[TOPIC COORDINATORS]

Topic Concept Note Template
Thematic Process, 11th World Water Forum

- **Theme Number:** *1*
- **Theme Title:** *Water security*
- **Topic Number:** *1C*
- **Topic Title:** *Integrated Water Resource Management*
- **Topic Coordinator:** *International Network of Basin Organizations (INBO) – Edouard Boinet, Head of Project for International Cooperation*

I. Topic Overview

Rationale and Context

Integrated Water Resources Management (IWRM) at the basin scale is a proven approach for achieving Water Security, as it enables the reconciliation of different water uses with ecological sustainability, social equity, and economic development. Globally, IWRM is essential for achieving sustainable development goals, particularly those related to water security, climate resilience, food security, and ecosystem protection. In the face of climate change, population growth, and increasing pressure on water resources—including growing hydrological variability, water quality degradation, and governance challenges—IWRM provides a framework for coordinated governance, knowledge-based planning, and stakeholder engagement, offering integrated, cross-sectoral solutions rather than isolated interventions.

At the national level, it supports the management of water resources across multiple sectors and uses. Locally, an IWRM approach strengthens water security in contexts such as Saudi Arabia by aligning resource management with development priorities and climate resilience.

At the regional level, particularly in transboundary basins and shared water systems, the application of integrated water resources management is critically important to reduce potential conflicts, enhance cooperation, and ensure the optimal and integrated use of all available water resources. This is especially relevant in regions such as the Middle East and in the countries of the Gulf Cooperation Council (GCC), where severe water scarcity, reliance on groundwater and desalination, and increasing climate extremes make integrated planning essential to balance supply and demand, protect aquifers, and strengthen resilience. IWRM ensures the sustainable management of surface water, groundwater, non-conventional water resources, reused wastewater, desalinated water, and other complementary water-related resources and functions, in a form of "water mix" similar to the "energy mix", thereby contributing to peace, security, and sustainable development. More than just a model, IWRM is a dynamic process that adapts to different regions, challenges, and stakeholders in order to preserve environments and uses.

Alignment with SDGs: *Directly supports SDG 6 (clean water and sanitation), and contributes to SDGs 2 (zero hunger), 7 (affordable and clean energy), 11 (sustainable cities), 13 (climate action), 14 (life below water), 15 (life on land), and 17 (partnerships).*

Cross-cutting dimensions: *Integrates climate resilience through adaptive basin planning, gender & youth inclusion via participatory governance, digital innovation in water information systems, partnerships across sectors and borders, and sustainable financing mechanisms.*

This Topic Coordination Group 1C will discuss the interest in enriching an operational IWRM with emerging paradigms across multiple scales, including Nexus, "system of systems," and source-to-sea approaches.

Objectives of the Topic

Technical*: Promote efficient tools and agile methodologies for Integrated Water Resources Management.*

Policy and institutional*: Strengthen legal and governance frameworks for Integrated Water Resources Management, in particular national and transboundary basin organizations responsible for managing hydrographic basins of rivers, lakes and associated aquifers.*

Capacity-building and knowledge*: Facilitate experience sharing, peer-to-peer learning, training, and the development of information systems.*

II. Key Issues, Opportunities, and Scope

Key Challenges

Key challenges include:

- *Fragmented governance and lack of coordination between sectors and administrative levels.*
- *Lack of understanding of the issues and possible courses of action by stakeholders.*
- *Insufficient financing for the planning and implementation of Integrated Water Resources Management (measures and infrastructures).*
- *Weak institutional capacity, especially in transboundary basin organizations.*
- *Data gaps and poor integration of information systems for decision-making.*
- *Climate change impacts exacerbating water scarcity, floods, and droughts.*
- *Insufficient higher education programmes incorporating the concept of IWRM, leading managers responsible for its implementation to be unfamiliar with it or to apply it in ways that are poorly suited to local contexts.*

- *Lack of public awareness on IWRM and challenges to water security in context on integrated management*

Opportunities and Strategic Importance

- *Growing political recognition of Integrated Water Resources Management since its inclusion as a target of the SDGs.*
- *Demand for stakeholder and public participation in decision-making.*
- *Advancing IWRM by mobilizing new tools and technologies (example of remote sensing, AI, and digital tools for water data management and planning of IWRM)*
- *Increased momentum for transboundary cooperation and diplomatic engagement.*
- *leveraging regional partnerships to share best practices and replicate successful water management initiatives.*
- *Integrating nature-based solutions to enhance sustainability, ecosystem health and water security*
- *Scaling up proven solutions such as water reuse, managed aquifer recharge, and nature-based approaches.*
- *Advancing policy and regulatory frameworks that enable integrated, climate-resilient water management.*
- *Mobilizing investment and partnerships to support sustainable water infrastructure and capacity development.*

Proposed Priorities of the Topic / Guiding Questions

- *How can basin organizations strengthen their governance and financing mechanisms in an evolving system?*
- *What tools and data systems are needed for climate-resilient basin planning?*
- *How can transboundary cooperation be enhanced to ensure equitable and sustainable water use?*
- *How can we stimulate and energise stakeholder and public engagement?*
- *What role do nature-based solutions play in achieving water security and ecological health?*
- *What strategies can support inclusivity in the basin level?*
- *How can successful national and regional experiences be scaled up or replicated in other basins?*
- *What mechanisms can ensure long-term management plan in the basin level?*
- *What mechanisms can be established to monitor implementation, track progress, and ensure accountability in Integrated Water Resources Management at the basin level?*
- *How can integrated water resource management be practically implemented to address water scarcity, quality, and climate risks?*
- *What approaches enable the sustainable use of groundwater, water reuse, and non-conventional water resources?*
- *How can successful initiatives and pilot projects be scaled up and adapted across different regional contexts?*

Proposed Sessions of the Topic

- ***1C1. Legal and institutional frameworks for participative and Integrated Water Resources Management, the need for flexibility and adaptability?***
- ***1C2 Integrated Water Resources Management: Data, innovation, and digital tools to know more and act better***
- ***1C3 Sustainable financial mechanisms for Integrated Water Resources Management***
- ***1C4 Joint session with other topics (here with theme 4 Water governance & diplomacy): "Advancing transboundary water cooperation"***

Description of the proposed Sessions of the Topic:

- ***1C1. Legal and institutional frameworks for participative and Integrated Water Resources Management, the need for flexibility and adaptability?***
    - *Short description: Effective Integrated Water Resources Management (IWRM) relies on robust yet adaptable legal and institutional frameworks. This session will address the critical need for governance structures that can respond to climate uncertainties, evolving societal demands, and political change. Showcasing policies from local to transboundary scales, we will explore how institutional frameworks (like basin organizations and committees) and legislations can facilitate cross-sectoral coordination (water-energy-food-ecosystems), data sharing, and stakeholder participation. A key focus will be on how to design frameworks that provide long-term security for investments and environmental protection, while allowing adaptive management for unexpected crises. Discussions will highlight the role of basin organizations in mediating between national laws and local realities, and the importance of international water law. By showcasing diverse models of legal and institutional frameworks, the session aims to demonstrate how tailor-made governance structures can turn water from a source of potential conflict (within States and between States) into a catalyst for sustainable development.*

- ***1C2 Integrated Water Resources Management: Data, innovation, and digital tools to know more and act better***
    - *Short description: Operationalizing the Integrated Water Resources Management requires knowledge. "We cannot manage what we cannot measure". This session will demonstrate the central role of developing and modernizing data sharing, data collection and water information systems to improve the management of water resources, both surface water and groundwater. It will explore the shift from centralized, siloed databases to interconnected, decentralized systems that link national and transboundary information. It will stress the importance of a good "science-policy interface" to ensure technical data supports joint political decisions. It will highilight the need to build capacities and the skills of human resources for data management and valorization. It will call for a greater*

combination of innovative technologies with traditional in-situ monitoring to overcome data scarcity. The session will address the political and technical challenges of data exchange, emphasizing that trust, not just technology, is the bedrock of cooperation. By showcasing successful monitoring programs and interoperable platforms from around the world, the session will illustrate how enhanced diagnostics, forecasting, and open data can empower stakeholders, build common knowledge, and ultimately support adaptive and sustainable water management decisions.

- ***1C3 Sustainable financial mechanisms for Integrated Water Resources Management***
    - *Short description: Financing IWRM is not a cost; it is an investment that pays back in water security, economic stability, and peace. There is a need to set up sustainable financial mechanisms to ensure long-term funding for IWRM implementation.*

      This session will provide an opportunity to present and discuss different models of financial mechanisms. It will explore the possible combinations of the "3 Ts" (taxes, tariffs and transfers) and highlight the interest to apply sound economic policies, such as the "polluter pays", "user pays" and "water pays for water" principles. It will discuss strategies and tools to mobilize diverse financial streams, both public and private, including funding models for infrastructures generating revenues, diverse forms of public-private partnerships (PPPs), Payment for Environmental Services (PES), and intersectoral solidarity funds. The objective is to move beyond short-term projects toward sustainable self-financing models.

- ***1C4 Joint session with other topics (here with theme 4 Water governance & diplomacy): "Advancing transboundary water cooperation"***
    - *Short description: Transboundary basins cover nearly half the world's land surface, yet the majority lack operational cooperation agreements. This session will discuss how to advance cooperative management of the transboundary basins of rivers, lakes and associated aquifers. Building on the increasing momentum that global legal instruments are benefiting from, the session will explore how to engage in transboundary water cooperation, including with data exchange that helps to build trust, the development of effective legal and institutional frameworks for transboundary basin organizations and capacity building of professionals in hydrodiplomacy.*

      The session will present the interest of benefit-sharing over volume-sharing, demonstrating the economic case for joint infrastructure, successful models for negotiating and implementing agreements, and the crucial role of transboundary basin organizations as platforms for dialogue. Ultimately, this session will argue that transboundary cooperation is not a loss of sovereignty, but a tool to increase sovereignty over shared resources through joint resources mobilization.

III. Expected Outcomes and Deliverables

Policy and Strategic Outcomes

- *Dissemination of the recommendations of the / identified by the members of the topic coordination group on strengthening governance, institutional and legal frameworks and financing of Integrated Water Resources Management.*
- *Formally position basin management as the primary operational scale for achieving not only SDG 6 but also climate goals (UNFCCC), biodiversity targets (Kunming-Montreal Framework), and sustainable development. Manging soils, rainfall and water resources according to topography is what helps to sustainably manage the blue gold in its different form (including to **conjunctively manage surface water and groundwater**).*

Technical and Knowledge Deliverables

- *Dissemination of the platforms and knowledge hub of the / identified by the members of the topic coordination group on operational approach, tools and services to inform and implement Integrated Water Resources Management.*
- *Policy brief on Special issue on Water Management in Basins of Rivers, Lakes and Aquifers: the challenges ahead after 30 years of Innovation (IWRA/INBO partnership)*

Partnerships and Financing Outcomes

- *Dissemination of successful financing models for Integrated Water Resources Management.*

Actions and Initiatives for Implementation

- *Identification and showcasing of exemplary actions and initiatives of the / identified by the members of the topic coordination group.*
- *Pilot projects of IWRM.*
- *Implementation of a global program of twinning (the Twin Basin initiative and the Peer-to-peer program) strengthening capacities of basin organizations and national administrations on Integrated Water Resources Management. Might include the development and launch of "Twinning Awards" in recognition of outstanding results in capacity building through peer-to-peer exchanges, and the development of a component of the Twin Basin Initiative for the MENA region.*

Communication and Visibility

- *Key messages for the Forum declaration.*
- *Media briefs and social media campaigns on basin success stories.*

- *Produce a Basin segment report to feed directly into the follow-up to the 2023 UN Water Conference, ensuring that the basin perspective is central to the international water policy dialogue for the coming years.*

IV. Monitoring and Post-Forum Action

- *Link outcomes to the 12th World Water Forum and global processes (UN Water Conference, COP).*
- *Maintain partnerships and promote continued knowledge-sharing through digital platforms, international & regional basin networks.*
- *Promote cross-regional learning and replication of successful basin management experiences*

V. Proposed Cross-Process Dialogue Areas

Potentially (depending on available time and resources):

- *Within Theme 1:*
    - *Dialogue with 1B (Water-Related Disasters) on flood and drought management in basins.*
    - *Dialogue with 1E (Water for Food Security) on agricultural water use in basin planning.*
    - *Dialogue with 1C (Integrated Water Resource Management) and 1F (Climate Resilience) on nature-based solutions for basin adaptation.*

- *With Other Themes:*
    - *Engagement with topic 3E (Protecting and Restoring water ecosystems and aquatic biodiversity) to facilitate integrated management of water ecosystems considering current and future challenges to water security*
    - *Engagement with Theme 5 (Innovation) on the interest for IWRM to mobilize earth observation through satellite monitoring water quality and quantity and topic 5A on the opportunities offered by artificial intelligence for better quantitative planning and management.*
    - *Engagement with topic 5E (knowledge sharing and capacity building) on how to strengthen the capacities of institutions in charge to implement IWRM.*
    - *Dialogue with Theme 6 (Finance and Investment) on sustainable financing mechanisms for IWRM.*

- *With Other Processes:*
    - *Feeding the Ministerial segment and the basin segment of the political process with ToCG key messages on IWRM at basin level.*
    - *Dialogue with the Local and Regional Authorities Process on decentralized basin management.*
    - *Dialogue with success Basin organizations on operationalizing pilot projects and sharing basin-level data.*

- *Regional Focus:*
    - *Connection with the Euro-Mediterranean Water Forum*
    - *Emphasis on Asia-Pacific through collaboration with NARBO.*
    - *Focus on Africa through collaboration with ANBO and transboundary basin initiatives).*
    - *Highlight Middle East & North Africa (MENA) for lessons on arid basin management, climate adaptation, and regional cooperation.*