Follow-up to the International Forum of UNESCO Chairs and Partners

A Global Priority Africa (GPA) Dialogue Session

Transforming Knowledge for Africa's Future

Wednesday 4 June 2025, 2pm-4pm (Paris time)

Priority Africa Flagship Programme 5 - Online Working Session Part 2/2

GPA Dialogue session on:

Ocean science, climate change resilience and water resource management in Africa

This webinar brings together two complementary platforms for discussion on Global Priority Africa. The first being the last session in the current series on Priority Africa Flagship Programmes held as a follow-up to the International Forum of UNESCO Chairs and Partners on Transforming Knowledge for Africa's Future. The second is the Global Priority Africa Dialogues between Member States and experts at Headquarters and on the ground.

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Background

Africa's ocean and freshwater systems underpin the ecological stability, economic prosperity, and cultural heritage of its peoples. With over 38 coastal and island states, the continent possesses more than 30,000 km of coastline, which supports livelihoods, biodiversity, trade, and climate regulation. Simultaneously, water basins cover approximately 64% of the continent's land area, which contain 93% of the water resources and are inhabited by 77% of the population[1]. These water bodies and marine systems are critical to achieving the African Union's Agenda 2063, the UN 2030 Agenda for Sustainable Development, the African Water Vision 2025, and the aspirations of the African Blue Economy Strategy, which recognizes both oceanic and inland water ecosystems-including rivers and the African Great Lakes—as integral to Africa's development.

Yet, these vital resources are increasingly at risk. The Intergovernmental Panel on Climate Change (IPCC) has identified Africa as one of the most vulnerable continents to the impacts of climate change, with projected increases in sea level rise, ocean warming, saltwater intrusion, glacial melt, and extreme precipitation events. Coastal cities such as Lagos, Abidjan, Dar es Salaam, and

[1] Transboundary Natural Resources Management in a Changing Climate – The Case of Shared Watersheds in Africa

Alexandria are among the world's most exposed urban areas to flooding and sea level rise, threatening infrastructure and economic assets worth billions of dollars[2]. It is estimated that climate-related damages to African coastal zones may reach USD 50 billion annually by 2050 under current trajectories[3].

Freshwater systems face parallel challenges. Water resource management in Africa is increasingly challenged by population growth, rapid urbanization, and rising demand for potable water, agriculture, and industrial development. Solid waste, agricultural runoff, and sanitation-related pollution have further deteriorated water quality across river basins and aquifers. Climate change exacerbates these pressures, altering rainfall patterns, intensifying droughts and floods, and increasing hydrological variability. More than 400 million people in Sub-Saharan Africa lack access to basic drinking water, and climate variability has intensified the frequency and severity of droughts and floods across the continent[4]. As of 2022, water stress was estimated to affect about 250 million people in Africa and is expected to displace up to 700 million people by 2030[5], with additional disproportionate burden due to its high dependence on rainfed agriculture and limited adaptive infrastructure. The 2022 Water Sector and Sanitation Monitoring and Reporting (WASSMO) analysis underscores significant gaps in institutional capacity, investment in education and training, and availability of specialized personnel. Addressing these gaps requires not only improved technical capabilities, but also stronger legal frameworks, enhanced cross-border cooperation, and a coordinated research-to-policy interface.

In the face of these challenges, Africa must strengthen its leadership in ocean and freshwater science. Currently, global ocean observations originating from African waters are low, and many countries on the continent lack national ocean science strategies, sustained observation systems, or integrated hydrological data platforms. These limitations constrain the continent's ability to generate actionable insights, inform disaster preparedness, and build resilience. Investments in hydrological and oceanographic infrastructure, advanced forecasting systems, and institutional coordination across sectors are urgently needed.

The evolving science-policy landscape provides Africa with an opportunity to shape the future of ocean and freshwater governance. Strengthening institutional capacities, expanding observation systems, and accelerating innovation can turn current challenges into opportunities for green jobs, inclusive growth, and cross-border cooperation. Recognizing this, countries such as Kenya, South Africa, Seychelles, and Mauritius invest in marine spatial planning (MSP) and Sustainable Ocean Planning to integrate ecosystem-based management into coastal and maritime development. Similarly, the Lake Chad Basin Commission, OMVS, and transboundary river basin organizations are demonstrating new models of multilateral governance and data sharing. The Source-to-Sea approach is gaining traction in Africa as a holistic method to link terrestrial, freshwater, and marine systems, promoting sustainable land use, pollution control, and ecosystem restoration.

UNESCO, through its Intergovernmental Oceanographic Commission (IOC) and Intergovernmental Hydrological Programme (IHP), is working to address these dual challenges. IOC supports African countries through the UN Decade of Ocean Science for Sustainable Development by promoting marine spatial planning, ocean literacy, and early warning systems to advance science-policy integration, capacity development, and inclusive ocean knowledge for climate resilience and a sustainable ocean economy. In parallel, the IHP aims to address national, regional, and global water challenges by expanding scientific understanding of water, improving technical capabilities, and enhancing education to build a sustainable and resilient society. These includes the innovative development of science and technology, generation of integrated knowledge based on empirical data and shared experiences, and its broad dissemination and practical application.

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[2] https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg2-chapter9-1.pdf

[3] https://storymaps.arcgis.com/stories/87000260100a4700a908ee6210e15425

[4] https://library.wmo.int/viewer/67761/download?file=1330_State-of-the-Climate-in-Africa-2022_en.pdf&type=pdf&navigator=1

[5] https://library.wmo.int/viewer/67761/download?file=1330_State-of-the-Climate-in-Africa-2022_en.pdf&type=pdf&navigator=1

Through the Ocean Decade (2021–2030) and IHP-IX Strategic Plan (2022–2029), UNESCO supports member states in strengthening technical systems and scientific capacity. UNESCO also fosters innovation in ecosystem-based adaptation and promotes the conservation of submerged archaeological resources through the 2001 Convention on the Protection of Underwater Cultural Heritage, reinforcing cultural dimensions of the blue economy. In addition, UNESCO promotes the implementation of ecohydrological nature-based solutions approach through the 63 UNESCO Ecohydrology Demonstration Sites in 36 countries.

Notably, over 300 participants joined the International Forum of UNESCO Chairs and Partners plenary on the International Decade of Sciences for Sustainable Development (IDSSD), reflecting Africa's commitment to leveraging science, technology, and innovation for sustainability and resilience. This momentum aligns with Agenda 2063, STISA-2034[6], the African Union's Climate Strategy, the 2050 AIM Strategy, and AMCOW[7]-led frameworks. Regional Economic Communities such as IGAD[8], ECCAS[9], COMESA[10], and ECOWAS[11] are advancing Blue Economy strategies that promote integrated governance of oceanic and inland waters, supported by instruments like the SADC[12] Water Protocol, the Nairobi Convention, and the Abidjan Convention. However, fragmented national and regional efforts continue to hinder coordinated responses to ocean-climate-water challenges. This working session, part of the Fifth Flagship Programme of the Operational Strategy of Priority Africa, is grounded in the overarching goal to enhance open science, reinforce capacity building in basic and applied sciences, and strengthen innovation and technology in support of ocean science, climate change resilience, and water resource management in Africa. Whereas the issues of enhancing open science and reinforcing capacity development in basic and applied sciences to strengthen scientific research, innovation, and technology were addressed in the session of 12 March 2025, which was attended by over 200 participants. The current session will provide a platform to further discuss how ocean sciences and sound, science-based decision-making in water resources management can support efforts towards achieving sustainable development and climate resilience in Africa.

Aims and Objectives

This session seeks to build on Africa's growing momentum in harnessing science and innovation to address climate resilience and sustainable water management across marine and inland aquatic systems. Framed within the African Union's Agenda 2063, 2050 AIM Strategy, and the Blue Economy Strategy, the session aims to:

- Foster integrated dialogue on the role of ocean science, freshwater management, and climate resilience in advancing Africa's sustainable development priorities;
- Identify strategies for scaling ocean and freshwater observation, modeling, and data access;
- Identify concrete opportunities for scaling science-based solutions that enhance the adaptive capacity of African countries and coastal and riverine communities to climate change impacts;
- Promote synergy and coherence among existing frameworks and tools such as Marine Spatial Planning (MSP), Sustainable Ocean Planning, Integrated Water Resources Management (IWRM), and the Source-to-Sea approach;

[6] Science Technology and Innovation Strategy - 2034
[7] African Ministers Council on Water
[8] Intergovernmental Authority on Development
[9] Economic Community of Central African States
[10] Common Market for Eastern and Southern Africa
[11] Economic Community of West African States
[12] Southern African Development Community

- Highlight African-led initiatives and regional best practices that demonstrate innovation, inclusion, and cross-border cooperation in ocean and water governance;
- Mobilize partnerships and action to strengthen observation networks, research infrastructure, and data sharing to inform policy and investment at national and regional levels.

Priority Africa Flagship Programme 5 - Online Working Session Part 2/2 **Ocean science, climate change resilience and water resource management in Africa** Wednesday 4 June 2025, 14:00 – 16:00 (Paris time)	
14:00 - 14:10	**Welcoming remarks** • Sobhi Tawil, Director, Future of Learning and Innovation Division, UNESCO • Mohamed Elfarnawany, Director, Division of Priority Africa Coordination, UNESCO
14:10 - 14:55	**Segment 1: Advancing Ocean Science for Climate Resilience and Sustainable Ocean Economies in Africa** **Moderator: Ibukun Adewumi,** Head, UNESCO/IOC Sub Commission for Africa & the Adjacent Island States (IOCAFRICA) Secretariat **Speakers:** • David Obura, Director CORDIO/Chair, IPBES • Mahouton Norbert Hounkonnou, Chairholder, Chaire UNESCO en physique mathematique et applications, University of Abomey-Calavi, Bénin • Ntahondi M. Nyandwi, Chairholder, UNESCO Chair in Marine Technology, University of Dar es Salaam, United Republic of Tanzania • Fanny Douvere, Sustainable Ocean Planning and Management (SOPM) Coordinator, IOC • Andrina Beaumond, Clean Seas Coordinator, UNEP **Open discussion**
14:55 - 15:40	**Segment 2: Achieving Water Security in Africa** **Moderator: Alexandros Makarigakis,** Head of Natural Sciences Sector & Regional Hydrologist, UNESCO Regional Office for Eastern Africa, Nairobi, Kenya

	Speakers: • O.D. Jimoh, Chairholder, UNESCO Chair in Integrated Flood Management and Water Resources, Federal University of Technology, Minna, Nigeria • Thokozani Kanyere, Co-Chairholder, UNESCO Chair in Geohydrology, University of the Western Cape, South Africa • Makarius Lalika, Chairholder, UNESCO Chair on Ecohydrology and Transboundary Water Management, Sokoine University of Agriculture, United Republic of Tanzania • Graham Jewitt, Professor of Hydrology, IHE Delft Institute for Water Education - UNESCO Category 2 Centre. **Open discussion**
15:40 - 15:50	**Overall Wrap-up** **Speaker: Rahmah Elfithri,** Chief of Section, Capacity Development and Water Family Coordination, Natural Sciences Sector, UNESCO
15:50 - 16:00	**Closing Remarks** • Mohamed Elfarnawany, Director, Division of Priority Africa Coordination, UNESCO