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IHP-IX and most important hydrological themes

Abou Amani

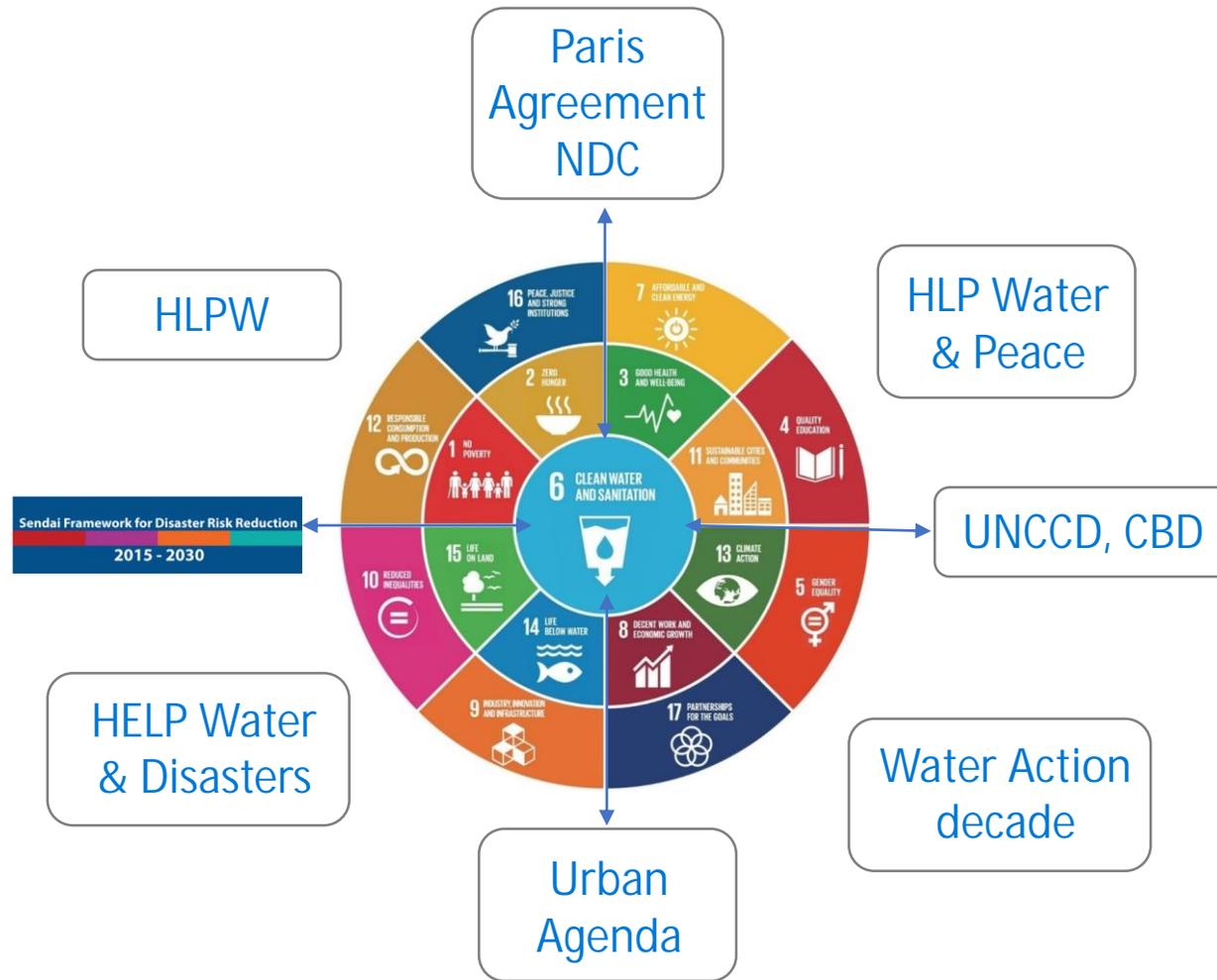
Director, Division of Water Sciences

Secretary, Intergovernmental Hydrological Programme



Water, SDGs and other Related Agendas

Water connects and is at the centre of SDGs and other related Agendas:



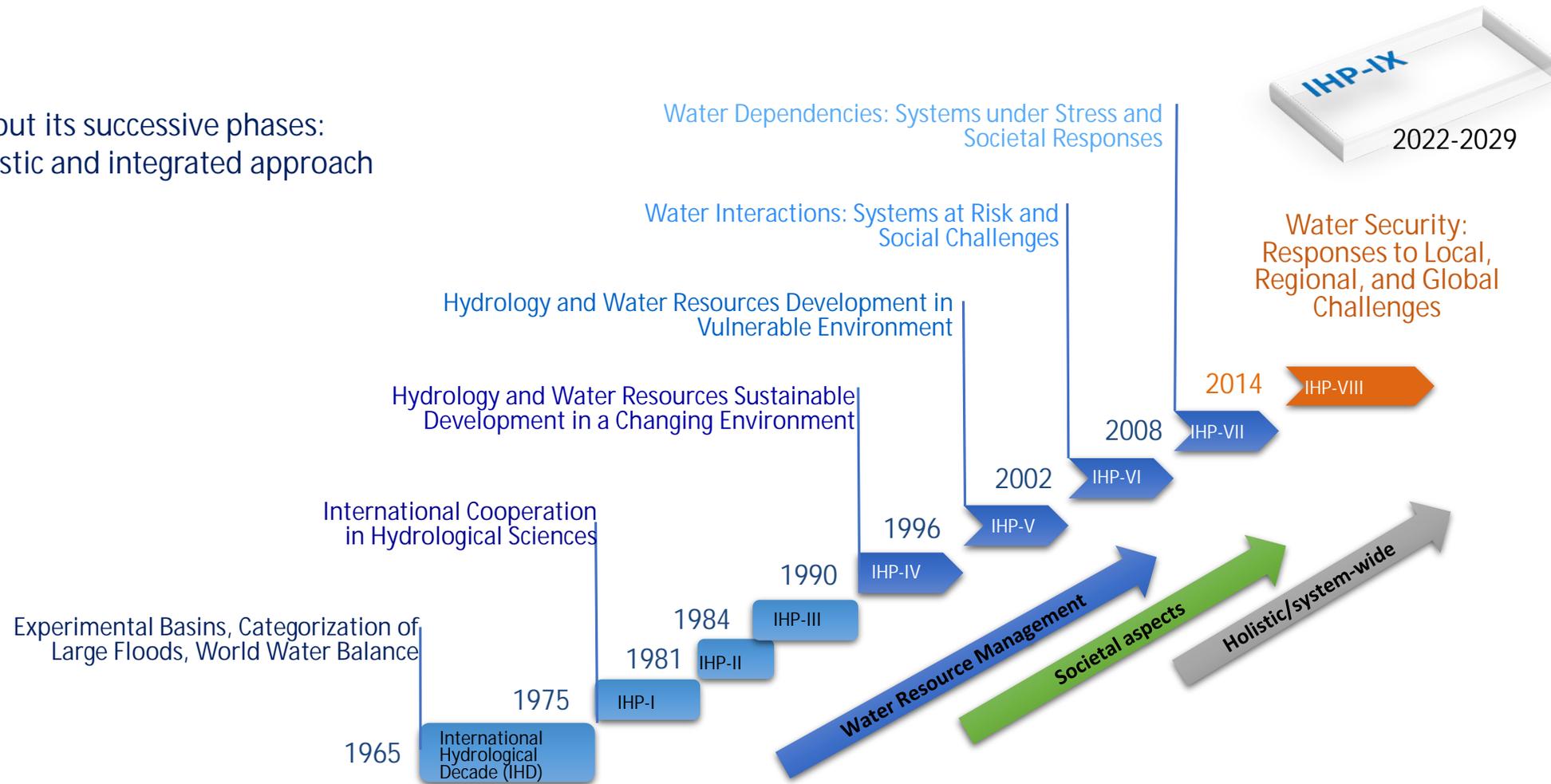
Evolution of IHP: From Hydrological Science to Integrated Science, Policy, and Society



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Intergovernmental
Hydrological Programme

IHP throughout its successive phases:
shifting to a holistic and integrated approach



UNESCO Water Family

Aims to advance hydrological knowledge by supporting scientific research programmes and building capacities:



Europe & North America

- 24 Chairs
- 11 Centres

Arab States

- 6 Chairs
- 5 Centres

Latin America & the Caribbean

- 14 Chairs
- 6 Centres

Asia and the Pacific

- 13 Chairs
- 11 Centres

Africa

- 8 Chairs
- 3 Centres

36
Category 2
Centres

66
Chairs

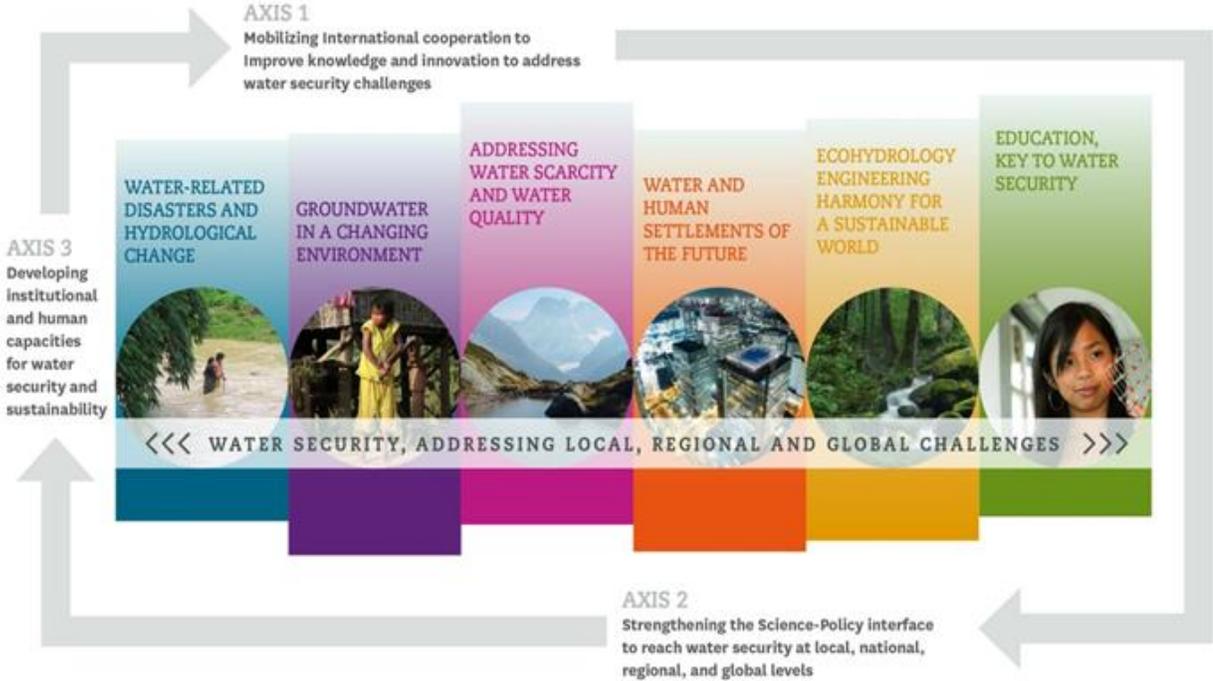
169
National
Committees

World Water
Assessment
Programme

18
Initiatives

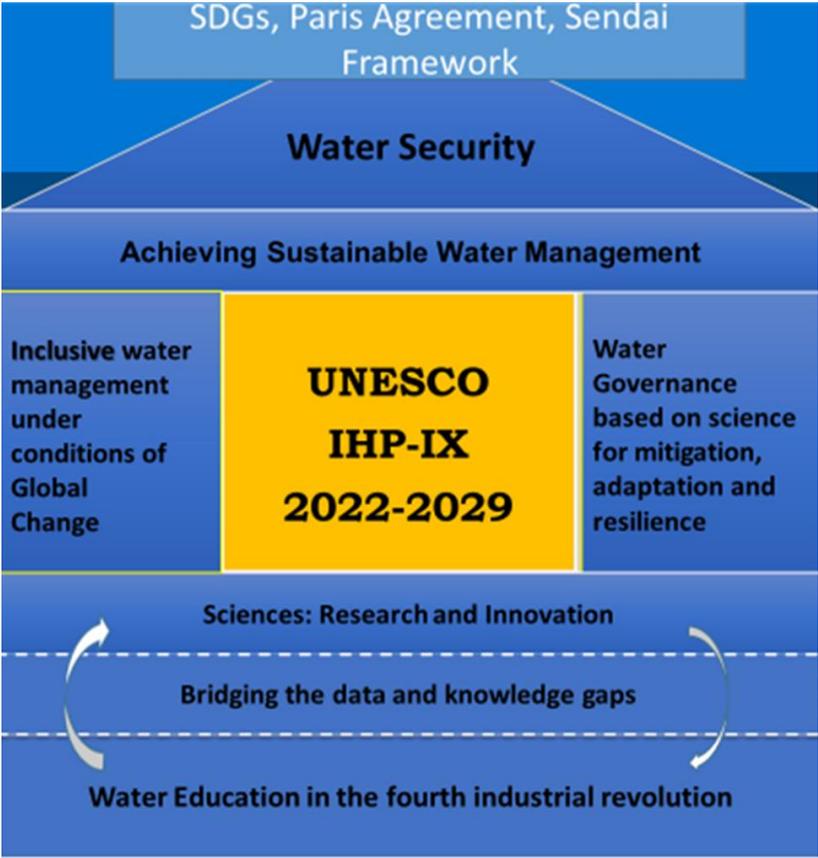
Intergovernmental Hydrological Programme

Serving Member states for 55 years:



Water Security: Responses to local, regional and global challenges

IHP IX 2022-2029



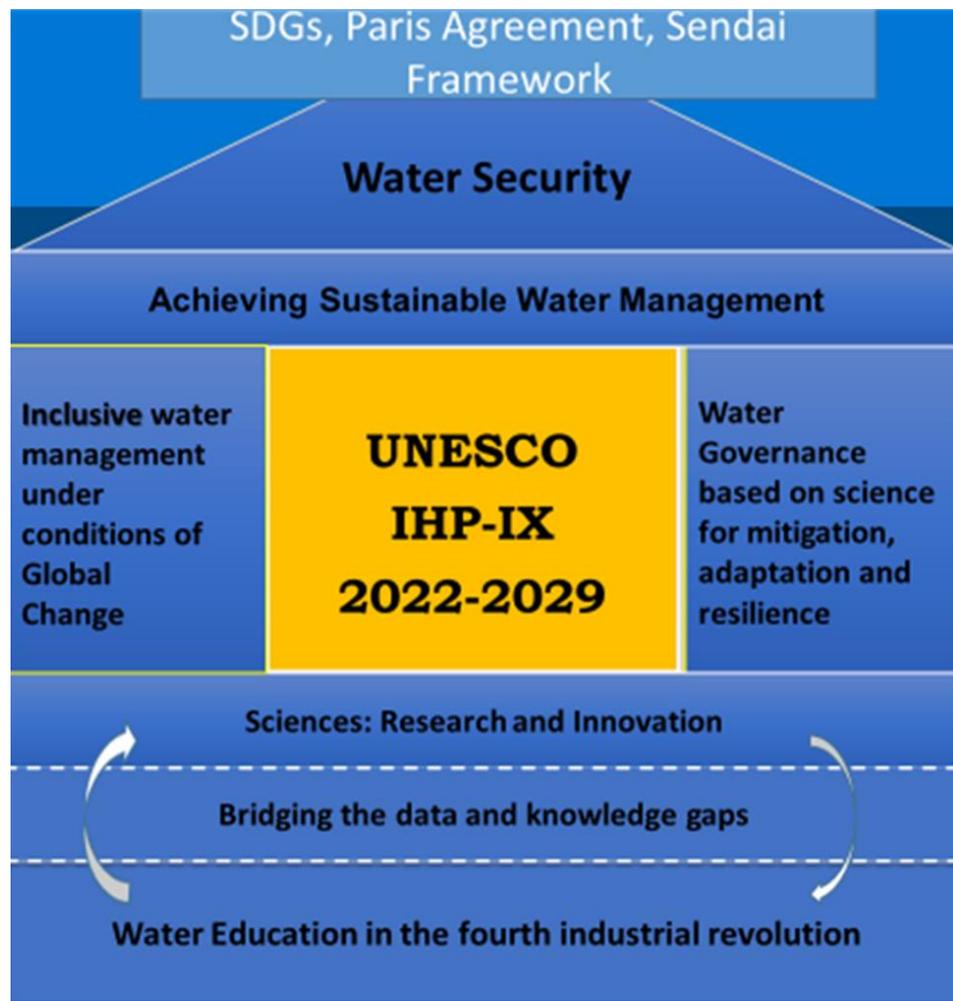
Science for a Water Secure World in a Changing Environment

The Intergovernmental Hydrological Programme (IHP)

IHP envisions a water secure world where people and institutions have adequate capacity and scientifically based knowledge for informed decision-making on water management and governance to attain sustainable development and to build resilient societies.



IHP IX 2022-2029: Science for a Water Secure World in a Changing Environment



Five priority areas:

- Scientific research and innovation
- Water Education in the Fourth Industrial Revolution including Sustainability
- Bridging the data-knowledge gap
- Integrated water resources management under conditions of global change
- Water Governance based on science for mitigation, adaptation and resilience

34 expected outputs

Priority Area 1: Scientific Research and Innovation

Expected outputs:

1. International scientific cooperation strengthened and fostered to address unsolved problems in hydrology, improving scientific understanding of hydrological cycles across river basins and aquifers
2. Ecohydrology research and innovation at UNESCO-designated sites to assess the impact of ecohydrological and nature-based solutions on water cycles and include such solutions in IWRM and services at all scales
3. Research on uncertainty in climatic scenarios, hydrological projections and water use scenarios conducted to elaborate adaptive water management strategies
4. Conducting scientific research on the exploration of new business models to accelerate the circular economy transition of the water sector
5. Undertaking and sharing assessments on the interaction between humans and water, in line with socio-hydrology to develop adaptive pathways, scenarios and strategies for water management.



Priority Area 1: Scientific Research and Innovation

Expected outputs:

6. Scientific knowledge, methodologies and tools in addressing water-related disasters, towards timely forecasting
7. Development and sharing of knowledge-base on the impacts of global change and human usage on river and lake basins, aquifer systems, coastal areas, and cryosphere and human settlements to embed it in water resources and services management plans.
8. Development and sharing of knowledge and innovative solutions on improving water quality, and reducing water pollution to support science-based decision-making, improve knowledge, services and reduce health related risks
9. Development and sharing of new technologies using, earth observation, Artificial Intelligence and Internet of Things to increase their use in hydrological planning and assessment
10. Conducting and sharing of research on integrating citizen science in the hydrological discipline, to improve understanding of the water cycle enabling science-based decision making.

Priority Area 2: Water Education in the Fourth Industrial Revolution including Sustainability

Expected outputs:

11. Public's awareness at all levels raised towards better understanding their contribution to the important multi-functions of water in domestic life, ecosystems and productive development.
12. Development and implementation of transdisciplinary research collaborations and educational approaches by UNESCO Water Family promoted to enhance participatory holistic practices.
13. Teaching and learning materials on water-related matters for formal, non-formal and informal education at all levels
14. Development and sharing of methods and tools based on new practices to translate scientific information into a format facilitating education, decision-making and policy formulation.
15. Capacities of skilled professionals and technicians at water-related tertiary and vocational education strengthened to identify the main gaps for sustainable water management
16. Capacities of decision makers, and water managers and key water sector institutions strengthened allowing them to take advantage of new technologies and research to enhance better decisions, design and implementation of integrated and efficient water policies

Priority Area 3: Bridging the data-knowledge gap

Expected outputs:

17. Development and use of scientific research methods by the scientific community supported to correctly collect, analyse, interpret and exchange data.
18. Establishment of harmonized experimental basins by Member States, scientific and research communities, supported to collect scientific data and gain knowledge for hydrological research and holistic water management.
19. Comparing and validating open access data on water quantity, quality and use and their sharing by the scientific community supported for sustainable water management.
20. Capacity of scientific community strengthened to develop, share and apply scientific tools for data processing (like data assimilation and visualization methods, quality assurance protocols to connect existing databases and outreach protocols).



Priority Area 4: Integrated water resources management under conditions of global change

Expected outputs:

21. Conducting and sharing of research on inclusive and participatory approaches by the scientific community, to ensure open, active, meaningful gender-responsive engagement of youth, local and indigenous communities supported to enable all stakeholders to be part of the water management process.
22. Research on upstream-downstream river uses for hydropower, navigation, fishery, leisure activities, water supply, drought risk management and flood risk management conducted and shared by the scientific community and UNESCO Water Family to minimize socio-economic and ecological consequences.
23. Conducting and sharing of research on non-conventional Water Resources (NCWRs) such as wastewater reuse, desalination, rainwater harvesting, and the Management of Aquifer Recharge (MAR) by the scientific community, in support of improving Water Cycle Management (WCM), strengthening capacities of local, regional, and national decision-makers, and enhanced acceptance of public.
24. Development and sharing of knowledge on using the source-to-sea and nexus approaches by the scientific community supported, and capacities strengthened to improve integrated water resources management for all watersheds, including transboundary ones.
25. Understanding and knowledge on pollutants sources, fate and transport in freshwater systems, including surface waters (rivers, lakes, wetlands) and groundwater improved by the scientific community and UNESCO Water Family to prevent and reduce water pollution and underpin water resources management strategies.

Priority Area 4: Integrated water resources management under conditions of global change

Expected outputs:

26. Undertaking and sharing assessment of ecosystem services and environmental flows in ecohydrology pilot sites by the scientific community supported, to improve integrated water resources management.
27. Undertaking assessments and developing and sharing of methods to monitor changes in the cryosphere system (snow, glacier, and permafrost), runoff formation from melting glaciers erosion and sediment transport, glacier fed reservoirs such as mountain lakes, and aquifers, by the scientific community supported for improved understanding of their potential use to inform decision makers at all levels.
28. Development and sharing of methodologies and tools in mainstreaming global changes within water management by the scientific community supported for improved planning by decision makers at all levels.
29. Implementing integrated water resources management at all levels, through transboundary cooperation as appropriate by Member States, supported, in coordination with UN-Water and UNECE, to achieve SDG target 6.5.

Priority Area 5: Water Governance based on science for mitigation, adaptation and resilience

Expected outputs:

30. Awareness raising of decision makers at all levels on the importance of science based water governance by the UNESCO Water Family supported, to enhance the overall resilience of communities to effects of global change.
31. Integration of sound science in water governance instruments improved reflecting adaptation to climate change and IWRM, integrating surface and groundwater for their uptake by decision makers.
32. Sciences-based assessment and development of guidelines, for strengthening water-related content in Nationally Determined Contributions and National Adaptation Plans, conducted to strengthen water-based climate policy action nexus for adaptation and mitigation.
33. Conducting and sharing of research on novel approaches of adaptive water management by the scientific community supported and capacities of Member States strengthened to enhance sound water governance.
34. Capacities of the scientific community and decision makers strengthened on new frameworks and tools, to underpin water governance and build resilience.

UNESCO Recommendation on Open Science



“ The draft recommendation marks an essential step in the development of an international consensus around Open Science and the promises it holds for science to become more inclusive, cooperative, and also more innovative, it could help science unleash its full potential and take up the challenges facing our contemporary societies, such as global warming, the fight to end the shrinking of biodiversity and the struggle against pandemics. ”

— Audrey Azoulay, UNESCO Director-General

Our Partnership

Identified initial priority areas

- a) Climate change and the impact on hydrological regimes**
- b) Water Security and extreme events (floods, low flows)**
- c) Sediment research and management**
- d) Socio-economic scenarios and the consequences for hydrological regimes**
- e) Contribution to the UNESCO IHP World's Large Rivers Initiative**
- f) Strengthen of a young professional network in the region with as concrete example the project “Youth for the Rhine” an initiative of the Netherlands IHP-HWRP Committee and Water Youth Network (WYN)**





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Thank you

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