Dakar Working Paper: Interactive Dialogue C (ID C) Water for Planet: Climate, Biodiversity, Desertification, Environment, Source to Sea, Resilience and Disaster Risk Reduction

Headlines on progress to date

- **Planetary resilience depends on healthy, connected hydrological systems.** Water connects the planet from groundwater, rivers, plants, precipitation, clouds, and glaciers to oceans, making it both the primary medium of planetary risk but also resilience. Yet continental drying is accelerating, water quality is declining, soils are losing their capacity to store water, and floods and droughts are becoming more frequent. Freshwater ecosystems play a critical role in safeguarding water resources, reducing water-related hazards, and acting as carbon storage that contribute to climate mitigation. Ecosystems are degrading globally[1] with freshwater species declining by 83% since 1970; undermining resilience, biodiversity, and livelihoods that depend on them. Understanding these connections reveals how the global hydrological system functions and where it is breaking down.
- **SDG 6 Commitments have been upscaled, but significant gaps remain in their implementation.** Whilst there are consequences for this across a range of sectors, implementation issues create cascading ecological impacts from source to sea impacting water availability and quality. This dialogue focuses on SDG 6.3 (wastewater and water quality), 6.6 (freshwater ecosystems) but recognizes water as an enabler, connecting and integrating water across the SDGs, including SDG 2 (zero hunger), SDG 11 (sustainable cities), SDG 13 (climate action), SDG 14 (oceans), and SDG 15 (land).
- **Significant effort has been made to upscale the generation of freshwater and ecosystem data, but it is not sufficiently contextualized for decision-making across multiple water-dependent sectors**. The challenge is not only closing data gaps but making existing data actionable: transforming complex datasets into accessible, relevant knowledge that informs planning, the development of management strategies, and implementation into national policies in a rapidly changing environment.
- **Effective management of water resources, including transboundary and groundwater, is fundamental** for climate adaptation to manage increasing risks from floods, droughts, glacier melt and sea-level rise, as well as for climate mitigation to for example ensure sufficient water availability for the clean energy transition and removal of carbon dioxide from the atmosphere[2]. The Integrated Water Resources Management (IWRM) offers a practical framework for managing competing water demands across sectors and scales. The IWRM status of global implementation has increased from 49% in 2017 to 57% in 2023[3].
- **Measurable progress has been made on expanding multi-hazard early warning systems (MHEWS), with 119 countries, or 60% of all countries, reporting the existence of MHEWS, which signifies 113% increase during the past 10 years[4].** However, gaps in coverage, interoperability, and national capacity persist especially among Least Developed Countries (LDCs) and Small Island Developing States (SIDS), with only 43% of them having these systems in place, and only 50% of transboundary basins have implemented joint coordination or warning systems for floods[5]. This is despite MHEWS being an

[1] UN-Water and UNEP, 2024. Progress on Water-related Mid-term status of SDG Indicator 6.6.1 and acceleration needs, with a special focus on Biodiversity. Available at https://www.unwater.org/sites/default/files/2024-08/SDG6_Visual_Summary_Indicator_Report_661_Progress-on-Water-related-Ecosystems_2024_EN.pdf
[2] UN-Water, 2024. UN-Water Analytical Brief on Water for Climate Mitigation. Geneva, Switzerland
[3] United Nations Environment Programme, 2024. Progress on implementation of Integrated Water Resources Management. Mid-term status of SDG indicator 6.5.1 and acceleration needs, with a special focus on climate change.
[4] UNDRR and WMO, 2025. Global Status of Multi-Hazard Early Warning Systems. Geneva, Switzerland.
[5] UNECE, UNESCO and UN-Water, 2024. Progress on Transboundary Water Cooperation: Mid-term status of SDG Indicator 6.5.2, with a special focus on Climate Change – 2024

essential adaptation measure with a tenfold return on investment[6]. 90% of disasters linked to natural hazards during the last decade were water-related[7] highlighting the need to accelerate investments in flood and drought monitoring, forecasting, risk communication as well as the development of resilient water infrastructure and emergency preparedness and response capacities.

- **Nature-based and hybrid solutions for water and climate resilience are proven and cost-effective.** However, traditional water governance systems do not prioritize nature-based solutions to water resources management with the knock-on consequence that nature-based solutions are significantly underfunded. The ongoing lack of prioritization of nature-based solutions will continue to undermine natural ecological systems that are essential to support societies and economies.

Emerging issues / areas of action

While Multilateral Environmental Agreements (MEAs), including the three Rio Conventions increasingly recognize water as an *organizing* principle; it has yet to function as an *operating* principle that effectively drives governance, investment, and accountability into climate, biodiversity, and development agendas. Moving from recognition to implementation requires addressing critical gaps in how natural water systems are understood, governed, and financed. The following emerging issues highlight where Dakar discussions can advance practical integration and accelerate action.

- **Managing water systems under increasing uncertainty and rapid environmental change:** Historical hydrological patterns no longer guide reliable planning, as floods, droughts, glacier melt, and sea-level rise expose the limits of conventional management approaches. Floods and droughts increasingly reflect non-stationery and compound risks, challenging infrastructure design, ecosystem management, and financial risk assessment. Managing water under growing uncertainty requires rethinking interconnected water systems and integrating ecosystems as core infrastructure. Safeguarding ecosystem services requires large-scale protection alongside investments in hazard monitoring, hydrometeorological data, forecasting, and early warning systems to reduce risks, protect communities, and manage climate-related uncertainties.
- **Designing nature- and climate-resilient solutions that are truly intergenerational, inclusive and cross-sectoral:** Water's natural connectivity as a global resource must be mirrored in the solutions we design to tackle the crisis, particularly through connected and integrated governance systems. To maximize impact, solutions must be cross-sectoral, intergenerational, and inclusive, ensuring that young people, women, and Indigenous Peoples are actively engaged as decision-makers shaping outcomes.
- **Technology and water demand:** Technological developments can help address a variety of global challenges (urbanisation, food security, population growth, economic development), but these have additional impacts on water availability. AI and quantum computing have been transformative in generating solutions but the data centers, smart technology (e.g. semiconductors) and energy generation needed to support this technological revolution are water hungry. Large data centers use as much water per day as a town populated by ~25,000 people[8], raising concerns about water use priorities and equity.
- **Accelerating unconventional water supplies:** The increasing recognition that water planning must account for the basic water needs of the planet means that the world must get smarter in how water is used and this requires upscaling of unconventional water supplies: increased wastewater treatment for

[6] WMO, 2022. Early Warnings for All Executive Action Plan 2023-2027. Available at https://library.wmo.int/doc_num.php?explnum_id=11426
[7] Sendai Framework Monitor, 2010-2019. Available at https://sendaimonitor.undrr.org/
[8] M. Yañez-Barnuevo, 2025. Data Centers and Water Consumption. Environmental and Energy Study Institute. Available at https://www.eesi.org/articles/view/data-centers-and-water-consumption

reuse, desalination, and rethinking water supply systems. At the same time, we must be cognizant of potential unintended consequences of feeding unconventional water supplies back into the natural environment, and monitoring and management strategies should specifically address this issue.

Guiding questions

- Given the interconnectedness of global water and ecosystems, how can countries ensure that their national decision-making processes deliver intergenerational and cross-sectoral solutions across agendas (including Climate, Biodiversity, Desertification, Environment and Disaster Risk Reduction)?
- Governance approaches like source-to-sea, the Water-Energy-Food-Ecosystems Nexus, and IWRM aim to overcome fragmentation, yet implementation remains challenging. How can governance frameworks from local to national and transboundary scales enhance cross-sector connectivity, foster stakeholder's accountability, strengthen natural water storage, and reduce flood and drought risks through ecosystem restoration and improved hydrological information systems?
- While closing remaining data and information gaps is essential, how can we simultaneously contextualize and operationalize existing freshwater and ecosystem data to drive knowledge generation that directly supports effective governance and management strategies for addressing economic, societal as well as environmental needs?
- How can countries and investors be incentivized to redirect financing from traditional infrastructure toward large-scale nature-based solutions and freshwater ecosystem restoration?
- What is needed to accelerate the adoption of unconventional water sources, such as increased wastewater treatment for reuse, desalination, and rethinking water supply systems, to address global water scarcity, while ensuring that unconventional water sources do not negatively impact the natural environment?
- Smart technology and the digital evolution are water hungry. How can we balance the needs of the technological transformations that are taking place, with planetary needs, the needs of the freshwater ecosystems and issues of global water scarcity, and declining water quality?