Regional Report

Regional Process Commission

Region: Asia-Pacific

Coordinator: Asia-Pacific Water Forum

Asia-Pacific Water Forum

Pre-forum version
March 2018

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1. Executive Summary

The Regional Process Commission (RPC) of the 8th World Water Forum appointed the Asia-Pacific Water Forum (APWF) to lead the Asia-Pacific Regional Process. Accordingly, the APWF developed its regional position, selected the regional theme leaders and topics of 6 themes, and established teams. Five sub-regional coordinators of the Asia-Pacific region for Central Asia and the Caucasus, Northeast Asia, South Asia, Southeast Asia, and Oceania and Pacific were selected in accordance with the APWF framework.

The APWF developed the regional process in line with the policies and roadmaps presented by the RPC of the 8th World Water Forum, thanks to the solidarity of its member organizations and their willingness to voluntarily cooperate and collaborate. This is important to enable the Asia-Pacific region to accelerate the integration of water resource management into its socio-economic development. The width of the expert knowledge, experience and lessons of the members are capitalized upon to address a range of water issues derived from the diversity of Asia and the Pacific and to make it water secure.

In this Asia-Pacific Regional Process Report, each regional theme leader and their collaborators examined the water security and sustainable development challenges faced in Asia and the Pacific and the actions that can be proposed to solve these issues. They conducted situation analyses and examined the key recommendation and pathways to overcome the challenges. They did this based on selected case studies.

The **"Climate"** theme is led by **International Centre for Integrated Mountain Development (ICIMOD)** and focuses on **"dimate change, disasters and water related adaptation".** This region comprises several vulnerable areas, such as mountains, coasts, islands and arid regions, where impacts of climate change are likely to be higher than elsewhere given the inherent nature of these fragile areas. Disasters, water related and other natural disasters, are also very frequent in the region. Through the lessons from the case studies, it highlights the necessity to promote the integration of scientific and engineering approaches and local and traditional knowledge in implementing the water-related assessment. It also emphasizes the importance to implement water-related disaster risk management and adaptation measures with locally tailored technological innovation and capacity building for local communities. Adaptation shall be promoted through regional cooperation, partnership development with trust building and continuous engagement.

The **"People"** theme is led by **Japan Sanitation Consortium** in collaboration with Water Environment Partnership in Asia (WEPA), Japan International Cooperation Agency (JICA) and Water Aid India. This theme addresses the need for **"integrated sanitation for all."** The present report reviews the current situation of sanitation and wastewater management in both urban and rural contexts of the Asia-Pacific region. It examines how administrations, utilities and operators, as well as civil society organizations, respond to challenges in terms of sanitation and wastewater management, including off-site and on-site sanitation and septage management, human resources development, institutional and regulatory frameworks and circular economy (wastewater reuse and sludge recycling). It emphasizes the importance of partnerships to enable

the sharing of knowledge, successful experience and good practices in sanitation and wastewater management, which is needed to achieve all the tasks required to mainstream wastewater management. It is also essential to improve and increase investment in both off-site and on-site sanitation, including septage management, and in innovative technologies.

Under the **"Development"** theme, the "**water-food-energy" nexus is selected** and **FAO Regional Office for Asia and the Pacific** examines the issues in the contexts of water and development. The past three decades have witnessed unprecedented growth in most parts of Asia with substantial improvements for food security. However, many investments have triggered trade-offs, which created increasing levels of awareness of the water, food and energy nexus and its inherent cross-sector relationships. Applied research suggests that the future achievement of development goals depends on the improved management of nexuses. This challenge implies three main elements: an improved capacity to assess nexus interactions and sustainability outcomes, the governance of the water-food-energy nexus and the design of effective incentives and policy instruments to navigate nexus trade-offs. The report describes case studies in the Mekong river basin, Myanmar and India to address these three challenges. The results of the case studies suggest that strategically investing in all three domains – assessment, governance and policy instruments – in parallel is likely to ensure a steady improvement of our ability to manage water, food and energy trade-offs and realize more sustainable development outcomes.

The **"Urban"** theme is led by the **Global Water Partnership Organization (GWPO) in** collaboration with **PUB,** Singapore's National Water Agency, **and UN-HABITAT**. It examined the approaches to shift the urban water supply in developing countries of Asia and the Pacific to promote circular economy through water use reduction, wastewater reuse and water recycling. It is examined through case studies and by looking at the enabling environment of favorable business model. The report finally emphasizes:

- Wastewater is a resource. Within the water cycle, treated wastewater and properly collected sludge can generate a circular economy that, can reduce demand for freshwater, help its conservation, maintain and improve water quality and offset investment costs as nutrients and construction materials. Decentralized Wastewater Treatment Systems (DEWATS) and non-networked sanitation systems are potential solutions where piped sewerage systems are not economically viable.
- Systems must be continuously monitored and maintained. To do so, a conductive and enabling environment that mainstreams wastewater management, establishes and enforces legal and regulatory systems, develops innovative financial instruments and addresses the insufficiency of human resources is necessary under the leadership and support of government.
- A coordination mechanism among governments and stakeholders from various sectors can be a helpful tool. Stakeholder engagement should be carried out from the very beginning and throughout the process.

The UNESCO Regional Science Bureau for Asia and the Pacific specifically focuses on **mobilizing science for the SDGs through enhanced freshwater ecosystems management in Asia and the Pacific.** Through the examination of case studies from the region, this theme highlights the contributions of new integrated and problem-oriented scientific approaches to enhance water-related benefits for ecosystem preservation. Using examples from different parts of the region, the report draws upon the successes and challenges of tools such as Integrated Water Resources

Management (IWRM), UNESCO Ecohydrology and transdisciplinary approaches, bringing these to bear for the resolution of challenges and conflicts relating to the management of ecosystems. Restoration of the ecosystems, particularly river ecosystems, back into its natural conditions is argued to be the most effective way forward to ensure sustainability. The report also discusses water and ecosystem education needs and priorities, arguing for the need for reorientation of water education at all levels, which should also include community education strategies. Finally, the report also discusses pathways towards optimizing the mobilization of science, technology and innovation (STI) for cost effective and rapid implementation of the 2030 Agenda for achieving SDG 6 and its ecosystem-related targets in Asia and the Pacific. The key recomendations include:

- **Freshwater ecosystems** provide many economically valuable commodities and services for humans. These ecosystem benefits are costly and often impossible to replace when aquatic systems are degraded. To this end, recognizing carrying capacity of ecosystems is vital.
- On **river ecosystems**, river projects must be targeted towards restoring its natural, original conditions, enhancement of the natural river ecosystem and functioning, enhancement of biodiversity, ecology, and ecohydrology. In this regards, river works must consider at least 4 objectives: 1) enhancement of biodiversity/ecosystem; 2) water quantity control (maximizing attenuation, reduced peak outflow discharge, proper use of water balance equations); 3) water quality control at source and in the system; and 4) socio-economy circumstances of the people.
- **Water education** is essential for the sustained, long-term safeguarding of ecosystems and the water-related services they provide. However, for water education to deliver on this potential, comprehensive investment and reorientation of water education at all levels is required.

The **"Finance"** theme, led by **Economic and Social Commissions for Asia and the Pacific (ESCAP) with the feedback from the Asian Development Bank (ADB)** examines **"Financing implementation of water-related SDGs".** The Asia Pcific region faces a significant investment gap to develop its much-needed water infrastructure. According to the ADB, more than USD 800 billion in investment through 2030, or $53 billion annually, is required to develop water and sanitation infrastructure[1]. To address this need, countries in the region must develop and strengthen innovative and effective policies, actions and frameworks that can strategically mobilize public resources and attract private investment.

This report and forum session highlight a variety of issues, including:

- the need for improved planning and implementation of impactful investments to enhance sustainable business models for water services and infrastructure;
- mobilizing commercial lenders, raising credit-worthiness of service providers, and blending public and private sources of finance to invest in water and sanitation infrastructure; and
- strengthening policy and monitoring frameworks, and water management systems including incentivizing decentralized water systems and collaborative partnerships;

The report emphasizes the necessity of the following actions:

- Empowerment of regional and local governments to develop policies and norms for financial frameworks and investments in decentralized projects is required, as water and sanitation-

[1] Climate-adjusted estimate for investment in water and sanitation infrastructure, 2016-2030 (based on 2015 prices) ADB. 2017. *Meeting Asia's Infrastructure Needs*. https://www.adb.org/sites/default/files/publication/227496/special-report-infrastructure.pdf

related SDGs cannot be attained solely through large-scale projects and mega infrastructural financing.

- By creating smart budget appraisals that support the water cycle in urban infrastructure, coupled with the efficient delivery of water and sanitation services, mis-management of funds could be avoided, especially in municipal and local governments water and sanitation projects, which are vulnerable to financial leakages.

In addition, each one of the 5 sub-regions conducted a situation analysis of the 6 themes in terms of the 3 cross-cutting themes and introduced good practices from each sub-region.

- **The Central Asia and Caucasus (CACENA) Sub-region** examines water-food-energy-ecosystems nexus as a tool towards SDGs in the CACENA countries. It explores how to improve the inter-resource linkages by the step-by-step buildup of an inventory in the flow of each sector/resource. It also discusses how the nexus mechanism can contribute to increase efficiency and synergies.
- In the **Northeast Asia-Sub-region,** China examines case studies about Integrated Water Resources Management for ecosystem restoration. Japan introduces the ways of creation and restoraton of sound water cycle management for sustainable development from a governance perspective. In addition, Japan focused on climate and introduced the ways to manage risk and uncertainty for resilience and disaster preparedness. Furthermore, Japan also addresses the issue of ecosystems to ensure water quality from ridge to reef using the case study of Siga Prefecture. The Republic of Korea also focuses on climate change and introduces the BANPOL (Basin Nonpoint-Source Pollutant Load) model to estimate flow, sediment and pollutant discharges from basin areas to surface water due to climate change.
- **The South Asia Sub-region** presents the complexity of the nexus issue with large populations coping with shrinking per capita water endowments.
- **The Southeast Asia Sub-region** also focuses on “climate change” and examines how various stakeholders respond to flood and drought, ranging from disaster preparedness and risk reducion to post-disaster recovery.
- The **Oceania and Pacific Sub-region** focuses on the barriers to improve acess to safe dinking water and sanitation in 14 Pacific Islands Countries and highights the required solutions by presenting a number of case studies.

Finally, this report has conveyed the recommendations derived from the key messages of each one of the 6 thematic and sub-regional reports. It highlights that all aspects of water security require the strengthening of four pillars:

- **Science and technology:** to accelerate policy implementation and monitoring processes;
- **Governance**: to enhance governance, institutional and legal frameworks and enforcement at regional, national, sub-national levels. This includes the improvement of sectoral awareness about inter-linkage between water and economic development to accelerate water sectors reform by encouraging the consultation and meaningful participation of various stakeholders for the co-design and co-implementation of fair legislation, regulation and institutional arrangements through community empowerment;
- **Financial and economic instruments**: to ensure the diversification of economic revenue for investing in water security and creating job opportunities;
- **Capacity building and gender**: to build capacity and integrate gender in a cross-cutting manner across sectors and regions.

Since Asia and the Pacific region is so diverse and water security challenges are so complex that there is no one-size-fits-all solution. The actions and measures needs to tailor local conditions of countries and communities through regional knowledge management.

APWF continues its steadfast support for government leaders to explore the ways to address water security issues at the top of their political agenda by sharing approaches to raise both human and capital resources and develop processes to increase cooperation, learning and mutual support, as well as approaches to harness the immense knowledge and experience that exists in the region.

2. Presentation

2.1. World Water Council

The World Water Council is a multi-stakeholder organization founded in 1996, with permanent headquarters in the city of Marseille, France, organized as a global network with 400 institutions willing to work for the future of water by expanding its actions, creating new synergies and proposing innovative solutions.

The Council unites institutions from approximately 70 countries and is composed of representatives of governments, academia, civil society, companies and NGOs, forming a significant spectrum of institutions related to the water theme.

The Council encourages debates and exchanges of experience and has as its mission to "promote awareness, build political commitment and trigger action on critical water issues at all levels, including the highest decision-making level, to facilitate the efficient conservation, protection, development, planning, management and use of water in all its dimensions on an environmentally sustainable basis for the benefit of all life on earth."

2.2. The 8th World Water Forum

The World Water Forum, organized by the WWC, is the world's largest multi-stakeholder platform, which brings together political leaders, practitioners and experts to share knowledge and experiences to learn from each other as well as to renew political commitments. It contributes to the dialogue of the decision-making process on water at the global level, seeking to achieve the rational and sustainable use of this resource.

Table 1 – Previous Fora, organized by the WWC.

Location	Year	N° of participants	Attending Authorities
Daegu-Gyeongbuk, South Korea	2015	40.000	10 Chiefs of State, 121 officials from 168 countries
Marseille, France	2012	35.000	15 Chiefs of State, 112 officials de 173 countries
Istanbul, Turkey	2009	30.000	250 officials de 182 countries e 1st meeting from Chiefs of State
Mexico City	2006	27.500	270 officials from 140 countries
Kyoto, Japan	2003	25.000	Officials from 142 countries
Hague, Netherlands	2000	39.000	114 officials from 130 countries
Marrakesh, Morocco	1997	500	-

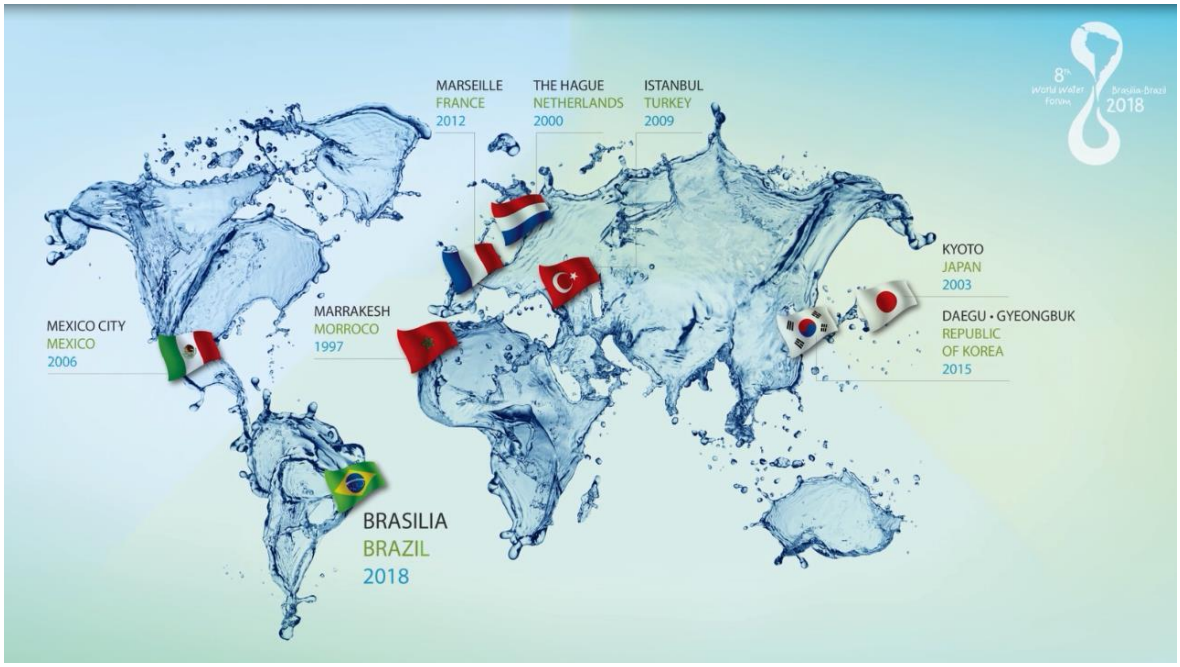

Figure 1 - World Water Forums

The 8th World Water Forum, co-organized by the World Water Council (WWC) and Brazil, will take place in Brasilia, Brazil from 18th to 23rd of March 2018. This is the first time the event will occur in the Southern Hemisphere. The 9th World Water Forum will take place in Republic of Senegal in 2021.

The International Steering Committee (ISC) is the Forum's highest decision-making authority and is composed of 24 members, 12 of whom are nominated by the World Water Council and 12 by the National Organizing Committee.

The Forum's contents are defined and implemented by five distinct commissions responsible, respectively, for:

- **the Thematic Process**, which discusses which themes the Forum will address;
- **the Regional Process**, which discusses the development, analysis and presentation of case based water issues by a regional point of view.
- **the Political Process**, which involves local, regional, national, and national governing bodies and parliamentarians, and has resulted in memoranda of understandings, cooperation treaties and agreements for the integrated water resource management;
- **the Sustainability Focus Group**, which discusses the adherence of public policies and actions to the principals of sustainable (economic, social and environmental) development in a cross-cutting perspective, participating in all the other processes; and
- **the Citizens' Forum**, which stimulates the participation of organized civil society in the discussions, exchanges of experience and all the Forum's other activities.

Discussions at the 8th World Water Forum are organized by the following themes:

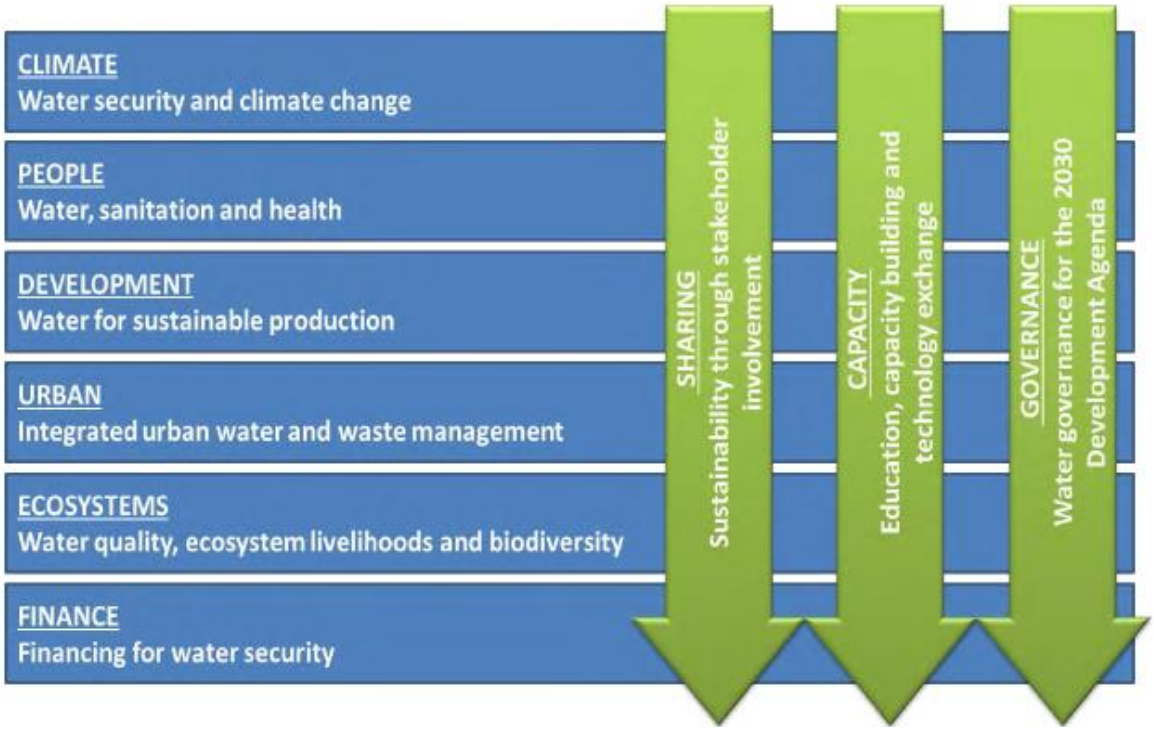

Figure 2 – Thematic Framework

2.3. Regional Process

The Regional Process has as its core the development, analysis and presentation of case based water issues by a regional point of view. Guided by the six main themes and three crosscutting issues of the Thematic Framework, the Regional Process incorporated local and regional perspectives throughout its own preparatory process as well as other processes and events related to the 8th Forum.

The Regional Process was supported by the Regional Process Commission (RPC) led by the Chair and the Vice-Chair, reporting to the ISC. The RPC mobilized water experts, politicians, high-level government officials, water users, NGOs, the private sector, media and civil society.

The structure of the Regional Process was primarily based on six larger geographic areas, or Regions, and these six Regions: Africa, Americas, Arab, Asia-Pacific, Europe and Mediterranean. Africa, Americas and Asia-Pacific were also divided into sub-Regions.

One Coordinator was nominated for each Region and Sub-Region and their work was aligned with the overall guidelines produced by the RPC. They organized stakeholders, promoted preparatory meetings, recruited consultants and build regional sessions proposals. They were advised by focal points for each theme.

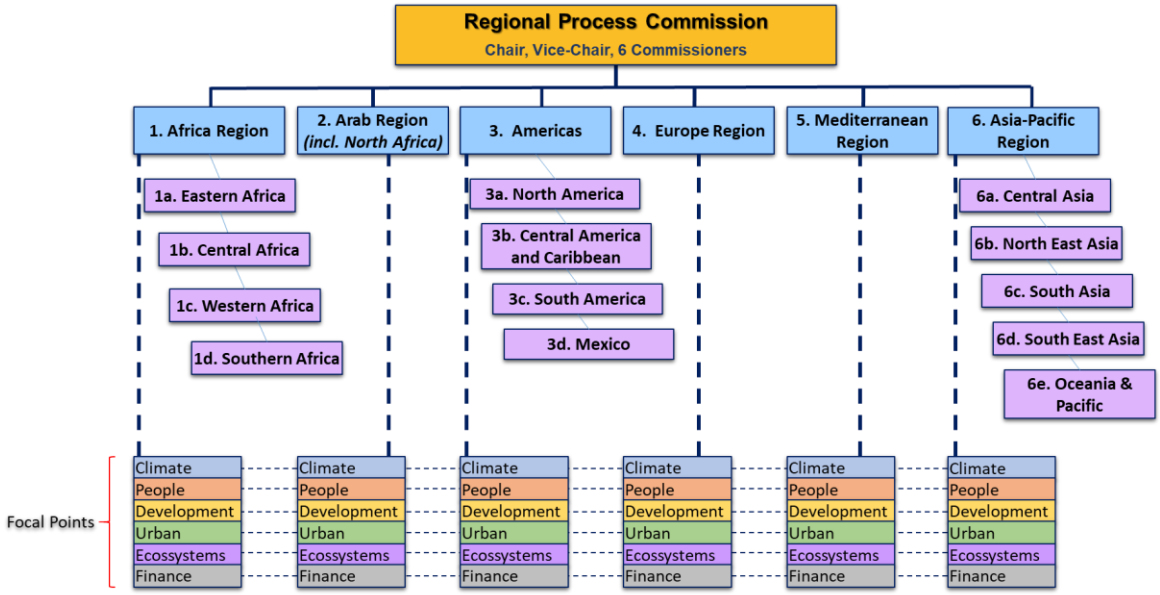

Figure 3: Organizational Structure of the Regional Process.

3. Regional Approach: Asia-Pacific

The Asia-Pacific region, which is addressed under the Asia-Pacific Regional Process for the 8th World Water Forum, covers 49 countries and is divided into 5 sub-regions: Central Asia, Northeast Asia, South Asia, Southeast Asia, and Oceania and the Pacific (see Table 2).

Table 2: Sub-region and countries under the Asia-Pacific Regional Process

Sub-region	Countries
Central Asia and Caucasus Region	Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan, Turkmenistan, and Uzbekistan
Northeast Asia	China, Japan, and Republic of Korea
Southeast Asia	Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, East Timor, and Vietnam
South Asia	Bangladesh, Bhutan, India, Nepal, Pakistan, Maldives, and Sri Lanka
Oceania & Pacific	Australasia Sub-Region: Australia, New Zealand Pacific Sub-Region: Cook Islands, Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu

3.1. The methodology adopted for the Asia-Pacific Regional Process

The **Asia-Pacific Water Forum (APWF)** was nominated as a regional coordinator of Asia-Pacific for the regional process of the 8th World Water Forum. The APWF has served as regional coordinator of the World Water Forum since the 5th World Water Forum.

The APWF is an independent non-profit multi-stakeholder network, launched in September 2006, upon request of the region's ministers at the 4th World Water Forum. The mission of the APWF is to seek political commitment at the highest level in the region to the cause of water security and to promote the active exchange of information, knowledge and skills across institutions and people in Asia and the Pacific in the pursuance of water security as an indispensable part of the development process. For this purpose, The APWF put great emphasis on bringing water to the forefront of the development and political agenda by championing best practices, boosting investments, building capacity and enhancing cooperation throughout the region. The APWF has then provided countries and organizations in Asia and the Pacific with a common platform and voice to accelerate the process of effective integration of water resources management into the socio-economic development process. The APWF has also established a well-coordinated network of its member organizations that is founded upon their willingness to meet the needs of decision-makers, policy-makers and practioners and identify solutions toward water security for sustainable development.

As such, APWF has organized three Asia-Pacific Water Summits (APWS), respectively in December 2007, May 2013, and December 2017, by bringing together leaders of the region and showcasing leadership in decision-making, excellence in practice and innovation leading to political declarations in the form of specific commitments related to water security.

Since its creation, the APWF has aimed to deliver the concrete results of the APWS to make substantial impacts on the leaders in region, as well as other stakeholders across the world, by serving as the regional coordinator for the World Water Forums. For instance, at the 5th World Water Forum, the APWF followed up on the commitments made at the 1st APWS as contained in the "Message From Beppu", which was endorsed by the heads of government and leaders of the region who participated in the Summit. At the 6th World Water Forum, APWF key member organizations and partners developed regional issues, targets and solutions and formulated recommendations for heads of government and leaders to be delivered for the 2nd APWS. This laid down the basis for the "Chiang Mai Declaration", calling for leaders of the region to focus their attention on water security, water disaster prevention, dimate adaptation, irrigation and pollution, and to promote the efficient integration of regional information networks and communications systems to improve water resources management in socio-economic development. At the 7th World Water Forum, the APWF and the Korea Water Forum, one of the partner organizations of the APWF since its establishment, led the Asia-Pacific regional process.

During the 7th World Water Forum, the APWF assisted the coordination of the discussion of the 11 themes of water security challenges and encouraged the regional water stakeholders to present their strong will and commitments to address water challenges and collaborate positively in a stepwise approach towards solutions. Building and reflecting on the outcomes and recommendations emerged from the Asia-Pacific regional process of the 7th World Water Forum, the scope and discussion themes of the Asia-Pacific Regional Process of the 8th World Water Forum has also been developed.

The APWF's regional position, prepartion, and contributions to the 8th World Water Forum is made according to the policies and roadmaps presented by the Regional Process Commission (RPC) of the 8th World Water Forum.

- Regional/Sub-Regional Process Roadmap to guide and ensure our region and its sub-regions to reach, in a timely manner, the achievement of important milestones for the 8th World Water Forum;
- Regional Kick-off Meeting;
- Regional/Sub-Regional engagement: through the Asia-Pacific Regional Coordinators and Regional Design Groups (regional theme leaders and Sub-regional Coordinators and partner organizations) on a continuous basis to work towards the development of the Asia-Pacific Regional Process Report for the 8th World Water Forum;
- Regional Wrap-up Meeting: to present the outcomes and policy messages from the Asia-Pacific Regional Process and finalize the Report;
- Draft and Finalize Regional Reports: one of the main outputs for each Region/Sub-Region will be a Final Report, which will be provided as input into the other Processes of the Forum; and,
- Session Design(s) and Framework: the Regional Design Groups (6 theme leaders from the region) work closely with the co-theme leaders, sub-regional coordinators, and the other

partner organizations to organize and structure sessions with a regional framework.

In parallel to the preparation of the Asia-Pacific Regional Process, the APWF and its partner organizations prepared the 3rd Asia-Pacific Water Summit (3rd APWS), which was co-organized by APWF and the Republic of the Union of Myanmar on 11-12 December of 2017 at Sedona Hotel, Yangon, Myanmar (see Appendix 1: Roadmap for the 3rd APWS and 8th World Water Forum).

All decisions for the Asia-Pacific Regional Process are made based on consensus among the APWF Governing Council Chair and Vice Chairs, APWF Partner Organizations (regional theme/topic leaders and co-leaders), Sub-regional Coordinators and the APWF Secretariat throurgh the following meetings:

1) APWF 19th Govering Council Meeting, July 2016

On 13 July 2016, the 19th APWF Govering Council meeting was held in Singapore. It was chaired by Mr. Ravi Narayanan and Ms. Changhua Wu in their capacities as Chair and Vice-Chair of the APWFGoverning Council.

During the meeting, the outcomes of the kick off meeting in preparation of the 8th World Water Forum (held on 27th and 28th June 2016) were shared and discussed, including the six proposed themes and the role of APWF and its members. Of the five proposed processes (thematic, regional, political, citizen and sustainability), the APWF was interested in the regional process and willing to take the lead to coordinate, as was the case in three previous World Water Fora.
After discussions about the themes and their relative merits, the members agreed that:

a) The APWF should continue to press for a process by which there is convergence among the regional, thematic and political processes;
b) Members agreed that the six proposed themes, plus an additional one on urban water security, were APWF's preferred option;[2]
c) Members reached consensus that focused actions shall be on the "last mile", which requires to identify gaps, promote innovation, and capture opportunities through partnerships and collaborations from the public and private sectors when solutions of water security in the region are concerned;
d) Members will be requested to indicate their interest in leading or participating in the development of the above-mentioned themes from a regional perspective; and
e) Participation by stakeholders such as civil society groups, including youth and women, academia and local governments is encouraged and welcome, as far as possible.

2) APWF 20th Governing Council Meeting

On 18 January 2017, the 20th Governing Council meeting was organized in Singapore. It was chaired by Mr. Ravi Narayanan, Ms. Changhua Wu and Prof. Simon Tay in their capacities as Chair and Vice-Chairs of the Governing Council of the APWF. The meeting was attended by a total of 23 members from 17 organizations along with 4 other members from 4 organizations via a web conference system.

[2] At that time, the six proposed themes were: 1) Climate, 2) People, 3) Growth, 4) Quality, (5) Ecosystems, (6) Governance.

Before the meeting, the 8th World Water Forum Secretariat nominated the APWF as a regional coordinator of Asia-Pacific for its regional process. In accordance with that decision, the sub-regional coordinators were also elected in accordance with the APWF framework.

The APWF Secretariat introduced the overview of the regional process, and each APWF partner organization shared their interest both in themes and topics and willingness to lead and/or contribute to the regional process. After discussion, each theme leader was nominated as follows:

Table 3: Asia-Pacific Regional Process Theme Leaders and the Selected Topics

Theme	Selected topic ◆ Regional theme leader ✧ Regional co-theme leader
Climate	**b) Water and adaptation to climate change** ◆ International Centre for Integrated Mountain Development (ICIMOD)
People	**b) Integrated sanitation for all** ◆ Japan Sanitation Consortium (JSC) ✧ Water Aid India
Development	**a) Water-food-energy nexus** ◆ FAO Regional Office for Asia and the Pacific
Urban	**b) The circular economy: reduce, reuse, recycle** ◆ Global Water Partnership Organization (GWPO) ✧ PUB, Singapore's National Water Agency (PUB) ✧ United Nations Human Settlements Programme (UN-HABITAT)
Eco-system	**a) Managing and restoring ecosystems for water services and biodiversity** ◆ UNESCO Regional Science Bureau for Asia and the Pacific ✧ International Water Centre (IWC), Australia ✧ Network of Asian River Basin Organizations (NARBO)
Finance	**b) Financing implementation of water-related SDGs** ◆ United Nations Economic and Social Commissions for Asia and the Pacific (UNESCAP) ✧ Asian Development Bank (ADB)

Table 4: Asia-Pacific Regional Process: the sub-regional coordinators

Central Asia:	GWP Central Asia and Caucasus
Southeast Asia	GWP Southeast Asia
South Asia	GWP South Asia
Northeast Asia	Korea Water Forum
Oceania and Pacific Island Countries	Australasia Sub-Region: International WaterCentre (IWC) Pacific Sub-Region: Secretariat of Pacific Community (SPC)

The members also discussed the topic priorities of the 6 themes in terms of cross-cutting themes/topics, as well as sub-regional aspects.

a) **Cross-cutting thematic contexts**

- Members claimed that transboundary river basin management and transnational

cooperation should be selected as one of the key topics for the region.

- Regarding the topic of "capacity" proposed by World Water Council (WWC), the members pointed out that each topic component raises very different issues. Members then suggested that "science and technology" should be highlighted as a priority to offer innovative solutions.
- Members also claimed that "capacity building" should be examined more specifically reflecting the priority given by our region and sub-regions.
- Members confirmed that the thematic discussion would be based on the outcomes of the regional process of the 7th World Water Forum. They also achieved consensus that APWF should also make a regional contribution through its knowledge sharing.
- The members also requested to the APWF Secretariat to develop and share templates for the concept notes and position papers to be prepared and to be used by all theme leaders.

b) **Sub-regional contexts**

- Sub-regional coordinators were expected to gather, collect case studies, and examine whether the knowledge shared by the thematic discussion is appropriate on the ground of each sub-regional contexts. They will also select the best stories/practices and greatest challenges.
- The participation from government and the private sector to the regional process would be addressed in accordance with the coordination from the sub-regional coordinators.
- Members agreed that we would also keep paying special attention to the water security challenges Pacific island countries are facing.
- "Technologies for innovation and solutions" will be addressed as a cross-cutting theme, and it is important to address the theme for both developed and developing countries.
- Members also suggested "science and technology" as a topic to be prioritized in both thematic and sub-regional contexts. Its importance was hilighted to show leap-frogging ways for achieving sustainable development and offering solutions in line with the sub-regional context. Members proposed to clarify what determines innovation in each sub-regional context. Therefore, some case studies should focus on innovative solutions.
- The members confirmed that the regional process is a milestone for the 3rd Asia Pacific Water Summit (3rd APWS).

Photo: APWF 20th Governing Council Meeting

3) APWF 21st Govering Council Meeting / Asia- Pacific Regional Process Kick-off meeting

On 31 July, 2017, the 21st Governing Council Meeting of the APWF was held at the PUB WaterHub in Singapore. It was organized as part of the Asia-Pacific Regional Process Kick-off Meeting for the 8th World Water Forum and chaired by Mr. Ravi Narayanan and Ms. Changhua Wu in their capacities as Chair and Vice Chair of the Governing Council. A total of 28 representatives from the APWF Partner Organizations were present with additional 5 members joining through remote connection.

The discussion about the Asia-Pacific Regional Process followed up the outcomes of the discussions and consensus reached at the 19th and 20th APWF Governing Council meetings. After sharing the overview of the current situation of the regional processes for the 8th World Water Forum by the Asia-Pacific Reginoal Process Coordinator/APWF Secretariat, regional process theme leaders shared their first concept notes and their preparatory processes for the 6 themes of the 8th World Water Forum. The participants then exchanged opinions and feedback, including how to inter-link the relevant topics with the 6 themes by providing quantitative and qualitative data and lessons learnt from case studies. Each sub-regional coordinator from Central Asia, Northeast Asia, Oceania and the Pacific, South Asia, and Southeast Asia also made comments such as how they could contribute to the themes by sharing on-site experiences and possible case studies. The representatives also discussed how we should deliver tangible and action-oriented messages and solutions for water security, and how to achieve Sustainable Development Goals in the Asia-Pacific region. Then the reporting process, including the format and schedule was confirmed .

Photo: Asia-Pacific Regional Process Kick off meeting/ APWF 21st Gvening Coucil Meeting

4) 3rd Asia-Pacific Water Summit (3rd APWS)

The Asia-Pacific Regional Process for the 8th World Water Forum was prepared in parallel with the preparation for the 3rd Asia-Pacific Water Summit (3rd APWS), which was co-organized by APWF and the Republic of the Union of Myanmar on 11-12 December of 2017 at Sedona Hotel of Yangon, Myanmar (See the Agenda in Appendix 4).

The objectives of the 3rd APWS are:

- To set out a course and pathway for the sustainable development of the Asia-Pacific region from water security perspective;
- To provide and share concrete actions, solutions and innovation, as well as communication platform for the regional leaders to advance water security, and,
- To enhance transboundary and multi-partnership cooperation for integrated water resources management, water-based economy and the implementation of globally-agreed agendas.

A total of 20 heads of state and government and ministerial-level delegates from 15 countries joined the 3rd APWS. The total number of participants was more than 700 from national and local governments, including speakers and panelists, international and regional organizations, the private sector, NGOs and academia from 39 countries.

APWF Partner Organizations and the representatives of the Republic of the Union of Myanmar jointly prepared and organized the following 10 Parallel Thematic Sessions to reflect on the preparation process of thematic and topic discussions in the regional process.

- Reviving Hydrological Cycles: Rainwater Harvesting and Sustainable Groundwater Management (part of CLIMATE)
- Governance for Sustainable Urban Water Supply (URBAN)
- Improving Sanitation and Wastewater Management (PEOPLE)
- Water and Disasters in the Context of Climate Change: from the Mountains to the Islands (CLIMATE)
- Better Governance: Inclusive Approach through Good Practices on Water Governance and Integrated Water Resource Management (ECOSYSTEM and GOVERNANCE)
- Water-Energy-Food-Ecosystems Nexus (DEVELOPMENT)
- The Roles of Women and Youth in Water Security and the SDGs (SHARING)
- Financing Implementation of Water-related Sustainable Development Goals (FINANCE)
- Working Together: Multi-Stakeholder Partnership for Regional Cooperation (part of URBAN and SHARING)
- Source-to-Sea Opportunities in Asia and the Pacific (part of DEVELOPMENT and ECO-SYSTEM)

The leaders and participants of the 3rd APWS unanimously adopted the Yangon Declaration: The Pathway Forward. This document was prepared by the APWF and the Joint Steering Committee of the Government of the Republic of the Union of Myanmar, based on input from the preparatory process, including the Asia-Pacific Regional Process, and on the speeches, presentations and discussions that took place during the Summit.

Yangon Declaration: The Pathway Forward
http://apwf.org/apwf_wp/wp-content/uploads/2017/12/Yangon-Declaration.pdf

Third Asia-Pacific Water Summit:
Water Security for Sustainable Development
Yangon Declaration:
The Pathway Forward

The Asia-Pacific region, with the largest and most dynamic economies in the world, is experiencing vigorous growth accompanied by a rapid reduction of poverty. However, approximately 1.1 billion people in Asia alone live in areas currently experiencing severe water stress and, unless significant action is taken, the number of affected population is expected to increase by more than 40% by 2050. Water security is a key component of sustainable development and faces enormous challenges. Achieving the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs) can only be materialized if water is valued and if water resources are effectively protected and managed for the enhancement of water security in all the countries of the region.

The Third Asia-Pacific Water Summit (3rd APWS) was convened in Yangon, Republic of the Union of Myanmar, on 11-12 December 2017, with the aim of promoting cooperation and partnership, as well as sharing knowledge and experiences to enhance water security in the region towards concrete actions and solutions for sustainable development. This marks the beginning of a regional endeavor to take a leading role in the implementation of the International Decade for Action, "Water for Sustainable Development", 2018-2028.

We, the Leaders of the Asia-Pacific region,

Celebrating the significant progress made in the past ten years since the First Asia-Pacific Water Summit held in Beppu, Japan, in 2007, and the Second Summit in Chiang Mai, Thailand, in 2013, in which period there have been large contributions to the achievement and improvement of the water-related targets of the Millennium Development Goals across the region, particularly in strengthening water supply to fulfill basic human needs,

Expressing continued concern over the remaining gaps between the ambition to deliver internationally agreed post-2015 water-related goals contained in the 2030 Agenda for Sustainable Development and the increasing threats to water security, such as climate change, particularly in the lowest income countries, countries with mountain areas and Pacific Island Countries, as well as the impacts on vulnerable groups, such as women, children and the elderly, in rural areas alongside emerging and rapidly growing urban areas,

Reaffirming shared commitments to achieving the water-related Sustainable Development Goals and targets, the Sendai Framework for Disaster Risk Reduction and the Paris Agreement on Climate Change to enhance resilience and the quality of socio-economic growth,

Being aware that the abovementioned threats will continue to intensify as the world population is expected to reach 10 billion inhabitants in 2050, in which over half of them will be living in the Asia-Pacific region, meaning that the sustainability of the region becomes a key component of our global future,

Hereby *express* our determination to achieve water security for sustainable development in the

Asia-Pacific region and *declare* to:

Provide safe and affordable drinking water and basic sanitation for all in the region by 2025, five years in advance compared to the 2030 Agenda for Sustainable Development, as agreed at the First Asia-Pacific Water Summit, both in fast-growing urban areas, as well as in rural areas;

Double investment at the regional level in infrastructure and community-based efforts to address water-related disasters and significantly increase water security;

Advance research and development, as well as education and training, to generate innovative solutions, particularly in water use efficiency and productivity, recycling, risk assessment and reduction, policy and governance, meet growing water demand, reduce disaster damage and improve sanitation and wastewater management;

Recognize that there is no one-size-fits-all solution and *apply* measures tailored at local conditions of countries and communities through regional knowledge management;

Facilitate the implementation of integrated water resources management at all levels, including through transboundary cooperation, as appropriate, and partnerships.

We *envision* the Pathway Forward to upscale innovation for water security in the Asia-Pacific region and *are determined* to:

Sound water cycle management

Integrate rainwater, rivers, groundwater, glaciers, oceans and ecosystems, where relevant, into water cycle analysis and related policies at the river basin level;

Undertake efforts to conserve and restore water-related ecosystems, including deltas and estuaries, and promote the inclusion in the development agenda of wastewater management, green infrastructure and nature-based solutions for disaster risk reduction;

Take actions to increase water productivity in irrigation and drainage to achieve food security and sustainable agriculture;

Combine the management of water resources and urban, regional and national land use planning;

Governance and inclusive development

Establish sound regulatory mechanisms and planning at the local and national level to supply safe and sustainable drinking water and to extend and improve sanitation and wastewater management services;

Ensure the protection of vulnerable groups from water-related disasters and *engage* them in disaster management;

Promote the integration of scientific and engineering approaches with sociologic and economic perspectives, along with local and traditional knowledge, in water-related assessments and activities;

Take measures to build the capacity of all stakeholders, particularly women, youth, disabled and the poor, and create mechanisms for involving them in water-related decision-making processes and multi-stakeholder partnerships at the different levels of governance;

Urge all parties to end open defecation by 2025, as agreed at the First Asia-Pacific Water Summit, ensuring the availability of sanitation facilities, as well as promoting hygiene education for behavioral change;

Financing the implementation of water-related Sustainable Development Goals

Support the development of innovative and sustainable financial instruments that generate low-interest lending mechanisms, long-term cash-flow and attractive returns for high-impact water-related investment at multiple levels and scales;

Adopt innovative financial solutions such as reforming public finance, advancing Public-Public Partnerships, Public-Private Partnerships, structuring blended finance, applying Environment, Governance and Society investment and developing financial tools for long-term investment;

Focus on ex-ante investment for infrastructure and community-based efforts, including disaster preparedness and risk reduction, in addition to post-disaster recovery;

Develop a regional monitoring system on the financing of water-related Sustainable Development Goals and targets, aiming at harmonizing and complementing national and international initiatives and incentivizing collaborative partnerships.

We *request* the Asia-Pacific Water Forum (APWF), as a leading coordination and facilitation platform for water security solutions in the region to:

Water cooperation at all levels

Present this Yangon Declaration "The Pathway Forward", accompanied by a supporting document to Call for Action, to relevant regional and global fora;

Provide region-specific inputs to the outcomes of the High-Level Panel on Water (HLPW);
Contribute to the Asian Water Development Outlook as an ongoing analysis to support the improvement of the water security situation in the Asia-Pacific region;

Lead the regional contribution to the Eighth World Water Forum, to be held in March 2018 in Brasilia, Brazil;

Advocate innovation and *lead* through action at the Singapore International Water Week, to be held in July 2018;

Keep playing its coordination role for the contributions of the Asia-Pacific region to the Stockholm World Water Week.

We collectively *express* our sincere appreciation to the Government of the Republic of the Union of Myanmar for successfully hosting the Third Asia-Pacific Water Summit and for the warm welcome and generous hospitality extended to all participants.

The Asia-Pacific Regional Process Report has reflected the outcomes of the 3rd APWS and supplemented the discussion with further evidence base and case studies.

Myanmar News Agency
Photos: 3rd APWS Opening Speech by H.E. Ms. Aung San Suu Kyu

Photo: Delegations and Representatives at the 3rd APWS in Myanmar

Photos: Adoption of Yangon Declaration: The Pathway Forward

5) Other consultative meetings relating to the 6 themes and sub-regions

In addition, each thematic and sub-regional coordinator organized both official and informal consultative meetings. These meetings were implemented pursuant to the outcomes of the kick-off meeting of the Asia-Pacific Regional Process held on 31 July of 2017.

Other consultative meetings include:

- Sub-regional Coordination Meeting for Oceania and the Pacific (8 August, Apia, Samoa, as part of the 10th Pacific Water and Wastewater Conference);
- Stockholm World Water Week 2017 (27 August-1 September);
- Sub-regional process consultation meeting for Central Asia (7-8 September, Almaty, Kazakhstan);
- Korea International Water Week 2017 (20-23 September, Gyeongju, Republic of Korea);
- Sub-regional process consultation meeting for South Asia (29 October, Dhaka Bangladesh); and,
- Sub-regional process consultation meetings for Southeast Asia: as part of the Regional Workshop for Water and Climate Development (WACDEP) Program, 7-8 December, 2017, Bangkok, Thailand.

Each theme leader, sub-regional coordinator, and the Asia-Pacific Regional Process Coordinators are also consulted and joined discussions through remote connections.

APWF coordinated the Asia-Pacific Regional Process in an inclusive manner. The process is open to any interested member, who wishes to participate in the Preparation Process toward water security for sustainable development in our region by collaborating with other members in friendly and cooperative manners and by making use of their expertise and experience. The APWF has developed the regional process thanks to the solidarity of its member organizations and their willingness to voluntarily cooperate and collaborate. This is important to enable the Asia-Pacific region to accelerate the integration of water resource management into its socio-economic development. The width of the expert knowledge, experience and lessons of the members are capitalized upon to address a range of water issues derived from the diversity of Asia and the Pacific and to make it water secure.

3.2. Integration with other processes

3.2.1. Thematic Process

The "Urban" theme in the Asia-Pacific Regional Process is developed in collaboration with the Global Water Partnership Organization (GWPO), which is also the thematic process leader. In addition, the "Capacity: Science & Technology" in the theme process is coordinated by the Korea Water Forum (KWF), which is also the sub-regional coordinator for Northeast Asia. Modeling and the technologies element is introduced in the case study from the Republic of Korea that is related to the discussions in the thematic process. Furthermore, Japan Water Forum, as Secretariat of APWF, has contributed to the topic of "Involving All: Public, Private, Civil Society, Women and Men, Young and Old" as one of the topic coordinators. One of the case studies from Japan, which is introduced in the Northeast Asia Sub-Regional Report, will be presented at the thematic process session of the 8th World Water Forum.

3.2.2. Citizens Process

The 2030 Agenda for Sustainable Development propagates an "all-of-society engagement and partnership" as a main driver for transformation.

In that spirit, the 3rd Asia-Pacific Water Summit (APWS) has sought active cooperation with the Citizens Process of the 8th World Water Forum to address aspects of social inclusion in water governance, in particular Rio-Dublin Principles 2 and 3 that were agreed by the UN member states as corners stones for Integrated Water Resources Management (IWRM) back in 1992.

The 3rd APWS convened a Women and Youth Session in cooperation with the 8th World Water Forum Citizens Commission and the host country of Myanmar. The outcomes of which will feed into the Citizens Process and Political Process of the Forum, and serve the Asia-Pacific region to prepare for the International Decade for Action "Water for Sustainable Development", 2018-2028.

3.2.3. Political Process

The APWF was set up with the activation of political leadership on water security issues in the Asia Pacific region as one of its primary objectives. It has sought to achieve this primarily by convening and organizing Asia Pacific Water Summits at which issues of water security of importance in the region are discussed by the political leadership of the countries in the region and declarations of commitment made to pursue solutions.

APWF therefore aims to influence the policy proposals of the Asia-Pacific Regional Process as well as the "Yangon Declaration: The Pathways Forward", which was adopted by the Asia-Pacific Governments leaders of the 3rd APWS on the Political Process.

3.3. Partnerships

The Asia-Pacific Regional Process is developed in partnership and collaboration with the APWF partner organizations and with the partners of each regional theme leader's organization. It is also developed through the preparation processes of the Thematic Sessions of the 3rd APWS and the Asia-Pacific Regional Process of the 8th World Water Forum. Sub-regional coordinators have also contributed to the process. They are often consisted of multi-stakeholder partnerships with country water partnerships, who provide inputs by sharing case studies with their sub-regional coordinator.

The following institutions are mainly involved in the Asia-Pacific Regional Process. The number is more than 60 institutions.

Table 5: Partner organizations of each topic

Asia-Pacific Regional Process: Overall Coordinator · Mr. Ravi Narayanan, APWF Governing Council Chair · Ms. Yumiko Asayama, APWF Secretariat, Manager, Japan Water Forum · Advisors: Ms. Changhua Wu, Prof. Simon Tay, APWF Governing Council Vice Chair	
Theme	Selected Topic ◆ Regional theme leader ✧ Regional co-theme leader · Partner organizations
Climate	**b) Water and adaptation to climate change** ◆ **International Centre for Integrated Mountain Development (ICIMOD) Dr. Aditi Mukherji** · Asian Development Bank; UNESCO-Asia Region; IUCN – Asia Region; Global Water Partnership – South East Asia Chapter; ICHARM; IWMI; Secretariat of Pacific Community; Korea Water Forum and Arghyam (India), Department of Metrology and Hydrology (DMH), Ministry of Transport and Communication, Myanmar , Irrigation and Water Utilization Management Department-Ministry of Agriculture, Livestock and Irrigation (MOALI), Myanmar Engineering Society, Advisory Group, National Water Resource Commitee, Myanmar
People	**b) Integrated sanitation for all** ◆ Japan Sanitation Consortium (JSC), Mr. Pierre Flamand ✧ Water Aid India · Water Environment Partnership in Asia (WEPA) IGES (Japan), International Cooperation Agency (JICA), Manila Water Company, Inc. (Philippines), Ministry of Construction (Vietnam), SPAN (Malaysia), APEX (Japan)/PUSTEKLIM (Indonesia), Arghyam (India), Mr. Ravi Narayanan, Chair of the APWF Governing Council.
Development	**a) Water-food-energy nexus** ◆ FAO Regional Office for Asia and the Pacific, Ms. Louise Whiting, Ms. Caroline Amy Turner ✧ Mekong Region Futures Institute (MERFI) Dr Alex Smajgl ✧ Stockholm Environment Institute (SEI) Asia: Ms. Thazin Aung and Mr. Michael Boyland
Urban	**b) The circular economy: reduce, reuse, recycle** ◆ Global Water Partnership Organization (GWPO), Mr. François Brikké ✧ PUB, Ms. Kai Yun Tay, Mr. Tiing Liang Moh ✧ United Nations Human Settlements Programme (UN-HABITAT) Mr. Avi Sarkar
Eco-system	**a) Managing and restoring ecosystems for water services and biodiversity** ◆ UNESCO Regional Science Bureau for Asia and the Pacific, (Dr. Shahbaz Khan, Mr. Hans Thulstrup, Hans, Ms. Katriana Trita) ◆ Dr. Mohamad Roseli Zainal Abidin, Tenaga National University, Malaysia ✧ International Water Centre (IWC), Australia, Mr. Mark Pascoe ✧ Network of Asian River Basin Organizations (NARBO), Dr. Keizul Bin Abdullah, Mr. Tadashige Kawasaki
Finance	**b) Financing implementation of water-related SDGs** ◆ United Nations Economic and Social Commissions for Asia and the Pacific (UNESCAP), Dr. Stefanos Fotiou, Dr. Curt Garrigan, Dr. Aida Karazhanova

	✧ Asian Development Bank (ADB), Mr. Tom Panella
Sub-Region	◆ Sub-Regional Coordinator ✧ Country focal point
Central Asia:	◆ GWP Central Asia and Caucasus, Mr. Vadim Sokolov (coordinator), Ms. Nurmuhammedova Guljamal (chair) Agency of International Fund for the Aral Sea Saving (IFAS), Country Water Partnership from Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan, Turkmenistan, and Uzbekistan
Southeast Asia	◆ GWP Southeast Asia, Mr. Fany Wedahuditama (coordinator), Mr. Watt Botkosal (chair). ✧ Country Water Partnership from Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, and Vietnam
South Asia	◆ GWP South Asia, Mr. Lal Induruwage (coordinator), Dr. Lam Dorji (chair) ✧ Country Water Partnership from Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka
Northeast Asia	◆ Korea Water Forum, Ms. Yoonjin Kim, Ms. Jiyeon June Lee, Ms. Yeji Lee Dr. Jae-Heung Yoon ✧ GWP China, Ms. Yilin Ma ✧ Japan Water Forum, Mr. Kunihiro Moriyasu, Mr. Shigenori Asai, Ms. Yumiko Asayama
Oceania and Pacific Island Countries	◆ Secretariat of Pacific Community (SPC) Mr. Dave Hebblethwaite, Ms. Rhonda Robinson: Pacific Sub-Region ◆ Internaional WaterCenre (IWC) Mr. Mark Pasco: Australasia Sub-Region

4. Water Security Challenges in Asia-Pacific Region

This Chapter examines the major water security challenges in Asia and the Pacific. It first provides a general overview. This introductory part presents the key indicators and overall trends at the regional level. However, Asia and the Pacific is a very large and diverse region. Issues that are important in one sub-region are not necessarily important elsewhere. Threfore, this Chapter then specifically analyzes 6 thematic perspectives: climate, people, development, urban, ecosystem and finance. Finally, the Chapter presents the challenges of the major sub-regions: Central Asia and the Caucasus, Northeast Asia, South East Asia, South Asia, Oceania and the Pacific.

4.1. Overview

The Asia and the Pacific, hosting two-thirds of the world population, has been the fastest growing region in the world for two decades[3]. The socio-economic conditions of the Asia-Pacific region achieved a remarkable transition over the past two decades. More than 1 billion people in this region overcame extreme poverty by ending hunger between 1990 and 2012[4]. The region has also achieved rapid economic growth, which currently ranges between 4.1% (GDP/year) in East Asia and the Pacific and 6.3% in South Asia, well above the global average of 2.5%.[5] Economic growth in the region is expected to remain at the current average of 5.4% at least until 2022.[6]

Despite of these achievements, water security continues to be a vital challenge. As of 2015, 277 million people in Asia and the Pacific still lacked access to safe drinking water sources and 138 million of them are living in South and South-West Asia.[7] While the percentage of the population with access to basic sanitation in the region was 65% in 2015, Asia alone is still home to half of the world's poorest people and 1.7 billion people still lack access to basic sanitation[8]. With only 48% access to at least basic drinking water supplies and 31% access to at least basic sanitation, the Pacific is the sub-region that is lagging most behind and needs focused actions.[9] If the availability and sustainable management of water and sanitation is not ensured in Asia-Pacific region, it will be impossible to achieve the Sustainable Development Goals at the global level.

Today, Asia and the Pacific are home to 60% of the world's total urban population[10]. Asia is home to 13 of the 22 world's largest megacities[11], In 2018, Asia and the Pacific will be considered, for

[3] Asian Development Bank (2016), *Asian water development outlook 2016: strengthening water security in Asia and the Pacific*, ADB: Mandaluyong.
[4] Ibid
[5] World Bank national accounts data (2016).
[6] IMF (2017), *World economic outlook*, IMF: Washington.
[7] United Nations Economic and Social Commission for Asia and the Pacific [UNESCAP] (2016), Statistical Yearbook for Asia and the Pacific 2015
http://www.unescap.org/sites/default/files/SYB2015_Full_Publication.pdf eISBN: 978-92-1-057924-7 ST/ESCAP/2749
[8] Ibid
[9] UNICEF East Asia and Pacific Regional Pffice (2017), A Snapshot of Water and Sanitation in the Pacific 2017 Regional Analysis of UNICEF Programme Countries. Bangkok: UNICEF.
https://www.unicef.org/eapro/EAPRO_Water_Snapshot_2017_Final_27_10_2017.pdf
[10] UNESCAP (2014), Statistical Yearbook for Asia and the Pacific 2014 http://www.unescap.org/publications/statistical-yearbook-asia-and-pacific-2014 United Nations Publication 2014. ST/ESCAP/2704
[11] Asian Development Bank (2016).

the first time, predominately urban, with over 50% of its total population living in urban areas[12]. Today, more than 2.1 billion people live in the region's urban areas. The significance and impact of this transition cannot be overstated. The urban population of the region more than doubled between 1950 and 1975, doubled again between 1975 and 2000 and is projected to almost double once more between 2000 and 2025[13]. Dramatically poor slums in urban areas and rural areas lack access to basic services for water and sanitation and the gap remains wide in many of the countries in the Asia-Pacific region.

Population is still growing, but at a much slower pace than in the 1970s, particularly in East Asia and the Pacific. However, countries in South Asia are growing faster than global average, with 1.2% increase of the population per year[14]. This means that the number of people that need drinking water, sanitation and other water-related goods and services is growing. While there are many people without access to improved water and sanitation, the rest has overexploited surface and groundwater resources. Globally, groundwater provides 25-40% of the world's drinking water. In many countries of Asia and the Pacific, more than half of the groundwater withdrawn is for domestic water supply[15]. In addition, a significant amount of wastewater generated by households and industries is being discharged into water bodies without any treatment.

Asia and the Pacific region is most vulnerable to water-related disaster and climate change impacts. The demands on freshwater resources and water-related infrastructure are expected to increase in correspondence with population and economic growth, urbanization and meeting demand of food security. The region accounts for nearly 90% of all water-related disasters in the world in terms of number of people affected by events, such as floods, droughts, and sea-level rise, which impede sustainable development in the region. However, only 10% of its water-related infrastructure needs are currently being met.[16] Water security is a vital challenge to the Asia-Pacific region. Approximately 1.1 billion people live in areas currently experiencing severe water stress and, unless significant action is taken, the number of affected population is expected to increase by more than 40% by 2050.[17]

The demands on freshwater resources and pressure on water-related infrastructure are expected to increase in correspondence with population and economic growth, particularly in urban areas. The agriculture sector is still the major water user, utilizing more than 80% of the region's resource[18]. As economies develop, increasing demands will be placed on water for food and water and for energy. Primary energy production is projected to double and power generation to more than triple by 2050[19]. The increased demand of water for energy generation will put additional pressure on already constrained water resources. Estimates for Asia predict a 65% increase in industrial water use, a 30% increase in domestic use and a 5% increase in agricultural use by 2030[20]. This illustrates the growing and acute competition among principal water users. Parallel to these challenges, pressure on aquatic systems has also been increasing with serious

[12] UNESCAP (2014)
[13] Ibid
[14] Ibid
[15] Asian Development Bank (2016).
[16] Asian Disaster Reduction Center (2015), *Natural disaster data book 2015: an analytical overview*, ADRC: Kobe.
[17] Asian Development Bank (2016).
[18] Ibid
[19] Ibid
[20] Ibid

consequences for ecosystem health. The poorest and most vulnerable communities in rural areas, largely in mountainous highlands and semi-arid zones, face immense difficulty to access to improved drinking water sources and sanitation facilities. They also experience significant challenges to farming due to a combination of uncertain rainfall, steep slopes and poor soil, marginal land and natural resources that are under pressure. Coping with water-related issues in an appropriate manner is thus indispensable for the sustainable development of the region.

It is expected that competition for water among domestic, industrial and agricultural uses is putting a strain on the ability of countries to allocate the available water equitably, considering the projected spatial and temporal variation in water availability derived from climate change. In Asia, there are several transboundary river basins where the river flows through many countries as it travels from source to sea, making water resources management further difficult.

4.2. Thematic Analysis: Summary

This section introduces water security for sustainable development from the perspective of each theme. The Asia-Pacific Regional Process for the 8th World Water Forum conducted a situation analysis of each theme when key issues and problems emerge. It then analyzes what needs to be further examined on the ground by looking at a set of case studies. The analyses, recommendations for solutions and key actions from the analytical outcomes of each theme are generarated as follows. The details of analysis with the case studies are included in each thematic analysis of the Annex Document.

4.2.1. Climate

The **"Climate"** report examines **climate change, water-related disasters and adaptation**, particularly focused on vulnerable areas like mountains, coasts and islands. It particularly showcases the community-based and ecosystem-based adaptation. As a theme leader on this topic, **ICIMOD** has leveraged all its partnerships in generating and disseminating relevant information with all sub-regional partners who are interested in the theme of climate change and water related adaptation.

Situation Analysis

The entire Asia Pacific region and especially, the mountains and the small island developing states (SIDS) are facing severe consequences of climate change which is affecting crucial water services and threatening the overall quality of life and environmental sustainability within the region.

The Hind Kush Himalayas (HKH) is the water tower of Asia and is often called the Third Pole as this region is the third largest storage of snow and ice after the North Pole and the South Pole. Climate change is severely affecting the water provisioning services offered by the HKH. Climate change is also exacerbating the frequency and severity of all disasters, especially, water-related disasters.

Water induced disasters cause significant damage to life and property in the Asia Pacific region and poorer countries are particularly vulnerable. These damages can be reduced drastically

through the right technologies and institutional arrangements that are inclusive and community centered.

The lessons learnt from the case studies

- Technological innovations are very important and will help in adaptation and mitigation – as exemplified by case studies on SPIP and Regional Flood Information Systems;
- Community-based adaptations are equally important as exemplified by the case of Community-Based Flood Early Warning Systems;
- Coordinated governmental and non-governmental efforts are necessary to devise and implement effective disaster preparedeness and emergy response as exemplified by the case of Fiji;
- Fragile areas like mountains have their own particular needs, for example, drying of springs affects millions of people in the mountains and local solutions for spring revival are needed. Here partnerships across sectors are needed as exemplified by the Spring Revival in India; and,
- Agronomic practices like SRI can help farmers adapt to climate change and for that to happen, policy support is required.

Actions and Sub-actions to overcome the problems and achieve the solutions

1. Derive consensus about climate change and its impact across all stakeholders in the region:
    a. Contribute and support studies that unpack the varied impacts on climate change on water resources and various other aspects such as agriculture, hydropower, ecosystems, among others;
2. Provide special attention and assistance to vulnerable geographies like mountains, islands and coastal regions:
    a. Contribute to, and use the findings from IPCC's ongoing Special Report on Cryosphere and Oceans in a Changing Climate (SROCC) to inform public policy discussions;
3. Promote good practices of adaptation – both community- and ecosystems-based adaptations:
    a. Use existing platforms, like the World Water Forum and UNFCCC to document "best practices" and lobby for its adoption in similar geographies.

Key Recommendations:

- Act in both short term and long term;
- Improve governance, and adopt and implement a more integrated sustainable water resource management to grapple with climate risk and uncertainty; and
- Implement water-related disasters risk management and adaptation measures with locally tailored technological innovation and capacity building for the local communities. This will be promoted through regional cooperation, partnership development with trust building and continuous engagement.

4.2.2. People

The **"People" element** focuses on **"sanitation for all"** and reviews the current situation of sanitation and wastewater management in the Asia-Pacific region which highlights the challenges faced in both urban and rural contexts. It analzes how the administration, utilities and operators,

as well as civil society organizations, respond to challenges in sanitation and wastewater management, induding off-site and on-site sanitation and septage management, human resource development, institutional and regulatory frameworks and circular economy.

To cover, most comprehensively and from diverse perspectives, the large number of issues in sanitation and wastewater management in both the urban and rural areas of the Asia-Pacific region and provide recommendations for improvement, the **theme leader (JSC)** applies its expertise and knowledge of a wide range of organizations and bodies in Japan and overseas, partaicularly in Asia and the Pacific.

Situation Analysis

The situation for sanitation and wastewater management is far from being satisfactory with very different conditions between countries that have achieved, or almost achieved, universal access to improved sanitation facilities and those still struggling with low toilet coverage. More specifically, many countries in East Asia and Southeast Asia have reached satisfactory sanitation conditions, but many others such as Indonesia, Cambodia and Laos still face serious problems. The situation is not better in South Asia where 600 million people still practise open defecation, which ultimately threatens people's health.

With the exception of countries such as Japan, Korea, Singapore and China, a majority of countries in the region, for example in Southeast Asia, has not taken effective measures to reduce the amount of untreated or unsatisfactorily treated wastewater discharged into the environment. As a direct result, water pollution in rivers, lakes and coastal waters is worsening and threatens the comfort and safety of people's daily living conditions.

Challenges for effective wastewater management are quite similar in the developing countries of Asia. These include a low percentage of improved sanitation systems, especially in rural areas, inadequate sewerage network coverage, and lack of sewage and sludge treatment facilities. These also create Negative impacts on surface and groundwater quality

Further to the problem of sanitation access is the lack of availability and capacity of human resources for wastewater and sludge management, as well as inadequate institutional, legal, regulatory and financial frameworks to support the sector. Thus, despite improvement over the last 15 years measured by the Millennium Development Goals (MDGs), the region is still facing many challenges and tasks for the improvement of sanitation and wastewater/sludge management.

Lessons learned from the case studies

- Sewerage system development supported by a good resettlement policy can contribute to the clean-up of rivers and a better life for all the citizens including low income populations.
- A combination of sewerage development based on the interceptor sewer system and septage management can provide affordable sanitation and wastewater management solutions in developing countries.

- Any on-site facility cannot function as a wastewater treatment facility and becomes a pollution source without a regular removal of sludge. Septage management is the key for the successful implementation of decentralized wastewater management.
- For successful sanitation and wastewater management, a substantial number of professional human resources who are engaged in the actual work of managing sewerage systems, operating and maintaining on-site facilities and conducting septage management are required. It is essential to create systems that promote, regulate and recognize these people socially.
- The creation of a circular economy is possible only if wastewater is properly treated and sludge properly collected. Sludge reuse and recycling must be pursued as a proper way of disposing of the increasing volume of sludge resulting from the development of sewerage systems and the establishment of improved septage management.
- To provide universal access to sanitation and reduce water pollution, it is critical to promote behavior change, particularly to end open defecation and increase the acceptance of sewer house connection and septage management. Special attention must be given to the poor to ensure that no one is left behind.

Recommendations, Actions, Sub-Actions, and Measures

- To enable the sharing of knowledge, successful experiences and good practices in sanitation and wastewater management, which is needed to achieve all the tasks required to mainstream wastewater management, partnerships, existing ones for achieving the SDG sanitation target and new ones such as the Asia Wastewater Management Partnership (AWaP) proposed by Japan, should be encouraged.

4.2.3. Development

Under the **"Development"** theme, the "**water-food-energy" nexus is selected** and **FAO Regional Office for Asia and the Pacific** examines it in the contexts of water and development.
The objective is to identify nexus relationships that are critical for understanding food security dynamics through assessing a few case studies. Ultimately, it aims to contribute to the wider agenda of developing practical guidelines for nexus management.

Situation Analysis

The past three decades have witnessed unprecedented growth in most parts of Asia with substantial improvements for food security. According to the 2015 FAO report on the state of food insecurity in the world, much of this success is based on efficiency gains in the agricultural sector and the provision of energy access for the transition from primary to secondary and tertiary sector employment.

However, many development investments have triggered trade-offs, which creates increasing awareness of the water, food, and energy Nexus and its inherent cross-sector relationships.

Applied research suggests that the future achievement of development goals depends on the improved management of the Nexus.

The sustainability of development outcomes depends on the ability to manage cross-sector trade-offs resulting from interactions in the water, energy and food nexus. Three main challenges are: 1) how to improve capacity to assess nexus interactions and sustainability outcomes; 2) the governance of nexuses; and 3) the design of effective incentives and policy instruments to navigate nexus trade-offs.

Key recommendations derived from the analysis of the case studies from the Mekong river basin, Myanmar and India are:

- The sustainability of development outcomes depends on the ability to manage cross-sector trade-offs resulting from interactions in the water, energy and food Nexus;
- Assessment methodology and underpinning data (including. water accounting) require improvement and context-specific implementation;
- Governance systems have the existing cross-sector coordination mechanisms that can be improved in order to enhance Nexus interactions;
- Existing policy instruments need to be re-assessed against their Nexus-wide impacts and new incentives need to be designed to improve development outcomes.
- Better policy-science interactions are also necessary to improve integrated assessment methodology to analyze water-food-energy interaction and contribute to effective evidence-based decision making.

Action towards sustainable Nexus interactions

- Implementing sound and innovative water accounting and auditing to support decision-making and management
- Evolving risk management strategies for national food security policies under water constraints and economic transitions
- Implications for agricultural and rural water management of a renewed focus on ensuring farmer and rural prosperity for managing socio-economic transitions sustainably: plotting new futures for irrigation and drainage under long-term vision
- Supporting investments in boosting ecosystem and water productivity, maintaining water quality across agriculture, fisheries, aquaculture, irrigation and drainage, with their recognized multiple services-and supply chains that support rural transformations:
- Managing the changing dynamics of the water- energy-food nexus; and
- Capacity building

4.2.4. Urban

The **"Urban"** theme is led by the **Global Water Partnership Organization (GWPO) in** collaboration with **PUB, Singapore's National Water Agency (PUB) and UN-HABITAT**. It examined the approaches to shift the urban water supply in developing countries of Asia and

the Pacific to promote circular economy through water use reduction, wastewater reuse and water recyding. It is examined through case studies and by looking at the enabling environment of favorable business model.

Situation Analysis

As the main economic engines of growth, Asian cities are increasingly challenged to ensure sustainability of development while reaping the benefits of urbanization. In 2016, 48.2 % of the Asian population was living in urban areas and the urban population is expected to rise to 64% by 2050[21].

Cities in Asia and the Pacific region are increasingly feeling the pressure of population growth and urbanization. In South-east Asia, although there are abundant rivers, the overpopulation has led to major pollution and caused the water to be undrinkable. Many people don't have enough clean water to drink. For South Asia[22], home to nearly 1.6 billion people, it is estimated that 22 of 32 Indian cities face daily water shortages. Besides, South-east Asia and India are currently suffering from one of their worst heat waves in history with temperatures regularly reaching mid-forties[23] (Celsius). While nearly 20% of the world's population are living in China[24], the country only contains 7% of the world's fresh water. Eleven out of the 31 Chinese provinces failed to meet the World Bank's water needs criteria of 1500 m^3 per person in 2014. Due to limited water resources, water is often a major cause of border conflicts in Central Asia[25]. And many Pacific islands [26]are facing the risk that freshwater scarcity may lead to an uninhabitable island, which is mainly caused by climate change.

The above mentioned situations show that Asian cities face major challenges concerning both the quantity and the quality of the water resource. Promising experiences on Integrated Urban Water Management (IUWM) and circular economy are gradually being developed in Asia that need to be captured and shared as they can have tremendous potential to bring about changes in urban health and economy.

Key Message 1: on Water Reuse – Recycling – Reduce

- **Water reuse isn't the future – it is the present**. Innovative technologies and approaches on water resource management can help to diversify sources of water while at the same time decrease costs, and increase resilience of communities. There are considerable opportunities for making use of different sources of water (storm water, rain water, raw water, grey and black waters) available as potential new resources, that will require technology transfer, social acceptance, adjusted legislation, tariffs and regulation. Water recycling is an opportunity in regions with high water scarcity, this solution becomes

[21] Reference: UN-Habitat. (2016). Urbanization and Development, Emerging Future. World Cities Report 2016.
[22] http://asiafoundation.org/2015/03/25/south-asias-water-crisis-a-problem-of-scarcity-amid-abundance/.
[23] https://www.weforum.org/agenda/2016/05/southeast-asia-india-suffering-worst-drought-in-20-years/.
[24] https://globalriskinsights.com/2017/08/shocks-china-growing-water-crisis/.
[25] https://www.forbes.com/sites/realspin/2017/02/06/will-central-asia-fight-over-water-resources/#413578114c1f.
[26] https://sinkingislands.com/2014/09/20/water-shortage-in-paradise/ .

essential for social, economic and environmental sustainability because it reduces stress on the water resource. The approach of water conservation, i.e. water demand management, is also important for water-scarce areas when options of developing new water resources are limited and costly. It involves the adoption of policies or investment by a water utility to reduce the waste of water resources and achieve efficient water use by all members.

Key Message 2: on Wastewater

- **Wastewater is not wasted water; it is potentially an important resource.** Sludge was traditionally considered as a waste in the water sector. But now new approaches have turned it into a valuable resource from wastewater that can be used to generate electricity, recover nutrients, and reduce landfill disposal. Benefits such as income generation, employment, poverty alleviation, contribution to food security, improved environmental standards can be gained from well-defined sludge management. Decentralized wastewater treatment systems (DEWATS) and community manageable solutions can respond to local needs and capacity in an efficient and sustainable way.

Key Message 3: on Enabling Environment

- **Making circular economy a reality requires a conducive and enabling environment**. It will require coordination mechanisms at all levels of government and the involvement of all stakeholders, as well as a long term and holistic urbanistic planning processes. New business models and opportunities can be derived from the adoption of a circular economy that will require new finance, regulation, norms, and raising the priority for investment in wastewater and reuse. The adoption of a new Circular Economy approach will also require cultural change and acceptance: sensitization of the populations on all issues relating to wastewater management and water quality and rainwater.

Actions and Sub-actions, and measures

- **Steadfast political leadership** and support are required throughout the intervention. If necessary, existing policies, laws, regulations and guidelines should be revised and new ones should be introduced.
- **Coordination mechanisms** should be developed to improve institutional capacity. Integration of existing institutions needs to be promoted.
- **Economic incentives and financial funding** should be considered. Investment from **private sectors** is important, which requires government to draw their interest.
- Under the pressure of water scarcity, government should be able to **shift to new concepts** to diversify water sources.
- **Appropriate innovative technologies** can be applied to diversify water sources. Demand study before intervention is suggested to help government better understand current situation.
- **Public acceptance and awareness education** on the new concepts and innovative technologies should be taken into account. In addition, water-related behavior change should be promoted. The education on young generations is extremely significant. One key partner in public education is the media, whose influence can be considerable.

- **Monitoring and maintenance** of these technologies and facilities are important, to make sure targeted water can always meet the national standards.
- **Inter-governmental (regional) cooperation** on trans-boundary water issues is useful, viewing problems at catchment scales rather than urban scales.
- **New business models** can be developed in improved wastewater management and solid waste management. Communities should be educated and trained to these models.
- **Promotion of DEWATS** can be promising in some Least Development Countries, where the coverage of sanitation service is low. Co-management on DEWATS is required, which may be done with help of public-private partnership model.

4.2.5. Ecosystem

The UNESCO Regional Science Bureau for Asia and the Pacific specifically focuses on **mobilizing science for the SDGs through enhanced freshwater ecosystems management in Asia and the Pacific.**

Water-related benefits of healthy ecosystems provide a powerful illustration of the fundamental nature of ***ecosystem services***. Ecosystems provide water purification as they process and filter out pollutants and sediment when water moves through wetlands, forests and river systems – allowing for the provision of clean drinking water. Ecosystems regulate water quantity, storing and tempering the release of water thereby providing protection against water-related disasters such as floods.

However, the ecosystems we rely on for the provision of these services – and many more - are increasingly modified, often to the extent that their ability to deliver the water-related services on which we depend is severely reduced. SDG6 recognizes the key importance of "sound management of freshwater ecosystems", in recognition that continued modification and degradation of our remaining healthy ecosystems is not an option – and recalling the need to address the functionality of modified ecosystems.

Protecting and caring for ecosystems in a manner that allows for essential water-related services to be provided requires a ***science-based, detailed and comprehensive understanding*** of water and ecosystem dynamics. Obtaining such an understanding requires good science, drawing on multiple fields of inquiry. Ecosystem-based water services need to be streamlined into water planning and integrated water resources.

Through the examination of case studies from Asia and the Pacific, the contributions of new integrated and problem-oriented scientific approaches to enhance water-related benefits towards healthy ecosystems will be highlighted. Using examples from different parts of the region, this report draws upon the successes and challenges of tools such as Integrated Water Resources Management (IWRM), UNESCO Ecohydrology and transdisciplinary approaches, bringing these to bear for the resolution of challenges and conflicts relating to the management of ecosystems. Restoration of the ecosystems, particularly river ecosystems, back into its natural conditions is argued to be the most effective way forward to ensure sustainability. The report also discusses

water and ecosystems education needs and priorities, arguing for the need for reorientation of water education at all levels, which should also include community education strategies.

Key Recommendations

- Sound and sustainable management of ecosystems – from pristine to heavily modified – is of crucial importance to the delivery of water-related ecosystem services and in turn to the delivery of SDGs and their targets.
- Innovative, integrated, interdisciplinary and transdisciplinary research – as exemplified by such approaches and tools as IWRM and ecohydrology – provides an essential contribution towards attaining the ecosystem targets of SDG 6 by providing the information needed for sound water management and decision-making. Ecohydrology should be used in creating a scientific basis for a societally acceptable, cost-effective and systemic approach to the sustainable management of freshwater resources. IWRM approaches, which comprise management of water resources, disasters and environmental issues, are needed in the management of competing uses across interests and sectors and by building compromises through stakeholder participation and consultation.
- **Freshwater ecosystems** provide many economically valuable commodities and services for human beings. These ecosystem benefits are costly and often impossible to replace when aquatic systems are degraded. To this end, recognizing carrying capacity of ecosystems is vital.
- **Forest** plays a vital role for ecosystem protection due to its direct impact on the hydrological cycle and for its further impact on food and habitat of aquatic ecosystems. Forest cover in watersheds is the best cover for drinking water supply, because most forestry activities involve no use of fertilizer, pesticides and fossil fuel or outfalls from domestic sewage or industrial processes. Loss of forested areas or altering of forest landscape must therefore be limited.
- On **river ecosystems**, river projects must be targeted towards restoring its natural, original conditions, enhancement of the natural river ecosystem and functioning, enhancement of biodiversity, ecology, and ecohydrology. In this regards, river works must consider at least 4 objectives: 1) enhancement of biodiversity/ecosystem; 2) water quantity control (maximize attenuation, reduced peak outflow discharge, the proper use of water balance equations); 3) water quality control at source and in the system; and 4) socio-economy circumstances of the people.
- The quality of rivers relies on the amount of pollutants entering the water bodies. In this regard, efforts should be targeted towards preserving stream ecosystems through riparian cover along streams, river environmental status monitoring systems at the national and basin levels and community engagement in protecting rivers.
- To improve stream/river water quality, proper waste trapping systems and technologies were recommended. Large water treatment plants are not preferred recommendation for for cleaning, handling pollution issues and restoring life to the river as they are expensive and difficult to operate and maintain.
- “Soft engineering” techniques that are cost-effective shall be explored and promoted, complementing “hard engineering” solutions, in the mobilization of science, technology and innovation (STI).
- **Environmental flows** are needed by adapting and managing flow to meet the needs of both people and nature through integration of knowledge across numerous disciplines as

law, policy, economics and ecology. Nowadays as technology advances, the whole spectrum of environment flows should be considered as 'ecosystem flow' which incorporates low flow, high river flow and overbank flow for different river ecological roles rather than just concentrating on compensation flow or low flow.

- Water education is essential for the sustained, long-term safeguarding of ecosystems and the water-related services they provide. However, for water education to deliver on this potential, comprehensive investment and reorientation of water education at all levels is required.

4.2.6. Finance

The **"Finance"** theme, led by UN Economic and Social Commissions for Asia and the Pacific (ESCAP) examines **"Financing implementation of water-related SDGs"** to deal with a significant investment gap to develop its needed water infrastructure.

Situation Analysis

The Asia Pacific region faces a significant investment gap to develop its much-needed water infrastructure. According to the Asian Development Bank, more than USD 800 billion in investment through 2030, or $53 billion annually, is required to develop water and sanitation infrastructure[27]. To address such need, countries in the region must develop and strengthen innovative and effective policies, actions and frameworks that can strategically mobilize public resources and attract private investment.

Facilitating investments in water and sanitation infrastructure will allow countries to meet local and national needs, while contributing to the achievement of Sustainable Development Goal 6, which seeks to '*Ensure availability and sustainable management of water and sanitation for all.'*

Given the diversity of country contexts and financial systems in Asia-Pacific, this report will highlight a variety of issues, including:

- the need for improved planning and implementation of impactful investments to enhance sustainable business models for water services and infrastructure;
- mobilizing commercial lenders, raising credit-worthiness of service providers, and blending public and private sources of finance to invest in water and sanitation infrastructure;
- strengthening policy and monitoring frameworks, and water management systems including incentivizing decentralized water systems and collaborative partnerships; and,
- assuring that investment in water infrastructure and services increases resilience to natural disasters and climate change.

Key Messages

- Over the period 2016–2030, the Asia Pacific region will need $800 billion, or $53 billion annually in investment to meet water and sanitation infrastructure needs (ADB estimate).
- The region must focus on developing and strengthening mechanisms to finance water and sanitation infrastructure if it is to reach the SDG target of universal access by 2030. Robust

[27] Climate-adjusted estimate for investment in water and sanitation infrastructure, 2016-2030 (based on 2015 prices) ADB. 2017. *Meeting Asia's Infrastructure Needs*. https://www.adb.org/sites/default/files/publication/227496/special-report-infrastructure.pdf

integrated water resources management policies and practices and inter-disciplinary approaches can enhance efficiency and create more certainty for investment.

- A strategic framework is proposed, which identifies opportunities along the water cycle (where financial sustainability and the resilience of water systems and infrastructure can be improved) for achieving the water SDG. Attracting impactful investments requires demonstrating the multiple benefits to social and environmental security, including enhanced resilience of infrastructure, and demonstrable returns on investments.
- Financial planning within a water cycles framework can also pinpoint where to augment value-based opportunities for private investment and hence, strategically guide the mobilization of private resources.
- Empowerment of regional and local governments to develop enabling policies and norms for financial frameworks and investments in decentralized projects is required, as universal access cannot be attained solely through large-scale projects and mega infrastructural financing. The leadership of governments and municipalities to frame policies and attract increased investment for water and sanitation infrastructure is crucial, especially in addressing the needs of vulnerable and marginalised communities without access to basic infrastructure needs.

4.3. Overview of Sub-Regional Reports

In addition, each one of the 5 sub-regions conducted their individual situation analysis and introduced good practices from each sub-region. The detailed case studies and analyses are included in each Sub-Regional Report of the Annex Document.

- **The Central Asia and Caucasus (CACENA) Sub-region** examines water-food-energy-ecosystems nexus as a tool towards SDGs in the CACENA countries. The key conclusions are:
  - Uncoordinated national policies risk pushing countries further away from each other, undermining opportunities to optimize resource use and maximize benefit;
  - Improved transboundary relationship as well as consistency in national policies (such as the business case made for energy efficiency and renewable energies, and the incentives offered for rational water use) would improve investors' confidence, which is important for mobilizing resources, in particular for major projects; and,
  - Improved coordination among riparian countries, but also among sectors at the national level, is necessary to that end; and transboundary cooperation would benefit from an improved understanding of the different sectoral needs and how these needs can be reconciled.

- **The Northeast Asia-Sub-region** hosts three large economies. China offers case studies on Integrated Water Resources Management for ecosystem restoration. Japan introduces the ways of creation and restoraton of sound water cycle management for sustainable development from a governance perspective. Japan also fucuses on climate change by introducing the ways to manage risk and uncertainty for resilience and disaster preparedness. Furthermore, Japan provides the Siga Prefecture case study with an ecosystem view to secure water quality from ridge to reef. The Republic of Korea also examines climate change and introduced the BANPOL (Basin Nonpoint-Source Pollutant Load) model to estimate

climate change impacts on flow, sediment and pollutant discharges from basin areas to surface water.

- **The South East Asia sub-region** focuses on "climate change" and examined how various stakeholders respond to flood and drought, ranging from disaster preparedness and risk reducion to post-disaster recovery. The region highlights the importance of conductiing locally tailored disaster preparedness led by local communities, learning from past lessons. It emphasizes the importance to enhance scenario modeling studies to conduct informed decision making. And, it points out that having policy or regulation in place does not really solve the problem when there is lack of human resources with the necessary skill sets. It also stresses the importance of capacity building by enhancing the linkage of efforts between national and local levels.

- **The South Asia sub-region** presents the complexity of the nexus issues with large population coping with shrinking per capita water endowments. The Nepal case study demonstrates how a local organization took initiative to re-frame climate change adaptaptaion actions from a water resources perspective. The sub-regional report highlights the importance of monitoring and evaluating existing national initiatives. A simple strategy is to understand how funding is allocated in line with priority agendas of local stakeholders and/or government representatives. Tough questions have to be asked about why certain functions get priority, who will be impacted, and what the implications are for poorly funded initiatives.

- The **Oceania and Pacific Sub-region** introduces the overview of water security challenges in **Australasia and Pacific sub-region.** This report particularly focuses on Pacific Sub-Region. It focused on key barriers to overcome in order to improve acess to safe dinking water and sanitation in 14 Pacific Islands Countries (PICs). The report highgliths some required solutions, in particular, to raising adequiate investment and meeting individual country's needs:
  - **Strengthen community resilience to natural harzards and climate change.** PICs' vulnerabilities cannot be addressed without incrased investments in water and sanitation. These efforts must be an integrated component of resilience efforts at the national and community levels.
  - **Support the capacity of small, isolated and informal communities** to establish, operate and maintain their own approprite water and sanitation facilities, while also maintaining safe drinking-water and hygiene practices at homes, schools and health facilities.
  - **Protect limited and fragile water resources from "ridge to reef".** Freshwater resources in many communities of PICs are confined to small and fragile groundwater lenses, streams, and/or rainwater collected from roofs. Efforts to achieve water and sanitation targets must consider the water cycle as a whole by utilizing Integrated Water Resource Management approaches.
  - **Address the constraints of limited human and financial resources.** The Pacific sub-region is constrained by small economies, relatively high costs of materials and services, and developing and retaining human resources. Programmatic approach is required to achieve meaningful progress toward water and sanitation targets.

5. Asia- Pacific Regional Process : Final Remarks

The Asia-Pacific region, the largest, most populous and most diverse in the world by any measure, political, economic, social and geographic, faces unique and multiple water security challenges on an unprecedented scale. The region is the global hot spot for water insecurity. Countries in the region with varying water endowments are in the midst of rapid economic growth and have to make policy choices and investments which balance the requirements of agriculture, industry, energy and the environment, while being conscious at the same time of climate change uncertainties, demographic change and the livelihoods of its people. Though the international community adopted the SDGs, challenges remain and include how to maintain a balance between the immediacy of economic growth and the longer term objective of securing sustainable water security.

Measures and recommendations to surmount these challenges were developed at a thematic level in the sections above. However, arriving at a synthesis to adequately capture all of them requires an overview which underlines the following fundamental principles:

1. All aspects of water security require the strengthening of four pillars:
    - **Science and technology:** to accelerate policy implementation and monitoring processes;
    - **Governance**: to enhance governance, institutional and legal frameworks and enforcement at regional, national, sub-national levels. This includes the improvement of sectoral awareness about inter-linkage between water and economic development to accelerate water sectors reform by encouraging the consultation and meaningful participation of various stakeholders for the co-design and co-implementation of fair legislation, regulation and institutional arrangements through community empowerment;
    - **Financial and economic instruments**: to ensure the diversification of economic revenue for investing in water security and creating job opportunities;
    - **Capacity building and gender**: to build capacity and integrate gender in a cross-cutting manner across sectors and regions.
2. These goals can only be achieved through political will and committed leadership, hence the need for regular political engagement and endorsements through mechanisms such the Asia Pacific Water Summits and their declarations.
3. The case for political leadership should be strengthened through rigorous research and analysis on an ongoing basis through initiatives such as the Asian Water Development Outlooks which measure and track the progress of water security indices in all the countries of the region.
4. Data and information should be constantly used to analyze and communicate (not just to the political leadership but to all citizens) the economic and human development costs of water insecurity as an incentive to invest financial and human resources to overcome the challenges.
5. The region being so interlinked in terms of water flows and resources, the effort to develop and consolidate conflict resolution mechanisms within and across countries needs to be an ongoing process.
6. The importance of developing a water-sensitive culture through education at all levels – formal and informal – requires not only recognition but, even more importantly, investment in policy development and financial resources. This culture does not just mean

curriculum development and communication campaigns, it depends immediate and active measures to enhance the participation of women in leadership positions in the water sector.

Since Asia and the Pacific are so diverse and water security challenges are so complex, there is no one-size-fits-all solution. The actions and measures needs to be tailored to local conditions of countries and communities through regional knowledge management. And they shall be facilitated by the implementation of integrated water resources management at all levels, including through multi-stakeholder partnerships within and across countries so that knowledge, experience and support can be shared for the common benefit.

APWF aims to stedfastly supporting government leaders to put water security at top of their political agenda by sharing approaches to raise both human and financial capital and develop processes to increase cooperation, learning and mutual support, as well as approaches to harness the immense knowledge and experiences that exist in the region.