[Regional Coordinators]

Region Concept Note Template
Regional Process, 11th World Water Forum

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1 Regional Water Context

1.1 Rationale and Context

1.1.1 Regional Profile: Asia and the Pacific.

Asia and the Pacific are the most geographically, climatically, and socio-economically diverse regions in the world. It encompasses major river basins and deltas, high mountain systems, arid and semi-arid zones, tropical forests, and nearly half of the world's Small Island Developing States (SIDS) and all of the world's atoll nations. The region is home to approximately 4.8 billion people which is around 60% of the global population (ESCAP 2024[1]). The region is characterized by wide disparities in income, institutional capacity, and access to water, sanitation, and related services. Such geographic and socio-economic diversity translates into varied water risks, capacities, and priorities, necessitating a structured regional framework to capture shared challenges while reflecting sub-regional specifics. The Asia-Pacific region, as addressed in the Regional Process for WWF11, covers 35 countries and is divided into 5 sub-regions (Table 1).

Table 1: Sub-regions and countries participating in the Asia-Pacific Regional Process of the 11th World Water Forum.

Sub-region	Countries
Central Asia	Afghanistan, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan (6 countries)
Northeast Asia	People's Republic of China (PRC), Japan, the Republic of Korea, and Mongolia (4 countries)
Southeast Asia	Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam (11 countries)
South Asia	Bangladesh, Bhutan, India, Nepal, Pakistan, the Maldives, and Sri Lanka (7 countries)
Oceania & Pacific Island Countries	Australasia Sub-Region: Australia, New Zealand (2 countries) Pacific Island Countries: Cook Islands, Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu (14 countries)

1.1.2 Water Security Progress and the Urgency of Strengthened Regional Action

[1] 2024 ESCAP Population Data Insight

According to the Asian Development Bank's *Asian Water Development Outlook (AWDO) 2025*[2], the region has made significant progress in water security over the past decade. Since 2013, strengthened political commitment, targeted investments, and governance reforms have enabled approximately 2.7 billion people (around 60% of the region's population), to move out of severe water insecurity. Early gains were driven largely by expanded access to safe drinking water and basic sanitation, particularly in rural areas in China and India. The progress in these countries was driven by strong political will, targeted investments, and large-scale reforms to service delivery.

Despite this progress, water security gains across Asia and the Pacific remain fragile. Environmental degradation, intensifying climate risks, increasing hydrological variability, and persistent underinvestment are reshaping the region's water landscape, creating a dual reality of progress alongside systemic vulnerability (ADB 2025). The AWDO identifies the Pacific as the most vulnerable subregion, with uneven progress and consistently low performance across multiple key dimensions.

These disparities, combined with an evolving risk profile, underscore the urgent need to bridge the persistent and widening gap in water investment and governance through strengthening regional cooperation and coordinating multi-stakeholder action. In this context, the Asia-Pacific Regional Process of the 11th World Water Forum (WWF11) serves as a critical inflection point to accelerate implementation, mobilize financing, and advance climate-resilient water action.

1.1.3 Rising Water Variability: Availability, Scarcity, and Allocation Pressures

Water security across Asia and the Pacific is increasingly shaped by hydro-climatic variability, ecosystem decline, and unsustainable groundwater use. Climate change, rapid economic growth, and weak water management are destabilizing water availability across seasons and geographies.

Erratic monsoons in Southeast Asia, South Asia and the Pacific, glacier retreat in the Hindu Kush Himalaya and Pamir, and intensifying droughts and floods in South and East Asia are reducing the reliability of water supply. While some areas are facing recurrent flooding, others, notably South and Central Asia, North and West China, and arid zones are experiencing persistent and worsening scarcity. These diverging hydrological patterns are amplifying exposure to climate shocks and increasing uncertainty for agriculture, energy systems, urban development, and ecosystems.

The reliable availability of water is further constrained by groundwater over-extraction, declining transboundary river flows, deteriorating water quality, and limited storage capacity. The region's Small Island Developing States (SIDS), constrained by limited and fragile water sources, face the increasing impacts of sea level rise and ocean inundation on coastal aquifers.

Rising demand from irrigation, cities, energy, and industry is intensifying allocation trade-offs across the water-energy-food-environment (WEFE) nexus, while governance systems in shared

[2] Asian Development Bank (ADB 2025) Asian Water Development Outlook 2025: The Index of Water Security for Asia and the Pacific, http://dx.doi.org/10.22617/SGP250481-2

basins are mostly politicized and remain strained by lack of effective coordination, data gaps, and limited climate-responsive allocation frameworks.

These pressures are creating distinct water security hotspot typologies across Asia and the Pacific. Glacier-fed basins face growing flow-uncertainty from rapid cryosphere change, while deltaic and coastal regions confront salinity intrusion, sea-level rise, and compound-flooding risks. Groundwater-dependent plains are experiencing accelerating aquifer depletion driven by irrigation demand, and arid and semi-arid basins face chronic scarcity intensified by climate variability. Small Island Developing States remain highly vulnerable due to limited freshwater storage and fragile aquifers. Addressing these emerging hotspots requires a shift from fragmented interventions toward coordinated, risk-informed, and investment-ready approaches.

1.1.4 Service Delivery Pressures — Rural and Urban Dimensions

Access to piped water has expanded significantly since 2013, reaching 42% of the rural population in 2025 – equivalent to approximately 800 million people, according to the Asian Development Bank's *AWDO* 2025. However, many systems still lack verified data on water quality, reliability, and service continuity. As a result, piped access alone cannot guarantee safely-managed and resilient services. In parallel, significant gaps persist in Pacific Island Countries, where access to basic water and sanitation remains among the lowest globally. Additionally, the water sources for drinking and WASH purposes are facing degradation due to anthropogenic intervention and climate induced extreme events.

Urban areas face parallel pressures. Rapid population growth, aging infrastructure, operational constraints, and intensifying flash floods and extreme flooding events and loss of connectivity of the natural water courses are straining service delivery, particularly in fast-growing Southeast Asian cities where drainage systems lag urban expansion. The groundwater, a major source of drinking water in most of the urban centres, is fast depleting. Reliability and resilience must therefore become core performance metrics for rural, urban, and peri-urban water management. Reliable and climate-resilient water systems are foundational to urban economic productivity, supporting industry, services, tourism, and employment. Urban water security must be addressed through an integrated urban basic services approach, linking natural water courses connectivity, water supply, sanitation, drainage, and solid waste management systems to reduce systemic risks, improve service reliability, and prevent pollution.

In this context, cities and local governments must be positioned as frontline actors in water security. Urban authorities and utilities play a central role in translating basin-level risk into service delivery, infrastructure planning, and investment decisions. Strengthening their technical, institutional, and financial capacity is essential to operationalize climate-resilient water systems.

Water insecurity is often most acute in informal settlements and peri-urban areas, where loss of natural water infrastructure (e.g. wetlands, natural drainages), infrastructure gaps, tenure insecurity, and exposure to climate hazards intersect, requiring targeted and inclusive service delivery approaches.

1.1.5 Environmental Water Security as the Region's Defining Vulnerability

Environmental water security has emerged as the most critical and rapidly deteriorating dimension in the region. AWDO *2025* reports regression in 24 of the 50 assessed economies.

This decline is driven by multiple pressures, including unsustainable urban planning, pollution, land-use change, deforestation, groundwater depletion, and neglect of nature-based solutions. Untreated wastewater and widespread contamination are degrading rivers, lakes, and aquifers, weakening the natural systems that underpin drinking water supply, food production, biodiversity, and long-term climate resilience.

Asia-Pacific is home to globally significant biodiversity hotspots, now under increasing threat. Freshwater biodiversity has declined sharply, and continued degradation risks undermining both natural heritage and economic sectors that rely on these ecological, cultural, and spiritual values. Environmental degradation is therefore not a sub-sectoral issue but a system-wide risk multiplier. In this context, restoring ecosystem services through large-scale investments will remain a major challenge unless innovative financing mechanisms such as blended finance and green bonds are effectively mobilized.

1.1.6 Groundwater - Strategic Resource under Growing Multisectoral Stress

Asia and the Pacific are the world's largest groundwater-using regions and home to six of the ten largest groundwater extractors: Bangladesh, China, India, Indonesia, Iran, and Pakistan (UNESCO, 2022[3]). Groundwater underpins agricultural productivity, rural livelihoods, and food security across the region, particularly through irrigation, which accounts for more than 80 percent of total withdrawals. It is also a critical buffer against climate variability, droughts and floods sustaining domestic and industrial supply where surface water is seasonal, polluted, or unreliable. Groundwater is a particularly important resource for the region's Small Island Developing States, with significant populations relying on volcanic and coastal aquifers for their daily water needs.

However, groundwater resources are under mounting stress. Over-abstraction, reduction in recharge due to urbanization, weak regulation, energy subsidies for pumping, and limited focus the protection of recharging zones and recharge management are leading to declining water tables, land subsidence, salinization, and deteriorating water quality.

At the same time, emerging industrial demand, including from data centers and semiconductor manufacturing linked to AI-driven economic growth, is adding new pressure in several urban and industrial corridors. These industries require reliable and high-quality water, and groundwater is often used to meet these needs. While still secondary to agricultural use at the regional scale, its rapid growth is creating additional allocation challenges. In addition, substantial volumes of

[3] United Nations, The United Nations World Water Development Report 2022: Groundwater: Making the invisible visible. UNESCO, Paris

groundwater and surface water are expected to be used for cooling, raising concerns about thermal pollution in public water bodies caused by discharged heat.

Balancing economic development with long-term water sustainability is therefore a critical policy priority. It will require aligning industrial expansion with basin-level water carrying capacity, strengthening participatory governance, enhancing transparency, and improving land-use management to support groundwater conservation. For many small islands and remote rural communities, the development and sustainable management of new groundwater sources can provide a safer, more reliable, and climate-resilient alternative to surface water.

Given pressures from agriculture, urban expansion, industrial growth, and climate variability, groundwater management is central to regional water security. Priorities include improved monitoring, regulated abstraction, conjunctive surface–groundwater management, recharge enhancement, and circular water use, including recycling and reuse, monitoring of thermal pollution in public water bodies, alongside better alignment between economic development and water availability.

1.1.7 Climate Change and Water-Related Disasters — Escalating Systemic Risk

Asia and the Pacific remain the world's most disaster-affected region, accounting for around 41% of global flood impacts alongside rising droughts, storms, heatwaves, and coastal hazards (ADB 2025). Climate change is amplifying hydrological extremes across all subregions.

- **South and Southeast Asia** face intensifying monsoons, cyclones, and compound flooding.
- **East Asia** is experiencing more frequent extreme rainfall and urban flooding.
- **Central and West Asia** confront worsening drought, desertification, and heat stress.
- **Pacific Small Island Developing States (SIDS)** face sea-level rise, storm surges, freshwater contamination, and flash flooding associated with extreme rainfall events.

A major systemic concern is the disruption of Asia's critical water towers, including the Himalayas, the Hindu Kush, the Pamir, and the Tibetan Plateau, which supply freshwater to nearly 2 billion people (ICIMOD 2019)[4]. Accelerating glacier retreat, permafrost thaw, and altered snowmelt patterns are reshaping river flow regimes, increasing the risks of both floods and dry season shortages downstream.

The Pacific subregion is disproportionately affected by the water and wastewater-related impacts of climate extremes, with climate change expected to significantly increase the likelihood of hydro-meteorological disasters, such as flooding and droughts, that already account for over 75% of the region's reported natural disaster events.

[4] ICIMOD (2019) [Scott, C.A., Zhang, F., Mukherji, A., Immerzeel, W., Mustafa, D., Bharati, L. (2019). Water in the Hindu Kush Himalaya. In: Wester, P., Mishra, A., Mukherji, A., Shrestha, A. (eds) The Hindu Kush Himalaya Assessment. Springer, Cham. https://doi.org/10.1007/978-3-319-92288-1_8]

Despite escalating hazards, significant adaptation gaps persist, including underinvestment in disaster prevention, in enhancing precipitation forecasting systems and early warning systems, and in the limited operational use of climate and hydrological data in decision-making. Strengthening resilience, therefore, requires not only the steady advancement of infrastructure-centered approaches, but also a shift toward anticipatory investment, ecosystem-based adaptation, climate-informed planning and practices, and basin scale governance that integrates disaster risk management with long term water security.

1.1.8 Transboundary Water Challenges

Transboundary cooperation is central to climate resilience, regional stability, benefits sharing and geopolitical trust-building across Asia and the Pacific. Shared basins underpin water-energy-food security and economic interdependence, but they are increasingly exposed to climate variability, competing national development priorities, and evolving geopolitical dynamics. As water stress intensifies, transboundary rivers are becoming not only hydrological systems but also strategic spaces where cooperation, data transparency, and collective risk management shape regional peace and sustainable development outcomes.

- **East Asia-** Upstream–downstream asymmetries linked to dams, flow regulation, and data transparency continue to influence water security.
- **Southeast Asia** (Mekong)- Hydropower expansion is reshaping flows, sediment transport, fisheries, and delta systems. The Mekong River Commission serves as a central institutional platform for cooperative basin governance, data exchange, and joint planning among member countries. The recent endorsement of the MRC Strategic Plan 2026–2030, marking 30 years since the 1995 Mekong Agreement, signals renewed political commitment to collaborative, science-based water management and a transition from coordination toward more operational basin governance (MRC 2025[5]). Complementing this basin-level cooperation, broader engagement through Association of Southeast Asian Nations (ASEAN) frameworks supports regional dialogue on sustainable basin development, climate adaptation, and cross-sectoral coordination.
- **South Asia**--transboundary water cooperation in South Asia is fundamentally shaped by the region's dependence on glacier- and monsoon-fed river systems originating in the Hindu Kush–Himalaya. Major shared basins, including the Indus River, Ganges River, Brahmaputra River, and Teesta River, support hundreds of millions of people across Afghanistan, Bangladesh, Bhutan, India, Nepal, and Pakistan, and underpin irrigation, hydropower, urban supply, and deltaic ecosystems. Accelerating glacier retreat, erratic monsoon behavior, sediment shifts, and compound flood–drought cycles are increasing flow volatility and challenging the historically fixed allocation arrangements. While selected bilateral treaties have provided important stability, many frameworks require review and updating to incorporate climate-risk modelling,

5 MRC endorses new Strategic Plan 2026-2030, marking a shift toward impact-focused basin management https://www.mrcmekong.org/media-releases/pr-29nov2025

real-time hydrometeorological data exchange, joint flood forecasting, environmental flow requirements and adaptive reservoir operations. Strengthening science-based hydro-meteorological initiatives through shared cryosphere monitoring, basin-scale scenario planning, and coordinated disaster preparedness will offer a pathway to move beyond reactive crisis management towards anticipatory, climate-resilient basin governance in South Asia.

- **Central Asia**- Structural water-energy-agriculture environment trade-offs persist in the Amu Darya, Syr Darya, Ili, Irtysh, and other basins despite regional restoration efforts. Institutions operating under the International Fund for Saving the Aral Sea (IFAS)[6] – including its Executive Committee and branches, the Interstate Commission for Water Coordination (ICWC),[7] and the Interstate Commission on Sustainable Development (ICSD) play important roles in coordinating allocation, ecosystem restoration, and regional dialogue, demonstrating the continued relevance of cooperative basin governance despite political and economic constraints.

Across subregions, key priorities include strengthening integrated basin management and governance, operationalizing basin-level data-sharing frameworks to support real-time cooperation and early-warning systems, climate-adaptive agreements, and leveraging science diplomacy to build trust among riparian countries.

2 Key Regional issues, opportunities, and priorities

2.1 Key Regional Challenges, Systemic Drivers, and Pressures

Building on the above context, water security in Asia and the Pacific is shaped by three interrelated systemic drivers:

- Hydro-Climatic Non-Stationarity and Risk Amplification
- Demographic, Economic, and Structural Demand Transitions
- Limited Transboundary Data and Information Sharing, Governance Fragmentation, Capacity Gaps, and Financing Constraints

These drivers interact across scales, reinforcing one another and giving rise to a set of systemic challenges:

- **Increasing Hydro-Climatic Variability and Climate Fragility:** Intensifying floods, high tides, droughts, glacier retreat, sea-level rise, and compound hazards are undermining the reliability of water systems, leaving hard-won gains in water security highly climate-vulnerable.
- **Water Scarcity, Allocation Stress, and Nexus Trade-offs:** Growing demand from agriculture, cities, hydropower, industry, and emerging digital sectors is intensifying

[6] IFAS https://ecifas.kz/en/
[7] ICWC http://www.icwc-aral.uz/index.htm

allocation pressures across the water–energy–food–ecosystem nexus, particularly in transboundary and groundwater-dependent basins.

- **Water Quality Degradation and Decline of Ecosystem Services and Biodiversity:** Untreated wastewater, pollution, land-use change, and groundwater depletion are degrading freshwater ecosystems, weakening environmental resilience and threatening public health, livelihoods, and food systems.
- **Service Delivery Gaps and Unequal Access**: Rural and peri-urban systems continue to face unreliable WASH services, with marginalized and remote rural and small island communities disproportionately affected. Particular attention is required for fast-growing secondary cities and small cities, especially in Least Developed Countries, where infrastructure expansion is not keeping pace with urbanization and climate risks.
- **Governance Fragmentation and Institutional Capacity Constraints**: Sectoral silos, limited basin-scale coordination, uneven data interoperability, and insufficient integration of climate risk into planning constrain effective water governance.
- **Financing Gaps and Limited Scaling of Innovation:** investment needs for infrastructure, ecosystem restoration, early warning systems, and climate adaptation exceed the current level. Proven technologies remain unevenly deployed and insufficiently embedded into formal planning and operations.

These interconnected challenges highlight the need for integrated, inclusive, and climate-informed approaches that move beyond fragmented responses toward coordinated, implementation-oriented action at scale.

2.2 Proposed Regional Priorities / Guiding Questions

The Asia-Pacific Regional Process for the 11th World Water Forum builds on the knowledge, partnerships, and strategic directions established through the outcomes of the Asia-Pacific Regional Process of the 10th World Water Forum[8].

The regional agenda is anchored in the Asian Development Bank's Five Guiding Principles under the Water Sector Directional Guide of Strategy 2030 and informed by analytical evidence from the AWDO and related regional assessments. This continuity ensures that regional discussions move beyond agenda-setting toward implementation, scaling, and accountability.

Sub-regional consultations during WWF10 revealed differentiated yet converging priorities across Asia and the Pacific:

- Northeast Asia emphasized open science, data sharing, digital innovation, and youth engagement in climate-resilient basin management.
- Southeast Asia prioritized water allocation frameworks, water accounting, and smart management technologies to address scarcity and basin stress.

[8] 10th World Water Forum Asia-Pacific Regional Process Synthesis Report
https://www.waterforum.jp/pdf/pr/ap-regional-synthesis-report-verson-9-July-2024.pdf

- South Asia underscored climate-resilient and gender-equitable WASH systems and strengthened community capacity.
- Central Asia focused on transboundary cooperation, basin adaptation planning, water saving programs, and resilience financing, particularly in the Aral Sea basin.
- Pacific Island Countries and Small Island Developing States highlighted locally led adaptation, knowledge partnerships, and improved access to climate finance in response to existential climate risks.

These insights collectively underscore the need for integrated, inclusive, and climate-resilient water governance systems capable of addressing both structural and emerging risks.

Regional Vision: Advancing resilient, inclusive, sustainable, and quality-oriented water societies across Asia and the Pacific.

5 Guiding Principles for Framing Regional Priorities:

To operationalize this vision, regional priorities are structured around ADB's five mutually reinforcing principles that provide the strategic architecture for engagement under WWF11 and ensure alignment with the Forum's Thematic Framework.

- ❖ GP1: Resilience and Adaptive Capacity: Scaling multi-hazard early warning systems, risk-informed infrastructure, and glacier and cryosphere risk management.
- ❖ GP2: Inclusiveness and Gender Equality: Advancing inclusive WASH, gender-responsive disaster risk reduction, and leadership of women, youth, and marginalized groups.
- ❖ GP3: Environmental Sustainability & Circular Economy: Strengthening basin management, ecosystem restoration, pollution control, and circular water use.
- ❖ GP4: Governance and Finance: Enhancing institutional coordination and mobilizing blended finance, green bonds, and disaster risk financing.
- ❖ GP5: Innovation and Technology: Urgently implement water saving programs, deploy digital water solutions, AI forecasting, remote sensing, and smart allocation systems alongside locally appropriate technologies.

Cross-Regional Priority Action Areas

Building on WWF10 discussions and regional consultations, the Asia–Pacific Regional Process will continuously advance the following cross-regional priorities:

- Early Warning Systems for All (EW4ALL)
- Glacier and cryosphere cooperation
- Water accounting and corporate disclosure
- Community-driven resilience solutions
- Cooperation across the region's small islands and atoll communities

Strategic Direction toward WWF11

The Asia–Pacific Regional Process will focus on translating dialogue into implementable pathways. Discussions under WWF11 will aim to:

- Deepen regional and transboundary cooperation by clearly defining the roles of local governments, utilities, and basin institutions, and by operationalizing coordination mechanisms across city, basin, and national levels throughout Asia and the Pacific.
- Scale proven solutions and innovation.
- Mobilize resources to where they are most needed.
- Address emerging systemic climate and water risks.
- Advance research and development to enhance precipitation forecasting accuracy.
- Strengthen mechanisms that translate climate and hydrological risk data into prioritized infrastructure investment, particularly at the city level, enabling risk-informed planning, budgeting, and financing decisions.
- Promotion and preservation of water culture

Through this structured and implementation-oriented framework, WWF11 provides a critical platform to accelerate action, strengthen accountability, and close persistent adaptation and resilience gaps across Asia and the Pacific.

Operationalization of Regional Priorities through Thematic Pillars: The above guiding framework is operationalized through three integrated Priority Themes that translate global water security objectives into a coherent regional action architecture for Asia and the Pacific. Together, these themes address systemic climate risk, nexus trade-offs, environmental degradation, and governance and financing gaps, while embedding innovation and inclusiveness across all interventions.

2.2.1 Priority Themes toward WWF11

Priority Themes 1–3 collectively operationalize the core pillars of the WWF11 Thematic Process by translating global water security priorities into an integrated regional action framework for Asia and the Pacific.

Priority Theme 1 Water & Climate / Disaster Risk Management operationalizes the Water-Related Disasters and Climate Resilience agenda under Water Security (Theme 1), while mobilizing cross-cutting enablers in Finance (Theme 2), water for human and natural systems (Theme 3), Governance (Theme 4), Innovation (Theme 5), and Water Valuation (Theme 6) to shift the region from reactive disaster response to predictive, risk-informed water resilience systems.

Priority Theme 2- IWRM for Resilience & Water-Energy-Food-Ecosystem Security operationalizes WWF11's Water Security pillar (Theme 1)—particularly IWRM (1c), Groundwater and Surface Water (1A), food security through efficient irrigation (1E), and circular water management (1D)—while systematically linking to Governance (Theme 4), Finance (Theme 2), Innovation (Theme 5), Ecosystem Restoration (Theme 3), and Value of Water (Theme 6) to stabilize the WEFE nexus under climate stress.

Priority Theme 3 — Water Quality, Sanitation & Ecosystem Health is primarily situated under Theme 3: Water for Humans and Nature, advancing sanitation, pollution control, and ecosystem restoration.

Cross-cutting priorities - Water Culture, Heritage, Traditional Knowledge and Trust-Building for Resilient Regional Cooperation permeate all three Priority Themes. Anchored in the Value of Water (Theme 6) and Water Governance & Diplomacy (Theme 4, particularly topics 4A, 4C, 4D, 6B, and 6D), it provides the cultural, ethical, and diplomatic foundations that strengthen and sustain the three Priority Themes across all interventions.

Together, the three priorities and the cross-cutting one are enabled by cross-cutting alignment with Water Finance (Theme 2), Governance & Diplomacy (Theme 4), Innovation (Theme 5), and the Value of Water (Theme 6), forming systems architecture for resilient, inclusive, and regenerative water security.

2.2.1.1 Priority Theme 1 — Water & Climate / Disaster Risk Management

Key Message
Water security has emerged as one of the most important non-traditional security threats in Asia and the Pacific and must therefore, transition from reactive disaster response to **predictive, integrated, and system-wide resilience**, enabled by multidimensional water management, data-driven decision-making, and risk-informed, society-wide investment.

Framing
Water–climate risks across Asia and the Pacific are intensifying in both frequency and severity, driven by floods, high tides, droughts, storms, storm surges, and cryosphere changes. These risks are further amplified by high population exposure in floodplains, the complexity of transboundary river systems, and rapid land-use change, and increasing water and energy demands associated with rapid digital transformation, resulting in cascading impacts across economic, social, and environmental systems.

At the same time, growing uncertainty in the hydrological cycle is rendering traditional experience-based and sector-specific ("two-dimensional") water management approaches—focused separately on rivers, urban systems, or irrigation—increasingly insufficient. Together, these dynamics underscore the limits of fragmented and reactive disaster response systems.

Across Asia and the Pacific, a wide range of hydrologic analysis methods are already applied in the planning and design of hydraulic infrastructure, river basin management, rainfall–runoff modelling, and flood risk mapping (UNESCO 2025)[9]. These approaches reflect diverse climatic conditions, topographic characteristics, and stages of catchment development. However, access to high-resolution spatial flood-risk data and standardized methodologies remains uneven. Strengthening regional platforms to systematically document and disseminate hydrologic analysis methodologies, modeling practices, and lessons learned is critical to enhance institutional capacity for risk assessment and water-related disaster risk reduction, particularly in countries with limited technical resources and experience.

[9] UNESCO Regional Office in Jakarta. An overview of the Regional Steering Committee for Asia and the Pacific and the Catalogue of Hydrologic Analysis. Jakarta, UNESCO, 2025
https://unesdoc.unesco.org/ark:/48223/pf0000396213

A fundamental shift is therefore required toward anticipatory, integrated, and system-wide resilience, combining advanced science with locally grounded practices and strengthening cooperation across basins and borders.

2.2.1.1.1 Strategic Direction: From Reactive Disaster Response to Predictive Resilience

Advancing water and climate resilience requires repositioning water management systems as **anticipatory, data-driven, and risk-informed**, capable of managing multi-hazard risks across spatial and temporal scales. This implies:

- Integrating the full water cycle (precipitation, surface water, groundwater, evapotranspiration) with temporal forecasting to enable multidimensional water management
- Embedding interoperable data systems integrating climate, hydrology, cryosphere, and socio-economic information
- Operationalizing **Early Action informed by Early Warning** across basins and borders
- Scaling risk-informed planning and investment, including flood mapping, hydro-meteorological forecasting, and basin analytics
- Transitioning from disaster risk management as public expenditure to a society-wide investment strategy
- Continuously enhance the accuracy of precipitation forecasting systems in line with advances in science, technology, and innovation.

Cities, local governments, and community governance systems must be positioned as frontline actors and primary users of multidimensional data systems. Sustained technical, institutional, and financial capacity-building is essential to translate risk intelligence into inclusive urban resilience, flood and drought management, and service continuity.

The Asia-Pacific Regional Process will showcase integrated action across disaster risk reduction, ecosystem restoration, digital innovation, and climate finance to deliver scalable implementation-oriented pathways for predictive, multi-layered water resilience.

2.2.1.1.2 Key Regional Action Areas

- **Early Warning Systems for All (EW4All)** — Strengthen multi-hazard forecasting, real-time data integration, and last-mile reach, communication, and community preparedness to operationalize Early Action informed by Early Warning. Ensuring that multi-hazard data systems are accessible and usable by local governments is critical to enable real-time, data-driven decision-making at the city level.
- **Climate-resilient WASH** — Protecting the fresh water sources to safeguard service continuity through risk-informed planning and adaptive infrastructure design into water and sanitation systems.
- **Risk-informed infrastructure** —Mainstream flood, high tide hazard mapping, basin analytics, hydro-meteorological forecasting, and drought planning into the planning, design, and forecast-based operation
- **Adaptation & Loss-and-Damage finance** — mobilize blended finance, insurance mechanisms, and contingency funding

- **Glacier & cryosphere cooperation** — Strengthen regional monitoring data sharing and downstream risk planning to address growing cryosphere-driven hazards across transboundary basins.
- **Cities & Local Government Capacity Building** — Empower local governments as frontline resilience actors through technical, institutional, and financial capacity development to operationalize multidimensional risk data in planning and service delivery.
- Strengthen R&D for improving precipitation forecasting accuracy by leveraging science, technology, and innovation.

2.2.1.1.3 Guiding Questions

GP1 - Resilience and Adaptive Capacity

Framing: Strengthening predictive, multi-layered disaster resilience across Asia-Pacific's diverse hydro-climatic systems.

1. **What priority actions are needed to scale multi-layered disaster resilience systems** in your sub-region, integrating grey infrastructure, nature-based solutions, and community preparedness?
2. **How can forecasting innovation**—including AI, satellite monitoring, and basin modelling—be operationalized to support anticipatory reservoir operations, drought management, and flood regulation?
3. **What practical mechanisms can effectively connect Early Warning to Early Action**, including contingency planning, pre-arranged finance, and evacuation systems?
4. What initiatives are required to drive further scientific and technological innovation?

GP2 - Inclusiveness and Gender Equality

Framing: Ensuring disaster preparedness and predictive resilience systems are inclusive, gender-responsive, and locally led.

1. What targeted measures are needed to ensure Early Warning and Early Action systems reach vulnerable populations**,** including women, persons with disabilities, and indigenous communities?
2. How can community-based monitoring systems and civil society networks be strengthened to enhance last-mile preparedness and response?
3. What institutional measures are needed to ensure gender-responsive evacuation planning during disasters and climate-resilient WASH continuity?

GP3- Environmental Sustainability and Circular Economy

Framing: Leveraging ecosystems and circular water systems as natural infrastructure for buffering disaster risk.

1. How can integrated surface water, groundwater, and circular water management be scaled to reduce drought, subsidence, and climate vulnerability?
2. What enabling policies and investments are needed to accelerate ecosystem restoration and nature-based disaster risk reduction?

GP4 - Governance and Finance

Framing: Embedding disaster risk intelligence into governance, investment, and transboundary cooperation systems.

How can risk-informed investment frameworks, including blended finance, PPPs, and insurance mechanisms, be mobilized to scale resilient water and disaster infrastructure investment?

1. What institutional arrangements are needed to strengthen transboundary data sharing, joint forecasting, and coordinated basin risk management?

GP5 - Innovation and Technology

Framing: Scaling digital and technological innovation for anticipatory, multi-hazard disaster risk management.

1. Which digital innovations should be prioritized to strengthen multi-hazard early warning and predictive risk analytics for decision-making?
2. What scalable technology solutions can expand community-level early warning coverage?
3. How can cities and local governments be empowered as core users of multi-dimensional data systems to strengthen urban risk planning, ensure service continuity, and localize SDG implementation?
4. How can we stimulate research and development aimed at adapting water cycle management to emerging advances in science, technology, and innovation?

2.2.1.2 Priority Theme 2 — IWRM for Resilience & Water-Energy-Food-Ecosystem Security

Key Message

Integrated Water Resources Management (IWRM) in Asia and the Pacific must be revitalized as an operational, climate-responsive system that manages trade-offs across the water–energy–food–ecosystem (WEFE) nexus, ensuring resilience, resource efficiency, and sustainable food and energy systems under growing uncertainty.

Framing

Discussions during the Asia-Pacific Regional Process of WWF10[10] highlighted the urgent need to revitalize IWRM across the region to address water scarcity, food security, and trade-offs across the WEFE nexus. AWDO 2025[11] further underscores growing instability in water availability driven by climate variability, ecosystem degradation, and unsustainable groundwater use. Agriculture remains highly exposed to hydrological shocks, while rising industrial, energy, and urban demands intensify allocation pressures across basins.

[10] 10th World Water Forum Asia-Pacific Regional Process Synthesis Report https://www.waterforum.jp/pdf/pr/ap-regional-synthesis-report-verson-9-July-2024.pdf

[11] Asian Development Bank (ADB 2025) Asian Water Development Outlook 2025: The Index of Water Security for Asia and the Pacific, http://dx.doi.org/10.22617/SGP250481-2

At the same time, AWDO 2025[12] identifies persistent gaps in water governance and management across Asia and the Pacific. Many countries develop water plans that are never implemented, policies that are not enforced, and data that are not shared. The region's continuing progress will require political will, a focus on service delivery, and the ability to manage trade-offs alongside continuing investment in gray infrastructure (Executive Summary, Pg 38)

Hydropower and multipurpose water infrastructure are reshaping basin development across the WEFE nexus. However, glacier retreat, sedimentation, and intensifying hydrological variability are constraining operational performance, while increasing drought risk is undermining energy security. This reinforces the need to integrate nature-based solutions (NbS) and basin-scale resilience measures into hydropower planning and operations.

Groundwater systems are also under increasing stress, including from water-intensive industries linked to digital and AI-driven economic growth, amidst heightening competition and vulnerability. Fragmented approaches are no longer viable; IWRM must address cross-sector interdependencies while balancing productivity, resilience, decarbonization, and ecosystem integrity.

The main challenge is now implementation: translating integrated planning into climate-responsive, basin-scale operations. While advanced water technologies exist, they remain unevenly deployed and insufficiently embedded in IWRM. Strengthening IWRM requires systematically integrating nexus-enabling technologies into allocation, reservoir, groundwater, industrial, and ecosystem management, positioning innovation as an operational enabler of climate-resilient, food-secure basin management.

2.2.1.2.1 Strategic Direction: Operationalizing IWRM

Revitalizing IWRM in Asia-Pacific requires redefining water as a central integrator of climate resilience, food and energy security, ecosystem protection, and pathways toward low-carbon and energy transitions. Moving beyond planning frameworks, IWRM must evolve into an operational system enabling:

- Climate-responsive water retention, recharge-oriented basin flood management, and water allocation planning
- Coordinated dam and groundwater management for enhanced functionality
- Circular and efficient water use and water heat utilization
- Ecosystem restoration and environmental flows

Digital innovation, forecasting, and decision-support tools are essential for managing variability and optimizing multipurpose infrastructure. Strengthened hydro-diplomacy, inclusive governance, and scaled financing are critical to move from fragmented sectoral approaches to system-wide basin resilience.

[12] AWDO 2025 Executive Summary P.38

2.2.1.2.2 Key Regional Priority Action Areas

1. **Climate-Responsive water Retention and Recharge-oriented Basin Flood Management and Water Allocation Planning** (Relate to 1A, 1C, 1E): Basin flood management planning incorporating water retention and recharge functions, Risk-informed allocation, conjunctive management, and nexus-based basin planning to balance food, energy, and ecosystem needs. Water saving and increasing water use efficiency in irrigation
2. **Circular and Efficient Water Use** (Relate to 1D, 6B): Water reuse, demand efficiency, non-conventional resources, and water thermal energy utilization to reduce agricultural and basin water stress.
3. **Digital & Data-Driven IWRM** (Relate to 5A, 5C): Water accounting, AI allocation modelling, earth observation, and decision-support systems.
4. **Nexus-Enabling Water Technologies** (Relate to 5B): Scaling up application of digital and smart water tools—AI forecasting, digital twins, smart irrigation, and satellite water accounting—supports climate-smart allocation, basin-scale food security, hydropower, and ecosystem resilience within IWRM.
5. **Ecosystem & Watershed Resilience** (Relate to 3C): Watershed restoration, environmental flows, sediment management, and aquatic biodiversity protection.
6. **Nexus Governance & Policy Coordination** (Relate to 3E, 4A–4C): Integrated water–energy–food planning, institutional alignment, and cooperative basin governance.
7. **Hydro-Diplomacy & Transboundary Cooperation** (Related to 4C): Transboundary Water Governance, Shared data systems, joint basin planning, benefit sharing, and coordinated reservoir operations.
8. **Financing Water–Food Transitions** (Relate to 2A–2C): Blended finance, climate adaptation funding, ecosystem payments, and investment in water-smart agriculture.

2.2.1.2.3 Guiding Questions

Framing: Intensifying competition across the water–energy–food–ecosystem (WEFE) nexus—combined with expansion of hydropower generation, rapid transition to an IT-driven society, and increasing climate risks—requires climate-smart, low-carbon, and ecosystem-integrated IWRM systems tailored to sub-regional contexts.

Flood water retention and aquifer recharge for climate resilience

Showing, storing, and infiltrating rainwater across the river basin

GP1- Resilience & Adaptive Capacity (Aligned to WWF11 Topics 1A, 1C, 1E)

1. What priority actions are needed to strengthen basin resilience by aligning climate-responsive food production, hydropower operations, and environmental flows under increasing hydro-climatic variability?
2. How can climate-risk planning and operational coordination be improved across multi-purpose reservoirs, irrigation systems, and energy infrastructure?

3. Which floodwater retention, aquifer recharge, water allocation, and basin planning models are most effective in addressing compound risks—such as drought, floods, glacier melt, and seasonal variability—in your sub-region?
4. How can IWRM enable climate-responsive floodwater retention, aquifer recharge, and water allocation planning while securing food systems under growing hydrological uncertainty?

GP2 - Inclusiveness & Gender Equality (Aligned to WWF11 Topics 4A, 4B)

1. How can nexus planning ensure equitable water allocation, livelihood protection, and benefit-sharing for smallholders, fisheries, and riverine communities affected by basin infrastructure?
2. What participatory governance and social safeguard mechanisms are needed to address resettlement, social risks, and conflict in hydropower and basin development?
3. How can water stewardship, capacity development, and decision platforms empower women, indigenous peoples, and vulnerable users in nexus governance?

GP3 - Environmental Sustainability & Circular Economy (Aligned to WWF11 Topics 3C, 1D, 6B)

1. What integrated strategies are needed to address ecosystem fragmentation, fisheries decline, and groundwater depletion linked to nexus infrastructure?
2. How can circular and water-efficient agricultural systems reduce basin stress while sustaining productivity?
3. How can ecosystem-based approaches reinforce watershed resilience and long-term food security?

GP4 - Governance & Finance (Aligned to WWF11 Topics 2A–2C, 4C)

1. How can blended finance, PPPs, climate funds, and ecosystem financing be mobilized to scale low-carbon hydropower, efficient irrigation, and nature-based solutions?
2. What governance reforms are required to integrate water, energy, food, and ecosystem planning within basin institutions and national policy frameworks?
3. What transboundary cooperation mechanisms are needed to strengthen joint dam operations, sediment management, and climate-hydrological data sharing?
4. How can integrated hydropower–nature-based solutions (NbS)–WEFE nexus approaches be designed and implemented to reduce urban flood risk, protect downstream cities, and address social impacts—including resettlement and livelihood restoration—particularly for vulnerable communities in your sub-region?
5. Given the strong conceptual momentum around NbS, how can Asia and the Pacific, particularly in your sub-region, strengthen practical implementation pathways, monitoring and evaluation indicators, and financing mechanisms to scale NbS and other effective area-based conservation measures (OECMs) within hydropower investments?
6. What governance, cooperation, and financing frameworks are required to operationalize IWRM across the WEFE nexus?

GP5 — Innovation & Technology (Aligned to WWF11 Topics 5A, 5C)

1. Given uneven digital capacity, hydrological risk profiles, and infrastructure maturity across the Asia–Pacific, how can innovation be scaled in ways that are context-appropriate, inclusive, and basin-relevant?
2. How can digital water accounting, remote sensing, and AI-based modelling be operationalized to strengthen WEFE nexus allocation and basin scenario planning in your sub-region?
3. How can decarbonized water infrastructure be designed and scaled to deliver urban resilience co-benefits—such as climate adaptation, service reliability, and public health—within integrated urban resilience frameworks across sub-regions of Asia and the Pacific?
4. How can MRV and digital tracking platforms be strengthened to monitor emissions, energy use, and sustainability performance across water infrastructure in your sub-region?
5. How can digital innovation and integrated data systems improve basin decision-making for food security and water resilience in your sub-region?
6. How can proven water technologies in the Asia-Pacific be scaled from pilots to basin-wide systems that support climate-resilient food production, water security, hydropower operations, and environmental flows?
7. What institutional, governance, and financing conditions are required to integrate advanced water technologies into formal IWRM and basin decision-making processes, rather than operating them as parallel systems?
8. How can water-saving technologies increase water use efficiency in the agrifood sector?
9. What policy and technological measures can accelerate the utilization of waste thermal energy from power plants and data centers for infrastructure management and agriculture?

Cross-Cutting Sub-Regional Reflection

- What scalable policies, investments, or technologies are already emerging that could be replicated regionally?

2.2.1.3 Priority Theme 3 - Water Quality, Sanitation & Ecosystem Health

Key message

Water systems must shift from linear "use-and-dispose" models to **circular, regenerative, and basin-integrated approaches** that restore water quality, strengthen sanitation, and regenerate ecosystems.

Framing

Water pollution is emerging as a constraint as severe as scarcity or flooding. Discussion outcomes from the Asia-Pacific Regional Process of the 10th World Water Forum (WWF10)[13], reinforced by findings from the *Asian Water Development Outlook (AWDO) 2025*[14], identify declining water quality and ecosystem health as systemic risks affecting health, food systems, urban liveability, and long-term water security. These trends underscore the limits of conventional water

[13] 10th World Water Forum Asia-Pacific Regional Process Synthesis Report https://www.waterforum.jp/pdf/pr/ap-regional-synthesis-report-verson-9-July-2024.pdf

[14] Asian Development Bank (ADB 2025) Asian Water Development Outlook 2025: The Index of Water Security for Asia and the Pacific, http://dx.doi.org/10.22617/SGP250481-2

management approaches. L**inear "use-and-dispose" water management models are no longer sufficient to address growing pollution loads, sanitation gaps, and ecosystem degradation**.

Restoring water quality requires integrating sanitation services, pollution control, wastewater reuse, and ecosystem restoration within basin governance frameworks. In this context, circular water regeneration, decentralized treatment, and nature-based purification systems are increasingly recognized as scalable, climate-resilient solutions. Protecting ecosystems and improving water quality are therefore inseparable from sustaining resilient, inclusive, and climate-secure water systems across the Asia-Pacific region.

2.2.1.3.1 Strategic Direction: From Linear Systems to Regenerative Water Management

This requires:

- Basin scale integration of sanitation, wastewater management, and ecosystem restoration
- Decentralized and inclusive service delivery
- Circular water use and resource recovery
- Pollution prevention and catchment protection
- Embedding nature-based solutions within water quality management
- Application of innovative, context-appropriate technologies
- Collection of data from multiple water quality treatment facilities within a river basin and the development of monitoring and management support systems.

2.2.1.3.2 Key Regional Action Areas

1. **Basin-Level Water Regeneration & Circular Flow Systems** — Integrate sewerage, wastewater management, ecosystem restoration, and reuse within basin planning to strengthen climate resilience and restore natural hydrological circulation. (1C, 1D, 3B, 3C (+5B, 6B))
2. **Building-Level & On-Site Water Regeneration** — Deploy compact, low-cost, and renewable-powered treatment and recycling systems to enable greywater reuse and ultra-low wastewater discharge. (5B, 3B (+1D, 2D))
3. **Circular Water Economy & Resource Recovery** — Advance wastewater recycling, nutrient recovery, resource recovery, energy recovery, the utilization of thermal energy from water biosolids reuse, and fit-for-purpose water reuse across agriculture, industry, and cities. (1D, 6A, 6B (+6D, 2A, 5B))
4. **Decentralized & Inclusive Sanitation Solutions** — Expand community-based sanitation systems to serve informal settlements, remote areas, small islands, and climate-vulnerable communities. (3A, 3B (+4E, 4A, 2D, 5D))
5. **Pollution Source Control & Catchment Protection** — Reduce agricultural runoff, industrial discharge, salinity intrusion, and groundwater contamination through integrated watershed management. (3D, 3C, 1A (+4A, 6E))
6. **Healthier ecosystems and stronger regional resilience -** Restoration of wetlands, rivers, and groundwater, enhancing ecosystem services. 3C, 1B (+6E, 2C)
7. **Transboundary & Community Governance** — Strengthen shared basin cooperation while empowering communities in participatory pollution management and ecosystem stewardship (4C, 4A, 4B (+4E, 5D, 1A))

2.2.1.3.3 Guiding Questions for Sub-Regional Dialogue

GP1 — Resilience and Adaptive Capacity

- How can integrated water quality management strengthen basin resilience to climate shocks, urban flooding, and drought in your sub-region?
- How can water saving, wastewater reuse, safe sanitation, and regenerative water systems enhance water availability during scarcity and climate extremes?
- What infrastructure and ecosystem vulnerabilities (e.g., salinization, flooding, inundation, contamination) most threaten water security and disaster preparedness?
- How can nature-based purification systems—wetlands, riparian buffers, floodplains—serve as multi-layer defences for both water quality and flood regulation?

GP2 — Inclusiveness and Gender Equality

- How can safely managed sanitation services be expanded to informal settlements, peri-urban areas, and marginalized communities?
- What gender-responsive and socially inclusive approaches are needed in sanitation planning, wastewater management, and hygiene services?
- How can decentralized and on-site treatment systems improve service access in remote, island, and mountainous communities?
- What participatory governance mechanisms ensure that affected communities shape pollution control and ecosystem restoration efforts?

GP3 — Environmental Sustainability and Circular Economy

- How can circular water systems—reuse, recycling, and regenerative treatment—reduce freshwater withdrawals and pollution loads?
- What role can wastewater regeneration play in supporting agriculture, industry, urban water supply, and the mitigation of urban heat islands?
- How can watershed restoration, wetland rehabilitation, environmental flow protection, and utilization of wastewater from heat reverse ecosystem degradation?
- What strategies address nutrient loading, salinity intrusion, groundwater contamination, and biodiversity loss in your sub-region?

GP4 — Governance and Finance

- What regulatory and institutional reforms are needed to enforce pollution control and wastewater standards?
- How can public finance, blended finance, and private investment scale wastewater treatment, reuse infrastructure, and ecosystem restoration?
- What governance models integrate sanitation, water quality, and basin management across sectors and jurisdictions?
- How can transboundary cooperation address shared river pollution, coastal contamination, and upstream–downstream externalities?
- Is there a need for an international organization that can assess and monitor transboundary cooperation and provide advice to the concerned countries when necessary?

GP5 — Innovation and Technology

- What technological and digital innovations can accelerate wastewater treatment, monitoring, and safe reuse?
- How can AI-enabled monitoring, smart sensors, and real-time data systems strengthen pollution tracking and compliance enforcement?
- What decentralized, modular, and nature-based treatment technologies are most suitable for your sub-regional context?
- How can low-energy and gravity-based systems reduce emissions and operational costs in sanitation and water treatment?
- What is needed to actively promote research and development and field-level pilot applications to continuously integrate scientific and technological innovations? How can the necessary financing be secured?

Integrative / Cross-Theme Guiding Questions

- Which water quality and sanitation risks pose the greatest threats to health, food systems, and ecosystems in your sub-region?
- What scalable circular economy approaches—reuse, regeneration, resource recovery—are being implemented or planned?
- How can basin planning better integrate pollution control, ecosystem restoration, and climate adaptation?
- What financing, governance, and innovation enablers are most critical to accelerating systemic transformation?
- Where can sub-regional cooperation, knowledge exchange, and investment partnerships drive the greatest impact?

2.2.1.4 Cross-Cutting Priority: Water Culture, Heritage, Traditional Knowledge and Trust-Building for Resilient Regional Cooperation

Key Message

Sustainable water security in Asia and the Pacific requires embedding **water culture, heritage, traditional knowledge, and trust-building** into governance systems—strengthening the cultural legitimacy, ethical foundations, and cooperative frameworks that enable resilient, inclusive, and durable water management.

Framing

The cross-cutting priority on Water Culture, Heritage, Traditional Knowledge, and Trust-Building strengthens all three Priority Themes by embedding the cultural, ethical, and diplomatic foundations that technical and operational interventions alone cannot provide.

Across Asia and the Pacific, water systems are not only physical and economic resources — they are living entities embedded in spiritual tradition, collective memory, and intergenerational responsibility. From sacred river custodianship in South and Southeast Asia, to indigenous freshwater stewardship in Pacific Island nations, to millennia-old water commons governance across Central and Northeast Asia, the region holds an unparalleled diversity of water heritage that remains largely untapped as a governance asset.

These dynamics underscore the need for a deeper transformation: embedding cultural, ethical, and diplomatic dimensions into water governance to strengthen cooperation, legitimacy, and intergenerational continuity. While Priority Themes 1–3 address systemic water risks through disaster resilience, nexus management, and ecosystem health, this cross-cutting priority reinforces and sustains them by recognizing water heritage and traditional knowledge as an active governance asset — anchored in topics 4A, 4C, 4D, 6B, and 6D —for resilient, inclusive, and regionally owned water security.

Building on the 10th World Water Forum's call for a global community of good practices on water ethics, this priority advances a fundamental reorientation of values shifting from predominantly anthropocentric, extractive water management approaches toward harmonious coexistence, moral stewardship, and institutional trust. It recognizes that governance reforms, infrastructure investments, and transboundary cooperation frameworks are only as durable as the cultural legitimacy and societal consensus that underpin them. Without this foundation, technical solutions risk remaining contested and difficult to sustain across generations.

2.2.1.4.1 Strategic Direction: From Technical Solutions to Trust-Based and Culturally Embedded Water Governance

Advancing this cross-cutting priority requires repositioning water governance as **ethically grounded, culturally informed, and trust-based**, complementing technical and institutional approaches. This implies:

- Recognizing water systems as living entities with ecological, cultural, and spiritual significance
- Embedding water ethics and stewardship principles into governance, policy, and behavioral norms
- Integrating traditional knowledge and cultural heritage into contemporary water management systems
- Strengthening societal consensus, public awareness, and intergenerational responsibility
- Building trust across stakeholders—communities, governments, and regions—through inclusive dialogue and cooperation
- Leveraging cultural diplomacy and shared heritage to support transboundary water cooperation

Operationalizing this shift will require stronger collaboration across government, cultural institutions, water authorities, scientific communities, and youth networks, as well as new platforms to document, share, and scale water-related knowledge and practices.

2.2.1.4.2 Key Regional Action Areas

1. **Water Ethics and Value Reorientation** (Relate to 6A, 6C, 6D): Advance the recognition of water systems as living entities with intrinsic rights to survival, health, and ecological integrity. Promote the development of ethical frameworks that guide human-water relationships across diverse contexts in Asia and the Pacific.
2. **Legal and Institutional Recognition of Water Rights** (Relate to 4A, 4D): Support frameworks that recognize the rights of rivers, aquifers, and water bodies as living

systems — drawing on legal innovations, customary water law, and indigenous governance.

3. **Water-Related Cultural Heritage and Intangible Knowledge Systems** (Relate to 6B, 6D): Document and integrate water-related cultural heritage, intangible cultural properties, and traditional water governance knowledge into governance to strengthen resilience and ecological stewardship. Strengthening government support is essential to achieve this.
4. **Infrastructure Ethics and Lifecycle Responsibility** (Relate to 4A, 4D, 6C): Embed ethical and cultural consideration across the full lifecycle of water infrastructure — from planning and design through construction, operation, and decommissioning. Ensure that infrastructure development processes respect the cultural, spiritual, ecological, and community values.
5. **Societal Consensus and Public Awareness** (Relate to 6B, 5E): Expand water ethics education through UNESCO schools, community networks, and youth engagement initiatives, linking water security to cultural identity, and intergenerational responsibility across the region's diverse societies.
6. **Tri-Level Trust-Building and Water Diplomacy** (Relate to 4A, 4C, 4D): Facilitate structured dialogue among water scientists, national and local government officials, business stakeholders, including those from the investment and finance sectors, and youth representatives, and strengthen transboundary cooperation through cultural and science-diplomacy.
7. **Global Community of Good Practices** (Relate to 4C, 6B, 6D): Contribute Asia-Pacific regional knowledge and practices to a global knowledge platform, establishing systematic mechanisms to document, share, and scale good practices across sub-regions, positioning Asia and the Pacific as a leading contributor to the evolving global agenda on water culture and ethics.

2.2.1.4.3 Guiding Questions

Framing: Across Asia and the Pacific, sustainable water governance requires not only technical and financial solutions but also cultural and ethical transformation — recognizing water's intrinsic value, rebuilding societal trust, and strengthening cooperation across diverse societies and transboundary systems.

GP1 — Resilience and Adaptive Capacity

- How can traditional ecological knowledge and cultural memory of past water crises — floods, high tides, droughts, and ecosystem collapse — be formally integrated into disaster risk management, early warning systems, and adaptive governance frameworks?
- What role can water-related cultural heritage and intangible knowledge systems play in strengthening community resilience, particularly in climate-vulnerable and disaster-prone sub-regions?
- How can the recognition of water systems as living entities with intrinsic rights strengthen long-term institutional commitment to maintaining healthy rivers, aquifers, and watersheds under growing climate stress?

GP2 — Inclusiveness and Gender Equality

- How can indigenous and community-based water stewardship traditions be formally recognized and integrated into national and basin-level water governance frameworks, ensuring that marginalized communities' cultural relationships with water are protected?
- What mechanisms ensure that women, youth, and indigenous peoples — who are often the primary custodians of traditional water knowledge — are empowered as leaders in water ethics, cultural heritage documentation, and governance processes?
- How can water education programs rooted in cultural values and community identity build more inclusive and gender-responsive water governance systems across diverse societies?

GP3 — Environmental Sustainability and Circular Economy

- How can cultural and spiritual relationships with rivers, wetlands, sacred water bodies, and aquatic ecosystems strengthen societal commitment to ecosystem protection, pollution prevention, and regenerative water management?
- What legal and institutional frameworks — drawing on river legal personhood, customary water law, and indigenous governance — can most effectively protect the ecological integrity of water systems across Asia and the Pacific?
- How can traditional water conservation and reuse practices, which predate modern circular economy models, be documented, scaled, and integrated into contemporary basin management frameworks?

GP4 — Governance and Finance

- How can water-related cultural heritage, ethical frameworks, and stewardship traditions be mobilized as governance assets to strengthen institutional legitimacy, public compliance, and societal consensus around water policy reforms?
- What transboundary trust-building mechanisms — combining science diplomacy, cultural exchange, and joint heritage recognition — can complement formal negotiation processes to reduce hydro-political tensions and advance cooperative basin governance?
- How can ethical principles governing human-water relationships be embedded into the design, financing, and operation of water infrastructure to ensure that cultural, spiritual, and community values are respected throughout the infrastructure lifecycle?
- What governance frameworks are needed to systematically document, protect, and leverage water-related intangible cultural heritage as a recognized asset in regional water diplomacy and cooperation?

GP5 — Innovation and Technology

- How can digital platforms, remote sensing, and knowledge management systems be deployed to document, preserve, and share water-related cultural heritage, traditional governance practices, and intangible knowledge systems across sub-regions?
- What innovative approaches can bridge traditional water knowledge systems and modern scientific data — combining indigenous hydrological observation, cultural landscape mapping, and advanced basin modelling — to strengthen integrated water governance?
- How can youth-facing digital tools, social media platforms, and educational technologies be used to connect water ethics and cultural heritage to the next generation of water managers, policymakers, and citizens across the region?

Cross-Cutting Sub-Regional Reflection

- What water-related cultural heritage, ethical frameworks, or stewardship traditions in your sub-region offer the strongest foundation for trust-building, transboundary cooperation, and durable water governance?
- How can Asia and the Pacific's diverse water heritage contribute to the global community of good practices on water ethics called for at the 10th World Water Forum?
- What partnerships between cultural institutions, water authorities, scientific bodies, and youth networks are needed to translate water heritage into active governance assets at sub-regional and regional levels?

3 Expected Outcomes and Deliverables

The Asia-Pacific Regional process for the 11th World Water Forum is designed to move beyond dialogue toward implementation by delivering a focused set of high-impact, action-oriented outputs. These outputs translate regional priorities into concrete policy frameworks, operational tools, partnership mechanisms, and investment pathways that can be scaled across diverse countries and basin contexts.

To anchor this transition from knowledge exchange to implementation, the Asia-Pacific Regional Process will deliver a set of flagships. These flagship deliverables represent scalable instruments to advance water security, climate resilience, and inclusive development across Asia and the Pacific.

The Flagship Deliverables consolidate the full set of policy, technical, partnership, and financing outputs into integrated, implementation-oriented packages aligned with the Priority Themes and Guiding Principles.

Implementation will be supported through city-level pilot initiatives, regional peer-learning platforms, and structured capacity development to enable replication and scaling across sub-regions.

Box 1: Asia-Pacific Regional Process - Core Flagship Deliverables for Implementation and Scaling

1. **Asia-Pacific Regional Synthesis Report & Ministerial Policy Package**
   A consolidated package of regional findings, priority actions, ministerial briefs, and voluntary commitment inputs to inform high-level decision-making and global processes
2. **Predictive Risk Governance Framework (Water & Climate)**
   A regional policy framework integrating multi-hazard risk intelligence (floods, droughts, cryosphere) into basin governance, national planning, and adaptation strategies.
3. **Early Warning – Early Action Implementation Protocols**
   Operational protocols linking forecasting, financing, reservoir operations, and community preparedness to enable anticipatory disaster risk management.
4. **Climate-Responsive Basin Planning & IWRM Framework**
   Practical guidance for conjunctive water management, allocation, ecosystem integration, and risk-informed basin operations across sectors.
5. **Water-Secure and Climate-Resilient Food System Pathways**

Strategic pathways for irrigation modernization, water-use efficiency, groundwater sustainability, and drought-resilient agriculture systems.

6. **Digital Water & Data-Driven Decision Systems Package**
   A suite of tools and institutional frameworks for AI, satellite monitoring, digital twins, forecasting systems, and data-driven water governance.
7. **Circular Water Economy & Water Quality Transformation Package**
   Integrated policy and technical solutions for wastewater reuse, recycling, resource recovery, decentralized sanitation, and ecosystem-based water quality management.
8. **Water–Food–Climate Financing Framework & Investment Platform**
   A regional framework to mobilize blended finance, green bonds, and private sector investment**,** aligned with nexus resilience and nature-based solutions.
9. **Multi-Level & Transboundary Water Cooperation and Partnership Mechanisms**
   Established platforms for city–basin–national coordination**,** including science diplomacy and implementation-oriented partnerships**.**
10. **Water Culture, Ethics & Trust-Building Global Initiative**
    A flagship initiative advancing water ethics, legal recognition of water systems, cultural heritage integration, infrastructure ethics, youth engagement, and contributing Asia-Pacific practices to the global water stewardship agenda.
11. **City-Level Water Resilience Action Framework**
    Practical tools and guidance for municipalities/local urban authorities to integrate climate risk into urban planning, infrastructure development, and service delivery.

3.1 Policy and Strategic Outcomes

Building on the flagship deliverables outlined above, the Asia-Pacific Regional Process will generate detailed policy and strategic outputs through its preparatory process and sub-regional, inter-regional, and regional synthesis sessions. These outputs will translate technical dialogue into actionable policy frameworks, operational guidance, and institutional and investment pathways aligned with the priority themes and guiding principles.

3.1.1 Priority Theme 1 — Water & Climate / Disaster Risk Management

3.1.1.1 Predictive Risk Governance Frameworks

Development of policy frameworks that integrate multi-hazard risk intelligence—including floods, droughts, and cryosphere-related risks—into basin governance, national water planning, and climate adaptation strategies.

3.1.1.2 Early Warning - Early Action Implementation Protocols

Operational Protocols linking forecasting systems with financing mechanisms, evacuation triggers, reservoir operations, and community preparedness to enable anticipatory disaster response.

3.1.1.3 City & Local Government Resilience Action Guidance

Practical guidance and capacity development frameworks enabling local authorities to apply risk data in urban planning, flood management, and climate-resilient WASH services.

3.1.2 Priority Theme 2 — IWRM for Resilience & Water-Energy-Food Ecosystem Security

3.1.2.1 Climate-Responsive Allocation & Basin Operations Frameworks

Guidance to operationalize climate-responsive allocation, conjunctive management, and risk-informed basin planning across sectors.

3.1.2.2 Water-Secure and Climate-Resilient Food System Pathways

Strategic pathways for securing water for sustainable agrifood systems through irrigation modernization, water-use efficiency improvements, reuse systems, and drought-resilient agricultural planning.

3.1.2.3 Digital & Data-Driven IWRM Systems

Frameworks for embedding digital tools, such as AI modeling, satellite monitoring, and forecasting platforms into basin decision-making.

3.1.2.4 Ecosystem & Watershed Resilience Integration

Policy guidance to integrate watershed restoration, environmental flow, sediment balance, and biodiversity protection into basin management.

3.1.2.5 Financing Frameworks for Water–Food–Climate Transitions

Investment frameworks to mobilize blended finance, climate adaptation funds, NbS financing, aligned with nexus resilience.

3.1.3 Priority Theme 3 - Water Quality, Sanitation & Ecosystem Health

- Policy frameworks for basin-based water quality management, integrating pollution control, wastewater regulation, sanitation, and ecosystem protection
- Strategic guidance to transition from disposal-based wastewater management toward circular systems that enable reuse, recycling, and resource recovery.
- Operational models for decentralized, modular, and nature-based treatment systems
- Policy commitments to scale watershed restoration, wetland rehabilitation, and riparian buffers as natural infrastructure for water purification and resilience.
- Integrated policy alignment linking water quality, sanitation, food systems and public health
- Financing strategies to scale wastewater treatment, reuse infrastructure, and ecosystem restoration.

3.1.4 Cross-Cutting Priority — Water Culture, Heritage, and Trust-Building

3.1.4.1 Water Ethics and Value Reorientation Policy Framework

Policy frameworks to advance the recognition of water systems as living entities with intrinsic rights to survival, health, and ecological integrity — shifting governance frameworks from purely extractive and anthropocentric approaches toward harmonious coexistence and establishing ethical behavioral norms that underpin durable and socially legitimate water governance across Asia and the Pacific.

3.1.4.2 Legal and Institutional Recognition of Water and River Rights

Policy directions to support the development of legal and institutional frameworks recognizing the rights of rivers, aquifers, and water bodies as living systems — drawing on emerging precedents including river legal personhood, customary water law, and indigenous governance frameworks — as foundations for more equitable, culturally legitimate, and durable basin governance.

3.1.4.3 Integration of Cultural Heritage into Water Governance

Guidance to formally recognize, document, and integrate water-related cultural heritage, intangible cultural properties, and traditional water governance knowledge systems into national and basin-level water planning processes, ensuring that long-standing stewardship traditions are protected and leveraged as active governance assets rather than treated as peripheral cultural considerations.

3.1.4.4 Infrastructure Ethics and Lifecycle Responsibility Standards

Policy guidance to ensure cultural, social, and ecological considerations throughout the infrastructure lifecycle — from planning and design through construction, operation, and decommissioning — and to formally recognize cultural, spiritual, and community values associated with water bodies in environmental and social impact processes across the region.

3.1.4.5 Public Awareness and Water Stewardship

Expansion of water culture programs to strengthen water ethics education, public awareness, and value formation as prerequisites for effective and durable water governance through UNESCO schools, youth networks, and community platforms that connect water security to cultural identity and intergenerational stewardship responsibilities across Asia and the Pacific's diverse societies.

3.1.4.6 Trust-Building and Water Diplomacy Frameworks

Frameworks for structured tri-level dialogue among water scientists, government officials, and youth representatives to establish inter-regional and transboundary trust-building mechanisms

— combining science diplomacy, cultural exchange — that complement formal negotiation processes and reduce hydro-political tensions across shared water systems.

3.1.4.7 Global Community of Good Practices on Water Ethics

Contribution of Asia and the Pacific practices to a global knowledge platform on water ethics and stewardship, building on the call at the 10th World Water Forum and positioning the region as a leading contributor to the evolving global agenda on water culture, ethics, and harmonious human-water coexistence.

3.2 Technical and Knowledge Deliverables

The Asia-Pacific Regional Process will produce a comprehensive set of practical knowledge products and tools to support implementation across all themes.

Core Outputs

- Asia-Pacific Regional Synthesis Report
- Five Sub-Regional Reports
- Ministerial policy briefs
- Collection of case studies and innovation showcases
- Platforms for knowledge exchange and capacity partnership

3.2.1 Risk, Climate, and Basin Resilience Knowledge Products

- Regional assessments of disaster risks in water and sanitation systems
- Case studies on flood and drought management and basin modelling innovations
- City-led practices on urban flood management, drainage planning, and WASH resilience
- Methodological documentation of rainfall–runoff models, flood mapping tools, and basin analytics across hydro-climatic contexts
- Technical guidance on embedding hazard mapping, forecasting, and climate stress-testing into infrastructure design
- Early Warning–Early Action toolkits for operational implementation

3.2.2 Water–Agriculture–Groundwater Systems Knowledge Products

- Case studies on climate-resilient irrigation systems
- Guidance on smart irrigation and precision agriculture
- Tools for improving water-use efficiency and crop productivity
- Frameworks for groundwater governance and aquifer management

3.2.3 Circular Water Economy & Reuse Knowledge Products

- Technical guidance on water reuse and recycling systems
- Policy Frameworks for safe and regulated reuse
- Tools supporting circular water economy implementation

3.2.4 Technology & Digital Innovation Showcases

- Showcases of smart water and irrigation technologies
- Tools for low-energy water systems and climate-smart operations
- Applications of digital twins for basin management

- Guidance for institutionalizing data-driven water systems.

3.2.5 Water Culture, Heritage, and Ethics Knowledge Products

- Asia-Pacific Water Ethics and Good Practices Compendium
- Regional Water Culture Education and Youth Engagement Toolkit

3.3 Partnerships and Financing Outcomes

3.3.1 Partnership Outcomes

The Asia-Pacific Regional Process of 11th World Water Forum will deliver a set of implementation-oriented partnership outcomes that translate technical dialogue into concrete collaboration mechanisms, joint initiatives, and capacity development platforms across the region.

These include:

(1) Multi-Level Cooperation Mechanisms: City–Basin–National

- Established platforms for inter-basin and multi-level coordination among cities, basin organizations, and national governments
- Replicable models for co-management, data sharing, and joint planning

(2) Transboundary and Regional Water Cooperation Partnerships

- Formalized science-diplomacy partnerships on cryosphere monitoring and downstream risk management
- New or strengthened transboundary trust-building frameworks integrating scientific collaboration, cultural exchange, joint water heritage recognition, and water ethics dialogue

(3) Knowledge and Capacity Development Partnerships

- Regional networks of experts, practitioners, and institutions across sub-regions and the Asia-Pacific Region overall
- Cross-sector partnerships linking basin managers, water utilities, hydrological services, agriculture, and disaster risk communities
- Structured peer learning programs, joint training initiatives, and capacity-building platforms
- Programs to translate science into policy and operational frameworks
- Partnerships with youth networks, civil society, and cultural institutions to advance water ethics education, effective water advocacy and intergenerational stewardship programs across the region
- Inter-regional exchange platforms contributing Asia-Pacific practices to the global community of water knowledge and ethics.

3.3.2 Financing Outcomes

The process will also generate actionable financing outcomes and investment signals to scale implementation across priority themes:

- Strengthened engagement with international financing institutes such as ADB, IsDB, and JICA through the policy recommendations and action proposals.
- Increased mobilization of financing for water security and resilience, including through blended finance approaches and private sector investment and participation.

- Developed new financing partnerships that link financiers, startups, technology solution providers, private sector actors, and community-based organizations to scale innovation
- Dedicated funding streams for integrating water-related cultural heritage into water security investment frameworks, including engagement with UNESCO and cultural development funds.
- Created market for emphasizing cultural legitimacy, social inclusion, and community trust as critical enablers for sustainable and bankable water infrastructure projects.
- Strongly aligned with global climate and environmental financing, including the Global Environment Facility (GEF) and the Green Climate Fund.

3.4 Actions and Initiatives for Implementation

3.4.1 Asia-Pacific Region overall

The Regional Process will co-develop and deliver an integrated package of implementation-oriented outputs to support scaling and on-the-ground actions. Key deliverables will include:

- Replicable solution packages-Documented and transferable bundles of proven technologies, policy instruments, and institutional models, designed for adaptation and scaling across diverse countries and basin contexts.
- Regional knowledge and partnerships platforms — An operational platform enabling continuous peer learning, technical exchange, and capacity development across sub-regions and institutions.

3.4.2 Sub-Region

3.4.2.1 Northeast Asia

Northeast Asia will primarily advance Priority Theme 1 - Water & Climate / Disaster Risk Management, while contributing to ecosystem and watershed resilience under Priority Theme 2, and ecohydrology and basin water quality governance under Priority Theme 3, and the cross-cutting priority on Water Culture, Heritage, and Trust-Building:

- Apply the latest scientific and technological innovations to improve the accuracy of precipitation forecasting.
- Promote knowledge exchange on advanced hydrological forecasting approaches and strengthen drought response and flood regulation systems to enhance climate risk preparedness in highly managed river basins.
- Advance Integrated Water Resources Management (IWRM) by sharing comprehensive water cycle planning frameworks, conjunctive surface and groundwater management models, and institutional design approaches that balance competing sectoral demands across highly managed and transboundary basins.
- Showcase emerging applications of basin digital twin and AI-enabled decision-support systems to support drought response and flood regulation in highly managed river basins.
- Promote open science and open hydrology frameworks — including interoperable data sharing platforms, standardized hydrological methodologies, and transparent basin monitoring systems — to strengthen regional scientific cooperation and evidence-based water governance across Northeast Asia.

- Highlight science-based approaches for improving drought response and flood regulation through improved hydrological monitoring and forecasting systems.
- Promote dialogue on ecosystem and watershed resilience, including integrated watershed management approaches.
- Share experiences on ecohydrology, ecosystem-based water management, and integrated basin water quality governance to support science-based and basin-oriented water management across the region.
- Advance the cross-cutting priority on Water Culture, Heritage, and Trust-Building by documenting and exchanging municipal water governance traditions, water-related intangible cultural heritage, and ethical frameworks governing human-water relationships across Northeast Asia, contributing to the global community of good practices on water ethics and strengthening the cultural foundations for durable regional cooperation.

3.4.2.2 Southeast Asia

Southeast Asia will primarily advance Priority Theme 1 - Water & Climate / Disaster Risk Management, focusing on strengthening climate-resilient water governance in the face of increasing hydro-climatic volatility, including intensified monsoon flooding, urban flash floods, transboundary basin risks, and recurring drought.

- Promote regional cooperation on multi-hazard risk analytics, Early Warning to Early Action systems, forecast-based financing, and risk-informed infrastructure planning to support predictive and risk-informed water management.
- Contribute to strengthening transboundary cooperation in major basins, particularly through regional mechanisms such as the Mekong River Commission, and potential collaboration with the Korea–Mekong Cooperation Center, to advance interoperable flood forecasting, coordinated reservoir operations, and cross-border risk data exchange.
  Highlight the role of regional organizations such as the Asian Disaster Preparedness Center (ADPC) in integrating regional systems to bridge disaster risk management, water resources governance, and ecosystem-based adaptation
- Complement the FAO Regional Office for Asia and the Pacific on climate-resilient agrifood systems, and IUCN Asia on nature-based solutions, freshwater ecosystem restoration and protection, and the protection of recharge zones to provide a foundation for joint programming that links basin risk intelligence to community resilience.
- Showcase scalable approaches for climate-resilient WASH systems, hybrid grey–green infrastructure, and inclusive early warning systems to contribute to ASEAN disaster risk reduction priorities and the global Early Warnings for All initiative, and broader climate adaptation discussions.
- Resilient river basin initiative for strengthening knowledge on subnational, national and regional water resources, water-related food security, and coastal and river city resilience in countries, while expanding investment opportunities for river basin management projects and programs
- These engagements would elevate Priority Theme 1 from a technical implementer to a strategic partner in strengthening predictive, basin-scale resilience across the region.

3.4.2.3 South Asia

South Asia will focus primarily on Priority Theme 1- Water and Climate/Disaster Risk Management - while also addressing WASH and wastewater management under the Priority Theme 3 (Water Quality, Sanitation and Ecosystem Health). Climate-resilient food system pathways to be

emphasized, addressing Priority Theme 2 (IWRM for Resilience & Water-Energy-Food Ecosystem Security).

- Share regional experience on early warning and minimizing carbon footprint/carbon credit.
- Promote dialogue on climate-responsive basin planning, irrigation modernization, and conjunctive surface–groundwater management in major river systems such as the Ganges, Brahmaputra, and Indus.
- Share regional experiences on groundwater governance, aquifer sustainability, and water productivity improvements to support climate-resilient food systems.
- Highlight approaches to improving river health and sanitation through wastewater management and climate-resilient WASH systems in rapidly growing urban areas.
- Case studies on Water, sanitation, and health targeting children, especially girls
- Strengthen transboundary basin governance frameworks to incorporate climate risk modeling, adaptive allocation mechanisms, and joint flood forecasting.
- Integrate nature-based solutions for flood and drought management, including wetland restoration, riverbank reforestation, and floodplain management.
- Advance water–energy–food–ecosystem nexus approaches to balance hydropower, irrigation, and ecosystem flow requirements across the basin.
- Enhance urban water security and river ecosystem services through decentralized sanitation, wastewater reuse, and pollution mitigation.
- Develop open-access hydro-meteorological data platforms and joint basin monitoring systems to strengthen evidence-based decision-making.
- Promote scenario-based basin planning to anticipate compound climate risks, including floods, droughts, and sedimentation impacts.

3.4.2.4 Central Asia

Central Asia will primarily advance Priority Theme 2 - IWRM for Resilience & Water–Energy–Food Ecosystem Security, reflecting the region's dependence on irrigated agriculture, shared river systems, and the need for coordinated basin management under increasing climate variability.

- Promote regional dialogue on water-efficient agriculture, irrigation modernization, incentive-based tariff reforms, and digital water accounting from source to farm to improve basin-scale water productivity.
- Share experiences on glacier monitoring, climate risk preparedness, and financial mechanisms such as climate risk insurance and potential regional initiatives (e.g., a Glacier Fund) to strengthen resilience in mountain headwater systems.
- Implement the Glaciers to Farms initiative to build climate resilience for vulnerable mountain communities facing accelerated glacial melt, focusing on securing regional water and food supplies by supporting sustainable agriculture, smart irrigation, and comprehensive watershed management.
- Highlight cooperative approaches for coordinated seasonal allocation in transboundary rivers, including compensation mechanisms for water–energy–ecosystem services and adaptive withdrawal arrangements during droughts.
- Facilitate knowledge exchange on early warning systems for climate-related risks (including dust storms), green infrastructure for vulnerable communities, and strengthened technical capacity in irrigation, hydrology, and water network management, while reinforcing water diplomacy grounded in trust, data sharing, and cooperative basin management.

3.4.2.5 Pacific Islands

Pacific Island Countries will prioritize climate-resilient water security under Priority Themes 1 and 3, focusing on protecting fragile freshwater resources, strengthening disaster preparedness, and improving sanitation systems in small island contexts.

- Promote strengthened engagement in water security as a key determinant of Pacific Island resilience, including through the Pacific Water Security Warriors mechanism endorsed in 2025 by Pacific Water and Wastewater Ministers[15] and Pacific Leaders'[16] recognition of the importance of raising water visibility at the highest political levels.
- Highlight the need for prioritization and deeper integration of water and sanitation into the region's national development plans, climate change strategies, and disaster preparedness frameworks.
- Facilitate coordinated and impactful partner support to national and regional frameworks that address Pacific water security priorities, including through increased access to sustainable financing solutions tailored to the different scales and needs of Pacific Islands.
- Promote dialogue on the unique and significant challenges faced by the region's atoll and low-lying communities reliant on rainwater and shallow aquifers, and the value of sharing locally developed solutions (such as rainwater harvesting, storage systems, and sustainable use of shallow aquifers) through whole-of-region collaboration and communities of practice.
- Highlight the critical importance of the region's national hydrological services in enabling evidence-based decision making for sustainable water resources management, disaster risk reduction, and climate change adaptation.
- Promote dialogue on multi-hazard early warning systems addressing cyclones, storm surges, flooding, and drought affecting water supply systems.
- Highlight decentralized sanitation, nature-based treatment solutions, community-based monitoring, and watershed protection approaches suited to small island environments.

Table 2: Actions and Initiatives Outputs - Clustered by Type and 5 Sub-Regions

Type	Northeast Asia	Southeast Asia	South Asia	Central Asia	Pacific Islands
Policy & Governance	•IWRM governance compendium • Water culture & governance compendium	•Transboundary cooperation package • Regional coordination model (DRM–water–ecosystem)	•Transboundary governance framework • Nexus (WEFE) framework	•Transboundary allocation mechanisms • Water diplomacy framework	• Policy integration framework (water in national plans) • Water security leadership and advocacy platforms
Technical & Data Systems	• Hydrological forecasting toolkit • Digital twin & AI applications	• Multi-hazard risk & EWS framework • Scalable WASH & hybrid	• Basin planning toolkit • Hydro-meteorological data platform•	• Digital water accounting • Early warning systems (incl. dust storms)	• Hydrological services strengthening package • Multi-hazard EWS models

[15] 9th Pacific Water and Wastewater Ministers (PWWM) Forum, Honiara 2025

[16] 54th Pacific Islands Forum Leaders Meeting, Honiara 2025

Type	Northeast Asia	Southeast Asia	South Asia	Central Asia	Pacific Islands
	• Open hydrology/ data-sharing framework • Asian Water Development Outlook country water security score card	infrastructure models • Asian Water Development Outlook country water security score card	Scenario-based planning tools • Asian Water Development Outlook country water security score card	• Asian Water Development Outlook country water security score card	• Community-based water solutions • Asian Water Development Outlook country water security score card
Financing & Economic Instruments	*(limited explicit outputs)*	• Forecast-based financing approaches • Joint programming pipelines	• Low-carbon water management approaches	• Climate risk insurance & glacier financing mechanisms	• Coordinated financing mechanisms tailored to SIDS
Capacity Building & Knowledge Sharing	• Ecosystem resilience knowledge set • Ecohydrology casebook	• Regional knowledge exchange via ASEAN/partners	• WASH casebook (inclusive, gender-focused) • Regional experience sharing	• Capacity-building programs (irrigation, hydrology)	• Sub-regional ommunities of practice & local solution exchange • Capacity support for national services

To complement the clustering of proposed actions and initiatives, Table 3 highlights the strategic relevance of regional priorities by identifying what issues are most critical, where these priorities are concentrated, and why they are important for strengthening long-term water security, resilience, and cooperation across Asia and the Pacific.

Table 3: Strategic Relevance of Proposed Actions and Initiatives Across the Five Sub-Regions: What Matters, Where, and Why

Sub-region	What Matter (Priority addressed)	Where	Why It Matters
Northeast Asia	Digital water management, AI forecasting, ecosystem resilience	Urban-industrial basins, climate-sensitive river systems	Increasing hydro-climatic variability, aging infrastructure, and the need for advanced predictive systems
Southeast Asia	Transboundary cooperation, flood resilience, WASH	Mekong basins, coastal/delta cities	Rapid urbanization, flood exposure, and cross-border disaster risks
South Asia	WEFE nexus, basin planning, inclusive WASH	Himalayan river basins, water-stressed agricultural regions	Glacier melt, groundwater depletion, food-energy-water pressures, and social vulnerability
Central Asia	Water diplomacy, allocation mechanisms, and climate risk financing	Aral Sea basin and transboundary river systems	Competing water demands, regional tensions, glacier retreat, and economic dependence on irrigation
Pacific Islands	Climate-resilient water services, community	Small islands, atolls, vulnerable coastal areas,	Extreme climate vulnerability, limited freshwater availability, and institutional capacity constraints

Sub-region	What Matter (Priority addressed)	Where	Why It Matters
	solutions, and financing for SIDS	remote rural communities	

3.5 Communication and Visibility

3.5.1 Consolidated Regional Messaging for Global Visibility

The Asia-Pacific Regional Process will deliver a coherent and high-impact communication package to elevate regional priorities and solutions at the global level. Key outputs include:

- Asia-Pacific Key Messages Package- A consensus-based set of high-level messages reflecting 5 sub-regional priorities, cross-regional challenges, and priority actions for the Asia and the Pacific
- Ministerial Messaging Inputs-- Clear articulated narratives on regional urgency, investment needs, and implementation pathways to inform Ministerial dialogues at the 11th World Water Forum and the other global platforms.
- Curated Asia-Pacific Solutions Portfolio – A selection of scalable solutions, including technologies, technical know-how, governance models, and financing innovations.
- Regional Case Study Compendium – A consolidated collection of implementation case studies for dissemination across the region and global platforms.
- Voluntary commitments and investment pledges – A coordinated set of pledges, partnership initiatives, and investment commitments from the participating organizations of the Asia-Pacific Regional Process
- Strategic Communication and Outreach Partnerships: Strengthened collaboration with regional organizations, development banks, UN entities, and civil society networks to amplify Asia-Pacific messages globally.

3.5.2 Official Contributions to Forum Communications

The Asia-Pacific Regional Process will provide formal inputs and communication deliverables to shape the official outcomes of the 11th World Water Forum. Key outputs include:
Official Regional Inputs to Forum Outcomes – Consolidated Asia-Pacific Contributions to the Chair Summary, Ministerial Declaration, and thematic outcome documents.

- Policy and Technical Submission Package- Submitted policy statements, technical recommendations, and regional action priorities for inclusion in official records of the 11th World Water Forum.
- Global Alignment Brief – A structured alignment of Asia-Pacific messages with global water agendas, SDGs, and climate negotiation processes**.**
- Sub-Regional Representation Package - Coordinated inputs reflecting the perspectives and priorities of all 5 subregions to ensure balanced visibility**.**
- Ministerial Communication Briefs – Targeted briefs outlining priority actions, investment needs, and cooperation opportunities from the Asia-Pacific Region
- High-level messaging Toolkits – Ready-to-use communication materials to support ministerial interventions and leadership dialogues of the 11th World Water Forum.

4 Proposed Cross-Process and Inter-Regional Collaboration

Collaboration with the Political Process, particularly Ministerial Dialogues and local authorities' dialogues

4.1 Proposal for Inter-Regional Dialogue: Climate-Resilient Basin Governance and Transboundary Cooperation

The Asia-Pacific Regional Process proposes an inter-regional dialogue titled **"Climate-Resilient Basin Governance and Transboundary Cooperation."** The initiative will convene a broad and inclusive group of stakeholders, including representatives from Asia-Pacific, the Americas, Africa, the Arab Region, and Europe, as well as basin organizations, government agencies, scientific, technical, and financial institutions, private-sector actors, civil society organizations, and youth representatives.

This dialogue is designed not as a conventional exchange of views, but as a **functional international cooperation mechanism** aimed at translating the **New Integrated Water Resources Management (New IWRM)** into concrete implementation.

Key Thematic Pillars

1. Strengthening Transboundary Water Management under Climate Change

This pillar forms the implementation foundation of New IWRM by addressing escalating hydro-climatic risks, including glacier retreat, droughts, floods, high tides, and shifting precipitation patterns. The focus is on accelerating the shift toward **predictive, data-driven, and risk-informed water management systems**.

Key elements include:

- **Multi-dimensional data systems:** Integrating the full water cycle (precipitation, surface water, groundwater, evapotranspiration) with climate and socio-economic datasets
- **Risk-informed decision-making:** Directly linking early warning systems with early action mechanisms
- **Predictive investment planning:** Anticipating and managing flood, high tides, drought, and water scarcity risks
- **Adaptive governance systems:** Integrated management of dams, aquifers, and river basins through cooperative arrangements
- **Financial transformation:** Shifting from fragmented public expenditure toward a whole-of-society investment approach

The dialogue will also redefine the IWRM paradigm in a more inclusive manner, enabling all countries—whether or not they share transboundary rivers—to contribute through technology, finance, knowledge, and innovation.

In addition, water will be positioned at the core of the **WEFE Nexus (Water–Energy–Food–Ecosystems–Climate)**, supporting a transition toward circular and regenerative water systems.

2. Water and Peace

This pillar positions water as a strategic foundation for trust-building, cooperation, and regional stability. Building on the New IWRM framework, the dialogue will explore practical pathways to reduce risks of conflict and strengthen peace through:

- **Transparent data sharing:** Joint monitoring and enhanced technical transparency
- **Science diplomacy:** Evidence-based dialogue and cooperation between regions
- **Cooperative governance mechanisms:** Mitigating tensions arising from water stress through the development of institutional cooperative frameworks for conflict prevention.

3. Institutional Design for International Water Governance

This pillar examines the international institutional architecture required to support New IWRM at scale.

- **Feasibility assessment:** Exploring the establishment of an international water institution to support assessment, policy advice, coordination, and scientific knowledge sharing
- **System-wide review:** Evaluating whether existing UN mechanisms and regional organizations are sufficient to address increasingly complex water challenges, and identifying gaps that may require new institutional arrangements

This discussion is positioned as part of the design of the institutional backbone for **New IWRM implementation**.

4. Strengthening Multi-Stakeholder Collaboration

To strengthen climate resilience and implementation capacity, the dialogue will transform existing multi-stakeholder forums into **sustained platforms for implementation**. By bringing together governments, academia, the private sector, financial institutions, civil society, and youth, the focus will shift toward:

- Coordinated investment and technology transfer
- Human capital development and capacity strengthening
- Integrated data-sharing and knowledge ecosystems

Expected Outcomes and Significance

This dialogue is intended as a practical platform for decision-making and implementation**,** not merely a consultative forum. It will define joint actions, clarify implementation responsibilities, and strengthen long-term accountability mechanisms.

Its strategic significance lies in accelerating the transition from fragmented regional responses toward integrated and coherent global water governance, while transforming “New IWRM” from a conceptual framework into an actionable architecture for international cooperation and implementation.

To address these shared challenges, the dialogue aims to deliver the following tangible inter-regional outcomes:

- A joint inter-regional framework on measuring the status and progress of the national water security index, climate-resilient, and cooperative basin governance[17]

[17] To monitor progress of global water security, Asian Development Bank (ADB) is partnering with African Development Bank (AfDB) and Inter-American Development Bank (IDB) to share the methodology of national water security monitoring – Asian Water Development Outlook.

- Shared principles, operational guidance, and technical guidance on predictive and data-driven management for transboundary data sharing, forecasting, and adaptive water allocation.
- Cross-regional case studies and a compendium of transboundary basin management practices, drawing lessons from diverse regions.
- New or strengthened inter-regional partnerships on science diplomacy, basin monitoring, and early warning systems.
- Institutional recommendations, including cooperation frameworks involving international water organizations, to strengthen governance mechanisms.
- Ministerial-level messages reflecting political alignment with "New IWRM," as well as coordinated inputs to the Ministerial Declaration and Forum outcome documents that convey a unified inter-regional voice.

5 Monitoring, Legacy, and Post-Forum follow-up

5.1 Contributing to the Long-Term Legacy of the 11th World Water Forum

The Asia-Pacific Regional Process aims to strengthen the long-term legacy of the 11th World Water Forum by transforming the Forum from a dialogue platform into an implementation accelerator that supports measurable progress on water security, resilience, and cooperation across the region**.**

In the immediate term (2027-2028), the participating organization and the regional partners of the Process aim to implement and scale up our voluntary commitments/pledges by learning from case studies/good practices and technical guidance. In the mid-term (2028-2029), the participating organizations and regional partners will track the implementation of selected actions and voluntary commitments through periodic regional stocktaking and peer-learning exchanges, including the Conferences and Workshops they plan. They are then expected to present what works and what failed in WWF12.

The process will also position the Forum as:

- a platform for applied learning that documents practical implementation experience, including both successful approaches and operational challenges
- a mechanism for connecting local innovation, basin-level practice, national policy, and regional cooperation; and
- a platform for strengthening alignment between regional action and global monitoring frameworks, particularly SDG 6 and other water-related SDGs, by working with the UNESCAP and the other regional offices of the United Nations organizations, and their partner organizations for implementation, including capacity building.

5.2 Supporting Implementation and Follow-Up at Regional and Local Levels

The outcomes of the Asia-Pacific Regional Process are intended to support implementation beyond the Forum through structured follow-up, continuous learning, and strengthening regional and inter-regional coordination mechanisms. Drawing on the mandates, technical expertise, partnership networks of participating organizations, and their regional partners, the process will support the monitoring and review of:

- progress on voluntary commitments and partnership initiatives;
- implementation of selected regional flagship actions and pilot activities;
- dissemination and practical application of technical guidance and case studies;
- regional cooperation activities on transboundary water management, early warning systems, and climate adaptation; and
- contributions to SDG 6 and related indicators, particularly on integrated water resources management (SDG 6.5.1), transboundary water cooperation (SDG 6.5.2), water-use efficiency (SDG 6.4.1), wastewater management (SDG 6.3.1), and access to water and sanitation services (SDG 6.1 and 6.2).

Monitoring and follow-up activities will include annual or biennial regional progress reviews, voluntary reporting by partner institutions, regional webinars, peer-learning exchanges, and updates to shared knowledge platforms.

Key follow-up actions include:

- Developing and regularly updating a living “What Worked / What Didn’t” regional case compendium as a practical learning resource;
- Sustaining communities of practice and regional learning networks to strengthen peer exchange and technical cooperation;
- Translating regional guidance into sub-regional, basin-level, and national implementation pathways; and
- Encouraging participating organizations, where feasible, to align reporting and implementation efforts with SDG 6 monitoring and relevant climate adaptation frameworks.

5.3 Feeding into Preparations for the 12th World Water Forum

The Asia-Pacific Regional Process is designed to establish continuity across the Forum cycle by maintaining implementation tracking, regional learning, and policy dialogue between 11th and 12th World Water Forum. Key continuity actions include:

- Periodic update and presentation of the evolving regional case compendium at the 12th Forum.
- Feeding implementation lessons and regional priorities into agenda-setting and thematic planning for WWF12**.**
- Maintain a synthesis-to-action pipeline linking regional technical dialogue with political and ministerial processes, and
- Promoting an implementation-focused Forum cycle that builds on operational evidence and measurable progress rather than restarting conceptual discussions.

5.4 Alignment with Global and Regional Agendas

The preparatory Process and the outcomes of the Asia-Pacific Regional Process are structured to ensure coherence with global, regional, and sectoral frameworks related to water, climate, resilience, and sustainable development.

UN & Global Water Agendas, including the 2nd UN Water Conference

The process will contribute regional evidence, implementation experiences, and policy recommendations to global water discussions and follow-up mechanisms, including:

- Inputs to Asia-Pacific SDG 6 and water-related SDGs reviews reporting processes;
- Contributions to follow-up processes related to the 2nd UN Water Conference and post-2030 water dialogue discussions;
- Practical implementation models for inclusive water governance and climate resilience, and integrated water resource management; and
- Cooperation with organizations such as FAO, ICID, and regional partners to increase irrigation efficiency.

Climate & Disaster Frameworks

The process also aims to strengthen alignment with the climate adaptation and disaster risk reduction agenda by:

- Supporting adaptation priorities under UNFCCC processes;
- Advancing cooperation on Early Warning Systems, cryosphere and glacier monitoring, and risk-informed water infrastructure;
- Promoting integrated approaches linking water security, disaster resilience, and climate adaptation financing; and
- Contributing practical regional experiences relevant to climate finance, adaptation planning, and Loss-and-Damage discussions.

5.5 Sustaining Partnerships, Knowledge, and Monitoring

To maintain momentum beyond WWF11, the Asia-Pacific Regional Process Coordinators, lead sub-regional coordinators, and their supporting organizations will encourage their partner organizations to periodically share progress, lessons learned, and implementation experiences through their (sub)regional platforms, conferences, etc. Monitoring efforts will primarily focus on implementation progress, knowledge dissemination, and contributions to regional and global water-related targets. Priority actions include:

- Strengthening long-term multi-stakeholder partnerships across government, regional organizations, scientific institutions, development partners, civil society, youth networks, and basin organizations**.**
- Providing open-access knowledge products (case studies, methodologies, regional synthesis reports, and technical guidance materials).
- Supporting regional capacity and peer-learning activities through webinars, technical exchange, and hands-on-training programs, and
- Operationalizing voluntary monitoring and feedback systems aligned, where feasible, with SDG6 indicators, climate adaptation reporting, and regional resilience frameworks to support evidence-based follow-up and future Forum cycles.