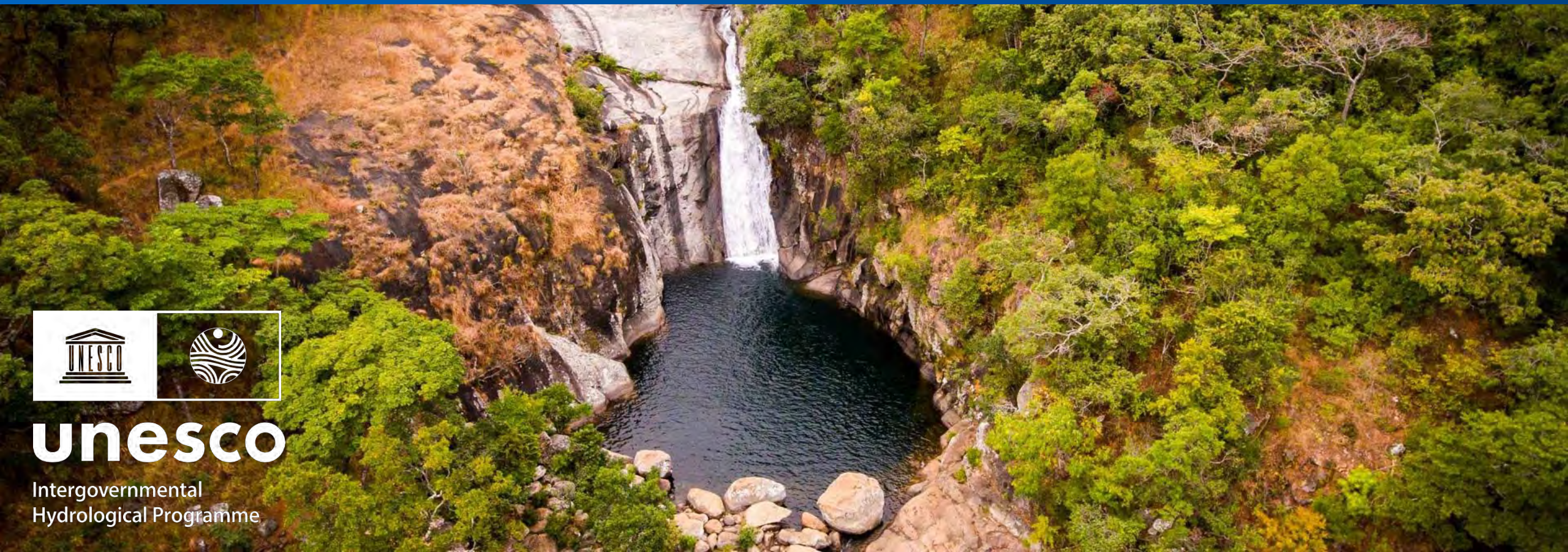
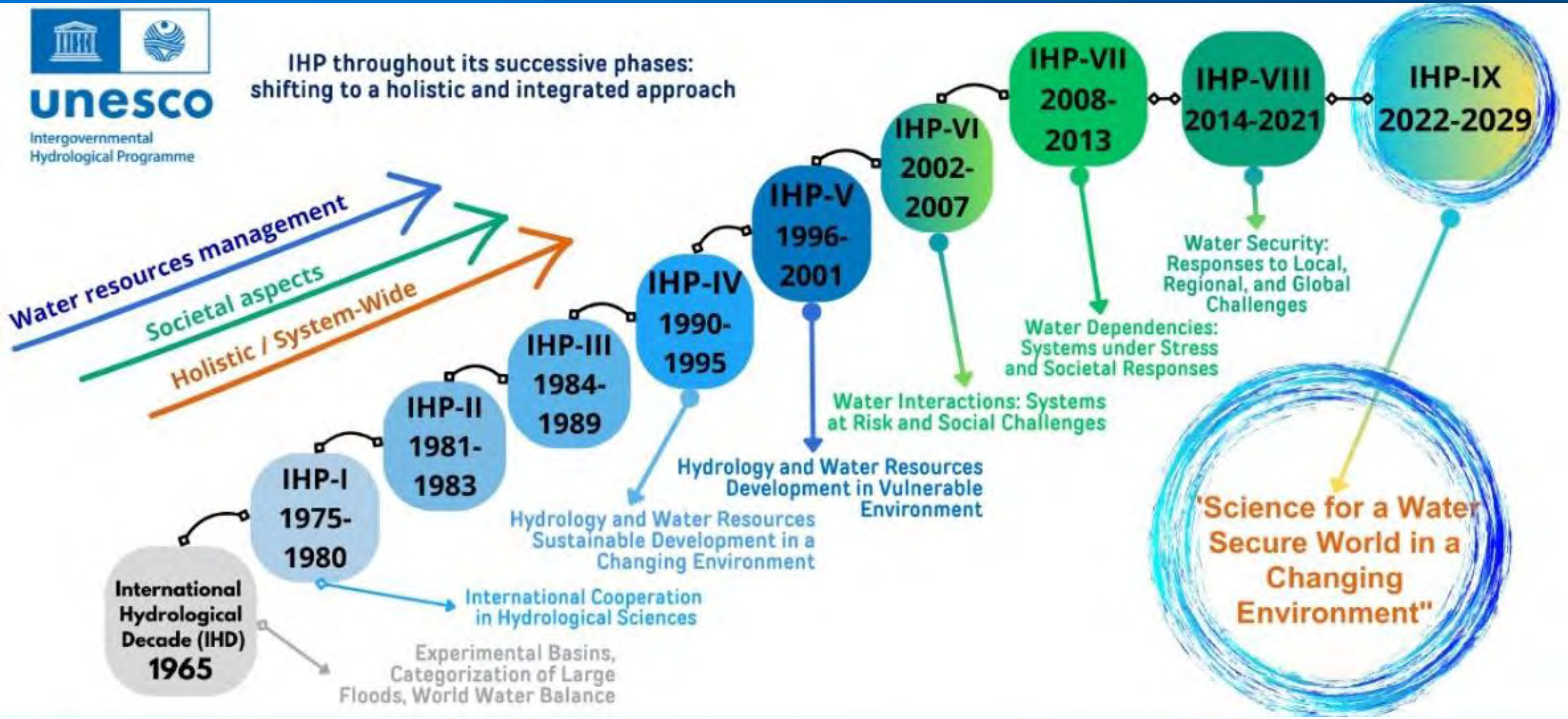
The Intergovernmental Hydrological Programme

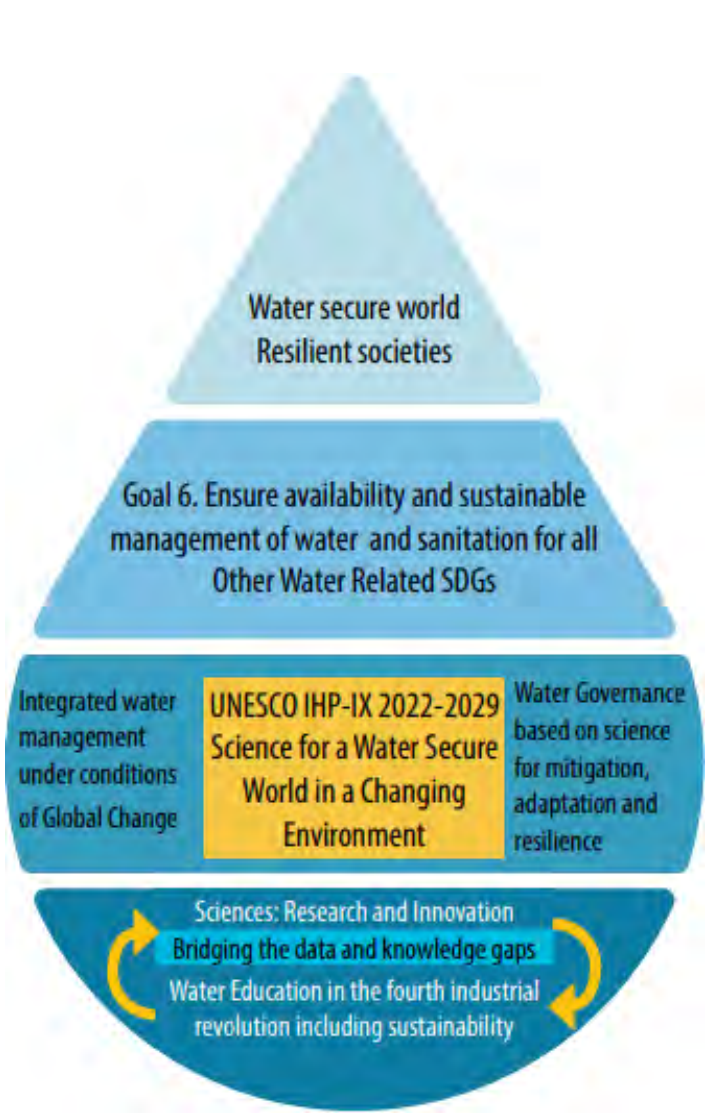
Dr. Abou Amani
Secretary of UNESCO's Intergovernmental Hydrological Programme
Director of UNESCO's Water Division



Intergovernmental Hydrological Programme – Phases



IHP IX Working Groups



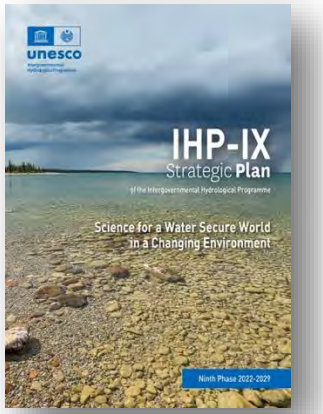
34 expected outputs

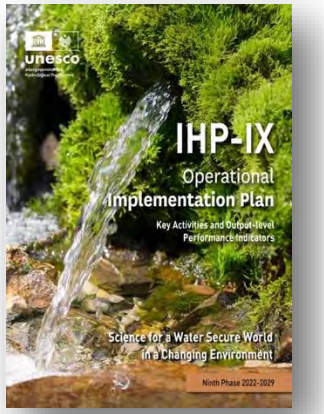
151 Key activities

5 Thematic Open-Ended Working Group based on priorities

3 cross-sectoral groups

Thematic Open-Ended Working Group
1. Scientific Research and Innovation
2. Water Education in the Fourth Industrial Revolution including Sustainability
3. Bridging the data and knowledge gap
4. Integrated Water Resources Management under conditions of Global Change
5. Water Governance based on Science for Mitigation, Adaptation and Resilience





Additional cross-sectoral groups:
1. Hydrological Systems, Rivers, Climate Risk and Water-Food-Energy Nexus
2. Groundwater and Human Settlements
3. Ecohydrology and Water Quality;

Water Family Members

UNESCO Water Initiatives

INTERNATIONAL DROUGHT INITIATIV

INTERNATIONAL FLOOD INITIATIVE

HELP

Hydrology for the Environment, Life and Policy

WORLD'S LARGE RIVERS INITIATIVE

World's Large Rivers Initiative

IHP WINS

Water Information Network System

friend water

Flow Regimes from International Experimental and Network Data

isarm

Internationally Shared Aquifer Resources Management

WATER MUSEUMS GLOBAL NETWORK

UWMP

Urban Water Management Programme

G-WADI

Global Network on Water and Development Information in Arid Lands

MAR

Managing Aquifer Recharge

CRIDA

Climate Risk Informed Decision Analysis

WHYMAP

World Hydrogeological Map

iSi

LAND SUBSIDENCE

LaSII

IIWQ

International Initiative on Water Quality

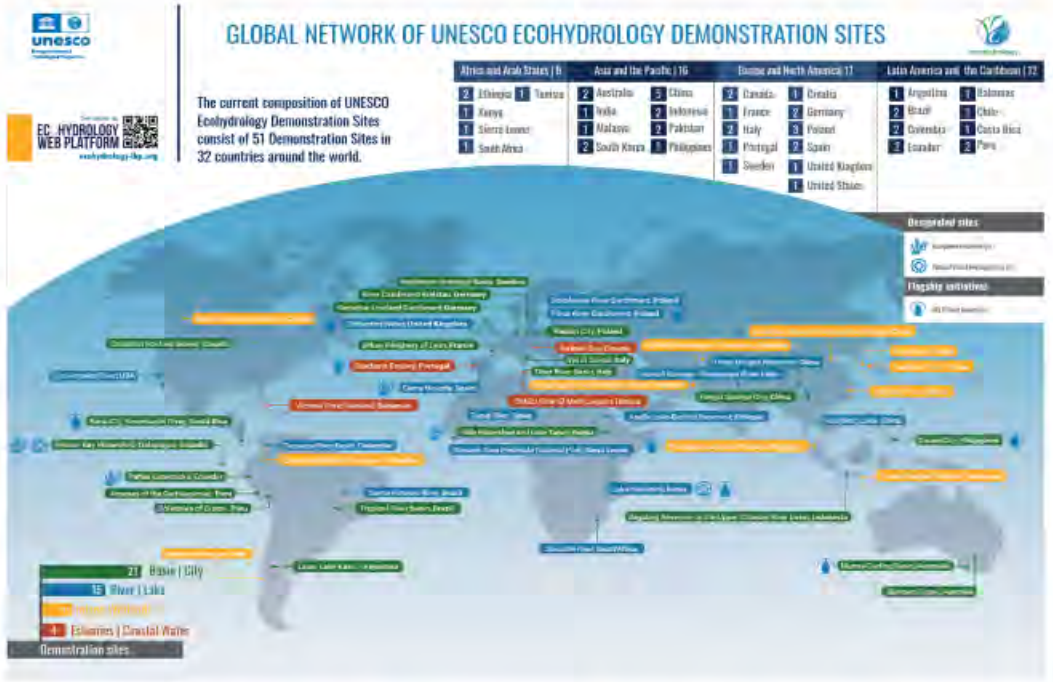
GRAPHIC

Groundwater Resources Assessment under the Pressures of Humanity and Climate Change

unesco

Global Network of UNESCO Ecohydrology Demonstration Sites

- UNESCO-IHP has been applying **Ecohydrological Nature based Solutions since 1996** during the IHP V (1996-2001), means almost 30 years (or 28 years) of Ecohydrology in UNESCO.
- **The first Ecohydrology demonstration project** initiated in 2006 during IHP VI (2002-2007) as part of the Joint IHP-MAB Main Line of Action by establishing its first 10 Ecohydrology Demonstration Sites.
- UNESCO launched the **first call for demonstration sites in 2010** during IHP VII (2008 – 2013) to promote the establishment of Ecohydrology Demonstration Sites around the world to apply ecohydrology solutions in various catchments at all scales.
- In 2022, within the framework of Ninth Phase IHP-IX (2022-2029), UNESCO-IHP launched the **global call for new Ecohydrology Demonstration Sites,** opens from June until August every year – The current call is available here:
- Call for new ecohydrology demonstration sites for the year 2024 |



Ecohydrology Web Platform (ecohydrology-ihp.org)

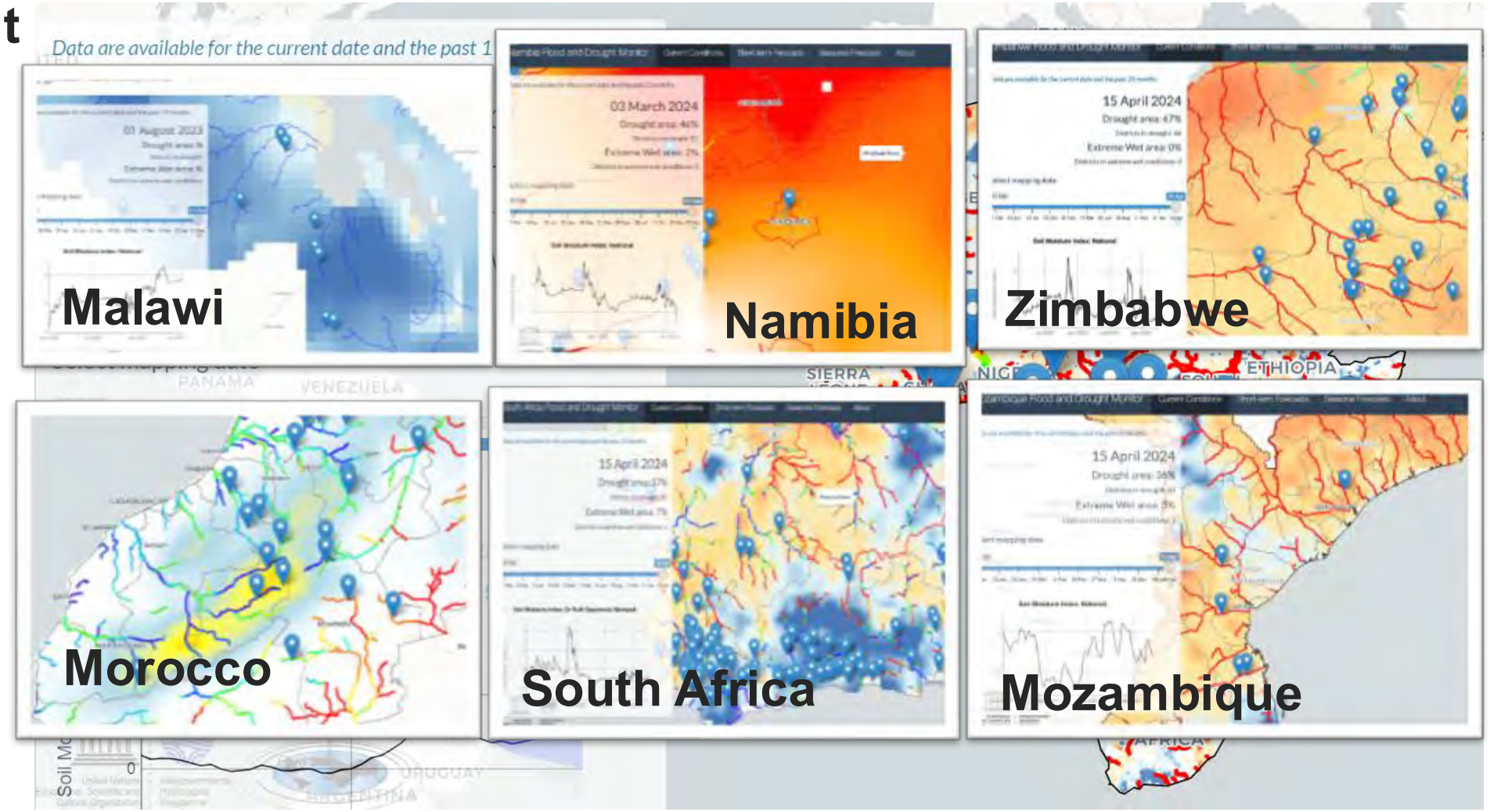
ECOHYDROLOGY WEB PLATFORM

ecohydrology

Climate risk monitoring and early warning to support adaptive planning

Flood and Drought Monitor Platforms

- Continental: Africa
- National:
  - Zimbabwe
  - Mozambique
  - Malawi
  - Namibia
  - South Africa
  - Zambia
  - Botswana

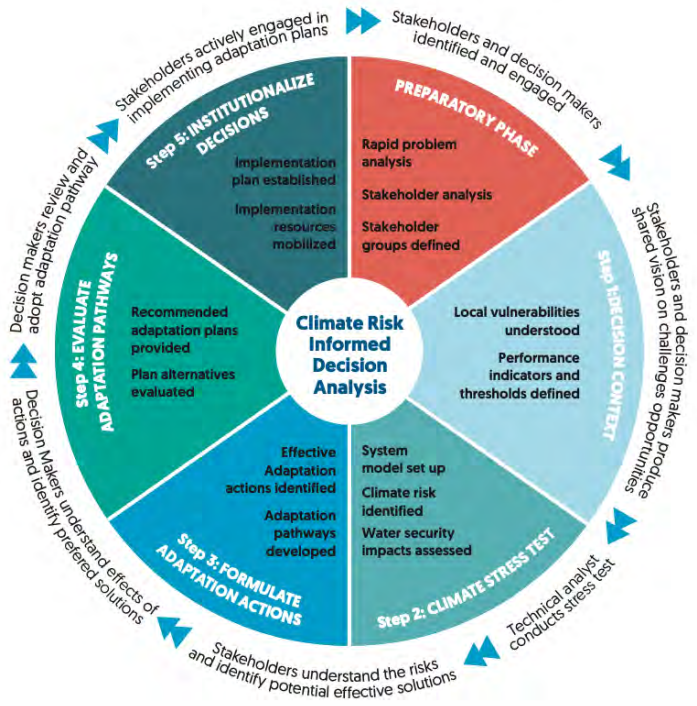


Climate Risk Informed Decision Analysis (CRIDA)

The **Climate Risk Informed Decision Analysis (CRIDA)** was established in 2018 to support Member States to bring Climate Change Adaptation to the local level through a bottom-up approach, actively involving local stakeholders.

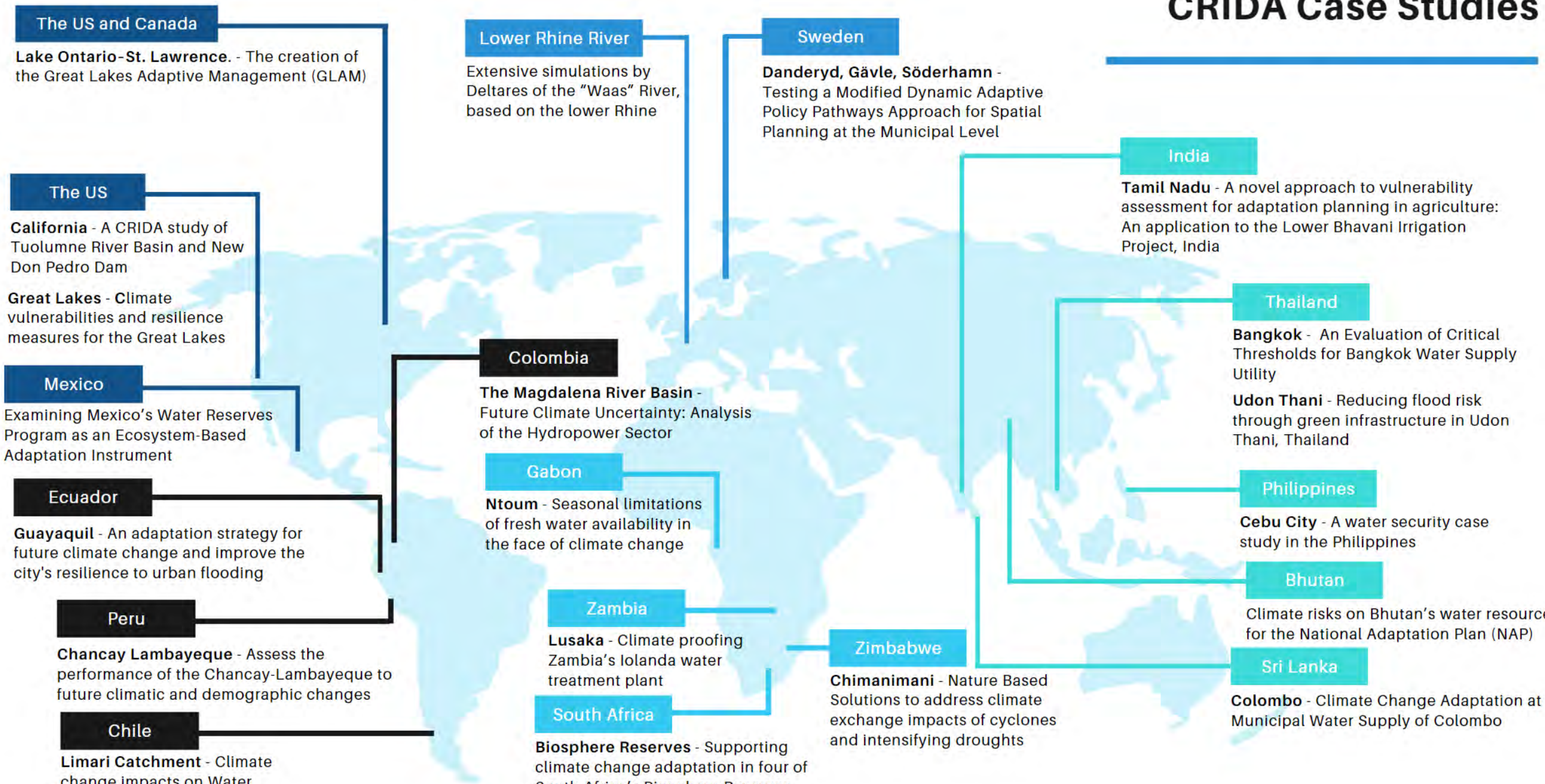
https://www.unesco.org/crida

CRIDA
Climate Risk Informed Decision Analysis



Book in 5 languages. More than 3000 people trained

CRIDA Case Studies



The US and Canada

Lake Ontario-St. Lawrence. - The creation of the Great Lakes Adaptive Management (GLAM)

The US

California - A CRIDA study of Tuolumne River Basin and New Don Pedro Dam

Great Lakes - Climate vulnerabilities and resilience measures for the Great Lakes

Mexico

Examining Mexico's Water Reserves Program as an Ecosystem-Based Adaptation Instrument

Ecuador

Guayaquil - An adaptation strategy for future climate change and improve the city's resilience to urban flooding

Peru

Chancay Lambayeque - Assess the performance of the Chancay-Lambayeque to future climatic and demographic changes

Chile

Limari Catchment - Climate change impacts on Water security in Chile's drylands

Lower Rhine River

Extensive simulations by Deltares of the "Waas" River, based on the lower Rhine

Sweden

Danderyd, Gävle, Söderhamn - Testing a Modified Dynamic Adaptive Policy Pathways Approach for Spatial Planning at the Municipal Level

Colombia

The Magdalena River Basin - Future Climate Uncertainty: Analysis of the Hydropower Sector

Gabon

Ntoum - Seasonal limitations of fresh water availability in the face of climate change

Zambia

Lusaka - Climate proofing Zambia's Iolanda water treatment plant

South Africa

Biosphere Reserves - Supporting climate change adaptation in four of South Africa's Biosphere Reserves

Zimbabwe

Chimanimani - Nature Based Solutions to address climate exchange impacts of cyclones and intensifying droughts

India

Tamil Nadu - A novel approach to vulnerability assessment for adaptation planning in agriculture: An application to the Lower Bhavani Irrigation Project, India

Thailand

Bangkok - An Evaluation of Critical Thresholds for Bangkok Water Supply Utility

Udon Thani - Reducing flood risk through green infrastructure in Udon Thani, Thailand

Philippines

Cebu City - A water security case study in the Philippines

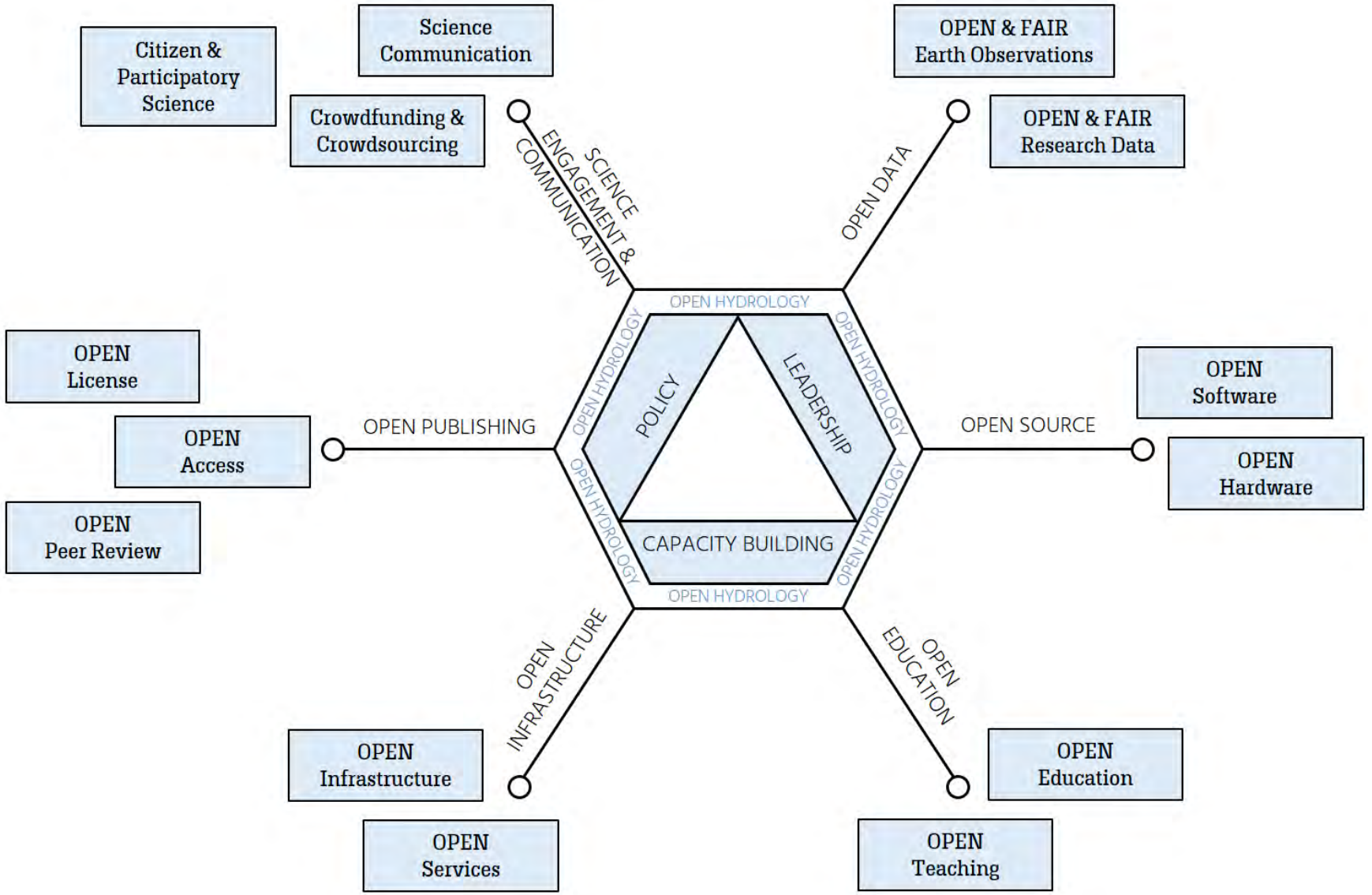
Bhutan

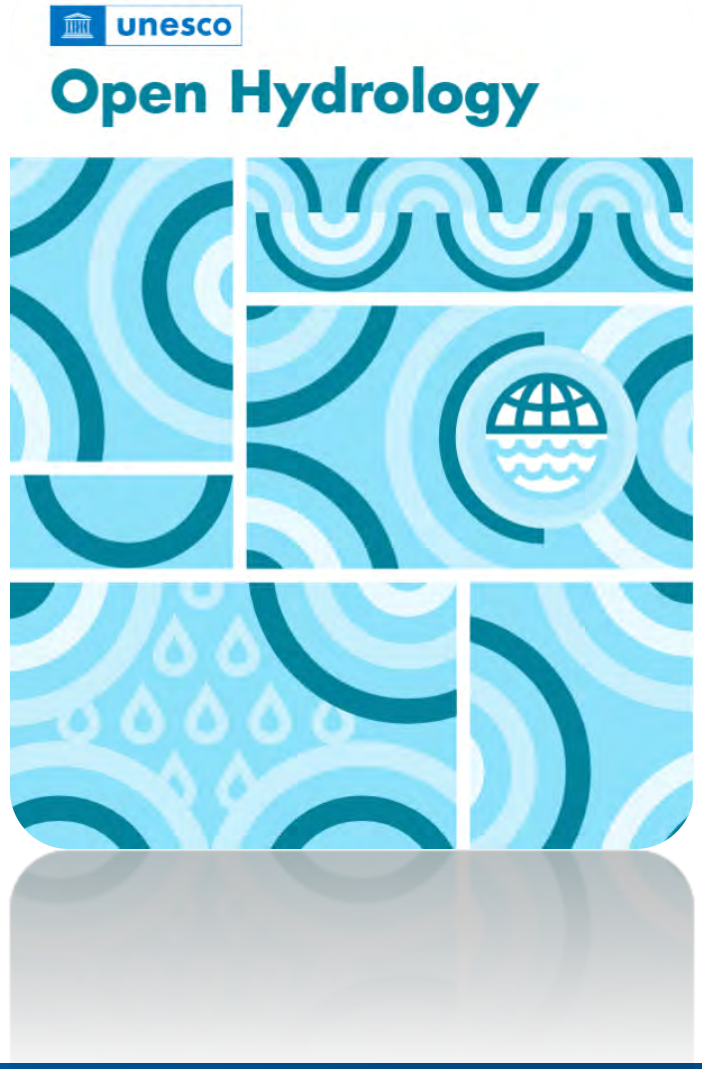
Climate risks on Bhutan's water resource for the National Adaptation Plan (NAP)

Sri Lanka

Colombo - Climate Change Adaptation at Municipal Water Supply of Colombo

Open Hydrology: IHP's contribution to the Open Science Framework





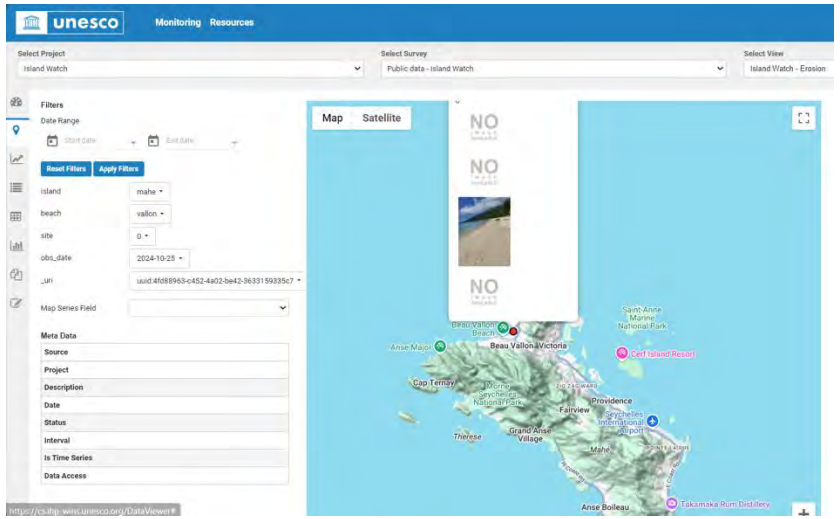
Citizen Science toolbox and Citizen Science pilot projects

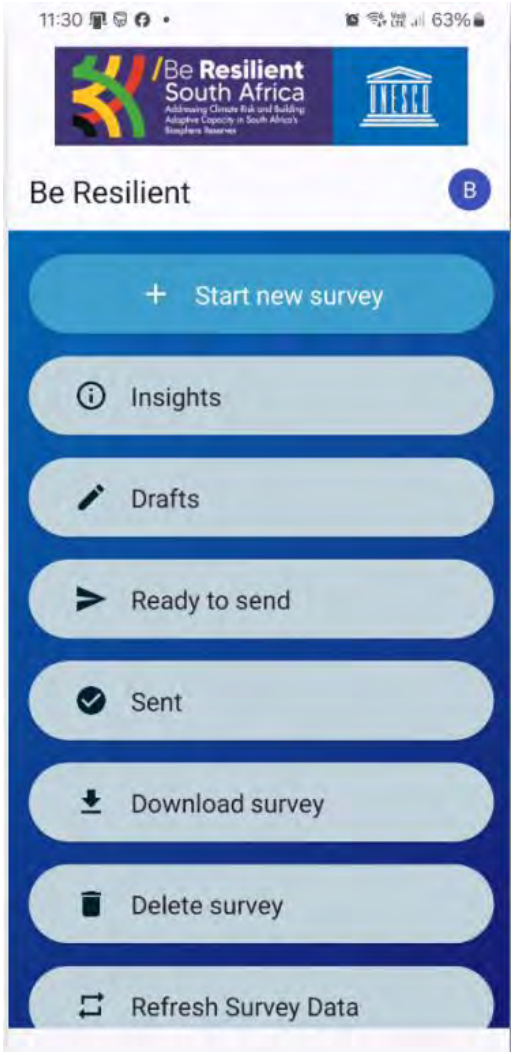
Citizen Science Toolbox

- Open-access, open source Toolbox
- Facilitates the Collection of data specific to tailored topics for related Citizen Science Projects

Citizen Science Application

- Accessible surveys for Water-Related Data Collection
- Surveys tailored to specific projects' needs





Hydro Resilience
CITIZEN AND OPEN SCIENCE FOR CLIMATE ADAPTATION

CliMWaR
ENHANCING CLIMATE SERVICES FOR WATER MANAGEMENT

Flood & Drought

- Using Internet-of-Things (IoT) approach for improved flood and drought monitoring

- Data Hosted in a UNESCO Owned Open Data platform

- Weather station
- Water level sensors
- Water quality sensors
- Wind sensors
- Soil Moisture Sensors

Low cost IoT weather station, water level and quality sensors

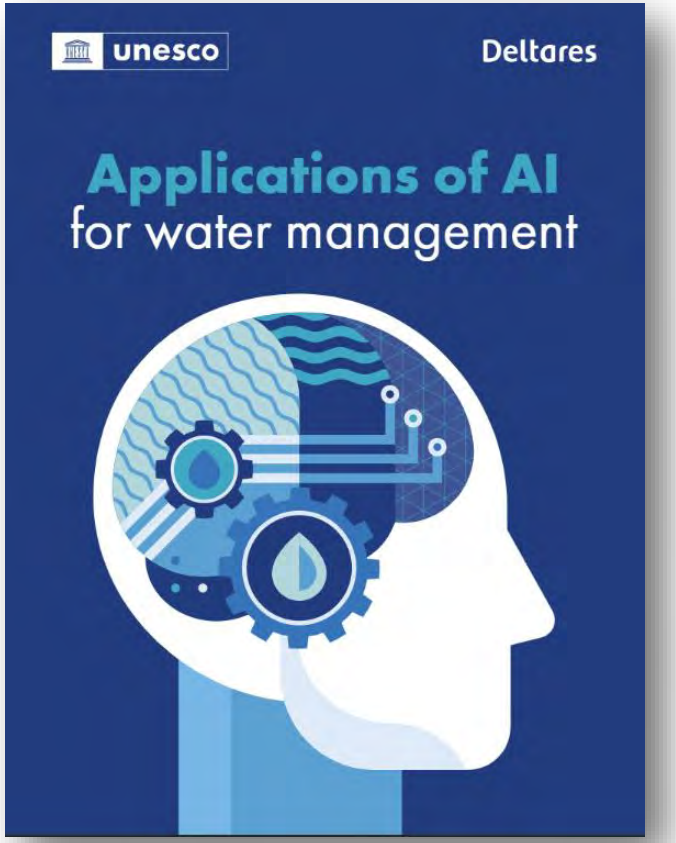
The Abdus Salam International Centre for Theoretical Physics

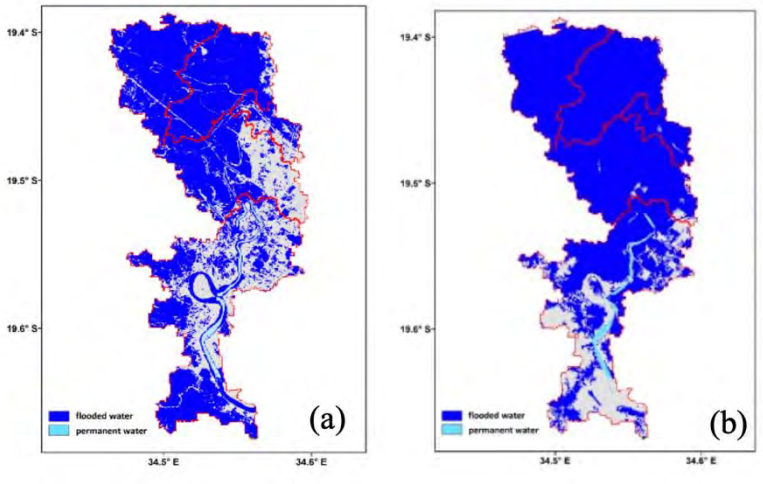
ThingsBoard

New technologies: Artificial Intelligence (AI) for Hydrology

Preparing the ground for AI projects in hydrology

- **Mapping exercise** on AI for Hydrology
- **Publication** on AI Applications for Hydrology
- **Basic online training course** on AI for Hydrology
- **AI Chatbots** for Disaster Risk Reduction and IHP Governance
- Support the **AI for the Planet Alliance**





Example: Using AI to predict the area to be flooded in the next 24h in the Pungwe River Basin in Mozambique

Open Science = Open access + Open source

The aim of IHP-WINS is to establish a robust and inclusive international water information network system that promotes sustainable water management, enhances data sharing and integration, facilitates evidence-based decision-making, and supports effective governance for the equitable and efficient use of water resources.

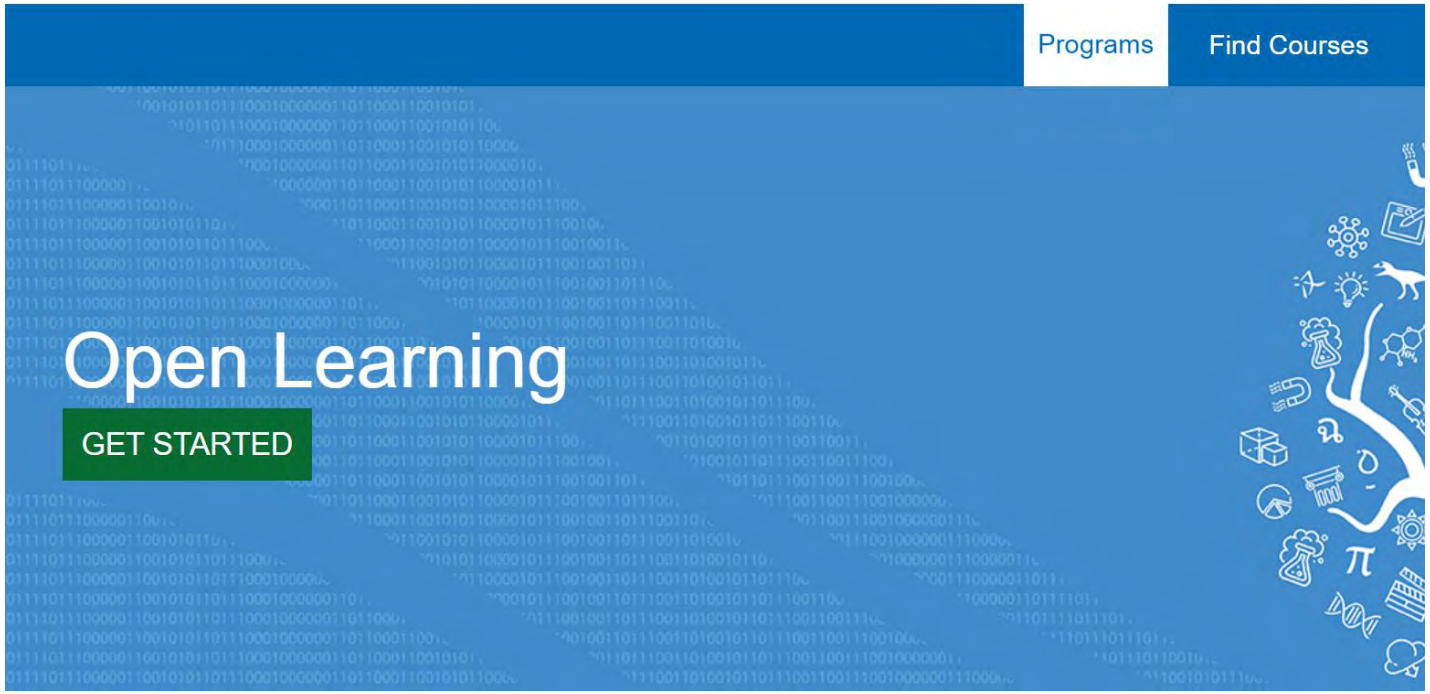
Expected results

- Water Data Integration and Sharing
- Global Water Data Portal and Decision Support System
- Capacity Building and Research
- Disaster Risk Reduction and Sustainable Development

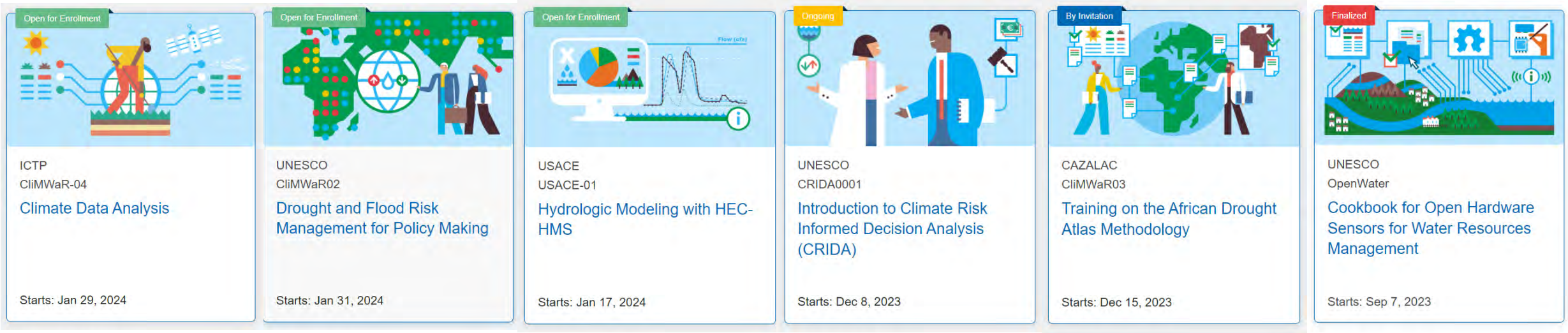
Integrating Data and Learning Portals

- IHP-WINS Data Catalogue
- IHP-WINS Geospatial Viewer(s)
- IHP-WINS Open Learning Environment
- Others (e.g. Urban Water Portal, Water Quality Portal, etc.)

UNESCO Open Learning platform



UNESCO Open Learning platform
https://openlearning.unesco.org/
58 courses
> 54000 learners since 2020



2025 International Year of Glaciers' Preservation

2025 International Year of Glaciers' Preservation

In December 2022, the UNGA adopted the resolution to declare 2025 as the International Year of Glaciers' Preservation, accompanied by the proclamation of March 21st of each year as the World Day for Glaciers starting in 2025.

UNESCO and WMO are invited to facilitate the implementation of the International Year and observance of the World Day by working with Governments and relevant organizations of the United Nations system to develop necessary proposals on all activities to support Member States in the implementation of the Year and observance of the Day.

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THANK YOU

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and Cultural Organization