of Bhutan to sustainably capitalise on the GBM waters, while maintaining geopolitical stability in the region. While, India, Bhutan, and China have geopolitical and/or geographic advantages in accessing the common pool of shared resources in the GBM, and have had economic growth-oriented unilateral interventions overall, the basin sharing states have underutilised the opportunity for regional integration and a combined agenda for water and human development. Table 17.1 showcases examples of initiatives in hydroelectricity generation to channel food production and agricultural development in the region.

Regional integration in the water sector is limited, and technologically advanced countries have utilised the opportunity to exploit shared river water to support economic growth plans, exposing the paradox of regional versus sovereign interests. Lack of coordination and benefit-sharing approaches between the riparian states makes it difficult to capitalise on shared water resources systems' full potential. Therefore, regional integration in water management could significantly ensure stable and sustainable water-secure futures. In this reference frame, the flood episodes in China, India, and Bangladesh in 2020 boosted the call to extend

Table 17.1 Joint programmes by the riparian states in the GBM region – selected examples

Project	*Objective*	*Beneficiaries*	*Type*
Proposed Punatsangchhu Hydroelectric Power Project 2003	Generate and fulfil the demand for electricity for Bhutan and India. Capacity: 1,200 MW. After meeting the requirement from Bhutan, the remaining electricity will be supplied to India via the Lhamoizingkha and Alipurduar substations in Bhutan and India.	Communities and populations India and Bhutan	Bilateral (India-Bhutan)
Tala Hydroelectric Project 2006	Power generation and export to India	Communities and populations India and Bhutan	Bilateral (India-Bhutan)
Identified Pancheshwar Multipurpose Project 2008	Cooperation in hydropower, flood control, and irrigation	Communities and populations Nepal and Bhutan	Bilateral (India-Nepal)

Source: FAO (2011).

hydrodiplomacy and cooperation in GBM basin states. These floods were some of the worst in recent times, wherein countries were forced to destroy their dams and use unilateral mechanisms to ease the impacts. China blew up a dam to lessen the flood threat (Associated Press, 2020), but this unilateral action worsened the downstream nations' flooding situation. Taking note of this narrative, one could argue that regional integration for disaster management and climate change adaptation are aspects that directly relate to cross-border water management provisions. This argument is further explained in the selected case studies showcased in the next section.

17.3 WHERE HAVE REGIONAL AGREEMENTS FOR WATER SHARING BEEN IMPLEMENTED?

The regional distribution of water cooperation arrangements at the global scale as shown in Figure 17.1 reflects that only a few regions have operational treaties and supporting structural measures like RBOs to facilitate efficient water-sharing arrangements (see Annex 17.2 for selected examples of regional agreements). It is widely acknowledged that external stressors play a crucial role in influencing the operational efficiency of existing agreements. For instance, population growth is one of the main factors responsible for increasing water demand (WWAP, 2018). Along with South and East Asia, Africa contributes to more than half of the total human population globally. Meeting the basic water needs of these populations includes access to clean water and food security, along with access to energy for people's livelihoods. Ensuring operational and effective water sharing can help augment and improve water access for vulnerable communities and populations. In a regional water-sharing agreement, clarity on secured access rights for all states, irrespective of their regional political and economic standing, is fundamental for safeguarding water, energy, and food security, with economic growth, employment, human health, and overall socioeconomic development as co-benefits. To expand on this statement, the Nile and the Ganges-Brahmaputra-Meghna (GBM) river basins – two of the world's largest water systems in terms of size and population – have been selected as case studies to explain the interdependencies of shared water systems and

complex geopolitical relationships. These basins are shared by 16 different countries, whose economies, directly and indirectly, rely on the water flow, allocation, and sharing mechanisms. Examining how sharing arrangements and cooperation frameworks operate at the regional scale and how cross-border water management dynamics influence the economies of riparian communities and nation-states could help shape a regional integration framework. To further explain this narrative, we have selected another case study from the Central African Region.

17.3.1 Case Study 1: Regional Water Cooperation in the Nile Basin

The Nile basin has long-standing bilateral and multilateral development projects, treaties, and agreements between riparian communities to support shared water resources management and development.

This cross-border river divides 11 African countries: Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Uganda, Tanzania, and Eritrea. These countries also form the member states of the Nile Basin Initiative (NBI), noting that Egypt and Sudan did not sign the agreement and Eritrea maintains observer status within this initiative. While the NBI is one of the more notable multilateral agreements in the region and the states have a protracted history of water cooperation, they also face disputes attributed to mistrust, unilateral water development projects, lack of inclusivity and contribution, and conflict. The collaboration (or lack thereof) between riparian communities on various water use domains and sectors like hydropower generation, agricultural development, water supply (household, industry, and agriculture), infrastructure, and industrial development vary between communities and countries – thus, it impacts to a different degree on the different countries' economies. Therefore, a water cooperation agreement or treaty is not merely of political salience but also has an impact on the economic agendas of the various states that share the resource. Formalising these agreements or treaties also determines how the water-sharing relationships shape the relations between and among states (Table 17.2). Understanding the context surrounding the cooperative history between riparian communities is therefore crucial. Examining the dimensions that can undermine the cooperation framework in the Nile basin case – while the riparian states have a long history of cooperation on water use – as well as undertaking unilateral development projects by the basin states is not uncommon. The examples of such cooperation include the New Valley project and the Toshka project in Egypt, Kenya water supply programmes, GERD, and the Tekez Dam project in Ethiopia. States with unilateral water development projects have often failed to engage with the merits of cooperative and benefit-sharing.

Additionally, historical relationships between water-sharing states, political, social, and cultural emotions, past conflicts, and the current economic and development agendas of each state all have a role in shaping modern-day cross-border water management strategies. The most recent event in this mix is Ethiopia's agenda for hydropower generation and irrigation, the GERD project in the Nile River basin, which is in line with their national economic growth plan. The environmental impact assessments undertaken to reflect the hydrological impact of the GERD in Egypt demonstrated that such intervention could escalate water crisis in their territory and could also cause conflicts in the short and long term if the Dam becomes operational (Gleick, 2014; Kelley *et al.*, 2015). As a result, Egypt considers GERD as the biggest threat to their water security (Mulat and Moges, 2014). The Nile Basin Initiative (NBI) is the only initiative that Ethiopia did agree to sign as a regional water resource development and management

Table 17.2 Selected examples of regional water-sharing arrangements in the Nile Region

Water Cooperation Arrangements	*Stakeholders, Communities and their People, including Affected People*	*Brief Description*	*Approach/Focal Point*	*Challenges*
Nyabanja Water Resource Development Project (2014)	Tororo district, Uganda	Proposed project to build 12 m high and 11.8 mcm storage capacity dam on Dumbu within Sio-Malaba-Malakisi sub-basin	Mitigate floods, irrigation and domestic water supply, and livestock watering	To ensure the proper preparation and implementation of resettlement policy framework
Kabuyanda Water Resource Development Project (2014)	Isingiro district, Uganda	20 m high dam with 10 mcm storage capacity within Kagera River sub-basin	Irrigation, hydropower, livestock and potable water supply	To ensure the proper preparation and implementation of resettlement policy framework
Ngono Valley Water Resource Development Project (2014)	Bukoba and Missenyi districts, Tanzania	Proposed project for abstraction of irrigation water from Lakes Ikimba and Ngono and to build 26 m earth fill dam across the Ngono East River	Irrigation, reclamation of land, and restoration of critically degraded hotspots	Dam may have a negative social impact and negative effects on surrounding aquatic life
Mara Valley Water Resource Development Project (2014)	10 villages in Mara valley, Serengeti district, Tanzania	Project aims to help develop irrigation water supply abstracting from Mara River	Irrigation and the restoration of critically degraded hotspots	People may lose access to economic resources due to land acclamation
Hydromet (1967–1992)	Burundi, Egypt, Kenya, Sudan, Rwanda, Uganda, United Republic of Tanzania (Observer: Ethiopia after 1972 and DRC after 1977)	Examining water balance within the catchments of Lake Victoria, Kyoga, and Albert within the Nile Basin, collection and analysis of meteorological data in Kenya, Tanzania, and Uganda	Water sharing	Exclusion of key parties and their contribution
UNDUGU (1983–1992)	Burundi, Egypt, DRC, Rwanda, Sudan, Uganda, (Ethiopia and Kenya as observer)	To replace Hydromet with broader objective in regional cooperation in terms of culture, environment, trade, and infrastructure	To ascertain Nile Basin Economic Community and promote regional cooperation	Riparians failed to move due to mistrust and conflict

Water Cooperation Arrangements	*Stakeholders, Communities and their People, including Affected People*	*Brief Description*	*Approach/Focal Point*	*Challenges*
Technical Cooperation Committee for the promotion of Development and Environmental Protection of the Basin (TECCONILE) (1993–1999)	Egypt, Sudan, Rwanda, Tanzania, Uganda, DRC (Ethiopia and Kenya as observers)	Riparian minister reformed UNDUGU and established TECCONILE to determine Nile River Basin Action Plan (NRBAP), and Cooperative Framework Agreement (CFA)	Technical cooperation in water and environmental quality	Lack of inclusivity, funding, legal framework, and institutional settings
Nile Basin Initiative (NBI) (1999–Present)	Burundi, DR Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Uganda, Tanzania, Eritrea (Egypt and Sudan did not sign)	NBI launched in 1999 and CFA signed in 2010 by five basin states with opposition from Egypt and Sudan. Support from World Bank as a major development partner and managed through the Nile Equatorial Lakes and the Eastern Nile Subsidiary Action Program.	Benefit sharing. 'To achieve sustainable socioeconomic development through equitable utilisation of, and benefit from, the common Nile basin water resources'	Riparians do not leave unilateral development initiative for using Nile Water

Sources: Government of Uganda (2014); Government of Tanzania (2014); Nile Basin Initiative (NBI) (2016).

arrangement. In the past, Ethiopia's status as an observer in the water development initiatives and Egypt's active involvement were the key dimensions of regional water politics. In 2010, Ethiopia engaged in the NBI, but Egypt left the agreement and declined to sign it. The conflict has intensified since the GERD construction started in 2011, while the Joint Multipurpose Program (JMP) closed in 2012.

The GERD and has been critical to the transformation of water cooperation dynamics in the Nile region, particularly between Egypt and Ethiopia as it is seen as the greatest threat to the water security of Egypt's water development. Therefore, it could provide an excellent case to test the potential of regional integration beyond the standard dimensions of economic and political integration. Katz and Shafran (2020, p. 304) stated that 'a deep-rooted lack of trust among parties, political and economic asymmetric, and conflicting national goals could hinder mutually agreeable water-sharing agreements. Moreover, local-level conflict is common and raises the question of regional initiatives' effectiveness for water sharing'. Though such arrangements offer potential, an assessment of the gaps and the need to establish their plausibility for conflict resolution and peacebuilding (Septon *et al.*, 2019) should be explored in tandem. To clarify, while some key riparian communities are not active in the NBI treaty, this regional arrangement's main achievement in shifting the focus of water cooperation from volumetric sharing to benefit-sharing is important. For regional water diplomacy to expand and play an effective role in regional integration, initiatives like NBI hold assurance.

17.3.2 Case study 2: Cross-border Management in the Ganges-Brahmaputra-Meghna (GBM) Basin

The GBM basin connects five Asian counties (India, Bangladesh, China, Nepal, and Bhutan) and is home to around 40 per cent of the world's population. The socioeconomic development of communities and populations depends on how the regional water-sharing norms are agreed upon and implemented. To this end, the basin states in GBM desire the active and efficient use of shared water systems to foster cooperative agreements and treaties that address the challenges arising from the symmetrical and asymmetrical dimensions of geography, hydrology, and geopolitical positioning of the basin-sharing states. The management in the GBM basin has several challenges, as noted in Table 17.3, taking note of information from 1972 to the present – including agreements, treaties, the establishment of regional water and energy commission, and technical and financial cooperation in the basin.

17.3.3 Case Study 3: Cross-border Management in Central Africa

The region is split between two climate zones: arid to the north as attested by the shrinking of Lake Chad (until 1960s classified as the sixth largest lake in the world), while the south is predominantly tropical. The region has an abundance of natural resources and is home to the largest river basin on the continent, the Congo River, which is also the second-largest river basin in the world. The Lake Chad Basin Commission (LCBC) and the International Congo-Ubangui-Sangha Commission (CICOS) are key agencies at the centre of regional hydrodiplomacy and water-sharing mechanisms. As institutions representing major water management actors at the regional scale, we have examined their interactions – within their common agenda and with international agencies and institutions – to provide an overview of the regional cooperation and integration in the Central African cross-border water governance context. Both agencies are mandated with a water governance agenda and provide a good example to discuss how the water-related crises and conflicts operate in the Lake Chad and Congo basins and what challenges are faced by communities and stakeholders.

The LCBC was set up in 1964 to help coordinate access to and use of its Lake Chad resources among basin-sharing states (eight countries): Chad, Niger, Central African Republic, Nigeria, Algeria, Sudan, Cameroon, and Libya. Egypt, the Republic of Congo, and the Democratic Republic of Congo (DRC) joined the commission with observer status. Despite the commission's long-standing operation, the lake has shrunk to nearly 90 per cent of its capacity over roughly the last half a century. The international community has split opinions about the hydrological disaster in Lake Chad – there are those who think the commission has failed its mandate, specifically due to increasing human population pressures, and others who believe that the regional coordination efforts have managed to reduce the effects of long-term drying trends in the region (Galeazzi *et al.*, 2017; Nagabhatla *et al.*, 2021). The LCBC was gradually enforced in its decisional powers after 1994 when violent crime activities and security issues were flagged during the 8th Summit of the Commission. Galeazzi *et al.* (2017) argue that the political direction of LCBC is centralised around the executive secretary, summits of the heads of states, and the governments. As noted, water issues can be potential drivers of regional tensions and conflicts, and, at the same time, the Boko Haram uprising of 2009 reflects the political, civil, and social instability in the region (Adesoji, 2010).

Table 17.3 Selected examples of water sharing and cooperation in the Ganges-Brahmaputra-Meghna basin (and tributaries)

Water Cooperation Event	*Members/ Parties*	*Brief Description*	*Approach/Focus*	*Challenges*
Indo-Bangladesh Joint River Commission (1972)	India, and Bangladesh	Joint River Commission is a bilateral working group. Its main objective was to forecast and measure floods and cyclones, and recommend and implement the plan for flood control and irrigation.	Water sharing	Lack of enforcement due to unilateral development
Agreement on Ganges Water at Farakka (1977)	India and Bangladesh	Sharing of water in the Ganges River as per flows.	Water sharing	Both countries require water for their own development
Agreement on the Chandra Canal (1978)	Nepal and India	Renovation and extension of Chandra Canal	Water share	
Primary agreement on Teesta River (1983)	India and Bangladesh	Teesta River water will be shared in an equitable way between India and Bangladesh.	Water sharing	Final agreement is not signed yet
Chukha Dam (1988)	Bhutan and India	Bhutan commenced a plan to find out the feasibility of hydropower at Chukha with India's cooperation. The latter agreed to establish a 336 MW run-of-the-river project with a 60% grant and 40% loan.	Cooperative agreement	Unilateral development
Treaty on the Mahakali River (1996)	Nepal and India	A provision for using water from the river equally	Water sharing	Lack of inclusivity and trust
Ganges Water Sharing Treaty (1996–2026)	India and Bangladesh	Regulates water sharing at Farakka since water diversion causes problems in India and Bangladesh	Water sharing	Lack of trust and unilateral development
BRIDGE GBM (2016–2018)	India, Bangladesh, China, Nepal, Bhutan	This project was funded by the Asia Foundation. It establishes the GBM CSO network and develops the GBM CSO vision. It can reduce the gap between riparians and plays a role in sustainable transboundary water resource management.	Reinforces capacity and the voice of CSOs to extend regional water cooperation for economic growth and livelihood security	Absence of common legal and institutional framework, absence of basin-level thinking

Sources: FAO (2011); UNFCCC (2012); De Stefano *et al.* (2010).

CICOS was created in 1999 to facilitate navigation in its river systems, comprised of the Congo River and its two main tributaries the Ubangui and Sangha. The basin is shared by 10 countries, including DRC, Central African Republic (CAR), South Sudan, Rwanda, Zambia, Angola, Republic of Congo, and Cameroon. CICOS has six member states: CAR, Angola, DRC, Republic of Congo, Cameroon, and Gabon (Medinilla, 2017) and follows a standard river basin commission model with a three-level structure, i.e., a decisional body, an advisory body, and an executive agency (the general secretariat). Its mandate has evolved to integrate, along with navigation promotion, a wide range of water management challenges. The basin has enormous potential in terms of the quantity and variety of resources. However, the

region's political instability and basin-sharing states do not allow stable regional coordination between the riparian countries. Sustainable management planning and equitable sharing of the resources between member states and a minimum distribution for the development of its population is a persisting need (Nagabhatla *et al.*, 2021).

For many years, as regional water cooperation institutions, the LCBC and CICOS have had one enterprise in common, i.e., the Inter-Basin Water Transfer (IBWT). First proposed by an Italian engineering firm in the 1970s and implemented into political agendas in the 1980s, the project involves diverting an estimated 5 per cent of the Congo River Basin's annual flow to revive Lake Chad (Sayan *et al.*, 2020). While the proposal holds the potential to strengthen regional integration through water-sharing agreements, many dimensions of the IBWT have been questioned. Its mandate on sustainability management has been challenged, particularly by the Congo Basin states, while issues including the lack of consensus over repartition of water, scientific aspects such as evaporation, environmental degradation of ecosystems, and habitat loss linked to the construction work remain unresolved. IBWT discourse also lacks focus on specific issues such as acknowledgment of the historical change of Lake Chad's water levels. A detailed account of IBWT by Sayan *et al.* (2020) highlights various challenges to its realisation, including the exclusion of CICOS from the negotiations and DRC's observer status in LCBC not helping in representing the interests of the state in that discourse. However, IBWT could serve as a potential platform to steer regional cooperation and integration, if the two regional organisations were able to link their actions and decision-making to take a collaborative and consultative approach. It is also vital to note that the CICOS mandate does not provide a platform for discussion on security matters, unlike that of LCBC. Altogether, the interactions between LCBC and CICOS reflect a tense partnership.

Overall, this complexity in cross-border water management in the Central African region presents a typical case to examine the regional political and socioeconomic trends in such systems. Political transitions and turbulence in the region, coupled with uncertainty and unpredictability, as well as the multitude of stakeholders (e.g. member states of the regional water management commissions, national agencies, indigenous groups, community organisations, and the private sector), all directly or indirectly influence transboundary water management arrangements (Sayan *et al.*, 2020). Often, such agreements are driven by the government with an economics-oriented agenda, and communities are rarely consulted. Merrey (2009) advocates for African institutional models that would not follow the current western framework, but rather be built upon existing and established indigenous models and local knowledge. Local stakeholders must be supported, and regional diplomacy encouraged (Nagabhatla *et al.*, 2021), especially in the case of existing institutions like the LCBC and CICOS, where historically the local population's interests have not only often been neglected but are still regularly ignored entirely.

17.4 WHAT DOES THE EMPIRICAL EVIDENCE TELL US?

Shared water systems can be a source of cooperation and collective socioeconomic development in the basin states. Annex 17.3 showcases selected water development and management projects and agreements for Nile waters from a benefit-sharing perspective. The listed initiatives to manage shared water in the Nile Basin can be categorised into three types: hydroelectricity, agriculture, and sustainability-focused interventions, projects, and programmes.

Several projects address hydroelectricity production, trade and infrastructure development for the transmission of the energy produced, and contribute to the socioeconomic development of communities. At the global scale, the 'Water Convention' (adopted in Helsinki in 1992 and enforced in 1996) created a discussion space for the protection of water rights and provides an enabling environment for water governance to be inclusive and reflective of multiple stakeholders and interests; however, it fell short on capturing the specific socioeconomic, sociopolitical, and sociocultural settings at regional and sub-regional levels. In that context, Qaddumi (2008) proposes 'benefit sharing' as a strategy for the regional integration of water resource management, calling for a shift of focus from the physical volume of water to integrating various values and political, economic, environmental, and social benefits derived from collective water use. The argument that cooperation and benefit-sharing approaches in regional water resource management can contribute to a more effective socioeconomic development carries potential, and insights like that from Phillips *et al.* (2006) sorting the benefits into three categories – environmental, security, and economic – and Sadoff and Grey's (2002) synthesis elaborating the context of the benefits as (a) cost reduction due to the river; (b) benefit to the river; (c) benefit from the river; and (d) benefit beyond the river, serve as good references to refine and reform existing agreements on shared water systems.

The growing body of empirical studies highlight that water-related conflicts in various regions around the globe result in direct and indirect consequences for the communities that rely on these systems for survival, and these conflicts will remain present until we can ensure equal rights for water resources in river basins (Nagabhatla *et al.*, 2020; Falkenmark *et al.*, 2000; Wichelns *et al.*, 2003). Meanwhile, the adverse impact of such episodes on water security and the accompanying increasing water demand cannot be disregarded. Serageldin (2009) remarks with some urgency that while the world has been fighting for oil, the next century's battle will be for water. The UN Water (2013) water security framework that has been jointly created by inputs from experts in different thematic domains and geographies could offer guidance to outline a collective strategy for sharing water resources while managing the socioeconomic benefits to the people and communities and strengthening the regional discourse to deliver these benefits. In this framework, water security dimensions such as drinking water and energy supply, industrialisation, capitalisation of macroeconomic growth potentials, development patterns, and poverty reduction of basin countries rely on effective cross-border water management (Qaddumi, 2008). Lack of water security is one of the reasons why nation-states may face internal unrest, displacement or outbound migration of their citizens, and political instability. Arfanuzzaman (2018) argues that the unilateral diversion of water in an upstream country hinders downstream countries' economic prosperity. In such contexts, integration becomes vital and cooperation necessary.

In the context of the water-climate change nexus, in particular the disaster-management-related projects/programmes/interventions that support the development of irrigation systems for drought management, flood management could strengthen transboundary water cooperation and regional water management policies at the regional level, along with technological innovations like early warning systems. It would be fair to say that the integration of water, food and climate security agendas not only promise better socioeconomic opportunities but also long-term regional development. Regional water cooperation can present a significant opportunity to establish a platform bringing people together in a shared agenda to manage various facets of regional dynamics, peace, and development opportunities. In order to achieve regional integration in the cross-border water management settings, the need for multilateral

initiatives is evident, so is the need to manage stress created by unilateral interventions. Appropriately spotlighting the achievements of new paradigms in regional water cooperation could bring basin states together to achieve common sustainable development objectives.

To create a win-win situation, inclusive economic growth and the development of all basin states, ensuring an equal or fair share of water, is paramount, and regional integration offers new thinking on how to address the water crisis through cooperation-based strategic arrangements. In that context, it is important to examine selected examples of regional arrangements such as CICOS and LCBC within the water security, regional relations, and geopolitical diplomacy fields. The narrative by Lala (2020) on the rise of African diplomacy and nations 'organising themselves to build a continental order' (p. 8), with part of such diplomatic efforts including cooperation and management of shared water resources, reinforces that hydrodiplomacy stands at the centre of regional negotiations, in keeping with this new orientation. The African Union's Water Vision 2025 can form a good ground for regional integration in the water sector. The vision outlined by UN-Water Africa in collaboration with the Economic Commission for Africa, the African Union, and the African Development Bank aims to unleash the potential of Africa's water resources through following a framework articulated around the strengthening of the governance of water resources and the financial base for the desired water future, meeting urgent water needs and improving water wisdom. This last point especially accords with UN International Water Decade for Action (2018–2028) and calls for raising awareness, spreading knowledge and evidence, and, finally, holding elected representatives accountable. The UN Water/Africa Water Vision 2025 (UN Water/Africa, 2004) openly speaks to this accountability stating, 'what remains is mobilising the political will, grassroots support, and sustainable financial resources to make the Vision a reality' (p. 28).

17.5 CONCLUSION

The chapter focuses on only a few of the dimensions that influence cooperative frameworks, global/regional water cooperation, and cross-border water governance approaches; many other factors apply, including the effects of (neo)colonialism, regional history, geopolitical relations, cultural systems, and values, among others. However, what can be ascertained is that strengthening water cooperation and diplomacy at the regional level is a significant challenge and also a tool to foster regional integration. Employing a regional focus on cross-border water cooperation requires the engagement and involvement of all parties who are directly and indirectly affected by and reliant on shared water systems, including but not limited to state and non-state actors. To effectively manage these various interests, regional mechanisms of water cooperation should also clearly ascribe to the global guidelines of Human Rights to Water (Resolution 64/292 of the United Nations General Assembly 28 July 2010) (UN, 2010) and other institutional mechanisms such as the Water Convention that emphasises equitable, efficient, and effective access to and the sharing and management of water resources. The process needs to engage with a particular focus on the needs of marginalised people.

Additionally, in cross-border water management settings, balancing multiple interests could be a challenging task as the needs of local stakeholders and the mandate of funding agencies may or may not align. Strong regional frameworks could help tackle such barriers with tactics of negotiation, equitable representation, consensus-building, and cooperation models. Many RBOs have attempted to evolve in their composition and duties to address current challenges

in the water sector. Their jurisdictional boundaries and role are increasingly focusing on climate change agendas such as flooding or drought, stakeholder participation with attention on communities and grassroots actors, and agencies at the basin-level, for example, through the organisation of water forums. Furthermore, RBOs are also extending measures to generate revenue via the collection of fees or by attracting grants and/or loans.

While we acknowledge that global frameworks could guide regional deliberations on managing shared water systems, our discourse underscores that an intersectional approach is crucial for water cooperation and establishing a regional integration strategy for water management. Moreover, a regional framework founded on globally acknowledged principles of water governance such as Resolution 64/292, the agenda outlined in the SDGs, particularly SDG 6, and taking note of local and indigenous knowledge could result in a complex mix of formal and informal norms depending on the place-based setting. However, such an agenda can provide for a base frame for balanced top-down and bottom-up mechanisms of cooperation with strong buy-in and integrated agreements to meet all stakeholders' needs.

Overall, this synthesis offers an overview of the socioeconomic implications of cross-border water systems while showcasing how existing arrangements of water cooperation acknowledge that global frameworks guide regional deliberations on managing shared water systems. It is observed that dynamic agreements on shared water systems significantly affect all facets of riparian communities' lives, livelihoods, income, stability, and well-being. Therefore, a practical and efficient regional integration strategy for water management could help enhance the universal image of water cooperation.

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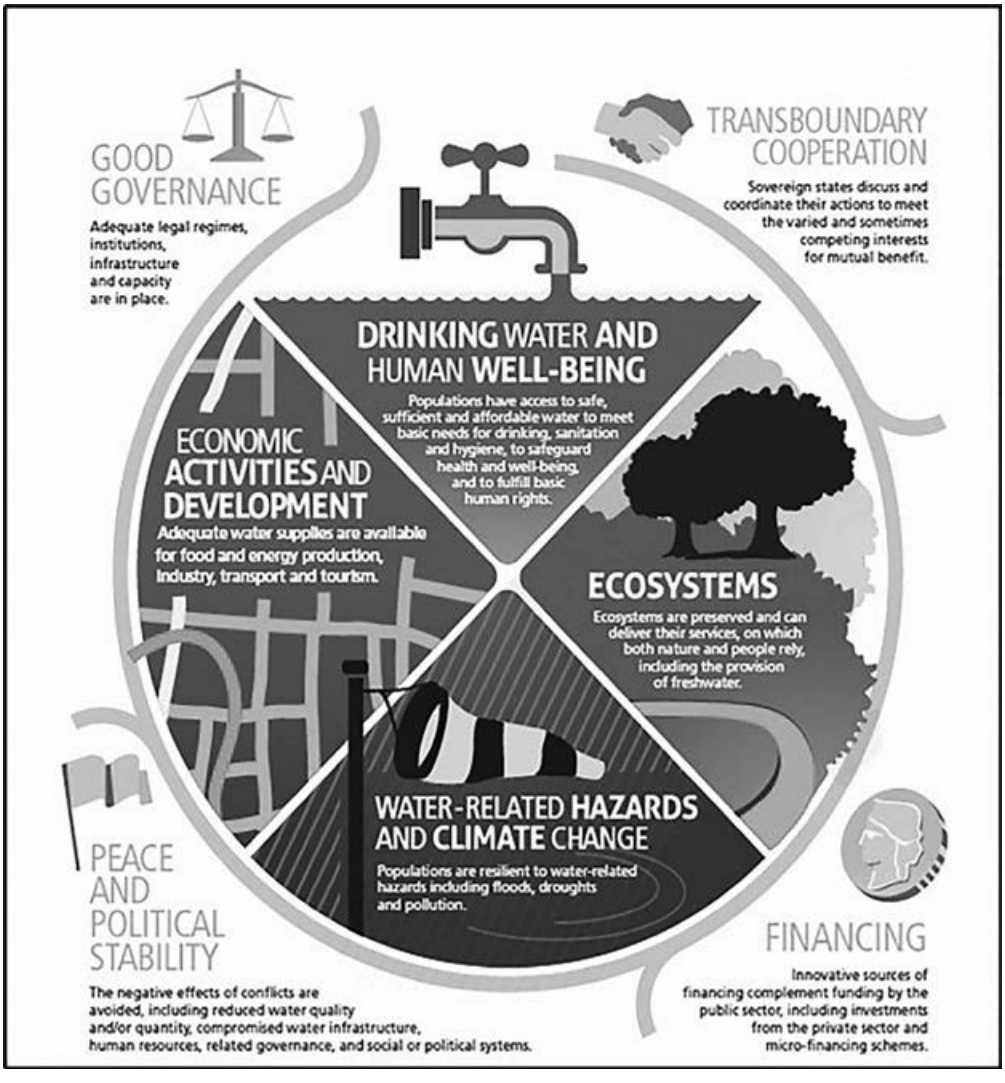
ANNEX 17.1 WATER SECURITY CONCEPTUAL FRAMEWORK

The water security conceptual framework outlines key dimensions of water management and positions on transboundary cooperation among critical aspects of planning global, regional, and national water security.



Source: UN Water (2013) (What is Water Security? Infographic – article published 8 May 2013), accessed at https://www.unwater.org/sites/default/files/app/uploads/2017/05/unwater_poster_Oct2013.pdf

ANNEX 17.2 SELECTED REGIONAL WATER-SHARING AGREEMENTS

Regional Agreements	*Participants*	*Type*
1995 Mekong Agreement	Cambodia, Lao, Thailand, Vietnam	Multilateral
Agreement on the Nile River Basin Cooperative Framework	Burundi, Ethiopia, Kenya, Rwanda, Tanzania, Uganda	Multilateral
The 1987 Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System	Botswana, Mozambique, Tanzania, Zambia, Zimbabwe	Multilateral
North-Western Sahara Aquifer System (NWSAS)	Algeria, Libya, Tunisia	Multilateral
Nubian Sandstone Aquifer System (NSAS)	Chad, Egypt, Libya, Sudan	Multilateral
1986 Lesotho Highlands Water Project Agreement	Lesotho, South Africa	Bilateral
1996 Treaty between India and Bangladesh on Sharing of the Ganga/ Ganges Waters at Farakka	India, Bangladesh	Bilateral
1992 Komati River Basin Treaty	Kingdom of Eswatini, South Africa	Bilateral
Tripartite Interim Agreement for Co-Operation on the Protection and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses	Kingdom of Eswatini, Mozambique, South Africa	Multilateral
1998 Agreement on the Use of Water and Energy Resources of the Syr Darya Basin	Kazakhstan, Kyrgyzstan, Uzbekistan	Multilateral

Source: Ecolex (n.d.).

ANNEX 17.3 SELECTED MAJOR WATER DEVELOPMENT AND CROSS-BORDER MANAGEMENT PROJECTS FOR THE EFFECTIVE AND EFFICIENT UTILISATION OF AFRICA'S WATER

Project	*Objective*	*Beneficiaries*	*Type*
Implementation of Lakes Edward and Albert Fisheries Project (LEAF I) (2005–2008)	To generate reproducible experiences in fisheries management in a transboundary context	People of DR Congo and Uganda	Bilateral (DR Congo and Uganda)
Multinational Lakes Edward & Albert Integrated Fisheries & Water Resources Management Project (LEAF II) (2016–2021)	To sustainably use fisheries and natural resources in Albert Basin and Lake Edward	People in 26 districts of Uganda and 2 Provinces in DR Congo	Bilateral (DR Congo and Uganda)
Regional Rusumo Falls Hydroelectric Project Implementation Agreement (2013)	To address the severe shortage of electricity that negatively affects the economy	People of Burundi, Rwanda, and Tanzania	Multilateral (Burundi, Rwanda, and Tanzania)
Ethiopia Sudan Interconnection (2012)	Power Trade	~ 1.4 million people	Bilateral (Ethiopia, Sudan)
Implementation of the Interconnection of Electric Grids of the Nile Equatorial Lakes Countries Project (2009–2016)	To improve the quality of life of NEL countries through increasing the cross-border sharing of power and energy	People of participating countries	Multilateral (Burundi, DR Congo, Kenya, Rwanda, and Uganda)
Sio Malaba Malakisi River Basin Management Project (Phase II) (2013–2017)	Biodiversity protection, livestock management, sustainable fishing, sustainable land use, conservation agriculture, and sanitation improvement	People in these countries	Bilateral (Kenya & Uganda)
Sio Malaba Malakisi Sub-Basin Implementation of Sub Catchment Management Plan (2013–2017)	Integrated infrastructure development of transboundary water resources development	~ 2 million people	Bilateral (Uganda and Kenya)
Approval of the Nile Equatorial Lakes Investment Program (2020)	'To optimise and implement a NEL basin water, energy and food security program to boost NEL member countries' economic growths, improve rural livelihoods as well as reduce poverty levels and safeguard the Nile River ecosystems'	People in these countries	Multilateral (Burundi, DR Congo, Uganda, Sudan, Kenya, South Sudan, Egypt, Rwanda, Ethiopia, and Tanzania)
Implementation of Regional Agricultural Trade and Productivity Project (2009–2012)	To promote pro-growth and enhance food security in the Nile Basin	People in the participating countries	Multilateral (Burundi, Kenya, DR Congo, Sudan, Tanzania, Rwanda, and Uganda)
Approval of Eastern Nile Watershed Management Project (2009)	Restore watershed integrity of Eastern Nile	670,000 people	Multilateral (Egypt, Ethiopia, and Sudan)
Implementation of Integrated Forest Management Program for Mau Forest (2017–2019)	Integrated and development of transboundary river water	162,000 people	Unilateral (Kenya)
Approval of Angololo Water Resources Development Project (2015)	Supply potable and irrigation water, and generate hydropower	People in 3 districts in Eastern Uganda and 2 counties in Kenya	Bilateral (Kenya and Uganda)

Project	*Objective*	*Beneficiaries*	*Type*
Implementation of Kagera River Basin Management Project (2013–2017)	Build up sustainable cooperative framework for joint water resources management of Kagera River and develop the living conditions of people along with conserving the environment	People in 11 provinces in Burundi, 25, 5, and 4 districts in Rwanda, Tanzania, and Uganda respectively	Multilateral (Burundi, Rwanda, Tanzania, and Uganda)
Implementation of Akanyaru Multipurpose Water Resources Development Project (2020–2022)	Increase domestic and agricultural water supply, and access to electricity	24,948 farmers and 614,200 people	Bilateral (Burundi & Rwanda)
NELSAP Trans-Boundary River Basin Management Program (2006–2014)	To establish a sustainable framework for joint water resources management in the Kagera, Mara, and Sio-Malaba-Malakisis basins	People in the participating countries	Multilateral (Burundi, Kenya, Rwanda, Tanzania, and Uganda)

Source: Nile Basin Initiative (NBI) (2016).