

## Keynote

### Knowledge Management and Innovation

Kick-off meeting of the Ninth World Water Forum  
Dakar, Senegal – 20-21 June 2019

9 <sup>th</sup> World Water Forum – Dakar 2021		
Priorities	Themes	Keynote Responsible
1. Water security		
2. Cooperation		
3. Water for rural development		
4. Tools and Means	Financing	ADB
	Governance	OECD
	<b>Knowledge Management and Innovations</b>	UNESCO

#### 1. Scope of the theme

Water security (i.e. sustaining access to water (in adequate quantity and quality) to respond to the needs of populations, the environment, and the economy) is a precondition for sustainable peace and development at all levels.

Science, technology and innovation (STI) are key drivers of economic and social development. Of late, innovations are transforming water resources governance and management at an unprecedented pace, from the simple utilization of low cost sensors, to real-time monitoring networks or satellite earth observations, to the application of artificial intelligence (AI).

The integration of STI policies into water resources development strategies, as well as its combination with institutional and organizational changes, contribute to raise efficiency, improve resilience, and the transition to sustainability of several processes within the water sector, including but not limited to:

- assessment of water resources;
- conservation, recovery and reuse of water resources;
- resilience of infrastructures;
- cost-reduction of processes;
- monitoring of water resources;
- efficiency of water supply and use
- access to safe drinking water and sanitation;

Such achievements offer new opportunities and solutions to support sound and confident decision-making in the governance and management of water resources. Indeed, by providing more-effective products and enabling their implementation, **innovation** is central to translating water-related scientific knowledge and technological know-how into useful processes, services and employment.

Conversely, the complexity of innovation in the water sector is largely dependent to the increasing amount of technical and scientific knowledge available to organizations. **Knowledge** consists of contextualized information, which themselves are raw facts that have been processed, organized, structured and presented so as to make it meaningful and useful (see Fig. 1). It forms the basis of science-based decision-making processes.

Knowledge must be recognized and managed as to (i) guarantee the sound governance and management of limited yet vital resources such as water, (ii) ensure successful innovation, and

overall (iii) shape water security and sustainable development. Such an objective entails adopting multidisciplinary approaches, tools and methodologies to create, share, use and handle knowledge and information, with the aim of improving how water resources are managed, allocated and used, how related services and goods are delivered, and how the needs of populations and of the ecosystems are met.

There is an absolute need to improve access to data and encourage dissemination of knowledge through Information and Communication Technologies (ICTs). Promoting openness in content, technology, and processes through awareness raising, policy formulation and capacity building is trusted as a tool to broaden access to information, knowledge and technologies. Free and Open Source Software (FOSS) have been well received in low- and middle-income countries where license costs may be difficult to overcome. Such tools for knowledge management also foster an inclusive approach to water resources management, by encouraging the participation of the civil society regarding both the collection and supply of information and its use. They also contribute to greater transparency and accountability in the sector. Access to information and knowledge has the ability to empower users, including youth, women, and the most vulnerable groups, in managing water resources and to enable them to produce informed decisions.

To ensure sustainable peace and development and to be able to provide tools for achieving water security, the governance and management of water resources must integrate knowledge management, information and communication technologies (ICTs), science, technology and innovation.

## 2. Main challenges

- **Collecting data and deriving information**

Despite the increasing availability of data in many parts of the world, the use of information and knowledge to inform policies for improving the management of water resources represents a major challenge for stakeholders in the water sector (whether governments, scientists, the private sector, civil society, etc.) and remains sometimes limited. Reasons include a shortage of financial and human resources, a lack of commitment and investment from the political leadership, gaps in technical skills, and an absence of clearly defined strategies and mechanisms to support overall knowledge management.

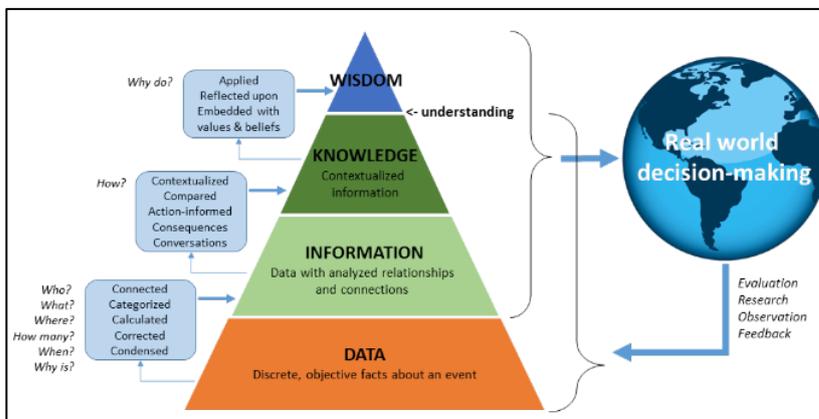


Fig. 1. The knowledge pyramid

Consequently, there is a general need to improve data collection across the different sectors and scales. In the particular case of biophysical data where ground data is particularly lacking, remote sensing has been highlighted as a means of bridging and supplementing this gap, at least in certain thematic areas. Field surveys can also be used as ways of collecting local and traditional knowledge that would complement biophysical and socio-economic data and a way to concretize what the real issues are. This is key to supporting decision making in terms of food security, poverty reduction, sustainable basin management, and inclusive development.

- **Bridging the science-policy interface**

Without the ability to process, analyze and transform raw data into information and expertise in a form that can be understood and used by decision-makers, access to data will not make a difference, even if available in large amounts. This represents a major development challenge for countries. As a result, providing open-access tools to visualize data allows sharing clear and straightforward information and developing a sound basis for decision-making. This contributes to ensuring that innovation and knowledge are translated and used to inform decision-making processes, and to bridging the science-policy interface.

- **Adapting capacity-building activities**

Technology, innovation and knowledge management can facilitate and contribute to supporting capacity-building processes in countries. However, project implementers should keep in mind that there is no 'one-size fits all', and that several limitations can exist depending on the region. Lack of internet access is one of them, and can impede the outputs of a project. As a result, capacity-building programmes must be tailor-made to ensure they are efficient. Identifying and implementing the adequate ICTs or sensor technology can make the difference.

- **Integrating indigenous knowledge**

Previously perceived simply as resources users, indigenous people are now recognized as essential partners in water management, while their ecological understandings, conservation practices and resources management goals are recognized. Indigenous knowledge provides a foundation for locally-appropriate sustainable development, and includes understandings of how to cope with and adapt to variability and change. As a result, they can make important contribution to water resources management policy.

However, differences between scientific and indigenous worldviews continue to create barriers to meaningful collaboration, as does the widespread assumption that science is superior to other knowledge systems. It is important to promote the inclusion of local and indigenous knowledge holders in water-related science and policy fora, to merge expertise and foster the emergence of transdisciplinary solutions.

### **3. Main targeted objectives**

- Creating a global catalogue/repository connecting platforms hosting data, information, and knowledge on water-related challenges, in order to facilitate the search of information and to avoid duplicating the publication of content;
- Based on existing tools, creating an online library to publish water-related documents, such as but not limited to, national water strategies, project descriptions, etc.

#### **4. Expected results during the forum**

- Trans-sectoral discussions including all stakeholders involved in water resources management: government representatives, scientists, the private sector, civil society, and youth;
- Identification of available information identified and highlight of ways to bridge knowledge gaps;
- Improvement of expertise and understanding of good practices and lessons learned on information-driven decision-making and of the current and future knowledge-access landscape and opportunities within it;
- Strengthening of partnerships and collaboration towards knowledge management and innovation;
- Strengthening of management of water resources through a better understanding of the use, exchange, ownership and sustainability of data and information.

In addition, participants to the session held in the framework of the 'Knowledge Management and Innovations' theme are:

- Informed on how technologies and innovations can contribute to addressing challenges of water resources management;
- Are acquainted with the need and usage of Artificial Intelligence (AI), citizen science, downscaling, data driven technologies and appreciate how they are shaping water security and enhancing resilience;
- Are provided with an opportunity to understand the benefits and constraints of technology-enabled citizen science;
- Are better equipped to understand what actions can be undertaken in order to promote and give visibility to the results and achievements of their projects.

#### **5. Proposed way forward to implement the preparatory process**

- Identifying partners for the theme "Knowledge Management and Innovations"; Finalizing the description of the theme and the identification of topics to highlight;
- Establishing topic coordination groups and their leaders;
- Organizing a partners consultation meeting;
- Confirming sessions to be held during the 9<sup>th</sup> World Water Forum.

#### **6. Proposed milestones**

In preparation of the Forum, it is considered to hold information and discussions sessions covering the topic 'Knowledge management and innovations' at the following events:

- XVII World Water Congress, Korea, May 2020;
- 23<sup>rd</sup> IHP Intergovernmental Council, France, June 2020;
- Stockholm World Water Week, Sweden, August 2020;
- 10<sup>th</sup> GEF Biennial International Waters Conference, date to be confirmed.