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2023 United Nations Conference on the Midterm Comprehensive Review of the Implementation of the Objectives of the International Decade for Action, "Water for Sustainable Development", 2018–2028

New York, 22 March –24 March 2023

Interactive dialogues

Interactive dialogue 4: Water for Cooperation

Concept paper prepared by the Secretariat

Summary

The present paper was prepared pursuant to paragraph 9(d) of UN General Assembly resolution 75/212, in which the Assembly requested the Secretary-General of the 2023 United Nations Conference on the Midterm Comprehensive Review of the Implementation of the International Decade for Action, "Water for Sustainable Development", 2018-2028 (hereinafter: UN 2023 Water Conference) to prepare concept papers on each of the themes of the interactive dialogues, taking into account the relevant water-related processes of the Assembly and other possible contributions. The present paper concerns interactive dialogue 4, entitled "Transboundary and International Water Cooperation, Cross Sectoral Cooperation, including Scientific Cooperation, and Water Across the 2030 Agenda (SDG 6.5, 6.b and SDGs 16, 17)". In the paper the challenges, current status, interlinkages, opportunities for progress, transformative solutions and recommendations related to water cooperation are set out.

I. Introduction [1]

1. Water more often unites than divides. Water cooperation[2] across borders and across sectors has proven to generate benefits that accelerate progress across Sustainable Development Goals (SDGs), including delivering safe drinking water and sanitation, enhancing food security, sustaining healthy livelihoods and ecosystems, helping to address resilience to climate change, contributing to disaster risk reduction, providing renewable energy, supporting cities and industry, and fostering regional integration and peace.

2. Water cooperation should be *inclusive.* Water resources serve and are affected by multiple stakeholders at multiple levels, including civil society, government (national and local), Indigenous Peoples, the media, the private sector and the scientific community. Intercultural aspects of water cooperation, and diverse stakeholder values, should be considered within water governance systems.

3. Water cooperation should be *cross sectoral*. Bringing together water, energy, agriculture, environment, etc., helps to better manage trade-offs and can amplify the benefits that accrue from collective action, whilst also safeguarding ecosystems. Multi-level governance systems are key to breaking sectoral silos in a way that can deliver legitimate, equitable and sustainable outcomes.

4. Water cooperation must also be *action oriented*. The benefits that cooperative processes have to offer communities, sectors, ecosystems and countries across the SDGs can only be realised if concrete steps are taken to address funding and financing gaps, insufficient and inaccessible data and information, capacity development shortfalls, weak governance systems that result in poorly coordinated and uneven power relations amongst stakeholders, and the slow introduction and uptake of innovative practices and technologies.

5. There is a cost of non-cooperation, also considering that water conflicts persist. Unilateral action by communities, sectors and countries can lead to unsustainable and often more costly development choices, and if left unaddressed can even spiral into threats of regional stability and peace, especially within the context of weak governance systems and situations of fragility, conflict and violence. Population growth, migration and increasing water demand, coupled with climate change impacts and ecosystem degradation, make water cooperation an imperative.

6. Progress on water cooperation must be accelerated. Currently, the world is not on track to implement integrated water resources management at all levels by 2030 (SDG target 6.5). An estimated 107 countries are not on track to have sustainably managed water resources by 2030;[3] and out of 153 countries sharing transboundary rivers, lakes and aquifers, only 32 countries have at least 90% of their transboundary basin area covered by operational arrangements for transboundary water cooperation.[4]

II. Overview of the challenge, current status and interlinkages

[1] This Concept Paper has benefitted from contributions from Member States, UN system and a diverse group of stakeholders:https://sdgs.un.org/conferences/water2023/documentation and https://www.un.org/sites/un2.un.org/files/final_water_consultation_report_19_oct.pdf

[2] For this paper, 'water cooperation' refers to the process by which communities, sectors and countries work together in a mutually beneficial way towards the common goal of the peaceful, sustainable and equitable use and protection of water resources at local, national, regional and international levels.

[3] UNEP, *Progress on Integrated Water Resources Management – Global indicator 6.5.1 updates and acceleration needs 2021* (2021).

[4] UNECE and UNESCO, *Progress on Transboundary Water Cooperation: Global status of SDG indictor 6.5.2 and acceleration needs 2021* (2021). Basin area includes the surface area of any transboundary river and lake basins, or aquifer systems. For a definition of 'operational arrangements for transboundary water cooperation', see UNECE and UNESCO, *Progress on Transboundary Water Cooperation: Global baseline for SDG indicator 6.5.2* (2018).

Challenges and current status

7. Global pressures on the quality and quantity of water have increased since the 1980s, mainly due to a growing population, increasing water demand, unsustainable consumption patterns and cumulative environmental impacts. Estimates suggest that 2.3 billion people currently live in water-stressed countries of which 733 million live in high and critically water-stressed countries;[5] and by 2050, 3.9 billion people (40% of the world's population) will live in river basins that experience severe water stress.[6] Groundwater use represents almost half of all drinking water worldwide and the majority of water supply to rural populations.[7] Hotspots of groundwater depletion exist around the world, most often in areas of intensive groundwater use for irrigation and to supply large cities. Globally, groundwater storage depletion accounts for 15 to 25% of all groundwater withdrawals.[8]

8. Across the globe, climate change places additional pressures both on the quantity and quality of the world's water resources, as well as on water and wastewater infrastructure. Impacts include increased frequency and intensity of heavy precipitation, accelerated melting of glaciers, changes in the frequency, magnitude and timing of floods, more frequent and extended drought periods, changes in groundwater storage and recharge and the deterioration of water quality. Transboundary rivers, lakes and aquifers are particularly vulnerable due to fragmented governance systems. Climate impacts are projected to drive further migration and displacement and to compound existing vulnerabilities for people and places affected by fragility, conflict and violence, with grave humanitarian consequences.[9]

9. There is clear evidence that water cooperation between communities, sectors and countries can deliver a package of shared economic, social and environmental benefits, as well as promote peace and regional integration.[10] Over six decades of collaboration between the countries of the Rhine River basin demonstrate how cooperation can evolve from a singular purpose, e.g., addressing water pollution, to more holistic water management approaches across the entire basin and beyond. The creation of cross-border committees, such as the one between the communities in India and Nepal that share the Sharda-Mahakali River, demonstrate the benefits of transboundary cooperation at the local level. For the communities of the Sharda-Mahakali River such cooperation has improved community resilience to water-related shocks, e.g., through the early warning of floods, as well as increased the participation of women in water governance.[11]

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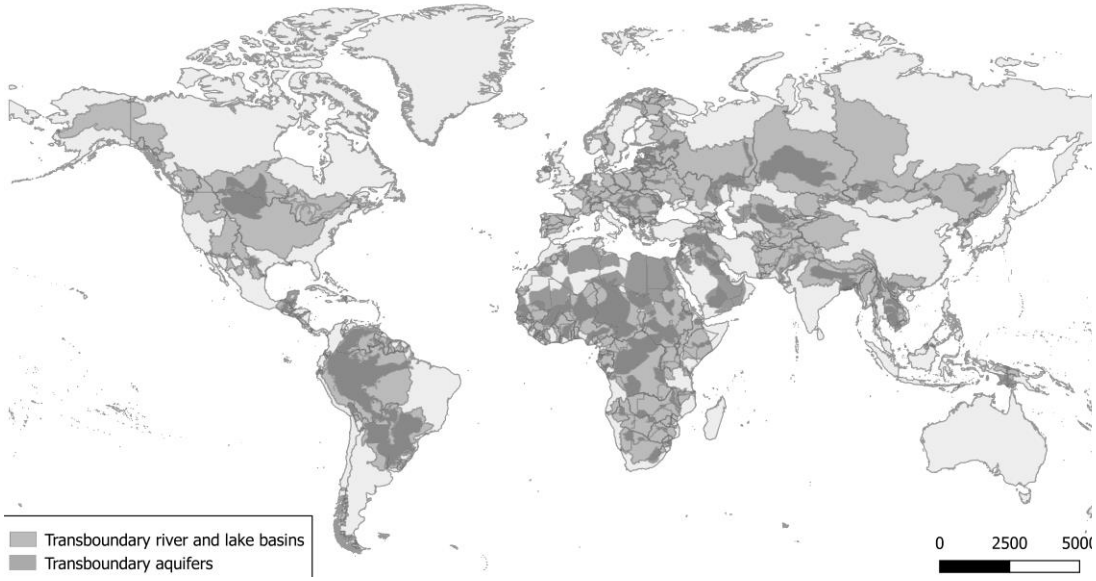
[5] UN-Water, *Summary Progress Update 2021 – SDG 6 – Water and Sanitation for all* (2021).
[6] OECD, *Environmental Outlook to 2050* (2012).
[7] United Nations, *The United Nations World Water Development Report 2022: Groundwater: Making the Invisible Visible* (2022). Groundwater withdrawal rates were around 3% per year during the period 1950 to 1980 and are currently around 1% per year.
[8] United Nations, *The United Nations World Water Development Report 2022: Groundwater: Making the Invisible Visible* (2022).
[8] ICRC, *When Rain Turns to Dust – Understanding and Responding to the Combined Impact of Armed Conflicts and the Climate and Environment Crisis on People's Lives* (2020).
[10] UNECE, *Policy Guidance Note on the Benefits of Transboundary Water Cooperation – Identification, Assessment and Communication* (2015).
[11] Avinash Singh, 'Whose Water? The Challenge of Rivers that Flow Across Borders' 26 May 2022, (*views-voices.oxfam.org.uk*).

Map 1. The world's transboundary river and lake basins and aquifers



Note: the delimitations and boundaries used on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations.
Source: UNESCO-IGRAC. 2015. Map of Transboundary Aquifers of the World. Scale 1:50 000 000. (aquifers); UNEP and GEF, TWAP River Basins Data Portal: http://twap-rivers.org/indicators/ (accessed 2 July 2018) (river and lake basins).

10. Over 310 transboundary river basins and an estimated 468 transboundary aquifers are shared between two or more countries (map 1).[12] Out of the 153 countries sharing transboundary waters, around two-thirds have more than 50% their territory within transboundary river basins. Although there is a long tradition of countries entering into cooperative arrangements for transboundary waters significant gaps remain. There are notably regional variations in the coverage of cooperative arrangements, and significant differences in coverage between river and lake basins, and aquifer systems. For instance, while 24 countries across Europe and North America, and 18 countries in Sub-Saharan Africa report having 90% or more of their river and lake basins covered by operational arrangements for water cooperation; only six countries in Asia, four countries in Latin America and one country in North Africa report having the same coverage.[13] Also, if transboundary aquifers are covered by operational arrangements it tends to be mostly through their association with river and lake basin arrangements – SDG indicator 6.5.2 data identified just eight aquifer/groundwater-specific arrangements.[14] Indicator 6.5.1 data suggests that even where arrangements are in place implementation is still a challenge in the majority of transboundary rivers, lakes and aquifers, and data sharing remains limited.[15]

11. River basins and aquifer systems are usually the most effective spatial unit for governing water between communities, sectors and countries irrespective of political boundaries. At the transboundary level cooperative arrangements and joint bodies, such as those for the Amazon, Chu Talas, Danube, Lake

[12] McCracken M and Wolf AT, 'Updating the Register of International River Basins of the World' (2019) 35(5) International Journal of Water Resources Development 732; UNESCO, IGRAC and WMO, 'Transboundary Aquifers of the World, update 2021' (2021).
[13] UNECE and UNESCO, *Progress on Transboundary Water Cooperation: Global status of SDG indictor 6.5.2 and acceleration needs 2021* (2021). These figures are based on 101 validated indicator 6.5.2 national reports.
[14] Ibid.
[15] UNEP, *Progress on Integrated Water Resources Management – Global indicator 6.5.1 updates and acceleration needs 2021* (2021).

Chad and Senegal basins, are therefore important instruments in the prevention and management of conflicts, for climate action and regional sustainable development. Such arrangements and joint bodies have also often been resilient in the face of broader geopolitical conflicts. Unfortunately, funding gaps, limited capacity, fragmented and unclear responsibilities at different levels, misaligned national and transboundary law and policy frameworks, a failure to engage beyond the water sector, poor monitoring and enforcement, power asymmetric relationships, gaps in information, and a lack of accountability remain some of the barriers to effectively implementing basin- or aquifer-wide arrangements.

12. At the global level there have been notable recent developments in progressing water cooperation based on principles of international law. In 2014, the *Convention on the Law of the Non-navigational Uses of International Watercourses (*Watercourses Convention) entered into force. The *Convention on the Protection and Use of Transboundary Watercourses and International Lakes* (Water Convention), serviced by UNECE, became open to all UN Member States in 2016. Also, a 2008 UN General Assembly resolution endorsed the *Draft Articles on the Law of Transboundary Aquifers* as the most authoritative reference for the negotiation by countries of governance arrangements for their shared aquifers. Support for these global instruments is growing. [16] Chad, Cameroon, Ghana, Guinea-Bissau, Senegal and Togo were amongst the first countries from outside the UNECE region to join the Water Convention, and at least 20 countries are at various stages in the accession process. Ministers from Parties and non-Parties during the high-level session on 'Water and Peace' at the 9th Meeting of the Parties in September 2021 recognised that the Water Convention offers an essential intergovernmental platform and a UN forum for dealing with transboundary water issues that has helped to strengthen political will, exchange best practices and lessons learned, collaboratively identify and address emerging issues, support the adoption and implementation of arrangements and joint bodies, and ultimately accelerate transboundary water cooperation. [17] Since the Convention's entry into force in 1992 over 100 agreements were signed. Also, of the 24 countries that have all their transboundary basin area covered by operational arrangements, 19 are Parties to the Convention.

13. Regional instruments, such as the 2000 *Revised Protocol on Shared Watercourse Systems* in the Southern African Development Community (SADC) and the 2000 EU *Directive Establishing a Framework for the Community Action in the Field of Water Policy* (Water Framework Directive), are also valuable and complementary legal frameworks and platforms for progressing water cooperation.

14. Through public-private sector partnerships, corporate social responsibility, impact investment and other means, the private sector is an important actor in addressing the water crisis. The private sector places significant pressures on water resources both directly and through multinational operations and supply chains, and through the acquisition and leasing of land by multinational companies, which in the absence of effective governance arrangements, may lead to inequitable and unsustainable water use patterns. Cooperation between governments, civil society and the private sector at the global level, for example through the call for fair water footprints, is critical to addressing the water crisis.[18] Despite the private sector having an important role to play in water management, including by unlocking financial resources and innovative funding schemes, 25% of countries report limited exchange of data on water resources development, management and use between government and the private sector.[19]

15. A key challenge in progressing cooperation at all levels is to improve linkages across communities, sectors and countries, which is ultimately a governance challenge. Meaningful stakeholder engagement that brings together multiple values, is essential to the sustainable and equitable governance of waters at all levels. However, while around 90% of countries report having laws and policies in place to support community and user participation in rural drinking water, as well as water resource planning and

[16] At present, there are 37 parties to the Watercourses Convention and 47 parties to the Water Convention. See also UN General Assembly Resolutions in 2008, 2011, 2013, 2016, 2019 and 2022 encouraging countries to be guided by the Draft Articles when developing governance arrangements for their shared aquifers.

[17] UN-Water, *Policy Brief on the United Nations Global Water Conventions: Fostering sustainable development and peace* (2020).

[18] Glasgow Declaration for Fair Water Footprints, A COP26 Initiative, November 2021.

[19] UNEP, *Progress on Integrated Water Resources Management – Global indicator 6.5.1 updates and acceleration needs 2021* (2021).

management, only around 17% of countries report having sufficient, i.e., over 75%, financial resources to support such participation.[20]

16. At both national and transboundary levels, coordination mechanism across sectors and ministries, including agricultural and livestock rearing, climate, energy, environment, financing, fisheries, forestry, health, humanitarian, industry, mining, municipalities, planning, sanitation and tourism, is key to sustainable and equitable water management. However, 50% of countries suggest that they do not have formal water resources management mechanisms at the national level for cross-sectoral coordination.[21] Even where formal mechanisms are in place, most countries still report challenges in their implementation. A lack of vertical coordination between the basin or aquifer level, national and subnational levels, including local government, is cited by many countries as a challenge.[22] At the basin level, joint bodies, such as river basin organisations, often lack the mandate to engage effectively with all water-related sectors.

17. Scientific cooperation, together with education and training, plays an important role in supporting water cooperation and progressing the SDGs. Output-based approaches to education and training, however, have paid insufficient attention to attracting and retaining the skilled workforce needed to progress water cooperation. Also, asymmetric and weak national research capacities, fragmented research programmes, differing funding priorities, and a lack of critical and independent research mandates, hinder meaningful scientific collaboration.[23] Additionally, Indigenous Peoples' knowledge, which can provide important insights into the sustainable and equitable management of water, is not always appropriately taken into consideration in scientific collaborations.

Sustainable Development Goal Interlinkages

18. Climate adaptation and mitigation measures demand action across physical, political and jurisdictional boundaries, between sectors, and amongst stakeholders operating at and across multiple levels. While climate change impacts on water can exacerbate tensions and increase risks of disputes, they can also trigger cooperation. Water cooperation is important for progressing climate change adaptation in shared basins. Mainstreaming freshwater in climate mitigation and adaptation planning and action requires polycentric and inclusive governance arrangements that offer the potential for more efficient and effective adaptation, the pooling of available data, models, scenarios, expertise and resources, scientific evidence, innovations and technologies, and enlarging the planning space for locating adaptation measures and even sharing costs and benefits.

19. Another opportunity for enhancing cooperation across the SDGs relates to water and energy (SDG 7). For example, hydropower is recognized as playing a crucial role in accelerating the transition away from fossil fuels and towards renewable forms of energy. The International Energy Agency estimates that hydropower generation would need to double to reach net-zero CO_2 emissions by 2050.[24] Cooperation between Brazil and Paraguay, originally through the signing of a peace and cooperation agreement in 1966, demonstrates the multiple benefits that countries enjoy through cooperation. As a result of the creation of the Itaipu Hydropower Scheme and a binational entity the countries have generated shared benefits. These benefits not only include energy provision and shared revenues, but also social and environmental projects across most SDGs for local communities and Indigenous Peoples within the Paraná River basin. In addition, the countries have been able to more effectively manage critical periods, such as during low water levels. Unfortunately, many countries and transboundary basins lack the necessary governance arrangements that can provide both an enabling environment for implementing

[20] UN-Water and WHO, *Strong Systems and Sound Investments – UN-Water Global Analysis and Assessment of Sanitation and Drinking Water GLASS 2022 Report* (2022).
[21] UNEP, *Progress on Integrated Water Resources Management – Global indicator 6.5.1 updates and acceleration needs 2021* (2021).
[22] Ibid.
[23] Dinara R Ziganshina and Joop LG de Shutter, 'Paving the Way for Evidence-Driven Transboundary Water Cooperation in Central Asia' (2021) 58(6) JAWRA 1149.
[24] International Energy Agency, *Net Zero by 2050 – A Roadmap for the Global Energy Sector* (2014).

hydropower projects in a sustainable and equitable way, and that can account for the likely impacts of climate change and related risks on existing and future infrastructure projects.

20. The water-energy-food-ecosystem (WEFE) nexus, which requires a systems approach that brings together communities, sectors and countries, offers potential to accelerate progress across multiple SDGs.[25] Given that agriculture accounts for 70% of water use globally, nexus solutions that lead to a more sustainable and productive agricultural sector are particularly important. Within a transboundary setting not addressing trade-offs and externalities across all sectors can lead to tension between communities, sectors and countries; whereas a WEFE nexus systems approach, underpinned by multilevel governance, including transboundary arrangements where appropriate, has the potential to increase resource use efficiency, capitalize on regional complementarities and improve ecosystems. Nature-based solutions can support a WEFE nexus system approach. Such solutions protect, sustainably manage, and restore natural or modified ecosystems, address societal challenges effectively and adaptively, and simultaneously provide human well-being and biodiversity benefits. Cooperation between Algeria, Libya and Tunisia on the North-Western Sahara Aquifer illustrates the benefits of adopting a WEFE nexus approach. Based on a 2006 tripartite consultation mechanism and other cooperative endeavours these countries have worked at local, national and aquifer levels to carry out a WEFE nexus assessment and identify a package of 15 mutually supportive solutions that minimize intersectoral trade-offs and negative impacts, while maximizing synergies across water, energy, food and ecosystems.[26]

21. Water cooperation can also be a catalyst for exploiting synergies between the preservation and sustainable use of both terrestrial ecosystems, including mountains and forests (SDG 15) and oceans, seas, marine and inland water resources (SDG 14). Partnerships, such as the Action Platform for Source-to-Sea Management hosted by the Stockholm International Water Institute, demonstrate the importance of cooperation and coordination between organisations, initiatives, and multilateral environmental agreements operating at multiple levels with a shared interest in building more climate resilient and sustainable land-freshwater-marine ecosystems. The collaboration between the Orange-Senqu River Commission and the Benguela Current Large Marine Ecosystem Commission in Southern Africa shows the value of coordination between two international commissions established for the equitable and sustainable use of a transboundary river basin, and a marine ecosystem.

22. While the relationship is complex, it is clear that ‘water, peace and security are inextricably linked’.[27] Water can be an important driver for peace and cooperation at all levels.[28] At the local level conflicts between users may occur. For example, transhumance routes affected by changing rainfall patterns can impact migratory herders who may be pushed towards the lands used by sedentary farmers or towards conservation areas, which in turn threatens tourism potential and leads to human-wildlife conflicts.[29] Displacement and migration due to water insecurity is also a large and growing risk. Local level cooperation becomes even more important in situations of fragility, conflict and violence. In such settings, water access can be part of existing tensions, the ability of authorities to address tensions may be compromised, and a failure to agree on cooperation mechanisms may trigger conflict. In 2022, one billion people live in countries affected by situations of fragility, conflict and violence, and over 324 million are directly in need of humanitarian aid.[30] Water may be the object or target of conflict, such as when Islamic State militants/ Daesh briefly took control of Iraq’s largest dam (Mosul Dam) in August 2014, or during the wider conflicts in the region. In conflict settings, water resources, the natural environment, and essential services, such as access to water and sanitation, are almost invariably directly

[25] UNECE, *Solutions and investments in the water-food-energy-ecosystem nexus – a synthesis of experiences in transboundary basins* (2021).

[26] UNECE, *Policy Brief: Improving Sustainable Development in The North Western Sahara Aquifer System through a Transboundary Nexus Approach* (2022).

[27] United Nations Secretary-General, ‘Secretary General’s Remarks to Security Council on Preventive Diplomacy and Transboundary Waters [as delivered],’ New York, 6 June 2017.

[28] High Level Panel on Water and Peace, *A Matter of Survival – Report of the Global High-level Panel on Water and Peace* (2017).

[29] ICRC, When *Rain Turns to Dust – Understanding and Responding to the Combined Impact of Armed Conflicts and the Climate and Environment Crisis on People’s Lives* (2020).

[30] OCHA, *Global Humanitarian Overview 2022, October Update (snapshot as of 31 October 2022).*

or indirectly affected by the conduct of hostilities. Taken together, and left unaddressed, these pressures represent a significant risk not only to cooperation, peace and stability but also undercut the ability to capture significant development opportunities that are directly or indirectly dependent on water. Adherence and respect of international humanitarian law is the most basic and essential form of cooperation in times of (armed) conflicts.

23. Water can also bring communities, sectors and countries together and act as a driver of peace by providing livelihood and development opportunities – opportunities that are in contrast to largely lose-lose scenarios that result from conflict. By co-ordinating water collaboration across sectors and river, lake and aquifer systems, regional integration mechanisms, such as the regional economic communities across Africa, have an important role to play in progressing cooperation, peace and regional integration. At the transboundary level, joint bodies, such as river basin organisations, can also play a key role in driving peace and regional integration. For example, the establishment of the Sava River Basin Commission between Bosnia and Herzegovina, Croatia, Serbia and Slovenia, demonstrates how interests in the joint management of shared waters allows countries to build trust and develop cooperation in many other areas within post-conflict settings.

III. Overview of opportunities for progress and transformative solutions

Funding and Financing

24. While Official Development Assistance (ODA) commitments to the water sector increased in real terms between 2015 and 2019, ODA disbursements to the water sector remained stable at US$ 8.8 billion.[31] Current levels of financing fall far short of global projections of the financing needed to achieve SDG 6. Estimates suggest that US$ 6.7 trillion is needed by 2030, and US$ 22.6 trillion by 2050 to achieve SDG 6.[32] This shortfall is recognised at the transboundary level, where most countries report having insufficient resources to progress water cooperation.[33] Despite inevitable challenges, including significant funding gaps, domestic budgetary resources from the States that are members of a joint body should be the primary source of funds to support at least its core operational costs. Joint bodies reliant on such sources tend to demonstrate stronger political will, engagement and resilience. Additional public and private financing and funding offer opportunities for diversifying financial sources. However, there are some challenges in funding and financing transboundary water cooperation, including a perception that such projects are high risk, or the benefits are not well understood.[34]

25. Improvements are needed in the targeting of funding and financing for water cooperation, and in the better coordination and equitable use of existing resources. This includes the mobilisation of additional domestic and international funding for cross-sectoral projects, mobilizing climate funds for water, such as the Adaptation Fund and Green Climate Fund, and the development of innovative financing models, such as the Blue Peace Financing Initiative. Co-designed by the Swiss Agency for Development Cooperation, the UN Capital Development Fund and the Geneva Water Hub, the initiative is currently being piloted within the Gambia River Basin Development Organisation to promote access to public and private capital for non-sovereign entities, such as river basin organisations and municipalities, by transforming transboundary and multisectoral cooperation frameworks into investment platforms.

26. While transboundary water cooperation will require investments that are inevitably more difficult and involve more transaction costs than single country actions they can bring multiple benefits beyond water. International and regional grant finance, for example via the Global Environment Facility (GEF) International Waters Focal Area, and the World Bank managed regional trust funds, such as Cooperation

[31] Based on SDG indicator 6.a.1 data, UN-Water, *Summary Progress Update 2021 – SDG 6 – Water and Sanitation for all* (2021).

[32] OECD, *Financing a Water Secure Future,* OECD Studies on Water (2022).

[33] UNEP, *Progress on Integrated Water Resources Management – Global indicator 6.5.1 updates and acceleration needs 2021* (2021).

[34] UNECE, *Funding and Financing of Transboundary Water Cooperation and Basin Development* (2021).

in International Waters in Africa (CIWA) programme, are essential not only for regional dialogues and the establishment and implementation of legal and institutional frameworks on shared waters, but also to address global concerns such as biodiversity, sustainable land management, climate mitigation and adaptation, disaster risk reduction and pollution prevention in a systems approach that has potential benefits far beyond separate and sectoral finance.

Data and information

27. Sharing of data and information within and between communities, sectors and countries is essential to effectively and transparently inform water-related decision-making processes at multiple levels. Data and information exchange, including scientific cooperation, can also play an important role in building trust and a shared knowledge base, which in turn can contribute to dispute avoidance. Regional approaches, such as demonstrated through the implementation of the EU Water Framework Directive, can be an important means by which to align data validation and standardisation procedures, whilst advancing joint monitoring and assessment. However, States still face challenges with data collection, comparability and compatibility, financial and technical resources, spatial coverage, sustainability of data storage and sharing platforms, application and interpretation of data, and the frequency and timeliness of data exchanges. Despite efforts through UNESCO-IHP's Internationally Shared Aquifer Resources Management initiative to prepare a global inventory and support cooperation between countries through improved knowledge and capacity on transboundary aquifers, and the Global Environment Facility financed Transboundary Water Assessment Programme, the monitoring of SDG indicator 6.5.2 has also confirmed that many countries still face problems in accessing reliable data on their shared aquifers. Indicator 6.5.2 national reports have however provided an opportunity for countries to share data and information on a wide range of their activities and experiences in support of transboundary water cooperation.

28. While reliant upon local data for calibration, recent scientific and technological innovation may provide opportunities that address some of these challenges, such as through the use of the latest information and communications technologies (ICT), remote sensing, Geographical Information Systems (GIS), big data, machine learning, and open science.[35] Citizen science can also play an important role in fostering water cooperation. In addition, joint transboundary diagnostic analyses and strategic action programming, built on cross-sectoral and multi-stakeholder consultation, are valuable tools by which to develop and coordinate science and evidence-based approaches to the identification of shared challenges, priorities and investments within transboundary rivers, lakes and aquifers.

29. Local communities and Indigenous Peoples have a valuable role to play in ground-truthing scientific data and information and sharing traditional knowledge, which can foster bottom-up inclusive approaches that lead to better evidence-based decision-making, awareness raising, support capacity development, and lay the foundations for effective policy implementation.

Capacity development

30. While educating water managers on new technologies has improved, education on the skills needed to foster cooperation, such as negotiation, diplomacy, conflict resolution, governance and law should be upscaled.[36] As a vehicle through which greater inclusivity can be advanced, capacity development initiatives should engage with underrepresented groups, including Indigenous Peoples, women and youth, reach across sectors, and engage different levels and parts of government, including local government.

31. Transboundary cooperation processes require a long-term perspective, with sometimes many small steps. These processes should include opportunities to maintain dialogue outside formal negotiation settings. By becoming students or participants of a training workshop, informal engagements make capacity development a dynamic and often undervalued process that can support, complement and

[35] See *UNESCO Recommendation on Open Science* (2021).
[36] UNESCO-IHP, *IHP-IX Strategic Plan of the Intergovernmental Hydrological Programme – Science for a Water Secure World in a Changing Environment* (9th Phase 2022-2029).

strengthen formal cooperation processes in different ways. Capacity development initiatives, such as training workshops and exchange visits, can bring together experts from different communities, sectors and countries, build trust, and facilitate both peer-to-peer and inter-generational learning. In transboundary settings the funding of internships, Masters and PhD students from transboundary institutions, national governments and civil society has proven to be successful in building a cadre of young and influential technical experts with solid relations and a common knowledge base. Platforms and initiatives at the global and regional levels, such as the Global Environment Facility's International Waters Learning Exchange Resource Network, the International Network of Basin Organizations, and the provision of open access Massive Open Online Courses (MOOC) related to transboundary cooperation, governance, international water law and diplomacy, play an important role in progressing water cooperation.[37]

Innovation

32. Cooperation between international organisations, professionals and researchers through international scientific collaborations plays a crucial role in facilitating and identifying innovative solutions to water resources challenges, while also deepening shared knowledge and understanding, fostering synergies and building trust. For example, UN-Water, a coordination mechanism that brings together 35 Members from the UN system and 45 international Partners, aims to maximize system-wide coordinated action, cooperation and coherence on all freshwater-related issues. Global and regional networks, such as the UNESCO Water Family composed of 58 water-related Chairs and 36 water-related Centres and 168 IHP National Committee and focal points among UNESCO's 195 Member States can bridge the knowledge gap by facilitating the transfer, exchange and sharing of expertise between institutions, academia, civil society, local communities, researchers, and policymakers. Bilateral agreements and regional networks/ platforms, such as those provided through the African Ministerial Council on Water (AMCOW) or the Ibero-american Conference of Water Directors (CODIA), have proven valuable in advancing accessible and affordable knowledge exchange and technology transfer between countries. Innovations in science, including citizen science, open science and data, Internet of Things (IoT), cybersecurity, artificial intelligence, remote sensing, and big data, have an important role to play in progressing water cooperation. Approaches to sustainable water management that combine traditional knowledge and heritage with scientific innovation offer useful lessons, including on equitable and sustainable water allocation and conflict management.

33. Transformative innovation in governance has the potential to accelerate progress on the SDGs. Innovation should underpin policy coherence in line with integrated water resources management (IWRM), the WEFE nexus and source-to-sea approaches and, through integrated platforms, promote cooperative partnerships and networks. Such an approach helps maximise water productivity and sustainability, especially within constrained and contested contexts, and assists in targeting and enabling sustainable food and energy transitions across scales. By nesting a new governance arrangement for the transboundary Stampriet Aquifer within the existing Orange-Senqu Basin Commission, Botswana, Namibia and South Africa have adopted an innovative governance approach that lowers the transaction costs involved in setting up and implementing an entirely new transboundary governance arrangement, whilst also advancing the values of conjunctive management of surface water and groundwater.

34. The adoption and implementation of the Glasgow Declaration for Fair Water Footprints for Climate-Resilient, Inclusive and Sustainable Development is an example of an innovative partnership between government, private sector, financial institutions, civil society organisations, research and external support agencies at multiple levels.[38] Through the declaration, signatories agree to collaborate to ensure that business activity across multiple scales and with significant water and climate-related risks eliminates water pollution and over-extraction from rivers and aquifers, enhances climate resilience, and brings greater accountability to safeguard sustainable and equitable allocations of water.

Governance

[37] See for example the MOOC on Governance for Transboundary Freshwater Security, which is freely available in six languages.

[38] Glasgow Declaration for Fair Water Footprints, A COP26 Initiative, November 2021.

35. Governance is much broader than government - it recognises the value of the private sector, civil society and a wider range of stakeholders. At local and national levels, the factors undermining effective governance should be addressed, including poor resource management, corruption, fragmented institutional arrangements, bureaucratic inertia, insufficient human capacity and a lack of investment. Effective water governance demands decentralised and inclusive decision-making, integrity, transparency and accountability, and inter-sectoral collaboration between private enterprises, community-based organisations, water-user associations, non-governmental organisations and government agencies (national and local). Water governance should be based on clearly allocated and distinguished roles and responsibilities for policymaking, policy implementation, operational management and regulation. Policy and regulatory coherence through effective cross-sectoral co-ordination should be encouraged, especially between policies for water and the environment, health, energy, agriculture, industry, spatial planning and land use.[39] Laws and institutions are critical for establishing clear roles, rights and responsibilities, serving as a medium of legitimate communication across multiple levels of governance and ultimately safeguarding equitable and sustainable entitlements to water resources. National laws, regulations and institutions and transboundary governance arrangements must also be aligned.

36. At the transboundary level the adoption of arrangements for transboundary water cooperation, based on established principles of international law, is a key feature of any multi-level governance system. Arrangements for transboundary water cooperation can be concluded at the bilateral, basin or subbasin level, or provisions on water may be included in broader regional integration agreements or peace treaties. While their form and content may differ depending on the specific context and priorities, certain core 'building blocks' based on international law should be included, such as a) scope, e.g. embedding a drainage basin approach where appropriate; b) substantive norms, such as the principle of equitable and reasonable utilisation, the duty to take all appropriate measures to prevent significant harm and the general obligation to cooperate; c) procedural and institutional arrangements, including setting up joint bodies, prior notification and consultation, environmental impact assessment, data exchange, monitoring and assessment, forecasting and early warning; and d) dispute settlement mechanisms.[40] In addition, whilst recognizing that renegotiating agreements can have high transaction costs, there is a need to 'climate-proof' arrangements to ensure that they have the flexibility required to manage risks related to climate change. As illustrated by the Stampriet example, to better account for transboundary aquifers there is a need to advance governance frameworks for conjunctive management, i.e., the monitoring and coordinated management of surface and groundwater.[41]

37. Joint bodies, such as river basin organisations, are critical to ensuring that cooperative arrangements are implemented effectively and have the capacity to evolve over time, such as in response to climate change impacts or other risks. For example, the International Joint Commission between Canada and the United States has evolved over more than 100 years to address transboundary water issues between the countries. Such evolution has resulted in the Commission expanding its role in the 1970s and 2010s to tackle pollution and degradation within the Great Lakes Basin ecosystem. While many different types of joint bodies exist at the transboundary level experience shows that there are certain facets that generally increase their effectiveness, including inclusiveness, providing them with broad competence to address IWRM in a meaningful way, clearly defining their tasks and powers, ensuring for adequate representation of key stakeholders and promoting consensus decision-making, embedding flexibility in their rules and procedures, allowing for regular interactions amongst experts and decision-makers, utilising them as a platform for sharing available data and information, and giving them a mandate to identify and assess shared benefits.[42] With these facets joint bodies can perform many important legal, technical and diplomatic functions, including data and information collection and exchange, joint monitoring and assessment, joint basin management planning and adaptation, stakeholder engagement,

[39] International Association for Water Law, *Manifesto for National Integrated Legal Frameworks for Water Governance* (March 2022).
[40] UNECE, *Practical Guide for the Development of Agreements and Other Arrangements for Transboundary Water Cooperation* (2021).
[41] Jac Van der Gun, *Conjunctive Water Management: A powerful contribution to achieving the Sustainable Development Goals* (2020).
[42] UNECE, *Principles for Effective Joint Bodies for Transboundary Water Cooperation* (2018).

compliance monitoring and dispute settlement. Joint bodies therefore play an important role in progressing multiple SDGs and act as a driver of peace and regional integration.

38. Although often undervalued, the process of developing arrangements for transboundary water cooperation and joint bodies is in itself a significant outcome worth investing in. Such a process can help develop a common set of technical, legal and process-management skills, it can identify inequalities and inequities, generate respect and appreciation for different views, establish trust and rapport, and foster convergence toward a shared understanding of transboundary waters, their use and protection. Non-governmental and community-based organisations, such as EcoPeace Middle East and the Nile Basin Discourse, in partnership with government, can play an important role in progressing cooperation, both within and out with the context of an existing cooperative arrangement. Similarly, cooperation between cross-border communities can facilitate broader transboundary cooperation.

39. At the national level, countries that have made most progress in enhancing cross-sectoral coordination have pointed to the establishment of coordination bodies, such as inter-sectoral water policy committees that meet regularly and involve all stakeholder groups, or steering committees under the EU Water Initiative National Policy Dialogues (NPDs), which foster inter-sectoral consultation in the development and implementation of water strategies and legislation.[43] Experience reveals that nurturing interdisciplinary training of practitioners, improving coordination at the basin level (such as through the use of basin councils or catchment management committees), involving all key stakeholders (ministries, professional organisations and non-governmental organisations), mainstreaming climate initiatives into water management, and coordinating funding are useful ways in which to enhance inter-sectoral coordination at the national level.

IV. Recommendations

Inclusiveness

40. Accelerated progress on water cooperation at all levels will require much more transparent, accountable, inclusive and integrated water governance systems that target poverty reduction, value underrepresented groups and leave no one behind.

(a) There is a need to ensure the integration of all genders in water resources management at all levels, including transboundary cooperation. Networking initiatives dedicated to supporting existing and potential women water leaders, such as the Women in Water Diplomacy Network, should be continued and upscaled.[44]

(b) Despite international legal recognition and protection, the implementation of Indigenous Peoples' rights within a water context remains inconsistent. Where appropriate, governance frameworks for water cooperation should integrate local and traditional knowledge and customs in their structures, policies and programmes, promote the sharing of best practice and lessons learned, and ensure that Indigenous Peoples have the opportunity to meaningfully engage in decision-making processes.

(c) Young people are agents of change that push society to think differently about water challenges and how to respond to them. Youth are often not present in decision-making and negotiating spaces at different levels and should therefore be involved in water cooperation.

Cross-sectoral

[43] UNEP, *Progress on Integrated Water Resources Management – Global indicator 6.5.1 updates and acceleration needs 2021* (2021). EU, OECD and UNECE, *Water Policy Reforms in Eastern Europe, the Caucasus and Central Asia* (2016).

[44] Stockholm International Water Institute, *A Path Forward for Women, Water, Peace and Security: Women in Water Diplomacy Network Nile and Beyond Global Strategy 2022-2027* (2022)

41. Greater cooperation is needed to advance cross-sectoral approaches to water management that recognise the foundational value of water across SDGs, whilst also managing trade-offs and maximising shared benefits.

(a) Although progress has been made in all regions of the world, the implementation of IWRM at all levels and all dimensions must be accelerated. High-level political support is needed to achieve sustainable water resources management. Such support can be achieved by clearly communicating and demonstrating the value of implementing IWRM for multiple SDGs, for key stakeholders at multiple levels and for all sectors.

(b) At the global level there is a need to integrate water within the UN Framework Convention on Climate Change (UNFCCC), the Paris Agreement and its implementation mechanisms, such as in the global stocktake, the nationally determined contributions (NDCs) and national adaptation plans (NAPs), as well as the Sendai Framework for Disaster Risk Reduction, and other climate-related multilateral frameworks. The COP27 Sharm-El-Sheikh implementation plan and the *Action on Water Adaptation and Resilience* (AWARe) initiative aim to facilitate such integration. At the transboundary level, joint bodies have a key role to play in co-ordinating national adaptation measures and plans, and supporting the adoption of joint basin adaptation and management plans, such as those developed for the Danube, the Dniester, Neman, Rhine, Lake Chad, Lake Victoria, Mekong and Niger basins.

(c) At the regional level multi-stakeholder assessments, dialogues and strategies, river basin and aquifer plans, and coordinated financial support are all important ways by which to assess, prioritise and implement coordinated cross-sectoral nexus solutions and investments. These solutions and investments should include both 'hard' solutions, such as environmentally sustainable infrastructure, and 'soft' solutions, such as legal and institutional reforms, information sharing and capacity development.

(d) Political commitment is critical to supporting policy coherence and multi-stakeholder platforms, which build bridges across sectors and government departments at both national and local levels. Practical ways to support the implementation of ecosystem-based approaches must also be progressed within the context of water cooperation, such as adhering to the International Union for Conservation of Nature's Global Standard for Nature-based Solutions.

(e) Multilevel partnership amongst governments, financial institutions, the private sector, civil society and the scientific community to advance source-to-sea approaches, as well as lessons learned from existing practice, such as cooperative experiences between river basin organisations and regional sea commissions, should be capitalised on and developed further. Efforts to develop an international legally binding instrument on plastic pollution also provide an opportunity to strengthen links between freshwater and marine ecosystem governance systems.[45]

(f) At the global level existing and new diplomatic and humanitarian tools and initiatives, such as the Water, Peace and Security Partnership's Global Early Warning Tool and the Geneva List of Principles on the Protection of Water Infrastructure, should be utilised to address water conflicts, and advance technically-informed preventive diplomacy underpinned by strong political leadership and international humanitarian law. International organizations and other actors should support the creation of networks of local and transboundary peace mediators that can utilise water as a driver for reconciliation and building long-term peace. The recommendations of the Global High-level Panel on Water and Peace should be fully supported and realised.

(g) The co-production and sharing of knowledge are critical to advancing evidence-based approaches to decision-making on water that foster cooperation among scientists, policy-makers and practitioners, water users and the public, and help build trust within transboundary settings. The 9th Phase of UNESCO's Intergovernmental Hydrological Programme (2022-2029) should be embraced as a critical means by which to promote the role of science at multiple levels, and ensure that by 2029 countries have the

[45] UNEP, *UNEA Resolution 5/14 entitled "End plastic pollution: Towards an internationally legal binding instrument"* (10 May 2022).

knowledge, sound scientific and research capacity, new and improved technologies, and management skills needed to achieve a water secure world.

Action oriented

42. Water cooperation requires an accelerated action at all levels to realise water's catalytic and transformative power in progressing the SDGs.

Funding and Financing

(a) At all levels, funding and financing for water cooperation from national and international sources (public and private) should be increased and better coordinated to realise the benefits across multiple SDGs and leave no one behind. The financial and non-financial benefits of investing in water cooperation should be demonstrated through more robust analysis, awareness-raising, capacity-development and exchange of experiences. At all levels there is a need to improve the enabling environment for funding and financing through better coordination, accounting, legal and regulatory frameworks, transparency, anti-corruption and accountability measures, and broader revenue-generating mechanisms. Environmental and social governance frameworks, including the UN Guiding Principles on Business and Human Rights, and the OECD's Guiding Principles on Multinational Corporations, should be respected and corporate water stewardship should be reflected in corporate accountability and sustainable finance legislation. Transboundary cooperation information should be integrated into corporate water risk tools.[46] At the transboundary level, the establishment and strengthening of arrangements and joint bodies, including their financing provisions, as well as strengthening the capacity of such bodies to execute processes for joint project identification and preparation, are critical steps to addressing any perceived risks associated with transboundary water cooperation and providing a sustainable enabling environment for water-related investments.

Data and information

(b) There is a need to strengthen data-driven decision-making on water cooperation at all levels. At the global level efforts to coordinate and strengthen the availability of water-related data, such as the UN-Water's SDG 6 Integrated Monitoring Initiative and the World Metrological Organisation's *Unified Policy for the International Exchange of Earth System Data*, should be supported. At all levels data-sharing protocols can assist in the harmonisation and standardisation of data collection and sharing methods, as well as data management and exchange – but can only be effectively implemented through long-term investments at both national and transboundary levels. At the transboundary level, where operational arrangements for water cooperation are lacking, cooperation on data amongst technical experts, such as through the triennial SDG indicator 6.5.2 data drives, can build trust and collaboration. Joint bodies have a key role to play in data collection and exchange, as well as joint monitoring and assessment. Data management and sharing should be supported through information management systems and web-based platforms that assist in data collection, storage, processing, visualisation and sharing, including providing public access to data.[47]

Capacity development

(c) Capacity development activities in relation to water cooperation are ongoing and should be upscaled. The UN-Water SDG 6 Capacity Development Initiative, established in 2021, should be capitalised on as an opportunity to coordinate capacity building programmes and the expertise of UN-Water Members and Partners in a way that is cross-sectoral, inclusive, demand-driven and responsive of country specific needs. State-of-the-art water cooperation training programmes and materials that utilise new technologies and innovative learning processes, such as (open) e-learning platforms, should be

[46] Climate Disclosure Standards Board: Application guidance for water-related disclosures https://cdn.cdp.net/cdp-production/comfy/cms/files/files/000/005/523/original/cdsb_waterguidance_double170819.pdf

[47] United Nations, *The United Nations World Water Development Report 2022: Groundwater: Making the Invisible Visible* (2022).

developed further, and place emphasis on law, diplomacy, negotiation and conflict management and resolution. Special attention and funding support should be directed towards capacity building and skills development of women water professionals, as well as youth interested in water sector careers. Support to capacity development of local government should be strengthened to allow for implementation of arrangements for transboundary water cooperation at national and local levels.

Innovation

(d) To accelerate progress on water cooperation across sectors and administrative boundaries innovation is required in areas such as funding and finance, data and information, capacity development and governance. Transformative change will require greater co-ordination between UN agencies and other intergovernmental organisations, non-governmental organisations, networks and platforms that support water cooperation, as well as stronger cross-sectoral collaboration and a more inclusive engagement of stakeholders at multiple levels. Bilateral technology transfer and knowledge exchange programmes between States, including South-South partnerships, are an important tool for progressing water cooperation. Where appropriate, free access to knowledge and technology transfer should be provided. Cooperation at regional levels should be strengthened as an important catalyst for knowledge exchange, technology transfer and advancing innovation.

Governance

(e) Coordinated governance arrangements provide a critical enabling environment by which to progress SDGs across multiple levels, sectors and stakeholders. At the local level, while community participation is central to water governance, more investment is needed to support local community and user participation. At the national level countries should, in an inclusive and cross-sectoral manner, develop National Water Roadmaps, proposed by FAO, and IWRM action plans that focus, prioritise and coordinate efforts in support of SDG target 6.5. At the transboundary level, where operational arrangements are lacking or not adaptable or resilient enough to meet contemporary challenges, governments should take the responsibility, in partnership with non-governmental actors and with support from the international community, to establish such arrangements. Joint bodies are key drivers of sustainable development. Where required, the capacity of joint bodies should be strengthened to realise their multiple roles, including engaging water-related sectors, and stakeholders at multiple levels, coordinating basin plans and climate adaption strategies, leveraging innovative financing solutions, and maintaining common data and information systems.

(f) To strengthen political will and accelerate transboundary water cooperation based on principles of international law and existing good practices, countries should accede to and implement the Water Convention and Watercourses Convention, and utilise the Draft Articles on the Law of Transboundary Aquifers as a guide to developing specific arrangements for their shared aquifers, or enhancing the coverage of groundwater in river and lake basin arrangements. UN agencies, financial institutions, regional economic commissions, river basin organizations, non-governmental organisations and others should support countries in their efforts to accede to and implement these instruments.

V. Guiding Questions

The following guiding questions may be used to inform the dialogue:

(a) What needs to be done to accelerate progress and have arrangements and joint bodies for water cooperation in place for all transboundary rivers, lakes and aquifers by 2030?

(b) What transformative solutions will help implement inclusive and cross-sectoral multi-level governance arrangements in support of integrated water resources management by 2030?

(c) How can the international community better capitalise on water as a driver for peace at all levels, including through humanitarian-development partnerships, and better protect water in times of armed conflicts?

(d) What opportunities exist to articulate, promote, and maximise the shared benefits of water cooperation equitably across communities, sectors and countries?

(e) How can the gap in funding and financing of water cooperation be addressed? How can synergies between existing funding and financing models be strengthened, and how can innovative funding sources and approaches be advanced?

(f) How can synergies between climate action and water cooperation be enhanced?