



# Sustainable Water Futures Programme

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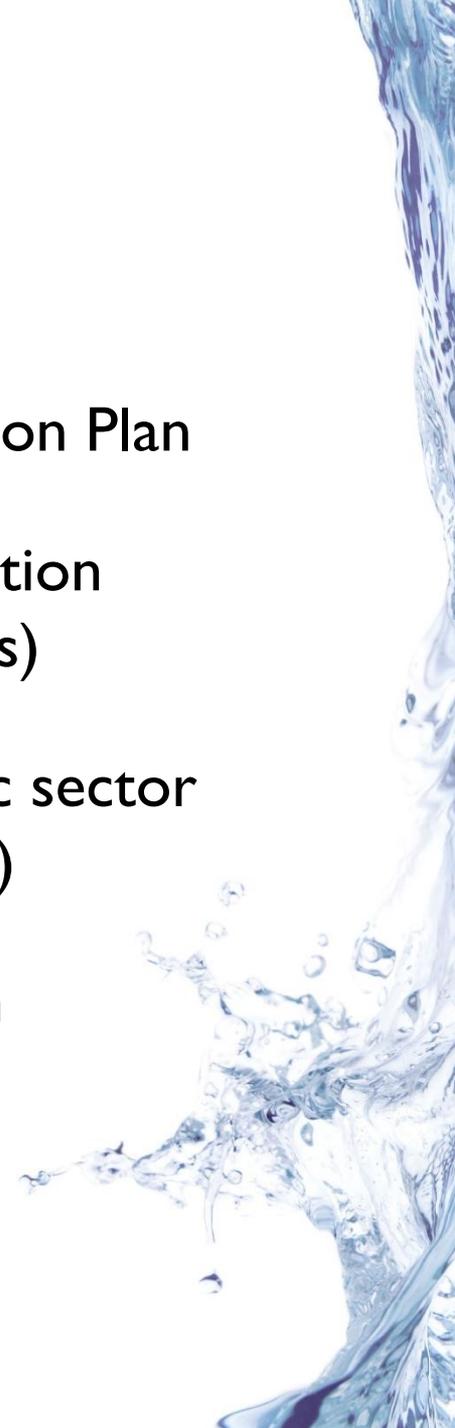
**waterfuture**  
Sustainable Water Future Programme



**futureearth**  
Research. Innovation. Sustainability.

# Structure

- ▶ I – Sustainable Water Future Programme - Action Plan
- ▶ Involvement to date International – EU cooperation (countries / activities / modalities / key challenges)
- ▶ Involvement to date cooperation with economic sector (countries / activities / modalities / key challenge)
- ▶ Ideas for progressing in multilateral cooperation
- ▶ Contact details



# The Water Programme of Future Earth

## Vision:

Support the implementation of freshwater water related sustainable development through the integrating research, stimulating innovation, and building capacity .



## Water Future Implementation:

Harvest and synthesize authoritative sound and a scientific knowledge base to achieve the Sustainable Development priorities associated with water.



### KEY FACTS



13 International Working Groups



202 Organisations



550 Core Researchers



5650 Network of Scientists, Policy Makers

A Scientific, Policy Relevant, and Solution Oriented Global Water Research Programme for Sustainable Development

# ▶ International Partners-



UNITED NATIONS  
UNIVERSITY



United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Hydrological  
Programme

## Australian node partners



## Canadian node partners



# Navigating the water challenges of the 21<sup>st</sup> Century

Earth Observations-based Water Resources Assessment -working with



**THE WORLD BANK**

to pilot COMPASS in 4 countries: Peru, Columbia, Argentina, Brazil, to establish national level water risk indicators that can be used around the world

## **COMPASS**

A comprehensive assessment system for global water resources for 1) infrastructure planning (domestic, industrial, & ag water use); 2) monitoring progress on SDGs; and 3) identifying business opportunities and risks



Water Solutions Lab-Facilitates the process of innovation in water-related issues by strongly connecting problems with solutions, knowledge generators and knowledge implementers.

It offers a comprehensive water system diagnostic and brings forward custom-made innovative solutions through a combination of advanced scientific knowledge, multi-stakeholder involvement, multi-criteria analysis and digital information technology to address emerging water challenges in the city of Bengaluru.

# “Towards a Sustainable Water Future”

A Future Earth Conference

Opening new frontiers in water system diagnostics and innovative solutions to mitigate the 21st-century global water crisis

**24 - 27th September 2019**

Bengaluru, India

# Partners





# Waterfuture Conference



## The Bengaluru - Budapest Science Action Plan towards Sustainable Water Futures

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# Background

- ▶ The *International Conference Towards a Sustainable Water Future* was held in Bengaluru, India, 24 -27 September, 2019. The Conference was jointly convened by the international Sustainable Water Futures Programme, an associated Programme of ICSU's Future Earth initiative, and the Divecha Center for Climate Change, Indian Institute of Science, Bengaluru, India. More than 700 participants attended the meeting from various fields of science.
- ▶ *Budapest Water Summit (BWS) 2019*, Budapest, Hungary, 15-17 October, 2019.
- ▶ The Bengaluru Water Future Conference and Budapest Water Summit 2019 submit the following recommendations for general consideration:

# Creating a digital environment and architecture

- ▶ Through appropriate capacity development activities facilitate the work of an interdisciplinary team of scientists, humanists, policy specialists and digital technologists to develop the architecture for the integrated digital water management framework across scales.
- ▶ Develop partnerships with non-water actors who pioneered integrating disruptive technologies and adopt appropriate good practices.
- ▶ Enable the fast and effective transfer of modern data science, modelling and other relevant new water management tools for the benefit of developing countries, particularly in Africa and South and Southeast Asia.
- ▶ Facilitate the inclusion of citizen scientists to amplify data capture and provide verification of these important new information streams.
- ▶ Capitalize on the most recent advances in space technology for the benefit of sustainable water resources management, seamlessly enabling up and downscaling.

# Promote novel data and tools in a digital architecture

- ▶ Use new design tools based on deep learning, advanced neural networks, artificial intelligence, machine learning to map out static (e.g., engineered infrastructure) and time-varying (e.g., watershed state and natural capital) elements of and linked to water systems and develop meaningful and traceable indicators for policy planning.
- ▶ Implement greater access, openness and transparency in data heritage and governance and design ethics-based cyber information systems
- ▶ Refine modelling of coupled social and environmental processes, including detection of potential water-related in-country and transboundary conflicts and migration.
- ▶ Develop machine learning tools that appropriately consider the accelerating hydrological cycle under climate change and invokes non-stationarity for an improved estimation of relevant design values. The impacts of non-stationarity will result in higher occurrence probabilities of extremes, for which the research, technology and policy community will need to develop adequate responses, including social ones.

# Developing capacity to deliver digital transformation in the water sector

- ▶ Establish Gender-sensitive capacity building approaches targeting emerging digital technologies
- ▶ Advance data literacy of all stakeholders engaged in water security,
- ▶ Stimulate and foster innovations in water institutions, governance through innovative, cyber based applications.

**The water science community that convened in Bengaluru is committed to working with all stakeholders to realize the action plan outlined above.**

# Moving forward

- ▶ A blueprint on the architecture architecture for the integrated digital water management framework over the next one year
- ▶ The architecture will identify key elements needed to make it operational and custom made of real time usage in different sectors.
- ▶ Requires engagement of a broad community of stakeholders, to understand specific needs and considerations related to develop integrated digital water management framework with data needs-Consultation with key international partners, counties, Inter governmental agencies

WATER JPI –Nice opportunity to reach out multilaterally to different stakeholders.

Future Earth/Water Future-Can help to identify specific research needs in developing the integrated digital water management framework .

A photograph of three goldfish swimming in water. The fish are bright orange and are positioned at different heights, with one at the top left, one in the middle left, and one at the bottom right. The water is splashing around them, creating a dynamic and energetic scene. The background is plain white.

# ***Thanks to all!***

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