Global Water Partnership Asia

25 YEARS

UN environment programme | DHI

UNEP-DHI CENTRE

Progress on Integrated Water Resources Management (IWRM) in the Asia-Pacific Region

2021

Learning exchange on monitoring and implementation towards SDG 6.5.1

2021 STATUS REPORT

PROGRESS ON INTEGRATED WATER RESOURCES MANAGEMENT (IWRM) IN THE ASIA-PACIFIC REGION

Learning exchange on monitoring and implementation towards SDG 6.5.1

Acknowledgements

This report is entirely dependent on the substantial efforts and contributions of government officials and other stakeholders from 58 Asia Pacific countries in reporting on SDG indicator 6.5.1 in 2020. National focal points coordinated the country reporting processes and 16 countries in Pan Asia region held multi-stakeholder workshops, which provided invaluable insight into the degree of their integrated water resources management (IWRM) implementation efforts. The workshops were co-facilitated by Country Water Partnerships of the Global Water Partnership (GWP).

The identification of national focal points, online training and support was facilitated by UN Environment, UNEP-DHI Centre, Cap-Net and GWP.

Data analysis and the development of this report was carried out by a working group with the following members (in alphabetical order):

Carmen Auste (consultant) and Colin Herron, Fany Wedahuditama, Louise Desrainy Maryonoputri (Chief Editor), Megan Knight, Sandra Bruehlmann, Yumiko Yasuda (all from GWP).

Substantial review and data support were provided by Paul Glennie and Maija Bertule (UNEP-DHI Centre on Water and Environment)

SUGGESTED CITATION

GWP and UNEP-DHI (2021). Progress on Integrated Water Resources Management (IWRM) in the Asia-Pacific Region 2021: Learning exchange on monitoring and implementation towards SDG 6.5.1.

Cover image: Wide Angle Photography of River, 2019.
Credits: Tom Fisk
https://www.pexels.com/photo/wide-angle-photography-of-river-2897193/
Graphs: Imam Safingi
Layout designer: Valery Marsiano

Table of Contents

List of Figures and Tables

Foreword

Water is at the core of sustainable development. An integrated approach to developing and managing our water resources fosters economic growth and sustainable agricultural development. It protects the environment, promotes democratic participation in governance, and contributes to better human health.

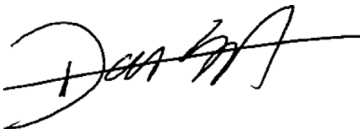
Since 2017, the Global Water Partnership (GWP) has partnered with the United Nations Environment Programme (UNEP), the UNEP-DHI Centre, and Cap-Net in the SDG 6 IWRM Support Programme. This programme assists governments in monitoring and accelerating progress towards Sustainable Development Goal (SDG) indicator 6.5.1— the degree of implementation of Integrated Water Resources Management (IWRM). It supports countries in designing and implementing country-led responses to accelerate progress towards the achievement of water-related SDGs and other development goals, in line with their national priorities.

As part of the programme, we are pleased to present this learning exchange report, which provides valuable insight into country experiences in the Asia-Pacific region. The report shows how the monitoring, reporting, and advancing of IWRM implementation of SDG target 6.5 is progressing and provides concrete recommendations for improvements.

The global 2020 survey for indicator 6.5.1 on the degree of IWRM implementation in the Asia- Pacific region shows that a "business as usual" approach is not enough to achieve SDG 6.5.1 by 2030.

In the Yangon Declaration, agreed to by the Leaders of the Asia-Pacific region at the Third Asia Pacific Water Summit in 2017, governments re-affirmed their commitment to achieve the SDGs and to facilitate the implementation of IWRM at all levels, including through transboundary cooperation and partnerships. The Asia-Pacific region therefore has a tremendous opportunity to transform and accelerate IWRM implementation as a significant contribution to their national sustainable development. But doing so is only possible with political will at the highest level.

We are convinced that achieving a water secure world can be achieved through working in partnership. This report constitutes an urgent "call to action" for all relevant stakeholders at all levels to contribute to enhancing IWRM as a necessary step to achieve the SDGs by 2030. We are ready to support all stakeholders in this endeavour.



Mr Darío Soto-Abril
Executive Secretary, Global Water Partnership

Abbreviations and acronyms

ASEAN	The Association of Southeast Asian Nations
BAPPENAS	Ministry of National Development Planning of Indonesia
CEDAW	Convention on the Elimination of all forms of Discrimination against Women
COVID	Coronavirus Disease
CSMP	Cyclone Shelter Management Policy
CWP	Country Water Partnership
EIA	Environmental Impact Assessment
EIEC	Environmental Information and Education Centre
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
EUWI	European Union Water Initiative
GAD	Gender and Development
GIPA	Georgian Institute of Public Affairs
GWP	Global Water Partnership
ICWC	Interstate Commission for Water Coordination of Central Asia
IBT	Indus Basin Treaty
IFAS	International Fund for Saving the Aral Sea
IWRM	Integrated Water Resources Management
JCIFM	Joint Committee on Inundation and Flood Management
JSTC	Joint Standing Technical Committee
LGU	Local Government Unit
MHA	The Mongolian Hydrologists Association
MONRE	Ministry of Natural Resources and Environment
MOWA	Ministry of Women Affairs
MOWRAM	Ministry of Water Resources and Meteorology
NAP	National Agriculture Policy
NEC	National Environment Committee
NGO	Non-Governmental Organisation
NIEG	National Interagency Experts Group
NSDP	National Strategic Development Plan
NWC	National Water Council
NWRC	National Water Resources Council
ODA	Official Development Assistance
O&M	Operation and Maintenance
PES	Payment for Environmental Services
PCIW	Pakistan Commissioner for Indus Water
RBM	River Basin Management
RBO	River Basin Organisation
SAP	Strategic Action Program
SACEP	South Asia Co-operative Environment Program
SDG	Sustainable Development Goals
SDMX	Statistical Data and Metadata Exchange
UNEP	United Nations Environment Program
UNEP-DHI	UNEP-DHI Centre on Water and Environment

Executive Summary

Water is the lifeblood of ecosystems, vital to human health and well-being and the precondition for economic growth and prosperity. Decisions about how to allocate and use water in an efficient, sustainable, and equitable manner are fundamental to sustainable development. The significance of water is captured by the Sustainable Development Goal (SDG) 6 – to ensure availability and sustainable management of water and sanitation for all – which, given water's strategic importance for other development objectives, is considered a prerequisite for the achievement of many other SDGs. In particular, SDG target 6.5 on Integrated Water Resource Management (IWRM) is central to supporting a sustainable future for all and achieving SDG 6.

This report provides insights into countries' experiences in monitoring, reporting and advancing on IWRM under SDG 6.5 in the Asia-Pacific Region. It draws on data submitted by 58 (out of 61) Asia-Pacific countries who responded to the global 2020 survey for indicator 6.5.1 on the degree of IWRM implementation, and is enriched through the Country Stakeholder Consultation Reports of 16 countries and responses in the e-reflection tool from national SDG 6.5.1 focal points.

Main Water-Related Challenges in the Asia-Pacific Region

The main challenge of water management in the region is the accumulative effect of many constraints, including inadequate quantity and quality of drinking water supply, and limited coverage of sewerage networks and wastewater treatment systems. Poor water quality and increasing abstraction of water are putting pressures on the environment. The rapid depletion of groundwater aquifers is leading to inequity in water access, land subsidence in some major cities, and an increase in saltwater intrusion into coastal areas. These pressures are expected to further intensify due to population growth and the growing impact of climate change on water resources. Approximately 1.1 billion people in Asia live in areas currently experiencing severe water stress. Unless significant action is taken, the number of affected people is expected to increase by more than 40 percent by 2050.

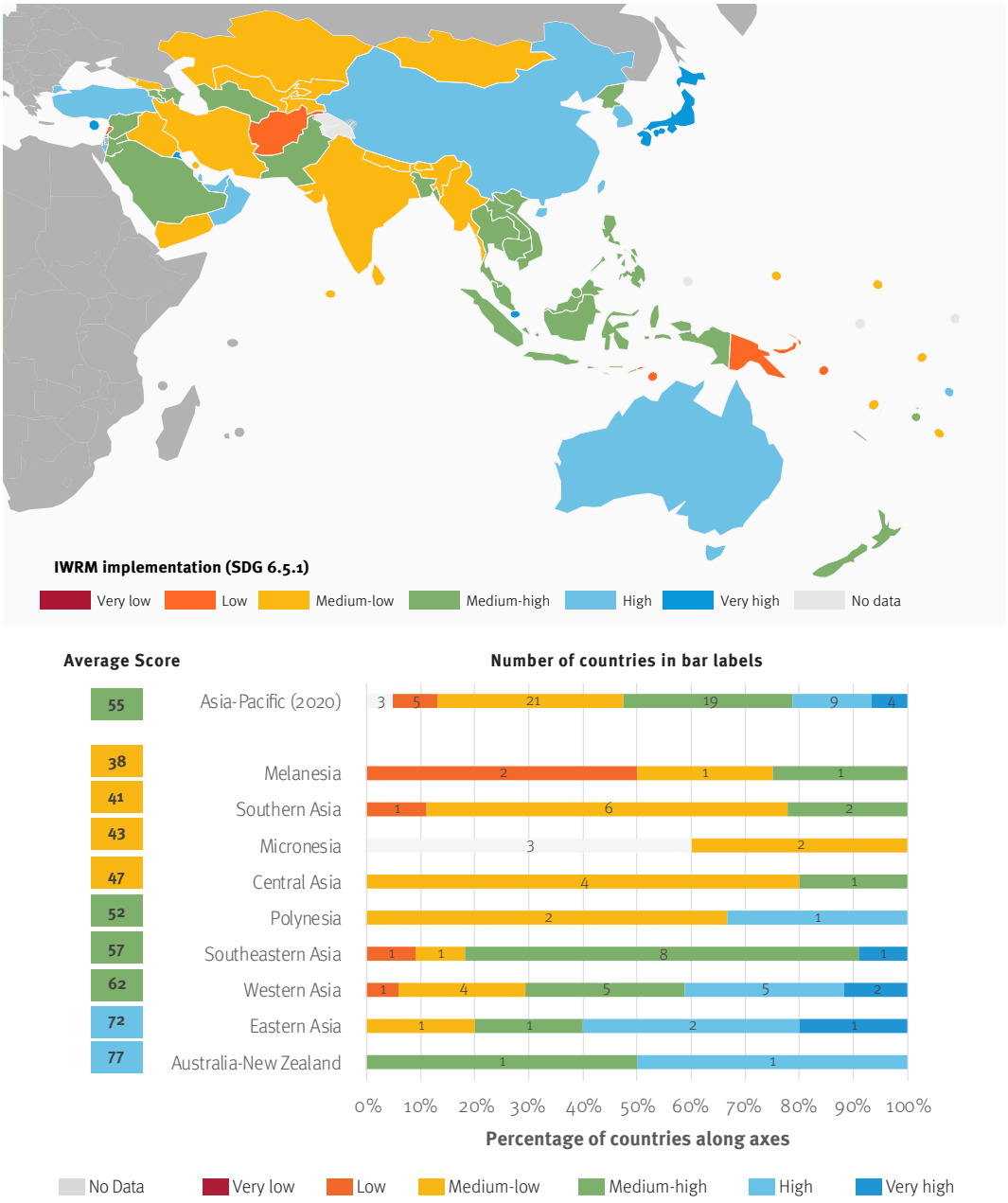
Status of IWRM Implementation in the Asia-Pacific Region

The average degree of implementation of IWRM as of 2020 for Asia-Pacific is medium-high, with a score of 55 out of 100. This is slightly higher than the global average of 54. The majority of countries in the region (65 percent) fall in the medium-low and medium-high category, 22 percent of countries have a high or very high score, and 8 percent of countries fall in the low category.

Score threshold and interpretation

Status category	Score range	IWRM score Interpretation
Very high	91-100	Vast majority of IWRM elements are fully implemented, with objectives consistently achieved and plans and programmes periodically assessed and revised.
High	71-90	IWRM objectives of plans and programmes are generally met and geographic coverage and stakeholder engagement is generally good.
Medium-high	51-70	Capacity to implement IWRM elements is generally adequate, and elements are generally being implemented under long-term programmes.
Medium-low	31-50	IWRM elements are generally institutionalised, and implementation is under way.
Low	11-30	Implementation of IWRM elements has generally begun, but with limited uptake across the country, and potentially low engagement of stakeholder groups.
Very low	0-10	Development of IWRM elements has generally not begun or has stalled.

Country implementation of IWRM in Asia Pacific (SDG indicator 6.5.1) and subregional averages.



Source: IWRM Data Portal (UNEP-DHI, 2021)

Subregional differences within the Asia-Pacific region show Eastern Asia and Australia-New-Zealand having high average scores, Western Asia, Polynesia and Southeastern Asia having medium-high average scores, and Southern Asia, Central Asia, Micronesia, and Melanesia having medium-low average scores for IWRM implementation.

Across the four IWRM dimensions, the Asia-Pacific region's average score for i) Enabling Environment, ii) Institutions and Participation, and iii) Management Instruments was medium-high; and iv) Financing was medium-low in 2020, although regional averages hide significant subregional and country-level differences. Financing was the lowest scoring dimension, and while clearly much more must be done to leverage funding for IWRM from multiple sources, the fact that many countries are generally moving in the right direction in implementing and operationalising IWRM shows that there are positive examples that can be shared between countries to foster greater progress. Despite this,

it is projected that by only relying on business-as-usual approach, most countries are not likely to reach the 2030 target. Thus, accelerating the implementation of IWRM, with cross-sectoral coordination to increase and ensure a more efficient use of financing and sustainable and equitable outcomes, must now be the focus.

Recommended Action Areas for Accelerating IWRM Implementation

Action to progress IWRM implementation in the Asia-Pacific region is required at all levels and across dimensions.

Enabling Environment

To address the main challenges related to gaps in policy implementation and competencies, recommended actions include:

- develop or accelerate the passing and full implementation of critical breakthrough laws for water, environment and natural resource management that reflect best practice principles of sustainable water resources management through sensitising political leaders, prioritising legislative processes; and engaging stakeholders;
- improve and strengthen compliance with, and enforcement of, national laws and policies;
- harmonise and align cross-sectoral, interagency policies and coordination structures;
- enrich knowledge and experience sharing through broader collaboration;
- strengthen regional legal frameworks to enhance transboundary cooperation.

Institutions and Participation

To address sectoral and fragmented management of water resources, coordination gaps, and persisting difficulties in inclusive participation, recommended actions include:

- strengthen and enhance capacity development initiatives;
- introduce or strengthen institutional structures, systems, and coordination mechanisms between government agencies and key stakeholders;
- establish, deepen, or expand stakeholder participation in IWRM implementation and ensure stakeholders from all levels are engaged. For example, at the subnational and basin level, including local water management authorities, water users, private sector, local communities, vulnerable groups, and indigenous communities;

Reflections on the SDG 6.5.1 IWRM 2020 data collection and reporting

The Pan-Asia Learning Exchange Workshop, held in December 2020, enabled participants to reflect on the SDG 6.5.1 IWRM data collection and reporting process. Recommendations were made to improve the survey instrument to ensure clarity, usability, and relevance. Whilst the survey instrument is a global initiative, the following lessons learned by the countries could inform future reviews of the survey instrument and data collection activities.

Stakeholders from all levels should be engaged: Consultations should include more sub national or basin level participants, such as local water management authorities, river basin council committee members, water users, private sector, farmers, local communities, vulnerable groups, and indigenous communities. It was also recommended that the bridging role of the Country Water Partnerships and the GWP was maximised and a Community of Practice on IWRM be established.

Having accurate and sufficient data for analysis remains challenging: Data collection, validation and analysis was flagged as the most challenging issues through the different consultative processes undertaken. Suggested solutions include:

- Developing an annual SDG 6.5.1 reflection report to capture and show changes and improvements and facilitate the preparation of the 3-year SDG 6.5.1 report.
- Developing a shared open platform that allows for regular updates of IWRM action.
- Ensuring agreed transboundary coordination mechanisms exist to enable real time and open sharing of data and information (where relevant).

Consultation processes must be adaptive to build consensus: The use of online consultation meetings during the COVID-19 pandemic has shown the adaptability and commitment of governments and key stakeholders. Process facilitators are considered essential to ensure active involvement by all participants, and to moderate differences and build consensus and agreement on rating scores. In this regard, respondents across countries and regions considered the Cap-Net training for facilitators of this process essential.

- ensure that consultation processes are adaptive and trained facilitators are used to build consensus and assist with decision-making in water management;
- mainstream gender and vulnerable groups into water laws and plans as well as the supporting structures that facilitate implementation of such legal instruments;
- develop a shared open platform that allows for regular updates on IWRM actions, accessible by all;
- develop a community of practice on IWRM to share best practices;
- strengthen transboundary water management arrangements through institutional arrangements or existing policies and regulatory measures that exist between state authorities, where they are lacking.

Management Instruments

To address challenges around availability, quality, and access to information for analysis, planning and decision-making, recommended actions include:

- develop an annual SDG 6.5.1 reflection report to show areas of concern and areas of improvement, and identify where urgent IWRM action is required;
- develop technical tools and guidelines on groundwater management, protection, and management of water-related ecosystems, strengthening pollution control and minimising water-related disasters;
- enhance individual and institutional capacities, and technical competencies of all water actors involved in discussing and managing technical water resource management issues;
- create robust, transparent, unified platforms and mechanisms for data capture, and information sharing at all levels within and between countries, and ensure open access to data;
- establish relevant coordination mechanisms and river basin management plans to manage local, subregional, and national issues;
- ensure management instruments required to obtain data such as monitoring stations and data collection programmes are operational, funded and continually maintained;
- develop an information sharing instrument, where necessary, for real time and open sharing of transboundary data at the basin and aquifer level between transboundary state authorities.

Financing

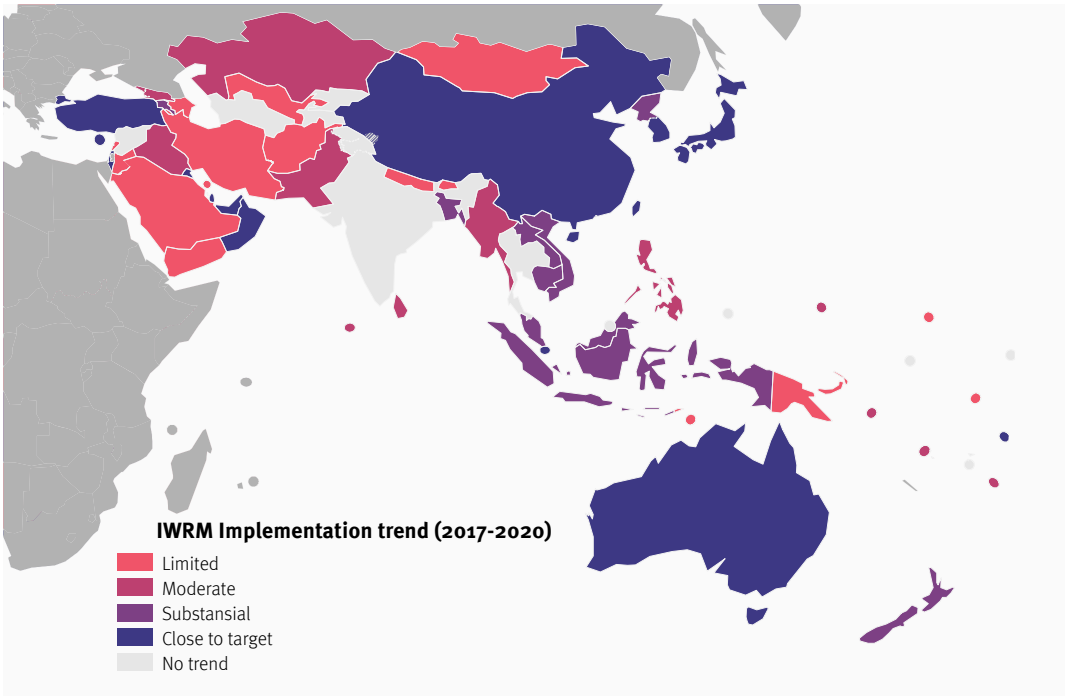
To address the main challenge of increasing and enhancing the efficiency of financing for IWRM, recommended actions include:

- prioritise existing investments, and where necessary increase prioritising national investment in IWRM;
- build, strengthen, and expand partnerships, including with the private sector, to unlock new co-financing opportunities;
- institutionalise innovative and sustainable financing mechanisms such as payment for ecosystem services to fund water and land management;
- increase revenue for IWRM through mechanisms such as water pricing mechanisms and water taxes (user pays and polluter pays principles);
- strengthen planning and monitoring systems relating to financing and budgeting for water resource management actions, plans, programmes, and infrastructure, at all levels, to ensure best financial management practices.

A Call for Collaboration, a Call to Action

This report provides the basis for further regional collaboration to debate and take action on the critical next steps needed to work towards achieving full IWRM implementation by 2030. Strategic actions to accelerate IWRM implementation across the Asia-Pacific region that support the above recommendations and urgently require addressing include: (1) enhancing capacity to accelerate implementation of IWRM; (2) strengthening information, experience and knowledge exchange; (3) maximising meaningful participation; (4) securing sustainable, innovative and blended financing; and (5) promoting and supporting regional and subregional collaborative initiatives.

Adopting a business-as-usual approach will not achieve the IWRM target of 100 percent implementation by 2030, with at least a doubling of current progress needed to achieve SDG 6.5. Perhaps what is needed, more than anything else, is political will at the highest levels, both within countries and between them, through regional collaboration. Such action is in line with the Yangon Declaration made by Leaders of the Asia-Pacific region at the Third Asia-Pacific Water Summit in 2017, which committed to achieving the water-related Sustainable Development Goals and targets, and to facilitating the implementation of integrated water resources management to achieve water security for sustainable development in the Asia-Pacific region.



Source: UNEP, 2021

1 Introduction

photo credit: https://www.yayimages.com/11716566/amphawa-bangkok-floating-market-thailand.html

1.1 Context: The 2030 Sustainable Development Agenda and SDG 6.5

SDG 6.5 and IWRM: Ensuring a Sustainable and Secure Water Future

In September 2015, the United Nations General Assembly and 193 member states of the United Nations adopted Resolution 70/1 on Transforming Our World: The 2030 Agenda for Sustainable Development. The 2030 Agenda consists of 17 Sustainable Development Goals (SDGs) and 169 associated targets for global sustainable development. These aspirational global targets are intended to be universally relevant and applicable to all countries. The agenda addresses social, economic, and environmental aspects of development. The three-pronged vision is to end poverty, protect the planet, and ensure peace and prosperity for all people by 2030.

Water is central to the achievement of all 17 SDGs. It is the lifeblood of ecosystems, vital to human health and well-being and a precondition for economic growth and prosperity. It is at the very core of the 2030 Agenda (SDG 6). Integrated Water Resources Management (IWRM) has been acknowledged as central to achieving SDG 6, as a major step towards a sustainable future for all (Figure 1).

IWRM is about balancing the competing demands and impacts of the water requirements of society, the economy, and the environment. At its core, IWRM provides a holistic framework to ensure that water resources are developed, managed, and used in an equitable, sustainable, and efficient manner. It underscores the need for countries to move away from the sectoral development and management of water resources towards a more integrated, coherent, and sustainable approach. As shown in Figure 2, an integrated approach to water resources management can have multiple benefits, including sustainable and efficient agriculture, economic stability, ecosystem protection, and peace and security. SDG 6.5 is "By 2030, implement IWRM at all levels through transboundary cooperation as appropriate", and it is measured through two indicators, 6.5.1 and 6.5.2 (see box 1).

Box 1. SDG 6.5 Indicators

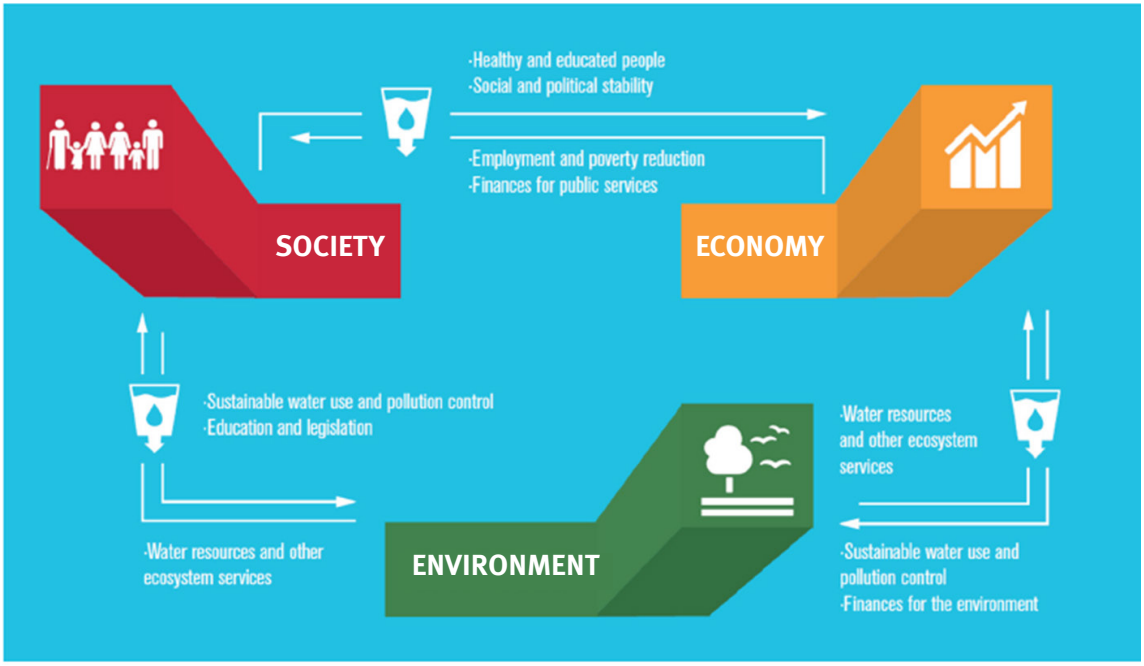
Two indicators measure progress towards target 6.5 ("implement integrated water resources management at all levels, including through transboundary cooperation as appropriate"):

- 6.5.1 Integrated water resources management implementation (0-100)
- 6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation

Figure 1 Anthropogenic and natural water cycles as described by the SDG 6 targets

Source: ESCAP, 2017

Figure 2 Interlinkages based on the three dimensions of sustainable development within SDG 6



Source: ESCAP, 2017

Monitoring SDG 6.5.1: Process and Focus

The United Nations Environmental Program (UNEP) is the custodian agency responsible for monitoring the progress of SDG indicator 6.5.1, which is reported by UN member states every three years since the baseline was established in 2017. The extent of implementation of IWRM is monitored based on a self-assessment through a survey instrument that determines the status of IWRM implementation and tracks progress made. The survey instrument consisting of 33 parameters (questions) covers the main elements of IWRM at national and basin levels (Table 1). This is organised into four dimensions/sections: enabling environment, institutions and participation, management instruments, and financing. The monitoring methodology, results and supporting documentation are available through the IWRM Data Portal[1]. Countries are also asked to provide a 'status description' and 'way forward' narrative response to each question.

Indicator 6.5.1 is mainly tracked at global and regional levels through a single average degree of implementation of IWRM per country. However, at the country level, the individual scores and narrative responses for each of the 33 questions in the survey instrument are even more important. These responses provide a diagnostic tool for identifying key elements of integrated water resources management where implementation can be accelerated and advanced in line with national priorities.

Box 2. Degree of IWRM Implementation

- Very high (100) Objectives consistently achieved, and periodically reviewed and revised.
- High (80) Policy objectives consistently achieved.
- Medium-high (60) Being used by the majority of relevant authorities to guide work.
- Medium-low (40) Based on IWRM, approved by government and starting to be used by authorities to guide work.
- Low (20) Exists, but not based on IWRM.
- Very low (0) Development not started or not progressing.

Source: SDG 6.5.1 Monitoring guide 2020 (UNEP, 2020)

1 at http://iwrmdataportal.unepdhi.org.

Table 1 Overview of survey question subjects for the four IWRM dimensions, per level

	1. Enabling environment	2. Institutions and participation	3. Management Instruments	4. Financing
National level	• Policy • Law • Plans	• Authorities • Cross-sectoral coordination • Capacity • Public participation • Business participation • Gender in IWRM laws/plan • Participation of vulnerable groups	• Availability monitoring • Water-use management • Pollution control • Ecosystem management • Disaster management	• Budget for infrastructure • Budget for IWRM activities
Subnational	• Policy • Law	• Authorities • Gender and vulnerable groups objectives	Data and information sharing	• Subnational or basin budget for infrastructure and IWRM activities • Revenue raised
Basin/aquifer/local	Basin/aquifer management plans	• Basin/aquifer organisations • Local public participation	• Basin management instruments • Aquifer management instruments	
Transboundary	Management arrangements	• Organisational arrangements	Data and information sharing	Financing transboundary cooperation

1.2 Purpose and Intended Audience

This report has two main aims: (a) present the status of IWRM implementation in the Asia-Pacific region, with a focus on 16 countries in the Pan-Asia region which received support through the SDG 6 IWRM Support Programme in 2020, and make recommendations to progress towards SDG target 6.5; (b) identify lessons learned and make recommendations on the stakeholder consultation processes for reporting on SDG 6.5.1 in the 16 countries.

It is expected that the sharing of good practice models will inspire and enable country focal points and other national or regional partners to further enrich the process of SDG 6.5.1 implementation, monitoring and reporting. It is anticipated that this report will contribute to identifying pathways for action, solutions to challenges hindering the pace and progress of IWRM implementation as well as inspire breakthrough innovations for advancing IWRM implementation, at country, subregional and regional levels. Further, recommended improvements for a more robust and interactive process of SDG 6.5.1 monitoring and reporting will contribute to active engagement of stakeholders, improved data quality, more substantive analysis and recommendations for accelerating the progress of IWRM implementation.

1.3 Focus, Scope and Limitations

This report is developed based on the consolidation of responses, feedback and recommendations gathered from four sources:

- Country Stakeholder Consultation reports of 16 countries in the Pan-Asia region supported by GWP in undertaking the SDG 6.5.1 IWRM survey and consultation.
- SDG 6.5.1 country data and narrative of each IWRM dimension taken from the UNEP-DHI IWRM Data Portal (http://iwrmdataportal.unepdhi.org/).
- Outputs of the discussions in the breakout groups and plenary dialogue during the online GWP and UNEP initiated Knowledge Learning Exchange Workshop on the SDG 6.5.1 Survey and Consultation held on 10 December 2020 for all country focal points of IWRM in UN member countries in the Asia-Pacific region. Following the second round of the SDG 6.5.1 survey in 2020, this online workshop was conducted to provide opportunities for countries from across the region to exchange lessons learned both in terms of the survey process and implementation of IWRM, and to discuss the way forward towards the achievement of SDG indicator 6.5.1.
- Responses to an e-reflection tool completed by individual respondents from national SDG 6.5.1 focal organisations of selected countries.

Box 3. The SDG 6 IWRM Support Programme

Under the SDG 6 IWRM Support Programme, the Global Water Partnership (GWP) in collaboration with UNEP-DHI Centre and Cap-Net assisted the United Nations Environment Programme (UNEP) in its second round of reporting in 2020 on SDG Indicator 6.5.1. In the Pan-Asia region, 16 countries were facilitated by GWP through its Country Water Partnerships (CWPs) by using a multi-stakeholder consultation approach which involved a range of relevant government ministries/agencies and civil society, academia, international organisations, the donor community and the private sector, as well as stakeholders from outside the water community whose activities depend and/or impact upon water resources. This multi-stakeholder approach is implemented as a means of fostering the water resources management improvements that will result in tangible impacts on sustainable development in general, as seen through progress towards the other SDG 6 targets and broader national water-related goals. Moreover, the process of bringing together multiple stakeholders to reach consensus on responses to the survey provides a valuable mechanism for cross-sectoral and multilevel dialogue. Numerous reports have indicated that it has contributed to enhancing synergies, strengthening or expanding multisectoral coordination and collaboration, starting up new collaborative change initiatives, or introducing context sensitive innovations to advance IWRM implementation. See Section 3 for more information.

1.4 Report Structure

Section 1, Introduction, explains the context of the SDG agenda, SDG 6 goals and indicators and its interrelationship with IWRM. It also provides an overview of the indicator 6.5.1 survey methodology, the purpose and intended audience for the report, report focus, scope and limitations.

Section 2, Snapshot of Asia-Pacific's SDG 6.5.1 Implementation Status of IWRM based on the 2020 survey, provides information on the defining characteristics and significance of Asia-Pacific as a region as well as the status of SDG 6.5.1 reporting of countries across subregions in Asia-Pacific.

Section 3, Learning from 16 countries: Reflections on the Monitoring and Survey Process using a multi-stakeholder approach, discusses the feedback generated from the stakeholder consultation reports, e-reflections and knowledge-learning exchange with regards to the key processes of the IWRM monitoring and reporting: stakeholder engagement, data validation, analysis and verification, consultation, reaching agreement and consensus on survey results, and preparing the final report. For each process step, country experiences with regards to challenges encountered, best practices adopted, innovations introduced, and recommendations are shared.

Section 4, Reflection on key IWRM Dimensions: Key National Challenges and Recommendations from 16 countries in the Pan-Asia region based on the 2020 IWRM global survey result, consolidates and summarises the status, key challenges and recommendations on the Enabling Environment, Institutions and Participation, Management Instruments and Financing. It provides examples of barriers, enablers, and good practice models as shared by participating GWP-facilitated countries.

Section 5, Way Forward: Regional Action Pathways and Levers to Accelerate IWRM implementation and localisation, examines and explores crosscutting issues across the whole IWRM implementation spectrum and presents proposed subregional or regional actions as well as required support interventions. The main recommendations covered in this section include enhancing capacities to accelerate implementation of IWRM; maximising inclusive and meaningful participation of diverse stakeholders at all levels; strengthening knowledge and information exchange; fostering robust institutional and organisational systems; securing sustainable and blended financing; and spearheading regional/subregional collaborative initiatives.

Section 6, A call for collaboration, a call to action, constitutes an urgent "call to action" for all relevant stakeholders at all levels to contribute to promoting and enhancing IWRM implementation as a necessary step to achieve the SDGs by 2030.

2 Snapshot of Asia Pacific's SDG 6.5.1 Implementation Status Based on the 2020 Survey

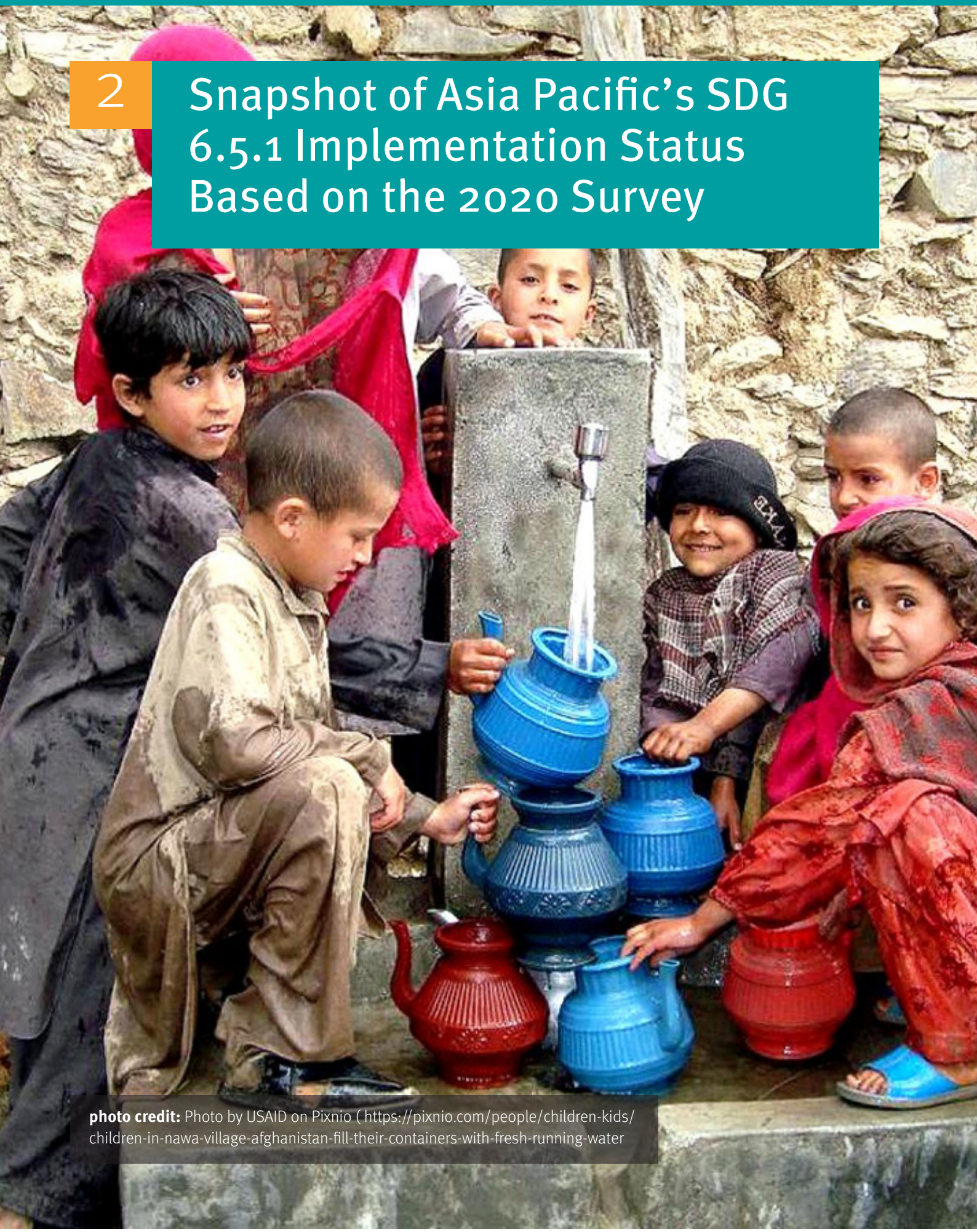


photo credit: Photo by USAID on Pixnio (https://pixnio.com/people/children-kids/children-in-nawa-village-afghanistan-fill-their-containers-with-fresh-running-water

2.1 Regional Background and Initiative for Better Water Management

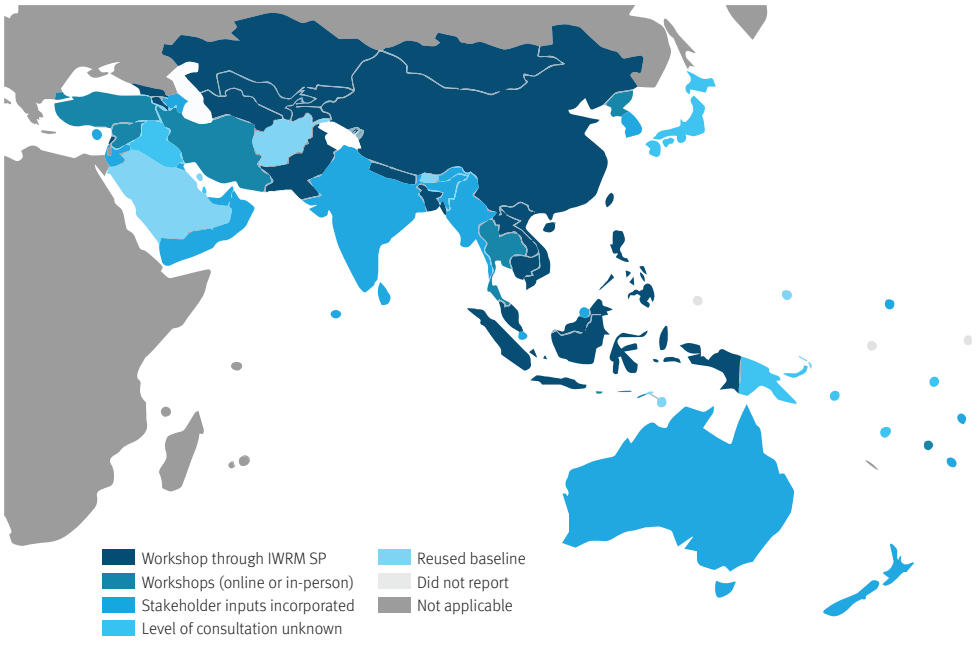
Some of the main challenges of water management in the Asia-Pacific region is the accumulative effect of minimum adequate quantity and quality of drinking water supply, limited coverage of sewerage networks and wastewater treatment systems. Poor water quality and increasing abstraction of water are putting pressure on the environment. Water quality in Asia has deteriorated significantly, with pollution increasing in 50 percent of major rivers during 1990–2010, salinity increasing by more than one-third, and 80 percent of wastewater discharged into waterways without adequate treatment. The rapid depletion of groundwater aquifers has led to inequities in water access, land subsidence in some major cities, and an increase in saltwater intrusion into coastal areas (UNEP, 2016).

With the largest and most dynamic economies in the world, the Asia-Pacific region 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. Unless significant action is taken, the affected population is expected to increase by more than 40 percent by 2050. In December 2017, leaders of the Asia-Pacific region declared their determination to achieve water security for sustainable development in the Third Asia-Pacific Water Summit held in Yangon. One of the determinations mentioned in the Yangon Declaration is to facilitate the implementation of integrated water resources management (IWRM) at all levels, including through transboundary cooperation, as appropriate, and partnerships (Yangon Declaration, 2017).

2.2 Status of SDG 6.5.1 IWRM Reporting Across Asia-Pacific

During the second round of SDG 6.5.1 IWRM reporting, held in 2020, the COVID-19 pandemic resulted in a delay in each country's activities, with countries restricting social gatherings including face-to-face meetings and workshops. As a consequence, these activities were transformed into virtual or smaller, blended events. Despite this, a large majority (95 percent; 58 countries) of the 61 Asia-Pacific countries have completed their SDG 6.5.1 reporting commitments and finalised submission. Among these countries, Thailand, Turkmenistan, and Tajikistan submitted their first baseline data in 2020. Only three countries (in the Pacific Islands) did not submit reports.[2] 16 countries conducted multi-stakeholder workshop under the SDG 6 Support Programme in 2020 through Country Water Partnerships (CWPs).

Figure 3 Country SDG 6.5.1 reporting process in 2020



Source: UNEP, 2021

2 Kiribati, Nauru, and Palau.

2.3. Status of SDG 6.5.1 IWRM Implementation Across Asia-Pacific Countries

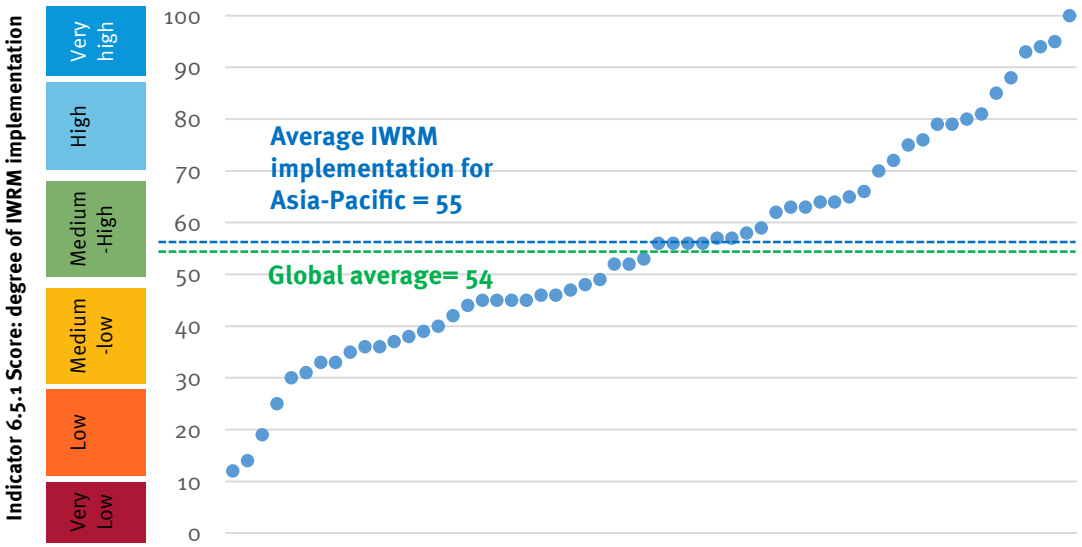
In Asia-Pacific, country implementation of IWRM ranges widely from low (11-30) to very high (91-100). Most countries in Asia-Pacific (65 percent) are distributed in the medium-low to medium-high status of IWRM implementation. These countries have institutionalised most IWRM elements and implementation is under-way.

Table 2 Number of countries in the Asia-Pacific per IWRM implementation categories, score thresholds, and interpretation

Countries per category		Number of countries	Score range	IWRM score Interpretation
%	status			
7%	Very high	4	91-100	Vast majority of IWRM elements are fully implemented, with objectives consistently achieved and plans and programmes periodically assessed and revised.
15%	High	9	71-90	IWRM objectives of plans and programmes are generally met, and geographic coverage and stakeholder engagement are generally good.
31%	Medium-high	19	51-70	Capacity to implement IWRM elements is generally adequate, and elements are generally being implemented under long-term programmes.
34%	Medium-low	21	31-50	IWRM elements are generally institutionalised, and implementation is under way.
8%	Low	5	11-30	Implementation of IWRM elements has generally begun, but with limited uptake across the country, and potentially low engagement of stakeholder groups.
0%	Very low	0	0-10	Development of IWRM elements has generally not begun or has stalled.
5%	No data	3	-	-

Compared to the global average score (54), the average score for IWRM in Asia-Pacific is slightly higher (55).

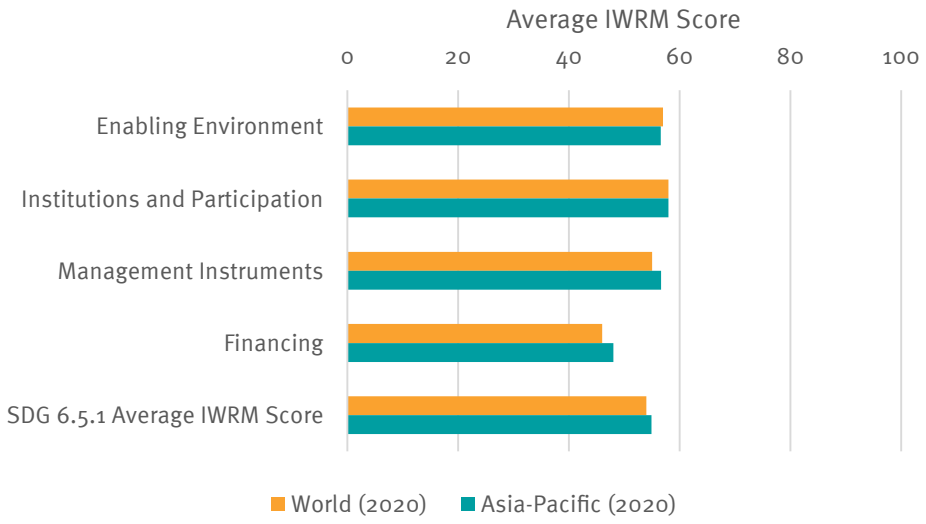
Figure 4 Distribution of 6.5.1 scores per IWRM implementation category in Asia-Pacific, based on 58 reporting countries



Source: IWRM Data Portal (UNEP-DHI, 2021)

Across the four IWRM dimensions, the average scores in Asia-Pacific for Management Instruments (57), Institutions and Participation (58) and Enabling Environment (57) are slightly higher compared to the global average, which is in the medium-high implementation category. The lowest average score in Asia-Pacific is recorded for financing (48), which is still higher compared to the average score at global level (46).

Figure 5 Average implementation of the four IWRM dimensions in Asia-Pacific and the world



Source: IWRM Data Portal (UNEP-DHI, 2021)

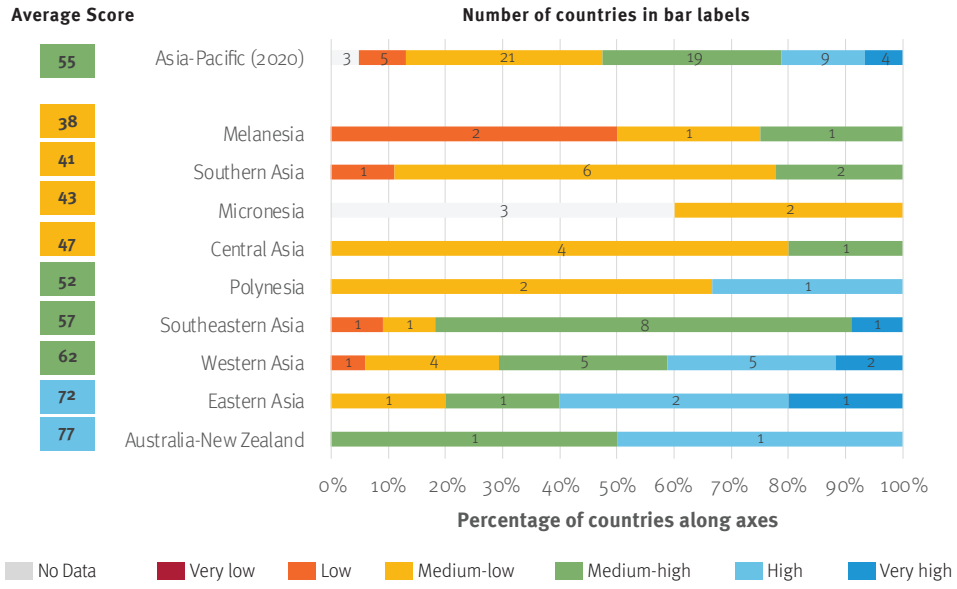
2.4 Subregional Implementation of IWRM

The subregions of Eastern Asia and Australia-New Zealand have similar levels of implementation, with average scores of 72 and 77 respectively (high IWRM implementation), being slightly higher than Western Asia (62) and Southeastern Asia (57), which are medium-high with one low IWRM implementation country in each subregion. Southern Asia (41) and Melanesia (38) have medium-low average scores with some countries at low IWRM implementation. Figure 6 shows the average score for IWRM implementation for each subregion, including the percentage and number of countries that fall within a particular category of IWRM implementation. All countries that did not participate in the SDG 6.5.1 survey in 2020 are located in Micronesia.

2.4.1 Developing and Implementing Policy, Legal, and Planning Tools for IWRM (Survey Section 1 – Enabling Environment)

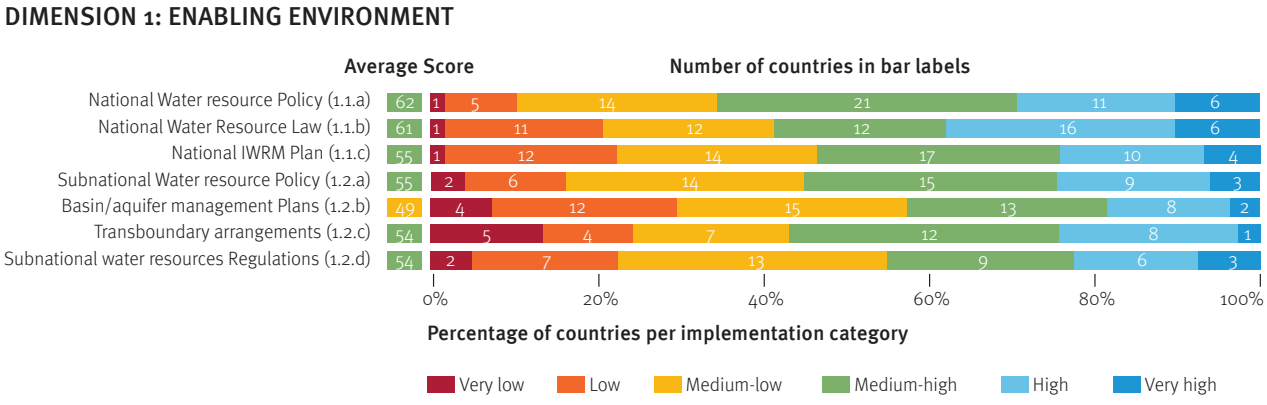
Based on the average score in the Asia-Pacific for enabling environment, the national-level implementation scores are significantly higher for water resources policy, laws, and plans than for subnational level policy, transboundary arrangements, and basin/aquifer management plans. When comparing the seven IWRM elements for the enabling environment across the Asia-Pacific, progress is the lowest for basin/aquifer management plans (an average score of 49) with a medium-low status (Figure 7), which means that basin plans are approved in the majority basins and starting to be used by authorities.

Figure 6 SDG 6.5.1 IWRM average score across subregions in Asia-Pacific and number of countries based on status of IWRM implementation, from the 2020 survey



Source: IWRM Data Portal (UNEP-DHI, 2021)

Figure 7 Implementation status of Enabling Environment in Asia-Pacific countries



Source: IWRM Data Portal (UNEP-DHI, 2021)

Four countries reported a 'very low' status for basin/aquifer management plan implementation and five countries with 'very low' transboundary arrangements for water management showing that initiatives in these areas have not yet started or are not progressing. Where this is the case, it is important for countries to prioritise for IWRM enabling environment initiatives at the subnational, basin/aquifer and transboundary levels.

The average score for overall progress in implementing the enabling environment across the Asia-Pacific was 57, resulting in a medium-high status (Figure 8).

Melanesia, Central Asia, Southern Asia, and Micronesia scored medium-low. While Polynesia, Southeastern Asia and Western Asia scored medium-high, and Eastern Asia and Australia-New Zealand scored high for implementation of the enabling environment.

Three countries[3] in Melanesia still reported a low status for IWRM implementation under the enabling environment. In Central Asia, only one country has a low status, namely Kyrgyzstan (27). In Southern Asia, two countries reported a low status for the enabling environment, Afghanistan (23) and Nepal (27). In Southeastern Asia only one country has a very-low score, namely Timor-Leste. To accelerate IWRM implementation in the Asia-Pacific region, special attention should be given to these countries in relation to improving policies, laws, and plans which enable IWRM.

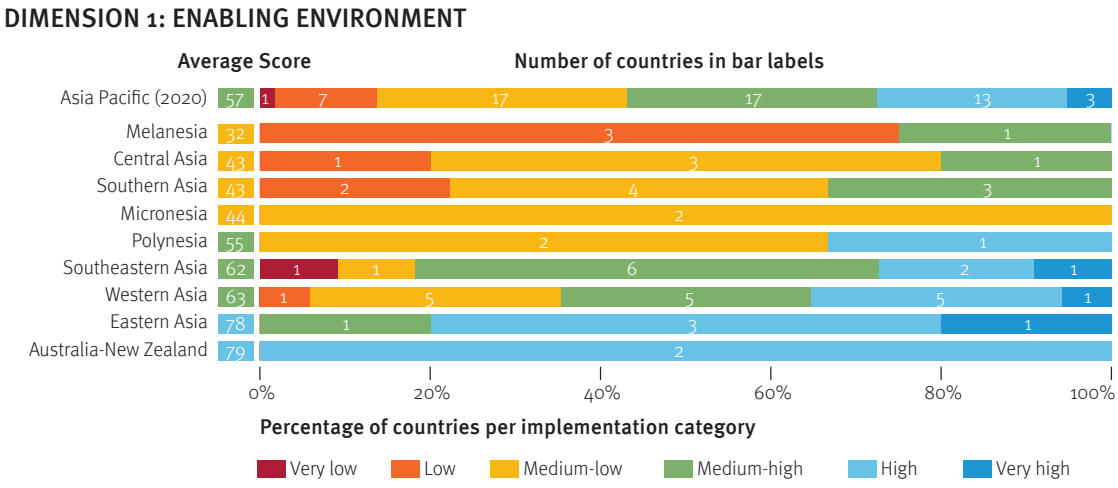
2.4.2 Establishing Institutions and Engaging Stakeholders (Survey Section 2 – Institutions and Participation)

Based on the average scores for Asia-Pacific countries, progress in institution and participation for IWRM at the national level is higher than at the subnational and basin levels (Figure 9). The lowest average scores for elements of the institution and participation dimension is for IWRM basin/aquifer organisation (46). Nine countries in the Asia-Pacific region identified that their IWRM implementation score is very-low due to absence of a dedicated basin organisation responsible for water resources management in their country.
The average score for participation of vulnerable groups in water resources planning and management is medium-low, indicating that some procedures are in place to engage vulnerable groups, but implementation is still limited (in terms of budget and human capacity). There are five countries with a very low status for participation of vulnerable groups as they are still not explicitly addressed in laws, policy or plans.

Three countries identified that gender inclusion in water laws and plans is still very low, which means that gender considerations have not been explicitly included in national or subnational law/plans.

Six countries reported the absence of an organisational framework for transboundary water management, while ten countries reported that an organisational framework for transboundary water management has been established.

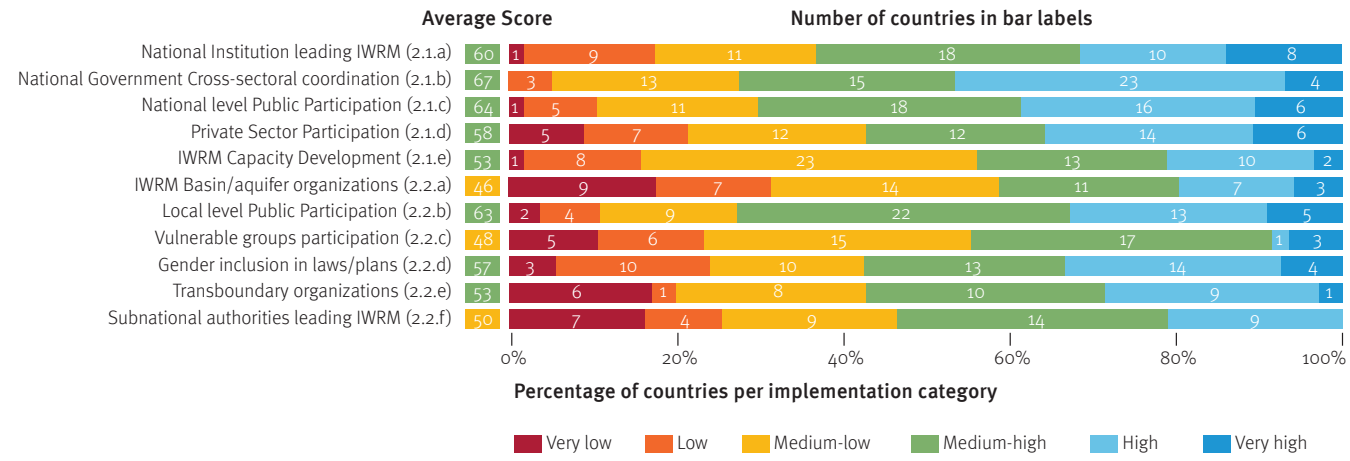
Figure 8 Progress in implementing enabling environment in Asia-Pacific subregions



Source: IWRM Data Portal (UNEP-DHI, 2021)

3 Papua New Guinea (17), Solomon Islands (30) and Fiji (28) in low status of enabling environment implementation

Figure 9 Implementation status of IWRM Institutions and Participation in Asia-Pacific countries



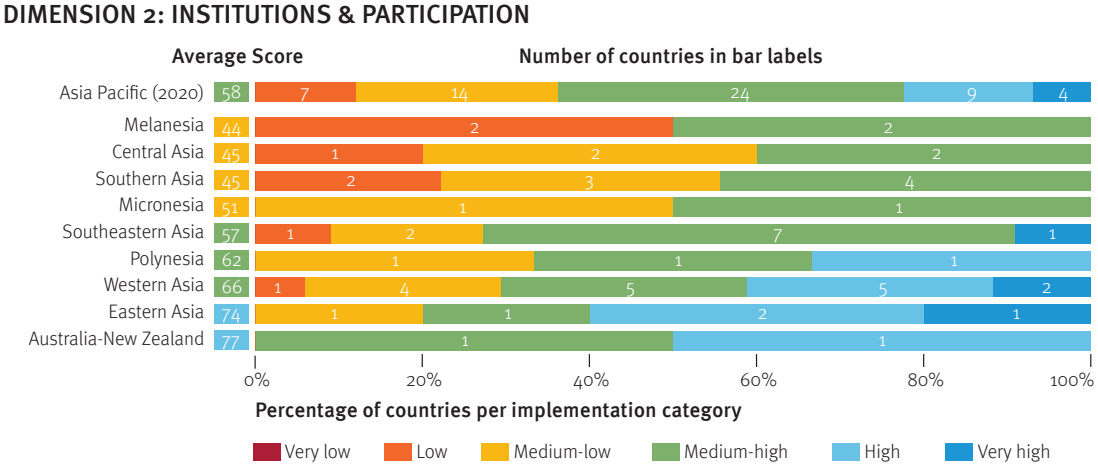
Source: IWRM Data Portal (UNEP-DHI, 2021)

At the subnational level, authorities for leading IWRM implementation reported a medium-low status with an average score of 50 in the Asia-Pacific region. Seven countries identified the status of subnational authorities in IWRM as very low, which means there is no dedicated subnational authorities for leading IWRM.

The overall average score for the Asia-Pacific region in the IWRM dimension of institutions and participation is 58, resulting in a medium-high status. The subregions of Melanesia, Central Asia, Southern Asia and Micronesia reported a medium-low status, with only a few countries having a low implementation score for the institutions and participation dimension: Solomon Islands, Papua New Guinea, Kyrgyzstan, Afghanistan, and Nepal (Figure 10).

Southeastern Asia, Polynesia and Western Asia show an average status of medium-high, with only two countries having a low implementation status for the institution and participation dimension: Timor-Leste and Lebanon. Eastern Asia countries and Australia-New Zealand reported an average status of high for the implementation of the institutions and participation dimension, with only one country in Eastern Asia having a medium-low status (Mongolia) and one country in Australia-New Zealand subregion having a medium-high status (New Zealand).

Figure 10 Progress in implementing Institutions and Participation in Asia-Pacific subregions



Source: IWRM Data Portal (UNEP-DHI, 2021)

2.4.3 Applying Management Instruments in Water Management (Survey Section 3 – Management Instruments)

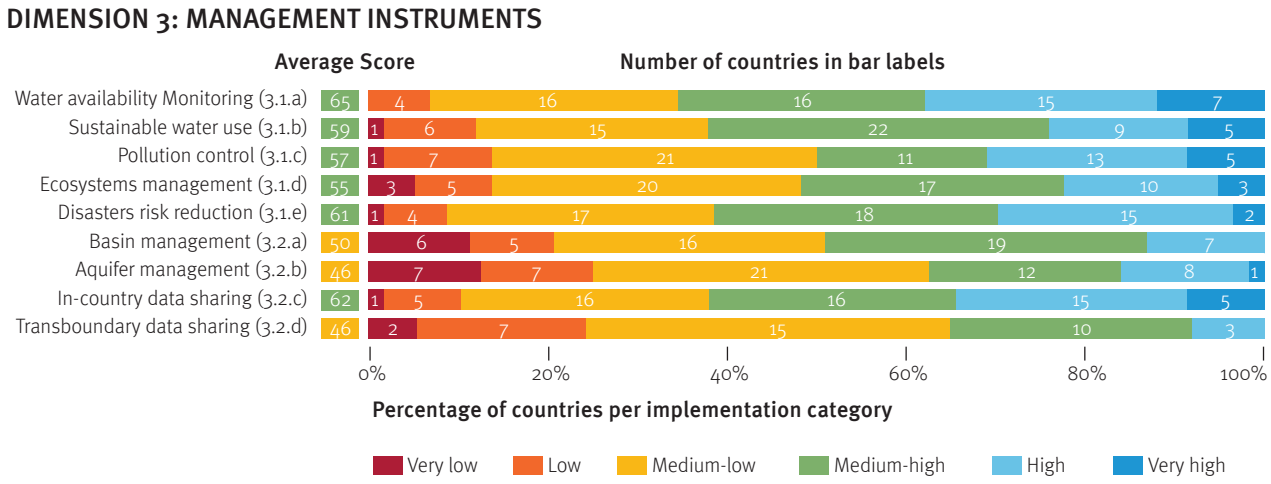
The progress in applying management instruments in water management in the Asia-Pacific region show a significantly higher score at the national level compared to the basin, aquifer, and transboundary levels, with these three elements all having an implementation status of medium-low (Figure 11). Six countries reported a very low status for the implementation of management instruments at basin level, seven countries reported a very low status for implementation of aquifer management instruments, and two countries identified that no transboundary data and information sharing mechanisms between countries are in place.

The average score for the implementation of management instruments in the Asia Pacific countries is 57, resulting in a medium-high status (Figure 12).

Southern Asia, Melanesia and Micronesia reported a medium-low status for the implementation of management instruments. In Southern Asia, Afghanistan reported a very low status, and in Melanesia, Papua New Guinea reported a low status for implementation of management instruments.

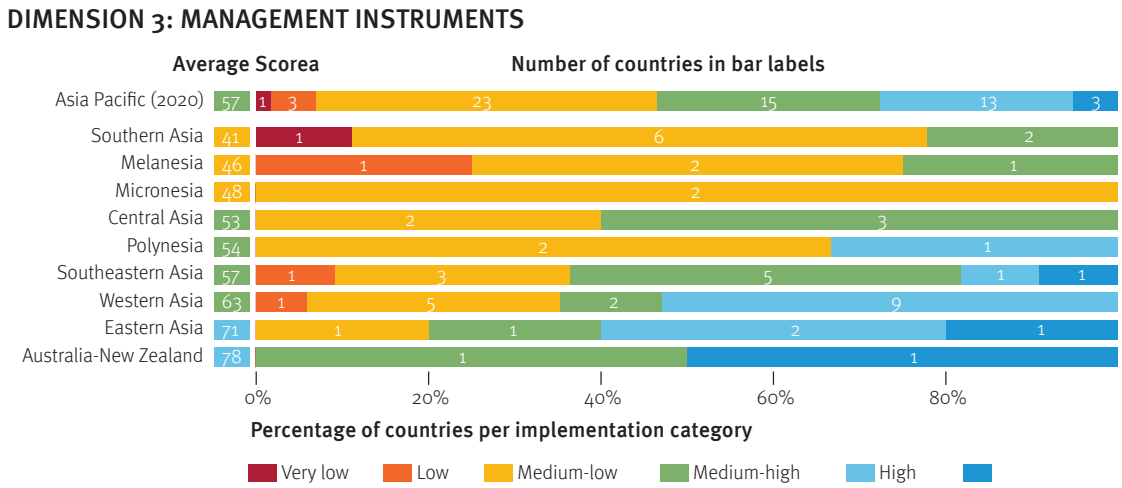
Central Asia, Polynesia, Southeastern Asia, and Western Asia reported a medium-high status for the implementation of management instruments. However, one country in Western Asia (Lebanon) has a medium-low implementation status.

Figure 11 Implementation status of water management instruments in Asia-Pacific countries



Source: IWRM Data Portal (UNEP-DHI, 2021)

Figure 12 Progress in implementing water management instruments in Asia-Pacific subregionssubregions



Source: IWRM Data Portal (UNEP-DHI, 2021)

2.4.4 Financing Water Resources Management and Development (Survey Section 4 – Financing)

The progress of implementation of financing in Asia-Pacific countries shows a slightly better score at the national level compared to the subnational level. The national budget for water resources infrastructure (including investment and recurrent costs) element under the dimension of Financing has a medium-high status with an overall average score of 56 across the Asia-Pacific region, meaning that there is already a sufficiently allocated budget and that funds have been disbursed for most planned programmes or projects. However, this average score does not illustrate the wide disparity between countries. Twelve countries within the Asia-Pacific region have a low status and two countries reported a very low status for the national budget in water resources infrastructure element (Figure 13).

The national budget for IWRM shows five countries with a very low status, which means there is no budget allocated for investments and recurrent costs for IWRM. Thirteen countries identified a low status for their national IWRM budget, which means that allocations have been made for some IWRM elements and implementation is still at early stage.

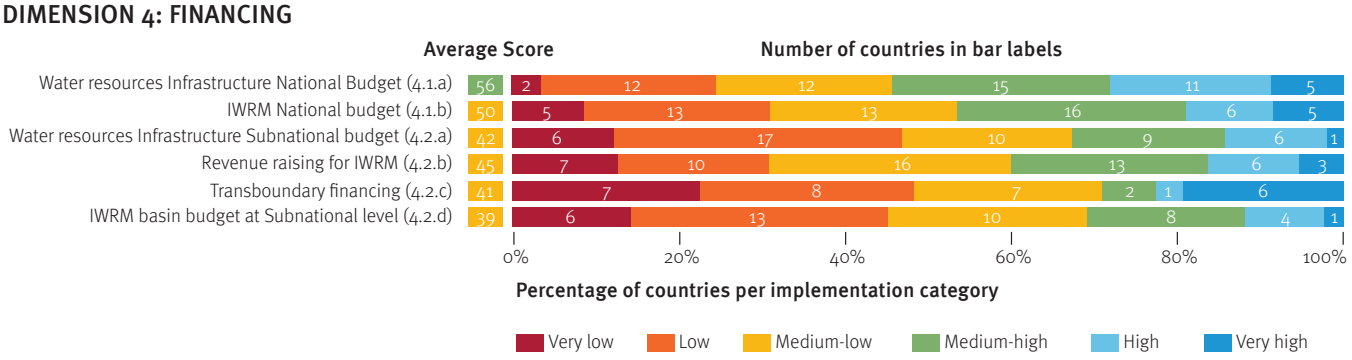
At the subnational and basin level, the average score of Asia-Pacific countries for water resources infrastructure budget was 42, with a wide range for implementation status at the country level. Six countries reported a very low status (i.e., no budget allocated to subnational or basin investment plans) and seventeen countries reported a low status (i.e., some budget allocated, but only partly covering planned investments). Ten countries reported a medium-low status for water resources infrastructure within their subnational budgets, meaning that there is sufficient budget allocated for planned investments, but insufficient disbursements.

The overall score for IWRM basin budgets at the subnational level is the lowest compared to other financing elements (39/100). Six countries reported a very low status of IWRM budget at subnational level, which means that there is no budget allocation at subnational or basin level for investments and recurrent cost of IWRM elements. Thirteen countries reported having a low status, meaning that a budget allocation for IWRM at the subnational level exists for only some elements and still in early implementation.

The overall average score for the financing dimension in the Asia-Pacific region was 48 out of 100, with a wide range in implementation at the subregional level and national level. Four countries have a very low status and nine countries reported a low status for implementation of IWRM financing (Figure 14).

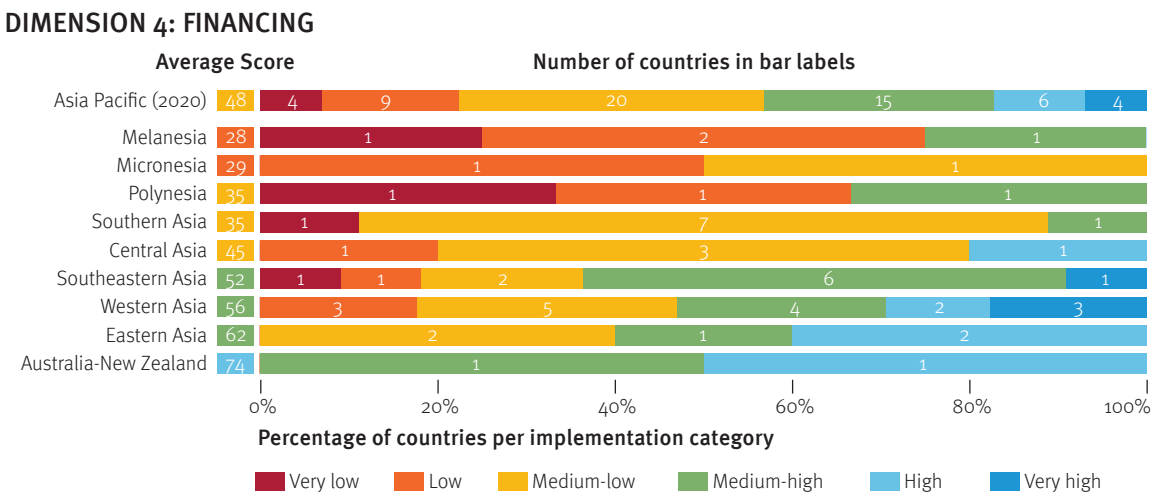
Countries from the Melanesian and Micronesian subregions reported an average score of below 30 resulting in a low status. One country in Melanesia, Papua New Guinea, reported having a very low status for financing (7/100). Only one country in Melanesia, Fiji, has a medium-high status for implementation. In Micronesia, the Marshall Islands reported

Figure 13 Implementation status of water financing in Asia-Pacific countries



Source: IWRM Data Portal (UNEP-DHI, 2021)

Figure 14 Progress implementation of water financing in Asia-Pacific subregions



Source: IWRM Data Portal (UNEP-DHI, 2021)

a low status for the financing dimension (16/100). Polynesia, Southern Asia, and Central Asia reported a medium-low status for implementation of the financing dimension. One country in Polynesia (Tonga) and one country in Southern Asia (Afghanistan) reported a very low status, and in Central Asia, Kyrgyzstan has a low status for implementation of financing.

The average score in Southeastern Asia, Western Asia and Eastern Asia was above 50, resulting in a medium-high status. Within Southeastern Asia, Timor-Leste, reported a very low status and Myanmar a low status score for the implementation of the financing dimension. In Western Asia, three countries, Lebanon, Yemen and Iraq, reported a low status with an average score of 20 and below for IWRM.

3 Learning from 16 Countries: Reflections on the Monitoring and Survey Process Using a Multi-Stakeholder Approach

photo source: Stakeholder consultation report SDG 6.5.1, degree of IWRM Implementation in Cambodia, 2020

For the second round of SDG 6.5.1 global data collection in 2020, 16 countries adopted a multi-stakeholder consultation approach facilitated by Country Water Partnerships and GWP under the SDG 6 IWRM Support Programme (see Box 3). This included three countries in Southern Asia (Bangladesh, Nepal, Pakistan), six countries in Southeastern Asia (Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Vietnam), five countries in Central Asia and Caucasus (Georgia, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan), and two countries in Eastern Asia (China and Mongolia).

To harvest the learnings generated from experiences in this reporting exercise, GWP requested the 16 countries to submit a stakeholder consultation report sharing the highlights of their multi-stakeholder consultation processes as well as the process they adopted. They were also asked to pinpoint challenges encountered during the survey and multi-stakeholder consultation and how they resolved them.

In December 2020, GWP initiated a Knowledge Learning Exchange Workshop on the SDG 6.5.1 Survey and Consultation for all country focal points of IWRM (61 UN member states) in the Asia-Pacific region. This online workshop was conducted to provide opportunities for countries across the region to exchange lessons learned both in terms of survey process and implementation of IWRM, and to discuss the way forward to achieve SDG indicator 6.5.1. This section focuses on the learning experience from 16 countries and discussions with country focal points that were held around the learning exchange workshop.

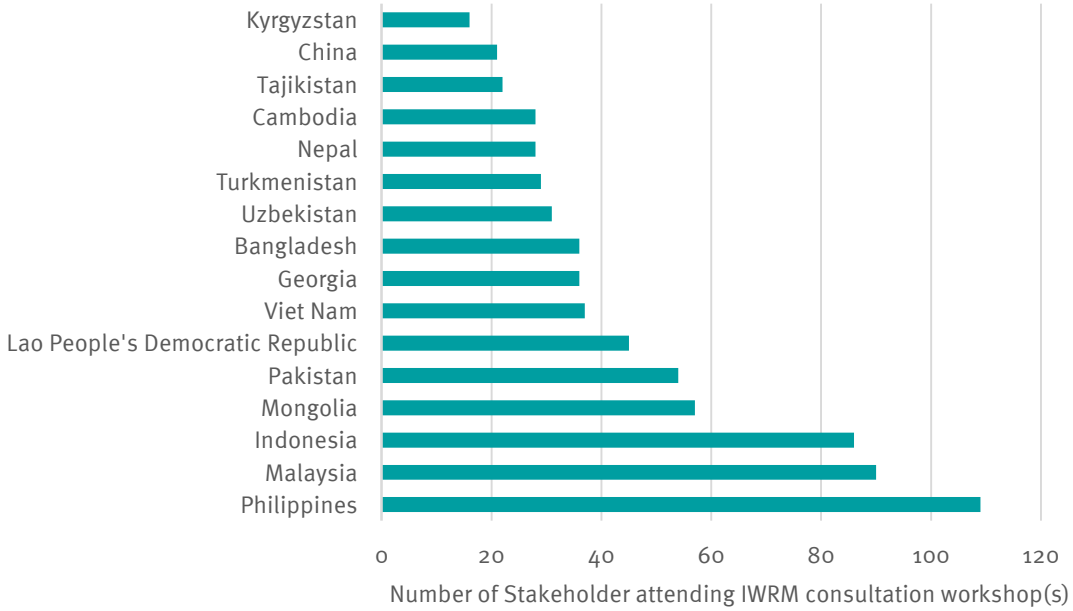
3.1 Stakeholder Engagement: Getting the right people to take part

Extent of Stakeholder Participation and Stakeholder Mix

In total, 725 participants took part in the consultations in the 16 countries, averaging 45 participants per country. Most of the supported countries (13 out of 16 countries) brought together and engaged a good number of stakeholders (i.e. more than 25) (Figure 15).

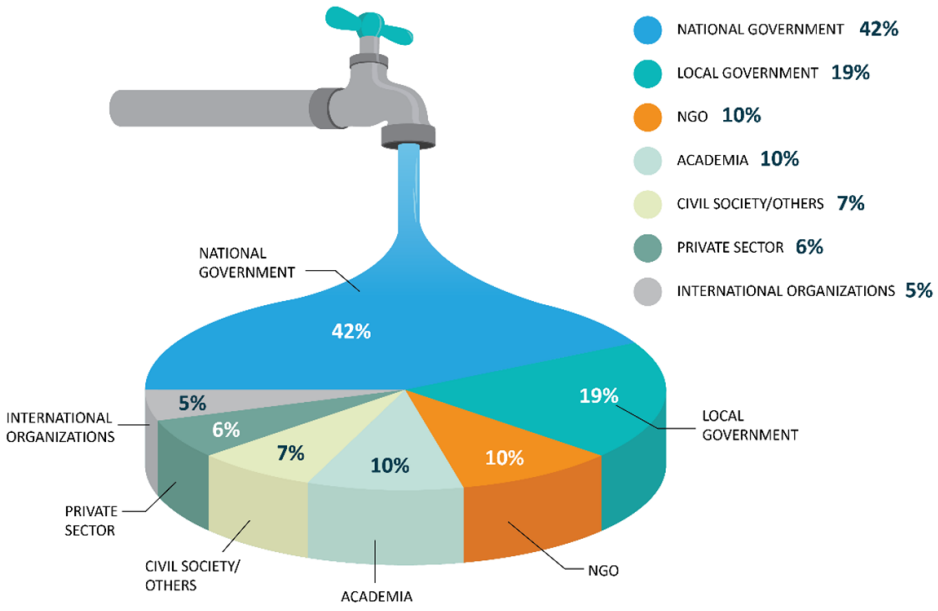
More than half of the facilitated countries (12 countries) had subnational or basin level representation participatedin the workshop. However, six countries did not have private sector representation, one country did not have representation from NGOs, and one country did not have representation from academia (Figure 16).

Figure 15 Total number of stakeholders attending consultations



Source: Global Water Partnership, 2020

Figure 16 Proportion of stakeholders who took part in 2020 consultation around SDG 6.5.1 in 16 countries in Asia Region



Challenges Encountered

Five key challenges were encountered in engaging key stakeholders. These challenges are as follows:

Challenge 1

Difficulty in connecting and contacting multilevel (national/ subnational), multidisciplinary and multisectoral stakeholders, primarily due to the COVID-19 pandemic

Challenge 2

No mechanism yet for involving non-governmental stakeholders. Weak coordination and connections with local communities, academia and the private sector

Challenge 3

Technology access limitation and poor/unstable connectivity

Challenge 4

Stakeholders refusal due to anticipated burden of data gathering/collection, primarily due to the COVID-19 pandemic

Challenge 5

Weak coordination across government agencies

Best Practices

A foremost good practice identified across eleven countries – necessary because of the pandemic, but which could be maintained in the future – is the use of online platforms for virtual meetings and stakeholder consultations (with five countries[4] having face-to-face stakeholder consultations). Country reports indicate that the advantage of this modality was that it increased the number of stakeholders and participants, reduced costs, and allowed the participation of vulnerable and marginalised stakeholders.

In that sense, another important best practice that was recognised across countries and subregions is the engagement of multidisciplinary participants from diverse sectors (i.e. government ministries, agencies or departments, academia and research institutions, civil society organisations, non-government organisations, foundations/philanthropic institutions and community-based organisations).

The third best practice was the involvement of specific sectoral representatives such as women, young professionals[5], the media[6], and an essential government ministry not previously actively engaged in IWRM consultations and initiatives, such as the Ministry of Finance. One country specified that involving the Ministry of Finance was necessary to secure their commitment to provide the necessary financing and budgetary support.

Innovations

Some countries designed innovative actions or interventions to resolve challenges or difficulties.

- To get their governments officials' view and position with regards to issues on the participation of civil society or public, women and vulnerable members of the population, Turkmenistan had email exchanges followed by two online consultations with representatives of their Institute of State, Law and Democracy.
- To ensure availability for consultation of representatives of key ministries and departments in Kyrgyzstan, national government agencies/ministries were asked to appoint a representative who would be "on call" and could be consulted (i.e., through formal and informal means of communication). This facilitated the reporting process and the completion of the survey instrument. It ensured that ministry representatives could be contacted directly and as needed to discuss specific issues, gather necessary data/information, and clarify any concerns.
- To ensure the survey could effectively capture on-the-ground realities, understood by all respondents, and has a shared framework of country specific IWRM elements, the Philippines developed four customised surveys for different stakeholder groups. The first group comprised national government agencies. The second group comprised local government units and river basin organisations. The third group comprised private sector and the academia. The fourth group comprised NGOs. Each stakeholder groups answered different questions selected based on relevancy to their expertise.

4 Kyrgyzstan, Cambodia, China, Lao PDR and Pakistan

5 Vietnam invited young professionals from the Ministry of Natural Resources and Environment, Vietnam National Mekong Committee, research institutions and water resource universities.

6 Pakistan, China, Turkmenistan and Tajikistan invited the media. Some took part in the meetings of the National Interagency Experts Group and had an advisory vote.

Coordinating Structures

Four different models of coordinating structures were organised by seven facilitated countries in the Caucasus and Central Asia, Southeastern Asia and Southern Asia. This was implemented to support the designated country focal organisation/person and facilitate timely and effective completion of the country report. The remaining eight countries were able to do the work using their existing structures and mechanisms, hence no special coordinating structures were formed.

Model 1: Formation of a National Interagency Experts Group (NIEG) comprising representatives from key institutions responsible for water management (Tajikistan and Turkmenistan)

The interagency expert group developed discussion papers based on previous baseline reports, undertook initial assessment for IWRM 2020 status and degree of implementation, followed by multi-stakeholder roundtable discussions with other stakeholders.

Model 2: Formation of a Task Force comprising senior experts on IWRM from different sectors and stakeholders (Vietnam)

The taskforce analysed and prepared a consolidation of the responses to the survey. The survey was discussed and completed by stakeholders via email, phone calls, social media (i.e., Zalo, Facebook, Viber). A final workshop was organised with the participation of relevant stakeholders to discuss and finalise the survey results.

Model 3: Formation of a Core Team comprising the SDG 6.5.1 Focal Point, a Technical Consultant, a Consultation Facilitator/IWRM or Water Resources Expert, and a Law and Policy Expert (Nepal and Philippines)

In Nepal, a core team was formed comprising the SDG 6.5.1 Focal Point of Nepal, a Technical Consultant, a Consultation Facilitator/Water Resources Expert and a Law and Policy Expert. The Core Team prepared the invitation package containing (i) a letter explaining the background, purpose, approach, and the expected input from the invitee, (ii) a survey instrument, including instructions and guidelines, and (iii) 2017 Baseline Data for reference. The invitation package was sent to a range of stakeholders for them to complete the survey.

The core team reviewed the completed questionnaires to ensure internal consistency between the scores assigned and the status description. Where necessary, clarifications relating to inconsistencies in scoring, or a conflict of opinion with regards to the status of IWRM implementation, were addressed one-on-one, or via telephone or video chat platforms. The team compiled and analysed all submitted responses from participants. They arrived at the final scores, with due consideration for the participants' scorings and the threshold descriptions. They also developed the narratives for the supporting and evidence-based justifications.

In the Philippines, a core team with a similar composition was organised. The additional member of the core team was from the local Philippine Water Partnership. However, there were variations in the scope of tasks and accountabilities in preparing the baseline data for scoring, and justification narratives were done together with stakeholders during the consultation process. Their roles included: assistance in deciding which stakeholders were to be engaged, follow up with key stakeholders to ensure timely submission of initial customised survey questionnaire, facilitation of data/information sharing and ensuring attendance/involvement in the consultation, and designing e-Dialogues (multi-stakeholder consultation). They also served as the technical reference group reviewing and approving the write up of the question narratives and final report.

Model 4: Designation of lead agency to assist the focal point, undertake and shepherd through SDG 6.5.1 monitoring and reporting activities (Uzbekistan, Indonesia and Mongolia)

The Uzbekistan focal point, the Ministry of Water Resources, appointed the agency of IFAS (International Fund for Saving the Aral Sea) as the representative in the Country Water Partnership to conduct all necessary steps for monitoring the progress of IWRM implementation. The same approach was also implemented by the Indonesia focal point, the Ministry of National Development Planning (BAPPENAS), which appointed Indonesia Water Partnership (InaWP)7 to undertake and facilitate the entire reporting process. Both of these lead agencies were tasked with: a) inviting national experts to fill out the survey instrument; b) preparing a draft of the results generated by the completed survey and validating/enriching it with ideas and inputs from key stakeholders; c) sending the completed draft survey to other stakeholders for comment and additional input; d) hosting a stakeholder consultation workshop for developing a consensus on the status of IWRM implementation; and e) writing the final report based on the consensus from the final stakeholder consultation workshop and submission to UNEP.

In Mongolia, the Mongolian Hydrologists Association (a local NGO), was engaged to collaborate with the Global Water Partnership – Mongolia and the Mongolian Ministry of Environment and Tourism. The Mongolian Hydrologists Association (MHA) translated the Country Survey Instrument,

7 InaWP is an accredited Country Water Partnership based in Indonesia. GWP currently has 69 accredited Country Water Partnerships (CWP) and 13 Regional Water Partnerships (RWP) that provide a neutral, multistakeholder platform for facilitating improvements in the way water resources are managed.

sent it to identified stakeholders (e.g. the 21 River Basin Administrations, Water Professionals etc), followed by online survey, feedback/questions and answers from a larger group of participants and a small group meeting with the representatives of River Basin Councils and main water users. The inputs from these various activities were consolidated, analysed and the final country report on implementing IWRM was developed.

Recommendations for Maximising and Expanding Stakeholder Engagement

Several countries pointed out the need to include more subnational or basin level participants such as local water management authorities, river basin council committee members, water users, and farmers. They emphasised that these stakeholders have on-the-ground experience and, consequently, would have valuable, interesting, and eye-opening inputs on the river basin-level implementation realities and challenges.

One participant of the learning exchange workshop recommended that at least 2-5 percent of total respondents/participants should be drawn from local communities. However, the provision of incentives may be necessary so that representatives from low-income communities and vulnerable groups would be encouraged to participate in the survey and the subsequent consultation/discussions.

Two countries emphasised the need to extend the survey to include vulnerable and indigenous communities who are directly impacted by the changing natural resources and water resources management approach.

Other important recommendations are as follows:

1. Raise awareness on IWRM. This was proposed in relation to three reasons:
    - Countries who had minimal to no participation from private sector stakeholders recommended the need to raise IWRM awareness among the private sector to awaken their interest in promoting and supporting IWRM initiatives.
    - As part of ensuring stakeholder readiness to participate fully and actively in the survey and the Multi-stakeholder Workshop-Consultation, some countries recommended that there should be a preparatory awareness raising activity to discuss the concepts and terms of IWRM and ensure a clear/shared understanding of IWRM and IWRM elements.
    - As part of the recommended customised capacity development on IWRM to diverse stakeholders, prior to the forthcoming survey and consultation rounds.
2. Maximise the bridging role of GWP Country Water Partnerships in connecting with diverse stakeholders across countries and regions, as well as in providing assistance for data generation and collection, and data, information, and experience sharing.
3. Allocate more time and resources for a better and more comprehensive consultation process.
4. Develop a community of practice on IWRM for sharing and learning best practices from each other.
5. Create a permanent intersectoral working group or form a national expert's group that will conduct an annual assessment of progress[8].

Box 4. Mainstreaming the SDG 6.5.1 reporting findings in the country

In Georgia, as part of the SDG 6 IWRM Support Programme, a series of virtual meetings were held with stakeholders at the subnational level (state and municipal employees, as well as NGOs) to present the final results of SDG 6.5.1 (question scores and narrative responses), including through National Policy Dialogue. This initiative was held to develop a broader evaluation and common understanding of existing challenges, barriers and gaps that have served as constraints to IWRM implementation.

3.2 Data Collection, Data Validation and Data Analysis.

"The in-country data collection process shall bring together different stakeholders from multiple sectors with the objective of having a consolidated perspective on where the country stands in respect to IWRM implementation, using the 33 questions contained in the survey instrument as a simple diagnostic tool for countries to identify strengths and weaknesses in different aspects of IWRM implementation"[9].

For these processes, certain preparatory work was implemented by countries to ensure that the IWRM survey was evidence-based. Data collection, validation and analysis were conducted prior to the consultation workshop to facilitate inclusion of relevant, evidence-based information

8 Implemented in Georgia, Turkmenistan

9 According to SDG 6 Support Programme Packages for Stage 1 https://www.gwp.org/contentassets/d90477f231d746d792af8c4bf2ac9c42/sdg-6-iwrm-support-package-with-annex-1-to-5.pdf

which would inform and guide the score and narrative response for each question.

The 16 facilitated countries in the Asia region conducted the preparatory work with the help of a country facilitator. GWP and Cap-Net provided online training to the facilitators10 to standardise the understanding of the survey, process and expected outputs.

Challenges Encountered

This aspect of the SDG 6.5.1 survey and consultation was tagged as being the most challenging by both the participants who submitted country reports and the attendees of the knowledge learning exchange.

to gather data and information and to reach contacts for important data sources.

The three main best practices used for data validation and verification included:

a. discussions with senior water experts,

b. validation with senior representatives of the data holder institutions or organisations, and

c. validation through key informant interviews or use of additional tools developed for subnational and basin level (i.e. customised surveys, open ended questions). The multi-stakeholder consultation was deemed as the final means of data validation and verification.

Challenge 1

COVID-19 Pandemic implications:

- Work from home setup. Most stakeholders were working from home and access to required documents and official data was difficult.

Connectivity. Poor internet access affected connectivity and ability to collect required data/information. A number of countries also mentioned that some subnational and basin areas lacked internet access outright.

Challenge 2

Public accessibility: A number of countries reported that the data/ information required is only available as hard data and not available for public sharing. One country mentioned it is under their Official Secrets Act data category.

Challenge 3

Difficulty in ascertaining which data is relevant for the specific question. This was attributed to two reasons: varying technical interpretations of data/ information required to be used, or limited knowledge on what data should be inputted.

Challenge 4

Difficulty in data verification or validation

Challenge 5

Limited time to collect necessary data and information

Challenge 6

Difficulty in accessing transboundary data or non-availability of data/ information on transboundary arrangements

Best Practices

Based on country experiences, a number of main factors were identified as leading to good practices in data collection. Firstly, the creation of an interagency working group. The core team typically consisted of at least a country focal point on IWRM, a facilitator and representatives from relevant core agencies, which then defined the data needs and data sources. At this point, Country Water Partnership (CWP) networks were very useful to help identify and connect relevant institutions to undertake the data collection and consultation process. Search engine platforms were also found useful for gathering data where access to data was limited, especially during the COVID-19 pandemic. Some countries used email and social media such as Facebook

10 https://www.gwp.org/en/sdg6support/consultations/where-we-are/stage-1-activities/training-of-facilitators/

Recommendations for Facilitating the Gathering of Essential Data and Ensuring Data Integrity

- Encourage countries to prepare annual SDG 6.5.1 reflection reports to capture/show changes and improvements and contribute to the preparation of 3-year SDG 6.5.1 reports.
- Develop a shared, open data platform for regular updates on the status of SDG 6.5.1 by countries. Respondents emphasised that this should be designed to be easily accessible to all countries. Others mentioned that GWP and/or UNEP should spearhead the development of this platform, potentially expanding the capacity of the IWRM data portal.
- Develop a single, in-country knowledge portal/

platform on IWRM to facilitate the sharing of data, knowledge and experience among all key national water stakeholders (government institutions and ministries, subnational, river basin, non-government, academia, research institutions and private/business sector). Some mentioned that GWP or UNEP should assist countries in establishing this platform and system.

- Develop specific standards and data frameworks for effectively monitoring IWRM implementation. This could be developed by GWP in collaboration with UNEP.

Ensure availability of transboundary data through agreed transboundary coordination mechanisms.

3.3 Consultation Process: Presenting Findings, Building Consensus and Reaching Agreements on the Degree of IWRM Implementation

Pre-Consultation Activities

To ensure the readiness of country focal points, facilitators and survey respondents, several activities were implemented to facilitate countries in the Asia-Pacific region prior to consultation workshops. The pre-consultation activities were aimed to contextualise the survey instrument into local contexts. Firstly, by having country focal points and country facilitators participate in the online training course for SDG 6.5.1 reporting and the translation of survey instruments.

To ensure respondents' readiness to participate fully, facilitated countries sent advanced copies of the survey or discussion papers to participants. This provided them with adequate time to study the questions, fill out the required information, gather missing data/information and consult with other colleagues from their organisations on their institutional viewpoint or position. The use of a presentation, which included an initial briefing and familiarisation with the question, also helped prepare the participants prior to the workshops. This information contained the purpose and objectives of the survey, shared examples of best practices and international experience, and explained the most common mistakes that can arise when deciding on the extent of implementation progress. This input helped develop a shared working framework and provided more clarity when considering a particular question. It ensured that participants understood fully what they were scoring. It also minimised differences in perceptions and broadened the participants' mindset. Facilitated countries undertook the collection of evidence and data prior to the consultation process.

Models of Stakeholder Consultation

There were three main modalities used for multi-stakeholder consultation: online, blended and face-to-face (offline). The model of consultation used were influenced by the: a) recommendations of health ministries on public gatherings

Figure 17 Face-to-face workshop on IWRM survey held by Pakistan

due to the COVID-19 situation in the country; b) availability and stability of internet connectivity; and/or c) decision on what would be most effective way to facilitate the completion of SDG 6.5.1 monitoring and reporting in a timely manner.

Five facilitated countries (Bangladesh, Indonesia, Mongolia, Nepal, and the Philippines) conducted online consultations, while four countries from Central Asia and the Caucasus region (Georgia, Tajikistan, Turkmenistan, Uzbekistan) and two countries from Southeastern Asia (Malaysia, Vietnam) conducted a blend of offline-online consultations. Within the blended modality, the number of phases and sequence of activities varied from one country to another. Face-to-face consultation was done in five countries: Kyrgyzstan, Cambodia, China, Laos and Pakistan.

Challenges

The main challenge across countries and regions identified was building consensus and reaching agreement on the scores for each question. Based on country stakeholder consultation reports, the factors are as follows:

- A divergence of scores between national government agencies and representatives from non-governmental organisation. Respondents who represented the policymaking and planning or implementing agencies tended to assign higher scores, while respondents from other organisations assigned lower scores. This can be attributed to organisational bias and because non-governmental stakeholders tend to feel that their participation or role is inadequate. However, the threshold descriptions given to the questions clearly point at the arrangements by law or policy, not the level of satisfaction felt by the stakeholders. Another factor is the different understandings of technical terms, questions and responses.
- A divergence of scores among national government agencies/ministries internally. Government representatives, whilst working in a similar area, may have different levels of expertise and experience, thus leading to different perspectives or ways of looking at IWRM. Another reason is the varying access to data, information, or knowledge base.
- The threshold description may be ambiguous, making it difficult to determine an appropriate score. Some questions have crosscutting topics with a number of ministries involved. There are variations in their geographical scope and extent of implementation, which may make it inappropriate to take the average score from all these geographic perspectives.

Innovations

Face-to-Face Consultation Workshop held in Lao PDR
Four small (maximum of 11 participants) thematic discussion groups were formed to correspond with the four IWRM dimensions of the survey framework. This was intended to deepen discussions on the assigned themes and specific areas of consideration. The small discussion groups then shared the results of their conversations with the plenary (all participants). The other groups provided comments, asked for clarification on perceived issues or unclear points in the presentation.

Challenge 1
Different perspectives and interpretations due to multidisciplinary nature of stakeholders and varied perspectives.

Challenge 2
Readiness of stakeholders: Not all stakeholders read the survey in detail prior to stakeholder consultation – workshops

Challenge 3
Gaps or barriers to understanding:
Difficulty in understanding questions and their threshold descriptions
Difficulty in communicating the logic for the question scores and narrative responses.

Challenge 4
Building consensus and reaching agreements on scores for degree of IWRM Implementation

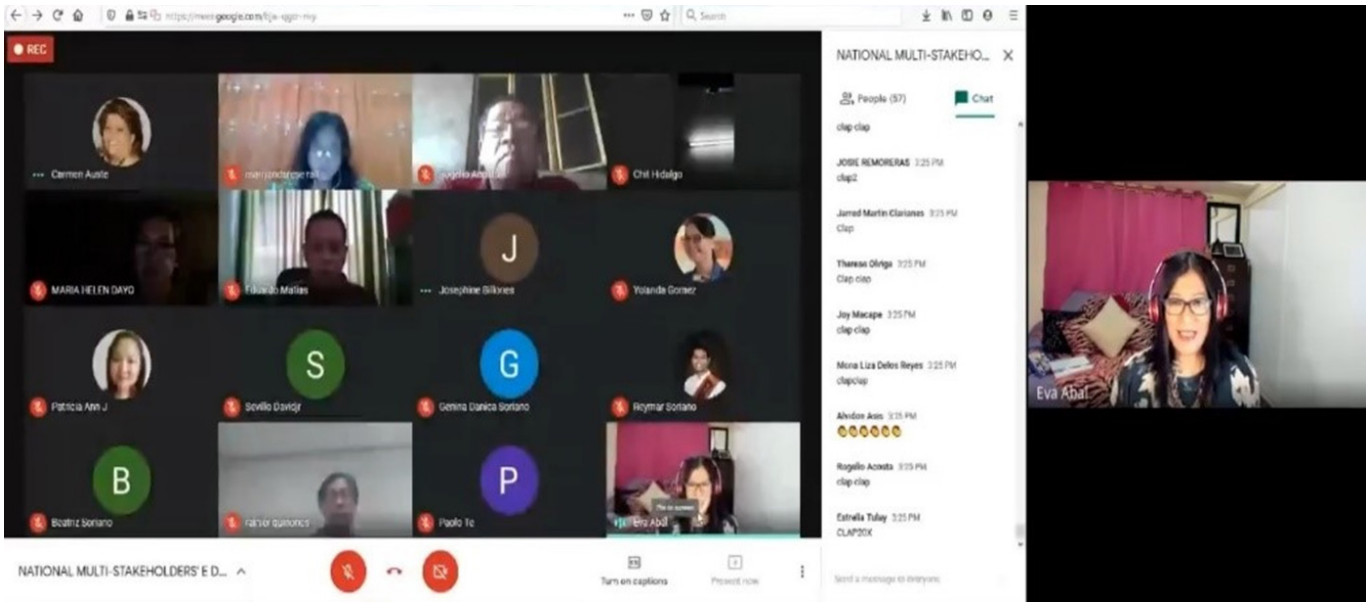
Figure 18 Face-to-face multi-stakeholder workshop on IWRM survey held by Lao PDR

Online consultation workshop held in the Philippines

Two consultations were held: one at the subnational level and the other at national level. While the subnational session only had presenters from the National Water Resources Board (the national focal organisation) tasked with presenting 2017 highlights and 2020 status, the national multi-stakeholder e-dialogue incorporated "lightning presentations (5-7 minutes each)" from key national agencies/ministries based on evidence data collecting and draft prepared by the facilitator and the country focal point. These focused on providing answers to key assessment sections/questions that had inadequate data. The approach worked well as presenters were able to share targeted information required within the time allocated. This approach also provided an increased level of involvement from attendees.

In addition, at the National e-Dialogue for National Government Agencies, a speaker from the Australia-based International River Foundation was invited to talk about IWRM PLUS: River resiliency to enrich and expand participants' interest and understanding of how IWRM is embedded and localised. It also provided a motivational boost to encourage participants to break existing mental barriers and traditional paradigms. It met all these objectives and participants were most appreciative of the fact that they did not only get to share their viewpoints, insights, and experiences, but were also able to enhance their knowledge.

Figure 19 Online multistakeholder workshop on IWRM survey held by the Philippines



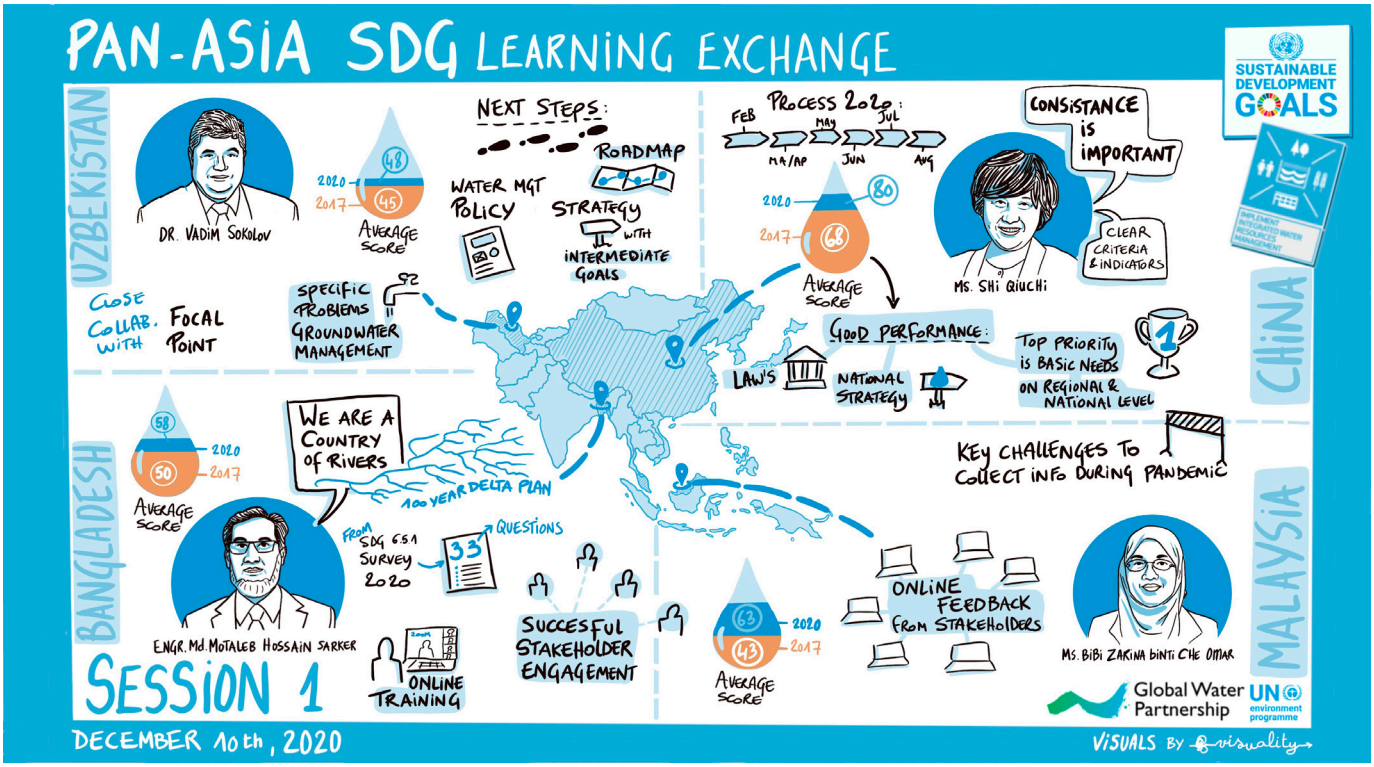
Recommendations

Most countries and participants in the learning exchange workshop recognised the importance of the country facilitator. Facilitators are considered essential in encouraging stakeholders and groups to be actively involved in the process, moderate differences, and resolve any conflicts, when and if they arose. Respondents across countries and subregions appreciated the GWP and Cap-Net Training for facilitators (Figure 20). One country even recommended that UNEP and GWP should: Create a permanent and publicly available learning platform, in all official UN languages, for training of facilitators in IWRM and SDG 6.5.1 monitoring and reporting.

Other recommendations are related to time and the mechanism for experience sharing:

- Building a climate of trust and ensuring political engagement and support of leadership. It is important for the country focal points to build and leverage good relationships with stakeholders.
- Ensure adequate time is given for the preparation of all needed materials. Ensuring necessary preparations are done well and in a timely manner.
- Allocate appropriate time to the process to maximise the participation of stakeholders.
- Develop a platform or community of practice for sharing best practices and innovations.

Figure 20 Countries presentation and reflection on SDG 6.5.1 monitoring process (taken from the Pan Asia Learning Exchange Workshop held in December 2020)



4 Reflection on Key IWRM Dimensions: Key Challenges and Recommendations from 16 Countries in the Pan-Asia Region Based on the 2020 IWRM Survey

photo source: GWP / Mary Christine P. Villanueva (https://www.flickr.com/photos/globalwaterpartnership/44786643 28/in/album-72157623615351715/)2020

This section consolidates and summarises the findings of SDG 6.5.1 IWRM monitoring from 16 countries in the Pan-Asia region with multi-stakeholder approach as presented in the previous section. It reflects on the status, key challenges, and recommendations from four IWRM dimensions: the Enabling Environment, Institutions and Participation, Management Instruments, and Financing. The analysis is based on the official SDG 6.5.1 country reporting and stakeholder consultation reports. This section provides examples of barriers, enablers, and good practice models as shared by participating GWP-facilitated countries. Many of these are likely to be relevant to other countries in the region.

4.1 Enabling Environment

Overview of the Enabling Environment

The enabling environment is the conditions that help support the implementation of IWRM. It consists of national and subnational policies, laws, national and basin/aquifer-level plans and arrangements for transboundary water resources management.

The enabling environment is determined by national, provincial, and local policies and legislation that constitute the "rules of the game". It provides a set of solid foundations, anchoring water governance structures to achieve their goals, while balancing the social, economic, and environmental demands for water resources. IWRM is a guiding principle in creating the enabling environment. These policies and legislative frameworks underpin regulatory norms for water use, conservation, protection, and water conflict management. They also link to structures for investment and financing.

Table 3 Progress in establishing an enabling environment for IWRM in 16 facilitated countries

Facilitated countries	Score based on elements in Enabling Environment						
	1.1 National level			1.2 Other levels			
	a. Water resource policy	b. Water resource law	c. IWRM plan	a. Subnational water resource policy	b.Basin/aquifer management plans	c.Transboundary arrangements	d.Subnational water resources regulations
Kyrgyzstan	40	50	20	10	20	30	20
Nepal	40	30	20	0	20	60	20
Uzbekistan	60	30	30	40	30	70	30
Georgia	70	30	50	n/a	20	40	n/a
Tajikistan	60	50	50	40	50	60	30
Mongolia	60	70	50	50	50	50	50
Bangladesh	80	70	70	60	50	30	50
Viet Nam	70	70	50	60	50	60	60
Pakistan	60	60	70	80	50	60	50
Cambodia	70	80	60	50	50	70	50
Turkmenistan	60	60	60	60	60	80	60
Philippines	70	80	70	50	60	n/a	50
Lao People's Democratic Republic	50	80	70	70	60	80	40
Indonesia	70	70	70	60	70	70	60
Malaysia	70	80	60	80	60	90	90
China	90	90	80	80	80	80	80

n/a = not applicable; Very low (0-10); Low (20-30); Medium-low (40-50); Medium-high (60-70); High (80-90); Very high (100)

Status of Enabling Environment: Policies, Laws and Plans

Thirteen out of 16 countries had existing laws, policies, plans, and regulations that support IWRM implementation at both the national, subnational or basin level (scores of 40 and above, for question 1.1.a,b,c and 1.2.a,b,c,d in Table 3).

Of these, three countries, Pakistan, Indonesia and Uzbekistan, reported the introduction and enactment within the last three years of their enabling documents[11]. Furthermore, Uzbekistan shared that in 2022 it plans to prepare the "Water Code of the Republic of Uzbekistan", which will codify all the norms of the current legislation concerning water supply, water use and water consumption and protection, and will consider specific aspects at the subnational level. At the basin level, all basins in China have formulated integrated water resources planning.

Three other countries, Bangladesh[12], Nepal[13], Georgia[14], shared that they are in the process of approving or implementing newly formulated IWRM/Water Resources laws, policies, or strategic frameworks.

The Philippines and Bangladesh declared a substantial progress in the development of IWRM-related policies and subnational legislation. These new policies either fill existing gaps (e.g., biodiversity, climate change, agriculture/irrigation-related, groundwater and aquifer management, industrial water use, gender, stakeholder engagement/participation) in the policy environment, provide an update to or enhancement of existing policies, or expand the coverage and scope.

In relation to water policy at subnational level, Kyrgyzstan reported a score of 10 out of 100 for subnational water resources policy in the official SDG 6.5.1 survey. It mentioned that the local administrations issue their own local normative and legislative acts/papers on the use of water bodies without taking into account the national interests and principles of IWRM.

Key Challenges: Policy Implementation Gap and Competency Gap

Eleven countries[15] stated that while they have the necessary laws and policies in place, they are experiencing challenges and barriers to full and consistent implementation, as well as the enforcement of related standards, guidelines, and implementing rules and regulations.

Four countries[16] asserted that their water resources laws and IWRM-related policies need to be reviewed, revised, updated, and aligned with the current situation on the ground to be realistic.

Vietnam reported that the issuance of policies on water resources management as "relatively complete", but effective implementation needs to be further considered, enhanced, and promoted.

There are two main challenges identified based on IWRM country survey in the facilitated countries:

1. Policy Implementation Gap

Across all countries in all four subregions, a policy implementation gap has been reported. Among the major reasons cited for this are: a) Contradictions or inconsistencies in policies, b) Weak or poor coordination among government organisations in the water sector, c) Limited capacities, d) Poor enforcement and inadequate monitoring, and e) Lack of concrete and detailed guidelines for effective implementation of some laws and policies.

2. Competency Gap

Five countries[17] observed a lack of competency in staff and specialists assigned to develop and implement IWRM policies due to a lack of sufficient technical expertise, or inadequate experience in IWRM. Inadequate human resources to support IWRM implementation were also mentioned as a constraint hindering effective implementation at both national and subnational levels.

11 National Water Policy (Pakistan; 2017), Water Resources Law (Indonesia; n017/2019), and Water Resources Strategy and Roadmap (Uzbekistan, Presidential Decree No UP-6024; Concept for the Development of the Water Resources of the Republic of Uzbekistan (2020-2030)

12 Bangladesh : Water Resources Development and Management Act (2019, drafted; Bangladesh Water Resources Development and Management Rules under preparation)

13 Nepal : National IWRM Policy, National Integrated Water Resources Act, (awaiting approval for enactment by parliament), National Long-term Vision on Water Resources and Energy Sector (awaiting approval for implementation)

14 Georgia : Law on Water Resources Management (draft already finalised, awaiting approval)

15 Bangladesh, Nepal, Cambodia, Indonesia, Lao PDR, Philippines, Vietnam, Kyrgyzstan, Mongolia, Uzbekistan, China

16 Bangladesh, Pakistan, Indonesia, Turkmenistan

17 Nepal, Cambodia, Lao PDR, Vietnam, Philippines (Source: Multi-Stakeholder Consultation Reports from each countries)

Box 5. The importance of concrete and detailed guidelines for effective law and policy implementation

China and Bangladesh provided concrete examples illustrating the lack of concrete and detailed guidelines or specific indicators. China cited water-saving standards, water quotas, ecological flow, groundwater management, and other aspects of the basic work as lacking measurable specific indicators. Bangladesh shared that their Cyclone Shelter Management Policy (CSMP, 2011) cannot be fully implemented due to lack of detailed guidelines about estimated demand for potable water, the number of latrines, water points, O&M system, management process, etc. Similarly, their National Agriculture Policy (NAP) of 2013 still has no provisions and no specific guidelines for dealing with the tension between landowner farmers and shrimp cultivators. While there are stipulations for the installation of tube wells on farmers' fields for small-scale withdrawal of groundwater for activities like irrigation, there are none for larger uses such as shrimp cultivation.

Ten key areas were identified as requiring capacity development and enhancement to improve the competency of staff

1. IWRM principles and practice (conceptual background; good practice models and best practices for implementation in other countries)
2. Use of digital technologies in IWRM implementation
3. Technological developments in IWRM
4. Climate resilient strategies, approaches, models
5. Engineering perspectives
6. Flood plain management
7. Risk management
8. Policy development and policy review
9. Monitoring of IWRM implementation
10. How to adjust/adapt so that laws and regulations developed are "best fit" with what is needed, based on the context and realities of the country

Status of Transboundary Laws, Policies and Agreements

Fifteen out of sixteen countries mentioned that the arrangement for transboundary water management has been started and implemented (score 30 and above) (for question 1.2 c in Table 3). China has signed agreements for transboundary water management of the most important basins with neighbouring countries such as Russia, Mongolia, Kazakhstan, and India as well as the Mekong River Commission. Kyrgyzstan mentioned that the transboundary arrangement with Kazakhstan on Chu and Talas River, and with Uzbekistan on Orto-Tokoy reservoir has been established to solve transboundary issue.

Four countries[18] pointed out several major challenges, gaps and needs related to weak, inconsistent, or partial implementation of transboundary agreements and arrangements. The challenge of transboundary policy was also identified as an impact on the lack of funds or inadequate financing for strengthening the institutions and for stakeholders' engagement.

Few countries also mentioned the need to update previous agreements and arrangements given current and emerging scenarios. This includes specific needs such as: provisions on groundwater aquifers and environmental flows[19] effective mechanisms for transboundary cooperation among upstream and downstream countries[20] and additional major international rivers and lakes.[21]

Uzbekistan mentioned the need for strengthening the regional or subregional legal framework for the use of water, and a stable and effective mechanism for regional water and energy cooperation. The importance of building and maintaining trust between riparian states was also highlighted.

18 Pakistan, Vietnam, Tajikistan, Uzbekistan (Source: Multi-Stakeholder Consultation Reports from each countries)

19 i.e. Indus Basin Treaty (IBS) 1960; Pakistan

20 Vietnam

21 Vietnam, Tajikistan

Box 6 Learning from transboundary agreement in Asia

China, Cambodia, Lao PDR, Myanmar, Thailand and Vietnam have jointly established a Lancang-Mekong Cooperation Framework for Sustainable Development of the Great Region on 23 March 2016. A data sharing mechanism has been signed in the agreements for transboundary management in Lancang-Mekong River. This transboundary agreement was established to promote the economic and social development of countries in the subregion, enhance the well-being of the people of all countries, narrow the development gap between the six countries, support the construction of the ASEAN community, promote the implementation of the United Nations 2030 Agenda for Sustainable Development, and promote South-South cooperation.

Recommendations for Creating a Favourable Enabling Environment to Accelerate IWRM Implementation

1. Accelerate the passing of critical breakthrough laws for water, environment and natural resources. This involves strengthening legislative advocacy; sensitising and raising awareness of political leaders on IWRM (Nepal); prioritising the formulation of derivative government regulations, presidential and ministerial decrees (Indonesia) and engaging stakeholders to amplify the appeal and urgency of the need for Water, Environment and Natural Resources laws to be a priority on the legislative agenda (Philippines[22]).

2. Improve implementation and strengthen compliance with laws, policies, guidelines and regulatory standards.

Cambodia mentioned that this recommendation involves strengthening the capacity of IWRM implementers at all levels, but most importantly at the subnational level. Malaysia mentioned the need to embed reliable and state-of-the-art systems and technologies for tracking compliance and enforcement; strengthening capacity and capability to boost enforcement, focusing on increasing provisions for financial, technological support, technical expertise and other regulatory support.

Lao PDR and Indonesia mentioned the need to engage in widespread dissemination of laws, policies , guidelines, regulatory standards to all stakeholders at all levels.

22 passage of Draft Bill on creation of Department of Water has been stalled, together with other major water related laws

The Philippines mentioned the need to conduct training on law enforcement for water and environment, natural resources, and establish forensic laboratories that capture evidence of environmental crimes.

3. Develop laws, policies or amend, enhance, update existing laws, policies, guidelines and regulatory standards. Four main factors were identified as drivers for this need: a) Climate change and global warming, b) Water security and water scarcity, c) Urbanisation and population growth, and d) Changing hydrogeological conditions and the difficulty of adapting to current situational realities (since some regulatory standards were developed many years ago).

4. Harmonise and align cross sectoral and interagency policies. This refers to national and subnational or basin-level policies, and national policies coming from different National Government Agencies and Ministries; and policies or legislative orders at different governance and administrative-political levels which should complement or support each other and not contradict or be in conflict with one another.

Twelve policy areas were identified from the country stakeholder consultation reports as requiring harmonisation and alignment. These are a) Water, land and forest codes; b) Water for people, water for economy, water for environment; c) Resilience to water related disasters; d) Water and energy; e) Water for agriculture, environmental protection, drinking water and the industrial sector; f) Conjunctive use of surface water, groundwater and rain water; g) Water and navigational/shipping water transportation policies; h) Flood/drought management; i) Land use zoning; j) Agro-climate zoning; k) Coastal area development with livelihood opportunities; and l) Separation of groundwater ownership from land ownership.

It was observed that the non-alignment of policies and guidelines by different agencies and offices at different implementation levels leads to confusion and, at times, misunderstanding and conflict among stakeholders. This has also resulted in poor, slow or stalled implementation.

5. Strengthen Systems and Processes. Firstly, there is a need for collaborative platforms and mechanisms leading to better integration, enhanced synergies and increased effectiveness. Secondly, enhanced systems and processes are required to improve monitoring and information exchange.

6. Capacity Enhancement, Knowledge, Information, and Experience Sharing. Four countries (Bangladesh, Georgia, China and the Philippines) recognised the need to collaborate with universities, academic and scientific research institutions for water resources monitoring, capacity

development initiatives and research. For Bangladesh, the specific areas requiring in-depth research are climate change impact and issues, groundwater management, natural environment, aquatic ecology, in-stream water demand, and a feasibility study for adaptation of new technologies. China and the Philippines also highlighted the need for studies on groundwater overextraction and management, as well as ecological protection and restoration.

The establishment of a knowledge hub or portal for data, information and experience sharing on water and water resources management was proposed by Cambodia and the Philippines to facilitate continual exchange on the progress of IWRM implementation as well as the sharing of best practices, effective innovations, and good practice models. In addition, the Philippines proposed two more innovative actions: the creation of a river basin score card and annual publication of the state of the Philippine rivers.

Box 7. IWRM mainstreaming in Academia

Georgia has a two-year Master's Programme on Environmental Management and Policy which was established in collaboration with the Georgian Institute of Public Affairs (GIPA), LEPL Environmental Information and Education Centre (EIEC) of the Ministry of Environmental Protection and Agriculture, and the German Society for International Cooperation (GIZ). Integrated Water Resources Management is one of the main courses under this program.

For the primary school level, the Centre has developed a training module "Teaching Environmental Issues in Primary School Subjects" and conducted trainings for school curriculum experts. Besides the theoretical part, the training also includes various practical exercises. Water and energy-related topics were among the most important parts of this training module. The Centre has also developed a textbook for preschool educators: "Preschool Environmental Education" which includes water and energy saving as one of the main topics. In 2019, about 2000 preschool educators from 1600 kindergartens all over Georgia, was trained by the EIEC. Currently, a new textbook "Environmental and Agricultural Education in Schools", for Grades I to VI is being developed by the Centre. Sustainable Management of Water Resources is one of the topics/chapters of the textbook.

4.2 Institutions and Participation

Overview of Institutions and Participation

A central element of integrated approaches to water resources management is that water should be managed at a range of levels, from national to local, in a coordinated manner. Adaptive and effective institutions are typically needed at all levels. These institutions need to ensure that planning and decision-making are inclusive and use a participatory approach involving the full range of relevant stakeholders.

Formal institutional arrangements and mechanisms for stakeholder engagement are elements of governance that are key to social equity, economic efficiency, and ecological sustainability in water management. They ensure regular, inclusive, and wide participation and involvement of all stakeholders in IWRM implementation.

Stakeholder engagement and public participation also contribute to developing a sense of ownership and promoting a whole-of-society and whole-of-government approach to IWRM implementation. Such mechanisms make a positive contribution to "leaving no one behind", ensuring that populations or organisations that represent them have a platform where they can engage, be actively involved and have their voices heard.

Table 4 Progress in establishing Institutions and Participation for IWRM in 16 facilitated countries

GWP facilitated countries	Score based on elements in Institutions & Participation										
	2.1 National level					2.2 Other levels					
	a. Government authorities leading IWRM	b. Government cross-sectoral coordination	c. Public Participation	d. Private Sector Participation	e.IWRM capacity development	a.IWRM basin/ aquifer organisations	b. Public Participation	c. Vulnerable groups participation	d. Gender inclusion in laws/plans	e.Transboundary organisations	f. Subnational authorities to lead IWRM
Kyrgyzstan	40	40	40	10	30	20	50	20	30	40	10
Tajikistan	60	50	40	40	50	50	30	10	30	60	50
Mongolia	60	40	40	40	50	50	40	40	40	50	50
Viet Nam	50	40	50	50	60	40	50	30	40	50	50
Turkmenistan	60	40	20	80	50	80	10	10	20	80	80
Nepal	20	80	80	80	40	20	60	60	80	40	0
Uzbekistan	60	60	50	40	60	60	60	40	40	70	40
Georgia	50	80	80	80	60	0	80	40	80	40	n/a
Bangladesh	70	60	80	50	70	30	70	60	70	40	60
Pakistan	60	60	60	60	50	60	60	60	50	60	80
Lao People's Democratic Republic	60	70	50	70	60	60	60	40	70	70	60
Philippines	60	70	60	90	50	60	70	50	60	n/a	50
Cambodia	60	80	70	80	50	50	60	50	70	80	50
Malaysia	60	80	80	60	40	40	80	40	80	90	60
Indonesia	70	70	70	70	60	60	70	60	70	60	70
China	80	80	70	60	80	80	70	70	80	80	80

n/a = not applicable | Very low (0-10) | Low (20-30) | Medium-low (40-50) | Medium-high (60-70) | High (80-90) | Very high (100)

Status of Institutions for IWRM Implementation at National and Subnational Levels

Seven countries[23] reported that various institutions for IWRM implementation, at all levels, have already been set up (together with their corresponding mandates) and have the capacity to effectively lead IWRM implementation (scores of 60 and above, for questions 2.1.a and 2.2.a in table 4) . Furthermore, in those cases, the government's institutional structures for water resources management are well developed.

At the subnational and basin level, some countries identified and discussed strategic issues and concerns related to the institutional status of IWRM implementation.

- Lao PDR shared how river basin committees for the major river basins were disbanded (cancelled) due to the overlapping role with local authorities. The river basin management responsibility for all related river management issues was transferred to the local

23 Turkmenistan, Uzbekistan, Pakistan, Lao PDR, Indonesia, Philippines, China

authority. During the consultation process, stakeholders discussed the issue, looking into the advantages and disadvantages of being with or without a river basin committee. It was concluded that after the trial period of this new arrangement, the mechanism could be adjusted as needed.

- Uzbekistan conveyed how it is necessary to define in more detail the powers of the lower structures of the Ministry of Water Management and other involved authorities in the management and regulation of the implementation of IWRM components.
- The Philippines pointed out the need for scaling up IWRM support, and adoption and localisation at the subnational level (i.e., generating increased support and involvement of local government units).

Coordination Between National Government Authorities Representing Different Sectors on Water Resources Planning, Policy and Management

Eight countries[24] mentioned that coordination and communication between national government authorities and different sectors were established via a consultation process by providing opportunities for different sectors to take part in the policy, planning, and management process (score of 60 and above, question 2.1.b, in Table 4).

Some countries have established formal cross-sectoral arrangements and mechanisms such as water councils to ensure good coordination in water resource management. In Indonesia, there are two types of coordination between national government agencies. Firstly, the National Water Resources Council (NWRC) is legalised through Presidential decree and has a mandate in coordinating policy development in national water resources. Secondly, the coordination for national development plan formulation is assigned to the Ministry of National Development Planning. Malaysia also established the National Water Council, chaired by the Prime Minister, to coordinate between Federal Ministries that hold a mandate over aspects related to water governance. In Pakistan, the National Water Council (NWC) is the apex body supervising the implementation of the National Water Policy, and includes representatives of relevant federal government authorities as members. The Government of Lao PDR has established the National Environment Committee (NEC) chaired by the Deputy Prime Minister to provide policy guidance and oversee the implementation related to environmental and natural resource management issues at the national level. An IWRM Working Group is also established to maintain coordination in IWRM.

China emphasised that it has established cross-sector and cross-agency coordination mechanisms for water issues. It also shared that government bodies at all levels plan to increase communication and collaboration between the Department of Water Resources and the Departments of Development and Reform, Finance, Taxation, Natural Resources, Ecology and Environment.

Nevertheless, for some other countries, water governance remains sectoral and/or fragmented. Facilitated countries observed that coordination is a key challenge due to the large number of organisations in the water sector, under various ministries, having water-related responsibilities and accountabilities. For some countries, coordination gaps occur at the planning or policy level, while for others it is at the implementation level, or both.

Lack of transparency for information sharing and conflict of responsibility between national government agencies in the water sector are also mentioned as challenges that hinder coordination in water resources management policy and planning.

Stakeholder Engagement and Public Participation in Water Resources, Policy, Planning and Management at National and Subnational Level

Nine countries[25] mentioned that government authorities have regularly used information, experiences and opinions of the public to consult in water resources, policy, planning, and management at both national and local levels (score 60 and above, in question 2.1.c and 2.2.b, Table 4).

In Vietnam, Cambodia, and Indonesia, public participation is legislated through the Law on Water Resources, which regulates public participation of communities and stakeholders in the planning process through public consultations, focus discussions, partnerships, forwarding aspirations, and supervision. Another type of public participation in policymaking in Indonesia is exercised in the National Water Resources Council activities wherein almost 50 percent of its membership is from non-government entities representing relevant civil society groups, professional associations, and water-related companies.

In Georgia, one of the initiatives to ensure public participation is through the National Policy Dialogue on IWRM, which allows cooperation between different government agencies and civil society representatives. An important task under the National Policy Dialogue on IWRM is the evaluation of the existing water-related policies. This Dialogue is the mechanism for the implementation of the European Union Water Initiative (EUWI) in the countries of Eastern Europe, the Caucasus and Central Asia.

The Malaysian government has taken an innovative approach in gathering inputs for the Twelfth Malaysia Plan by setting up a dedicated page for individuals to participate in the submission of inputs, including in water planning.

24 Uzbekistan, Bangladesh, Pakistan, Lao PDR, Philippines, Cambodia, Malaysia, Indonesia, China

25 Nepal, Georgia, Bangladesh, Pakistan, Philippines, Cambodia, Malaysia, Indonesia, China

Few countries reported that a mechanism for multi-stakeholder participation is not yet in place (Lao PDR, Mongolia), which also emphasised the importance of having stakeholders involved from the beginning of the project (planning stage), and not only during the implementation period.

Bangladesh, China, the Philippines and Vietnam shared that academic and research institutions are also active partners in water resources management. However, research activities are often constrained by a lack of funds. In Pakistan, on-farm water management organisations work in close coordination with district governments in most of the country.

Bangladesh also recognised that NGOs have a significant role in environmental and water management planning. They highlighted how local and international NGOs are providing goods and services normally associated with the public and private sectors. This includes providing technical assistance for capacity development and financing water development projects. They also stated how UNDP and other United Nations Agencies, especially UNICEF, are actively supporting water sector programmes and water-related initiatives for rural development.

Private Sector Participation in Water Resources Development, Management and Use

Twelve countries[26] described private sector participation in the water sector were regularly involved in water resources development, management and water use activities (score 50 and above, question 2.1.d in Table 4).

Involvement of the private sector is typically related to two areas: water resources development and management (e.g., water supply, irrigation, hydropower, industrial, sanitation) and water resources policy, planning, management, monitoring and evaluation, and technical studies like environmental impact assessment (EIA). Bangladesh, Nepal, Cambodia, Indonesia and the Philippines highlighted the existence of ongoing public-private partnership initiatives. The Philippines and Indonesia also spotlighted the involvement of the private sector in programmes for water stewardship, environmental conservation, protecting river health, as well as collaboration in information-education-communication campaigns.

Indonesia categorised private sector participation in water resources development, management and use into three types: a) indirect participation in NWRC, as directed by Presidential Decree No. 4/2019 on Membership of NWRC, wherein 50 percent of membership should be from non-government entities, association, company from the private sector, b) based on Article 51 of Law No. 17/2019 on Water Resources, the private sector in the form of a legal company has the right to be involved in water use management through a license, and c) based on Law No. 1/2017 on Construction Service, the private sector, in the form of a legal company or an individual has the right to be involved in government projects.

Vietnam and Cambodia cited legal issuances for attracting and encouraging private sector investments in water resources development and management. For Vietnam, it is the Law on Public-Private Partnership Investment (No. 64/2020/QH14), while for Cambodia it is the Law on Water Resources Management (2007) as stipulated specifically under Article 7. In addition, the Rectangular Strategy of Cambodia promotes private investment, exploitation, protection and development of water resources.

Six countries[27] reported the need to further develop mechanisms for engaging the private sector and increasing their contributions. Uzbekistan spoke of an urgent need to develop principles and mechanisms for public-private partnerships and conditions for outsourcing certain water sector activities. China described private business participation at national level as currently being limited. Kyrgyzstan shared that the state is making efforts to enhance partnership with private and other organisations in economic areas, including the use of water resources. Currently, some projects in water infrastructure facilities have been implemented through public-private partnership, but this process is still insufficient. Vietnam observed that while private sector participation has improved and mechanisms for attracting private sector participation have been created, it has not yet reached its "full potential" due to low awareness, unclear mechanisms, and financial constraints. Indonesia emphasised the need to provide guidelines and capacity building programmes to improve quality and quantity of private sector participation. They also mentioned the need to provide soft loans as an initial capital to remove barriers to private sector participation (e.g. by small scale contractors). Cambodia, likewise, recognised the need to develop guidance/guidelines for effective involvement and increased participation of the private sector.

Public Participation: Engagement and Involvement of Vulnerable Groups

Five countries[28] reported that the procedure for facilitating the participation of vulnerable groups is currently in place with moderate participation in budget and human capacity (score 60 and above, question 2.2.c in Table 4). Two other countries[29] also had supportive laws and policies in place but felt actual participation was still limited (score 50, question 2.2.c, Table 4). Five others[30] shared plans and initiatives to further increase and improve the engagement and involvement of vulnerable groups. (score 40, question 2.2.c, Table 4).

26 Nepal, Georgia, Pakistan, Lao PDR, Philippines, Cambodia, Malaysia, Indonesia, China

27 Tajikistan, Uzbekistan, China, Kyrgyzstan, Vietnam, Indonesia, Cambodia

28 Nepal, Bangladesh, Pakistan, Indonesia, China

29 Cambodia, The Philippines

30 Mongolia, Georgia, Uzbekistan Lao PDR and Malaysia

The participation of vulnerable groups are primarily in disaster related programs and interventions, consultations for water supply and sanitation, small dams activities. Involvement in water resources planning and management varies across countries.

- Pakistan specified that vulnerable groups actively participate in disaster related interventions and have an active part in consultations regarding small dam activities. They also shared that vulnerable groups were also able to participate in the consultation processes regarding water resources planning and management for their region, through the Area Water Partnerships31 (AWPs). It should be noted that as per PWP experience, male to female ratio in these consultations is 1:1.
- Indonesia reported that the new water resources law (No. 17/2019), involves the majority of vulnerable groups, such as indigenous groups, ethnic minorities, internally displaced people, remote communities, subsistence farmers, people living in poverty, people living in slums and informal settlement (Article No. 5). This is related to fulfilling their minimal daily water demand. Vulnerable groups are also involved in planning.
- Nepal stated that their Irrigation Policy and Water Supply Policy mandates inclusion and participation of vulnerable groups in all phases of project implementation and management, including planning. These policies support the Constitution of Nepal (2015) which ensures GESI and equal rights for women, the poor, the vulnerable and people from different social groups. It has provisions for affirmative action to address historical disadvantages and a ban on sex or caste/ethnicity-based discrimination. Directives for implementation at provincial and local government levels are in the process of formulation.
- China underscored that they have great importance to equality for all and the participation of disadvantaged groups in water resources planning and management. These groups include ethnic minority residents living in remote mountainous areas, and minority residents who were immigrated to the North-western region due to the construction of large water conservancy and hydropower projects such as reservoirs and hydropower stations. It intended to further encourage and support vulnerable groups to regularly participate in activities related to water resources planning and management.
- Bangladesh mentioned that vulnerable groups are engaged, and their issues are addressed when conducting feasibility studies. In addition, in compliance with requirements of donor funded projects, vulnerable groups and ethnic communities are involved, with provision for inclusion in labour contracting. However, they were not yet directly involved in water resources planning and management

Two countries (Philippines and Cambodia) mentioned having supportive laws and policies in place, but mentioned that actual participation and involvement of vulnerable groups is still limited and more needs to be done to fully and actively engage them.

- The Philippines highlighted that their constitution, legal and policy framework enable representation, consultation and meaningful participation of vulnerable sectors in special governance bodies, strategic local special bodies, the Disaster Risk Reduction and Management Councils and River Basin Organizations and Committees. It also mandates institutionalization of "platforms for effective and reasonable participation at all levels of social, political and economic decision making".
- Cambodia reported it has several laws and policies for the protection and inclusion of vulnerable groups such as the National Social Protection Policy Framework 2016-2025, the National Social Protection Strategy for the Poor and Vulnerable. Generally, the Cambodia government, in line with the principle "no one should be left behind", has mandated 2% participation of vulnerable groups in all development plans and projects at national and sub-national level. The government also implements activities for SDG 16.7 on "Ensure responsive, inclusive, participatory and representative decision-making at all levels". Support and monitoring is provided by various ministries.

Five other countries[32] described constraints and way forward related initiatives on engagement of vulnerable groups.

- Mongolia shared that there is a divergent opinion on the sufficiency of participation and involvement of vulnerable groups in IWRM. They indicated that the issue of weak engagement of vulnerable groups in IWRM implementation will be addressed by the newly established RBCs at each basin.
- Similarly, Georgia pointed out that while participation of vulnerable groups is encouraged, further considerations are needed. They envisaged that once the Advisory Coordination Councils for the river basin management (RBM) is established, engagement and participation of vulnerable groups would be supported at the basin level. Georgia also reported that the National Strategy on Human Rights (2014-2020) provides the key framework

31 AWPs were established by Pakistan Water Partnerships (PWP) across the country and in vulnerable regions

32 Mongolia, Georgia, Uzbekistan, Lao PDR, Malaysia

for the inclusion, participation and involvement of vulnerable groups in decision making processes.

- Uzbekistan specified the use of the Labor Contracting modality for involving vulnerable groups and mentioned that for donor-funded projects, it is mandatory to involve vulnerable groups and ethnic communities, especially during the feasibility study phase of project formulation. They shared that as Concept- 2030 did not yet reflect the participation of vulnerable groups in the regulation of water management issues, this will be addressed when developing their "Water Code" and the Strategy for the Development of the Water Resources of the Republic of Uzbekistan.
- Lao PDR reported a lack of mechanism between sectors and that currently, participation is through the People's Assembly and/or the village elders group. They plan to involve more vulnerable groups in the IWRM process.
- Malaysia currently involves its indigenous communities in projects related to availability and delivery of safe, water supply. They intended to continue these engagements with vulnerable groups and further intensified their involvement in water resources planning, development and governance.

Capacity for Leading IWRM at National Level

Seven[33] countries reported that the long-term capacity development initiatives of various relevant ministries/ National Government Agencies have been implemented with effective outcomes, and the geographic and stakeholder coverage was very good (score 60 and above, question 2.1.e in Table 4). The Philippines specified that these capacity enhancement initiatives are related to: a) embedding IWRM in its flagship programmes and signature events, and b) facilitating/supporting IWRM implementation at the Local Government Unit (LGU) and river basin level.

Lao PDR and Pakistan pinpointed the capacity and competency gaps that exist at the national level. Lao PDR stated that they have a "young organisational structure with limited experience" in leading water sector development. They also asserted that "it is not only training but it could be training and coaching for some period of time... knowledge exchange forums would be of interest if other countries in the region could share lessons learned". Pakistan mentioned that the existing water resource-related organisations, including the Ministry of Water Resources, have limited capacity to lead the implementation of IWRM.

Four countries (Bangladesh, Malaysia, the Philippines, and Tajikistan) described capacity development programmes for IWRM as already in place, with the opportunity to improve the quality of these training initiatives, and also expand their coverage and reach.

Capacity for Leading IWRM at Subnational and Basin Levels

Bangladesh and China declared that their river basin organisations have the capacity to effectively lead IWRM implementation. Seven countries[34] describe capacity in IWRM implementation at the subnational and basin level as ranging from non-existent, limited, inadequate, weak, to needing improvement. In addition, some countries mentioned an inadequate number of necessary staff/personnel.

Gender Inclusion in Water Laws, Plans and Similar

Countries are in varying stages of gender inclusion, integration, and mainstreaming. Thirteen countries mentioned that gender consideration have been included in laws, policies, subnational legislative instruments and plans, but are still limited in terms of implementation, budget, and monitoring (score 20 and above, question 2.2.d, Table 4). A number of these countries also mentioned the presence of a designated/mandated office.

- Bangladesh: Gender participation is being ensured during the preparation and implementation of all plans, policies, and laws especially in water sector projects. A minimum of 30 percent and up to 50 percent of women are participating through water management groups and associations.
- Nepal: Policy and legislative instruments are already in place for mainstreaming gender equity and sensitivity indicators. However, the capacity to implement these instruments need enhancing, particularly at the subnational government level.
- Pakistan: Women had active roles in the formulation of the National Water Plan and its implementation plan at different levels. They participated in equal numbers as the male participants during the consultations and awareness campaigns run by Pakistan Water Partnership through its AWPs, especially in water scarce areas.
- Cambodia : Gender mainstreaming in all sectors and the NSDP is a government policy, that is monitored and evaluated at both national and sub-national levels. The Ministry of Women Affairs (MOWA) is in charge of conducting Monitoring and Evaluation for the gender responsive indicators. It also promotes participation of vulnerable groups of women (i.e. women with disabilities, indigenous women, women from religious minorities)in politics and decision-making. Gender responsive IWRM is mainstreamed into the 5-year Strategic Plan of the Water

33 Viet Nam, Uzbekistan, Georgia, Bangladesh, Lao People's Democratic Republic, Indonesia, China

34 Nepal, Pakistan, Cambodia, Lao PDR, Philippines, Vietnam, Uzbekistan

Resources and Meteorology as well as in water projects:

- Indonesia. Gender mainstreaming is in the Law No. 1/2017 on Gender Equity wherein one of the objectives is to ensure equity in access to resources, control, participation and benefits of development. Several government regulations and ministerial decrees on mainstreaming gender in various aspects have already been issued. Guidelines on Local Government Regulations for mainstreaming gender in development has been issued by Ministry of Woman Empowerment and Children Protection. However, explicit consideration of gender inclusion in water management is not regulated in the Water Resources Law (No. 17/2019). On the other hand, the Ministry of Women, Family and Community Development, has committed that gender 'inclusion' will continue, and water-related elements will be clearly marked for reporting purposes.
- Malaysia: The inclusion of 'gender' in laws or plans within water resources management is integral to Malaysia's development programmes. Under the Ministry of Women, Family and Community Development, gender 'inclusion' will continue, and water-related elements will be clearly marked for reporting purposes.
- The Philippines: A supportive policy environment, dedicated gender and development (GAD) focal persons, and budget allocation for GAD initiatives at both the national and subnational levels have contributed to the mainstreaming of gender as well as the development of gender-responsive programmes. In addition, the recent development of GAD tools for national government agencies and local government units has enabled the embedding and integration of gender dimensions into programmes, projects and initiatives. Oversight for GAD initiatives in all levels is provided by the National Commission on the Role of Filipino Women.
- Vietnam. The Law on Gender Equality No. 73/2006/QH11 which was adopted in 2006 by the National Assembly (2006), is currently being revised to include more sectors such as climate change. The gender equality goals are: eliminate gender discrimination, create equal opportunities for man and woman in socio-economic development and human resources development in order to reach substantial equality between man and woman, establish and enhance cooperation and mutual assistance between men and women in all fields. Gender equality is present in principle in all government policies and programs, however, there's no specific gender elaboration in the Laws of water resources and Irrigation.
- Turkmenistan: Gender is being addressed through the implementation of the updated National Action Plan for Gender Equality in Turkmenistan for 2021–2025.
- Kyrgystan. Guarantees of gender equality are enshrined in Kyrgyz legislation (i.e The National Development Strategy of the Kyrgyz Republic: 2018-2040, National Strategy of the KR for Achieving Gender Equality, National Plan of Action for Achieving Gender Equality in the KR). Key conventions on women's rights, including the Convention on the Elimination of all forms of Discrimination against Women (CEDAW) have also been ratified. It should be noted that the official representation of gender issues, the application of gender parity rules and the impact of measures taken on the achievement of final results in the field of IWRM are only partially taken into account.

Two countries, Uzbekistan and Georgia, shared future plans on gender integration and mainstreaming.

1. Uzbekistan: It is necessary to take gender issues into account when developing the "Water Code" the Strategy for the Development of the Water Resources of the Republic of Uzbekistan until 2030. There has to be alignment between the water law with the law which guarantees equal rights and opportunities for women and men.
2. Georgia: It is hoped that once river basin management (RBM) is established, mainstreaming of gender issues and gender equity at the basin level will be ensured.

Two other countries, China and Mongolia, reported that they had undertaken discussions on the necessity of gender-specific objectives for water resources management as well as the sufficiency of current levels of gender participation.

1. China asserted that since the constitution states that men and women are equal and there is a guarantee of equal pay for equal work, the gender concern/component is already being recognised. However, a few suggested that it is still an issue, citing that no women-specific policies have been formulated.
2. In Mongolia, some participants assumed gender involvement in IWRM as being open and sufficient while others considered this as not being the case.

Further information on advancing gender mainstreaming in water resources management can be found in a publication developed by GWP and UNEP-DHI[35], in which **9 out of 23 Pan-Asia countries** were studied.

35 https://www.gwp.org/en/sdg6support/gender/

Transboundary Capacity

All 15 countries with transboundary arrangements mentioned the organisational framework for transboundary arrangements has been established and implemented (score 40 and above, question 2.2.e, Table 4).

Some countries mentioned specifically the issue and recommendation for organisational capacity in transboundary water management, as follows:

- Malaysia. There are task forces established in certain shared basins and aquifers; this provides an opportunity for the states to upscale existing arrangements and develop new arrangements. Regarding transboundary water management, there is evidence of international transboundary cooperation, e.g., Sungai Golok in Kelantan bordering with Thailand, with the organisational framework in place for many years, and the engagement of the two countries made publicly available through a dedicated website. It was mentioned that there is the need to structure a more formal arrangement for areas where there are no specific agreements, such as in Sebatik Islands between Malaysia and Indonesia, which is currently in research collaboration between the countries and hopefully will lead to an arrangement in the future.
- Uzbekistan. In 2018-2019, the Executive Committee of IFAS (the International Fund for Saving the Aral Sea) began work on improving the organisational structure and legal framework for regional cooperation, necessary to intensify the promotion of an agreement between all countries of the Central Asia region to ensure their practical implementation.

Table 5 Transboundary organisation mentioned by 16 facilitated countries (UNEP-DHI, 2021)

Name of country	Name of organisation	Transboundary arrangement
Bangladesh	Joint River Commission (1972)	Ganges Water Sharing Treaty (water sharing)
Bangladesh, Bhutan, India and Nepal	Joint Working Group	Ganges-Brahmaputra-Meghna Basin: Teesta Treaty and others (transboundary water management and hydropower)
Malaysia and Thailand	Joint Committee and Joint Steering Committee	Sg. Golok Malaysia-Thailand (management of shared basin)
Kyrgyzstan and Kazakhstan	Commission of the Kyrgyz Republic and the Republic of Kazakhstan (2000)	River Chu and Talas (water management facilities and shared water supply)
Kyrgyzstan and Uzbekistan	Commission on the interstate use of Orto-Tokoy	Orto -Tokoy (Kasansay reservoir) – technical safety of reservoir
Cambodia, Lao PDR, Thailand and China	Mekong River Commission (MRC) consist of 3 bodies: Council, Joint Committee and Secretariat	Mekong River Basin (facilitate cooperation between countries and as knowledge hub on water resources management that helps to inform the decision-making process based on scientific evidence)
Nepal and India	• Joint Standing Technical Committee (JSTC) • Joint Committee on Inundation and Flood Management (JCIFM)	Sharing water and developing a multipurpose project on a border river
Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan	Interstate Commission for Water Coordination of Central Asia (ICWC), with 5 executive bodies: BWO "Amudarya", BWO "Syrdarya", SIC, Secretariat and CMC.	Aral Sea basin (to make binding decisions on current and future issues of interstate water allocation and water use)
Turkmenistan and Afghanistan	Joint commission (meeting twice a year)	Murgab river

- Lao PDR. Lao Mekong National Committee Secretariat has the leading role in the country in coordination and cooperation with the regional organisation, Mekong River Commission.
- Indonesia mentioned that the role of managing and regulating trans-country river basins and aquifers is assumed by the central government, which is implemented by River Basin Organisations (RBO).
- Georgia mentioned that the transboundary arrangement with Azerbaijan is implemented through a Strategic Action Program (SAP) endorsed by the Ministry of Environment and Natural Resources Protection of Georgia and the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan in 2014. It presents a roadmap for countries for the implementation of the IWRM principles in the Kura river basin. Implementation of the SAP is supported by the GEF-UNDP project "Advancing IWRM across the Kura river basin" (Kura II). The document defines the priority areas for actions to resolve the most urgent issues identified. The coordinated implementation of the Program enables the countries to harmonise experiences, lessons learned, and resources where appropriate. In addition, the draft bilateral "Agreement between the Republic of Azerbaijan and Georgia on Cooperation in the Field of Protection and Sustainable Use of the Water Resources of the Kura River Basin" has been prepared, although the final draft has not been agreed upon yet.
- Pakistan. The capacity of the Office of the Pakistan Commissioner for Indus Waters (O/o PCIW), which is looking after implementation of the Indus Basin Treaty (IBT) is inadequate to tackle the current and future transboundary water management challenges.

Recommendations for Institution and Participation

1. Strengthen and enhance capacity development initiatives at all levels

Nine countries[36] across the region recommended key actions related to capacity development for key staff of national ministries mandated to implement water laws and policies as well as stakeholders of subnational, local/basin level organisations (i.e. river basin management committees or associations). Some countries emphasised that doing so has inherent benefits, such as: a) implementation of IWRM at a larger scale (Malaysia), b) more in-depth understanding of IWRM and development of practical skills to continue IWRM implementation (Cambodia), c) sharing of successful initiatives, good practice models, best practices and innovations, so they can learn from each other and build on each other's successes and collaboration with a wider range of stakeholders from diverse sectors (Philippines). Recommended activities were either structural (e.g., Bangladesh specified the need to establish a Central Water Resources Training Unit), related to learning materials development (Indonesia), or the increase in collaborative training and learning activities with the private sector, academia and the government (Philippines).

It is noteworthy that Indonesia highlighted that capacity development materials need to be designed to match the duties and tasks of target institutions, for example, capacity development for policymaking at the national and provincial levels, managerial, coordination, and technical aspects at all levels, operational and technical matters at river basin level. Capacity development materials also need to be matched with real world problems relevant to their context and address issues and challenges of water resources development and management at national, major island, provincial, and river basin levels.

Turkmenistan identified the need for capacity development in relation to the following topics: risk management, greater use of digital technologies in all aspects of IWRM, training on the theory and best global practice of IWRM for specialists from all involved ministries and departments, and for civil society representatives, including women organisations, vulnerable groups, farmers and managers of farmers' associations.

2. Strengthen institutional structures, systems, mechanisms and processes for coordination and collaboration between government ministries, agencies and offices

Various approaches are recommended to facilitate this. Three countries, Nepal, Pakistan and Turkmenistan, specified the need for an institutional set up and mechanisms which will improve coordination among government organisations for water resources planning, implementation and management. Nepal emphasised that these mechanisms should cross over to the non-water sector as well.

The Philippines suggested creating communities of practice or other knowledge/experience sharing mechanisms, across practitioners of IWRM, across agencies and institutions. This was viewed as further enhancing synergies, enriching IWRM related paradigms and perspectives, building more robust, integrated systems, responsive policies and innovative initiatives on IWRM and related concerns/issues.

3. Ensure a robust staffing structure with the provision of adequate human resources required by various ministries/agencies at all levels

Bangladesh and the Philippines shared their limitations in operational effectiveness and the reach of some key

36 Bangladesh, Pakistan, Cambodia, Lao PDR, Indonesia, Malaysia, Philippines, Vietnam, Turkmenistan

ministries, brought about by a shortage in human resources as well as absence or limited presence at the subnational (i.e. province or district) level.

4. Deepen and expand stakeholder engagement and public participation in IWRM implementation

Depending on the current degree of stakeholder engagement and public participation, different key actions were proposed. Where no mechanism or engagement platform is present, countries recommended creating a suitable mechanism for multi-stakeholder public participation. In areas with strong public participation and widespread stakeholder engagement, an intensified collaboration was recommended. Still others mentioned the need to continue and expand stakeholder engagement and public participation to nurture shared responsibility for water resources management, and to bridge and build support for government initiatives with local communities, community-based organisations, non-governmental organisations, and the private sector.

In addition, the development of a Stakeholder Engagement Policy by national government agencies and river basin organisations was recommended by the Philippines to serve as a framework and guide regarding who to engage, when, how, and at what level of engagement (i.e. expected/required for maximum results).

5. Gender mainstreaming in water resources management

This recommendation came in particular from Indonesia and the Philippines. Indonesia elaborated on the need and value of ensuring that gender mainstreaming is context and culture-sensitive and guided by an operations manual on mainstreaming gender in water resources management considering the diversity of social, cultural and local wisdom characteristics of the people of Indonesia. This publication should include definitions, guidelines and standards to be used in gender mainstreaming for water resources management.

The Philippines suggested that the gender lens should be utilised in reviewing the extent to which current RBO plans and programmes are already gender responsive and whether existing documents are gender fair. It also pushed for three innovative actions:

1. Adaptation of existing Gender Responsive and Women Empowerment (GRWE) indicators for use in river basins
2. Development of a customised Gender and Development checklist tool for river basins
3. Establishing a system for tagging and tracking Gender and Development expenditures for IWRM.

6. Accelerate the scaling up of IWRM implementation, localisation and operationalisation at the subnational or Local Government Units (LGU) level

The Philippines proposed the following key actions for this desired outcome:

- Develop a step-by-step Guidebook on the IWRM implementation journey in the river basin that includes processes and mechanisms of participatory governance and how to undertake participatory monitoring and evaluation in river basins.
- Engage Leagues of Provinces, Cities and Municipalities as IWRM champions and partners. Collaborate with them in developing a national registry of LGUs who have adopted IWRM or have localised and operationalised IWRM initiatives and related elements.
- Continue the action-focused, capacity development activities for RBOs on: a) planning, b) implementation, and c) periodic monitoring and evaluation of progress and status of IWRM/river basin plans. Follow through coaching and reinforcing activities should also be integrated into capacity development initiatives to ensure the application and sustainability of learnings.
- Develop programmes/initiatives for continuous enhancement of LGU capacity and key competencies essential for IWRM localisation/operationalisation, monitoring and evaluation. Onsite coaching and guiding of LGU teams on IWRM implementation should be considered.
- Include key aspects of IWRM localisation/ operationalisation in the Department of Interior and Local Government (DILG) Good Housekeeping Seal for Local Government Units (LGU); in this way IWRM becomes truly mainstreamed into what is expected and prioritised by LGUs.

7. Strengthen transboundary organisational arrangements

Some countries mentioned the need for capacity building and enhancement of national committee or national organisation within the country to better prepare for transboundary arrangements with other countries. Some countries also mentioned the need for research centre involvement as basis for decision-making between countries.

Pakistan suggested that a national organisation on transboundary management needs to be revitalised. The organisation shall be research-driven and should consist of highly skilled professionals to handle not only the supervision of implementation of the Indus Basin Treaty, but can also effectively lead other transboundary water management, such as the arrangement of the Kabul River shared with Afghanistan and the arrangement of the coastal region in Gwadar marine area shared with Iran. No law/treaty currently exists in both areas. The envisaged organisation shall be competent enough to advise the government of Pakistan in resolving transboundary issues/disputes to safeguard Pakistan's interest.

Malaysia recommended revisiting existing policies and regulatory measures to include measures for shared basin or aquifer management between state authorities to further intensify the establishment of transboundary management arrangements.

China mentioned the need to encourage more water resources management research institutions and related international river organisations to actively participate in international exchanges, and promote water resource cooperation between China and other international organisations and neighbouring countries

Indonesia mentioned that more trained staffs need to be added to national river basin organisation responsible for transboundary arrangements, namely B/BWS. Hydro-climatological Information System, including their guidelines, standards, manuals, and equipment, need to be prepared. Training to operationalise and report on the system for both sides/countries is also needed.

4.3 Management Instruments

Overview of Management Instruments

Management instruments refer to the tools and activities that provide information enabling stakeholders to make rational and informed decisions for water management. They provide the framework to implement management activities.

Long-term monitoring of hydrological systems – rainfall, streamflow, groundwater levels, water quality, etc. – is essential for understanding and assessing water availability. These are major inputs for the development of informed, science-based, context-sensitive policies, plans, programmes, and initiatives, leading to systematic and rational water resource allocation, management, and development.

Table 6 Progress in establishing Management Instruments for IWRM in 16 facilitated countries

Facilitated countries	Score based on elements in Management Instruments								
	3.1 National level					3.2 Other levels			
	a. water availability monitoring	b.Sustainable water use	c.Pollution control	d.Ecosystems management	e.Disasters risk reduction	a.Basin management	b.Aquifer management	c.In-country data sharing	d.Transboundary data sharing
Nepal	50	30	20	40	40	20	20	60	40
Georgia	50	60	40	50	50	0	0	80	20
Kyrgyzstan	30	60	60	60	40	20	40	40	40
Mongolia	50	50	40	30	40	50	40	50	40
Viet Nam	60	50	40	40	60	40	40	30	40
Tajikistan	50	60	40	40	50	50	50	40	50
Pakistan	60	50	20	30	70	60	40	60	50
Cambodia	70	70	70	70	70	40	20	60	50
Malaysia	60	50	60	60	60	60	40	70	60
Uzbekistan	70	60	50	60	70	60	60	60	50
The Philippines	50	70	70	50	90	50	50	50	n/a
Bangladesh	90	60	50	60	90	40	40	80	40
Turkmenistan	70	50	50	60	60	60	60	80	80
Indonesia	60	70	60	60	70	70	60	60	60
Lao People's Democratic Republic	70	60	80	80	60	70	30	80	60
China	80	80	80	80	90	80	80	70	70

n/a = not applicable | Very low (0-10) | Low (20-30) | Medium-low (40-50) | Medium-high (60-70) | High (80-90) | Very high (100)

Status of Management Instruments: National Level

For management instrument in water availability monitoring, 10 countries[37] reported that management instruments, such as rainwater or groundwater gauges and/or water level monitoring stations, are already in place and are well established. Long-term national monitoring has been carried out with adequate coverage but limited use by stakeholders (score 60 and above, question 3.1.a, Table 6).
In addition, the Philippines, Georgia, and Uzbekistan shared that there has been an increase in geographical scope and reach of water availability management instruments, while Malaysia shared future plans for its expansion of scope and reach.

Four countries[38] reported that their water availability monitoring instruments are still limited, inadequate, or insufficient.

37 Vietnam, Pakistan, Cambodia, Bangladesh, Turkmenistan, Indonesia, Lao PDR, Malaysia, Uzbekistan, China

38 Nepal, Kyrgyzstan, Georgia, Mongolia, Tajikistan

Moreover, six countries identified needs related to tools and equipment for monitoring water availability and groundwater status; three countries specified the need for more advanced tools (Lao PDR, the Philippines, Uzbekistan). Kyrgyzstan mentioned the need for technical reequipment of the monitoring network, while Georgia had a general comment on the need to purchase necessary equipment for use as management instruments. Turkmenistan shared its plans for further implementation of automated real-time systems for monitoring water consumption and data collection.

China and the Philippines reported significant improvements in geographical scope and number of groundwater monitoring stations. In addition, the Philippines reported the availability of hydrogeologic maps and a groundwater quality database. However, currently its tools only measure groundwater level fluctuation and quality, and not the full range of water availability dimensions. Pakistan observed it is still limited in this area.

Lao PDR shared its plans to establish at least 200 water quality monitoring and observation sites countrywide, with at least two river basins being selected for case studies. It also intends to undertake surveys and studies to investigate groundwater quantity and quality, as well as encourage the investigation of aquifers for potential river basins.

For sustainable and efficient water use management and pollution control, five countries[39] reported that while there are existing laws and regulatory instruments, the challenge is in implementation and enforcement. Thus, Malaysia has initiated a programme encouraging the public to report on pollution control violations, while the Philippines has intensified sectoral and multi-stakeholder initiatives for awareness raising and has taken steps to create a dedicated enforcement body.

Uzbekistan shared that the passage of environmental laws and institutional reforms has had a significant impact on improving the sustainable and efficient water use, pollution control, health of water-related ecosystems and reduction of impact of water-related disasters. However, it also shared that in groundwater management, the sustainable and efficient water use management, and a reduction of the devastating impact of water-related disasters, requires existing regulatory frameworks to be fully implemented.

It should also be noted that in previous sections several countries expressed the need for policy and regulatory instruments related to groundwater and aquifer management as well as pollution control.

For management instruments to reduce the impact of water-related disasters, 11 countries mentioned that they have implemented the instruments on a long-term basis with adequate coverage of at-risk areas (score 60 and above, question 3.1.e, Table 6). It focused on flood management, flood forecasting, and early warning systems. The Philippines has set this up not only for at-risk areas but also for five major dams. It also reported that it has completed the National Geohazard Assessment and Mapping.

Turkmenistan shared its plans to: a) create a system for analysis of water use efficiency in economic sectors and among large water users, and b) develop projects and implement measures to mitigate water-related consequences as provided for in their National Strategy on Climate Change.

The need for capacity development in management instruments of accountable institutions and organisations at both national and subnational levels was recognised by six countries (Nepal, Cambodia, Indonesia, Lao PDR, Kyrgyzstan, and Georgia) and will be discussed in detail in the recommendations subsection.

Status of Management Instruments: Subnational Level

Seven countries mentioned that basin management instruments were implemented on a more long-term basis, with adequate geographic coverage (score 60 and above, question 3.2.a, Table 6). While for aquifer management instruments, only 4 out of 16 countries were able to implement the instruments long-term with adequate geographic coverage (score 60 and above, question 3.2.b, Table 6).
For river basin management plans, four countries specified that this has started or is in the initial stage[40], while two other countries reported that they do not yet have subnational river basin management plans (Malaysia, Uzbekistan), and one other country, Lao PDR, mentioned that it does not yet have river basin management committees.

Bangladesh and Nepal pinpointed where their basin-wide planning is being undertaken (two districts in Bangladesh and four river basins in Nepal). The Philippines reported that all its 18 major river basins have completed 10-15-year climate resilient river basin management plans. Indonesia stated that various institutions and their mandates are already in place at all levels.

It should be noted that Malaysia explained that while there is no specific subnational plan dedicated to integrated river basin management (IRBM), there are various statutory instruments and plans addressing aspects related to

39 Bangladesh, Pakistan, Lao PDR, Philippines, Vietnam

40 Cambodia, Nepal, Pakistan, Lao PDR

IRBM. Uzbekistan attributed the absence of a river basin management plan to the fact that the 2020-2030 Concept for the Development of the Water Resources of the Republic of Uzbekistan does not include measures for the development of regional/subbasin IWRM plans for 2020-2022.

Lao PDR shared that it had no existing river basin committees anywhere in their country as it is the local government authorities that manage river basins. Lao PDR shared their plan to set up river basin management coordination committees in 10 priority river basins, and to assist them in developing and implementing their river basin management plans.

With regards to aquifer management plans, Bangladesh, Malaysia, and the Philippines report that these are already in place, with potential for further expansion. On the other hand, four countries are facing constraints in this area. They described their aquifer management plans as currently being inadequate (Pakistan), insufficient (Mongolia), or requiring further research for aquifer management instruments and plans to be developed (Cambodia). Uzbekistan shared plans to further strengthen the material and technical base of hydrogeological enterprises.

Eleven countries mentioned that data and information sharing arrangements have been implemented adequately (score 60 and above, question 3.1.c, Table 6). This data and information is either available on agency websites or specially designated websites for free, for a fee, or upon request. They also observed that there are varying degrees of availability and access to different data and information sets by stakeholders. In some countries, the public has no or limited access, or must pay a service fee. Pakistan and Cambodia specified the need to bring water resources data to the public domain for easier access. Cambodia emphasised the need to develop a national knowledge portal for data sharing on water and water resources management and pinpointed a lack of funds and limited capacities as constraints. Kyrgyzstan mentioned the need for a digital platform focused on normative legal aspects.

On a positive note, Turkmenistan and Uzbekistan pointed out the presence of state funds to support initiatives on environmental information and water, respectively. Malaysia mentioned that apart from the several websites provided by governments for data sharing to the public, non-governmental organisations also created a data portal[41], which is accessible and interactive, allowing public data entry for water quality monitoring.

41 http://www.riverranger.my/index.cfm?&menuid=12

Transboundary Arrangements for Data and Information Sharing

Five countries[42] mentioned that data and information sharing agreements between transboundary countries have been implemented adequately (score 60 and above, score 3.2.d, Table 6).
Malaysia mentioned that data sharing between countries was available for specific transboundary basins, such as the Sungai Golok Basin, as shown in the Malaysia-Thailand Collaboration Project. It is real-time hydrological data monitored by stations in Malaysia and it is readily accessible by the public via the dedicated website[43]. Data sharing was also conducted through joint research and studies between countries in transboundary aquifers or groundwater. A groundwater transboundary study has been undertaken jointly between Malaysia and Indonesia through the MALINDO Hydrogeology and Groundwater Development of Sebatik Island, where Malaysia and Indonesia shares information relating to the aquifer in Sebatik Island.

Bangladesh mentioned that data and information sharing arrangements between China, India, Bangladesh, and Nepal exists but sharing is limited to hydro-morphological and meteorological data.

Kyrgyzstan mentioned that Chu-Talas Water Management Commission shared information and data through website in English and Russian, which allows the sharing of knowledge regarding the Commission's activity and legal documents. They also created a hydrological bulletin at the national level with three levels of access: for regular users, decision makers, and experts.

Lao PDR mentioned that data and information sharing between Mekong countries was based on the National Sustainable Statistical Development Strategic Plan 2016-2025 with a vision to 2030 and it is carried out through Statistical Data and Metadata Exchange (SDMX).

Cambodia mentioned that the Ministry of Water Resources and Meteorology (MOWRAM) had the mandate to provide data and information on hydrometeorology, floods, and droughts to the public and the Mekong River Commission. Data and information sharing has increased in terms of coverage and across sectors, as well as country wide, compared to 2017.

Georgia mentioned that there has been no regular format of data exchange between Georgia and Azerbaijan on the Kura transboundary basin. The country usually did the data and information sharing on groundwater resources in Azerbaijan and Georgia and presented the results of the analysis on the

42 Malaysia, Turkmenistan, Indonesia, Lao PDR, China

43 http://h2o.water.gov.my/golok/main.html

agreed water quality indicators. In addition, the respective public agencies of Georgia and Azerbaijan cooperated on issues related to hydrological forecasting.

Nepal mentioned that it shared transboundary data with other countries in shared basins, but this was not the case for the other countries.

Recommendations

1. Develop regulatory policies as well as technical tools and guidelines on groundwater management, protection and management of water-related ecosystems, strengthening or improvement of pollution control, and minimising impacts of water-related disasters.

2. Enhance institutional capacities and technical competencies of accountable national/government organisations and partners, community-based, basin-level organisations.
Nine countries (Nepal, Pakistan, Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Georgia, and Turkmenistan) cited this recommendation in their stakeholder consultation reports. Seven countries specified that institutional capacities require strengthening. Bangladesh, Lao PDR, and the Philippines proposed certain modalities for capacity development:

- Bangladesh proposed the establishment of a consortium of government organisations, NGOs, and private sector to raise awareness on management and conservation of water-related ecosystems and encourage adoption of practices to protect such ecosystems.
- Lao PDR shared how the Ministry of Natural Resources and Environment (MONRE) established their own institution with the intended role of being the centre of capacity development as well as the new laboratory for water and wastewater testing. It cites how MONRE has established partnerships with leading academic institutions in Lao PDR, especially with the faculty of water resources, the faculty of environmental science, the faculty of forestry science and so on.
- The Philippines recommended the formation of a multi-stakeholder/interagency Technical Working Group or taskforce focused on the following: developing competency-based framework for IWRM capacity building across categories of stakeholders; conducting inventory of existing IWRM and related learning materials and programmes; conducting inventory of existing IWRM trainers/facilitators across sectors/institutions; developing a registry for a pool of trainers/ learning coaches or a network of IWRM-capable and IWRM-supportive learning institutions across geographical areas, and establishing cost effective mechanisms for IWRM capacity building, with a focus on action and solution-oriented trainings and other learning initiatives. Facilitating financing could be packaged into a proposal for an international water-focused NGO or international development partner. The Philippines is also planning to encourage Higher Educational Institutions to offer short-term certificate courses on IWRM and related topics, and/or assisting them to form institutional linkages with international academic institutions or INGOs.

3. Create robust, unified platforms and mechanisms for data capture, data and information sharing to improve monitoring and enhance access to key water-related data and information. Countries detailed this recommendation as follows:

- Create a unified, publicly available national dataset. Adopt a telemetric system to get real-time data for better water management (Pakistan).
- Ensure that a database system and data sharing network exists at the national level (Cambodia)
- Find the best platform for sharing water-related data and information and make them available to all (Lao PDR).
- Consolidate data and information through a one-stop portal that will link to various information portals and resolve the issue of multiple data custodianship and management. Move towards the development and use of a collective monitoring system (Malaysia).
- Formalise and strengthen data sharing collaboration with water-related data generating agencies and academic institutions; Invest in an IT platform to ensure robust security for data management (Philippines).

4. Develop information sharing instrument for transboundary data. Countries detailed this recommendation as follows:

- Institutionalise procedures to ensure automatic sharing of data among the Member States who have signed the transboundary agreement. A neutral third party shall be made the custodian to supervise the implementation of the procedure. Make use of global datasets that are available through multiple platforms (Pakistan).
- Strengthen data sharing at national and Mekong regional level, particularly data/information on dam operations from upstream member countries (Cambodia).
- Create mechanisms for each transboundary basin and include data on aquifer and groundwater management.
- Explore, develop, and expand data and information sharing of transboundary basin/aquifers that do not have specific management arrangements in place (Malaysia).

- Pay more attention to flood/drought and encourage intensive related studies, e.g., modelling for risk reduction (Lao PDR).
- Revitalise the work of the Coordination Group for the Regional Information Space on Water Resources and Environment44 in Central Asia, which started with the assistance of the UNECE and IFAS in 2015-2017 but ceased its activities due to lack of funding.

5. Enhance knowledge and experience sharing mechanisms as well as inter-institutional collaboration.

- Cambodia: Develop a knowledge hub and data sharing network, particularly at subnational (RBMC) level.
- Lao PDR: Follow up on the current river basin management plans and make use of lessons learned; sharing them from the region is also beneficial.
- Nepal: Encourage related staff to have collaborative projects with various partners for both national and regional platforms

6. Increase funding and investment for the implementation of management instruments. Countries detailed this recommendation as follows:

- Enable widening of geographic coverage (Nepal, Malaysia, the Philippines).
- Purchase necessary tools and equipment for monitoring.
- Operation and maintenance of water monitoring systems (Cambodia, Pakistan, Bangladesh).
- Establish additional groundwater monitoring stations, support more sustainable groundwater data collection programmes, and increase hydrological/hydrogeological monitoring stations to strengthen national capacity to conduct science-based and more reliable water resources assessment (Philippines).

4.4 Financing

Overview of Financing

Effective water resources management requires financing for two aspects: water resources infrastructure and water resources management. Within each two project aspects, financing is required for both investments and ongoing costs. The infrastructure financing aspect consists of two types of projects: the more traditional "hard/grey" projects such as infrastructure for water supply (e.g. dams, pipes, and pumps) and flood management (levees and dykes) infrastructure; and "soft/green" projects such as restored or constructed wetlands for water supply, water treatment, and flood management; investments in land management practices for water resources; and nature-based solutions, among them, the reconnecting of rivers with their floodplains.

The water resources management aspect consists of financing in institutions and people to build capacities of different stakeholders across various levels and for development, and the implementation and scaling up of geographical coverage of management instruments.

Status of financing for water resources development and management at the national level and subnational/basin level

Six countries[45] considered national budget for water resources infrastructure as a challenge (score 40 and below, question 4.1.a, Table 7).
Kyrgyzstan mentioned that funds from the national budget were allocated for the development of water infrastructure, but they do not cover the planned investments in full. Meanwhile, Nepal mentioned that budget allocation is not sufficient for meeting the targets set in the National Water Plan 2005, neither for capital investment nor for recurrent costs. As a result, cost overruns are a common problem.

The Philippines mentioned that tracking and monitoring of investment for water resources infrastructure from different resource streams is still difficult. There are no separate national accounts for water resources infrastructure. Thus, assessing availability and adequacy of national funds for planned programmes, projects, initiatives is still not possible.

Lao PDR mentioned that the annual budget of the government for infrastructure has been allocated, but is insufficient for implementation of the sectors' plan.

Seven countries[46] considered their national budget for water management (IWRM) as still limited and insufficient (score 40 and below, question 4.1.b, Table 7).

These countries described financing and budget allocation for IWRM as generally insufficient to meet the requirements or cover planned investments in water resource management. Mongolia and the Philippines specified that they made little to no progress in the financing dimension of IWRM.

Vietnam, Kyrgyzstan and Malaysia expressed difficulty in accurately describing the status of financing and adequacy of budget allocation for IWRM because there is no separation for water resources management which makes it difficult

44 More details: http://www.cawater-info.net/information-exchange/meetings.htm

45 Kyrgyzstan, Nepal, Georgia, Mongolia, Philippines, Lao PDR

46 Kyrgyzstan, Nepal, Georgia, Mongolia, Uzbekistan, Philippines, Viet Nam

Table 7 Progress in establishing Financing for IWRM in 16 facilitated countries (UNEP-DHI, 2021)

GWP Facilitated Countries	Score based on elements in financing					
	4.1 National level		4.2 Subnational			
	a. Water resources infrastructure budget at national	b. water management budget at national	a. Water resources infrastructure budget at subnational	b. Revenue raising for IWRM at subnational	c. Transboundary financing	d.I WRM basin budget at subnational
Kyrgyzstan	20	20	20	30	30	20
Nepal	40	40	20	40	n/a	20
Georgia	40	40	40	20	n/a	40
Mongolia	40	30	40	40	40	30
Uzbekistan	50	30	40	30	50	20
The Philippines	30	40	20	60	n/a	40
Tajikistan	50	50	30	40	40	40
Bangladesh	80	70	50	40	30	30
Cambodia	70	60	50	50	40	40
Malaysia	70	60	70	40	n/a	20
Pakistan	60	60	60	60	20	60
Viet Nam	60	40	60	40	100	40
Lao People's Democratic Republic	40	60	30	80	100	40
Indonesia	80	70	70	70	60	60
Turkmenistan	80	70	80	70	100	80
China	**90**	**80**	**80**	**80**	80	**80**

n/a = not applicable | Very low (0-10) | Low (20-30) | Medium-low (40-50) | Medium-high (60-70) | High (80-90) | Very high (100)

to have a comprehensive picture of budget allocation and revenues for water resource management.

Georgia mentioned that allocation of funding for water resources is included in several budget categories and in many different investment documents; thus, a special study is needed to assess the adequacy of financing available for IWRM. Uzbekistan reported that while there is some progress in financing, proper mechanisms to support IWRM as required is still lacking, and allocated funding for the water sector is not targeted properly on the IWRM components.

Nine other countries described their financing status positively, stating that their IWRM budget is generally sufficient:

- Lao PDR mentioned that the government has allocated the national budget for the implementation of the Integrated Water Resources Management, as it is a priority activity of the 8th National Socio-Economic Development Strategic Plan 2016-2020.
- Pakistan cited the assistance of its Supreme Court, an apex body of the judiciary, which took suo moto notice[47] over the discourse of impending water scarcity

47 i.e., an act of authority taken without formal prompting from another party

in 2025 and the poor planning of the government. This contributed to a new policy paradigm for water resources management, and development and increased financing or budget allocation.

- China explained that the national, subnational and basin budgets for investment are sufficient for water resource infrastructures and IWRM implementation. They also pointed out that many financial mechanisms and sources in China can be used by the water sector.

Five countries[48] mentioned that the infrastructure budget at subnational level as medium-low which means that some budget was allocated for water infrastructure but only partly covers planned investments (score 30 and below, question 4.2.a, table 7). Nepal mentioned that the provincial level can only allocate limited budget for water infrastructure. The Philippines mentioned that local government units have insufficient funds to implement needed water-related infrastructure and the budget allocated only allowed them to cover and deliver minimum expectations for planned investments.

Status of Financing for Transboundary Cooperation

Six countries[49] mentioned that financing for transboundary cooperation within the countries as limited (score 40 and below, question 4.2.c, table 7). Bangladesh, Vietnam, and Uzbekistan reported constraints and areas needing improvement that are related to:

- Bangladesh: inadequate budget for transboundary cooperation projects and their development.
- Vietnam: need for enhanced transboundary cooperation among upstream and downstream countries, an essential matter since they are reliant on international rivers with more than 60 percent of Vietnam's total average yearly surface water discharge generated outside the country.
- Uzbekistan: necessity to create a regional financial structure of the Fund (e.g., a special Investment Bank for the Aral Sea Basin) for IFAS to fully function. In line with this, the country proposed that IFAS member countries must strictly define their contributions and secure approval from the Board of the Fund. Spending of those funds will be carried out directly by the countries, with information provided to the Executive Committee of IFAS.

On the other hand, Turkmenistan and Lao PDR rated this at the highest tier, the two countries that cited positive progress on financing for transboundary management. Lao PDR mentioned the cooperation fee of transboundary rivers at the national level, and that especially Mekong and Mekong-Lancang cooperation is running very well. Turkmenistan mentioned the actual contribution of Turkmenistan is 100 percent as stated in the agreements on the share of financing of the riparian countries of joint bodies, projects and activities on the transboundary rivers Amu Darya and Tejen (Gerirud).

Financing Expenditure Gap: Impacts and Related Reasons

Several countries in Southeastern Asia (Indonesia, Lao PDR, Malaysia, Cambodia, the Philippines, Vietnam) and two in Southern Asia (Pakistan, Nepal) described experiencing a financing-expenditure gap. They stated that this is particularly felt at the level of river basin associations or organisations. They shared that inadequate budget, funding shortage or low/poor revenue are hindering the ability of river basin associations or organisations to complete their goals, fulfil their tasks, and undertake necessary activities like capacity development.

The countries cited seven major reasons for this financing-expenditure gap:

- Low priority or importance given to IWRM and IWRM elements at both the national and subnational levels (Cambodia).
- No arrangement for investment in IWRM elements, although some investments are made on a project or program basis (Nepal).
- Budget of apex organisation (e.g. Ministry of Water Resources (Pakistan) and National Water Resources Board (Philippines) is inadequate to effectively lead and monitor IWRM implementation.
- Competing development priorities at the national and subnational levels (Philippines).
- Absence of separate budget line or budget item (Vietnam) with proper nomenclature for water resources management (Indonesia).
- Low capacity of subnational governments to invest in water sector, water resources development and management/IWRM, IWRM elements (Nepal, Philippines).
- A major part of funds is allocated or used for governance and management authority (Lao PDR), or funds are just enough to cover operational and administrative expenses of river basin organisations (Philippines).
- Limited revenue due to poor or low revenue generation and collection from water use (Nepal, Pakistan, Lao PDR) and pollution fees.

48 Kyrgyzstan, Nepal, Philippines, Lao PDR and Tajikistan

49 Kyrgyzstan, Mongolia, Tajikistan, Bangladesh, Cambodia, Pakistan

- Revenues raised from water supply and services are not specifically channelled for IWRM activities(Malaysia).

Inadequate Revenue Generation and Collection: Impacts and Causes

Four countries[50] reported that revenue generation and collection from the use of water for agriculture or irrigation services and pollution fees are inadequate to meet future developments, operation and maintenance costs, and recurrent costs of infrastructure such as irrigation facilities and dams. Uzbekistan identified as a major constraint the practice wherein payments by agricultural producers for water delivery services are not directly linked to the volume of water consumption.

Some countries also reported that although their annual development budget is adequate for planned water resources infrastructure projects (which includes IWRM elements), the operation and maintenance costs and recurrent costs are often not part of the national budget allocation for planned IWRM projects and water resources infrastructure development, or are limited and inadequate (Bangladesh).

Recommendations

1. Advocate for increasing and prioritising national investments in IWRM. Several countries mentioned the need to increase and prioritise investments in IWRM. This would include investments in the following areas:

- Water resources monitoring and control, water ecological protection and restoration management (China).
- Management and protection of water resources and pollution control (China and Vietnam).
- Mitigation of climate change impacts; Strengthen resilience; Improve risk management and disaster response (Vietnam).
- Capital costs for construction and modernisation of water facilities (Nepal), construction, operation, and maintenance of water resource facilities (China), and reconstruction of water resource facilities to ensure their operability (Pakistan).
- Reduce water losses and delivery costs (Uzbekistan, Philippines).
- "Soft" aspects of IWRM, such as: a) capacity building (Nepal, Philippines), b) research, studies and related project development on groundwater/groundwater overmining, aquifer management and use (Lao PDR, Philippines, China), c) capacity development of relevant organisations to manage and effectively disburse the anticipated 20 percent of PDSP water sector allocation per National Water Plan (Pakistan), d) scientific and applied research, development and/or adoption, implementation of advanced technologies (China, Uzbekistan).
- Increasing the competitiveness of salaries for employees in governmental water management organisations to help attract and retain qualified specialists in the sector as well as increase their effectiveness (Uzbekistan).
- Implementation of a new Law on Water Resources Management (Georgia).

2. Build, strengthen or expand partnerships to unlock financing opportunities and obtain new sources of funds from multiple resource streams. The recommendations mentioned by facilitated countries are as follows:

- Engaging in public-private partnerships and cooperation for water infrastructure (Mongolia and Philippines).
- Increasing Official Development Assistance (ODA) or securing grants/assistance from international development partners or international philanthropic institutions.
- Acquiring loans from international financing institutions or more developed countries (Uzbekistan).
- Attracting private investments, including foreign ones, for priority projects and sustainable water resources development (Lao PDR, Philippines, Uzbekistan).
- Increasing the scale of credit capital investment initiatives (China).

In this regard, Uzbekistan and the Philippines suggested two priority actions. Firstly, by developing a state Investment Plan to attract investments, especially for the modernisation of irrigation infrastructure facilities (Uzbekistan). Secondly, by engaging in high-level advocacy to influential and institutional decision-makers, presenting evidence-based policy brief for increased public-private sector investments in IWRM (Philippines).

3. Institutionalise innovative and sustainable financing mechanisms, to secure IWRM implementation at all levels. Related to this, the adoption and institutionalisation of an economic instrument, Payment for Environmental Services (PES), was suggested by three countries, namely, Malaysia, the Philippines, Uzbekistan. They suggested:

- Exploring payment for services and including drainage management as part of these services (Malaysia).
- Promoting, scaling up and institutionalising PSE; documenting and disseminating successful experiences

50 Pakistan, Nepal, Malaysia, Uzbekistan

and effective good practice models (Philippines).

- Transitioning to payment for services related to the delivery of water in agriculture (Uzbekistan).

Other modalities recommended for increasing budget availability in decentralised government set ups are:

- Increasing the allocated budget for basin level activity (i.e., RBOs, RBAs, or RBCs) to be fully operational; advocating for national agencies to increase budget support for RBOs (Philippines).
- Encouraging local authorities to do fundraising and manage funds wisely/judiciously, to optimise the use of their limited resources (Lao PDR).
- Increasing the share of allocations from the water fee funds (Mongolia).
- Improving mechanisms for financing and self-financing of water management organisations, river basin associations/organisations (Uzbekistan).
- Establishing mechanisms for economic relations between water management organisations and water users (e.g., "water market" as the main lever for the redistribution of water resources from low-efficiency water users to highly efficient ones (Uzbekistan).
- Adapting successful sustainable financing schemes in the regions (Philippines).
- Making effective use of financial funds and local government special bonds (China).
- Attracting social capital input and ensuring the availability of large-scale water conservancy construction funds (China).
- Supporting RBO advocacy for legislation which will transform RBOs into an authority with an annual budget (Philippines).

4. Generate increased revenues for IWRM and ensure adequate budget allocation for the operation and maintenance and recurrent costs of water infrastructure projects. This includes suggestions for adopting water pricing mechanisms, introducing differentiated water tax rates, creating water-related funds drawn from raw water charges or revenue for water uses, raising revenues from navigational or recreational uses, payment for water abstraction and for penalties. The details are mentioned in the country stakeholder consultation reports as follows:

- Adopting realistic water pricing mechanisms for each water subsector (Pakistan).
- Raising revenues not just from water supply and services, but also for water-related uses, e.g., navigational or recreational uses (Malaysia).
- Developing a methodology for calculating differentiated water tax rates based on water consumption volume and the cost of water supply, with additional costs for water supply included in the water use tax. This will cover the costs of water delivery to water users by gradually adding tax rates for the use of water resources (Uzbekistan).
- Establishing a specific water-related fund which draws from revenues raised for raw water charges or related water uses to fund dedicated IWRM-related projects (Malaysia).
- Revisit existing water tariffs and promote water efficient product labelling to encourage increased use of sustainable and efficient appliances (Malaysia).
- Introducing a permit system for water abstraction and discharge and promote effective economic incentives, such as the "user pays" principle, through the introduction of fees for surface water abstraction (Georgia).
- Improving methods for calculating tax rates and penalties for various categories of water consumers in the future, considering their sectoral and technological characteristics and the quality of return water, including the level of mineralisation and other pollutants (Uzbekistan).

Three countries pinpointed the need to provide technical guidance and support as well as enhance capacities in the following areas: rationalising payment for agricultural water services (Pakistan), appropriate water pricing, and revenue generation strategies and approaches (Philippines).

5. Strengthen essential systems related to financing and budgeting such as planning and programming, budget planning, monitoring of financial flows and asset management.

The recommendations as mentioned by facilitated countries are as follows:

1. Mainstreaming IWRM into planning and programming systems.
2. Integrating or mainstreaming IWRM elements/activities into all water and water-related plans, programmes (national/subnational), infrastructure development and management projects (Cambodia, Indonesia).
3. Improvement of the budget planning system (Cambodia, Indonesia, Uzbekistan, Philippines).
    - Adopting a mix of bottom up (for provincial budgets) and national/sectoral approaches (Cambodia).
    - Establishing a standard structure for funding allocation for IWRM at all levels (Indonesia).

- Advocating for the Department of Budget and Management to include in their Annual Local Budget Memorandum issuance an explicit reference and directive to provide funds allocation for IWRM elements/water resources investment at all levels (Philippines).

4. Enhance monitoring of financial flows in public sector water management institutions or organisations.
    - Using modern information and communication technologies (China, Uzbekistan).
    - Incorporating relevant and specific indicators to monitor progress, achievements and outcomes of projects, to shape and set the course for future investments and expenditures (Cambodia and Malaysia).
    - Installing a system for Project Benefit Monitoring Evaluation to check and evaluate efficiency and effectiveness of budget allocation of funding especially for large scale projects, e.g., construction of dams, multi-purpose reservoir, etc. (Bangladesh, Indonesia).
    - Institutionalise a tagging system for tracking water resource-related expenditures of National Government Agencies (Philippines).
    - Develop and institutionalise mechanisms to collect specific information related to budget allocation for investment, development, and recurrent costs (Malaysia).
    - Developing and integrating measures for economic evaluation of water services, and a shift in present tariffs (Malaysia).
5. Strengthen asset management.
    - Ensuring effective use of material property (fixed assets) and land linked to the Unified State Water fund (Uzbekistan).

5 The Way Forward: Action Pathways and Levers for Accelerating IWRM Implementation

Photo: GWP/ Danilo T. Esteves, https://www.flickr.com/photos/globalwaterpartnership/4478210807/in/album-72157623615810173/

The IWRM global report released by UNEP in 2018 suggested that IWRM implementation needs to be accelerated to meet the 2030 Agenda. However, based on the data collected in 2017 and 2020 in the Asia-Pacific region, it is estimated that with "business as usual", the IWRM progress will not be on track to achieve the IWRM target in 2030 (Figure 21). To close the gap between "business as usual" and the required trajectory, greater effort is needed in the Asia-Pacific countries.

The report encouraged countries to accelerate implementation and take notice of the critical nexus of water and economic development; water, climate change and disaster risk reduction; water and people; and water and ecosystem health.

What follows are recommendations on strategic action pathways and levers that can be pursued to accelerate IWRM implementation in the Asia-Pacific region. The recommendations are related to:

1. Enhancing capacities to accelerate implementation of IWRM
2. Strengthening knowledge and information exchange
3. Maximising meaningful participation of stakeholders at all levels
4. Securing sustainable, innovative, and blended financing for IWRM
5. Promoting and supporting regional and subregional collaborative initiatives

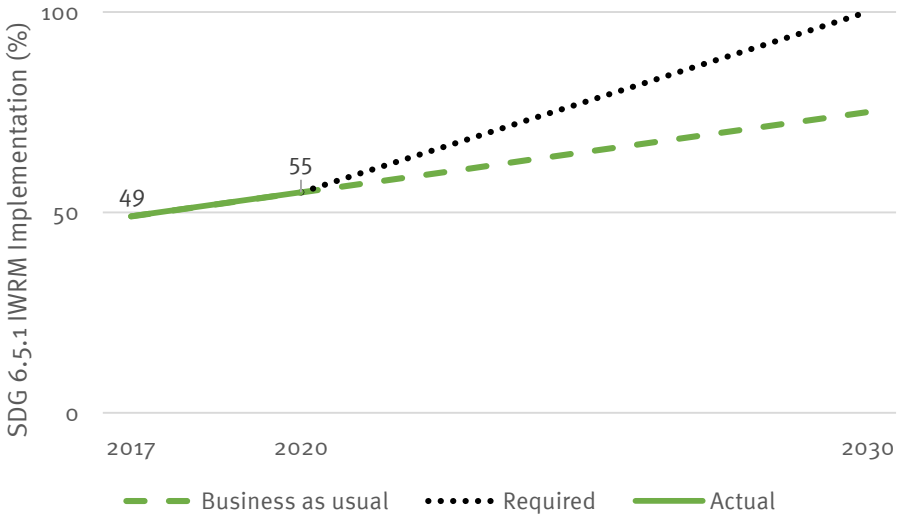
These correspond to crosscutting issues or themes discussed in Section 4, and further details can be found in that section.

5.1 Enhancing Capacities to Accelerate the Implementation of IWRM

It is widely recognised that capacity development has an integral role in the successful and sustainable implementation of IWRM. Across the four IWRM dimensions, capacity development and its various modalities (e.g. training, coaching) was mentioned as a necessary part of accelerating, expanding, and sustaining IWRM implementation.

- Encourage and assist countries to develop a competency-based framework for capacity development of key stakeholders of IWRM at both national and subnational/ basin levels. It will facilitate a coherent and integrated capacity development strategy and will serve as guide for designing various learner-focused capacity development initiatives. In this regard, it is important that capacity enhancement be viewed as not only focusing on individual competencies but also including organisational development/organisational strengthening to navigate the enabling environment. These various levels should be captured in the design of the recommended competency framework.
- Develop tool kits or learning packages customised for the functional responsibility/ accountability of targeted stakeholders. This can be built from previously developed IWRM tool kits/toolboxes, whilst ensuring local relevance.
- Give due importance and include "soft skills" like governance, participatory leadership, stakeholder engagement, social mobilisation (i.e. advocacy, networking and alliance building), trust generation, communication and negotiation skills, client service and conflict management to be part of the competency

Figure 21 Current and required rate of implementation of IWRM in Asia-Pacific



framework for IWRM. An assessment tool on these "soft skills" should be developed as a companion to the capacity development framework.

- Enable river basin associations/organisations and other IWRM related structures at the subnational level to become more strategically agile, adaptive, and resilient. Organisational strengthening initiatives need to be supported and encouraged alongside with capacity development of stakeholders. This is crucial given the reported limitations of most RBOs/RBAs/RBCs and the volatility, uncertainty, chaos, and ambiguity of the current geopolitical environment.
- Expand availability and reach of sustainable and supportive capacity development interventions for IWRM. This should not only focus on technical staff and stakeholders of IWRM from national and sub-national institutions and organization, but should also include the youth/young people, both in school and out of school.
- Ensure continuing capacity development and application of learnings. It was observed by some countries that there is a gap in current IWRM training. It tends to be "one shot", with no provisions for follow-through of application and reinforcement of learnings. On-the-job coaching and mentoring are also not yet part and parcel of capacity development for IWRM. Deep learning which leads to action, behaviour change and innovation requires continuity of learning and consistent application. It is recommended to develop Technical Guidance Notes on how to design effective, responsive, and action-oriented training programs for IWRM, spotlighting good practice models from countries. Furthermore, a menu of follow-through and reinforcing initiatives could be developed as a guide to assist countries in planning for sustainable learning application.
- Develop national and regional learning alliances, to undertake capacity development interventions. Forums or webinars spotlighting effective country or regional models of how these function and support IWRM implementation would inspire other countries/regions as well as help show the way.

See the recommendations at the end of section 4.2 for more detail.

5.2 Strengthening Knowledge and Information Exchange

Knowledge in IWRM is honed by experience and built through practical application. Thus, respondents and participants from several countries identified the need to create a national and regional IWRM knowledge portal as well as a community of practice. They expressed their interest in being able to learn about, adapt, and localise global or regional best practices into national and subnational settings.

The availability of this portal will facilitate access to information on IWRM, showcase innovative IWRM projects/initiatives, and serve as an enabling platform for UNEP and GWP to have robust linkages with IWRM practitioners, development partners, and other stakeholders. It will ensure a continuous flow and sharing of relevant information, experiences, insights, good practice models, breakthrough innovations, all of which can be leveraged to develop appropriate strategies and effective solutions for water resource management challenges. It will also facilitate and ensure easier/faster access to six diverse types of IWRM-related knowledge products (i.e. know how, know why, know what, know who, know where, know when). The presence of this portal will encourage both practitioners and stakeholders to act and make decisions that are evidence and science-based.

Given the complex nature of IWRM, the fast-changing landscape and emerging challenges, IWRM practitioners and stakeholders require knowledge versatility. The continuous sharing of experiences and insights among knowledge communities/communities of practice will boost knowledge creation, inspire creativity/innovation, enhance synergies, and promote expanded collaboration (i.e. nationally, regionally, transboundary).

Several countries identified the existence of strategic knowledge partnerships with research and academic institutions, civil society organisations, and individuals. Such partnerships could provide a foundation for IWRM knowledge infrastructure.

GWP is in a unique position to serve as an IWRM knowledge champion, leader, and broker, given its extensive experience, knowledge base and assets, including its global network. As a knowledge champion, working together with national focal persons, it can promote the adoption and institutionalisation of knowledge management mechanisms to capture, share, and transform information so that it is able to be acted upon through the use of knowledge products. Its CWPs and/or national focal persons can serve as knowledge custodians, assisting in the design and implementation of countries' knowledge management frameworks, plans and programmes.

5.3 Maximising Meaningful Participation of Stakeholders at All Levels

Addressing water management issues and challenges is not just a technical matter but involves the whole of society and the government. It is also multifaceted, addressing economic, social, and political aspects. A key message of the SDGs is "no one should be left behind". Harnessing the power of collaboration and the strength of togetherness, accelerating progress in IWRM is possible and with it a water secure future for all can be achieved.

Maximising Communities, Vulnerable Group and Public Participation

It was noted that while most countries have existing laws, policies and mechanisms for stakeholder engagement and involvement, there were constraints in actual implementation and operationalization. Among the barriers were: perceived inadequacy of stakeholders with regards awareness and understanding of IWRM, limited or no budget allocation for stakeholder engagement and lack of explicit guidelines and concrete processes on how stakeholders' involvement and participation can be maximized. Another probable underlying constraint is lack of recognition that meaningful stakeholder engagement leads to creation of a pool of future champions and advocates for IWRM localization and implementation. This momentum building effect of stakeholder engagement needs to be emphasized as well as demonstrated through documentation and dissemination of good practise models.

It is recommended that countries be encouraged and supported to develop a stakeholder engagement strategy as well as stakeholder communication plan for IWRM. This will facilitate on ground stakeholder engagement and provide a basis for them to decide whom they need to engage, their potential roles/contributions, the scope of their participation and involvement, and key messages and information that stakeholder needs to know. A knowledge product, such as mini video, focused on stakeholder engagement and mobilisation, showcasing successful modalities and initiatives as well as types and levels of involvement in IWRM, might serve as an inspirational trigger for countries that are not yet fully committed to full, active, and meaningful participation of stakeholders. Countries can also be encouraged and supported to capture these for their own use.

Given COVID-19 related restrictions, social media platforms and web-based apps can be used to more actively and fully engage as well as keep stakeholders informed. A few countries have set up online portals on key water related data sets, providing easier access to stakeholders.

In addition, for the vulnerable population in rural communities, geographically inaccessible areas, indigenous communities, context sensitive modalities of training, participation and consultation should be designed and adapted. For example, for low literacy communities, there have been reported successful use of community theatre or other culturally acceptable modalities, to introduce IWRM and deepen their understanding, appreciation and support for it. The necessary budget support should also be provided to maximize inclusion and involvement of a diverse mix of stakeholders.

Mainstreaming Gender in IWRM

Studies have consistently revealed that mainstreaming gender dimensions into IWRM policies, plans, programs and implementation improves the responsiveness, effectiveness and sustainability of IWRM programs. This involves a) attention and explicit consideration of gender needs (both strategic and practical) in each phase and process of IWRM, b) presence of gender related indicators in monitoring and evaluation of IWRM progress and process , c) tagging and tracking financial investments and expenditures on gender and gender related initiatives in IWRM, and d) ensuring relevant capacity development initiatives to encourage increased confidence, participation and balanced involvement of women, men and non-binary individuals (Lidonde & Woodfield, 2002) (World Water Vision, 1999) (Green & Baden, 1995).

Gender mainstreaming is about fully integrating all gender perspectives (i.e. differences in needs, uses and practices, employment and entrepreneurship, access to resources, vulnerabilities and impacts, adaptation and mitigation capacity of men, women and non-binary individuals) in water planning, management and decision-making (GWP, 2021).

Among the key concrete recommendations in this aspect are:

- Ensure water related organizations and institutions have a focal person, a dedicated unit or work stream, focused on gender aspects of IWRM
- Ensure key staff and stakeholders are oriented and trained on the gender dimension of IWRM, its interrelationships with other development priorities and processes and practices that are considered as enablers for gender mainstreaming in IWRM
- Provide technical guidance and assistance on how to undertake gender analysis of IWRM policies, plans and programs as well as learning/training materials.
- Share a framework or template on how to develop operations manual on mainstreaming gender in water resources management considering various social and cultural settings.

- Consolidate and develop a compendium of existing Gender Responsive and Women Empowerment indicators used in all levels of IWRM implementation (from national to sub-national, basin level)
- Develop a toolkit for Gender Mainstreaming in IWRM including simple, cost-effective tools (e.g. checklist type)
- Sponsor knowledge and experience sharing forums on how gender dimensions has been successfully mainstreamed and how level and quality of participation has improved

Enhancing Synergies Across Government Ministries and Subnational/Basin Stakeholders

Accelerating the progress of IWRM implementation requires that all concerned institutions and stakeholder groups collaborate and resolve any existing horizontal and vertical fragmentation. Improved coordination, harmonization and alignment between multiple government ministries and sub national/basin stakeholders is a "wicked" (i.e. recurring, seemingly unsolvable) problem that urgently needs to be addressed. Among suggested key actions are:

- Clarifying and clearly delineating scope of authority, accountability and decision-making parameters of various institutions and organizations involved in IWRM implementation and localization
- Establishing/strengthening appropriate coordinating mechanisms, processes and practices
- Conducting a quarterly or semestral meeting to share progress updates, challenges and emerging issues, as well as effective innovations and good practise models
- Conducting annual review of policies and guidelines to ensure alignment, coherence and complementation
- Undertaking joint planning for convergence and/or cross-sectoral initiatives
- Institutionalizing data and information sharing agreements
- Institutionalizing feedback mechanisms with a quick response time between basin level and national government agencies

5.4 Securing Sustainable, Innovative, and Blended Financing for IWRM

Except for a few countries, progress in providing adequate financing for IWRM and IWRM elements is still lagging. Countries should be encouraged and assisted in developing their investment case presentations capturing the economic and multidimensional benefits of IWRM adoption, localisation, and implementation. It is important to build a good advocacy capacity for key water-related institutions (such as Ministries of Water Resources Management and River Basin Organisations) in presenting investment plans to key national and subnational budgetary institutions and political leaders to secure water related investment. Since political leaders are increasingly committed to addressing climate change challenges, the inextricable link between water and climate change needs to be spotlighted in these presentations. Likewise, IWRM contributions to poverty reduction, water and energy security, economic development, food security, ecosystem health and resiliency from disasters and water impacts of climate change need to be highlighted in investment case presentations, showing how water can be an articulator of these different development objectives, having a multiplier impact on investments.

Several countries recommended diverse strategies for securing sustainable and blended financing for IWRM. They recommended unlocking financing opportunities, getting new sources of funds from multiple resource streams, utilising present funds more efficiently and judiciously, and institutionalising sustainable and innovative financing mechanisms.

Among the financing avenues countries have identified are: ODA (Official Development Assistance), public-private partnerships, loans from international financing institutions, grants from philanthropic institutions or from other high resource/high income countries. It is also clear that the combination of external and internal funding sources will be needed to meet the scope of the challenge since none of those funding sources on their own will be sufficient.

For innovative and sustainable financing mechanisms, some countries recommended Payment for Services or Payment for Environmental Services as the preferred economic instrument. Other countries spotlighted the need for generating increased revenues by adopting realistic water pricing mechanisms, introducing differentiated water tax rates, creating water-related funds drawn from raw water charges or revenue for water uses, raising revenues from navigational or recreational uses, payment for water abstraction, and penalties for various categories of water consumers.

Countries, with the support of GWP, should enable continuing discussions as well as studies, research and projects on these strategic financing options and proposed solutions. Effective and workable financing options should be shared with and between countries through case studies or web-based learning and knowledge exchange.

See the recommendations at the end of section 4.4 for more detail.

5.5 Promoting and Supporting Regional and Subregional Collaborative Initiatives

Aside from the previously proposed collaborative initiatives which focused on capacity development, knowledge, and experience sharing, and unrestricted access to country-level IWRM information, there is a need to organise different work streams of technical experts to address shared key issues and challenges that cut across country borders and that are best addressed at subregional or regional levels. Some examples of these that were mentioned are: a) strengthening capacity for avoiding, mitigating or adapting to climate change impacts, b) building resilience to disasters, c) updated data on water availability (surface water, groundwater, aquifers) with projections on expected changes related to climate change and increases in water demand to support economic and population growth, d) developing technical capacities in using modelling tools, updated equipment to facilitate science-based monitoring of ecosystem health, water quality, pollution and biodiversity, e) undertaking joint research on priority IWRM themes with regional spillover effects, and f) developing advocacy and communication campaigns for intensifying IWRM support and accelerating implementation. IWRM advocacy and communication campaigns could also be designed at subregional and regional levels, especially where special political bodies or existing transboundary arrangements are present, such as ASEAN, SACEP, ESCAP, etc.

It was also suggested that a common subregional and regional digital mapping system for thematic IWRM-related data and information be designed and that these be made readily accessible to all, across subregions and countries.

6 A Call for Collaboration, a Call to Action

Photo: GWP South Asia https://www.flickr.com/photos/143181951@N04/25719368148/in/album-72157692033547175/

This report provides the basis for further regional collaboration to take action on the critical next steps needed to achieve full IWRM implementation by 2030. The lessons learned, challenges, best practices and recommendations contained in this report provide a strategic action pathway to accelerate IWRM implementation across the Asia-Pacific region with cross-cutting action areas that urgently require addressing: enhancing capacity to accelerate implementation of IWRM; strengthening information, experience and knowledge exchange; maximising meaningful participation; securing sustainable innovative and blended financing; and promoting and supporting regional and subregional collaborative initiatives.

In this sense, this report highlights that we already know most of what is needed to fully implement IWRM by 2030 and thus boost the achievement of not just SDG 6, but also many other SDGs. The positive experiences highlighted in this report show that it can be done. However, what is needed more than anything else to advance towards this objective is political will at the highest level possible, both within countries, but also between them, through regional cooperation and collaboration. The report therefore constitutes an urgent "call to action" for all relevant stakeholders at all levels to contribute to promoting and enhancing IWRM implementation as a necessary step to achieve the SDGs by 2030. In particular, we call upon national and subnational governments to prioritise integrated approaches to land and water management in their budgeting and planning exercises. We call upon academic, civil society, and private sector partners to accompany and support governments in these endeavours. Finally, we call upon regional economic commissions and development partners to actively provide technical, financial and political support to governments in the necessary steps towards full implementation of IWRM. The SDG 6 IWRM Support Programme stands ready to support all these stakeholders in this endeavour.

Box 8. Current cross-cutting initiatives in GWP to support advancing IWRM implementation in the regional and country level, include:

Stages 2 and 3 of the SDG 6 IWRM Support Programme[51] – Based on the IWRM challenges reported by each country during the periodic UN-led assessment of SDG indicator 6.5.1, which is considered Stage 1 of the SDG 6 IWRM Support Programme, Stage 2 focuses on formulating appropriate responses to those challenges. This is done by designing targeted interventions as a series of investment opportunities, the output of Stage 2 is an IWRM Action Plan. These Action Plans should complement the existing IWRM framework, be aligned with broader development priorities, the SDG landscape, and the climate agenda and be developed through a multi-stakeholder and multisectoral gender-sensitive approach. When Stage 2 is finalised, these interventions should be ready to be funded to ensure they can be implemented in Stage 3. By implementing them, measurable progress should be made towards SDG 6.5.1, as monitored by Stage 1 approximately every three years.

Water Information Sharing System (WISE) – a new initiative which is being established to make the connection between supply and demand for water data and information, to better inform water and climate related decisions. It aims to bring together different data holders from multiple sources to jointly overcome bottlenecks that prevent existing data from being made available for enhanced decision-making, thus improving country's water management tools and measurably contributing to their SDG 6.5.1 progress.

A Study on Advancing Towards Gender Mainstreaming in Water Resources Management[52] – this study identifies the bottlenecks to acceleration with regards to gender mainstreaming in IWRM, as well as showcasing and disseminating a range of practices that have been implemented around the world, highlighting common gaps, challenges and constraints, and key enabling factors, and providing recommendations on how to strengthen current practices. The SDG 6 IWRM Support Programme will aim to assist countries in their efforts to build upon the enablers for gender mainstreaming.

Water Security Open Program – this program will allow any initiatives (and ideas) regardless of the location, level of implementation, duration of implementation, stage of implementation, implementation approach and so on to be registered as contributors to a certain set of indicators (including SDG indicators and targets). For this purpose, the Open Program will focus on Water Security where IWRM (as a set of principles) will be embedded. It is proposed to first implement the Water Security Open Program in the Southeastern Asia region, with the potential to apply to other subregions of Pan-Asia.

Community of Practice in IWRM and GWP ToolBox: IWRM Action Hub – the community of practice in IWRM will facilitate information, experience, and resource sharing between IWRM practitioners around the world to improve IWRM implementation at the global, regional, national, and subnational levels. In line with the objectives and structure of the SDG 6 IWRM Support Programme, that should lead to better monitoring, action planning and implementation of relevant IWRM actions. As it will be structured as part of the updated IWRM ToolBox[53] (to be relaunched late 2021), it will both feed into and draw from the dynamic information within the ToolBox.

51 www.gwp.org/en/sdg6support/

52 https://www.gwp. org/en/sdg6support/gender/

53 www.gwptoolbox.org

References

Baran, B., Woznyj, H. (2020). *Managing VUCA: The human dynamics of agility. Organizational Dynamics*. 2020 Aug:100787. DOI: 10.1016/j.orgdyn.2020.100787. PMID: 32843777; PMCID: PMC7439966.

ESCAP (2017). *Integrated Approaches for Sustainable Development Goals Planning: The case of Goal 6 on Water and Sanitation.* Bangkok, Thailand: United Nations.

Global Water Partnership (2020). *Stakeholder Consultation Reports for SDG 6.5.1*. Retrieved from https://www.gwp.org/en/sdg6support/sdgmap/

Green, C., & Baden, S. (1995). Integrated Water Resources Management: A Gender Perspective. *ids bulletin vol 26 no 1*, 92-100.

GWP and UNEP-DHI (2021). Advancing Towards Gender Mainstreaming in Water Resources Management. Retrieved from SDG Support Programme: https://www.gwp.org/en/sdg6support/gender/

Lidonde, R., & Woodfield, J. (2002). Gender Mainstreaming in IWRM. *28th WEDC Conference: Sustainable Environmental Sanitation and Water Services.* Kolkata: WEDC.

UNEP (2018). Progress on integrated water resources management. Global baseline for SDG 6. *Indicator 6.5.1: degree of IWRM implementation.* http://iwrmdataportal.unepdhi.org/

UNEP (2016). *A Snapshot of the World's Water Quality: Towards a global assessment.* Nairobi: United Nations Environment Programme.

UNEP (2021). Progress on Integrated Water Resources Management. Tracking SDG 6 series: global indicator 6.5.1 updates and acceleration needs. http://iwrmdataportal.unepdhi.org/

UNEP-DHI. (2021, July 28). *IWRM Data Portal*. Retrieved from http://iwrmdataportal.unepdhi.org/

World Water Vision. (1999). *Mainstreaming Gender in Water Resources Management: Why and How.*

Global Water Partnership Asia

25 YEARS

UN environment programme | DHI

UNEP-DHI CENTRE