

WORKING PAPER

Water Cooperation Global Outlook Initiative

Water Cooperation for Accelerated Agenda 2030 Implementation: Special focus on transboundary water cooperation in Africa



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This working paper

The International Centre for Water Cooperation (ICWC) has been undertaking an initiative, started in 2022, to promote water cooperation around the world. Against this aim, the initiative assesses the status and trends of water cooperation at different scales, and draws policy and practice lessons. Based on these insights, it then analyses country preparedness to cooperate on water to support contextualized water cooperation solutions, advocating their importance to national and international decision-makers and water managers.

This paper outlines the Water Cooperation Global Outlook initiative and its basic elements. It sets out the case that many countries and shared water basins are facing cooperation deficits, and outlines the importance of progress on water cooperation across sectors, stakeholders, scales and borders. In turn, this will improve water security for all.

The document highlights the basic water cooperation assessment framework used to analyse (i) transboundary water and (ii) water cooperation at the national and subnational scales. This framework is structured against three main questions of water cooperation: why, what and how?

- The component assessing the *why* of water cooperation is about the motivations, drivers and incentives to cooperate.
- The assessment of *what* characterizes cooperation is divided into four broad factors: (A) governance and leadership; (B) information and data; (C) joint programming; and (D) financing.
- The question of *how* cooperation is manifested and implemented relates to the various mechanisms that are developed to guide and set the rules for water cooperation.

The paper highlights the initial cooperation challenges identified in the assessment undertaken by ICWC in 32 basins in Africa. This is the initiative's first analysis of some of the key challenges of cooperation involving transboundary waters in Africa.

The final version of the *Water cooperation global outlook report* – to be launched at World Water Week 2023 (20–24 August in Stockholm) – will present the full analysis of the review of cooperation trends and innovations around transboundary waters plus the full assessment, with a global outlook, of national and subnational water cooperation.

The final part of the present paper outlines a set of water cooperation recommendations and voluntary commitments to be made by ICWC to the Water Action Agenda of the United Nations 2023 Water Conference, which is set to take place on 22–24 March.

The International Centre for Water Cooperation

The International Centre for Water Cooperation (ICWC) is a long-term collaboration between the Stockholm International Water Institute (SIWI), the Government of Sweden and the United Nations Educational, Scientific and Cultural Organization (UNESCO). It is a [UNESCO Category II water-related centre](#) as part of the [Intergovernmental Hydrological Programme](#). The Centre is hosted by SIWI. The mission of ICWC is to generate and share knowledge on the state, trends and benefits of water cooperation, and to strengthen the capacities of technical and political actors for increased cooperation with respect to shared waters. More information is available at the Centre's [website](#).

1. Introduction

The context: mounting global water challenges and management complexities

Many countries are facing the increasing challenges of the social, economic, political and ecosystem risks of too little, too much and too polluted water. Accessible and high-quality freshwater is, in space and time, a finite and highly variable resource. Water scarcity, water disasters and extreme weather events (such as floods and droughts), and failures of climate change mitigation and adaptation continue to rank among the globe's top risks, as assessed in the World Economic Forum's *Global risks report* (WEF, 2022).

Projections by the Organisation for Economic Co-operation and Development (OECD, 2012) show that 40 per cent of the world's population currently lives in water-stressed river basins, and that water demand will rise by 55 per cent between 2000 and 2050. The increased pressures on water may displace as many as 700 million people by 2030.

Water pollution has worsened in almost all rivers in Africa, Asia and Latin America since the 1990s. Up to 80 per cent of all wastewater is discharged into bodies of water without any treatment, posing severe health risks on all life. Intensive and disruptive land use practices in forestry and agriculture magnify the negative impacts on water quality and flow. All this has an adverse impact on people's health and livelihood opportunities and worsens the environmental conditions in freshwater, terrestrial, coastal and marine ecosystems, in turn damaging the vital ecosystem services provided by water bodies.

Growing economies – with population growth, increasing demands for food and energy, urbanization, and with climate change – exacerbate the challenges linked to the sharing of under-pressure water resources. Still, more than 60 per cent of transboundary river basins, and an even higher proportion of shared groundwater aquifers, lack any cooperative and adaptive transboundary management mechanisms. Where cooperative mechanisms are in place, they are often under-resourced. This seriously impedes their effectiveness.

The world is off-track to meet many of the Sustainable Development Goals (SDGs), and SDG 6 – clean water and sanitation for all – is no exception; achieving some of the other SDGs is also highly dependent on achieving SDG 6. The Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (UNICEF & WHO, 2022) reports that two thirds of countries will not achieve SDG 6 by 2030. More than 120 countries are not on track to meet sanitation targets, and people in six out of every ten countries are left without safely managed sanitation. Three in every ten countries, too, are not yet using safely managed drinking water services, with 785 million people still lacking basic services.

The progress on water cooperation specifically also looks gloomy, against SDG target 6.5 – to “implement integrated water resources management at all levels, including through transboundary cooperation as appropriate”. A 2021 United Nations Environment Programme report (UNEP, 2021) suggests that 107 countries are off-track to reach this target, and the global rate of progress to implement integrated water resources management will need to double.

Cooperation is an important aspect to meeting water challenges at all scales. Water unites people more often than it divides them (despite the impression that may be given by the role of the news media to focus on water's part in conflicts). Yet, while partnership and unity may be important, water management and governance tend to be fragmented and face great deficits in cooperation. International multilateral systems and most countries are at a crossroads on the decision about how far to follow the pathway away from business as usual. This pathway is characterized by transborder cooperation across stakeholders, sectors and scales – and taking it can help to accelerate the implementation of the 2030 Agenda. The United Nations 2023 Water Conference, set to take place in New York 22–24 March, is taking a step in the right direction: water cooperation has been identified as one of the main areas for dialogue.

Why water cooperation matters

Water cuts across borders, sectors, stakeholders and scales

Most of the world's freshwater sources cross international and national administrative borders. Globally, around 300 river and lake basins and more than 500 aquifer systems are transboundary. Altogether they flow through 153 countries sharing freshwater sources with at least one neighbouring nation (McCracken & Wolf, 2019; UNESCO 2021). In many countries, water management and uses are at the catchment and subcatchment levels, transcending traditional subnational administrative borders. This transborder nature of water resources means that the use or exploitation of upstream water can directly affect the availability and quality of downstream water, with the effects running between countries, regions, districts, cities and communities. Without substantial state-level cooperation between and within riparian areas, the growing pressures on water resources combined with the effects of climate change seriously challenge countries' abilities to ensure the availability and sustainable management of water and sanitation for all and thereby meet SDG 6 (CADRI, 2020; Swain & Öjendal, 2018).

Social, economic and ecosystem benefits that accelerate SDG progress

Strengthening water cooperation brings positive outcomes as it can reduce costs and increase levels of trust, peace, stability, human well-being and social welfare. Cooperation can also spur collective adaptation to climate change and enhance environmental sustainability (see for example, Ide, 2019; Swain & Karim, 2022; UNECE, 2015).

Huge costs in non-cooperation, conflict and inaction

The cost difference between good and bad water governance could add up to more than 20 per cent of GDP for Central Asia by 2050, according to the World Bank (2016). The costs for non-cooperation in shared waters in Central Asia, meanwhile, added up to more than USD4.5 billion a year, according to a 2017 study (Pohl et al.). The actual costs could be much higher since the study did not account for any interaction effects between sectors and across societies, which are significant, nor the many indirect social and environmental costs that are difficult to measure economically. Specifically examining the Ganges–Brahmaputra–Meghna river, the annual cost of the lack of transboundary cooperation was estimated by one study to be USD14.2 billion (Swain & Karim, 2022).

Water cooperation matters even more as management complexities develop

As water management becomes more dynamic through integrated approaches and multilevel governance, with a greater complexity of actors involved, cooperation becomes even more important. The role of cooperation between a growing number of both state and non-state actors, to represent different sectors and at various scales, is gaining importance in the shift towards integrated and adaptive approaches to water management and polycentric governance systems. Governments undoubtedly remain the critical entities for driving the development of law, policy and regulation, but an increasing number of private and civil society actors are assuming greater roles in policy development and implementation (Pahl-Wostl, 2015).

As a process, cooperation can help to address water-related synergies and trade-offs. But such cooperation is likely to be a non-starter if there are no formal or informal mechanisms in place for the complexity of actors to meet, debate and deliberate on their views and interests.

2. Aims and methods of the Water Cooperation Global Outlook initiative

Aims

The International Centre for Water Cooperation (ICWC) has been undertaking this initiative, started in 2022, to promote water cooperation around the world. Against this aim, the initiative assesses country preparedness to cooperate by analysing the status and trends of water cooperation at different scales, and draws policy and practice lessons. Based on this knowledge, it then seeks and supports water cooperation solutions, aiming, in national and international policy circles, to advocate their importance.

While there has been much research and many initiatives focusing on water conflicts at the transboundary level, there have been fewer systematic studies on water cooperation – on what makes it work or not – at the international, national and subnational levels. This initiative takes on that different approach, since it emphasizes cooperation and preparedness, and highlights water cooperation at different scales. Such enhanced water cooperation across sectors, stakeholders and scales is a critical means to accelerate the implementation of national and international development frameworks and commitments. See the box for details of the initiative’s aims and outputs.

The initiative’s aims and outputs

The Water Cooperation Global Outlook initiative of the International Centre for Water Cooperation (ICWC):

- emphasizes *water cooperation* – and what makes contextualized cooperation work at the outset
- focuses on country and water basin *preparedness* in water cooperation
- highlights water cooperation at *different scales*.

Aims

1. Assess and learn
 - advance the knowledge on country and shared water basin preparedness for water cooperation, and the mechanisms for improved cooperation on shared water resources at different scales.
2. Seek and support solutions
 - in response to demand, support governments and other decision-makers on contextualized water cooperation policies, planning, capacity, and stakeholder platforms.
3. Advocate and raise awareness
 - contribute to keeping water cooperation on the agenda for key water decision-makers, both globally and nationally, as means to accelerate frameworks such as the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction 2015–2030 and the Paris Climate Agreement 2015.

Outputs

- *Water Cooperation Global Outlook Report*
 - a main output of the initiative is the annual report assessing global water cooperation at different scales, from subnational and national to transboundary. With a global outlook, the report will include a detailed regional focus on transboundary water cooperation. The first edition will take a deep dive into the status of this in Africa and the following ones will report on other continents.
- Range of other information products
 - the initiative will produce case studies, thematic reports on the characteristics of water cooperation, a methodology report, and policy briefs.
- Capacity development and dialogue
 - in response to demand, the initiative will develop policy advice and capacity-development support and will convene national policy dialogues on water cooperation.

The initiative is supported by the Governments of the Netherlands and Sweden, with the *Global Outlook Report* being developed in partnership with the Research School for International Water Cooperation at Uppsala University, Sweden. The [Mediterranean](#) and [Southern Africa](#) partnerships of the Global Water Partnership and the [Inter-American Development Bank](#) have made case-study contributions to the first report; ICWC is grateful to these partners and is open to bringing on additional parties to the initiative. The opportunity for them is to multiply the thematic and case studies and so gain the benefits of sharing – and learning from – global experiences in water cooperation.

Methods

Definition of water cooperation

Cooperation may be defined as the action or process of two or more actors working together to the same end. While the definition is simple, its practical application can be challenging. Actions need to be undertaken among a set of actors sharing a joint water resource. While they preferably strive towards similar goals, they sometimes have asymmetric power relations and disparate interests, with varying capacities for negotiation.

Water cooperation refers to a wide range of interactions between actors sharing water resources such as rivers, lakes and groundwater aquifers, across various international, national and subnational borders. It broadly relates to multiple uses, management and aspects of water, and includes:

- water resources management
- water supply and sanitation
- water quality
- climate change adaptation and resilience
- flood and drought management.

Cooperation can take place at different scales – such as the transboundary, national and subnational (regions, districts, cities, towns, municipalities) scales – and at the catchment and subcatchment levels. It can take many shapes (formal, informal, technical, political and economic cooperation) and can result in interactions and processes that range anywhere from haphazard, infrequent and uncoordinated, to a level of cooperation that results in the signing of framework agreements. The latter may set in place joint institutions or undertake common infrastructure investments to manage and reap the benefits of shared water resources.

Assessment framework

This initiative has developed a robust assessment framework to generate the evidence-based learning that can inform the options and solutions for contextualized water cooperation. It examines the three main components of water cooperation set out in Figure 1.

Why?

The component examining the *why* of water cooperation seeks to understand the reasons for the cooperation happening in the first place (or, conversely, why actors may be shying away from cooperative outcomes). This is about the motivations, drivers and incentives for cooperation.

What?

On *what* characterizes the cooperation, the framework looks at four basic factors, A to D. These have been identified based on what characterizes the risks, opportunities and challenges of water cooperation. The assessment findings are structured in section 4 against the four factors – (A) governance and leadership, (B) information and data, (C) joint programming and (D) financing. (See the beginning of section 4 for further rationale of the development of these factors.) The following two sets of indicators have been developed to assess these factors from the perspective of cooperation.

1. The first set of indicators is targeted for the assessment of water cooperation status and trends at the transboundary basin scale:
 - the data on existing water cooperation are collected from 32 basins in Africa that are shared between two or more countries
 - some of this information comes from in-depth case studies, including in-person interviews.
2. The other set of indicators widens out to water cooperation at the country level and includes both the national and subnational scales; these include existing global monitoring data that can be related to water cooperation, with the following examples from United Nations monitoring systems:
 - data on progress against SDG 6, especially target 6.5.1 on IWRM implementation, 6.5.2 on transboundary cooperation, and 6.b.1 on stakeholder participation
 - data in the UN-Water global analysis and assessment of sanitation and drinking-water (GLAAS) 2022 report (UN-Water, 2022).

How?

The final component of the assessment framework is the *how* of cooperation. How is the water cooperation manifested and implemented? This focuses on the various mechanisms developed to guide and set the rules for cooperation. A range of factors influence the way these are defined and exercised, including economic, political and social power, capacity and the quality of relationships between different actors.

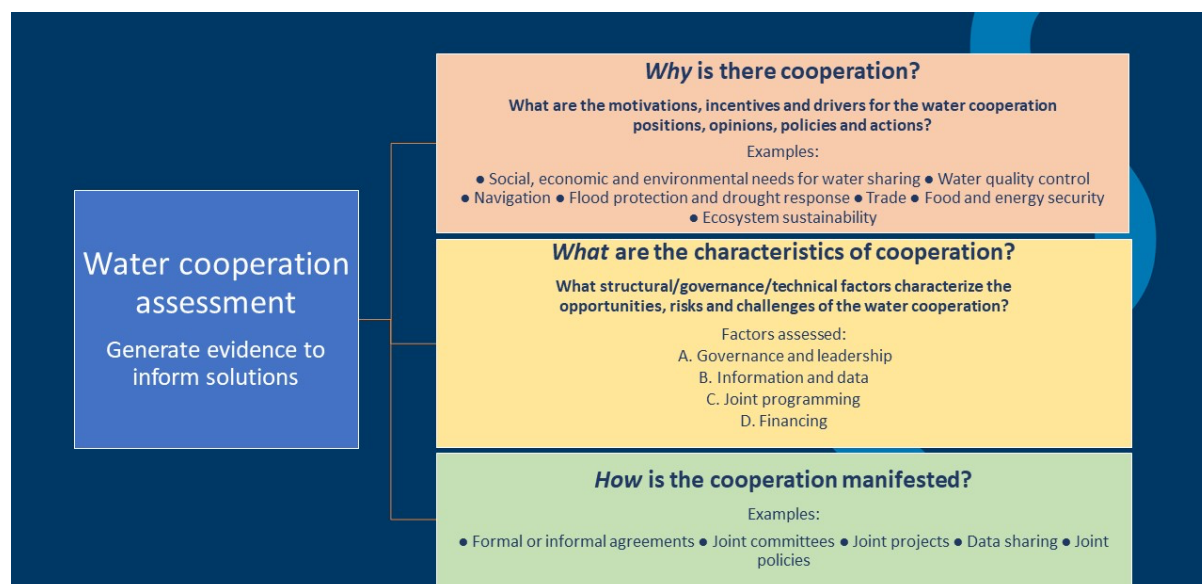


Figure 1: Assessment framework of the Global Water Cooperation Outlook initiative

The initiative's assessment framework provides a comprehensive overview of the status, trends and examples of cooperation in water, to yield evidence-based insights. The initiative takes the innovative approach of linking water cooperation at different scales; for example, because transboundary water management requires adequate capacity to manage water resources at both the national and subnational levels. In many cases, such an assessment is required to inform the strengthening of national capacities for effective participation in transboundary processes, such as for hydro-climatological know-how, negotiations, and the development and financing of cooperation modalities.

3. Findings: overview of transboundary water and its management in Africa

Water distribution

The distribution of freshwater across Africa’s countries and regions is uneven and depends heavily on the variability of rainfall in different climatic zones (FAO, 2021). A large extent of the continent’s freshwater sources is transboundary – 90 per cent of the surface water is in the more than 60 transboundary rivers and lakes (Adeel et al., 2015; McCracken, 2018). Many countries in Africa are also dependent on groundwater resources. Around three quarters of the population relies on transboundary aquifers (Nijsten et al., 2018).

This study of water cooperation included 28 transboundary river basins, three transboundary lake basins and one transboundary aquifer system, as shown in Figure 2.

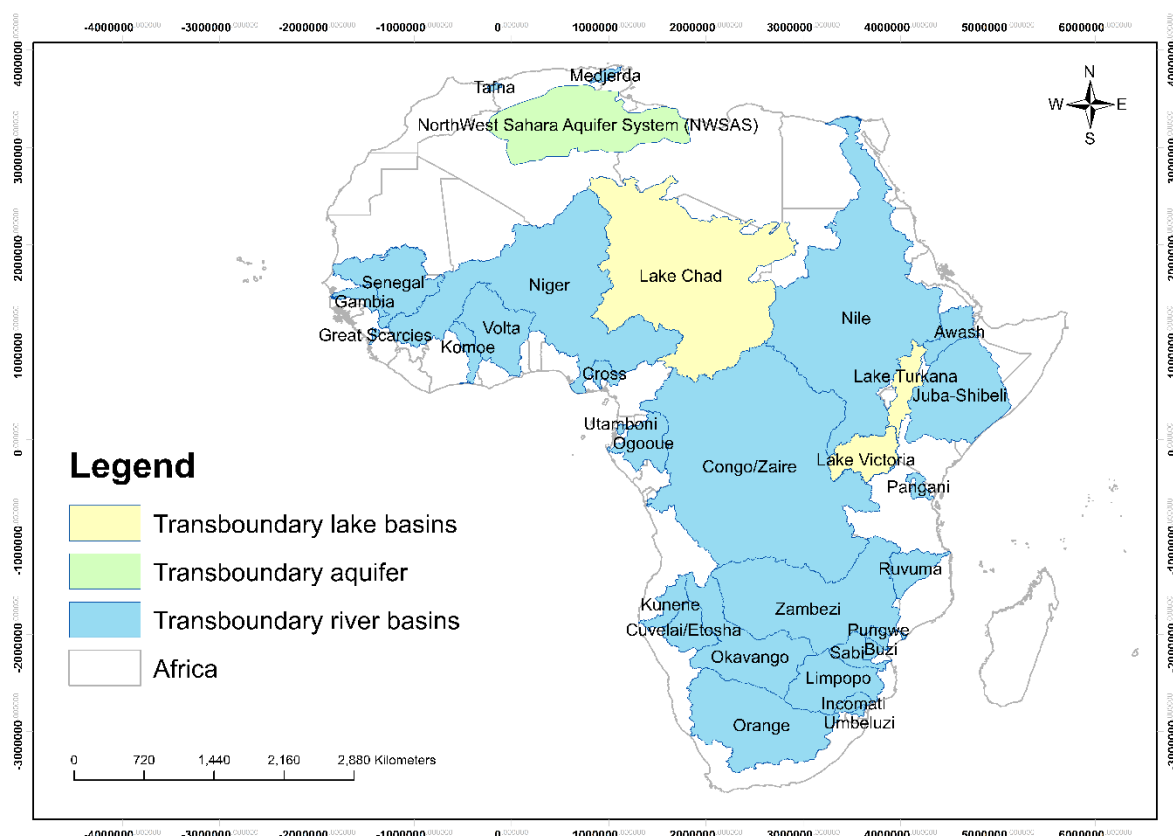


Figure 2: Transboundary water systems included in this study. Source: SIWI

Water stress

Population growth has significant implications for the sustainable management of Africa’s freshwater resources, due to the increasing water demand. According to data collated by the United Nations Economic Commission for Africa (UNECA, 2016), the continent’s population has grown over the 30 years to 2015 at an average annual rate approaching double that for the globe as a whole – 2.6 per cent compared with 1.5 per cent. The 2015 edition of *World Population Prospects* showed the continent was the fastest growing major area of the world (UN DESA, 2015) – and the latest summary results confirm this trend for African countries (UN DESA, 2022). Figure 3 shows the population growth trends for Africa from 1980 projected to 2065.

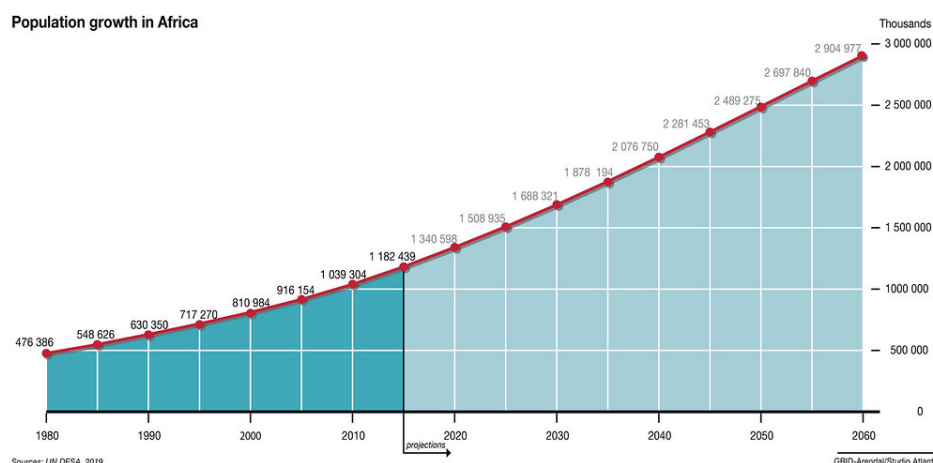


Figure 3: Population growth trends in Africa, 1980–2065. Source: AfDB, UNEP & GRID-Arendal (2020)

Among the seven regions globally that fall under the SDGs, three have water stress that exceeds 25 per cent. Two subregions have high water stress – Central and South Asia – and one is experiencing extreme water stress – northern Africa (FAO & UN-Water, 2021). The countries that consume the most water, such as Egypt, Madagascar, Mali, Morocco, South Africa and Sudan, do not necessarily have abundant water resources. For instance, Egypt is situated in a region of low water availability, yet it is Africa’s largest water consumer, using almost 62 km³ of water every year. Groundwater is a significant source of drinking water for about three quarters of Africa’s population, particularly in North Africa and southern Africa, yet it accounts for just 15 per cent of the continent’s renewable water resources, and North Africa has more groundwater resources compared with the other regions of the continent (AfDB, UNEP & GRID-Arendal, 2020). Figure 4 illustrates the water stress levels in Africa.

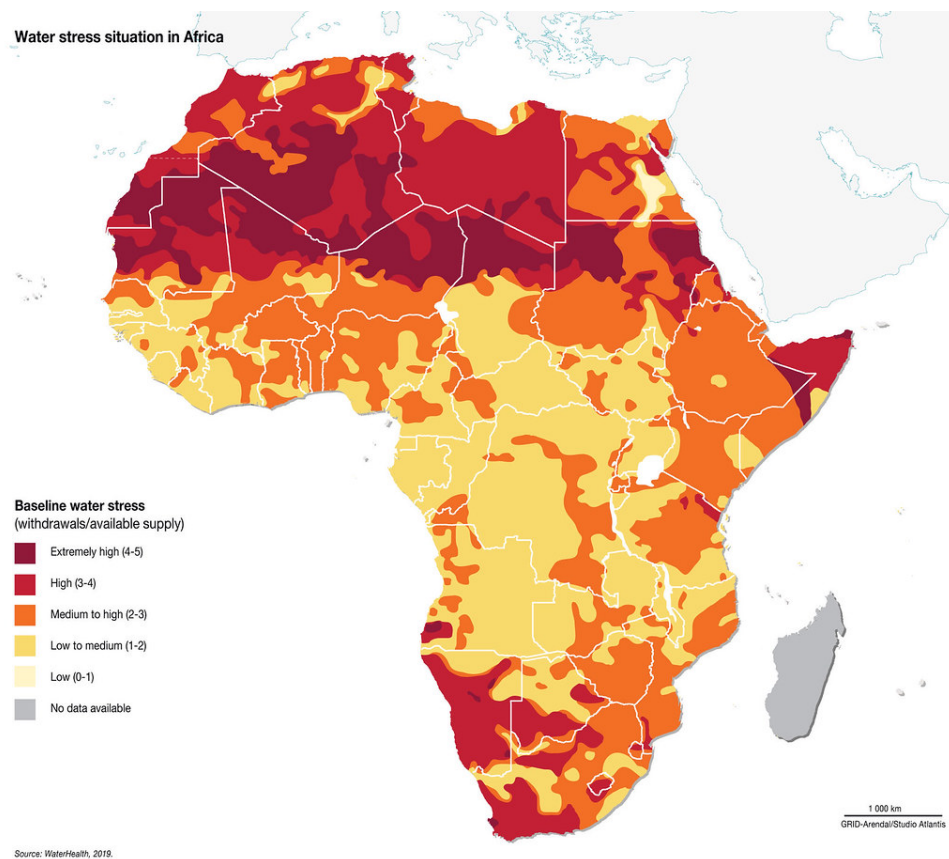


Figure 4: Water stress in Africa. Source: AfDB, UNEP & GRID-Arendal (2020)

National-level cooperation

The degree of the cooperation at the national level, through the implementation of integrated water resources management (IWRM) in Africa, varies. Some countries are showing good progress while for others there is limited uptake by, and engagement of, stakeholder groups (UNEP, 2021).

Most of the 23 countries taking part in the survey for this assessment fall under the medium-low category, indicating that elements of IWRM are generally institutionalized, and implementation is under way. A total of 15 countries report a medium-high degree of implementation, indicating that they have adequate capacity to implement IWRM elements, and these are being implemented under long-term programmes. In five countries, the implementation of IWRM is high, which means that plan and programme objectives are generally met, and there is good geographical coverage and stakeholder engagement. (Note that data are lacking for some countries and that all the data are self-reported.)

Transboundary water cooperation

Compared with other continents, Africa has relatively many operational water agreements on transboundary surface water, especially in the sub-Saharan region (UNESCO, 2021). The level of operational arrangements for transboundary cooperation varies among the African countries, with some basins having high coverage but others requiring more effort, and many countries lack available data. Among the 54 countries, there are:

- seven with operational arrangements covering 90 per cent of their territory or more
- another seven with arrangements covering between 70 and 90 per cent
- five covering between 50 and 70 per cent
- twelve countries with operational arrangements covering less than 50 per cent.

Having less than half of the country's transboundary surface water covered by agreements means there is more effort needed for cooperation. Note that 22 countries lack data.

Most transboundary aquifers are not covered by cooperative agreements or arrangements, but most transboundary surface water is covered by some form of cooperative arrangement (Adeel et al., 2015; UNESCO, 2021). However, in the context of North Africa, three countries (Algeria, Libya and Tunisia) have operational arrangements covering 50 per cent or more of their transboundary aquifers (mainly the north-western Sahara and Nubian Sandstone aquifer systems) (UNESCO, 2021). Many of the agreements have resulted in the establishment of river basin organizations (including joint or technical commissions). The establishment of river basin organizations has in most cases been funded and supported by external actors, such as the World Bank, the African Union through the Africa Development Action Plan, and the EU Water Initiative (Adeel et al., 2015; UNESCO, 2021). International support for transboundary water cooperation in the region is ongoing. The World Bank (on behalf of several bilateral donors), for instance, implements the Cooperation in International Waters in Africa (CIWA) programme to strengthen support for transboundary water management in sub-Saharan Africa (CIWA, 2022).

Despite the relatively large number of cooperative agreements in the region, water challenges persist, highlighting the need for increased efforts. The current challenges are largely based on technical, financial and political issues, such as limited resources, large socioeconomic differences between countries and increased vulnerability to climate change (Adeel et al., 2015; IPCC, WHO & UNEP, n.d.). The Intergovernmental Panel on Climate Change concludes that eastern, Central and West Africa are global hotspots for high human vulnerability due to climate change. Increased and more frequent extreme weather events threaten the water and food security in the region (IPCC, WHO & UNEP, n.d.). Climate change adaptation and mitigation strategies are presently given low priority and the region underinvests in water management (Adeel et al., 2015). Enhanced transboundary water cooperation, including with climate adaptation measures, should therefore be promoted to ensure the sustainable management of the water resources needed to meet current and future challenges.

4. Findings: challenges to transboundary water cooperation in Africa

Transboundary water management processes are notoriously difficult to research as much of the discussion and decision-making takes place behind closed doors by government officials tasked with representing the interests of their countries. Researchers can identify activities, projects and institutions that result from these discussions and the agreements reached by negotiators, but the process of coming to an agreement typically remains hidden from public view. Little can be known of the differences in positions and interests between countries and of the compromises made to reach cooperative outcomes.

Public statements by government officials or politicians typically represent the tip of the iceberg and keep submerged the deliberations, whether cooperative or conflictual, that led to the outcome. This makes learning from the past less effective, hindering the identification in other contexts of the innovative approaches that could overcome differences, break deadlocks and trigger cooperation.

In addition to the hidden nature of transboundary water management processes, the other factor posing a challenge to learning is that it is difficult to compare cases, which are heterogenous by nature. Each shared watercourse represents such a wide range of hydrological, climatic, geographical, social, economic and political factors that there is a risk of comparisons losing validity, as each case is considered unique. Learning from cases implies the ability to translate findings into a generalizable format, but how is this to be done when no two transboundary water management processes are alike?

The approach taken for this outlook report has been to blend quantitative and qualitative data. By looking for innovation or lessons learned across factors identified as being important for cooperation, the report uses these data to construct a framework for analysis and learning. The framing of “factors of cooperation” echoes the approach taken in economics to understand how goods and services are delivered efficiently by using the “factors of production” approach. The analogy is not perfect but helps us to differentiate the various factors that, if sufficiently developed, lead to an increase in cooperation. This allows a comparison of learning across cases because, despite every case being unique, the approaches taken to strengthening the factors of cooperation can be similar. Drawing on the economics definition of the factors of production, cooperation can be conceptualized in an analogous manner. See the terms in brackets that can form substitutes for this analogy:

If businesses (*countries*) can improve the efficiency of the factors of production (*cooperation*), they can increase production (*cooperation*) and create higher quality goods (*benefits*) at lower prices (*risk*). Any increase in production (*cooperation*) leads to economic growth (*reasonable and equitable utilization of international watercourses*).

The factors of cooperation used to structure this analysis are based on the assessment framework set out in section 2 (see page 12): (A) governance and leadership, (B) information and data, (C) joint programming and (D) financing. The following parts of the present section (4) of this report structure an overview of the factors of cooperation against A to D, in 32 basins in Africa. These basins mainly have an international scale, with some national ones included if they are significant to regional relations. The key lessons learned in respect to the factors of cooperation are drawn from an analysis of the cases, identifying the key common challenges and describing the innovative actions for overcoming these. Note that the cases are not compared with each other, but with themselves over time. If cooperation is deemed to be stronger in a case than it was, say, 20 years ago, what were the actions taken to address the challenges to the factors of cooperation? The following were the inclusion criteria, but with the analysis focusing more on the cooperation process and institutions than on the biophysical aspects:

- Size of at least 100,000 km²
- Population density of at least 100 people/km²
- At least two references to disputes or cooperation in the media.

A. Governance and leadership

i. Legal frameworks are not harmonized between basin states, and several do not reflect recent approaches to integrated management or international customary water law

International law takes precedence over domestic law, so a country needs a process to ensure that its legal and policy framework is not contrary to its commitments in agreements with other countries (Ministry of Water, 2019). Some countries in Africa still use laws dating from their colonial eras, and while others might have passed a post-colonial water law, it does not follow modern IWRM principles. This makes it difficult for countries sharing a watercourse to enforce local rules in support of what they have committed to internationally, leading to a possible increase in tension between basin states. This issue goes beyond the national water legislation and includes laws and policies governing environmental impact studies, emergency notification and response procedures, and the public right of access to information and participation in decision-making processes. In practice, this results in disjointed management, making it difficult to manage the basin as a cohesive unit. At the extreme, investors may choose to establish new water-dependent operations or may emit pollution flows in one basin country rather than another, based on the regulatory environment. Progress made in rationalizing water use or preventing pollution in one part of a watercourse may be undone in another part, with potentially negative impacts for businesses, communities and ecosystems.

ii. Not every basin state is party to a basin-wide agreement

The internationally accepted good practice is that all states sharing a watercourse should be party to a basin-wide agreement (one, that is, aiming to cover the entire territory of the watercourse), but this is not always the case (Medinilla, 2017). This results in suboptimal cooperation outcomes, since measures for the management and development of the basin's water resources are not binding on all the basin states. This may be because of the rationale for the formation of the original institution in some cases. The International Commission of the Congo–Oubangui–Sangha Basin (CICOS), for example, has a mandate only to secure safe navigation along the main stem of the Congo river. The agreement thereby leaves out upstream basin states where the river is not navigable. In other cases, a country might choose not to be party to an agreement due to a disagreement or dispute it may have with other basin states; the negotiated

agreement might not reflect what it deems to be in its best interest. There are also cases where basin states may decide that it does not make sense to include another state because they deem it to have little hydrological connection with the watercourse. Zimbabwe, for example, shares part of the territory of the greater basin of the Okavango, but there is no above-surface flow connecting to the stem of the river in this part of the country, because of the low levels of rainfall and runoff (OKACOM, 2023).

iii. Intractable inter-country disagreements and local political contentions can hinder agreements

Countries can disagree on a wide range of issues, and the following are just a few examples:

- territorial border demarcation
- access to and exploitation of mineral resources
- recognition of existing water rights
- broader political issues such as migration and indigenous people's rights.

Disagreements in such areas may fall outside of the specific scope of discussions about water management, or may be directly related. They can cause a country to take a position of not joining a basin-wide agreement, or joining only with observer status. In the case of the Nile Basin cooperative framework agreement, this was put out for signature in 2010 despite two of the basin states, Egypt and Sudan, proposing alternative wording for an article dealing with water security, uses and rights (Nile Basin Initiative, n.d.). At the time of the present report in mid-March 2023, Egypt and Sudan had no near-term plans to accede to this cooperative framework agreement, and their participation in the activities of the Nile Basin Initiative also remained limited. Such a situation makes a basin-wide management plan difficult to develop and, in this case, the activities are now implemented primarily at the sub-basin level.

Several disputes in Africa related to historical water use rights and territorial boundaries stem from the colonial era, when agreements would be entered into by colonial powers with little participation of the population of the territory. In 1890 for example, the then German Empire and Great Britain entered into the Heligoland–Zanzibar Treaty, which ceded the island of Heligoland in the North Sea to Germany and allowed Britain to exercise exclusive control over the Sultanate of Zanzibar (Yokell, 2010). The treaty agreed various colonial territorial boundaries in Africa, including the present-day border between Malawi and Tanzania being placed on the shore of Lake Malawi/Nyasa rather than along the lake's midline. After these two states achieved independence, Tanzania formally declared it no longer recognized the colonial-era agreements binding on them (commonly known as the Nyerere Doctrine of state succession) and initiated a process to revise the delimitation of the border between it and Malawi (Maluwa, 2016). This was not accepted by Malawi and a formal dispute persists between the neighbouring countries. The two states have, however, signed the 2004 agreement of the Zambezi Watercourse Commission (ZAMCOM) and do participate in joint activities, although Malawi is yet to ratify this accord (World Bank, 2015; ZAMCOM, 2023).

iv. River basin organizations' mandates are vague, severely limited or overlap those of other institutions

Negotiating an international agreement is a complex process, and parties typically call for a range of compromises. The degree of difficulty of reaching consent rises in tandem with the number of countries in the watercourse and the degree of water scarcity (Alfredson & Cungu, 2013). To establish a text that is acceptable to all, the adopted wording sometimes lands up being vague and non-prescriptive, and typically limits the amount of sovereignty the member states need to give up. This results in a lack of clarity about the mandate, scope and executive powers of the resultant joint institutions. Many of the basin-wide institutions have a mandate to act in an advisory capacity to the parties, making recommendations on the sustainable management and development of the basin without any executive powers delegated to the organization (Earle & Wouters, 2015). In some instances, this is explicit in the founding agreement, such as for the Lake Victoria Basin Commission, in which the document refers to the principle of subsidiarity and formally delegates to the national agencies the implementation of actions to promote improved water quality and control of abstraction (UNU-INWEH, 2011). Such an approach is feasible, however, only when there is a degree of legal, policy and regulatory harmonization across the basin states (see section 4.A.i above, “Legal frameworks are not harmonized between basin states”).

We tend to see the mandate strengthening over time for joint institutions across Africa, as basin states cede powers to further the objectives for ecosystem protection, water management and, in fewer cases, infrastructure development. In the case of the Congo river basin, the agreement to establish a uniform river regime and create CICOS – with the mandate of promoting inland navigation – was signed in November 2003. Its mandate was expanded in 2007 to include transboundary water management, turning CICOS into a coordinating and advisory body with a remit including expanding agricultural irrigation. To advance the agenda of a joint institution, basin states can reach an agreement to establish a secretariat to support the implementation of activities and to improve coordination between the states. Examples of institutions where this has happened are, in southern Africa, the Orange-Senqu River Commission (ORASECOM) and the Permanent Okavango River Basin Water Commission (OKACOM) and, in West Africa, the Niger Basin Authority (NBA). These were established without a formal secretariat, but in time it became evident that relying only on the regular and ad hoc commission meetings limited the degree to which the institutions could initiate, monitor and track progress against development objectives. Additionally, the lack of a legal identity for the institutions complicated operations, such as to open a bank account, purchase materials and equipment, and hire staff.

v. Stakeholder participation, including gender mainstreaming, is limited by transboundary settings and security considerations

Modern integrated water management recognizes the need to ensure the adequate participation of stakeholders – including water users, local communities and the private sector – in decisions that affect the long-term management and development of water resources. Meaningful and appropriate engagement with stakeholders is a risk-reduction and trust-building mechanism that can give early warning to government officials of the issues that can impact their abilities to manage resources. It can also contribute to compliance with regulatory and legal provisions. Inclusive participation means giving attention to ensuring that gender issues are accounted for and that the equal participation of women in stakeholder consultation and decision-making processes is promoted.

While most countries in Africa now have some recognition of the need, locally and nationally, to ensure stakeholder participation, the empirical evidence shows that, at the international transboundary levels, this

is much less the case (Earle & Bazilli, 2013). Until recently, very few joint institutions had formal policies promoting stakeholder participation or gender issues, with their founding agreements usually omitting to mention these areas entirely. Arguably, the need for stakeholder participation increases at the international level if the risk of water-related disputes between states could escalate to a higher level of conflict. Gaining an early warning of any issues by ensuring the participation of local stakeholders contributes to a joint institution's ability to address such issues before they escalate.

The low levels of stakeholder participation internationally are driven by factors linked to security (data around water management is still viewed as sensitive by many states). There are also factors linked to operational and logistical challenges, with stakeholders needing to travel across international borders to participate in meetings, albeit to a lesser extent with the increased use of online participation.

Transboundary water management had been found, before this past decade, to be largely gender-blind in its approach to ensuring the equal participation and representation of women. The situation is starting to improve, with several joint institutions now initiating programmes, strategies or actions to promote stakeholder participation and gender mainstreaming (innovations on this topic will be presented in the final report). Most of these remain, however, at a stage of project work plans being agreed and are not incorporated into legally binding agreements between states. They are thus at risk of being terminated if financial or leadership support declines.

B. Information and data

i. Hydrological monitoring networks and data sets are not maintained

It is a sizeable investment in equipment and human resources to maintain, at the basin scale, the capacity to monitor rainfall, runoff and streamflow, and to assess current and future water uses and demands. Yet without these data it is not possible to plan, conserve, allocate or share water resources sustainably, which in the transboundary setting becomes a conflict risk. Rainfall and hydrological data are needed in near real time to forecast floods and droughts in various parts of the catchment. But the reality for hydrological monitoring networks across Africa is that they have been in decline since the early 1980s, mainly because of insufficient resources being devoted to the sector. This decline is evident for surface waters and, perhaps more so, for groundwater, where the regular monitoring of levels and quality has been diminishing, placing communities at risk of overexploiting aquifers.

At the transboundary scale, the problem is compounded by disparities in data availability across countries. A basin-wide management approach is only as effective as its weakest link. Investments in one part of the basin to upgrade hydrological monitoring will make only a limited contribution to the improvement of basin-wide information systems if there is not also a concerted effort by all riparian states to improve the networks. There is a first-mover disincentive to make the substantial investment in the equipment as well as the long-term operations of a comprehensive hydrological monitoring network. In this regard, the World Meteorological Organization's *Comprehensive review of the world hydrological cycle observing system* (Pilon et al., 2011) gave the example of the Zambezi as being representative of many of the basins it reviewed. A report by the World Bank cited this case in the following way (World Bank, 2018, box 6, page 22).

“In the Zambezi River Basin, data collection networks are in a state of decline, with hydrological networks suffering greater losses than meteorological networks. Most stations operate manually and collect little real-time data. WMO Hydrological Cycle Observing System stations suffer because of insufficient numbers of qualified staff and financing for travel, repair, periodic maintenance, and sensor replacement. The basin’s hydrometeorological networks generally have limited gauges, such as real-time meteorological observation stations, rain gauges, and streamflow gauges. Rating tables for river water level gauges are increasingly becoming outdated because discharge measurements are not being taken.”

Today, the lack of on-the-ground data-gathering stations and instrumentation can to some degree be mitigated by the use of remote sensing, where satellite images can now provide accurate readings of flow levels and rates. Regular ground truthing remains necessary, however, to improve the accuracy of these remotely sensed images. In addition, there is a time delay associated with the retrieval of some of the datasets, which reduces their capacity for predicting floods in real time. The need for a functioning, on-the-ground hydrological data network still exists.

ii. Hydrological models and assessment methodologies are not compatible between countries

Countries adopt their own hydrological modelling systems based on their needs, the availability of various products in their markets, familiarity with the system and, in some cases, what a donor is willing to pay for. The results delivered by these models can vary substantially, making comparisons and projections across borders difficult. It is hard for technical staff representing their country in negotiations or routine management discussions to know how much faith to place in the projections being made from another country’s results without fully understanding the assumptions and calculation approaches used in the model. This creates an environment of low trust and frustrates basin-wide planning and management.

Another challenge is that different methodologies are used for determining inflow or environmental water requirements (essentially, how much water needs to always remain in a river and during what parts of the year). The approaches for this range from pragmatic estimations (for example, 25 per cent of the mean annual flow always being left in the river) to more sophisticated considerations of the season and recent rainfall events on a real-time basis. No matter which approach is used, the key is that it should be adopted on a basin-wide scale to ensure uniformity in environmental conditions across the basin and to reduce the chances that water users will move from one part of the basin to another. (They might do this if they perceive there would be more water to withdraw in the other area.) In some instances, the existence of differing methodologies for determining the environmental flow regime becomes a point of contention between countries, or between stakeholders in the same country.

iii. Data transparency and access are lacking

There are cases in which countries do commit to using the same hydrological model for a basin. The governments of eSwatini, Mozambique and South Africa, for example, all use the water resources yield model (WRYM) for the management of the Incomati basin. Experience implementing this model over the past couple of decades has, however, led researchers to conclude that it is not well suited to supporting transparency and stakeholder participation in water allocation decisions due to its complexity. It becomes difficult for water users and other stakeholders to meaningfully participate in discussions when they are not able to readily understand the basic workings of the model at the heart of their decision-support system. This creates a lack of trust among stakeholders in the basin management process and leads to reduced acceptance of decisions taken between government officials. This is an example in the transboundary context of relationships being strong between specific groups across borders (such as between government officials), but not translating into strong relations vertically with stakeholders in the officials' respective countries.

There are also instances of hydrological data being viewed as something of a state secret, the holding of which is a source of power. Having knowledge of the flow rate in one part of the basin may give states in another part of the basin an undue advantage in negotiations to determine an equitable share. The provision of hydrological information can be influenced by the relationships between the countries, such as when Egypt withdrew from active participation in some of the activities of the Nile Basin Initiative after other basin states opened up the cooperative framework agreement for accession. This has resulted in less sharing of hydrological data across the basin. (See section 4.A.iii. above, on intractable inter-country disagreements, for more about this case.) With the increasing use of remotely sensed hydrological data, data secrecy is becoming less of an issue but does at times pose a challenge.

C. Joint programming

i. Technical and financial resources to implement activities are lacking

Riparian countries do not always have the technical and financial resources needed to implement joint programmes. National water management activities need to be planned and implemented, and the activities at the transboundary level are in addition to the existing needs. Evidence of this is seen where the government staff who are mandated to represent their country in a shared institution usually have to perform this task in addition to their workload to implement national activities. Commissioners and other representatives speak of the challenge of trying to fit in the activities of the joint institution over and above their existing responsibilities.

The scope of the activities that can be implemented is limited by the funding available to the river basin organization. If programmes cannot be supported by donor contributions, the only other reliable source of income is member state contributions. These are usually set at the level that is affordable for all the member states, and so reduce the maximum total contribution made by them all. This in turn determines how much joint programming can be planned in a particular year.

It is common for there to be differences in technical capacity between basin states, with the ones having access to skilled and experienced experts within their implementing agencies being better able to participate in joint projects. The concern is that the states that are better resourced start to dominate the activities of the river basin organization, with negative impacts on trust and the level of political support

from other member states. Such a situation was evident, for instance, in the Okavango river basin in the early 2000s. Angola was emerging from a protracted civil war, leaving it with a lower level of technical resources than the other two member states of OKACOM. This slowed the pace at which the Global Environment Facility-supported transboundary diagnostic analysis/strategic action programme (TDA/SAP) process (GEF, n.d.) could be implemented as Angola simply had fewer technically trained government staff to support it (Earle & Wouters, 2015). The resources were built up over time in the country, but this was addressed only through a concerted effort by Angola and OKACOM with support from donor partners.

ii. Political ownership of activities is low

Because the transboundary activities are in addition to the national activities that need to be budgeted for by member states, they are sometimes viewed as less important to the national interest and so given less political support. In cases where donors agree to fund activities, such a lack of support results in less ownership of these activities by member states, in turn having a negative impact on the uptake and sustainability of results.

iii. There are competing national interests and priorities

Again, if countries are going to invest resources into basin management and development activities, it is expected that they will wish to pursue actions that they view to be in their national interest (and certainly not going against it). Part of the problem is that what is deemed to be in a state's national interest is not always agreed on by the various government departments and agencies in the state. For instance, a government department representing the agriculture sector would support maximising the withdrawal of water for use in irrigation, while the department representing the mining industry would wish to accelerate the issuing of permits for exploration and mining to proceed. Both of these approaches would potentially place a state in contravention of international commitments it has made to maintain minimum flows or to prevent pollution from entering watercourses. The government department representing a country in international water cooperation processes is therefore limited in terms of what it can commit to due to differing interests and priorities within its own country, reminding us that states are not unitary actors.

D. Financing

i. The case for member states to contribute does not always attract buy-in

Political leaders do not always appreciate the added value of working at the transboundary level. National water management and development activities need a large budget and are developed in direct response to national objectives and policies, with full control by the respective state. Multiple national priorities for countries' other competing sectors also need funding, further limiting the resources that can be allocated domestically. Also, working at the international level, each state has less control and needs to be willing to compromise for cooperation to materialize. Downstream and upstream states typically have differing attitudes to compromise. A downstream state often takes the view that there is more to be gained from working at the transboundary level, to ensure it receives an equitable share of the water from upstream or is protected from flooding. An upstream country may question, though, why it should contribute to a basin-wide cooperation process if the water emanates from its territory.

ii. Alternative sources of funding are scarce

Beyond the contributions from member states and the funds supplied by donors, there are few additional options for raising funds at the transboundary scale. Water allocation is typically a task still performed at the local or sub-basin level within the respective member states, so there is not usually the opportunity to generate revenue through water use permits.

iii. National fiscal regulations vary

Different countries have different rules and procedures regulating how government funding may be spent. This makes it difficult to agree on one model for covering the expenses of a transboundary institution. Finding a model that aligns with the legal frameworks of all the states can be a challenge and create some frustration if the process gets delayed.

5. Precursory insights on global water cooperation and ICWC's commitments

The first edition of the *Global water cooperation outlook report* – to be launched at World Water Week 2023 (20–24 August in Stockholm) – will assess the status and trends of water cooperation at the basin scale in Africa, and make a globally contextual assessment that covers national and subnational scales. Based on the assessment findings and other case study lessons and experiences, the report will develop policy recommendations that target different types of public and private decision-maker, and at different scales.

Section 4 of the present report provides some initial information on the trends and highlights some of the water cooperation challenges. Despite Africa displaying a fair degree of transboundary water cooperation compared with many other continents, the challenges and potential benefits of increased water cooperation call for increasing efforts for more water cooperation and diplomacy.

The findings of the *Global water cooperation outlook report* will address several gaps and opportunities in water cooperation. It will highlight various water cooperation best-fit examples on what works and under what conditions (contextualized cooperation). It will also highlight examples and insights from water cooperation innovations, to inspire other actors sharing water resources.

Precursory insights towards the *Global water cooperation outlook report*

The following are some of the global water cooperation challenges – as detailed in the earlier sections – which, in summary form here, are precursory to the outlook report.

Resolving water challenges will require more cooperation, not less

While water cooperation can take many different forms, the characteristics of governance, leadership, financing, joint programming and investment, and data and information collection all play important roles for how well countries are prepared for water cooperation across international, national and subnational jurisdictions, sectors and stakeholders.

There is a strong need for stakeholders to overcome cooperation deficits

The cooperation connectivity across jurisdictions, sectors and stakeholders is in many instances low, and contextualized cooperation mechanisms and trust need to be advanced for cooperation to take firmer root. Between sectors, for example, the connectivity is low, and there is an opportunity to improve coordination both at the inter-ministerial level, and at the basin and sub-basin levels within and between countries.

Water cooperation is growing in importance

It is expected that the role of cooperation will continue to grow in importance as water management becomes more dynamic (integrated and coordinated approaches), and with a greater complexity of actors. The growing importance is also clear in the fact that water decision-makers and managers are struggling to cope with the mounting water challenges due, for example, to demographic changes, the increasing water demands of all sectors, and the effects of too little or too much water created by the impacts of climate change.

Cooperation makes a difference to socio-economic development, peace and stability

The countries that are on the path to achieve the SDGs seem more likely to be prepared for water cooperation across jurisdictions, sectors and stakeholders. This is because they have:

- governance systems in place that can promote coordination and participation
- responsive leadership that facilitates cooperation by developing national policy frameworks and processes
- a higher priority on developing and sharing data and information
- a higher priority to invest in water cooperation and preparedness to undertake programmatic and multistakeholder collaborations.

ICWC's voluntary commitments to the Water Action Agenda

The water cooperation efforts set out in this working paper provide a basis, along with some separate precursory water cooperation messaging, for the voluntary commitments to be made by ICWC to the [Water Action Agenda](#) of the United Nations 2023 Water Conference, which is set to take place on 22–24 March.

The Water Action Agenda aims to mobilize actions across countries, sectors and stakeholders to meet the global goals and targets on water and sanitation. The ICWC, under the Water Cooperation Global Outlook initiative detailed in the present document, contributes to the building blocks of this agenda. ICWC commits to water cooperation actions that promote sustained and scaled-up implementation of water cooperation, and will follow up and review its experiences.

ICWC commits to the following.

1. Research, assess and learn from water cooperation

- ICWC will advance data-driven knowledge on country and shared water basin preparedness for water cooperation, and on the mechanisms for improved cooperation on shared water resources at different scales and across sectors and stakeholders.
- This will advance the knowledge on the status and trends of water cooperation – and on what works and why – by assessing cooperation at the transboundary, national and subnational scales. It will also lead to the development of insights from case studies.
- This commitment recognizes that water cooperation solutions need to be contextualized, yet stakeholders from different contexts can still learn from each other.

2. Seek out and support solutions on water cooperation

- ICWC will support governments and other decision-makers, in response to demand, to advance contextualized water cooperation policies, plans, capacities and stakeholder dialogue platforms.
- Many solutions to improved cooperation already exist and can be adapted and applied in various contexts. There is, however, considerable room for further innovation.
- For women, youth, indigenous groups, people living in informal settlements, and those with low incomes living in rural areas, water cooperation needs, for example, to improve its inclusive participation.

3. Advocate water cooperation and raise awareness

- ICWC believes that water cooperation can enable peace, inclusivity, and social and economic development.
- It is critical that water cooperation is on the international and national agendas of key water decision-makers as a means to accelerate the implementation of the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction 2015–2030 and the Paris Climate Agreement 2015.

Abbreviations

CICOS	International Commission of the Congo–Oubangui–Sangha Basin
ICWC	International Centre for Water Cooperation
IWRM	integrated water resources management
OKACOM	Permanent Okavango River Basin Water Commission
SDGs	Sustainable Development Goals
SIWI	Stockholm International Water Institute

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