[TOPIC COORDINATORS]

# Topic Concept Note Template

## Thematic Process, 11th World Water Forum

- **Theme Number:** 1
- **Theme Title:** Water Security
- **Topic Number:** 1B
- **Topic Title***:* *Water-related Disasters*
- **Topic Coordinator:** Directorate General of Water Resources of Indonesia (focal person: Muhammad Rizal/Director of Internal Compliance)

## I. Topic Overview

This topic directly addresses the threats of floods, droughts, and desertification which often coexist and demand a holistic, Integrated Water Resources Management (IWRM) approach. Focusing on water-related disasters is a critical strategy for addressing current and future water challenges, given that *climate change impacts are largely manifested through water-related events* (floods, droughts, etc.), that are increasing in frequency and intensity. This focus supports the advancement of integrated water resources management policies that strengthen resilience not only to extreme and cascading events, but also to long-term challenges including water scarcity and pollution.

### Rationale and Context

Water-related disasters—including floods, droughts, desertification, storms, and landslides—are the primary face of climate change, constituting over 90% of all natural disasters and causing massive economic losses, fatalities, and infrastructure damage. The impacts extend beyond immediate loss of life, resulting in widespread infrastructural damage, contamination of water sources, infectious disease outbreaks, and agricultural failures that exacerbate food insecurity. Furthermore, these hazards act as threat multipliers for migration, social instability, and geopolitical tensions. Addressing this emergency necessitates a fundamental shift from reactive crisis management to proactive adaptation, develop global collaboration and conflict resolutions, emphasizing nature-based solutions, integrated water resources management, and the strengthening of early warning systems to build resilience against a structurally altered hydrological future.

*Global Relevance*

Accelerated by climate change, these events are shifting rapidly from one extreme to another, causing hundreds of billions of dollars in economic losses, reversing development gains, and affecting billions of people worldwide. As the planet enters an era of “global water bankruptcy”, where demand exceeds replenishment, the increased frequency of these events exacerbates inequalities, disproportionately impacting vulnerable communities and destroying essential infrastructure. Water-related hazards are manifesting at both ends of the spectrum—from “Day Zero” water crises in South Africa during 2017–2018 to extreme rainfall events across South and Southeast Asia in 2025–2026. These extremes exacerbate inequalities, disproportionately

impacting vulnerable communities and destroying essential infrastructure. Therefore, implementing water-smart resilience, enhancing early warning systems, and prioritizing ecosystem-based management are no longer optional, but mandatory, global imperatives to adapt to this intensifying water crisis.

*Regional Relevance*

Asia and the Pacific, particularly in densely populated river deltas and urban centers, face the highest frequency of flooding and storm-related hazards, heavily impacting infrastructure and economic output. In contrast, Africa and the Mediterranean are primarily defined by aridification/desertification and chronic water scarcity, where droughts lead to severe food insecurity, agricultural failure, and rural displacement. South America and the Western US exhibit rising risks from drought, water depletion in mountain-fed systems (Andes/High Plains), and tropical anomalies. Meanwhile, coastal regions globally—such as Indonesia, Vietnam, and the Caribbean—suffer from multi-hazard threats of tidal flooding, tropical cyclones, and salinization due to sea-level rise. Collectively, these regional shifts highlight a need for tailored adaptation, ranging from urban flood management in Asia to resilient agricultural techniques in dryland Africa.

*Local Relevance*

Local relevance of water-related disasters—such as floods, droughts, desertification, and landslides—is critical because the impacts are highly contextualized by geography, infrastructure, and community vulnerability. While global climate change increases the frequency of these hazards, effective mitigation requires understanding place-specific vulnerabilities, such as regional urban planning, local watershed degradation, and existing sanitation systems. Integrating local knowledge, including lived experience and traditional forecasting, with scientific data allows for targeted, community-centered preparedness that strengthens resilience better than one-size-fits-all strategies. Tailoring mitigation to a specific location not only saves lives and livelihoods by identifying precise high-risk areas but also ensures efficient, relevant emergency responses during the critical 24–72 hours following a disaster.

*How Focusing on Water-Related Disasters Responds to Present and Future Water Challenges*

- Climate Change Adaptation**:** In many regions, climate change is primarily experienced through water-related disasters. By managing these disasters, countries are, in effect, implementing climate adaptation strategies, including addressing intensified rainfall patterns, sea-level rise, and glacier melt that disrupt the water cycle.
- Integrated Water Management**:** Reducing the impacts of floods and droughts requires a holistic approach to water management (Integrated Water Resources Management/IWRM) that considers land use, infrastructure, and ecosystems across the entire water system.
- Infrastructure Protection and Development**:** Water-related disasters frequently damage critical water and drainage infrastructure, increasing the risk of disease outbreaks. Prioritizing resilient infrastructure strengthens long-term water security and public health.
- Addressing Scarcity and Pollution Simultaneously**:** Floods spread contaminants, while droughts reduce water availability and quality. Effective management therefore requires integrated strategies that address both water quantity and quality, including protecting water sources from contamination and expanding alternative sources such as wastewater reuse and rainwater harvesting.
- Flood risk evolution: focusing on the evolving characteristics of flood risk. This will facilitate a shift from passive response to proactive prevention and control by strengthen

forecasting, warning, simulation, and planning capabilities, and from single-project flood control to the coordinated application of both engineering and non-engineering measures.

*Examples from Different Regions*

- The Netherlands (Flood Management): The Netherlands employs advanced flood risk management approaches that go beyond traditional dikes. These include green rivers and designated flood retention areas (detention in compartments) to manage excess water during extreme rainfall. These approaches reduce flood damage while supporting water storage and landscape planning, helping to manage water availability during drier periods.
- California, USA (Drought Management): In response to recurring severe droughts exacerbated by climate change, California implemented the Sustainable Groundwater Management Act (SGMA)**.** The policy requires local agencies to manage groundwater basins sustainably, addressing long-term overexploitation that worsens during drought periods.
- India serves as a critical epicenter, managing 16% of the world's population with only 4% of its water resources. In regions like the Manyad River Basin, local NGOs like Sanskriti Samvardhan Mandal (SSM) combat the "syndrome" through community-driven desilting and groundwater recharge, successfully resolving scarcity in several villages.
- Middle East and North Africa (MENA): As the most water-scarce region globally, the focus is on non-traditional sources like desalination and wastewater reuse to ensure supply during persistent drought and scarcity.
- Sub-Saharan Africa: While Asia has the most people affected, Africa records the highest fatalities per capita. Initiatives like the India-UN Partnership have introduced solar-powered water systems in Eswatini to improve resilience against climate-induced scarcity.
- Indonesia (Compound Flooding): In regions such as Jakarta and Northern Java, excessive groundwater abstraction driven by limited surface water availability has caused land subsidence, a slow-onset but compounding hazard that significantly increases flood exposure.
- Morocco (Dam control): Morocco’s experience in managing a large portfolio of multipurpose dams under increasing climate variability provides valuable lessons on dam safety governance, sedimentation challenges, flood–drought coexistence, and the role of reservoirs in disaster risk reduction. This experience is particularly relevant for arid and semi-arid regions facing increasing hydrological extremes.
- China: China has a vast territory and experiences diverse types of flood and drought disasters. By combining basin-wide coordination with region-specific measures, and integrating science and technology (S&T) support and institutional safeguards, China’s flood management practices are able to address flood risks under particular circumstances such as high population density, complex river basins, and rapid development. These practices offer transferable lessons for other countries in terms of risk identification, early warning and response, engineering regulation, and social mobilization.

Water-related disasters, including floods, droughts, storms, severely undermine the achievement of SDG 6 (Clean Water and Sanitation) and trigger cascading negative impacts across multiple other Sustainable Development Goals, including SDGs 2, 11, 13, 14, 15, and 17.

*Alignment with SDG 6: Clean Water and Sanitation*

Water-related disasters directly undermine the targets of SDG 6, which aims to ensure the availability and sustainable management of water and sanitation for all:

- Disrupted Access**:** Disasters damage critical water and drainage infrastructure, disrupting access to safely managed drinking water and sanitation services, including in areas that previously had reliable access.
- Water Quality Degradation**:** Floods introduce hazardous chemicals and untreated wastewater into freshwater sources and aquifers, while droughts concentrate pollutants due to reduced water levels, rendering water unsafe for use.
- Ecosystem Loss: Achieving SDG target 6.6 requires protecting and restoring water-related ecosystems, including wetlands, rivers, etc. Water-related disasters severely degrade these ecosystems, undermining long-term water resource management and biodiversity.
- Increased Scarcity**:** Droughts exacerbate water scarcity, which already affects billions of people worldwide and further complicates sustainable water management.

*Alignment with Related SDGs*

The impacts of water-related disasters create complex, cross-sectoral challenges that affect the broader 2030 Agenda for Sustainable Development, including the following SDGs:

- SDG 2: Zero Hunger**:** Disasters such as droughts and floods damage crops, livestock, and agricultural infrastructure, threatening food security and nutrition, and undermining sustainable agriculture.
- SDG 11: Sustainable Cities and Communities**:** Target 11.5 calls for significantly reducing deaths, the number of people affected, and economic losses from disasters, including water-related hazards. Cities, particularly coastal cities, are highly vulnerable to floods and storms, which cause extensive infrastructure damage and economic disruption.
- SDG 13: Climate Action**:** Climate change is a primary driver of the increasing frequency and intensity of water-related disasters. Climate action (SDG 13) and strengthen resilience are therefore intrinsically linked to water management (SDG 6), which is central to adapting to climate change impacts.
- SDG 14: Life Below Water**:** Flood runoff introduces pollution, including plastics, chemicals, and excess nutrients, into marine and coastal ecosystems, harming aquatic life and habitats. At the same time, protective coastal ecosystems such as coral reefs and mangroves are degraded, reducing natural defenses against storm damage.
- SDG 15: Life on Land**:** Disasters such as droughts contribute to desertification and land degradation, impacting terrestrial biodiversity, forests, and wetlands. Healthy ecosystems are essential for regulating the water cycle and mitigating disaster impacts.
- SDG 17: Partnerships for the Goals**:** Addressing growing water-related risks requires enhanced cooperation and data sharing at all levels. Strengthening national and international partnerships for disaster risk reduction and financing is critical to building resilience and achieving other development goals.

Water-related disaster management integrates cross-cutting dimensions by linking preparedness, response, and recovery efforts with holistic strategies for sustainable development. Integrating *climate resilience, gender & youth inclusion, digital innovation, partnerships, and financing* is essential for building a safer, more equitable, and adaptive future.

*Climate Resilience*

Climate change exacerbates water-related hazards like floods and droughts by disrupting the water cycle and increasing their frequency and intensity. Integrating climate resilience requires:

- Proactive Risk Management: Shifting from reactive crisis response to proactive risk management by aligning Integrated Water Resources Management (IWRM) with climate change adaptation (CCA) strategies.
- Ecosystem-based Adaptation: Applying nature-based solutions (NBS) including wetland preservation, floodplain restoration, and reforestation, to mitigate impacts by enhancing natural water storage and filtration.
- Infrastructure Adaptation: Developing infrastructure that is resilient to changing climatic conditions by combining both "grey" (e.g., seawalls) with "green" (e.g., natural landscapes) infrastructure to manage complex coastal urban flood risks.

*Gender and Youth Inclusion*

Water-related disasters disproportionately affect vulnerable and marginalized communities, including women and youth, due to pre-existing social, cultural, and economic inequalities. Integration involves:

- Empowerment in Decision-making: Ensuring the active participation and leadership of women and youth in disaster governance and policy-making processes, as their unique knowledge is crucial for effective and sustainable outcomes.
- Tailored Interventions: Designing gender- and age-sensitive early warning systems and recovery programs that address the specific needs and vulnerabilities of different groups.
- Capacity Building: Investing in women's and youth's capacity to participate, be included, and lead in climate action and public policies, which strengthens overall community resilience.

*Digital Innovation*

Science and technology are "game changers" of resilience to water-related disasters. Digital innovation is integrated through:

- Monitoring and Prediction: Employing smart flood management systems that use sensors, IoT devices, big data analysis, advanced modeling, and digital twins to monitor water levels, predict flooding, and optimize water flow management.
- Data Integration: Accelerating the integration of data, modeling, and observations across platforms to support timely, evidence-based decision-making.
- Outreach and Communication: Leveraging digital tools and social media to enhance outreach, strengthen risk communication, and support community-based initiatives, including participatory mapping projects, thereby ensuring the long-term sustainability of solutions.

*Partnerships*

Addressing complex water challenges requires breaking down traditional barriers and fostering collaboration among diverse actors. This dimension is integrated through:

- Cross-sector Collaboration: Forging new partnerships and strengthening collaboration across disciplines and sectors (e.g., water, climate, disaster management) and across governance levels (global, national, and local).
- Knowledge Sharing: Promoting cross-border and inter-agency collaboration to facilitate knowledge exchange and mutual learning on best practices and lessons learned.
- Multi-stakeholder Platforms: Establishing action-oriented communities and platforms (such as the Water and Climate Coalition), to equip stakeholders with a unified approach to align stakeholders around shared objectives, including linking SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action).

*Financing*

Achieving water security necessitates a shift from financing "crisis response" to financing "risk management". This includes leveraging blended finance, Green/Blue bonds, and environmental impact bonds to fund resilient infrastructure. Directing upfront capital toward Early Warning Systems (EWS) and climate-resilient WASH (Water, Sanitation, and Hygiene) services reduces long-term economic strain. Utilizing insurance and risk pools helps communities recover faster from post-disaster shocks. Financing is integrated through:

- Targeted Investment: Directing substantial upfront investments toward preparedness, response, and recovery, as well as resilient infrastructure and early warning systems.
- Gender-responsive *Finance*: Ensuring that financing projects support entire communities, including women, thereby transforming communities to become climate-resilient and gender-equitable.
- Integrated Funding: Aligning climate and water agendas to maximize coherent and integrated action, encouraging a shift from crisis response toward risk management.

As global climate change accelerates, triggering unprecedented droughts, floods, and sea-level rise that threaten human lives, ecosystems, and infrastructure, the 11th World Water Forum in Riyadh (2027) adopts the imperative theme "Action for a Better Future" to shift from dialogue to implementation. Addressing water-related disasters is central to this agenda, as intensified hydrological risks jeopardize global water security, demanding urgent collaboration to bridge financing gaps and implement effective adaptation strategies. Therefore, the, objective of the 11th Forum's water disaster discussions is to foster collaborative, proactive, and inclusive solutions—including nature-based approaches and improved data systems—that strengthen community resilience, reduce economic losses, and ensure sustainable water management for future generations.

## Objectives of the Topic

The objectives of this topic are designed to support action-oriented and initiative-driven outcomes within the Forum discussions. Technical, Policy and Institutional, and Capacity Building and Knowledge objectives are structured to drive concrete action and measurable results across global, national, and local levels.

*Technical objectives*

Technical objectives focus on delivering tangible, practical solutions, tools, and operational mechanisms to address defined water-related disaster challenges.

- Develop and implement shared digital platforms**:** Initiate the development of common data-sharing platforms to improve cross-sector collaboration.
- Standardize methodologies and protocols**:** Establish and adopt common operational procedures and technical standards (e.g., in data collection, reporting) to ensure consistency and efficiency across different projects and partners.
- Pilot and scale innovative technologies: Launch pilot initiatives for agreed-upon innovations (e.g., climate-resilient agricultural practices and digital supply-chain solutions) and develop pathways for wider deployment.
- Promote the development and scaling of hybrid models that integrate nature-based solutions (e.g., traditional rainwater harvesting structures, afforestation) and community

resilience with modern technologies like AI, GIS, and remote sensing for optimal impact and site selection.

- Strengthen the operational capacity of early-warning systems by improving the linkages among nation forecasting agencies in coordination with international networks and ~~mile~~ community alert mechanisms to ensure warnings are timely and actionable.

*Policy and institutional objectives*

These objectives aim to establish a supportive and coherent governance framework that enables sustainable change.

- Formulate and endorse policy recommendations**:** Develop proactive actionable policy recommendations for member countries to integrate into national development strategies and sectoral plans.
- Strengthen institutional mandates and autonomy**:** Advance action plans to enhance the legal, operational, and resource capacity of relevant national institutions to implement newly agreed policies effectively.
- Foster multi-stakeholder governance frameworks: Establish inclusive governance models that incorporate input from civil society, the private sector, and academia to ensure ownership and adaptability of policies.
- Develop policy frameworks that support the legal recognition and protection of traditional and community-managed water conservation structures, acknowledging their vital role in local resilience.

*Capacity-building and knowledge objectives*

These objectives focus on strengthening individual and institution skills, capacities, and learning systems to achieve the forum's goals, emphasizing learning and skill development.

- Establish knowledge-sharing platforms to disseminate successful, scalable blueprints for community-led water resilience
- Implement targeted training programs for local stakeholders on climate-smart agriculture, integrated watershed management, and the sustainable maintenance of both natural and engineered water infrastructure.
- Foster International cooperation to share the diverse developmental experience of nations in water management, particularly its portfolio of low-cost, high-impact traditional solutions.

These objectives will guide our discussions toward identifying and overcoming the key challenges while capitalizing on emerging opportunities to build a more resilient world.

## II. Key Issues, Opportunities, and Scope

### Key Challenges

Global challenges in water-related disaster management include climate change, which increases the frequency and intensity of hazards; implementation constraints such as limited budgets, weak inter-agency coordination, and low public awareness; gaps in data availability and technological capacity in vulnerable regions (particularly in Africa); and rising economic costs associated with disasters. The primary barriers stem from tensions between short-term economic development and long-term environmental sustainability, as well as disparities in national capacities to respond to increasingly complex risks.

Key Issues in Global Disaster Management:

- Climate-Related Pressures and Hydrological Extremes: A major driver of increasing hydrometeorological risks (floods, droughts, storms and heat-related hazards, and desertification), threatening millions of people and critical infrastructure worldwide.
- Anthropogenic Ecological Degradation: Environmental degradation caused by human activities (deforestation, pollution, and land degradation), significantly exacerbates disaster impacts.
- Capacity Gaps: Many developing countries face constraints in financial resources, technology, and institutional capacity for effective mitigation, while densely populated areas remain highly vulnerable to flooding due to inadequate drainage infrastructure.
- Governance Fragmentation: Disaster management is often hindered by a lack of inter-agency coordination and fragmented governance models. There is a critical need to move from siloed responses toward unified, multi-level governance that integrates disaster risk reduction (DRR) with climate change adaptation (CCA) and national development plans.
- Data and Technology Limitations: Vulnerable regions frequently face significant gaps in data management and lack access to modern technological tools. Many areas lack the advanced monitoring networks, real-time early warning systems (EWS), and digital platforms (such as AI or digital twins) necessary for accurate forecasting and evidence-based decision-making.
- Institutional and Regulatory Challenges: Many regions struggle with policies that are not locally specific or fail to align national regulations with international standards. Additionally, there is often a lack of institutional autonomy for local agencies to effectively implement disaster management mandates and enforce ecological restoration rather than simple financial fines.

## Opportunities and Strategic Importance

Key opportunities to advance collaboration, innovation, scaling-up, and policy advancement are concentrated areas such as artificial intelligence (AI) integration**,** sustainable development and green technology, and healthcare system transformation**.**
The specific opportunities are identified as follows:

Collaboration and Innovations Opportunities

- Cross-Sectoral Partnerships: There is a significant opportunity for collaboration between the public, private, and non-profit sectors to address complex public policy issues and coordinate resources. This includes development of hubs to co-locate research and development firms to promote knowledge synergies.
- Transboundary Cooperation: Collaboration across borders is vital for sharing hydrological data and implementing regional early warning systems, particularly in highly vulnerable regions like Asia and the Pacific.
- Multi-Stakeholder Platforms: Establishing action-oriented communities like the Water and Climate Coalition helps unify stakeholders to link clean water (SDG 6) and climate action (SDG 13) targets.
- Digital Transformation: Integrating Artificial Intelligence (AI), the Internet of Things (IoT), and digital twins allows for more accurate forecasting, real-time monitoring of water levels, and informed decision-making.

- Hybrid Resilience Models: A major opportunity exists in merging traditional indigenous wisdom (e.g., traditional earthen dams) with modern AI and GIS mapping to optimize site selection and monitor the performance of natural water storage systems.
- Nature-Based Solutions (NBS): Innovation in using "green infrastructure", such as restoring wetlands and floodplains, acts as a natural buffer to filter water and enhance storage capacity while providing biodiversity benefits.
- Digital Collaboration Platforms: Utilizing open-source hardware and software models can help overcome information barriers and provide appropriate technologies for sustainable development.

Scaling-Up Initiatives

- Replication and Localization: Expanding successful initiatives across regions requires adaptation to local contexts, engagement with local stakeholders, and careful planning to ensure effectiveness and sustainability.
- Evidence-Based Interventions: Scaling up policy innovations requires well-defined objectives, diversified funding, and robust monitoring and evaluation (M&E) systems to ensure quality and impact are sustained over large populations.
- Sustainable Ecosystems and Global Market Expansion: Businesses can scale their impact on the Sustainable Development Goals (SDGs) by embedding these goals into their core strategies and operations, creating a 'sustainable ecosystem' for all stakeholders, and promoting joint business action.

Policy Advancement

- Climate–Disaster–Development Nexus: Policies that integrate climate action, disaster risk reduction, and sustainable development can deliver multiple co-benefits, including enhanced resilience, reduced losses, and improved public welfare.
- AI Governance and Ethics: As AI is integrated into disaster management, there is an urgent need for policies regarding data privacy, cybersecurity, and ethical guidelines to ensure systems remain unbiased and secure.
- Legal and Institutional Preparedness: Strengthening national and local coordination through clear legal frameworks and assigned authorities ensures that disaster risk reduction (DRR) measures are effectively implemented.
- Healthcare Affordability and Access: Policy shifts can drive value-based care models especially for water-related disaster victims, particularly for aging populations. Policymakers can support collaborative innovation by empowering and educating firms on effective partnership strategies.

## Proposed Priorities of the Topic / Guiding Questions

Discussions and sessions on water-related disasters are structured around the four priority areas of the *Sendai Framework for Disaster Risk Reduction*, aligned with the disaster management cycle (prevention/mitigation, preparedness, response, and recovery). The major guiding questions and prioritized areas are:

*Area 1 of The Sendai Framework: Understanding Disaster Risk*
This area focuses on strengthening risk knowledge through data collection, analysis, and information sharing to support evidence-based decision-making.
Guiding Questions:

- What are the historical trends in temperature, precipitation, flooding, and drought in affected region, and how are these trends projected to change in the future?
- What are the specific hazards (e.g., floods, droughts, storm surges, heatwaves) do communities or region is exposed to, and what underlying risk drivers (e.g., deforestation, poor land use planning, inadequate drainage) contribute to these risks?
- How vulnerable are existing critical infrastructure systems (water supply and drainage, health facilities, transport networks) and exposed populations to these risks?
- Does the country or community have adequate data, hazard maps, and information system available, and are they accessible to all relevant stakeholders?
- Has the risk uncertainty lens been considered in addressing in water-related disaster including the possibility of compounding disaster?

*Area 2 of The Sendai Framework: Strengthening Disaster Risk Governance*
This area focuses on ensuring coherent institutional, legal, and policy frameworks for effective disaster risk management.
Guiding Questions**:**

- What policies, regulations, and institutional arrangements currently exist for water and disaster management, and where are the key gaps and opportunities for improvement?
- How can coordination and collaboration across sectors (water, health, civil society, security) and across levels of government (international, regional, national, local) be strengthened?
- How can local governments, communities, and marginalized groups be meaningfully engaged and empowered in planning and decision-making processes?
- What mechanisms are needed to mobilize political commitment and resources to address water-related disaster risks effectively?

*Area 3 of The Sendai Framework: Investing in Disaster Risk Reduction for Resilience*
This area emphasizes proactive investment and financial preparedness to reduce existing risks and strengthen long-term resilience.
Guiding Questions**:**

- What structural and non-structural measures (e.g., resilient infrastructure, early warning systems, ecosystem-based adaptation) reduce vulnerability?
- How can financial preparedness be strengthened and financing leveraged to manage disaster and climate risks, including through flexible funding mechanisms that support local actors?
- What sustainable solutions, such as rainwater harvesting or wastewater reuse, can enhance water security and minimize the impacts of water shortages during crisis?
- How can science, technology, and innovation be positioned as "game changers" to strengthen resilience, particularly in monitoring, modeling, and data integration?

*Area 4 of The Sendai Framework: Enhancing Preparedness for Effective Response and Recovery*
This area addresses readiness for effective response and the opportunity to “build back better” during recovery and reconstruction.
Guiding Questions**:**

- What strategies and measures can be implemented to enhance preparedness systems at the individual, community, and institutional levels (e.g., community education, evacuation plans, stockpiling supplies)?
- How can monitoring of meteorological and hydrological hazards be strengthened, and how can timely and effective early warning systems be ensured?

- What lessons have been learned from past disaster events, and how can these inform improvements in future response efforts? (e.g., social, economy, ecosystem)
- How can infrastructure and community recovery and rehabilitation processes reduce future risks and prevent the creation of new vulnerabilities, rather than simply restoring pre-disaster conditions?

## Proposed Sessions of the Topic

Discussions and sessions on water-related disasters are structured around the four priority areas of the *Sendai Framework for Disaster Risk Reduction*, aligned with the disaster management cycle (prevention/mitigation, preparedness, response, and recovery). The following draft sessions are proposed for discussion during the 2nd Stakeholder Consultation Meeting, including opportunities for joint sessions with related topics.

*Session 1: Understanding and Assessing Multi-hazard Risk*

- Comprehensive Risk Assessment: Methodologies to Assess Hazards, Exposure and Vulnerability: Discussion on state-of-the-art methodologies to estimate the nature and extent of cascading risk from water-related hazards like floods, droughts, heatwaves and landslides.
- The Critical Link: Climate Change, Freshwater Resources, and Disaster Frequency**:** Discussion of how climate change drives the decline and degradation of freshwater systems and, in turn, influences the frequency and intensity of water-related disasters.
- Watershed landscape change: the development of agriculture activities and infrastructures is affecting river morphology and increasing the risk of flood.

*Session 2: Prevention and Preparedness Strategies (Mitigation & Adaptation)*

- Structural vs. Non-Structural Measures: Balancing Engineering Solutions with Policy and Awareness**:** Discussion of the effectiveness of structural measures (e.g., dams and levees) and non-structural approaches, including policies, monitoring and prediction for watershed environment quality and water-related disasters, public awareness campaigns through water disaster education, culture, training, youth participation and involvement.
- Strengthening Water, Sanitation, and Hygiene (WASH) Infrastructure Resilience: Discussion on approaches to building resilient WASH systems and services to withstand climate impacts and reduce public health risks.
- Leveraging Smart City Technologies for Real-Time Disaster Response**:** Discussion on how artificial intelligence, big data analytics, Historical Research on Water-Related Disasters, and the Internet of Things (IoT) can enhance preparedness and enable rapid response to water-related hazards using real-time data.
- Drought Resilience and Risk Management of the Water Network: Monitoring, early warning, and coordinated prevention of extreme drought under climate change, pathways for enhancing regional drought resilience under the national water network framework and the role of the national water network in alleviating regional and structural water scarcity, and regulatory effects of inter-basin water transfer on water-related risk.

*Session 3: Post-Disaster Response and Recovery*

- Challenges and Prospects for Planned Relocation in the Context of Climate Change: Discussion on the legal, social, and practical aspects of managed population retreat away from high-risk areas.
- From Emergency Response to Long-term Recovery: Fostering Sustainable Water Management Post-Disaster**:** Discussion on strategies to ensure recovery efforts build back better and integrate long-term sustainable water management practice

Topic discussions on water-related disasters are expected to yield concrete, action-oriented outcomes across several key categories of disaster risk reduction and water management. These outputs are designed to strengthen resilience and guide policy and implementation.

The anticipated action-oriented outcomes for **Topic 1B (Water-Related Disasters)** are structured to ensure long-term resilience and integration across global and local levels.

## III. Expected Outcomes and Deliverables

The water-related disaster discussions at the 11th World Water Forum (Riyadh 2027), themed "Actions for a Better Tomorrow," aim to produce a set of actionable, innovative solutions for enhancing resilience against increasing water-related risks driven by climate change. The primary deliverables include a comprehensive synthesis report and actionable roadmaps that define how to enhance early warning systems, invest in climate-resilient infrastructure, and foster international cooperation for disaster risk reduction. Ultimately, the forum expects to deliver strengthened policy frameworks and concrete, multi-stakeholder commitments—particularly in flood handling and drought management—that can be implemented to protect human life, livelihoods, and ecosystems.

These outcomes emphasize a shift towards proactive, integrated, and community-centered approaches to managing water-related disaster risks

### Policy and Strategic Outcomes

Key policy and strategic outcomes for water-related disaster discussions center on integrating water management into broader disaster risk reduction (DRR) and climate change adaptation frameworks, primarily guided by the *Sendai Framework for Disaster Risk Reduction.*
Key outcomes, recommendations, and frameworks include:
*Major Frameworks and Policies*

- Sendai Framework for Disaster Risk Reduction (2015-2030): The overarching global agreement that emphasizes the need to prevent new and reduce existing disaster risk through a range of measures addressing exposure, vulnerability, and hazard characteristics. Water-related risks and resilience are integral to its implementation.
- Water Convention (UN Economic Commission for Europe/UNECE Water Convention): This serves as a roadmap, particularly for transboundary water issues, providing concrete examples and guidance to address water-related disasters across borders and foster cooperation between water, DRR, and climate change communities.
- Sustainable Development Goals (SDGs): Water-related disaster discussions feed into the broader SDG agenda, specifically Goal 6 (Clean Water and Sanitation) and Goal 13

(Climate Action), aiming for resilient infrastructure and sustainable water management systems.

- Enhancement of Centre of Excellence for Water and Climate Resilience (CoE4WCR): one of deliverable outcomes 10th WWF is crucial for water-related disaster management by foster interdisciplinary research, integrating local and scientific knowledge, developing better early warning system (EWS) , improving data collection for risk analysis, and promoting collaborative governance for climate adaptation and disaster risk reduction (DRR) to build community resilience against floods, droughts, and other water-related hazards.

*Key Strategic Outcomes and Recommendations*

- Integrated Water Resource Management (IWRM)**:** A primary outcome is the shift toward holistic, integrated management of water resources that considers the entire water cycle and multiple stakeholders, moving beyond siloed approaches to flood or drought management.
- Strengthening Climate Resilience in WASH: A specific focus on ensuring that Water, Sanitation, and Hygiene (WASH) services are climate-resilient, with the capacity to "anticipate, withstand, respond, recover, and thrive" amidst climate change impacts.
- Risk-Informed Decision Making: The integration of robust scientific data, risk assessments, and economic analyses into strategic long-term planning and investment decisions to ensure value for money and effective risk reduction.
- Ecosystem-based DRR (Eco-DRR): The use of natural infrastructure, such as wetlands and peatlands, for flood water storage and shoreline stabilization, recognizing their cost-effectiveness and co-benefits for biodiversity.
- Legal and Institutional Preparedness**:** A strong emphasis on developing clear legal frameworks, policies, and operational procedures with clearly assigned responsibilities and authorities to enhance national and local coordination and implementation of DRR measures.
- Multi-Stakeholder Cooperation**:** The need for effective national and local coordination platforms that involve government, industry, community organizations, and the public to ensure an all-of-society approach to DRR.

These policies and strategies are articulated in various UNDRR "Words into Action" guidelines, World Bank guides for Disaster Recovery Frameworks, and specific guidance notes from bodies like Directorate General for European Civil Protection and Humanitarian Aid Operation (DG ECHO) and International Union for Conservation of Nature (IUCN).

## Technical and Knowledge Deliverables

Discussions on water-related disasters yield a range of technical and knowledge deliverables aimed at improving risk management. These outputs often include specific tools**,** methodologies**,** data platforms**,** case studies, and synthesis notes.

*Technical Deliverables*

- Tools:
    - Early Warning Systems (EWS): Advanced systems often integrating AI, drones, and remote sensing for flood and drought forecasting.

    - Post-Disaster Damage Assessment Tools**:** Specialized software and protocols for rapidly collecting and analyzing infrastructure damage data (e.g., water supply, pipelines).
    - Modeling and Simulation Software**:** Tools for running flood simulations to assess water levels and flow, often using virtual reality (VR) or digital twin technologies for visualization and training.
    - Mobile Sensing Technologies**:** Applications and platforms that use built-in smartphone sensors or crowdsourcing (e.g., Ushahidi) to gather real-time, ground-level disaster data and enable situational awareness.
    - FWR (Flood Water Rescue) Equipment Specifications**:** Documentation detailing the required equipment, such as inflatable boats, life buoys, and flow meters, for response operations.
- Data Platforms**:**
    - Flood Data Platforms**:** Online infrastructures that store, manage, and visualize flood risk data for public authorities and users.
    - Global Community Cyber-infrastructures (e.g., Cyber Flood): Cloud-based platforms integrating crowdsourced and satellite data for map and statistic visualization of flood events.
    - Linked Data Aggregation Systems**:** Systems designed to compile and report damage data from various sources into a unified framework.

*Knowledge Deliverables*

- Methodologies:
    - Collaborative Modeling**:** An approach that engages stakeholders in interactive social learning processes to develop a shared understanding of flood risk and co-design management alternatives.
    - Risk-Based Planning Integration**:** Guidelines on integrating comprehensive risk assessments (hazard identification, vulnerability analysis) into water supply systems management and planning.
    - Community-Based Disaster Risk Management (CBDRM): Frameworks for actively engaging local communities in identifying, analyzing, and addressing their specific disaster risks.
    - Multi-dimensional Flood Analysis Frameworks**:** Structured approaches for a comprehensive analysis of flood dynamics.
- Case Studies**:**
    - Regional Examples of Collaborative Modeling**:** Specific analyses of the application and results of collaborative modeling in different catchments, such as the Cranbrook (UK) and Alster (Germany) projects.
    - Flood Data Platform Governance Analysis**:** Comparative studies contrasting technological versus socio-technical approaches to flood data platforms in different governmental contexts.
- Synthesis Notes**:**
    - Implementation Guides: Documents offering practical advice for governments and other actors on implementing specific measures, such as addressing water-related disasters through transboundary cooperation.
    - Policy Recommendations**:** Notes suggesting the mainstreaming of disaster risk reduction into national and local development plans, policy formulation, and budgeting.

- Critical Reviews**:** Analyses of current disaster resilience research, identifying obstacles, and proposing data-knowledge-driven frameworks for improved policy decisions

## Partnerships and Financing Outcomes

Recent discussions on financing and partnerships for water-related disaster management have produced several key outcomes, emphasizing a shift towards blended finance**,** enhanced private sector engagement, and the critical role of multilateral development banks (MDBs) in de-risking investments and building long-term resilience.

*Key Partnership and Financing Outcomes*

- Increased MDB Commitments: Multilateral Development Banks (MDBs), such as the World Bank, Asian Development Bank (ADB), and European Investment Bank (EIB), have jointly committed to significantly increase lending and technical assistance for the water sector, including enhanced flood protection and climate adaptation measures. The ADB, for instance, has committed to investing $100 billion globally in the water sector by 2030. The outcomes of this topic are also expected to serve as a global cornerstone in advancing the Water Forward Agenda under the World Bank's global initiative, which aims to secure water for 1 billion people by 2030 and address the projected 40% water supply–demand gap as part of a broader response to global water scarcity ("water bankruptcy").
- Leveraging the Private Sector**:** There is a strong consensus that public funding alone is insufficient to meet the financial needs for disaster risk reduction (DRR). Outcomes call for creating an enabling policy and regulatory environment to attract private investment, using public finance to de-risk projects, and exploring public-private partnerships (PPPs) that incorporate DRR and resilience criteria.
- Innovative Financing Models: New financial instruments are being promoted to bridge the funding gap:
    - Blended Finance and Impact Investing: Combining public and private capital to finance water resilience projects.
    - Resilience and Green Bonds: Issuing bonds where prevention and climate resilience are key criteria, helping to leverage capital markets for adaptation and mitigation actions. District Columbia Water, in partnership with private investors, issued an environmental impact bond to fund green infrastructure for stormwater runoff mitigation.
    - Risk Transfer Solutions: Utilizing instruments like insurance, risk pools, and contingent financing to share risk across wider geographic areas and manage post-disaster recovery efforts.
    - Domestic Resource Mobilization: Strengthening local financial systems and national development banks (NDBs) to mobilize domestic resources and intermediate international climate finance.
- Integrated Policy and Planning: Discussions highlight the need to integrate water and climate policies at national and global levels and ensure that DRR is mainstreamed in infrastructure planning and development assistance projects.
- Knowledge Sharing and Capacity Building**:** Partnerships emphasize knowledge exchange, operational collaboration, and building local capacities to ensure that financing decisions are informed by local contexts and data.

- The Water Action Agenda: The UN 2023 Water Conference resulted in the Water Action Agenda, a set of voluntary commitments from nations and stakeholders towards achieving water-related SDGs. These commitments cover a wide range of actions, including financing and partnerships, and highlight the need for increased international cooperation to overcome implementation challenges

## Actions and Initiatives for Implementation

Key actions and initiatives for implementing water-related disaster management strategies include pilot projects, basin-level coordination, formal agreements (MoU's), innovation challenges, and network coalitions involving a wide range of public and private stakeholders.

*Pilot Projects*

- Process Optimization**:** Implementing pilot projects for specific water users to optimize processes and improve water supply/utilization systems with climate change in mind.
- Assessment Tools**:** Piloting the use of agreed indicators and criteria for assessing surface water quality across transboundary river basins.
- Climate Risk Modeling**:** Implementing pilot projects that use shared international experience in modeling and forecasting climatic and hydrological characteristics for entire transboundary basins.

*Basin-level Initiatives*

- Joint Strategy Development**:** Developing common strategies for adaptation to climate change at the river basin level.
- Stakeholder Dialogues**:** Facilitating basin-level dialogues to bring stakeholders together and shift attitudes toward collaborative water management.
- Data Integration**:** Collaborating with water authorities and basin-level agencies to ensure water-related scenarios are grounded in region-specific hydrological data.

*MoU's, Network Coalitions, and Partnerships*

- Cross-Sector Collaboration**:** Fostering collaboration between diverse actors, including central banks, international bodies, water authorities, academia, and the private sector, often through joint task forces.
- Formal Agreements**:** Developing and implementing formal agreements (MoU's) between national agencies to ensure harmonized responsibilities and access to necessary local data for disaster management.
- Knowledge-Sharing Networks**:** Establishing and strengthening networks and partnerships (like the Global Water Partnership Country Water Partnership (CWP) approach) to compile and share local experience and knowledge across countries and regions.
- Integrating Agendas**:** Creating a climate risk management approach that integrates disaster risk reduction and climate change adaptation agendas through strong coordination between relevant institutions.

*Innovation Challenges*

- Technology Pull-through: Advancing innovation in hydrometry by accelerating the integration of new, cost-effective technologies, such as Artificial Intelligence (AI), Internet of Things (IoT), and satellite data, into operational use by monitoring agencies.
- Open-Source Tools**:** Encouraging the development of more open-source databases and tools, such as expanding climate scenario platforms to include water stress scenarios.

- Capacity Building**:** Launching innovation and engagement opportunities with the private, public, and academic sectors to build capacity through workshops, training programs, and technical assistance

## Communication and Visibility

Effective communication and visibility for water-related disaster discussions involve clear, actionable key messages, leveraging diverse public communication opportunities, and ensuring these points are reflected in high-level forum declarations.

*Key Messages*
Messages should be relevant, clear, targeted, and repeated across various phases of disaster management (pre-, during, and post-disaster).

- Acknowledge the event with empathy and establish credibility for the information source.
- Explain the risk in the simplest terms, going beyond technical jargon or color-coded warnings to describe potential consequences (e.g., expected water depth, road closures, potential injuries).
- Be precise about when and where flooding/disaster is expected, while also managing uncertainty by explaining that estimates may change and where to get updates.
- Specify who might be affected with tailored advice (e.g., "If you live on the ground floor...", "If your home is near a riverbed...").
- Provide practical, actionable instructions (e.g., "Do not attempt to move your car from an underground garage," "Turn off electricity at the main fuse box") that counteract common misconceptions or past behaviors.
- Empower individuals to make informed decisions about their own safety and provide information on accessing recovery activities.
- Reiterate key messages regularly, as people may have trouble remembering information during an emergency.

*Public Communication Opportunities*
Utilizing a mix of trusted channels is crucial to reach diverse audiences, including vulnerable populations and those with a digital divide.

- Mass Media: Traditional channels like radio and television remain vital for broad dissemination of early warnings and information.
- Digital Platforms**:** Social media, mobile apps, and direct messaging platforms are increasingly important for targeted, timely updates and two-way interaction.
- Community Engagement**:** Work directly with community leaders and representatives who know the local context and can help spread messages through trusted networks.
- Public Awareness Campaigns**:** Conduct hygiene education, risk awareness, and preparedness training brochures/workshops as part of pre-disaster activities.
- Mobile Networks**:** Leverage cell-broadcast technology for geo-located warning messages to reach all users in a specific area, regardless of whether they have a smartphone or specific app.

*Contributions to Forum Declaration*
Communication and visibility elements help ensure that commitments made in forums translate into tangible actions and public accountability. Contributions to a forum declaration, such as those at the World Water Forum or COP, can include:

- Committing to improved early warning systems**:** Endorsing efforts to scale up national meteorological and hydrological services and multi-risk early warning systems, ensuring everyone is protected by 2027, as part of global initiatives like the UN's "Early Warning for All".
- Integrating communication into policy**:** Advocating for the institutionalization of good communication practices within national disaster management frameworks.
- Promoting data sharing and transparency**:** Encouraging the sharing of knowledge, data, and best practices on climate observations, water levels, and risk assessments among nations and stakeholders.
- Focusing on vulnerable groups: Ensuring that communication strategies and resources consider the specific needs of disadvantaged groups (e.g., the elderly, those with disabilities, people in remote areas) who are often disproportionately impacted.
- Highlighting the role of water in climate action: Emphasizing water as a fundamental element for healthy ecosystems and an integral part of climate resilience and disaster risk reduction strategies.
- Ensuring visibility of partnerships and impact**:** Committing to publicize the relevance and impact of funded humanitarian and development aid projects, demonstrating the partnership between different stakeholders (e.g., EU, UN agencies, national governments

To translate the high-level policy outcomes and concrete deliverables on water-related disasters from the 11th World Water Forum into tangible, long-term impact, a robust, continuous tracking mechanism is essential. Moving beyond the immediate forum declarations, the proposed monitoring framework—facilitated by digital synthesis tools and regional workshops—will hold stakeholders accountable for implementing early warning systems, resilient infrastructure, and adaptive water management plans. This post-forum phase ensures that the "Action for a Better Tomorrow" theme remains a dynamic process rather than a static event, creating a direct, measurable pathway from the Riyadh 2027 deliberations to the frontline protection of communities against escalating hydrological extremes.

## IV. Monitoring and Post-Forum Action

Outcomes from a water-related disaster discussion could support future initiatives through concrete action plans, policy recommendations, and collaborative frameworks. The explanation are as follows:

### Long-term Forum legacy

The discussions establish a legacy by producing enduring resources like best practices, case studies, and policy frameworks for water disaster management that can be referenced and built upon for years to come. It demonstrates the Forum's commitment to tangible solutions beyond the event itself.

### Follow-up initiatives toward the 12th World Water Forum

The 11$^{th}$ WWF focuses on "Action for a Better Future", highlighting climate adaptation, water resource management, and innovation for a more sustainable future, with themes like climate

action and sustainable development being key. The following linking themes & focus areas to the 12th Forum or COP 29 are:

- Water for Climate Action**:** Connecting water management directly to climate change mitigation and adaptation efforts.
- Sustainable Development**:** Achieving SDG 6 (Clean Water & Sanitation for All) by 2030.
- Innovation & Governance**:** Promoting new technologies, data, and better policies for water management.
- Regional Cooperation**:** Addressing diverse water challenges across continents (Mediterranean, Asia-Pacific, Africa, Americas.

The specific outcomes generated by community and individual actions ("them action for better tomorrow") that feed into "water for climate action" include:

- Improved Water Quality and Availability: Local actions such as reducing pollution, minimizing hazardous chemical release, and treating wastewater translate to improved water quality in local rivers, lakes, and groundwater sources. This ensures more resilient water supplies amid climate-induced scarcity.
- Ecosystem Restoration and Carbon Sequestration: Community-led efforts to protect and restore local ecosystems, such as wetlands, mangrove forests, and forested areas, enhance natural carbon sequestration and help regulate the local water cycle, directly benefiting global climate change mitigation and adaptation efforts.
- Enhanced Resilience to Water-Related Disasters: Actions that build local infrastructure resilience, implement early warning systems, or adopt climate-resilient water and sanitation services, especially in vulnerable communities, mitigate the impacts of extreme weather events like floods and droughts.
- Sustainable Water Use Practices: Community engagement can promote a shift towards regenerative and restorative approaches to water demand in agriculture, industry, and domestic use, moving away from over-extraction of scarce freshwater resources.
- Policy and Capacity Building: By engaging in local initiatives, "them actions" build institutional and civil society capacity, which in turn influences local and national policymakers to adopt integrated approaches that link water, climate, food, and health policies.

These outcomes underscore the message in the "Water and Climate Leaders Call to Action" that water action must go hand in hand with climate action because water is part of the solution to climate change, not just a problem.

## Contributions to global agendas (e.g. UN processes, climate conferences, basin networks)

Key findings and consensus positions can be formalized into statements or reports that are submitted to global bodies, directly informing international policies on climate change adaptation, sustainable development (SDGs), and transboundary water management.

## Continued partnerships, knowledge-sharing, and monitoring mechanisms

The discussions facilitate the formation of new alliances and strengthen existing ones. Agreed-upon outcomes often include the creation of specific networks or platforms for ongoing data

exchange, shared learning, and a structured system to monitor the progress of implemented disaster risk reduction strategies.

## V. Proposed Cross-Process Dialogue Areas

**Cross-process dialogue areas for water-related disaster management across topics within Theme 1 or other Themes during the Forum preparation cycle.**

*Integrated Strategy for Water Related Disaster Management and Climate Resilience (Cross topics 1B[1], 1C[2] and 1E[3] in Theme 1)*

A cross dialogue to discuss water related disaster management strategy requires a structured agenda to facilitate integrated planning across various sectors and stakeholders. The dialogue should focus on bridging the gap between the water, disaster risk reduction, climate change, and its impact to food security.

- Adoption of Integrated Risk Informed Governance and Planning: Discussion on merging Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) policies into a single and cohesive framework. It shifts from reactive crisis management to proactive, long-term planning that accounts for future climate uncertainties, such as increased flood and drought frequency. It also requires effective sectoral coordination, linking water management with land use, agriculture, and urban development.
- Implementation of Hybrid Infrastructure and Nature Based Solutions (NbS): Discussion on combining traditional 'grey' infrastructure (dykes, dams) with 'green' infrastructure (wetlands, mangroves, green roofs, permeable surfaces) to manage water related hazards efficiently. This approach not only provides flood protection but also offers co-benefits like ecosystem restoration, water storage, and improved water quality.
- Enhancement of Data-Driven Preparedness and Community Resilience: Discussion on using real-time data, early warning systems, and climate forecasting to support evidence-based decision making. It emphasizes investing in disaster preparedness, improving community level capacity to adapt to shocks, and ensuring that vulnerable communities are actively involved in designing, managing, and maintaining local water systems.

*Governance and Cooperation (Cross Topics and Cross Themes, 1B[1], 1C[2], 2C[4] and 4C[5]*

- Transboundary Cooperation: Joint Initiatives for Shared River Basins and Flood Response. Discussion of advancement of international agreements, data exchange, and coordinated measures to manage shared water resources and reduce disaster risks.
- Integrating Water Policies Across Development Agenda. Disaster Risk Management, Health and Food Security**.** Discussion of the necessity to mainstream water management into broader development and climate change adaptation strategies.
- Financing Resilience: Innovative Mechanisms and Partnerships for Disaster Risk Reduction**.** Discussion on sustainable financing mechanisms for prevention,

[1] Water-Related Disasters
[2] Integrated Water Resource Management
[3] Securing Water for Food Security
[4] Funding for Water Resilience and Climate Adaptation
[5] New Instruments for Water Sustainability Policy Consensus

preparedness, response and recovery, including engagement with entities such as the Green Climate Fund (GCF).

**Cross-process dialogue areas for water-related disaster management across Thematic and Political Process (Ministerial, Parliamentarian, Local and Regional Authorities, Basin Authorities) during the Forum preparation cycle.**

*Bridging the Policy-to-Practice Gap: From NDCs to Village-Level Budgets (Joint with Ministerial and Local Authorities):*
This dialogue focuses on the challenge of translating Nationally Determined Contributions (NDCs) into locally-led implementation plans. The goal is to move beyond high-level strategy to ensure that local and regional authorities have the legal autonomy and assigned budgets to execute disaster resilience projects.

*Transboundary Data Sovereignty: Eliminating 'Man-Made' Floods (Joint with Basin Authorities):*
This dialogue addresses the "simultaneous peak" phenomenon, where uncoordinated dam releases during heavy rains cause catastrophic flooding downstream. It would push for integrated, real-time Decision Support Systems (DSS) that mandate data sharing between upstream dam authorities and downstream administrations.

**Cross-process dialogue areas for water-related disaster management across Regional Process *during the Forum preparation cycle.***

Asia and the Pacific:
This is the most disaster-prone region globally, accounting for over 90% of people affected by water-related disasters. Focused collaboration is needed here to address intense monsoons, tropical cyclones, and the rapid depletion of groundwater.

Middle East and North Africa (MENA):
As the most water-scarce region in the world, MENA faces chronic water shortages and droughts. Collaboration should focus on non-traditional water sources, such as desalination and reuse, to ensure reliability amidst persistent scarcity.