Progress on Integrated Water Resources Management

GLOBAL INDICATOR 6.5.1 UPDATES AND ACCELERATION NEEDS

2021

United Nations | UN WATER | UN environment programme | 50 1972-2022

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Editing: Strategic Agenda

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Presenting the UN-Water Integrated Monitoring Initiative for SDG 6

Through the UN-Water Integrated Monitoring Initiative for SDG 6 (IMI-SDG6), the United Nations seeks to support countries in monitoring water- and sanitation-related issues within the framework of the 2030 Agenda for Sustainable Development, and in compiling country data to report on global progress towards SDG 6.

IMI-SDG6 brings together the United Nations organizations that are formally mandated to compile country data on the SDG 6 global indicators, and builds on ongoing efforts such as the World Health Organization (WHO)/United Nations Children's Fund (UNICEF) Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), the Global Environment Monitoring System for Freshwater (GEMS/Water), the Food and Agriculture Organization of the United Nations (FAO) Global Information System on Water and Agriculture (AQUASTAT) and the UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS).

This joint effort enables synergies to be created across United Nations organizations and methodologies and requests for data to be harmonized, leading to more efficient outreach and a reduced reporting burden. At the national level, IMI-SDG6 also promotes intersectoral collaboration and consolidation of existing capacities and data across organizations.

The overarching goal of IMI-SDG6 is to accelerate the achievement of SDG 6 by increasing the availability of high-quality data for evidence-based policymaking, regulations, planning and investments at all levels. More specifically, IMI-SDG6 aims to support countries to collect, analyse and report SDG 6 data, and to support policymakers and decision makers at all levels to use these data.

- Learn more about SDG 6 monitoring and reporting and the support available: www.sdg6monitoring.org
- Read the latest SDG 6 progress reports, for the whole goal and by indicator: https://www.unwater.org/publication_categories/sdg6-progress-reports/
- Explore the latest SDG 6 data at the global, regional and national levels: www.sdg6data.org

UN WATER
INTEGRATED MONITORING INITIATIVE FOR SDG 6

United Nations | UN WATER

INDICATORS	CUSTODIANS
6.1.1 Proportion of population using safely managed drinking water services	WHO, UNICEF
6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water	WHO, UNICEF
6.3.1 Proportion of domestic and industrial wastewater flows safely treated	WHO, UN-Habitat, UNSD
6.3.2 Proportion of bodies of water with good ambient water quality	UNEP
6.4.1 Change in water-use efficiency over time	FAO
6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	FAO
6.5.1 Degree of integrated water resources management	UNEP
6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation	UNECE, UNESCO
6.6.1 Change in the extent of water-related ecosystems over time	UNEP, Ramsar
6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan	WHO, OECD
6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management	WHO, OECD

UN WATER
INTEGRATED MONITORING INITIATIVE FOR SDG 6

United Nations | UN WATER

Contents

Foreword

The COVID-19 crisis has caused enormous disruption to sustainable development. However, even before the pandemic, the world was seriously off track to meet Sustainable Development Goal 6 (SDG 6) – to ensure water and sanitation for all by 2030.

No matter how significant the challenges we face, achieving SDG 6 is critical to the overarching aim of the 2030 Agenda, which is to eradicate extreme poverty and create a better and more sustainable world. Making sure that there is water and sanitation for all people, for all purposes, by 2030 will help protect global society against many and varied looming threats.

Our immediate, shared task is to establish safe water and sanitation services in all homes, schools, workplaces and health care facilities. We must increase investment in water use efficiency, wastewater treatment and reuse, while protecting water-related ecosystems. And we must integrate our approaches, with improved governance and coordination across sectors and geographical borders.

In short, we need to do much more, and do it much more quickly. In the SDG 6 Summary Progress Update 2021 that preceded this series of reports, UN-Water showed that the current rate of progress needs to double - and in some cases quadruple - to reach many of the targets under SDG 6.

At the March 2021 high-level meeting on the "Implementation of the Water-related Goals and Targets of the 2030 Agenda", UN Member States noted that to achieve SDG 6 by 2030 will require mobilizing an additional US$ 1.7 trillion, three times more than the current level of investment in water-related infrastructure. To make this happen, Member States are calling for new partnerships between governments and a diverse group of stakeholders, including the private sector and philanthropic organizations, as well as the wide dissemination of innovative technology and methods.

We know where we need to go, and data will help light the way. As we ramp up our efforts and target them at areas of greatest need, information and evidence will be of critical importance.

Published by the UN-Water Integrated Monitoring Initiative for SDG 6 (IMI-SDG6), this series of indicator reports is based on the latest available country data, compiled and verified by the custodian United Nations agencies, and sometimes complemented by data from other sources.

The data were collected in 2020, a year in which the pandemic forced country focal points and UN agencies to collaborate in new ways. Together we learned valuable lessons on how to build monitoring capacity and how to involve more people, in more countries, in these activities.

The output of IMI-SDG6 makes an important contribution to improving data and information, one of the five accelerators in the SDG 6 Global Acceleration Framework launched last year.

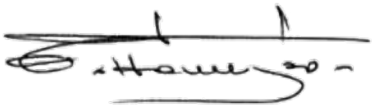
With these reports, our intention is to provide decision-makers with reliable and up-to-date evidence on where acceleration is most needed, so as to ensure the greatest possible gains. This evidence is also vital to ensure accountability and build public, political and private sector support for investment.

Thank you for reading this document and for joining this critical effort. Everyone has a role to play. When governments, civil society, business, academia and development aid agencies pull together dramatic gains are possible in water and sanitation. To deliver them, it will be essential to scale up this cooperation across countries and regions.

The COVID-19 pandemic reminds us of our shared vulnerability and common destiny.
Let us “build back better” by ensuring water and sanitation for all by 2030.

Gilbert F. Houngbo

UN-Water Chair and President
of the International Fund for
Agricultural Development



UNEP foreword

Indicator 6.5.1: Degree of integrated water resources management implementation

Our planet has enough fresh water to satisfy all current and foreseeable future demands, but it is not always available when or where it is most needed. In many regions of the world, the use of limited freshwater resources constrains social and economic development and degrades natural ecosystems. Climate change, biodiversity loss and pollution all have a negative impact on freshwater availability and quality, which is why sustainable management of our water resources is so important.

In 2018, UNEP reported that 60 per cent of countries were not on track to achieve sustainable water management by 2030. In this latest report, a key finding from the more than 170 countries surveyed is that global efforts to address this situation need to double to achieve sustainability by 2030. This is a mammoth, but not insurmountable, task. While some countries have made impressive progress over the last few years, 65 are far from the target and appear to be making little to no progress.

This report, produced as part of the UN-Water-led Integrated Monitoring Initiative for SDG 6, emphasizes the scale of the challenge and identifies where and how progress can be accelerated. UNEP is committed to supporting countries in this effort. Since 2019, UNEP and partners, including the Global Water Partnership, have assisted 10 countries in developing Action Plans that directly address water management challenges. By the end of 2022, we aim to have assisted at least 20 more countries with both their planning and implementation efforts.

I am proud of the work we are doing, but also recognize that so much more needs to be done. If we really want to sustainably manage water resources, and realise all the benefits this can bring, many more people and organizations need to figure out how they can meaningfully engage.

The COVID-19 pandemic reminds us that we live in an interconnected world, where the well-being of our neighbours affects us more directly than many of us realize. It also emphasizes the importance of working together, valuing things that we often take for granted, and adopting innovative approaches. As an uneven global recovery takes shape and gains pace, these lessons should not be forgotten.

The only viable option for our long-term collective well-being is to protect, manage and share the limited fresh water we have. We should not wait until it is too late. We can all make a difference if we act. What are you doing to address the water management crisis?

This is a cause for concern for all countries and signals the need to rapidly increase and enforce the protection of critical freshwater ecosystems.

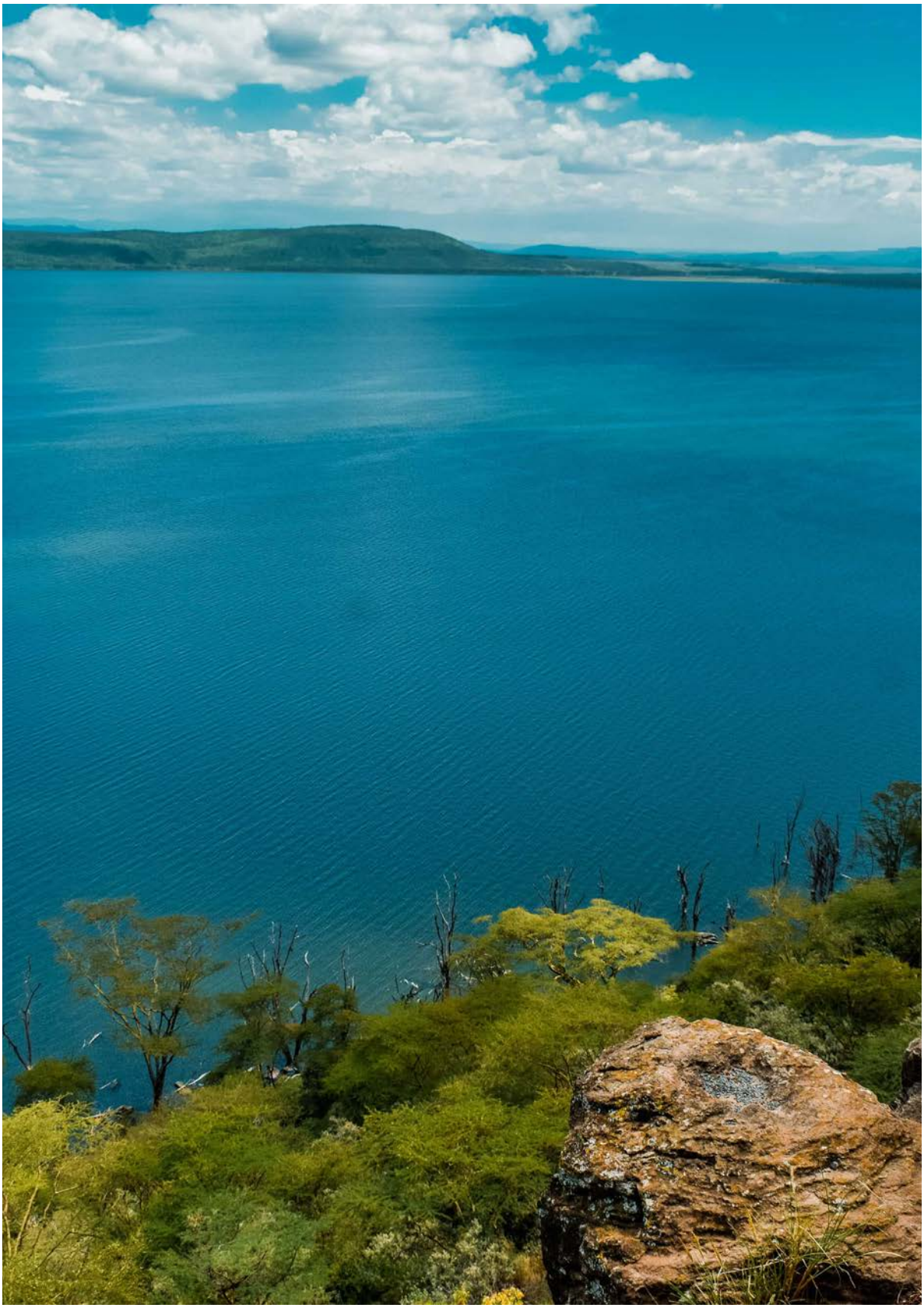
While humans may be responsible for driving ecosystem changes, they are also able to find solutions using available data to make informed decisions. At no other point in human history have people had to face such climate, pollution and biodiversity crises. Keeping ecosystems healthy will help address these crises and allow the world to “make peace with nature”. Now is the time for action.

Inger Andersen

Executive Director of the
United Nations Environment Programme

List of acronyms

AIP	Continental Africa Water Investment Programme
Cap-Net	International Capacity Development Network for Sustainable Water Management
ECOWAS	Economic Community of West African States
GWP	Global Water Partnership
IWRM	integrated water resources management
MoU	memorandum of understanding
NGOs	non-governmental organizations
ODA	Official Development Assistance
PPP	public-private partnership
SADC	Southern African Development Community
SDG	Sustainable Development Goal
UN-Water	United Nations Water
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNEP-DHI	UNEP-DHI Centre on Water and Environment
UNESCO	United Nations Educational, Scientific and Cultural Organization
WASH	water, sanitation and hygiene
WHO	World Health Organization



Lake Nakuru, Kenya by Mutehngi Mbuvi on Unsplash

Executive summary

6 CLEAN WATER AND SANITATION

Sustainable Development Goal (SDG) 6:

Ensure availability and sustainable management of water and sanitation for all

Target 6.5:

By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

Indicator 6.5.1:

Degree of integrated water resources management implementation (0–100)

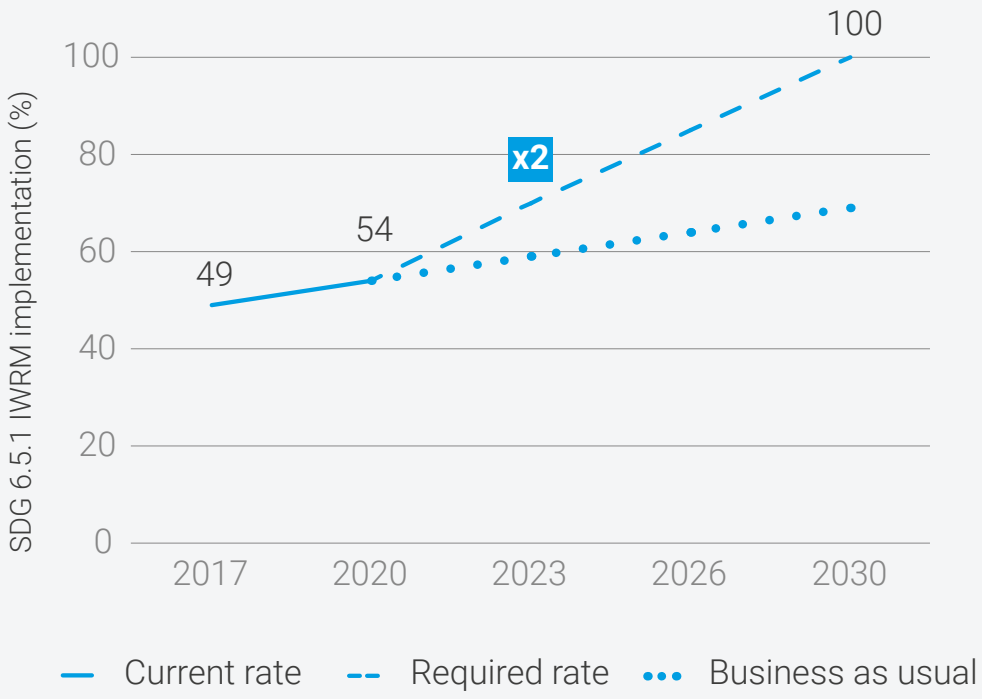
Integrated water resources management (IWRM) is an approach that helps to balance competing water demands from across society and the economy, without compromising the sustainability of vital ecosystems. This is achieved through coordinated policy and regulatory frameworks, management arrangements and financing.

Mara River, Kenya, by Lawrence L on Flickr, 2010

Progress towards target 6.5 – the three main points

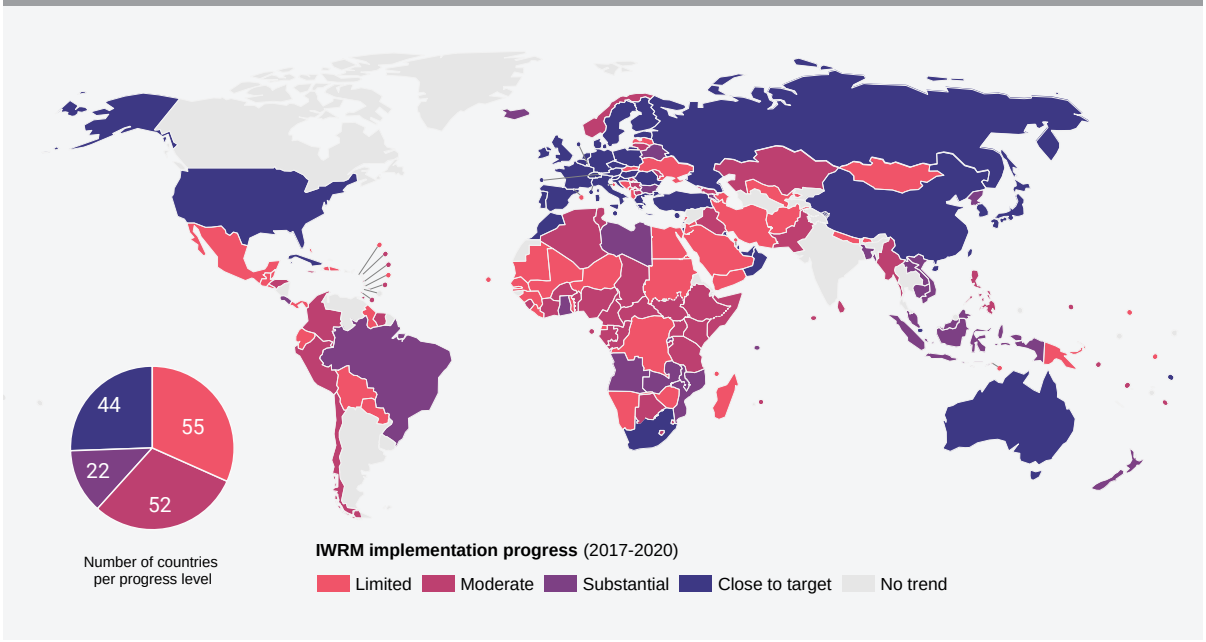
1. **Globally, the rate of implementation of IWRM urgently needs to double (Figure 0.1).** Unfortunately, the world is not on track to achieve SDG target 6.5. For many countries with lower levels of IWRM implementation, where development challenges are usually significant and capacity may be relatively low, the rate of implementation needs to far more than double.

Figure 0.1. Current and required global IWRM implementation rate



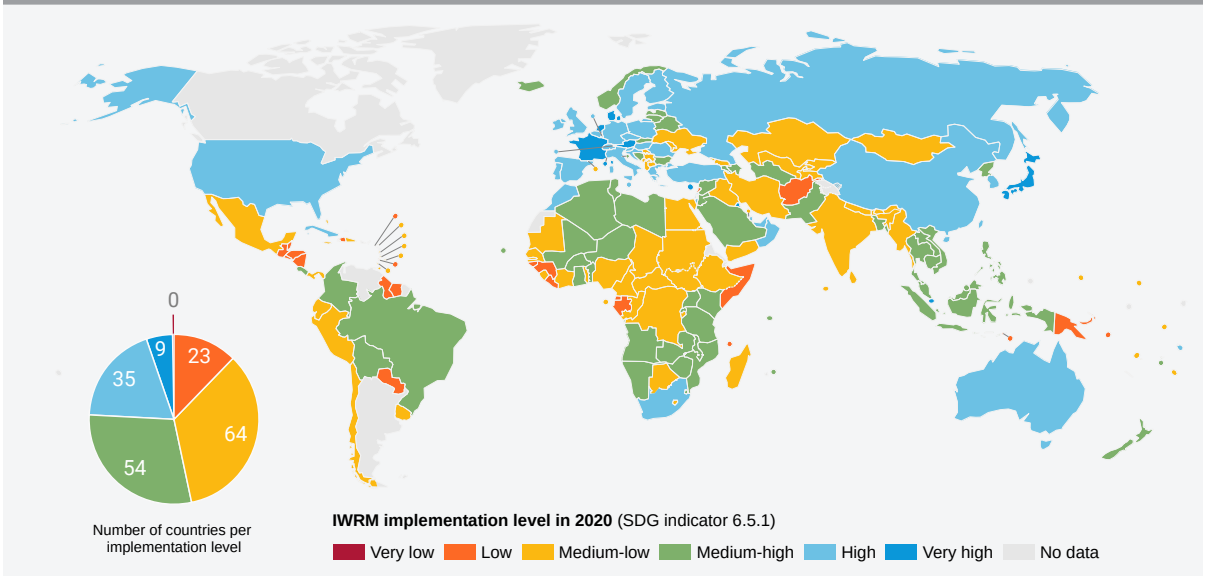
2. **Real and rapid progress is possible.** Unfortunately, 107 countries are not making sufficient progress to achieve SDG target 6.5. However, in some countries there are clear signs of progress (Figure 0.2). For example, between 2017 and 2020, 52 countries made moderate progress (though this still needs to accelerate), and 22 countries made substantial progress. The 44 countries that are close to the target need to sustain their efforts, since achieving and maintaining the objectives of sustainable water resources management is an ongoing process.

Figure 0.2. Country progress towards target 6.5 (2017–2020)



3. **Business as usual is not an option.** The global call for IWRM implementation was formalized in 1992. Almost 30 years later, 87 countries (47 per cent) still report "low" or "medium-low" levels of IWRM implementation (Figure 0.3). Experiences from the 98 countries (53 per cent) reporting "medium-high" and above provide valuable lessons in advancing the various aspects of IWRM. These countries are generally implementing IWRM as part of longer-term and focused efforts. Individual countries must decide on the course of action that will best suit their needs, and for many, strong political will to promote change is absolutely essential to make the progress required.

Figure 0.3. IWRM implementation level by country (2020)



Why integrated water resource management?

The challenge: Human pressures on water resources are increasing unsustainably at the same time as climate change impacts are being amplified in the water environment. Unfortunately, the world is not on track to achieve sustainable management of water and sanitation (SDG 6) by 2030: 2.2 billion people lack access to safe drinking water, 4.2 billion lack access to safe sanitation, 2.3 billion live in water-stressed countries, only 24 out of 153 countries have all their transboundary waters covered by operational arrangements, water pollution is increasing and freshwater ecosystems are rapidly declining. Water demands are increasing to feed growing populations, meet our increasing energy needs, service expanding urban areas and satisfy industrial needs.

Compounding these challenges, climate change is increasing water variability and causing more frequent and extreme floods and droughts, disproportionately affecting the most vulnerable.

Part of the solution: Improvements in the way we use and manage our water are urgently needed to sustain our development. Addressing the complexity of competing and increasing demands and stresses on water resources requires coordinated action on financing, policy and legal frameworks, transparent management of data and information, and multi-stakeholder planning across all sectors and at all levels. In other words, there is a clear need to implement IWRM, as evaluated by SDG indicator 6.5.1, to be able to balance competing social, economic and environmental demands and impacts on water resources, as we work towards broader sustainable development objectives and climate resilience.

Countries demonstrate their commitment

In 2020, 171 countries invested significant effort to complete the 6.5.1 survey, with most countries organizing multi-stakeholder consultation processes. For most, this was an update of baseline reporting completed in 2017. This demonstrates the significant commitment of countries in working towards implementing IWRM in the context of the SDGs.[1]

What are the key management challenges?

Water practitioners at all levels have reiterated time and again the value of IWRM, but point to a number of implementation challenges, including the following deficiencies:

- **lack of coordination** and alignment of policies and institutional collaboration between water-related sectors and stakeholders, and between national, subnational and basin levels;
- **insufficient financing**, including poor coordination between water-related initiatives, and lack of capacity to absorb and disburse funds;
- **weak capacity** of institutions to enforce legislation, and of water professionals to develop and implement cross-sector programmes;
- **insufficient monitoring, and data- and information-sharing** in practice;
- **outdated or ineffective legal frameworks**;
- **lack of appreciation of the value of implementing IWRM** among water-related sectors and across government ministries, including those responsible for national planning and financing.

However, the fundamental challenge lies in achieving political commitment at the highest levels and across sectors to prioritize the implementation of IWRM as an enabler for so many other SDGs.

Key recommendations for advancing integrated water resources mangement

Key enablers

1. **Strengthening of political will through advocacy and communication:** Without high-level political support, countries will not achieve sustainable water resources management. Such backing is essential for required actions, financing and follow-up to take place. This can be achieved by clearly communicating and demonstrating the value of implementing IWRM for achieving multiple SDGs to key stakeholders at all levels and across sectors.

2. **Action planning:** Countries can develop IWRM Action Plans, or similar, in order to focus, prioritize and coordinate efforts. Each country should identify and formalize their own pathway to make progress. A useful source of inspiration is the SDG 6 IWRM Support Programme;[2] its Acceleration Package[3] contains guidance and is available to all countries.

1 186 countries have reported on SDG indicator 6.5.1 across 2017 and 2020.
2 See www.gwp.org/en/sdg6support.
3 See www.gwp.org/en/sdg6support/consultations/where-we-need-to-go/acceleration-package/.

Supporting actions

3. **Coordination and alignment:** Coordination within the water sector and with other sectors needs to be prioritized and strengthened. For example, adopt integrated approaches to policies related to investments and management of water supply, wastewater treatment and reuse, water use and water-use efficiency in agriculture, industry and energy production, ecosystem protection and restoration, and water-related disasters. Identify opportunities to integrate water resources management into sectoral programmes and planning processes – such as climate change, agriculture and poverty reduction – and establish formal coordination mechanisms, with clear institutional mandates, responsibilities, and incentives for coordination.

4. **Financing:** Options include focusing on: (a) increasing direct central government investment backed by good policy; (b) raising revenue from traditional and non-traditional water and ecosystem services; (c) transparency, anti-corruption and accountability; and (d) leveraging opportunities from recovery support packages (COVID-19, natural disasters), using IWRM coordination mechanisms and stakeholder participation approaches as a tool for coordinating multiple interventions across sectors.

5. **Basin and aquifer management:** Prioritize the development of basin and aquifer organizations with clear mandates and strong links to relevant local government departments and agencies; technical capacity to monitor water resources and their use; and secured funding.

6. **Capacity development:** Identify and address the capacity gaps within and between key institutions and create incentives to retain qualified staff and encourage gender balance. Strengthen individual and institutional capacities through training programmes, peer-to-peer learning, partnering with universities, experience-sharing, career development pathways, and periodic evaluation. Ensure sufficient capacity and adequate and transparent management tools to enforce legislation, including for revenue raising. The aim should be long-term institutional capacity development, aligned with clear institutional mandates.

7. **Data and information management:** Options include: (a) developing an online national information system (or similar) for IWRM, which compiles and standardises relevant data and information on water use and allocation from different entities; (b) securing funding for establishing harmonized monitoring networks, making use of modern technology and approaches where appropriate; (c) encouraging national and international partners to share water data that may be of national interest; (d) ensuring that information is accessible and easily understandable to all relevant stakeholders.

8. **Inclusive participation:** The best ways and means to promote inclusive stakeholder participation in order to ensure the fairness and sustainability of water management and use are context-specific. However, general experience is that meaningful stakeholder engagement in at least the policy formulation and planning processes produces better results. In many countries, this approach will allow for consideration

of vulnerable groups and of gender mainstreaming. Some countries include participation considerations in their laws.

9. **Legal frameworks:** Develop or update laws to reflect progressive, coordinated water resources management approaches, and ensure policy alignment between existing or new legislation related to the use or pollution of water.

10. **Transboundary cooperation:** Promote the value of transboundary cooperation to national and riparian counterparts to ensure political backing and resources. A useful approach can be to draw upon regional and global frameworks, to enhance political buy-in at the basin and aquifer level.[4]

Further information, support and inspiration for action

IWRM data portal (http://iwrmdataportal.unepdhi.org): national SDG indicator 6.5.1 reports, visual country reporting summaries, global and regional reports, a results database, methodology, and Help Desk.

SDG 6 IWRM Support Programme (www.gwp.org/en/sdg6support): assists governments in designing and implementing country-led responses to SDG indicator 6.5.1, to accelerate progress towards the achievement of water-related SDGs and other water-related objectives, in line with national priorities. It is structured as three stages: (1) supporting countries to identify challenges through SDG indicator 6.5.1 reporting; (2) developing Action Plans, including an Acceleration Package; and (3) implementing solutions, including an Action Searcher.

Global Water Partnership (GWP) ToolBox: IWRM Action Hub (www.gwptoolbox.org): technical guidance and case studies covering all aspects of IWRM implementation, including interactive features for peer-to-peer exchanges between IWRM practitioners.

United Nations Water (UN-Water) SDG 6 Data Portal (www.sdg6data.org): global data sets on all SDG 6 indicators.

SDG 6 Global Acceleration Framework (www.unwater.org/sdg6-action-space): this UN-Water led initiative aims to coordinate the international community's support to countries to achieve SDG 6. The framework focuses on five accelerators: optimized financing, improved data and information, capacity development, innovation, and governance.

4 See also SDG indicator 6.5.2 on operational arrangements for transboundary cooperation.

Valley of Ziz, Morocco by Alexander Schimmeck on Unsplash

1. Water management in the 2030 Agenda

The world is not on track to achieve Sustainable Development Goal (SDG) 6 – "Ensure availability and sustainable management of water and sanitation for all".

The best option of accelerating progress towards SDG 6 lies in coordinated action across each target area.

Working towards target 6.5, on implementing integrated water resources management (IWRM), strongly supports this coordinated approach to all targets, such as those on water-use efficiency, water supply, sanitation, wastewater treatment, ambient water quality and freshwater ecosystems. An overview of the targets and indicators under SDG 6 can be found in the "SDG 6 Integrated Monitoring Initiative" graphic on the preliminary pages of this report.

Table 1.1. Status of SDG 6 targets

SDG 6 target area	Progress
6.1 Drinking water	Off track – progress rate needs to increase fourfold
6.2 Sanitation	
6.3 Ambient water quality and wastewater treatment	Insufficient data/likely off track
6.4 Water-use efficiency and water stress	Insufficient data/likely off track
6.5 IWRM implementation and transboundary cooperation	Off track – progress rate needs to double
6.6 Freshwater ecosystems	Off track

Source: United Nations Water (UN-Water) (2021).

IWRM is an approach that helps to balance competing water demands from across society and the economy, without compromising the sustainability of vital ecosystems. This is achieved through coordinated policy and regulatory frameworks, management arrangements and financing.

Everything is connected. Countless studies have argued that the only hope of attaining the SDGs is through an integrated approach that deals with the interconnected nature of the economic, social and environmental dimensions of sustainable development (Kroll, Warchold and Pradhan, 2019; Glass and Newig, 2019). SDG target 6.5, with its in-built integrated approach to water management, directly and intentionally supports the achievement of many other SDG targets – such as on health, agriculture, poverty, energy, climate, the environment, gender and peace – in a coordinated fashion that underpins sustainable development and leaves no one behind.

SDG target 6.5: "By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate."

Two indicators track progress towards the target, as a measure of sustainable water resources management:

- 6.5.1: Degree of integrated water resources management implementation (0–100)
- 6.5.2: Proportion of transboundary basin area with an operational arrangement for water cooperation (United Nations Economic Commission for Europe [UNECE] and the United Nations Educational, Scientific and Cultural Organization [UNESCO], 2021).

This report presents the global status and trends on IWRM implementation (indicator 6.5.1). It is part of a set of products to track progress and support countries in working towards target 6.5 – including country factsheets, country Action Plans and regional reports.[5]

Reporting on indicator 6.5.1 is based on a country survey, which typically involves extensive stakeholder consultations. Despite the effort required, countries have shown considerable commitment to working towards implementing IWRM in the context of the SDGs. This is demonstrated by the 186 countries reporting on the indicator since 2017 (Annex II), many of them hindered by the COVID-19 pandemic in conducting the necessary consultations (Box 1). This report attempts to bring their experiences and challenges to regional and global audiences, so that their efforts can be recognized and they can be supported in their mission to reach target 6.5.

5 Available at http://iwrmdataportal.unepdhi.org/.

Box 1. The COVID-19 pandemic has hindered progress in IWRM implementation globally, but it also offers opportunities for building back better[6]

The COVID-19 pandemic has had some negative impacts on water management, including delays in implementation of policies and plans (Maldives); delays in installing monitoring stations (Philippines); and reduced budgets for water sector investments (Sudan). However, the pandemic has also revealed the importance of water management, most obviously to ensure a secure supply of clean water, and adequate sanitation and hygiene (WASH) (SDG targets 6.1 and 6.2).

Beyond WASH, cross-sectoral coordination, such as in planning for irrigation and watershed management, has helped to ensure food (SDG 2) and water despite impacted supply chains (Philippines). Protection and restoration of water-related ecosystems (SDG target 6.6), and transboundary cooperation over water resources (SDG indicator 6.5.2), are becoming more urgent to build resilience to the social and economic impacts of pandemics (Czech Republic). Other countries point to the need to maintain or increase budgets for water resources management (Pakistan, Panama).

The pandemic has also provided opportunities to improve stakeholder participation. Some countries have turned constraints on physical meetings into better and broader participatory processes by allowing stakeholders more flexible participation through online facilities (Guatemala). This approach has offered opportunities for stronger and potentially more cost-effective stakeholder participation (Samoa), though more reliable power (SDG 7) and internet (SDG 9) is needed in some areas (South Sudan).

6 The blue boxes throughout this report present a selection of country experiences from the 2020 reporting round.

Senior hydro-geologist Saleem Abdulaziz monitors water consumption, North Darfur, Sudan on Flickr

2. How to interpret the results

IWRM survey and reporting process: Countries report on the indicator every three to four years. Most countries undergo comprehensive, multi-stakeholder processes to complete the survey, which are vital to working towards the target (Annex III). Thirty-three survey questions cover the four main dimensions of IWRM:[7] (1) Enabling Environment (laws, policies and plans); (2) Institutions and Participation; (3) Management Instruments; and (4) Financing. Each question is scored on a scale of zero to 100, guided by specific threshold descriptions.

Calculating the indicator score: Question scores in each dimension are averaged to give four dimension scores, which are then averaged to give the indicator score.

IWRM implementation levels: Six implementation levels have been defined, from "very low" to "very high", with general interpretations and score thresholds given below.

Table 2.1. IWRM implementation levels and their interpretation

Level	Score range	General interpretation for overall score, and dimension scores
Very low	0–10	Development of elements of IWRM has generally not begun or has stalled.
Low	11–30	Implementation of elements of IWRM has generally begun, but with limited uptake across the country, and potentially low engagement of stakeholder groups.
Medium-low	31–50	Elements of IWRM are generally institutionalized, implementation is under way.
Medium-high	51–70	Capacity to implement elements of IWRM is generally adequate, and elements are generally being implemented under long-term programmes.
High	71–90	IWRM plan and programme objectives are generally met, and geographic coverage and stakeholder engagement is generally good.
Very high	91–100	The vast majority of IWRM elements are fully implemented, with objectives consistently achieved, and plans and programmes periodically assessed and revised.

7 See Annex I for a survey summary. The full survey is available at http://iwrmdataportal.unepdhi.org.

Data coverage: This report is based on data from 186 UN Member States (96 per cent of countries; see Figure 3.3).[8] Of these, 172 countries have data for both 2017 and 2020, allowing for analysis of progress towards the target.

Calculating progress: Progress levels are defined as "limited", "moderate" and "substantial", based on the ratio of actual rate of progress to required rate of progress to reach the target.[9] While two data points cannot provide a statistically strong trend projection, and IWRM implementation is not a linear process, the data at least gives an approximation of the rate of implementation. For most countries, the data-collection process in 2020 has been more comprehensive than in 2017. For a few countries, this may have resulted in significant changes in score, which are more likely to be a result of this more robust process, rather than significant progress or regression.

Global target: In line with target 6.5, the global, the aspirational target for indicator 6.5.1 is to reach a "very high" level of implementation of IWRM, or an average score of 91–100, by 2030. Countries may also set their own national targets, though none have officially done so (see Box 2).

Data quality: Scores for each question are ideally consolidated in country-led, multi-stakeholder processes. For each of the 33 questions, countries also provide the "status description" and "way forward". The reporting processes add to the transparency and confidence in results, and the completed surveys can be used as simple diagnostic tools to determine the main challenges and opportunities in each country, as well as outlining next steps towards the target.[10] For recommendations on how countries can progress from reporting to action planning, see chapter 6.

Tai O, Hong Kong by Keith Hardy on Unsplash

8 In 2017, 173 countries reported. In 2020, 158 countries submitted updates, 13 reported for the first time, and 14 reused their baseline (totalling 185 country reports for 2020). Argentina reported in 2017 and chose not to resubmit its baseline, as it was still working on its update at the time of writing. As such,186 countries have reported across 2017 and 2020. Only seven countries have not submitted a report in either 2017 or 2020.

9 This methodology is based on United Nations Statistics Division (UNSD) methodology. For more information, see http://iwrmdataportal.unepdhi.org.

10 Country surveys are available at http://iwrmdataportal.unepdhi.org/countrydatabase.

3. Status of integrated water resources management implementation and progress towards target 6.5

Target 6.5: "By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate."

This chapter presents the progress towards target 6.5 at the global, regional and country levels, based on country reporting on indicator 6.5.1 in 2017 and 2020.

Key findings

1. While most countries have made some progress, **the global rate of progress on IWRM implementation needs to double**.

2. **Acceleration is most urgently needed in South and Central America, the Caribbean, Oceania, South Asia, Central Asia, Central Africa and West Africa**, but further effort is still needed in all regions.

3. **A total of 107 countries are not on track to achieve SDG target 6.5**. Between 2017 and 2020, 55 countries made limited or no progress, 52 countries made moderate progress but still need to accelerate their efforts, 22 countries made substantial progress but need to sustain their efforts towards 2030, and 44 countries are close to the target but need to sustain their efforts, since achieving and maintaining the objectives of sustainable water resources management is an ongoing process.

Key recommendations at different levels

The world is at a critical juncture to make a step-change towards a more water-secure world by 2030. Some countries and regions have shown that acceleration is possible, but action is needed at all levels by all actors.

1. **Global and regional organizations** need to ensure that coordinated technical and financial support is provided where it is most needed.

2. **Basin and aquifer organizations** – both transboundary and those within national borders – need to provide the necessary leadership and stakeholder platforms to ensure that basin-level development and management of resources takes place in a sustainable and integrated manner.

3. **National and subnational governments** need to ensure that the value of integrating water management to meet various social, environmental and economic needs is understood and promoted across sectors. In other words, they need to strengthen political will for IWRM through clear and targeted communication.

3.1. Global and country status and progress

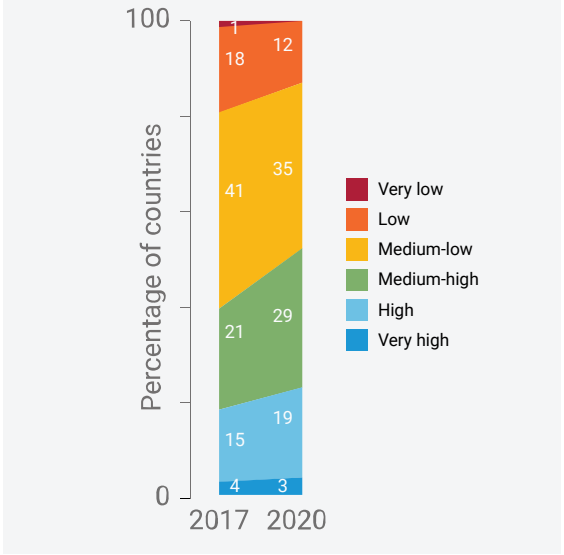
Between 2017 and 2020, most countries improved their IWRM implementation status (Figure 3.1). However, the world is not on track to achieve target 6.5, and the current global implementation rate needs to double (Figure 3.2). To close the gap between "business as usual" and the required trajectory, greater effort is needed in the countries (Figure 3.3, Figure 3.4) and regions (section 3.2) that are lagging.[11]

Failure to accelerate implementation threatens our ability to balance the social and economic demands on water with environmental water requirements, and hence the achievement of other SDG targets, such as those on water supply and sanitation, sustainable agriculture, energy, pollution and water-related ecosystems. The world is at a critical juncture. We must act now to set all countries on a path to a more water-secure future.

11 See chapter 5 for opportunities to strengthen implementation of various aspects of IWRM.

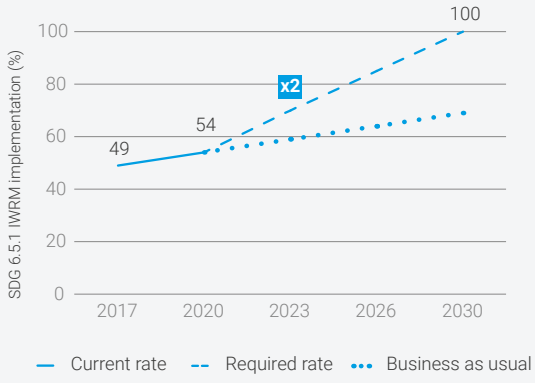
In 2017, most countries reported very low to medium-low IWRM implementation. In 2020, most countries are within the higher levels of IWRM implementation.

Figure 3.1. Percentage of countries per IWRM implementation level (2017 and 2020)



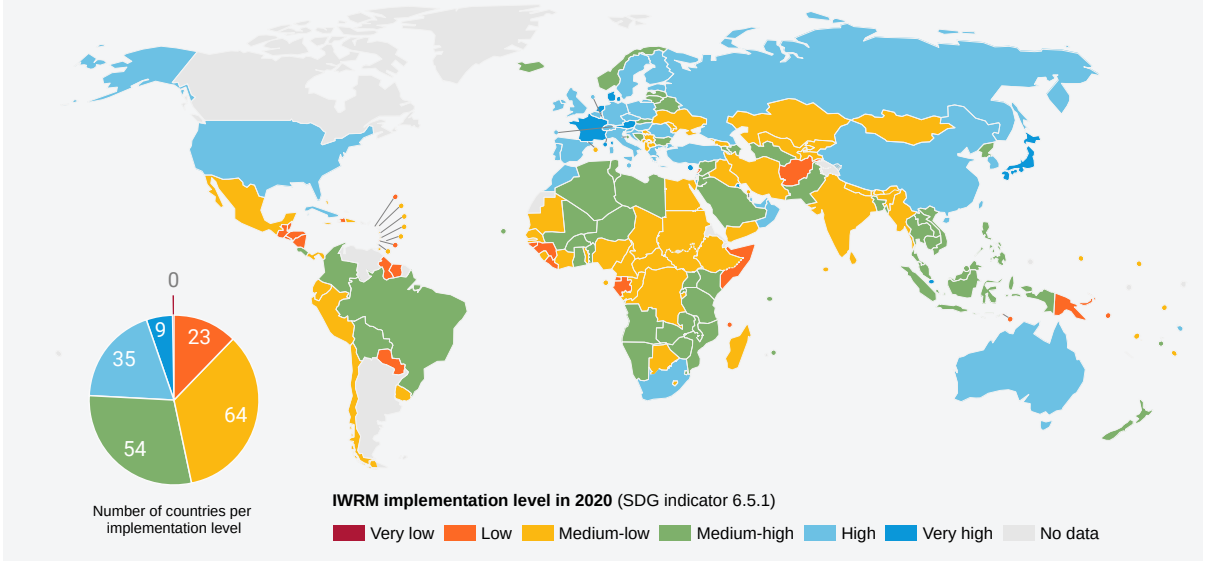
The global average indicator score increased from 49 to 54 between 2017 and 2020, but the global rate of progress needs to double.

Figure 3.2. Current and required global IWRM implementation rate



While the global score on indicator 6.5.1 constitutes a medium-high level of IWRM implementation (score of 54), there are huge variations between countries, with reported scores ranging from 12 (low) to 100 (very high).[12]

Figure 3.3. IWRM implementation level by country (2020)



12 A global map with country codes is provided in Annex IV.

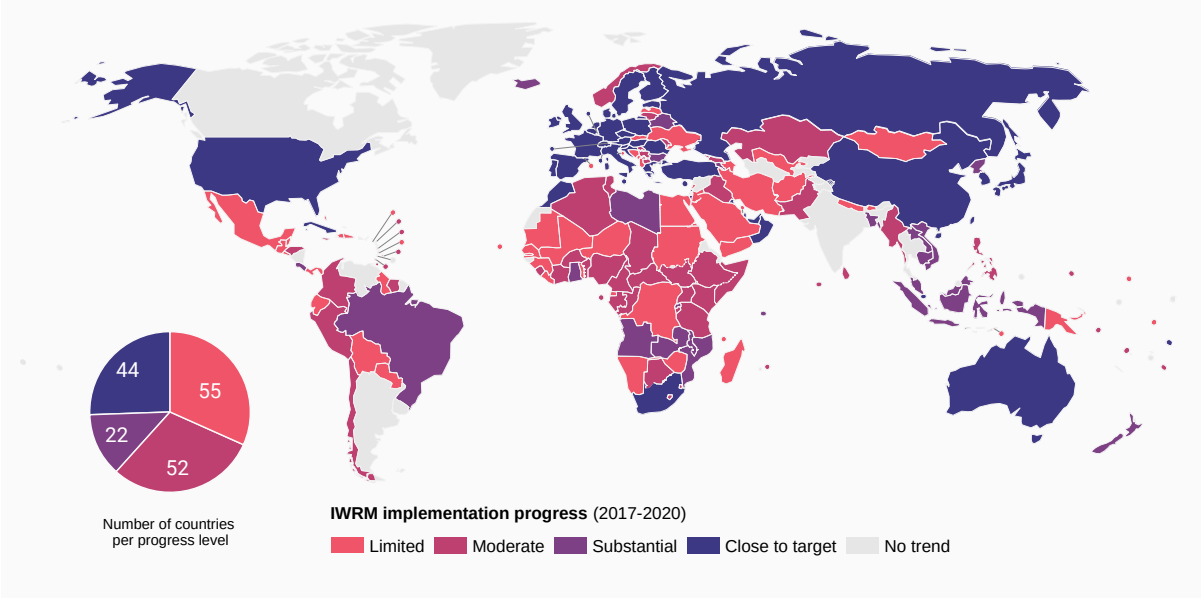
In 2020, 87 countries still reported medium-low or low IWRM implementation levels. Broadly speaking, this means that while some policies, plans and institutional arrangements for IWRM may be in place, implementation in practice is limited in these countries. This is often an indication of a generally low capacity of those mandated to implement IWRM, management arrangements that may not span the whole country, and limited stakeholder participation in water resources management, meaning that not all voices are being heard.

Fundamentally, what is often lacking is the "integration" part of IWRM – the vision and ability to manage water in a cross-cutting way to meet different demands and ensure environmental sustainability.

One of the key enablers to address this is high level political support. This in turn requires clear communication of the value of IWRM for multiple development objectives to a range of stakeholders at different levels and across sectors.[13]

A total of 107 countries are not on track to achieve SDG target 6.5. Between 2017 and 2020, 55 countries made limited or no progress,[14] 52 countries made moderate progress but still need to accelerate their efforts, 22 countries made substantial progress but need to sustain their efforts towards 2030, and 44 countries are close to the target but need to sustain their efforts, since achieving and maintaining the objectives of sustainable water resources management is an ongoing process. Strong conclusions on trends cannot be made from only two reporting rounds, and IWRM implementation is not a linear process. However, these results, coupled with experience of the last 30 years, suggest that efforts invested so far in most countries are insufficient.

Figure 3.4. Country progress towards target 6.5 (based on 2017–2020 data)



13 Guidance on how to address these aspects, and more, is discussed in chapter 5.
14 Progress on IWRM implementation is defined as "limited", "moderate" or "substantial", based on the actual rate of progress compared with the required rate of progress to reach the target by 2030 (see chapter 2).

Box 2. What do countries say about reaching the target?

Countries have not officially been asked to express an opinion on the likelihood of reaching "very high" IWRM implementation by 2030, or to set their own national targets. However, through the SDG 6 IWRM Support Programme, about 60 countries were directly supported in holding stakeholder consultation processes to report on indicator 6.5.1, and 44 countries reflected on the likelihood of reaching the 2030 target in their stakeholder consultation reports. Only a quarter of these countries estimate that they will reach the target for indicator 6.5.1, with the rest unsure or not specifying.

Among the greatest challenges seem to be lack of financing, and tools and activities that support water management. Countries are slightly more confident in reaching the target for enabling environment and stakeholder participation. About a quarter of countries indicate the need for national (interim) targets and some of them have already defined their own interim targets.

For more information, see the indicator 6.5.1 country stakeholder reports.[15]

3.2. Regional and subregional status and progress

Although the regional and subregional averages mask the variation between country-level results, they give an important indication of where global and regional organizations can intensify their efforts and explore innovative ways to support IWRM implementation.

At the regional level, significant efforts are needed in Latin America and the Caribbean, Oceania, Central and Southern Asia, and sub-Saharan Africa, as these regions have made limited progress and are clearly lagging behind the others (Table 3.1).

Broadly speaking, the average regional IWRM implementation corresponds to overall levels of development, with Australia and New Zealand, and Europe and North America reporting significantly higher average IWRM implementation. Many countries in Europe identify the European Water Framework Directive (WFD) as the primary framework and enabler for IWRM implementation at the national level, with WFD articles converted into national legislation. While regional frameworks may exist in other regions and subregions, financial resources, technical support and advocacy to increase political will be needed to effectively implement these regional frameworks at the country level.

15 Available at https://www.gwp.org/en/sdg6support/sdgmap/.

Table 3.1. Regional and subregional IWRM implementation scores and progress levels (2017 and 2020)[16]

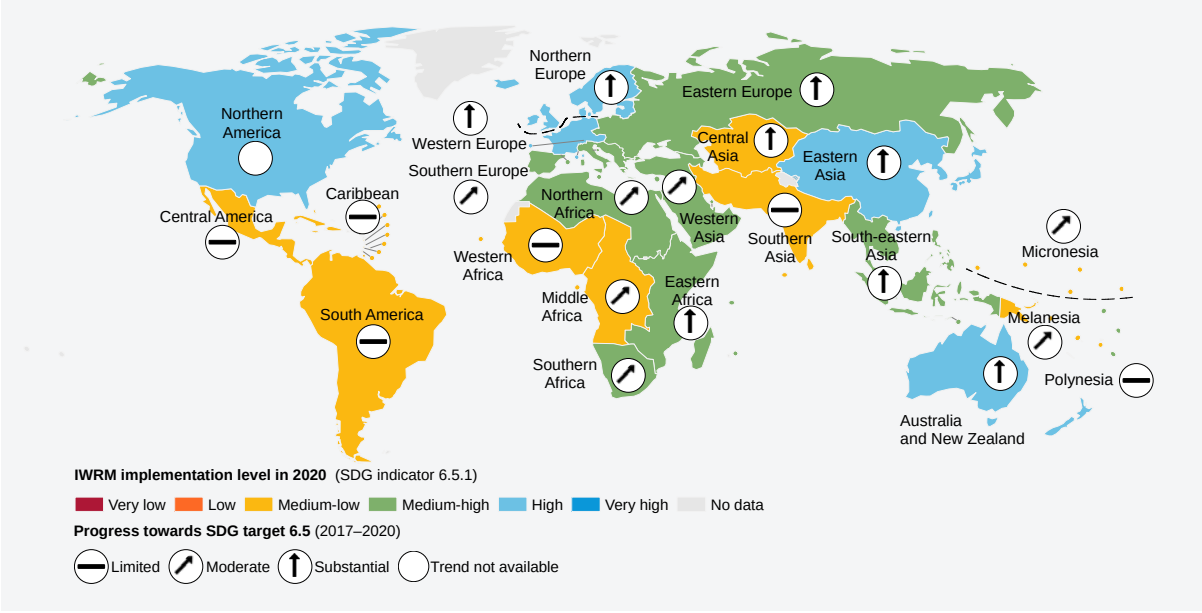
SDG region	6.5.1 score		Progress	SDG subregion	6.5.1 score		Progress
	2017	2020			2017	2020	
Latin America and the Caribbean	35	37	Limited	Central America	31	31	Limited
				Caribbean	37	39	Limited
				South America	35	39	Limited
Oceania (excluding Australia and New Zealand)	38	43	Moderate	Melanesia	30	38	Moderate
				Micronesia	35	43	Moderate
				Polynesia	49	52	Limited
Central and Southern Asia	37	43	Moderate	Southern Asia	37	41	Limited
				Central Asia	38	47	Substantial
Sub-Saharan Africa	40	46	Moderate	Middle Africa	29	37	Moderate
				Western Africa	42	44	Limited
				Eastern Africa	43	51	Substantial
				Southern Africa	50	55	Moderate
Northern Africa and Western Asia	55	60	Moderate	Northern Africa	49	54	Moderate
				Western Asia	57	62	Moderate
Eastern and South-Eastern Asia	52	62	Substantial	South-Eastern Asia	46	57	Substantial
				Eastern Asia	64	72	Substantial
Europe and Northern America	67	72	Substantial	Southern Europe	58	64	Moderate
				Eastern Europe	58	66	Substantial
				Northern Europe	73	77	Substantial
				Western Europe	72	77	Substantial
				Northern America	ND	77	No trend
Australia and New Zealand	72	77	Substantial	Australia and New Zealand	72	77	Substantial

16 There are eight standard "SDG" regions, and 22 subregions, as defined by the UNSD (https://unstats.un.org/sdgs/indicators/regional-groups). Note that these definitions may differ from those of members of regional bodies, which may lead to differences in average scores between this table and those produced through external regional analyses.

At the subregional level, substantial progress has been made in Central Asia, Eastern Africa, Eastern Europe, and South-Eastern Asia, although all remain relatively far from the target and much remains to be done (Figure 3.5).[17] Eastern Asia has also made substantial progress and is close to the target. However, 13 of the 22 subregions are not on track to meet the target by 2030 (those with "limited" or "moderate" progress).

Five subregions made limited progress between 2017 and 2020 and still have medium-low IWRM implementation levels: Central America, the Caribbean, South America, Southern Asia and Western Africa. In these subregions, considerable acceleration of IWRM implementation is needed.

Figure 3.5. Level and progress in 22 subregions towards target 6.5 (2017–2020)



The very nature of water requires actors to consider not only the sustainable management of water resources within their borders, but also the context of their upstream and downstream neighbours. Regional bodies, such as transboundary river basin organizations, can make an important contribution to sustainable resource management in all riparian countries through their work on water resources management and development at the basin level.

Efforts to accelerate IWRM implementation should therefore not only be targeted at national stakeholders, but also recognize the important contribution that transboundary and regional stakeholders can make.

This includes regional economic commissions and development banks, who can play a role in accelerating IWRM implementation in their regions, by supporting senior policymakers and decision makers through capacity development,

17 See chapter 2 for a discussion on trends.

platforms and processes for experience exchange, and with mobilization of resources (Box 3). It is recommended that regional bodies, including river basin organizations and regional economic commissions, use the indicator 6.5.1 reporting results to assess the status of IWRM implementation in their Member States as a starting point for their support activities.

A number of regional activities on indicator 6.5.1 are already under way, including regional assessments covering Central America, Arab countries, South-Eastern Asia, Southern Asia, the Mediterranean and Western Africa (UNEP-DHI Centre on Water and Environment, 2021).

Box 3. The Continental Africa Water Investment Programme (AIP) and its SDG water investment support programme

The goal of the AIP, adopted by the African Union in early 2021, is to transform the investment outlook for water and sanitation on the continent. The programme aims to mobilize USD 30 billion in climate-resilient, gender-sensitive investments in water and sanitation by 2030, and create 5 million jobs across the continent, as it recovers from COVID-19. The AIP SDG water investment support programme supports these goals by helping countries to achieve SDG 6 and water-related targets under health, energy, food and ecosystem SDGs.

One of the tools used to guide investment is the AIP Scorecard, which will focus political and leadership commitment on the drive to support African countries to track progress and identify bottlenecks as they take action to achieve all targets under SDG 6 on water and sanitation. The AIP Scorecard will enhance mutual accountability and employ peer review mechanisms at continental, regional, national, subnational and community levels. See https://aipwater.org/ for more information.

Altiplano, Bolivia by Hugo Kruip on Unsplash

4. Global status of the main aspects of integrated water resources management

The national survey on indicator 6.5.1 is structured around the four dimensions of IWRM: (1) Enabling Environment (laws, policies and plans); (2) Institutions and Participation; (3) Management Instruments; and (4) Financing (section 4.1).

Each dimension contains questions that cover the various elements of IWRM (33 questions in the survey) (section 4.2). The aggregate scores for each dimension and the underlying elements of IWRM give an indication of those that are relatively advanced, and those that need more attention.

Key findings

1. **In terms of global average scores, minor gains have been made, yet:**
    - None of the four IWRM dimensions are expected to be fully implemented by all countries by 2030 (section 4.1).
    - Financing lags significantly behind the other three dimensions – as it did in 2017 (section 4.1).
    - None of the IWRM elements are expected to be fully implemented by all countries by 2030 (section 4.2).
2. **Management arrangements at the basin level is generally lagging behind arrangements at the subnational and national level. Aquifer management is lagging further still (section 4.2).**
3. **Global averages mask important differences at the country level, which must be understood for targeted efforts and support (section 4.2).**

Key recommendations

1. **There is a clear need to close the gap between budget needs and available resources in most countries, which includes the following (section 5.5):**

- Increase financial support from central governments, backed by good policy.
- Improve revenue raising and cost recovery for water services.
- Improve coordination and prioritization of funds across "sectors", identifying win-win investments, for example climate adaptation and poverty reduction.
- Increase efficiency in implementation, including implementation of transparency, anti-corruption and accountability measures.
- Increase and improve coordinated investments from donors and banks.

2. **While each country has its own specific needs, there are some common recommendations for countries with lower overall IWRM implementation levels (chapter 5):**

- Improve cross-sectoral coordination and stakeholder participation, including gender mainstreaming.
- Update legal frameworks to reflect modern principles of water resources management.
- Clarify institutional mandates and increase technical capacity.
- Improve data and information collection and management.

4.1. Global status of the four dimensions of integrated water resources management

The national survey on indicator 6.5.1 is structured around the **four dimensions** of IWRM:

1. **Enabling Environment:** In an enabling environment, national and subnational policies and laws outline the importance of integrated approaches to water resources management. Plans are needed to operationalize policy and regulatory frameworks.

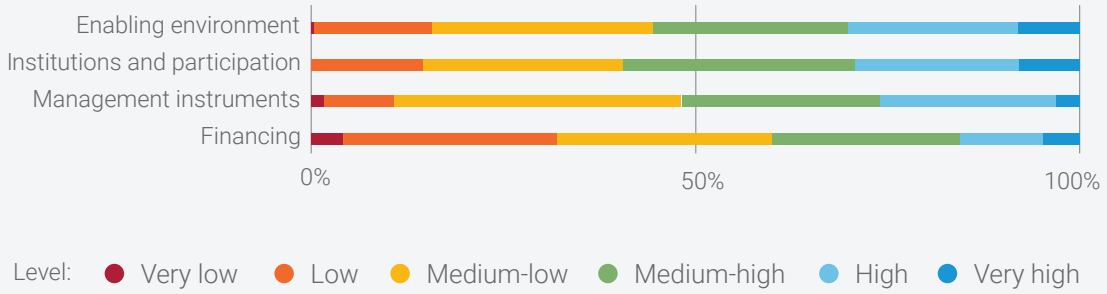
2. **Institutions and Participation:** Institutions, and stakeholder participation across sectors, are needed at all levels to implement plans and enforce regulations.

3. **Management Instruments:** Data and information need to be provided to all relevant stakeholders to allow for informed decision-making, covering aspects such as sustainable use, pollution control, ecosystem management and disaster risk reduction.

4. **Financing:** Budgets at the national and local level, for investments and ongoing infrastructure and management costs, are needed to implement management instruments and fund institutions. Revenue raising is an important part of this.

Each of the four dimensions is important for advancing IWRM implementation. Countries where any of the IWRM dimensions are "very low" or "low" are not in a strong position to accelerate progress overall. For financing, this is more than 30 per cent of countries (Figure 4.1). On a positive note, more than 50 per cent of countries are relatively advanced on the other three dimensions and are in a stronger position to accelerate implementation overall.

Figure 4.1. Percentage of countries per IWRM implementation level, by IWRM dimension (2020)



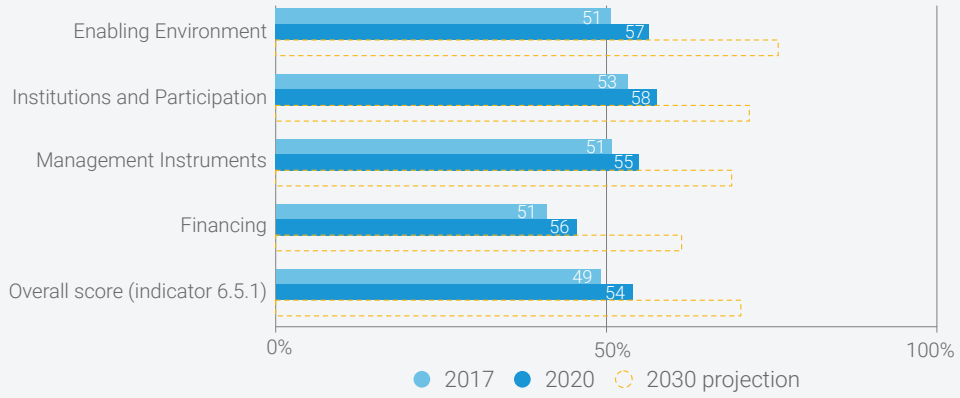
In countries where policy frameworks reflecting IWRM principles are not in place, institutions and stakeholders might struggle to gain sufficient political backing and mandate to implement various IWRM activities. Where IWRM-related policies and plans have been adopted, their implementation requires institutions with clear mandates, sufficient capacity and resources to carry out water management programmes.[18]

Of the four IWRM dimensions, financing is consistently scored the lowest (Figure 4.2). Without dedicated financial resources to operationalize IWRM policies and plans, IWRM is at risk of stalling, compromising the ability to meet current and future water resource needs. Accelerating progress on financing is therefore of the utmost importance to support efforts on practical implementation of IWRM and all water-related SDGs.

Financing is lagging behind the other three dimensions by about 10 per cent and remains a major barrier to accelerating IWRM implementation.

Based on the progress made since 2017, the world is not currently making sufficient progress in any of the four dimensions.

Figure 4.2. Global average score on the four IWRM dimensions in 2017 and 2020, and projections for 2030 based on the current rate of progress



18 Guidance on how to address these challenges is provided in chapter 5.

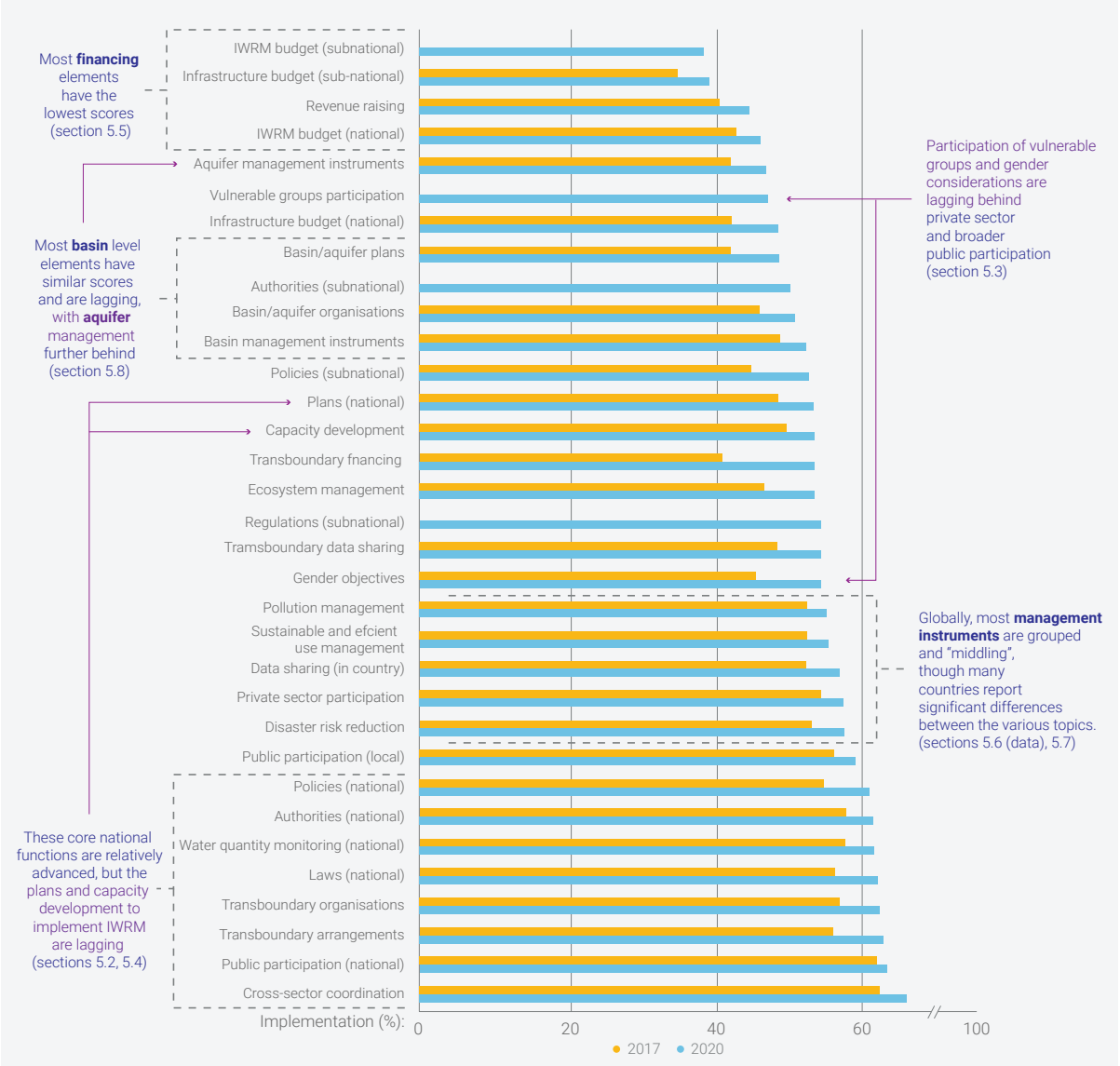
4.2. Global status of the elements of integrated water resources management

This section shows the global average scores for the main IWRM elements assessed through the indicator 6.5.1 survey (Figure 4.3). While the global average scores give some indication of which elements are generally progressing well and which are lagging, it is important to note that global averages do not tell the full story.

They do not show the broad range of the various stages of implementation that countries report and the nuances of implementation arrangements and challenges. For example, although cross-sectoral coordination and national legal frameworks have high average scores, closer analysis reveals that these are still some of the most important priorities for most countries (chapter 5).

Globally, some progress has been made on all IWRM elements, but not quickly enough.

Figure 4.3. Global average scores on IWRM elements (2017 and 2020)



Notes: 2020 scores range from 38 to 66. Text and arrows in purple denote elements that are lagging compared with similar elements.

5. Advancing integrated water resources management implementation: status and solutions

This chapter discusses key aspects of IWRM that countries have reported the need to accelerate progress on, organized in the following sections:[19]

- **5.1. Stronger political will:** targeted advocacy and communication, on the value of IWRM implementation to support broader development objectives, to key stakeholders to secure the necessary political support.
- **5.2. Coordinated governance arrangements:** coordination across sectors, and within the "water community", covering institutional and policy frameworks, and coordination between national and basin levels.
- **5.3. Stakeholder participation:** private sector participation; consideration of gender and vulnerable groups.
- **5.4. Capacity development:** institutional capacity; capacity development programmes.
- **5.5. Coordinated and transparent financing:** financing for infrastructure and management; better coordination and more transparency; revenue raising.
- **5.6. Improved data and information:** monitoring (water quantity and quality); data- and information-sharing arrangements.
- **5.7. Management instruments for water security and resilience:** instruments for sustainable and efficient use management across sectors; pollution control and ecosystem management; disaster risk reduction, flood and drought management and climate change adaptation.
- **5.8. Better basin and aquifer management:** plans, authorities, management instruments and financing at the basin level.
- **5.9. Transboundary cooperation:** agreements, organizations, data-sharing and financing.

While many countries are quite advanced in their IWRM implementation, and others are progressing well, this chapter focuses on countries with lower implementation levels, since these countries need to accelerate progress the most.

19 This structure allows for an analysis of the key challenges many countries face, in some cases cutting across the four IWRM dimensions. It follows that of the SDG 6 Global Acceleration Framework (see "Further information" at the end of the Executive Summary), with the aim of facilitating coordinated efforts to support countries to address these challenges.

Key messages

While each country context is different, five key areas emerge as common priorities for advancing IWRM overall for a significant number of countries:

1. **Strengthening political will for IWRM implementation is fundamental if many countries are to move beyond business-as-usual progress**. This can be achieved by clearly communicating and demonstrating the value of implementing IWRM for achieving multiple sustainable development objectives to key stakeholders at all levels and across sectors. Doing so is an important enabler to address other priorities.

2. **Cross-sectoral coordination and management activities, particularly at the basin and aquifer levels, are critical for sustainable and efficient water management.** However, most countries still cite their implementation as a significant challenge, partly due to capacity and financial constraints, and an inadequate legal framework.

3. **Dedicated budgeting for IWRM activities and more efficient use of existing resources in a coordinated manner are needed to address the financing gap.** Many countries have requested support in developing and enforcing revenue-raising mechanisms, and in coordinating budgeting across sectors for more efficient and transparent use of existing resources.

4. **Institutional and human capacity need to be enhanced and retained for planning, implementation and enforcement.** In conjunction with funded capacity development programmes, it is important to create incentives to keep staff in government agencies and provide practical experience-sharing opportunities.

5. **Reforms need to be underpinned by robust legal frameworks.** Many countries with lower levels of IWRM implementation report that developing or updating their legal framework is an important next step to progress on multiple areas of water resources management, as is enforcing implementation of such frameworks when they do exist.

How to navigate this chapter

- Each section starts with a list of success factors, drawn from indicator 6.5.1 country reporting.
- Blue boxes contain country experiences based on indicator 6.5.1 country reporting.
- Green boxes contain brief case studies.
- Further options for support, and suggested next steps for different actors, are provided in chapter 6.

5.1. Stronger political will

Many countries report a lack of awareness at strategic governmental levels of the importance of taking an integrated approach to water management, and consequently, a lack of political will to adequately resource its implementation. These countries highlight the need for advocacy and strengthened political will as one of the top priorities for advancing IWRM implementation overall.[20]

Indeed, for many countries, strengthening political will is perhaps the most important action they can undertake to accelerate progress across all areas of water resources management, especially countries where previous efforts have not led to the required rate of progress. Fundamentally, this involves being able to communicate and demonstrate the value of implementing IWRM for achieving broader development objectives.

Political will for infrastructure investments or water development schemes is often present, and sometimes strongly so, but mobilizing or directing political will towards more integrated approaches can be challenging. The rewards in doing so will however cut across and support all areas of water resources management, from water supply and sanitation, to productive agriculture and industry, to ecosystem protection. This is achieved by developing and implementing coordinated governance arrangements and cross-sectoral coordination, financing, stakeholder participation and capacity development. While strengthening political will towards IWRM involves different activities in different countries, and can take many different forms, the following list contains some common interrelated activities.

Tokyo Metropolitan Government Building, Shinjuku-ku, Japan by Ryoji Iwata on Unsplash

20 See Annex C of the SDG indicator 6.5.1 country reports. Approximately 65 of the 150 countries that completed the annex mentioned advocacy or political will as a priority (either as a "main barrier" or as a key "next step") for advancing IWRM overall.

Success factors for strengthening political will[21]

Valuing water across society: make efforts to fully understand and analyse the value that different stakeholder groups, at different levels, place on water from various perspectives, including water sources/environment; water infrastructure; water services; water as an input to economic activity; and sociocultural values of water. Valuation should go beyond trying to determine economic value, towards a structured and transparent mechanism that supports a multi-stakeholder process to recognize, balance and address the trade-offs among diverse types of value. This requires more robust measurement and valuation methods to help resolve trade-offs (United Nations, 2021).

Targeted communication: map out the key government and non-government stakeholders, at different levels, understand the value they place/should place on water for various uses, and develop targeted communication to encourage them to provide the necessary backing for the required political mandate and resources to be allocated.

Monitoring and evaluation: advocacy and communication are more effective when supported by transparent data, so ensure adequate monitoring and evaluation of policies, plans and programmes, highlighting the sustained social, economic and environmental benefits of coordinated water resources management.

Transparency and accountability: develop and implement mechanisms to ensure transparency and accountability in the management and implementation of projects and programmes, including the use of funds; ensure relevant data and information is freely and readily available to all. In practical terms, this could start with an integrity assessment.[22]

Financing: have a strong presence with decision makers for national budgets; sensitize decision makers and lawmakers to the importance of financing for advancing an integrated approach to water resources management (Box 6).

21 These are drawn from a mix of common country experiences included in country reporting under indicator 6.5.1, and supplementary sources. They are intended to inspire action, and not as a "how to" guide for implementing IWRM, since priorities and means of implementation will vary among countries.

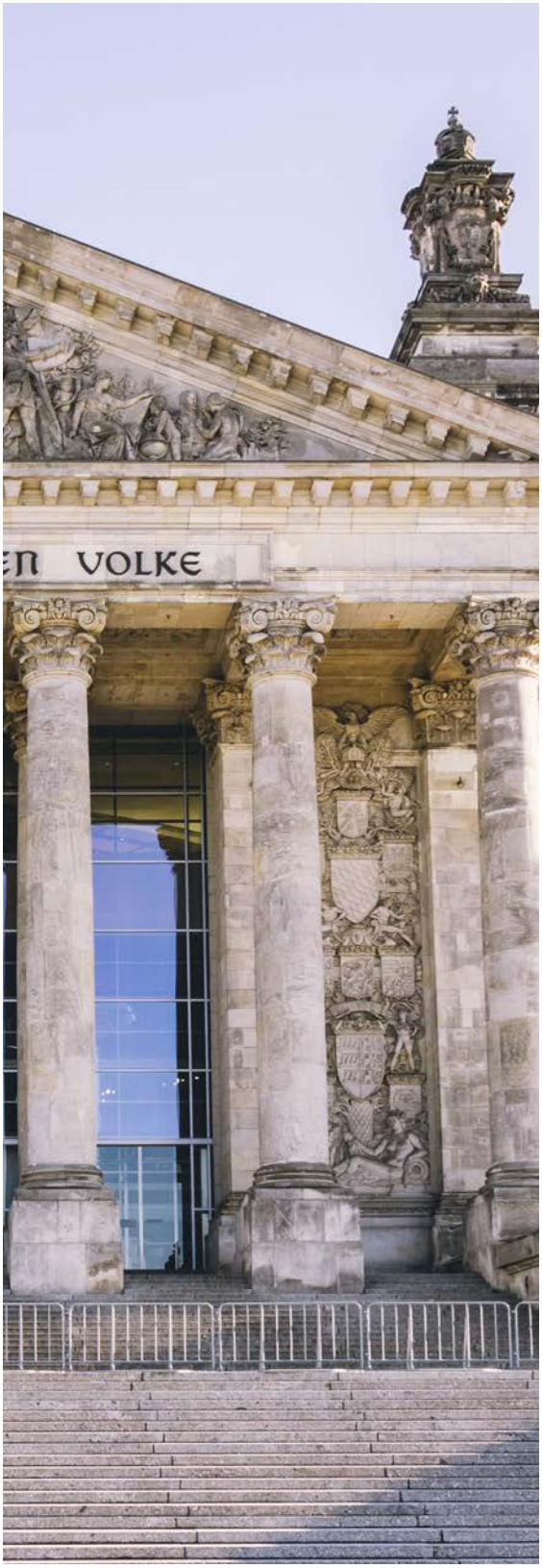
22 The Water Integrity Network (WIN) has several practical "integrity tools" to improve transparency and accountability and strengthen institutional integrity, covering areas such as stakeholder engagement, assessment and action. See www.waterintegritynetwork.net/integrity-tools/.

5.2. Coordinated governance arrangements

Coordination between governance arrangements lies at the core of IWRM, namely the coordination of social, economic and environmental development objectives through coordinated policy and regulatory frameworks, institutional responsibilities, financing, and management activities on the ground.

Many countries report overlapping or fragmented institutional responsibility, and fragmented or conflicting development objectives, as key challenges for progress on IWRM overall.

This results in a lack of coordinated action, inefficient allocation and use of limited resources, a lack of accountability, and an increase in corruption opportunities in some cases. Even with mechanisms and mandates on paper, effective coordination can take time to establish, and is an ongoing process of refinement and improvement. Fortunately, many countries can demonstrate practical experiences in working towards better coordination.



Reichstag, Berlin, Germany by Kristijan Arsov on Unsplash

Success factors for coordinated governance arrangements[23]

Coordination within and outside the water community:

- Ensure that there is a law(s) that mandates an authority to coordinate water resources management, planning and financing, and more generally that obligates authorities to cooperate.
- Ensure that there is an authority, or some form of intersectoral structure, with a clear mandate and resources to coordinate the work of other authorities across sectors, including establishing and maintaining formal coordination mechanisms.
- Identify all government and non-government institutions with an interest in or likely impact on water resources, and their roles, to ensure that relevant parties are included in coordination mechanisms, with the aim of identifying and consolidating institutional responsibilities, and avoiding overlaps and gaps.
- Ensure that there are resourced coordination mechanisms for both development of policies, strategies and plans (fairly common), and their implementation (less common).
- Strong political commitment across sectors is essential for effective coordination.

Advancing on plans: Develop strategic and operational plans for implementing IWRM at the relevant levels (national, subnational and basin/aquifer), with broad stakeholder input using an inclusive approach. Plans should ideally align and leverage elements of national development plans, and other sector plans and policies (e.g. climate change adaptation, energy policy, agricultural policy) where possible. Make regular monitoring and updating an integral part of the plan to keep track of the changing context and set time-bound targets for performance assessment. Get parliamentary approval to make plans binding on all relevant stakeholders.

In countries with low capacity, international support can help to establish an enabling environment (laws, policies, plans) with an integrated approach to water resources management.

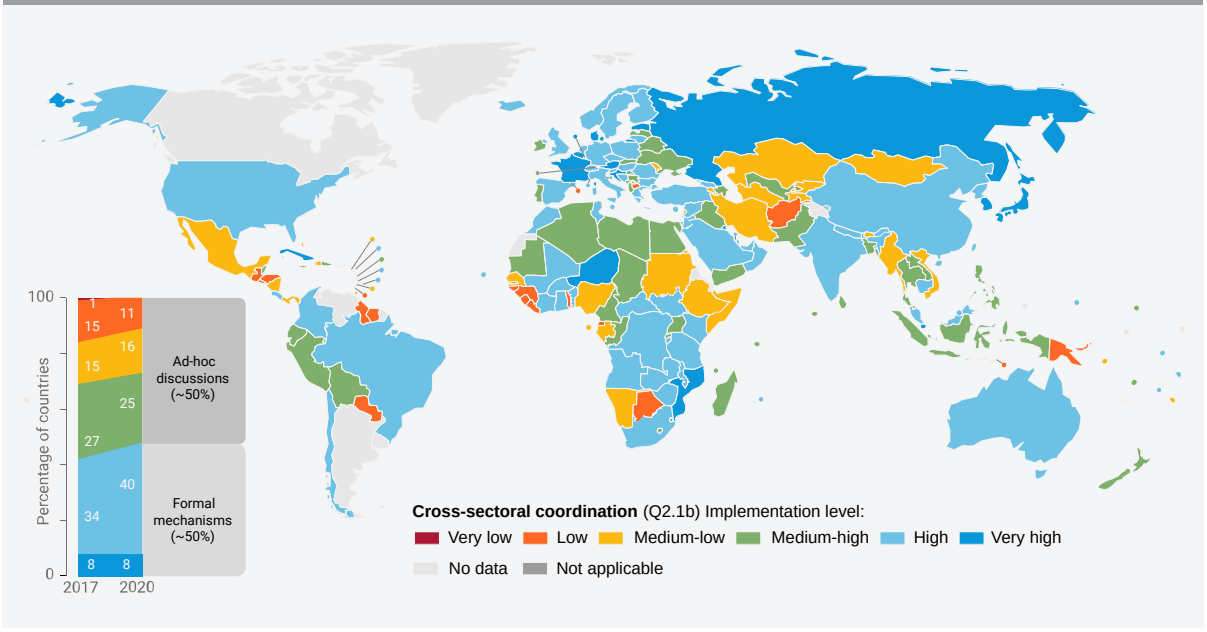
23 These are primarily drawn from common country experiences included in country reporting under SDG indicator 6.5.1, with phrasing guided by expert opinion. They are intended to inspire action, and not as a "how to" guide for implementing IWRM, since priorities and means of implementation will vary among countries.

Coordination across sectors

Coordination across sectors is essential for balancing the demands for water that underpin various social and economic activities. These sectors or ministries typically include agriculture and livestock rearing, fisheries, forestry, municipalities, WASH, health, planning, finance, energy, mining, industry, environment, climate and tourism. Yet, 50 per cent of countries report that they do not have formal national mechanisms for cross-sectoral coordination in relation to water resources management and are mostly only undertaking ad-hoc collaboration (Figure 5.1).

Even with formal mechanisms in place, most countries still report challenges in implementing cross-sectoral coordination in practice, citing the need to change the status quo of working in silos by ensuring institutional mandate, resources and incentives for coordination (Box 4). Of particular concern is that 40 countries still report not having national authorities with clear mandates for leading water resources management in an integrated manner (Q2.1a). Formalization of processes stipulating how institutions and sectors should coordinate would be helpful in many countries, but exactly how this should be done is dependent on the local context. In some instances, it may be necessary to oblige actors to coordinate through legislation.

Figure 5.1. Cross-sectoral coordination (Q2.1b (national level)) (2020)



Box 4. Cross-sectoral coordination mechanisms are common, but difficult to implement

There is often broad consultation in the development of policies and plans, but it can be challenging to continue cross-sectoral coordination in implementation (Bahamas). Challenges include the sheer number of agencies with various functions in water management (up to 30–40) (Chile), overlapping mandates (Panama), conflicting priorities (Botswana), a lack of resources (Gambia, Namibia), a lack of institutional mandate for coordination (Honduras, Lebanon), institutional instability (Sudan), and a lack of transparency and accountability (Viet Nam).

Addressing these challenges is a key step that many countries are working on. Countries that have made the most progress since 2017 (e.g. Chile, Seychelles) have set up coordination bodies that meet regularly, involving other sector stakeholders. Countries that are relatively advanced still report that effective coordination requires continued attention and improvement, such as interdisciplinary training for water practitioners (Serbia), improvement of coordination at the basin level (Hungary), involvement of all key stakeholders (ministries, professional organizations and non-governmental organizations [NGOs]) (Slovakia), mainstreaming of climate initiatives into water management (Philippines), and coordination of funding (Niger).

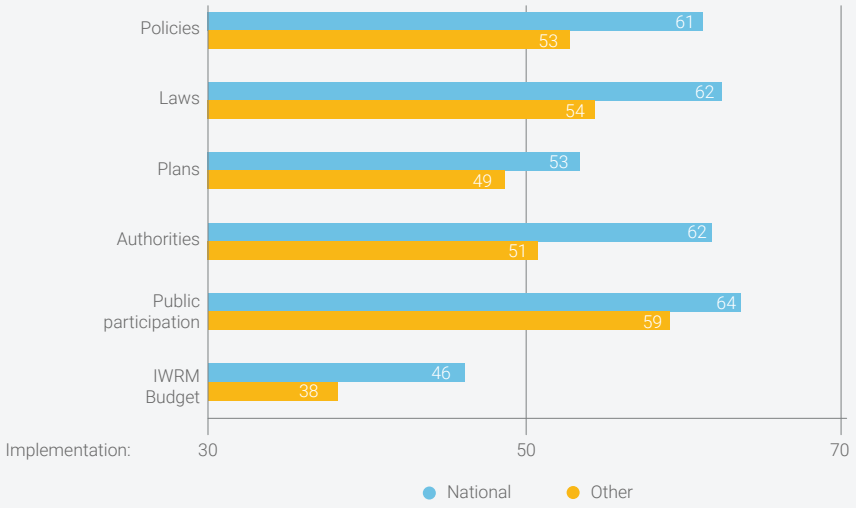
> "There are about 40 agencies with various functions in water management... presenting coordination and financing problems." Chile[24]

Coordination from national to basin levels

Harmonization and coordination of policies, plans and institutions from the national level, through to the subnational level, and down to the basin/aquifer level, is critical for achieving sustainable development objectives at all levels in a more coherent manner. However, a lack of vertical coordination, and generally lower technical and financial capacity at the local levels, is cited by many countries as a challenge. This is particularly the case for countries with more centralized government agencies. In fact, for every IWRM element for which countries reported at the national and subnational or basin levels, the national level had a higher average score than the other levels (Figure 5.2). More attention needs to be given to subnational- and basin-level implementation (see section 5.8 on basin management).

24 Country quotes throughout this report are taken from 6.5.1 reporting in 2020.

Figure 5.2. Global average implementation score on selected IWRM elements at the subnational, basin and local level, compared with the national level



Enabling environment for coordinated governance: laws, policies and plans

One of the most frequently cited challenges to advancing IWRM overall is an inadequate or outdated legal framework, and addressing this is cited as one of the main "next steps" to work towards target 6.5.[25] Approximately 40 per cent of countries report either having no laws that are based on IWRM principles (Figure 5.3), or that laws have been approved by the government but implementation is limited.

A strong legal framework, underpinned by the political will and resources to implement it, is important for many of the activities that enable effective cross-sectoral coordination, including institutional arrangements at all levels, stakeholder participation, and financing and revenue raising. However, a weak legal framework should not be a reason for a complete lack of action.

The development and implementation of national IWRM plans is lagging. Plans are needed to operationalize policy and legal frameworks. Nearly 50 countries (approximately 25 per cent) do not have an IWRM plan approved by the government (Figure 5.4). In many cases, this is a significant barrier to operationalizing IWRM policies and strategies. The SDG 6 IWRM Support Programme is one option available to support countries with planning and implementation (section 6.1). While many countries are focusing on basin-level plans (section 5.8), having a national level plan helps to ensure consistency and harmony between basin plans, and that national resources are prioritized between basins.

25 See Annex C of the indicator 6.5.1 country surveys.

Figure 5.3. National law development and implementation reflecting IWRM principles (Q1.1b) (2020)

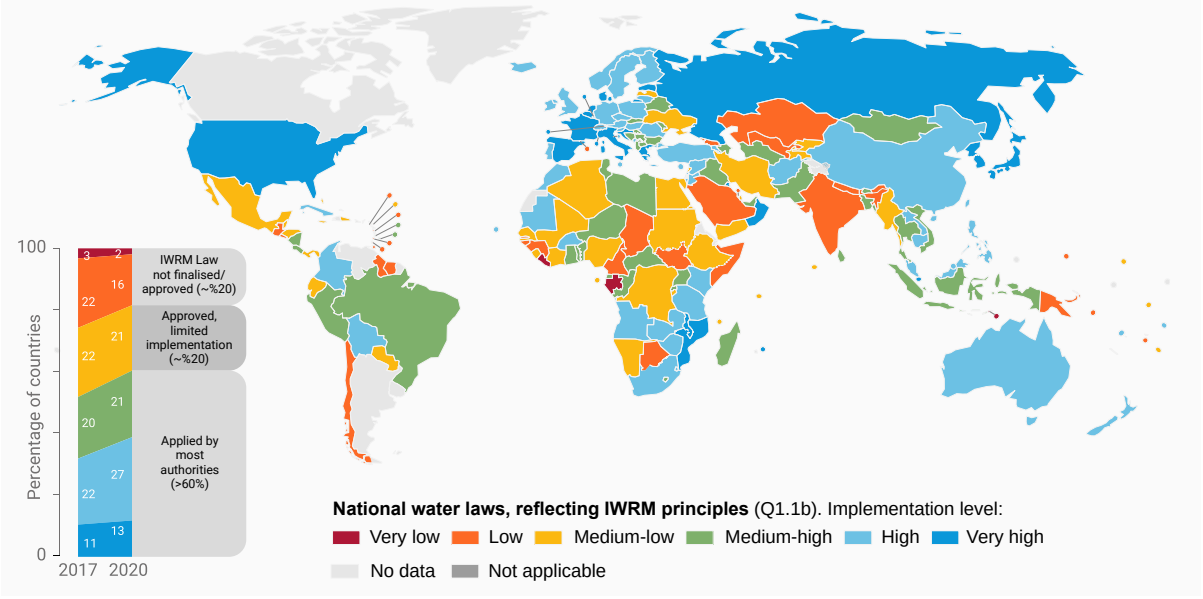
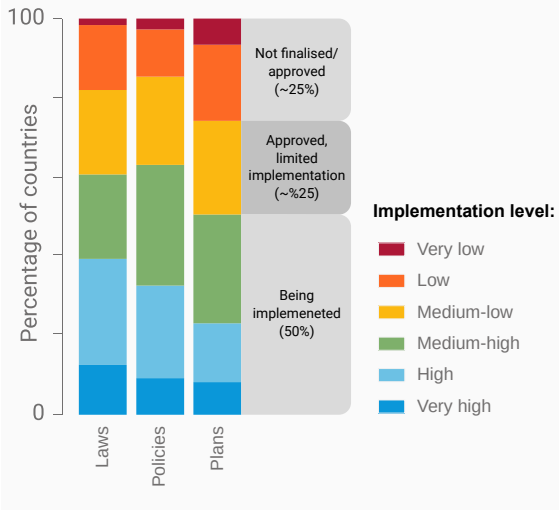


Figure 5.4. Development and implementation level of laws, policies and plans based on IWRM principles (2020)



5.3. Stakeholder participation

Much of the discussion on coordination (section 5.1) is highly relevant to stakeholder participation. Countries list stakeholder groups – including local government associations, basin committees, the private sector, water-user associations (including irrigators), indigenous groups and academia – as groups that they need to coordinate with for effective IWRM implementation. Another important but often overlooked stakeholder is the media, who are an important partner in disseminating information.

This section focuses on private sector participation, participation of vulnerable groups and gender mainstreaming. Local-level participation is also addressed through indicator 6.b.1, which finds that two thirds of countries have participation procedures in laws and policies, but effective participation is significantly lower due to a lack of financial and human resources, especially in rural areas (UN-Water and World Health Organization [WHO], 2019).

Success factors for stakeholder participation[26]

Advocacy: increase awareness and understanding on the multiple values of water (i.e. water as a social, economic and cultural good) in different stakeholder groups as appropriate, at different levels and across sectors, as a basis for being able to reconcile those values in water-related decision making; increase awareness of the value of IWRM within the water community and for water-related sectors that are benefited through an IWRM approach.

Public participation: regional directives and conventions can provide an effective framework for participation in the decision-making process (such as the Aarhus Convention[27] and related European Union directives).

Private sector: include business-sector representatives on basin councils and in the development of basin plans; promote the establishment of basin-scale collective action and compensation mechanisms such as "Water Funds" or "Investment for Watershed Services" programmes, which, among other activities, encourage investments in initiatives aimed at protecting or restoring upstream ecosystem function for the benefit of downstream users. Establish formal mechanisms and incentives for collaboration between the government and private sector, including the development of institutional responsibility, strategies and regulation for public-private partnerships (PPPs). Clear rules, transparency and predictability are important to attract private sector capital (these should include data-sharing agreements, support for regulatory compliance across basins, regulatory development, and attention to water quality). Set long-term rules and conditions that stimulate investments towards more sustainable water management practices.

Gender mainstreaming: experiences show that efforts in the following areas increase the success of gender mainstreaming in water management, which in turn enhances the quality of water management: advocacy and high-level commitment; legislative and policy framework; human and financial resources; institutions and support organizations; women's participation and parity; monitoring of activities to track progress (GWP and UNEP-DHI, 2021).

Participation of vulnerable groups: legislation and policy is needed that specifically addresses vulnerable groups in water management; where this is addressed in broader national anti-discrimination frameworks, ensure that there are measures to implement these specifically in water management. Enhance understanding of authorities about the importance of identifying and considering relevant vulnerable groups and about the best means to inform them and let them participate in decision making; create formal organizations of vulnerable groups that can represent community concerns in planning and management processes; give vulnerable groups special consideration in catchment committees; deliver targeted training to relevant vulnerable groups on local IWRM procedures and identify opportunities for their participation in water management activities. Involving development partners and donors that focus on vulnerable groups can help to increase understanding and capacity of authorities and vulnerable groups.

26 These are primarily drawn from common country experiences included in country reporting under indicator 6.5.1, with phrasing guided by expert opinion. They are intended to inspire action, and not as a "how to" guide for implementing IWRM, since priorities and means of implementation vary among countries.

27 United Nations, *Treaty Series*, vol. 2161, No. 37770. 45 parties in the pan-European region.

"Access to information, public participation in decision-making processes and access to justice in environmental issues are regulated in accordance with requirements of the Aarhus Convention and related EU Directives." Croatia

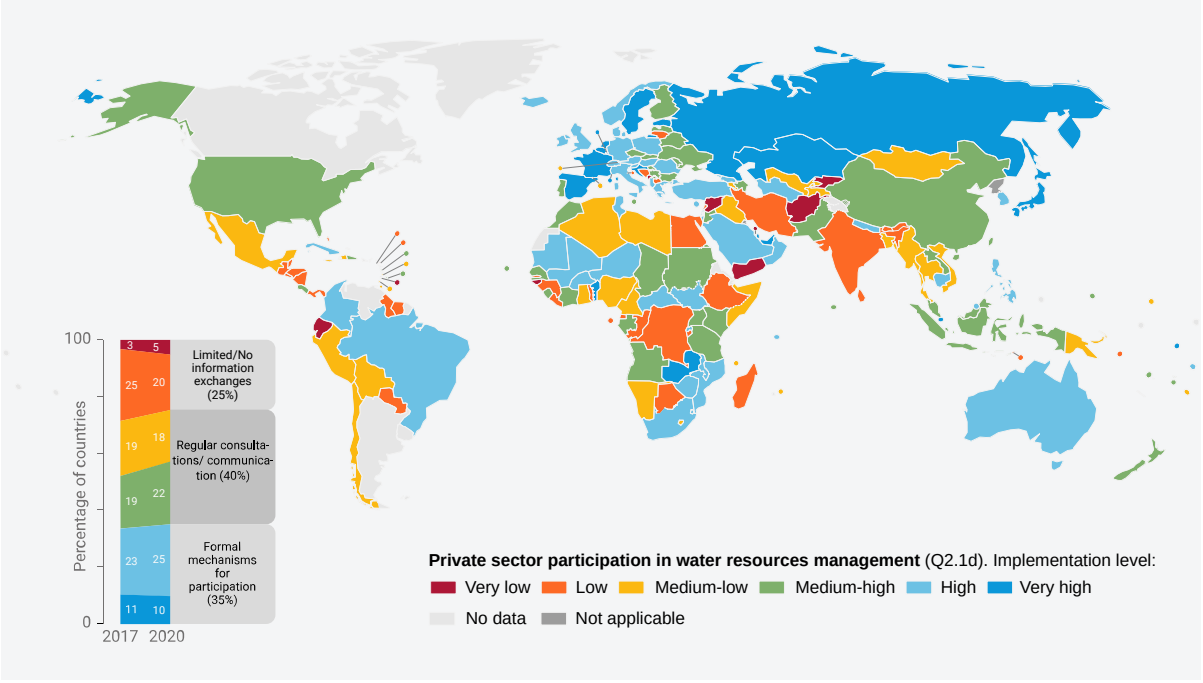
Private sector participation

Participation of the private sector in water resources management goes much beyond the question of privatization. In many basins, the private sector will be a dominant water user, service provider and employer engaged in agricultural, industrial and energy production. The private sector is not solely made up of big companies, but comprises a myriad of local companies and small and medium-sized enterprises (SMEs) that form the working economy of the basin.

These businesses have working relationships with water management agencies, regulators and government officials, and can improve working practices through training of their staff and throughout their supply chains. Finally, they often provide water-related services for local communities and/or their staff.

However, 25 per cent of countries still report limited information exchange between the government and the private sector about water resources development, management and use (Figure 5.5). Private sector engagement requires a certain level of regulatory capacity by the authorities, which is a barrier in some countries. Businesses may provide new information and data, technologies, human capacity, funding and, not least, research and development, to improve efficiency of water use and wastewater treatment and reuse, thereby supporting activities to deliver on all other targets under SDG 6, as well as targets under SDG 12 on sustainable consumption and production.

Figure 5.5. Private sector participation in water resources planning, development and management (Q2.1d) (2020)



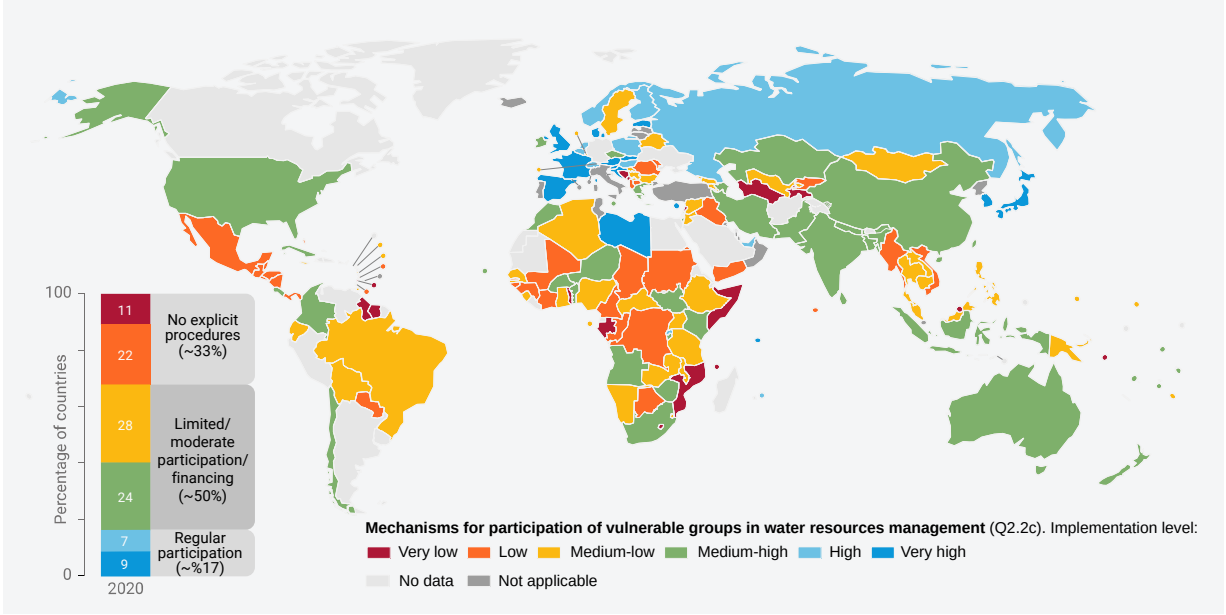
"The State has completely withdrawn from the field of technical studies and construction works for hydraulic structures, in favour of the private sector. Also the management of the public water service is provided by the private sector through a PPP strategy." Mali

Mechanisms for participation of vulnerable groups

"Leave no-one behind" is a core objective of the 2030 Agenda. While the provision of water supply and sanitation to vulnerable groups is often a focus of efforts in this regard, the consideration and participation of vulnerable groups in broader water resources management is important for achieving this objective.[28]

Unfortunately, one third of all countries have no explicit procedures in place to raise awareness, reduce language barriers and facilitate effective interaction with specific vulnerable groups, for example (Figure 5.6). Half of all countries report that explicit procedures are in place, and that there is limited to moderate participation from vulnerable groups, with limited to moderate financing and human capacity for implementing related activities. Countries describe a range of vulnerable groups, including ethnic minorities, indigenous peoples, remote communities, subsistence farmers and fishermen, people living in poverty, youth, elderly people, disabled people, internally displaced peoples, and refugees. See the success factors at the beginning of this section for some solutions.

Figure 5.6. Development and implementation of mechanisms for participation of vulnerable groups in water resources management (Q2.2c) (2020)



28 From SDG indicator 6.5.1 survey: Vulnerable groups "can include, but are not limited to: indigenous groups, ethnic minorities, migrants (refugees, internally displaced people, asylum seekers), remote communities, subsistence farmers, people living in poverty, people living in slums and informal settlements".

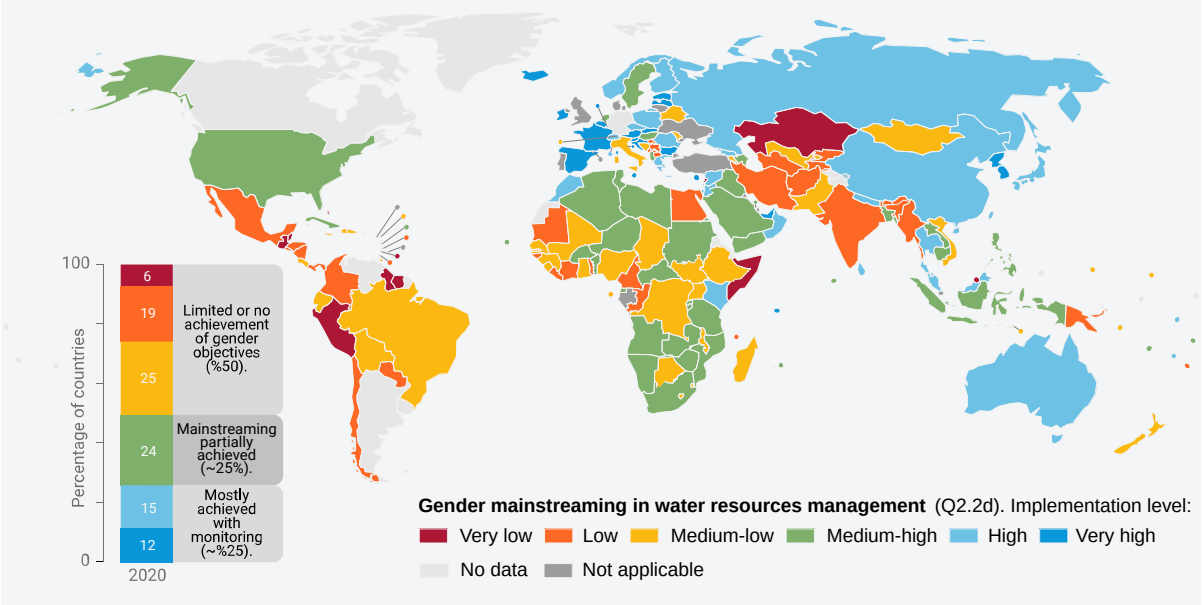
"Vulnerable groups are taken into account in the various programs and intervention plans through the adoption of the human rights-based approach (HRBA)." Burkina Faso

Gender mainstreaming

Gender mainstreaming in the water sector is about integrating gender perspectives into all aspects of water planning, management and decision making. It also supports progress on SDG 5 on gender equality.

Many countries have developed gender mainstreaming policies and strategies, yet evidence has revealed a clear gap between high-level commitments and practice. Half of all countries report limited or no achievement of gender objectives in water resources management, with 25 per cent of countries having no gender objectives in their water management policies and plans (Figure 5.7). One significant gap is the lack of monitoring and evaluation processes, with only a quarter of countries reporting adequate monitoring on gender activities and outcomes.

Figure 5.7. Gender mainstreaming in water resources management (Q2.2d) (2020)



In the report, "Advancing towards gender mainstreaming in water resources management", an analysis of country responses shows that the following six key enablers can increase the success of gender mainstreaming in water resources management: 1) high-level political commitment; 2) egalitarian national legal frameworks establishing the necessary enabling environment; 3) integration of any specialized gender polices in water management

strategies and laws; 4) earmarked funding and staff for gender mainstreaming activities in water management; 5) technical capacity and monitoring systems to develop and collect data on gender-specific indicators; and 6) multi-stakeholder and cross-sectoral engagement processes bringing in perspectives and experiences on gender from other sectors (GWP and UNEP-DHI, 2021).[29]

The analysis also brings to the fore many practical examples of where and how these enablers are helping to advance gender mainstreaming in IWRM (Box 5).

5.4. Capacity development

A skilled workforce at all levels, access to capacity-building programmes for continuous skill development, and knowledgeable stakeholders, are essential for inclusive and sustainable water resources development and management.

Box 5. Gender mainstreaming in water resources management in practice

Dedicated ministries, councils and units promoting gender mainstreaming nationally have been set up in a number of countries. Similar structures are being established within water resources decision-making bodies as part of gender mainstreaming efforts, such as a Women's Union in the Department of Water Resources, which is required to report on progress annually to the central gender agency (Lao People's Democratic Republic [PDR]); a gender focal point in the Ministry of Energy and Water (Lebanon); a Water Sector Gender Committee (Lesotho); and a gender committee in the National Water and Sanitation Agency (Brazil). This work is complemented by addressing water management aspects in national gender action plans and policies (e.g. Bangladesh and Grenada), or by developing sector-specific gender action plans and strategies (e.g. the gender action plan for the water and sewerage infrastructure sector in the Maldives).

Mandated requirements for equal representation in water management decision-making bodies and consideration of gender aspects in these processes have also been introduced. For example, Vanuatu requires 40 per cent participation of women in all local water committees. In Nepal, at least 33 per cent representation of women is required in the executive bodies of water users. In Togo, it is required that at least two out of the five members of water point management committees are women. Dedicated efforts to address gender aspects in technical capacity-building within institutions and in water education in general are also under way, such as exchange networks for women experts and professionals in water resources management (Austria) and government policies and strategies for women in the science, technology, engineering and mathematics (STEM) educational fields (Australia).

29 This report was produced through the SDG 6 IWRM Support Programme.

Success factors for capacity development[30]

Dedicated training programmes: develop appropriate training programmes for staff in institutions and secure funding for their implementation; create incentives to keep staff in government agencies (avoid brain drain); mainstream IWRM elements in existing training programmes of relevance.

Inclusiveness: ensure that relevant capacity development activities are accessible for all levels of staff; provide opportunities for young and mid-level staff to receive training and mentorship; create incentives or dedicated support for capacity-building of vulnerable groups, including women professionals.

Technical capacity-building: invest in technical capacity (human and technological) for coordinated resource management; collect and make available necessary data that enables coordinated management; ensure that necessary capacity is built at all organizations involved in water management and development, including basin organizations, water authorities and other subnational-level organizations.

Knowledge and experience exchange: provide opportunities for experience exchange within and across institutions and sectors; strengthen connections between universities and other organizations with local expertise and networks within water resources management; include IWRM in curricula of relevant educational institutions at various levels.

Capacity-building beyond the water community: across sectors (e.g. energy, agriculture, poverty reduction), identify capacity development needs for other stakeholder groups and devise appropriate training programmes; provide active involvement opportunities for various stakeholders to part take in water management activities and decision making (capacity-building through experience and dialogue).

Awareness-raising: increase understanding of the principles, and value, of coordinated water management and development across different stakeholder groups, at different levels and across sectors. Clear and targeted communication supports increasing political and social buy-in.

30 These are primarily drawn from common country experiences included in country reporting under SDG indicator 6.5.1, with phrasing guided by expert opinion. They are intended to inspire action, and not as a "how to" guide for implementing IWRM, since priorities and means of implementation will vary among countries.

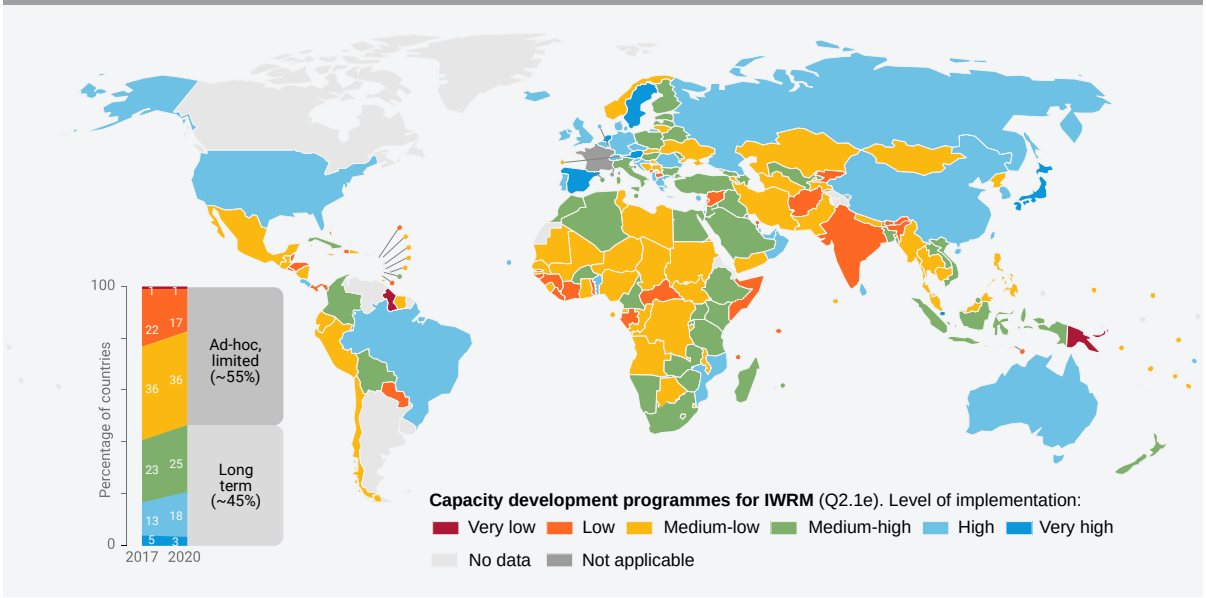
Institutional capacity and capacity development programmes

Although almost all countries report having national authorities for water management, and slightly more than in 2017, most still report that a lack of technical capacity and appropriately trained human resources is a barrier to coordinating and implementing IWRM activities. The situation is even more critical at subnational and basin and aquifer levels (section 5.8).

About 55 per cent of countries mostly undertake ad-hoc training on IWRM or have limited capacity development programmes (Figure 5.8).

To achieve transformational change, appropriate long-term capacity development programmes are needed, including awareness-raising on the importance of IWRM to achieve sustainable development objectives. Capacity-development and awareness-raising efforts need to target authorities at all levels with responsibility for water management, as well as other stakeholder groups, such as civil society, water-user associations and the private sector. This starts with an assessment of existing capacities, combined with an understanding of what is required to achieve the desired results. The system-wide capacity development needed in many countries requires political will (section 5.1) and finance (section 5.5).

Figure 5.8. Implementation of capacity development programmes (Q2.1e) (2020)



5.5. Coordinated and transparent financing

The two most commonly cited priorities for advancing IWRM overall are cross-sectoral coordination and financing.[31] While financing challenges primarily focus on a lack of funds or low investment, countries also highlight the need for improved management of existing funds and an enabling environment for revenue raising. This includes better coordination to ensure more efficient use of existing resources; better accounting to understand budgeting and investments across subsectors; legal and regulatory frameworks to support budget allocation and revenue raising; transparency, anti-corruption and accountability programmes and measures; and better and broader revenue-raising mechanisms that can generate sustainable funding for IWRM implementation.

Success factors for financing[32]

Legal frameworks at relevant levels: an updated water law, based on IWRM principles, supports allocation of funding for IWRM activities; implement legal mechanisms that support revenue raising; develop legal mechanisms at the basin level that ensure that basin organizations have the mandate to access and manage funding for IWRM activities.

Improved accounting: consider consolidating and analysing data/information relevant to water resources management investments and fund allocation for harmonization of efforts and cost efficiency; ensure that there are reporting, tracking and monitoring mechanisms to regularly capture and analyse data on WRM financing and budget allocation, for increased accountability and sustainability of efforts.

Transparency, anti-corruption and accountability: ensure transparency in setting water tariffs; develop and implement mechanisms to ensure transparency and accountability in the management and use of funds, including open procurement processes; digitalize revenue collection systems to reduce corruption and misuse; utilize existing and freely accessible tools to strengthen accountability mechanisms, such as through the integrity tools of the Water Integrity Network,[33] or the Sanitation and Water for All (SWA) Mutual Accountability Mechanism.[34]

Coordinated financing for efficient use of resources: establish institutional and legal responsibility for coordinating the allocation of funds on a rolling basis, including transparency and accountability mechanisms; coordinate finance planning for different water-related challenges (e.g. water efficiency, water pollution), across sectors where relevant (e.g. combining wastewater treatment with energy generation and agricultural inputs, multipurpose reservoirs).

31 See Annex C of the 6.5.1 country reports. Approximately 90 of the 150 countries that completed the annex mentioned cross-sector coordination and/or financing as priorities (either as a "main barrier" or as a key "next step") for advancing IWRM overall.

32 These are primarily drawn from common country experiences included in country reporting under SDG indicator 6.5.1, with phrasing guided by expert opinion. They are intended to inspire action, and not as a "how to" guide for implementing IWRM, since priorities and means of implementation will vary among countries.

33 See www.waterintegritynetwork.net.

34 See https://www.sanitationandwaterforall.org/about/our-work/mutual-accountability-mechanism

Advocacy: have a strong presence with decision makers for national budgets; sensitize decision makers and lawmakers to the importance of financing for IWRM (Box 6).

Private sector: develop incentive-based strategies to attract private sector investment in water resources management and conservation (in tandem with necessary regulatory mechanisms to ensure equitable and sustainable outcomes); align corporate water stewardship investments with IWRM priorities as identified by governments.

Revenue raising: ensure sufficient capacity for regulation and enforcement of revenue raising; ensure that revenues collected for water services remain largely in the water sector; implement "user pays" and "polluter pays" principles; consider designing tariffs and fee structures with a view to encourage water savings and avoid water pollution, while ensuring affordability through a human rights-based approach; to the extent socially appropriate, make sure that water tariffs and fees cover operation and maintenance of water resources services.

Mobilization/access to other sources: utilize climate financing and COVID-19 recovery to support resilient water resources management (domestic and international); create conditions to increase confidence of foreign donors and investors, including transparency and accountability; utilize donor funding to support establishment of sustainable long-term financing mechanisms relying on national funding or innovative revenue-raising mechanisms.

Financing for infrastructure and management

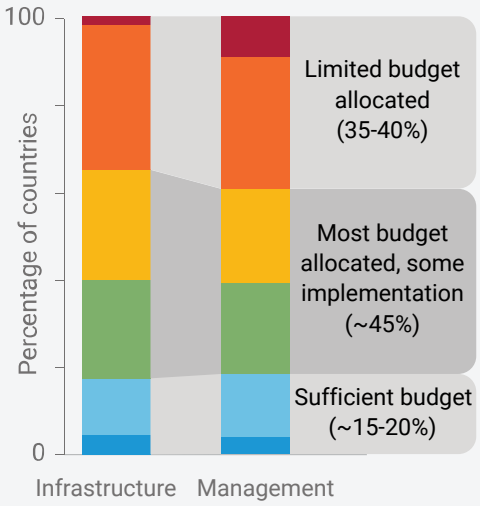
At the national level, 35–40 per cent of countries report that financing is only allocated for a limited amount of the planned investments and ongoing infrastructure and water resources management costs (Figure 5.9).

Some countries report that financing is allocated for infrastructure development, but less so for operation and maintenance and ongoing management, citing insufficient budget for research, new technology and training as a barrier to progress.

Others report the need to coordinate and streamline disbursement procedures (for domestic and external funding), and secure long-term funding to reduce the administrative burden and create a more certain planning framework. These findings are broadly consistent with experiences in the WASH subsector (UN-Water and WHO, 2019). The lack of financing is more acute at the subnational and basin level (section 5.8).

> "The available budget is 2.35% of the amount needed." Madagascar

Figure 5.9. National budget for infrastructure (Q4.1a) and management (Q4.2b) (2020)



Revenue raising: innovative/ varied sources

As much as 60 per cent of countries report limited revenue raising for IWRM activities (Figure 5.10). Of particular concern are the 36 countries (13 per cent) that report no mechanisms for revenue raising. A significant proportion of countries report that revenues raised go to central government and are not directly spent on water resources management (Box 7).

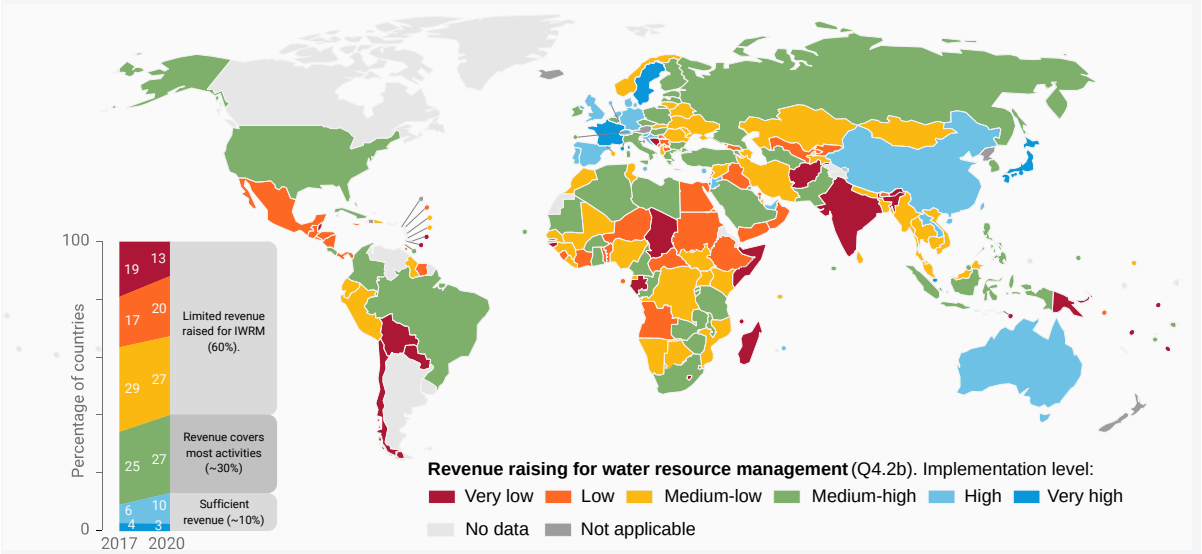
"The approved 2018 National Water Policy stipulates a gradual increase of annual water sector budget to 20 per cent of the annual Public Sector Development Programme budget by 2030." Pakistan

Box 6. Communicating the value of water resources management to central budget authorities reaps dividends

Every year, the Institute of Economic Affairs (IEA) in Kenya organizes pre-budget hearings. Since 2019, the Global Water Partnership (GWP), through its regional and country teams, has facilitated annual submissions to this process, advocating for increased funding for water and sanitation. This submission involves a contextual analysis of IWRM/WASH and its contribution to the economy, a proposal in the budget, any recent reforms and lessons learned during the COVID-19 pandemic, and challenges, all of which are backed up with data as much as possible. This has resulted in the government budget allocation to water and the environment more than doubling, from just under USD 300 million before 2019, to more than USD 750 million in 2020/2021, with USD 600 million going towards IWRM activities.

Source: GWP Eastern Africa (2020)

Figure 5.10. Revenue raising for water resources management (Q4.2b) (2020)



Many countries are implementing some or all of the following mechanisms for revenue raising for IWRM: abstraction fees (different sectors and uses) (Box 8); water supply and sanitation charges; discharge fees; flood protection fees; payment for environmental services, such as Water Funds at the basin level (Box 18); and fines for pollution or over-abstraction.

> "The IWRM funding mechanism remains embryonic." Democratic Republic of the Congo

Review of peatland restoration, Democratic Republic of the Congo by Ricky Martin CIFOR on Flickr

Box 7. Improving revenue-raising mechanisms has untapped potential

Revenues to cover water management costs typically come from government budgets or from collection of direct fees and tariffs from water users or polluters ("polluter pays principle") (Romania). For many low-scoring countries, there is still potential for establishing or improving revenue collection systems and making sure they are implemented or enforced so that revenue collection makes a meaningful contribution towards the costs of water management (Chile, Ethiopia). This not only includes collecting revenues from users, but also establishing innovative revenue-raising mechanisms involving PPPs with water users that can contribute to financing local- or basin-level IWRM activities (Uzbekistan). In some cases, there is scope for reducing perverse incentives in tariff structures to reduce inefficient or low-value use of water, particularly in the agricultural sector.

However, countries report that revenue collection takes place in a centralized manner and that the collected revenues are only partly channelled back to the water sector (Uganda). Countries also mention that the extent to which water-sector funding is earmarked for IWRM-related purposes is limited (Guinea-Bissau).

High-scoring countries often have specific and detailed regulations stipulating recovery of costs for both capital, operational and environmental services (Austria), or revenues raised for specific elements of IWRM, ensuring that user fees contribute to financing of IWRM implementation (Germany).

Box 8. Data-based water-rate reform in Shanxi Province

The Chinese Government, assisted by GWP China, has introduced a water-rate pilot programme in several provinces where the coal industry has high demand for water. In 2018, a comprehensive water monitoring system was set up in the Shanxi Province, one of the largest coal-producing areas in the country. The monitoring system includes data on water consumption, sewage discharge, and water recycling and reuse. Water rates are calculated based on this data, with higher charge bands applied for increased levels of water use. The data are available to all stakeholders and have enhanced water-use efficiency and wastewater treatment.

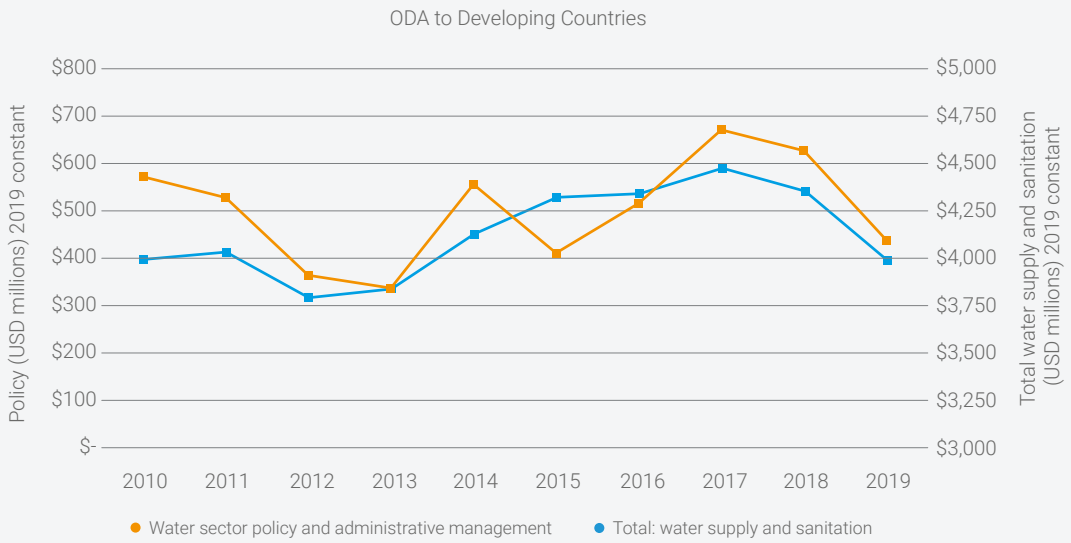
Source: GWP (2021a).

International financing

Many countries report that international financing makes up an important portion of their funding mix, and cite the need for increased donor financing to accelerate IWRM implementation.

Official Development Assistance (ODA) disbursements for water management rose from USD 400 million in 2015 to USD 670 million in 2017, then fell again to USD 440 million in 2019, following a similar trend in total ODA to water and sanitation (Figure 5.11).

Figure 5.11. ODA for water management and total ODA to the water and sanitation sector (2010–2019)[35]



Also of importance is the ability to link water resources with issues such as climate change resilience, food security, health and broader sustainable development objectives. Recognizing the central role of sustainable water resources management for these broader objectives can ensure better coordination of funds across these domains from ODA and other sources. Utilization of ODA to help establish national and local long-term funding revenue-raising mechanisms that can be sustained by respective institutions will also be important to build sustainable financing mechanisms for IWRM activities. From a WASH perspective, external grants and loans comprise only a small part of global expenditure in the sector (3 per cent and 9 per cent, respectively), indicating that most expenditure comes from national budgets (UN-Water and WHO, 2019). Similar data for water resources management is not known at the time of writing.

As reported on SDG indicator 6.a.1, there is a need to: (a) increase the capacity to absorb and disburse international funding, and (b) simplify the procedures for aid disbursements and procurement.

5.6. Improved data and information

Data generation, validation and standardization, and information exchange, builds trust – including across sectors and borders – and supports informed decision-making and increased accountability.

35 "Water management" ODA based on Organisation for Economic Co-operation and Development (OECD) Creditor Reporting System (CRS) code 14010 "Water sector policy and administrative management" (i.e. a proxy for water resources management). Total ODA to water and sanitation based on code 140: I.4. "Water Supply & Sanitation, Total". See https://stats.oecd.org/viewhtml.aspx?datasetcode=CRS1&lang=en.

Success factors for data and information management and use[36]

Online information systems: develop or enhance an online national information system (or similar) for the coordinated management of water resources, which compiles information from different entities, or points to the location of such information.

Funding: secure funding for establishing and operating monitoring networks, making use of modern technology and approaches where appropriate; oblige data holders to share their data if their collection has been funded with government resources.

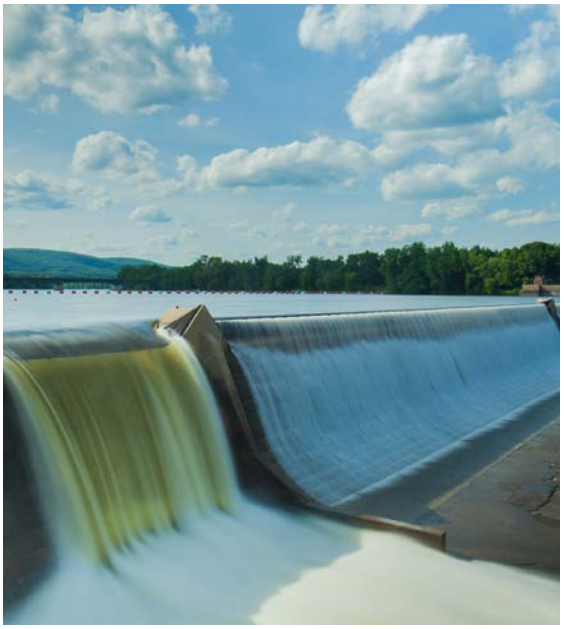
Legal frameworks: when developing legal and operational arrangements for cross-sectoral coordination (section 5.1), include provisions for data- and information-sharing.

Data-sharing protocols: harmonize and standardize data collection and sharing methods, and develop management and exchange protocols to allow subnational data to be interpreted and collated at the national level.

Broad data sources: encourage the private sector, international partners, NGOs and academic institutions to share water data that may be of national interest and create enabling environments that allow those data to be standardized, overcoming legal, cultural and technical bottlenecks.

Monitoring water availability

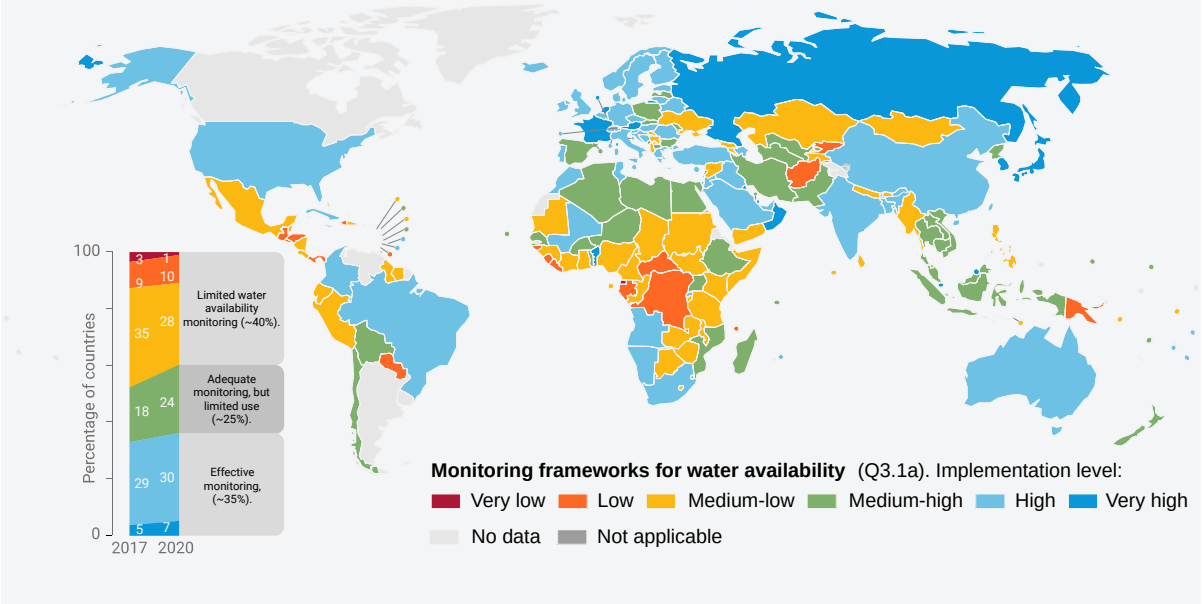
As much as 40 per cent of countries report that their monitoring programmes for water availability generally have limited coverage or that monitoring is project-based, rather than in long-term programmes (Figure 5.12). The biggest gain since 2017 has been the extension of existing programmes to cover a greater area.



Gäddede, Sweden by Jon Flobrant on Unsplash

36 These are primarily drawn from common country experiences included in country reporting under SDG indicator 6.5.1, with phrasing guided by expert opinion. They are intended to inspire action, and not as a "how to" guide for implementing IWRM, since priorities and means of implementation will vary among countries.

Figure 5.12. Development and implementation of monitoring frameworks for water availability (Q3.1a) (2020)



Monitoring of other aspects such as water quality, ecosystems, withdrawals, floods and droughts is discussed in section 5.7, and differences between monitoring of surface water and groundwater is discussed in section 5.8.

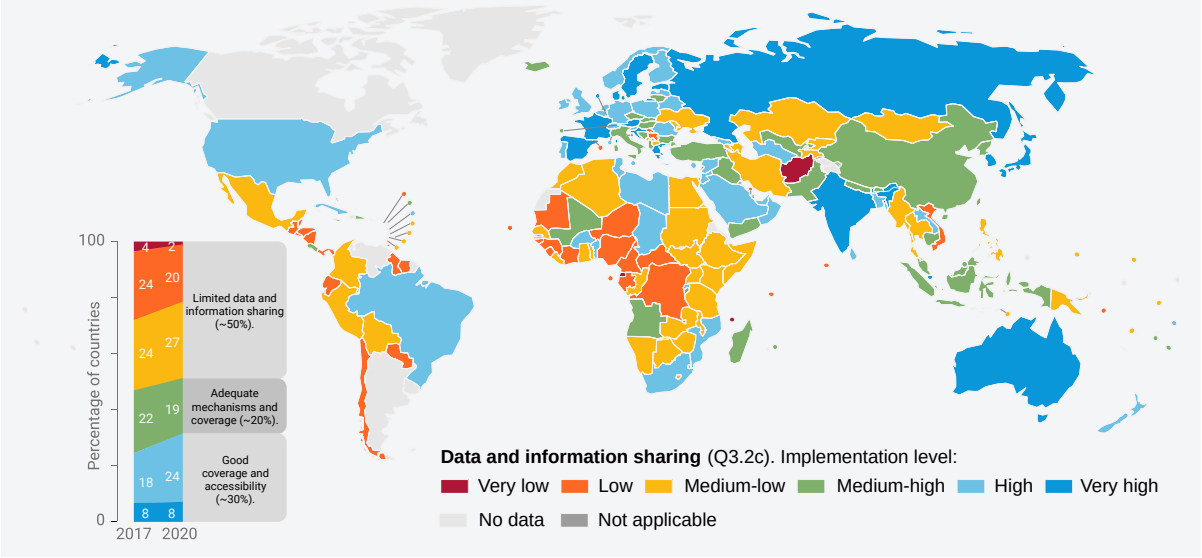
Data and information generation and sharing

Approximately 50 per cent of countries report that data and information generation and sharing within the country is limited (Figure 5.13). It either takes place on an ad-hoc basis, or only between the major data providers and users. Globally, gains have not been significant. Many countries included cross-sectoral considerations (Section 5.1) in discussing data- and information-sharing.

The large majority of countries say water data are available to stakeholders, often to the public and free of charge. Most countries share data/information on request by stakeholders, but many countries say they plan to make it more readily available to all, and to actively undertake awareness raising initiatives based on the data/information. The challenge for stakeholders is to locate the relevant information: data repositories are often not known by stakeholders, or data may not be properly organized or formatted so as to be useful in informing decision-making (Box 9).

"More than sixty thousand users have used the online national water resources information system to access catchment and discharge data." Colombia

Figure 5.13. Data- and information-sharing (including all stakeholders) on water resources management (Q3.2c) (2020)



Box 9. Using better online data to inform decision-making on IWRM in Malaysia

Malaysia has set up a National Water Balance Management System (NAWABS)[37] to ensure sustainable and efficient water use, allowing for informed decision-making when allocating resources or framing interventions. An integrated water resources information system is also being developed by the Department of Drainage and Irrigation, which will develop a standardized information platform, consolidating existing systems and allowing multi-layered access to information by government agencies to support the Water Resources Information Centre.[38] The State of Selangor has put in place the Lembaga Urus Air Selangor (LUAS) Intelligent Support System,[39] which gathers hydrological information that is fed to the Integrated Water Resource Information Management System.[40]

Source: Malaysia (2020).

37 See http://nawabs.water.gov.my/.
38 See www.water.gov.my/jps/resources/Annual Report/Laporan_Tahunan2017.pdf.
39 See www.luas.gov.my/v3/en/428-pengurusan-en-gb/bahagian-dan-unit-en-gb/bahagian-pengurusan-lembangan-sungai-dan-pantai-en-gb/1735-unit-hidrologi-en-gb.
40 See https://iwrims.luas.gov.my/.

5.7. Management instruments for water security and resilience

This section discusses the mechanisms in place to manage particular threats to society, the economy or ecosystems.

It covers questions from IWRM dimension 3 (management instruments) from the indicator 6.5.1 country survey. It also highlights links to other SDG targets and indicators.

Success factors for management instruments for water security and resilience[41]

Data and information: Invest in understanding the state of water resources and the effects on water resources from both natural and anthropogenic causes. Combine monitoring and modelling to enhance understanding on both water quantity and quality, and explore management scenarios. Understand where competing demands may lead to potential hotspots, and reduce the potential for conflict over water resources. Decision support tools are globally available and can be deployed to support water-use planning and management.

The right mix of regulatory instruments: Different types of management instruments can be mixed to obtain maximum benefits:

- Where necessary to protect the resource, apply direct control measures (executive orders) such as water-use rights, wastewater discharge permits, water quality standards, water efficiency standards and buffer-zone delineations.
- Apply economic instruments to encourage behaviour change or to raise revenue necessary for water sector investments and operations. Prices and tariff structures for water users must be designed to encourage efficient and equitable use. Taxes on pollution or polluting products are useful where users have alternative and more environmentally friendly choices. Payment for ecological services is another example.
- Take steps to encourage users and consumers to choose the most efficient and least harmful products and services, and to encourage producers to improve products and services. Eco-labelling, best practice guidelines and mandatory disclosure of performance analyses are some examples that would contribute to this objective.
- Strengthen coherence between policies in water-related sectors such as agriculture, energy, industry and tourism, and within national climate mitigation and adaptation strategies.

41 These are primarily drawn from common country experiences included in country reporting under SDG indicator 6.5.1, with phrasing guided by expert opinion. They are intended to inspire action, and not as a "how to" guide for implementing IWRM, since priorities and means of implementation will vary among countries. Also note that these are actions that are generally considered to be fundamental to progress, whereas more specific examples are provided in later subsections.

Enforcement: Regulation goes hand in hand with enforcement. Consider, and adjust if necessary, the capacity for enforcement alongside implementation of water-related regulations.

Technology choices: With climate change and growing demand putting more pressure on scarce water resources, use technologies and practices to increase the amount of available water, and reuse and recycle water. Examples include increased water storage, campaigns to reduce public consumption, reusing wastewater for irrigation, and treating and recycling polluted water before it is returned to the environment.

Mainstreamed climate change adaptation: Take an integrated approach to climate change and water resources policy, planning and management. Given climate change uncertainties and unexpected tipping points, IWRM approaches need to increasingly adopt the principles of adaptive management. Sustainable and efficient water resources management support climate change adaptation.

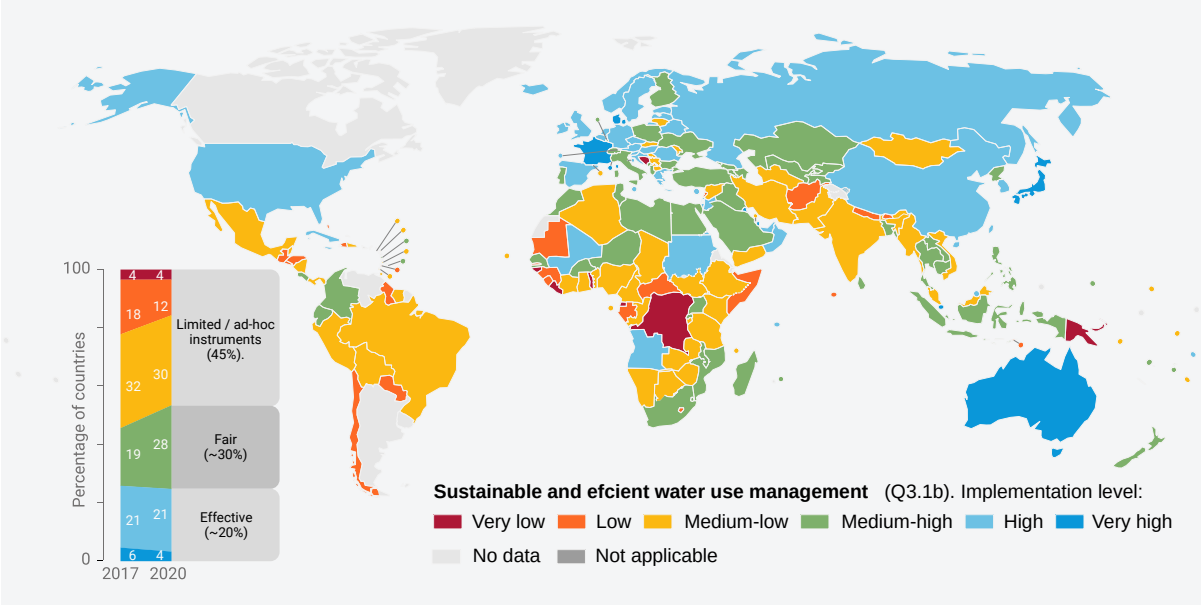
Sustainable and efficient management of water use across sectors

Supporting other SDGs

Working towards, and reporting on, indicator 6.5.1 directly supports the development of an enabling environment, management instruments and financing for increasing water efficiency (indicator 6.4.1) and sustainable withdrawals (indicator 6.4.2). It also more broadly supports SDGs, targets and indicators related to sustainable and resilient agriculture (target 2.4), sustainable management and efficient use of resources (targets 8.4, 11.6 and 12.2), and climate action (SDG 12), to name but a few.

Although some gains have been made, 45 per cent of countries still report that their management instruments for sustainable and efficient use are either only ad hoc or have limited coverage across different users and areas of the country (Figure 5.14). Many countries report the need for, or are implementing, instruments such as metering; volumetric pricing and taxation; water accounting; concessional loans to implement water-saving technologies; labelling of water-efficient products; reuse of water after treatment; water stewardship programmes (private sector); demand forecast models; education campaigns (e.g. water culture prizes, water footprint programmes, school competitions); allocation tools and regulation (with capacity to enforce compliance); rainwater harvesting; irrigation efficiency measures; monitoring and information systems (section 5.6); and analysis of environmental water requirements (see "Ecosystem management and pollution control" in this section).

Figure 5.14. Development and implementation of management instruments for sustainable and efficient water-use management (Q3.1b) (2020)



"WaterSense, a voluntary partnership programme sponsored by the U.S. Environmental Protection Agency (EPA), is both a label for water-efficient products and a resource for helping you save water. WaterSense-labelled products and services are certified to use at least 20 per cent less water, save energy, and perform as well as or better than regular models." USA

Ecosystem management and pollution control

Supporting other SDGs

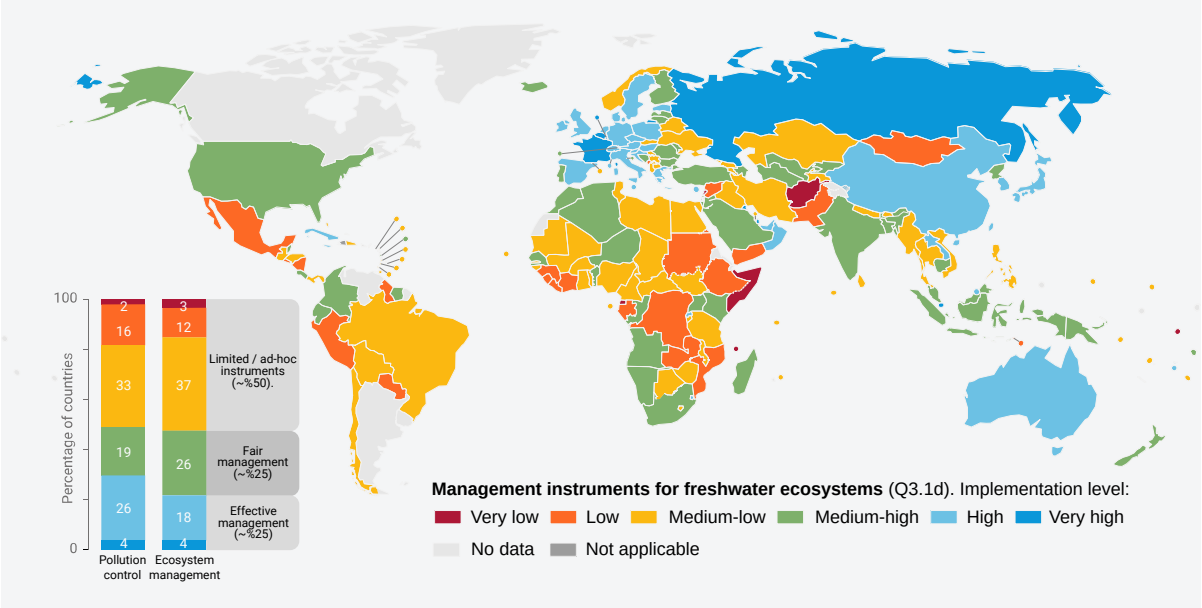
Working towards, and reporting on, indicator 6.5.1 directly supports the development of an enabling environment, management instruments and financing for increasing wastewater treatment, reuse, and ambient water quality (target 6.3) and ecosystem protection (targets 6.6 and 15.1–15.5). It also more broadly supports targets and indicators related to chemical and waste management (targets 3.9, 11.6 and 12.4), marine pollution and coastal ecosystems (14.1 and 14.2), and sustainable industrialization and infrastructure (targets 9.2 and 9.4), to name but a few.

Over a fifth of the world's basins have recently experienced either rapid increases in their surface-water area, indicative of flooding, a growth in reservoirs and newly inundated land; or rapid declines in surface-water area, indicative of drying up lakes, reservoirs, wetlands, floodplains and seasonal water bodies (UNEP, 2021b).

Under indicator 6.5.1, approximately 50 per cent of countries report that their management instruments for pollution control and ecosystems are limited, being either only ad-hoc, or with limited coverage and enforcement across stakeholders and ecosystem types (Figure 5.15). Governments are encouraged to accelerate the development and implementation of national- and basin-level policies, laws and practices to better protect freshwater ecosystem integrity; and as necessary, undertake wide-scale restoration of degraded ecosystems.

Indicator 6.5.1 findings are consistent with those from indicator 6.3.2 on ambient water quality: water-quality monitoring programmes are extensive and advanced in wealthier countries, but water-quality data are not routinely collected in many less developed countries, meaning that over 3 billion people are at risk because the health of their freshwater ecosystems is unknown (UNEP, 2021a).

Figure 5.15. Development and implementation of management instruments for freshwater ecosystems (2020)



In many cases, pollution point sources are under control, whereas diffuse sources are more difficult to manage. Many countries report the need for, or are implementing, instruments such as: wastewater discharge permits; wastewater treatment regulations and water-quality guidelines; regulation with capacity for enforcement; pollution fees and fines for breaching other regulations; river health assessments; national and basin/local plans for management of protected areas (Box 10); designation of protected areas, often in line with international programmes (e.g. the Ramsar Convention,[42] Natura 2000, the Convention on Biological Diversity[43]); designation of environmental flows; payment for ecological services; restoration of degraded lands; multi-stakeholder coordination (e.g. tourism, parks, forestry, wildlife services); buffer-zone management (including for aquifers); research (including analysis of environmental water requirements); community involvement and education, with a focus on sustainable livelihoods; monitoring (hydrological, water quality, biodiversity); and classification and databases of ecosystem types and quality targets, with appropriate management approaches.

"824 water bodies... have been classified for their best uses. With this classification, needed interventions can be determined to optimize the use of water resources and make them beneficial to the welfare and health of the people." Philippines

According to indicator 6.3.2 findings, in many countries, limited water-quality monitoring frameworks would benefit from additional funding, staffing and capacity development. In some countries where data are collected, these data are often not collected frequently enough or from enough monitoring locations to build a complete and reliable picture of water quality. Furthermore, these data are rarely compared with appropriate water quality standards, and as a result, the environmental health of a river or lake cannot be accurately defined. In many countries, data are not managed in a way that allows for easy access, sharing and communication. As such, they are not readily available to inform management action or to be shared between government institutions, the regional and national administrative level, or civil society (UNEP, 2021a).

Cẩm Thanh, Hội An, Vietnam by Chester Ho on Unsplash

42 United Nations, *Treaty Series*, vol. 996, No. 14583.
43 United Nations, *Treaty Series*, vol. 1760, No. 30619.

Box 10. Protecting and restoring ecosystems needs regulatory instruments

The Dominican Republic has had some success with protecting and restoring ecosystems (target 6.6), underpinned by the Sectoral Law of Protected Areas (2004). Under the law, Protected Areas Management Plans are one of the key instruments for managing ecosystems and species. The plans consist of a technical and regulatory document that contains the set of decisions on protected areas which, based strictly on scientific knowledge and experience of technical applications, establishes specific prohibitions and authorizations, and regulates the activities allowed in protected areas, detailing where and the exact form in which these activities can be carried out. Between 2012 and 2016, an annual average of 11,506 hectares of upper catchment areas were reforested.

Source: Dominican Republic (2021).

Disaster risk reduction, floods and droughts, and climate change adaptation

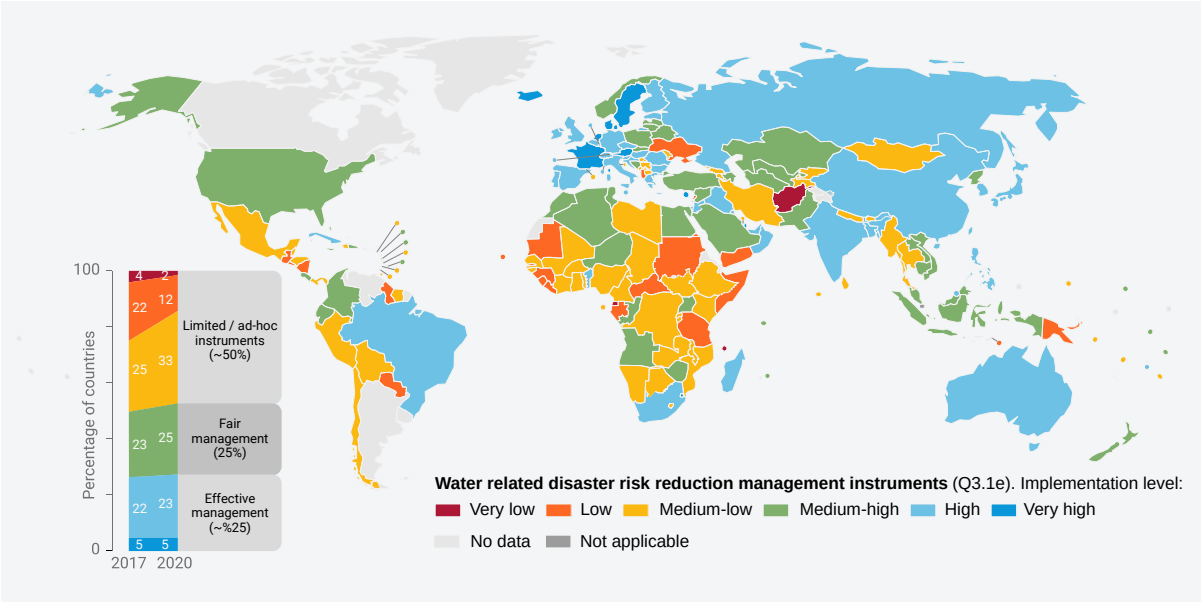
Supporting other SDGs

Working towards, and reporting on, indicator 6.5.1 supports the development of an enabling environment, management instruments and financing for reducing the social and economic impacts of water-related disasters (target 11.5), and enhancing climate change adaptation (13.1–13.3).

Despite making some gains in establishing mechanisms for disaster risk reduction, almost 50 per cent of countries report that they are still only implemented on an ad hoc basis, or that any longer-term programmes only have limited coverage of at-risk areas (Figure 5.16).

By Milind Ruparel on Unsplash

Figure 5.16. Development and implementation of water-related disaster risk reduction management instruments (Q3.1e) (2020)



Many countries report the need for, or are implementing, instruments such as: risk and vulnerability assessments as a basis for preparedness and emergency planning; awareness and response capacity-building of communities; forecasting and early warning systems; nature-based solutions; structural protection and mitigation measures; zoning regulations (to limit infrastructure in disaster-prone areas); contingency and emergency response plans; disaster relief funds and insurance schemes; water rationing during droughts; and use of unconventional sources such as desalination and reuse of treated wastewater.

Many countries highlight some common approaches to disaster risk reduction, including: designating a coordinating national authority responsible for disaster preparedness and response; engaging multiple agencies and operators in emergency response planning (e.g. ministries, telecommunication companies, media, community-based organizations). A number of countries align with the Sendai Framework for Disaster Risk Reduction (2015–2030).[44]

> **"Investing in flood forecasting and early warning systems that reach down to potentially affected individuals helps save lives. It also reduces economic impacts when supported by modern technology and information-sharing." Indonesia**

44 See www.undrr.org/implementing-sendai-framework/what-sendai-framework.

5.8. Better basin and aquifer management

For effective IWRM, the activities discussed in the previous sections need to be applied at the basin and aquifer level, since this is where many of the activities are put in to practice, and where the negative impacts of non-action may be most keenly felt. Where basins and aquifers cross international borders, this work also supports transboundary cooperation (section 5.9).

However, many countries report relatively low technical, human and financial capacity at the basin and aquifer level (compared with the national level) for their organizations, plans, studies and management instruments. These are all essential for ensuring that the demands and impacts of the various sectors on water resources are taken into account, so as not to put social, economic, or environmental water security at risk.

Success factors for basin and aquifer management[45]

Organizations: assign political and legal mandate from national-level to basin-level organizations, to ensure that they have the power and authority to carry out their work; ensure strong links between basin/aquifer organizations and relevant local government departments and agencies (which may be from different administrative units); ensure adequate funding for basin organizations, including through direct revenue raising where feasible; develop and implement training programmes to enhance staff capacity.

Development of plans: effective plans require solid monitoring frameworks and scientific assessments, so that allocations and sustainable withdrawal limits can be set for different users, including temporal considerations; include authorities from all relevant sectors in the development and implementation of plans; where relevant and feasible, ensure adequate groundwater considerations in surface-water plans, allowing for conjunctive use and management; consider different topic areas for incorporation into the plans, such as water-use efficiency, pollution control, ecosystem protection and management, and water-related disaster risk reduction; periodically review and revise plans (e.g. every 5–10 years).

Financing: to facilitate allocation of national budgets to the basin/aquifer level, ensure sufficient institutional capacity at the basin/aquifer level to absorb and use the national budget; ensure that basin/aquifer level management is supported by legal frameworks, since this will facilitate prioritization of the national budget; d develop long-term basin management plans; and evaluate budget needs across basins to facilitate national budget allocations. Develop revenue-raising mechanisms at the local level (a sufficient institutional and regulatory framework is needed for enforcement).

45 These are primarily drawn from common country experiences included in country reporting under indicator 6.5.1, with phrasing guided by expert opinion. They are intended to inspire action, and not as a "how to" guide for implementing IWRM, since priorities and means of implementation will vary among countries.

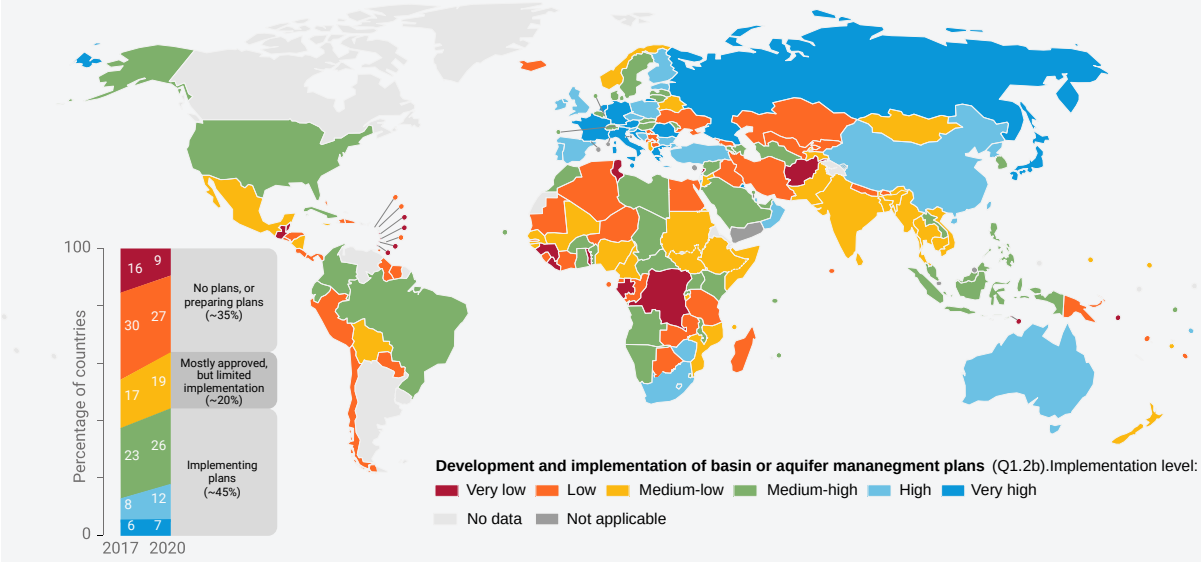
Implementation of plans and management instruments: ensure sufficient water resources monitoring and data-sharing to track implementation of plans.

Regional and transboundary agreements and frameworks can be a significant enabling factor for basin/aquifer-level management in countries.

Groundwater management: draw up "aquifer contracts" signed by relevant stakeholder groups; undertake detailed groundwater assessments, covering aspects such as potential reserves and sustainable withdrawal limits, and followed up by ongoing monitoring; include groundwater management in surface-water management plans and as part of water budgeting at the basin and national level; license and monitor groundwater abstractions.

While some progress has been made since 2017, approximately 55 per cent of countries still report that the institutional arrangements at the basin and aquifer level are either non-existent, or a lack of technical and financial capacity severely restricts implementation of activities (Box 11). A similar proportion of countries either do not have basin or aquifer management plans in place, or their implementation is limited (Figure 5.17).

Figure 5.17. Development and implementation of basin- or aquifer-level management plans (Q1.2b) (2020)



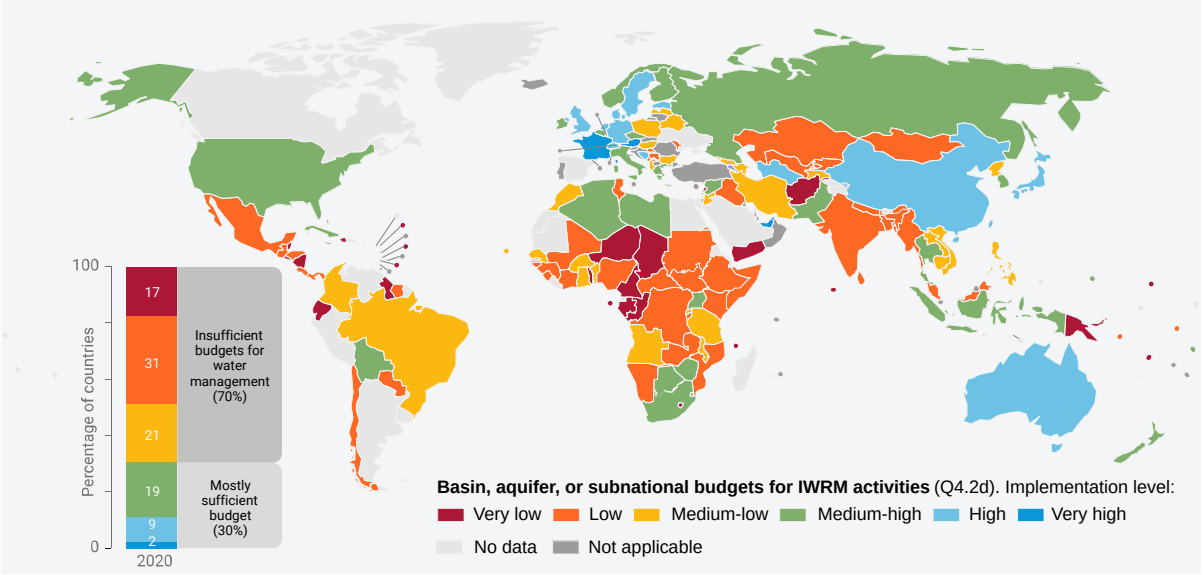
Box 11. Basin and aquifer management plans are challenging to develop and implement

An increasing number of countries have established river basin organizations or committees (Belarus, Kyrgyzstan, Panama) whose tasks include the preparation of basin plans. Although many countries are in the process of preparing or implementing river basin plans, some are still struggling to get started (Lebanon, Tunisia); in most cases due to legislation needing to be enacted or amended to provide for the plans. However, sometimes, and particularly in developing countries, basin plans, and the achievements associated with them, are obtained under stand-alone projects (El Salvador, Myanmar, Nicaragua). Some countries, even those that score highly on basin management instruments, say that the basin management instruments implemented have achieved less than expected (China, Estonia). And, despite good intentions to avoid fragmentation and ensure cross-sectoral coordination by adopting a basin planning approach, this can still prove difficult to achieve in practice (Eswatini, Guatemala, Lao PDR, Sierra Leone).

"30 years ago we adopted the integrated river basin management (IRBM) approach in all catchments, but management instruments remain limited and only through short-term / ad-hoc projects." Somalia

As much as 70 per cent of countries report that budgets for IWRM activities at the basin level are grossly inadequate (Figure 5.18). Many report that financial contributions for river basin organizations (national or transboundary) are often delayed or reduced. See the success factors listed at the beginning of this section for inspiration on how to address this.

Figure 5.18. Budgets for IWRM activities at the basin, aquifer or subnational level (Q4.2d) (2020)



Box 12. Protecting at-risk basins with sustainable water resources management

One of the largest lakes in Asia, Lake Balkhash, shared between Kazakhstan and China, was at risk from desertification, industrial activity and overuse of its tributary water sources. To address this, the Balkhash–Alakol Water Basin Council was set up in 2005, with 49 members from water-user organizations, with the aim of promoting cooperation among public, private and other water stakeholders, and encouraging sustainable water resources management. A 2017 basin agreement led to a range of environmental protection measures, including new (green) technologies to minimize the impact of industrial pollutants (supporting target 6.3) and reduce carbon emissions (SDG 13).

Source: GWP (2021b).

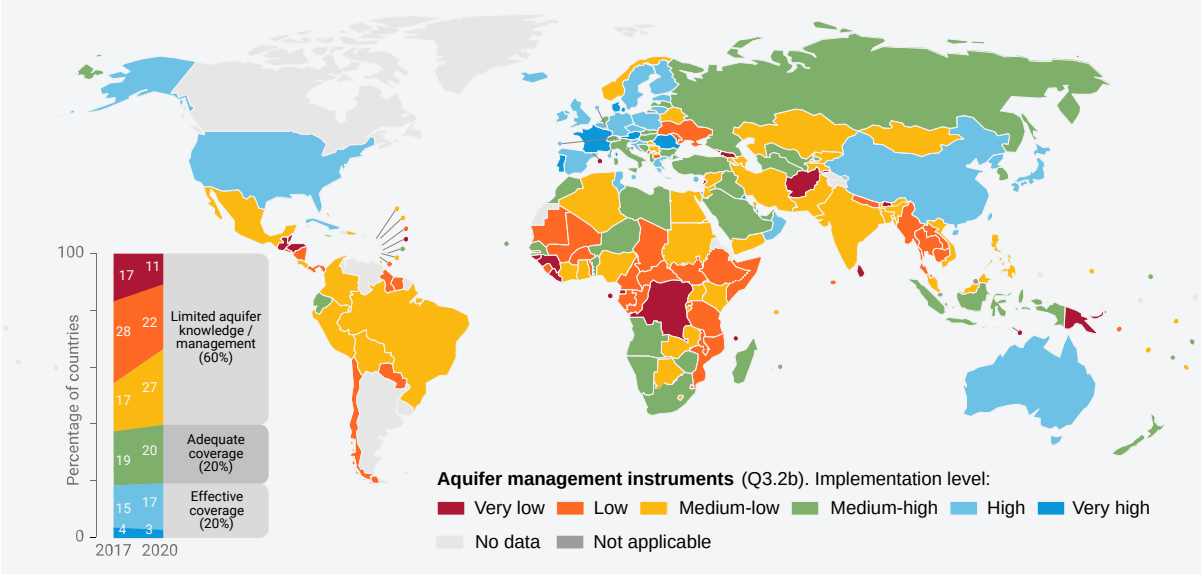
Spotlight on groundwater

In numerous countries and regions, groundwater is either the primary, or an important, water source (Margat and van der Gun, 2013). However, groundwater is pumped unsustainably in a number of regions – particularly for irrigation – with hotspots including the North China Plain, border areas between India and Pakistan, Iran and the Middle East, central Mexico, and California's Central Valley and the High Plains aquifer in the United States (Bierkens and Wada, 2019). Of particular concern is the impact of groundwater depletion on ecosystems. When groundwater levels drop, discharges from groundwater to streams may decline, stop completely or even reverse direction, thereby decreasing streamflow, with potentially devastating effects on aquatic ecosystems (target 6.6 and SDG 15) (de Graaf and others, 2019).

Sixty per cent of countries report having limited knowledge of their aquifer resources, or that management of aquifer resources is limited (Figure 5.19).

Groundwater management is becoming increasingly important to sustainable development and resilience to climate impacts, including on surface waters (International Association of Hydrogeologists, 2019). Therefore, urgent attention is required in each country, including for transboundary aquifers, to develop adequate monitoring systems; understand sustainable withdrawal limits, including the impacts of unsustainable withdrawals on local ecosystems; develop withdrawal regulations and enforce them; and develop integrated management plans for groundwater use and surface-water use.

Figure 5.19. Development and implementation of aquifer management instruments (Q3.2b) (2020)



5.9. Transboundary cooperation

Transboundary waters account for 60 per cent of the world's freshwater flows. A total of 153 countries have territory within at least one of the 286 transboundary river and lake basins, and 592 shared aquifer systems (UNECE and UNESCO, 2021). Cooperation between countries is therefore vital for achieving sustainable water management for all, while maintaining healthy ecosystems. Target 6.5 states, "By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate". Both indicators 6.5.1 and 6.5.2 advocate for the management of water resources at the basin or aquifer level, irrespective of whether they cross international borders or other administrative borders.

Success factors for transboundary cooperation[46]

Regional frameworks: regional frameworks such as the Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC), the Regional Water Resources Policy (WARWP) of the Economic Community of West African States (ECOWAS) and the European Water Framework Directive (WFD) give members a common commitment, which ensures that transboundary neighbours within the framework agreements are exchanging lessons learned and working towards the same goals.

National processes and priorities such as IWRM plans, information systems and financing can enhance the potential for, and contribute to, transboundary cooperation, since national capacity in these areas can be drawn upon in transboundary water management.

Integrated national and transboundary basin/aquifer management: activities to enhance capacity for management of transboundary basins and aquifers naturally support national-level capacity development, and vice versa.

Data- and information-sharing: Establish data- and information-sharing agreements between riparian States, as a minimum level of transboundary collaboration, which can be a basis for broader cooperation. A third-party neutral broker may be helpful to facilitate data- and information-sharing; organize joint visits (e.g. joint water-quality monitoring visits); develop joint data- and information-sharing platforms, with agreed protocols for data-sharing; and collaborate on flood warning and forecasting initiatives.

International conventions: the Convention on the Protection and Use of Transboundary Watercourse and International Lakes (Water Convention) and the United Nations Convention on the Law of Non-navigational Uses of International Watercourses can provide a platform for exchanging experiences and a basis for negotiating further arrangements.

Aquifers: incorporating transboundary groundwater into transboundary surface-water arrangements, and establishing groundwater working groups in surface-water institutional arrangements, offers a "quick win" in terms of triggering a holistic approach to water management.

Donor or third-party facilitated activities can provide much needed impetus to accelerate cooperation. Activities include projects involving technical studies; joint visits; development of monitoring frameworks; drafting of letters of intent or memoranda of understanding (MoUs).

Financing: Create political awareness about the need for stable long-term financing of transboundary water management arrangements, and the tangible benefits of such cooperation across a range of SDGs; ensure there is a legal body that can attract and manage finances, supported by a clear and transparent legal framework and mandate.

46 These are primarily drawn from common country experiences included in country reporting under indicator 6.5.1, with phrasing guided by expert opinion. They are intended to inspire action, and not as a "how to" guide for implementing IWRM, since priorities and means of implementation will vary among countries.

Based on indicator 6.5.2, an average of 58 per cent of countries' transboundary basin areas have an operational arrangement for water cooperation as of 2020.[47] Only 24 countries report that operational arrangements cover all their transboundary basins, and only another 22 countries report having more than 70 per cent of their transboundary basin area covered by such arrangements.

Thirteen countries with transboundary waters report having no operational arrangements for transboundary water cooperation (UNECE and UNESCO, 2021).

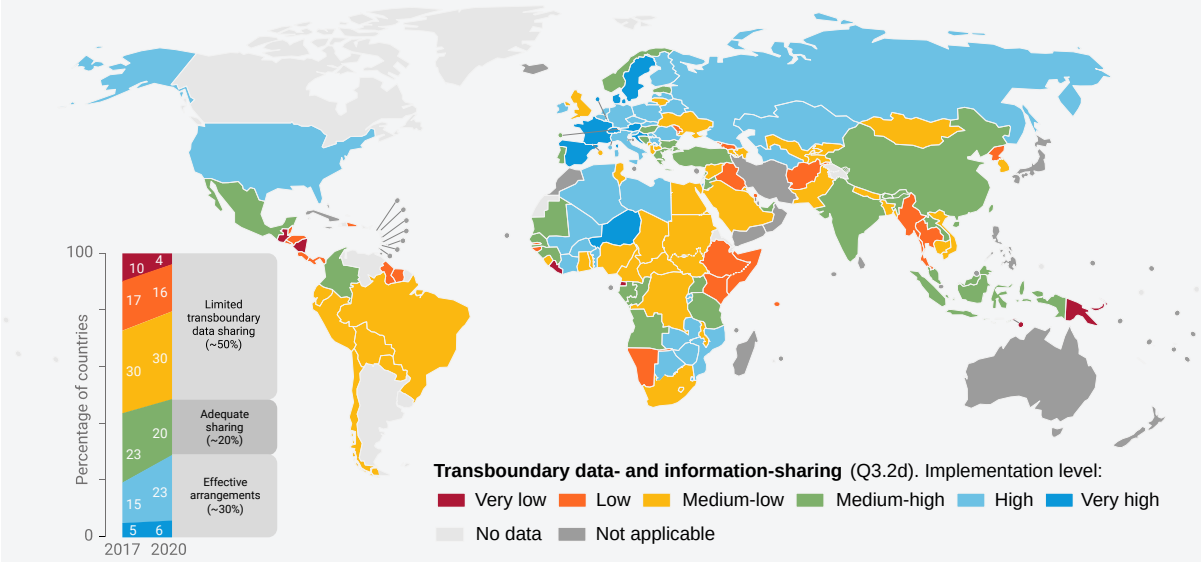
Indicator 6.5.1 complements 6.5.2 by tracking progress on transboundary cooperation with a question in each of the four IWRM dimensions, namely questions on **transboundary agreements, organizational frameworks, data-sharing, and financing**.

Of the 153 countries that share waters with their neighbours, 142 reported on these aspects through indicator 6.5.1. Overall, while over 80 per cent of these countries report having cooperation arrangements in place on these aspects for their most important basins and aquifers, implementation is often limited.

Since 2017, most countries report improvements in establishing and implementing agreements, organizational frameworks and data-sharing (Box 13). However, the current rate of progress is unlikely to result in effective transboundary cooperation by 2030 in all basins and aquifers. Around 50 per cent of countries still report limited data-sharing, with 20 countries reporting either having no transboundary agreements and organizations, or that these are still being developed (Figure 5.20; Box 14).

47 Percentage based on available data from 101 of the 153 countries sharing transboundary rivers, lakes and aquifers. Indicator 6.5.2 measures the proportion of transboundary basin and aquifer area in each country with an operational arrangement for water cooperation. To determine whether an arrangement is 'operational', four criteria are used: a joint body or mechanism must exist; meetings between countries must be held at least annually; joint management plans or objectives must have been set; and exchanges of data and information must take place at least annually.

Figure 5.20. Transboundary data- and information-sharing mechanisms (Q3.2d) (2020)



Box 13. National and transboundary water management activities are mutually reinforcing

Collaboration on transboundary water resources often focuses on bringing the capacities of riparian countries up to the same level, notably in terms of data-sharing, joint monitoring, notification of planned developments (Zambezi basin) and sometimes even joint planning (Mekong basin). Typically, the chosen level and quality standards for collaboration are a compromise between the capacities of the participating countries. This means that countries with lower IWRM capacity will often receive targeted support to bring them to the required and agreed level, particularly where transboundary collaboration is based on international support (Honduras, South Sudan). In the collaborative process, countries with lower IWRM capacity have opportunities to strengthen their capacity through participation in joint activities with more advanced riparian partners, such as joint monitoring or joint assessments. Similarly, joining forces and utilizing the capacity and information of national IWRM agencies is a recipe for improving transboundary collaboration mechanisms (Algeria), and the only way to create win-win solutions when attempting to optimize water management from a transboundary basin perspective.

Box 14. Transboundary cooperation for sustainable management of the Drin

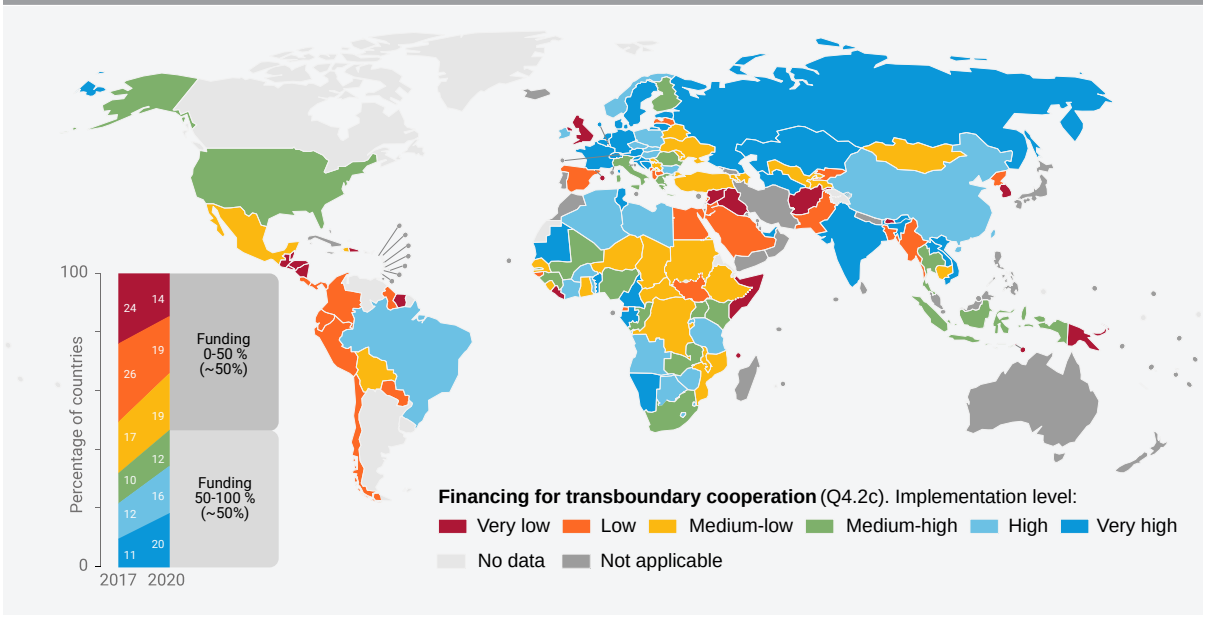
The Drin Basin[48] is shared by Albania, Greece, Kosovo,[49] Montenegro and North Macedonia. Joint work done under the Drin Coordinated Action[50] for the Drin MoU (2011),[51] supported through the Global Environment Facility (GEF)/United Nations Development Programme (UNDP) Drin project[52] executed by GWP, has enabled a scientifically based consensus to be reached among the riparian parties on four priority transboundary problems[53] that result in the deterioration of the basin's ecosystems. A Strategic Action Programme (SAP)[54] was endorsed in 2020 at a high level to address the multiple causes of these transboundary problems. An Information Management System (IMS)[55] was then developed to facilitate transboundary cooperation for the implementation of the Drin MoU and SAP, enabling data and information collection, storage and sharing between riparian parties. The IMS – which includes geographic information system (GIS) functions – is designed for use in the everyday work of the institutions responsible for the management of the Drin sub-basins.

Source: GWP (2020).

Financing for transboundary cooperation is a clear prerequisite for negotiating and implementing agreements, and for covering costs of organizational frameworks. Approximately half of all countries report funding between 50 and 100 per cent of agreed contributions, while the other half report funding less than 50 per cent (Figure 5.21). While transboundary water cooperation leads to multiple benefits at the national level, and across a range of sectors, financing may be hard to secure because these benefits are often poorly understood. Developing benefit-sharing frameworks in each basin/aquifer context would greatly facilitate communication to support financing efforts (International Union for Conservation of Nature [IUCN], 2021; UNECE, 2015). Furthermore, it is important that there is a legal body that can attract and manage finances, supported by a clear and transparent legal framework and mandate.

48 See http://drincorda.iwlearn.org/drin-river-basin/introduction.
49 This designation is without prejudice to position or status, and is in line with United Nations Security Council Resolution 1244/1999 and the International Court of Justice's Opinion on the Kosovo declaration of independence.
50 See http://drincorda.iwlearn.org/drin-coordinated-action/the-drin-mou-implementation-1.
51 See http://drincorda.iwlearn.org/drin-coordinated-action/drin-memorandum-of-understanding.
52 See http://drincorda.iwlearn.org/gef-supported-drin-project.
53 See http://drincorda.iwlearn.org/gef-supported-drin-project/the-drin-transboundary-diagnostic-analysis.
54 See http://drincorda.iwlearn.org/gef-supported-drin-project/the-drin-strategic-action-programme.
55 See https://dringis.org/.

Figure 5.21. Financing for transboundary cooperation on water management and development (Q4.2c) (2020)



"Transboundary issues in the Mekong Basin context do not only refer to negative, conflicting issues related to water resources management, but also issues of benefit-sharing that through trade-off and joint efforts can lead to cooperation and peace." Cambodia

Mekong river by Chris on Flickr

Mekong river, Laos, Vietnam by Thierry Leclerc on Flickr

6. Next steps for different actors

This section recommends processes that different actors can undertake to advance IWRM implementation.[56] Fundamentally, many of these activities depend on the ability to communicate and demonstrate the value of implementing IWRM for achieving broader development objectives to a range of stakeholders, and thus ensure the necessary political, social and financial support to accelerate IWRM implementation. **Coordination – across sectors and investments at all levels – underpins most activities.**

Actors may be able to leverage political support from various global and regional frameworks aimed at coordinating efforts to support countries to achieve SDG 6. At the global level, these include the International Decade for Action on "Water for Sustainable Development" (2018–2028),[57] and the SDG 6 Global Acceleration Framework,[58] which was endorsed by 161 countries in the 2021 Joint Statement for the UN High-Level Meeting on Water.[59]

6.1. For countries and states

Through reporting on indicator 6.5.1 and other national processes, countries generally know what their main water challenges are.

For many countries needing to accelerate IWRM implementation, the main task is to consider what is needed, which actions will be the most effective, what is already being undertaken or planned, and what other prioritized activities or similar need to take place, as well as how to make things happen. Country responses to the 6.5.1 individual survey questions may be a helpful input to these considerations.

A natural next step for many may be to develop a plan, or similar. Experience has shown that plans become more operational when things like activities, key responsibilities, timelines and sources of funding/potential funding are clearly defined. Periodic monitoring and adjustments also help to ensure their longer-term value (Box 15).

A useful source of inspiration is the SDG 6 IWRM Support Programme, coordinated by the Global Water Partnership (GWP) together with UNEP, UNEP-DHI and the International Capacity Development Network for Sustainable Water Management (Cap-Net).[60] The programme is designed to support countries to accelerate progress towards the achievement of water-related SDGs and other development goals, in line with national priorities.

56 Recommendations on the various IWRM aspects can be found under "Key Messages" at the start of chapters 3, 4 and 5, and in particular under "success factors" at the start of each section in chapter 5.
57 See https://www.un.org/en/events/waterdecade.
58 See www.unwater.org/sdg6-action-space/.
59 See https://finlandabroad.fi/web/un/current-affairs/-/asset_publisher/TMs3SoX45i0K/content/joint-statement-for-the-un-high-level-meeting-on-water-march-18th-2021/384951.
60 See www.gwp.org/en/sdg6support/.

The programme's Acceleration Package[61] is openly available and contains a range of materials that can be directly used or adapted to help facilitate the development of national Action Plans, or similar, to systematically guide the implementation of solutions to the countries' priority water challenges.[62]

A number of countries, cities and regions are pursuing sustainable and equitable water management through the framework of the OECD Principles on Water Governance.[63] Programmes and projects in this context complement efforts towards achieving target 6.5, and countries and cities engaged in these processes are encouraged to continue to do so.

Box 15. Coordinated multi-stakeholder arrangements to achieve SDG 6

In Nicaragua, the Ministry of Environment and Natural Resources, in collaboration with GWP, initiated a multi-stakeholder engagement process to set up a coordinated governance structure for the implementation of SDG 6. The process brought together government institutions, the regional government of the South Caribbean Coast, academia, NGOs, WASH committees, the Red Nacional de Organizaciones de Cuencas [National Network of Basin Organizations – RENOC] and the indigenous community of Jinotega, and resulted in an inter-institutional commission for SDG 6, a time frame for a workplan, and the convening of three inter-institutional working groups to coordinate a cross-sectoral dialogue between public, private and community actors towards the implementation of SDG 6.

The following are activities that can facilitate acceleration on IWRM and SDG 6 more broadly, not necessarily in sequential order. Most countries are already undertaking at least one of these.

1. Ensure that there is a **connection between those responsible for IWRM implementation at the different levels** – which is likely to involve several different government departments – and the relevant central authorities responsible for coordinating SDG 6 and broader SDG progress, to discuss opportunities for coordinating activities and financing across targets and goals, and to identify any options for mutual support or synergy (for example, goals and targets related to energy, food and agriculture, the environment, sustainable consumption and production, sustainable infrastructure, climate, gender, and poverty).

2. Establish a **task force for coordinating and leading activities to work towards the achievement of SDG 6**. This would bring together the key institutions and national focal points responsible for different aspects of water resources management such as wastewater treatment and reuse, pollution control, ecosystems, clean water and sanitation, water-use efficiency, and water scarcity. Approximately 140 countries have an overall focal point for SDG 6, which coordinates with UN-Water on all SDG 6 targets.

61 See www.gwp.org/en/sdg6support/consultations/where-we-need-to-go/acceleration-package/.
62 Ten national Action Plans have been produced so far, and dialogue with many more countries is ongoing.
63 See www.oecd.org/water/regional/.

3. Develop **communication materials to clearly communicate the value of implementing IWRM** for broader development objectives to key government stakeholders across sectors and at all levels (section 5.1).

4. Identify **options for support** from the global, regional and national level and activate this support as required.

5. Building on the national indicator 6.5.1 reporting process and report(s), organize **multisectoral and multi-stakeholder processes** to develop some form of Action Plan for progressing towards SDG 6 through an IWRM framework (Box 15).

6. As part of organization of multisectoral and multi-stakeholder processes, set **ambitious but achievable national targets for 2030**, and interim targets to get there (e.g. for 2023 and 2026). This may be not only at the target level, but also for underlying elements, such as those assessed through the 6.5.1 survey.

7. **Operationalize and implement the "actions" in the plan**; this includes securing necessary funding, institutional arrangements, and capacity at the relevant levels.

8. **Financing of activities** is a key issue for all countries. Options include direct central/regional/local government support, revenue for various services, fines for misbehaviour, development bank funding and donor support.

Depending on country priorities, general guidance on advancing on key common areas is provided in the success factors lists at the start of each section in chapter 5. Additional guidance on these processes can be found in the IWRM ToolBox (Box 16).

Box 16. GWP ToolBox: an action hub for IWRM implementation

The revitalized IWRM ToolBox, to be relaunched in late 2021, contains 80+ tools on how to design and implement IWRM. The tools offer action-oriented content that showcases step-by-step approaches, methodological frameworks and guiding principles on how to put IWRM into action.

Additionally, the ToolBox offers a collection of 400+ case studies, further demonstrating how IWRM concepts and approaches have been applied and adapted to different country and regional contexts. Users will be able to join one of several Communities of Practice hosted on the ToolBox, to connect with water professionals from around the world, exchange ideas and start new initiatives for IWRM implementation.

6.2. For regional bodies and transboundary basin organizations

Regional bodies are well placed to support IWRM implementation within their member countries, as well as facilitating transboundary cooperation over surface-water and groundwater management. However, in many cases regional bodies need to significantly enhance their institutional and individual capacity to effectively undertake the work.

The following are some useful activities that regional bodies and transboundary river basin organizations can undertake.[64]

1. **Undertake regional analysis of status and challenges of IWRM implementation:** insights from this can be used to initiate regional dialogues on IWRM as a springboard for advancing on regional priorities on water and the broader sustainable development agenda.[65] Importantly, any regional analysis products should seek to provide recommendations at various levels for advancing towards the target, and may also identify common priority areas for collective action by region countries, depending on other strategic development priorities in the region.

2. **Facilitate country-to-country learning**: for example, organize regional or subregional webinars, workshops or visits where countries can exchange experiences and ideas. Several countries identified this as a need through their indicator 6.5.1 reporting.

3. **Develop and/or implement regional strategies and policies to enable and advance IWRM**: it is likely that there is an existing regional framework to build upon, or the task may be to undertake an inventory of suitable strategies and policies that can help advance IWRM. Such regional strategies may include objectives such as: promote training and capacity development programmes at the regional level; promote peer-to-peer learning exchanges between countries; support the strengthening of national water information systems; develop regional guidelines to promote economic valuation, revenue raising and financing; promote regional guidelines to increase resilience to floods and droughts; develop regional policies and guidelines for transboundary cooperation (Box 17).

4. **Foster transboundary cooperation**: facilitate inclusive processes to develop agreed strategies and objectives and broker agreements around transboundary cooperation, including around data- and information-sharing; encourage and facilitate countries to ratify global conventions on transboundary cooperation (section 5.9).

5. **Ensure that IWRM is considered and included in related regional policy dialogues**: for example on climate change, disaster risk reduction and socioeconomic development in the context of the SDGs (United Nations Economic and Social Commission for Asia and the Pacific, n.d.; Global Resilience Partnership, 2020; United Nations Economic and Social Commission for Western Asia, 2020).

6. **Coordinate funding across countries and sectors, and support countries to access this funding**: for example, the African Union's Programme for Infrastructure Development in Africa (PIDA), and the Continental Africa Water Investment Programme (AIP) (Box 3; section 3.2).

64 Many of these activities should be coordinated with efforts on SDG indicator 6.5.2 on transboundary cooperation.
65 A number of regions have already produced regional reports (e.g. Africa (2018), Arab region (2018) and Central America (2021)), and UNEP and GWP may be able to support this process in other regions upon request.

Box 17. SADC ministers agree to coordinate planning on water, energy and food security in 2020

The SADC Water-Energy-Food (WEF) Nexus Governance Framework was formally adopted by the SADC ministers responsible for energy and water in October 2020. The "nexus" approach highlights interdependencies in achieving water, energy and food security, while it is paramount to ensure sustainable resource use and the importance of coordination between these sectors to advance regional integration. The framework is guiding coordination among the three sectors at the policymaking and decision-making levels. GWP Southern Africa will coordinate implementation of the next phase, which supports dialogue among ministers and other key stakeholders.

Other examples of enabling regional policies include the Regional Environmental Framework Strategy 2021-2025 in Central America (Central American Commission on Environment and Development – CCAD) and the Strategic Plan of Action on Water Resources Management 2005 in South-Eastern Asia (ASEAN).

Source: GWP Southern Africa (2021).

6.3. For investment banks and donors

These actors can include bilateral donors, multilaterals, investment funds and foundations. They have an interest in ensuring that resources are used effectively for maximum impact. Considerations for these actors include:

1. **Coordinate programmes and investments:**

- **Liaise with national overall focal points for SDG 6** or relevant national institutions to discuss key national findings and broader trends revealed by the SDG 6 reporting processes, to identify avenues for **coordinated investment** across all SDG 6 areas.
- **In addition to national overall focal points, liaise with focal points from related areas** such as climate (e.g. United Nations Framework Convention on Climate Change – UNFCCC[66]) and biodiversity (e.g. Convention on Biodiversity – CBD[67]), to coordinate actions and investments.
- **Engage with existing national, regional or global donor investment coordination platforms** to enhance coordinated investment. At the global level, this might include the SDG 6 Global Acceleration Framework,[68] which aims to coordinate investments for achieving SDG 6. While the Acceleration Framework is in its infancy, lessons may be learned from more established platforms such as the Global Donor Platform for Rural Development.[69] Many countries have national donor coordination platforms.

66 See https://unfccc.int/.
67 See https://www.cbd.int/.
68 See www.unwater.org/sdg6-action-space/.
69 See www.donorplatform.org/homepage.html.

- **Engage in regional IWRM processes** to form partnerships with relevant regional economic organizations or similar in order to form regional- or subregional-level investment plans and actions that can address regional priorities.

2. **Draw on existing information to support country needs:**

- **Make use of the national indicator 6.5.1 (and other SDG 6) reports** to establish an informed basis for national investment portfolios that can help address specific country needs. Indicator 6.5.1 stakeholder consultation reports can further be used to inform on key challenges and gaps that need addressing.

- **Engage with the** SDG 6 IWRM Support Programme,[70] which is developing promising country-driven investment portfolios, based on IWRM Action Plans, and includes over 200 country "Actions"[71] and counting.

There is also a need to support countries to better articulate their water-related financing needs, identify possible sources of financing, and in some cases increase their capacity to secure financing. There may also be value in discussing broad and specific country needs with potential investors to enhance outcomes. The SDG 6 IWRM Support Programme is currently undertaking a feasibility analysis to develop such a mechanism.

6.4. For sustainable development partners

For NGOs, community-based organizations, UN country offices, academic institutions and other partners that typically have ongoing work in various aspects of water resources management (such as environmental security, sustainable tourism and irrigation), an integrated approach to water resources management provides a practical entry point to identify and understand potential synergies and trade-offs of activities implemented by different actors. It should also be noted that, through the indicator 6.5.1 reporting process, many countries have explicitly highlighted the need for technical and financial support in various aspects of IWRM implementation.

Ways to engage and support IWRM implementation for these actors include:

1. **Making use of the detailed country reports developed through the indicator 6.5.1 reporting process:**[72] most of the national 6.5.1 reports provide a wealth of information on the status, main challenges, next steps and priorities for each country, based on substantive stakeholder discussions.

2. **Engaging with national focal point institutions and focal points for indicator 6.5.1 and other relevant indicators under SDG 6:** to identify any mutual synergies and room for mutual support (e.g. exchanging information, using existing non-governmental mechanisms and platforms to foster dialogues, sharing information hosted by universities or other research partners) towards addressing challenges to IWRM implementation.

3. **Engaging with active national and regional IWRM-focused organizations:** these can be drawn upon to seek IWRM-related capacity-building, learning resources and potential funding support for local- and national-level IWRM actions. For example, the GWP has 69

70 See www.gwp.org/en/sdg6support/engage/.
71 See www.gwp.org/en/sdg6support/engage/iwrm-actions/actionsearch/.
72 National reports and visual country summaries in all six languages are available at http://iwrmdataportal.unepdhi.org/countrydatabase.

Country Water Partnerships[73] and 13 Regional Water Partnerships[74] which may be able to provide technical support and networking to cross-sectoral and multi-stakeholder initiatives at the relevant level. Furthermore, UNDP Cap-Net has country and regional networks[75] which may be able to provide capacity development support in areas where they are active.

6.5. Partnering with the private sector

Partnering with the private sector is essential to address many of the world's freshwater-related challenges.

The business community is a key water user and an enabler of innovation and technology that can contribute to improving IWRM, within the context of multi-stakeholder mechanisms that strive for the common good.

The starting point for companies is to understand their water-related risks, which could be physical, reputational and/or regulatory. There are a number of global tools that allow companies to identify water-related business risks, set water withdrawal targets, implement practical projects to advance corporate water targets and track performance over time, such as ECOLAB's Smart Water Navigator[76] and the World Wide Fund for Nature (WWF)'s Water Risk Filter.[77]

Box 18. Water Funds: uniting public, private and civil society to achieve water security

Water Funds are independent organizations that design and enhance financial and governance mechanisms which unite public, private and civil-society stakeholders around a common goal to contribute to water security through nature-based solutions and sustainable watershed management. Currently, 43 Water Funds are in operation in 13 countries around the world, with many more in the pipeline. Investment in Water Funds from different stakeholders has totalled hundreds of millions of dollars, with over 140 companies investing approximately USD 70 million so far.

See https://waterfundstoolbox.org/ for more information.

73 See https://gwp.org/en/About/who/Country-Water-Partnerships/.
74 See https://gwp.org/en/About/who/Regional-Water-Partnerships/.
75 See https://cap-net.org/the-network/.
76 See www.smartwaternavigator.com/journey.
77 See https://waterriskfilter.panda.org/.

Many positive examples around the world show that involving the business community in IWRM can not only be good for the water security of the areas where companies are based, but also contribute to the sustainability of the companies' own operations, by helping to reduce their water-related risks. Initiatives such as the UN Global Compact CEO Water Mandate's Water Resilience Coalition,[78] the Alliance for Water Stewardship,[79] UNEP's Match! Water Solution Portal[80] and The Nature Conservancy's Water Funds[81] (Box 18) show that many companies are more than willing to contribute to SDG 6 with this dual objective in mind, especially when their contributions will have a significant impact on the environment, society and economies of their areas of interest.

That is also the objective of IWRM. Yet, the private sector's contribution to IWRM is still not operating at a scale that can significantly tip the balance.

There is therefore a need to better align opportunities for the private sector to contribute to IWRM, and to overcome some of the real or perceived barriers. In addition to the initiatives mentioned, the private sector can also engage through the SDG 6 Global Acceleration Framework and the SDG 6 IWRM Support Programme.

Gundal Dam, India by Joseph D'mello on Unsplash

78 See https://ceowatermandate.org/resilience/.
79 See https://a4ws.org/.
80 See https://matchwatersolutions.com/.
81 See https://waterfundstoolbox.org/.

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Annexes

I. Indicator 6.5.1 survey overview[82]

Dimension 1: Enabling Environment: policies, laws, plans. Implementation score (0–100)	
1.1	**National level**
a	Water resources **policy**
b	Water resources **law(s)**
c	Integrated water resources management (IWRM) **plans**, or similar
1.2	**Other levels**
a	**Subnational** water resources **policies**
b	**Basin/aquifer management plans** or similar, based on IWRM principles
c	**Transboundary agreements**
d	**Subnational regulations**
Dimension 2: Institutions and Participation: for water resources management. Implementation score (0–100)	
2.1	**National level**
a	**Government authorities**
b	**Cross-sectoral coordination**
c	**Public participation** in water resources development and management
d	**Private sector participation** in water resources development and management
e	**Capacity development**
2.2	**Other levels**
a	**Basin-/aquifer-level organizations** for leading implementation of IWRM plans or similar
b	**Local-level public participation** in water resources development and management
c	**Participation of vulnerable groups**
d	**Gender mainstreaming**
e	**Transboundary organizational frameworks**
f	**Subnational authorities**
Dimension 3: Management Instruments: for water resources management. Implementation score (0–100)	
3.1	**National level** (includes surface water and/or groundwater, as relevant to the country)
a	**Water availability monitoring**
b	**Sustainable and efficient water-use** management
c	**Pollution control**
d	Management of water-related **ecosystems**
e	Water-related **disaster risk reduction**
3.2	**Other levels**
a	**Basin management**
b	**Aquifer management**
c	**Data- and information-sharing** (within countries)
d	**Transboundary data- and information-sharing**
Dimension 4: Financing: for water resources development and management. Implementation score (0–100)	
4.1	**National level**
a	National budget for water resources **infrastructure** (investments and ongoing costs)
b	National budget for water resources **management** (investments and ongoing costs)
4.2	**Other levels**
a	Subnational/basin budgets for water resources **infrastructure** (investments and ongoing costs)
b	**Revenue raising**
c	**Financing for transboundary cooperation**
d	Subnational/basin budgets for water resources **management** (investments and ongoing costs)

82 The full survey, with complete question wording, threshold descriptions, annexes and further explanation is available at http://iwrmdataportal.unepdhi.org/.

The SDG indicator 6.5.1 survey also includes following voluntary annexes:

Annex A: Glossary

Annex B: Transboundary level

Annex C: Barriers, enablers and next steps for furthering IWRM implementation

Annex D: Priority water resource challenges

Annex E: 6.5.1 country reporting process form

II. National indicator 6.5.1 data: integrated water resources management implementation

IWRM implementation levels and score thresholds					
Very low (0–10)	Low (11–30)	Medium-low (31–50)	Medium-high (51–70)	High (71–90)	Very high (91–100)

Scores based on 33 questions across four dimensions (see Annex I).[83] **ND = No data**

	6.5.1 score	
Country	**2017**	**2020**
Afghanistan	12	12
Albania	43	47
Algeria	48	54
Andorra	36	36
Angola	37	61
Antigua and Barbuda	30	35
Argentina	38	ND
Armenia	36	52
Australia	86	88
Austria	91	91
Azerbaijan	66	57
Bahamas	33	34
Bahrain	40	39
Bangladesh	50	58
Barbados	42	46
Belarus	38	54
Belgium	78	82
Belize	20	21
Benin	63	68
Bhutan	32	33
Bolivia	49	52
Bosnia and Herzegovina	61	53
Botswana	41	48
Brazil	51	63
Brunei Darussalam	ND	70
Bulgaria	60	69
Burkina Faso	63	66
Burundi	32	47
Cabo Verde	64	62
Cambodia	46	59
Cameroon	34	40
Canada	ND	ND
Central African Republic	31	37
Chad	32	37
Chile	23	32
China	75	80
Colombia	50	57

83 For full results for each question for each country, see http://iwrmdataportal.unepdhi.org.

Comoros	26	20
Congo	32	43
Costa Rica	43	51
Côte d'Ivoire	32	40
Croatia	90	90
Cuba	80	82
Cyprus	91	93
Czech Republic	79	80
Democratic People's Republic of Korea	38	63
Democratic Republic of the Congo	31	32
Denmark	93	95
Djibouti	ND	ND
Dominica	40	47
Dominican Republic	36	36
Ecuador	42	38
Egypt	40	42
El Salvador	21	23
Equatorial Guinea	24	23
Eritrea	ND	ND
Estonia	80	85
Eswatini	53	59
Ethiopia	31	41
Fiji	ND	56
Finland	75	80
France	100	100
Gabon	14	29
Gambia	30	31
Georgia	35	44
Germany	88	89
Ghana	49	57
Greece	83	86
Grenada	25	31
Guatemala	25	21
Guinea	24	25
Guinea-Bissau	ND	19
Guyana	16	19
Haiti	29	30
Honduras	21	25
Hungary	73	75
Iceland	52	69
India	ND	45

Indonesia	48	66
Iran	59	40
Iraq	25	38
Ireland	81	81
Israel	85	85
Italy	55	77
Jamaica	43	50
Japan	94	95
Jordan	63	64
Kazakhstan	30	46
Kenya	53	59
Kiribati	ND	ND
Kuwait	82	94
Kyrgyzstan	ND	31
Lao People's Democratic Republic	49	62
Latvia	64	62
Lebanon	32	25
Lesotho	33	45
Liberia	15	15
Libya	47	60
Liechtenstein	70	72
Lithuania	57	61
Luxembourg	90	89
Madagascar	36	38
Malawi	40	55
Malaysia	43	63
Maldives	35	42
Mali	53	52
Malta	75	86
Marshall Islands	33	36
Mauritania	45	47
Mauritius	64	68
Mexico	49	42
Micronesia (Federated States of)	38	49
Monaco	90	94
Mongolia	43	45
Montenegro	34	35
Morocco	64	71
Mozambique	55	62
Myanmar	27	33
Namibia	59	53

Nauru	ND	ND
Nepal	33	37
Netherlands	93	92
New Zealand	58	65
Nicaragua	ND	30
Niger	50	53
Nigeria	35	44
North Macedonia	22	33
Norway	63	68
Oman	33	79
Pakistan	50	56
Palau	ND	ND
Panama	37	33
Papua New Guinea	25	19
Paraguay	32	27
Peru	30	41
Philippines	51	56
Poland	40	74
Portugal	74	72
Qatar	82	81
Republic of Korea	68	76
Republic of Moldova	32	46
Romania	72	77
Russian Federation	79	88
Rwanda	35	66
Saint Kitts and Nevis	22	23
Saint Lucia	40	40
Saint Vincent and the Grenadines	ND	24
Samoa	70	75
San Marino	66	66
Sao Tome and Principe	23	33
Saudi Arabia	57	57
Senegal	53	50
Serbia	30	36
Seychelles	45	55
Sierra Leone	19	36
Singapore	100	100
Slovakia	66	61
Slovenia	58	87
Solomon Islands	26	30
Somalia	10	22

South Africa	65	71
South Sudan	38	43
Spain	82	87
Sri Lanka	25	47
Sudan	40	34
Suriname	15	23
Sweden	89	86
Switzerland	81	81
Syrian Arab Republic	ND	56
Tajikistan	ND	46
Thailand	ND	53
Timor-Leste	14	14
Togo	32	34
Tonga	30	35
Trinidad and Tobago	25	34
Tunisia	55	60
Turkey	70	72
Turkmenistan	ND	64
Tuvalu	47	45
Uganda	59	62
Ukraine	39	39
United Arab Emirates	75	79
United Kingdom	77	79
United Republic of Tanzania	50	54
United States of America	ND	77
Uruguay	ND	34
Uzbekistan	45	48
Vanuatu	39	45
Venezuela	ND	ND
Viet Nam	38	52
Yemen	39	36
Zambia	46	58
Zimbabwe	61	63

III. Stakeholder consultation processes for data collection

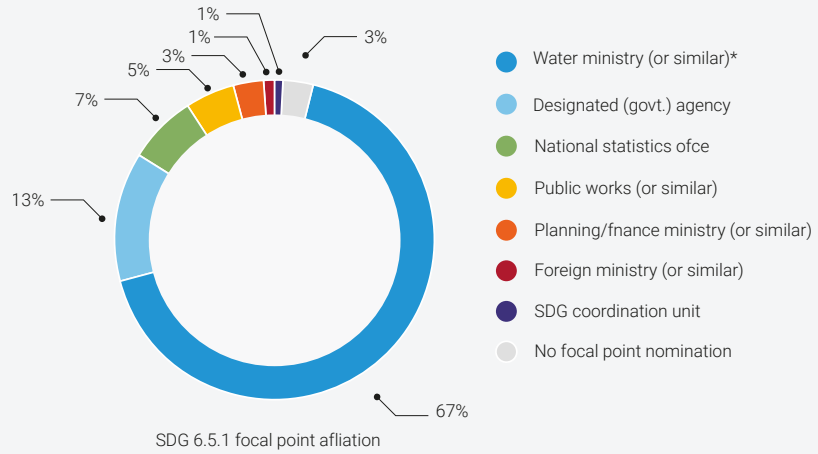
A central aspect of the 6.5.1 national reporting exercise is the multi-stakeholder process around agreeing on country scores and text responses to the survey questions.[84]

Many countries reported that this comprehensive process achieved a number of secondary but important outcomes, including awareness-raising among different stakeholders of the concept and value of integrated water resources management (IWRM); creation of a common understanding of the status of various aspects of water resources management; and discussion of the key barriers to IWRM implementation and priority actions to overcome them.

"The 6.5.1 stakeholder consultative process and use of this country survey instrument was very useful in that it served as a monitoring and evaluating tool for measuring progress on IWRM implementation in Zambia. It also served as a planning tool to address the areas that have been given less attention." Zambia

In Annex E of the 6.5.1 reports, countries were asked to provide a brief overview of the stakeholder consultation process, including the types of stakeholders involved and their level of engagement. The 6.5.1 focal points led the stakeholder consultation processes, with most affiliated to water ministries or similar (Figure III.1).

Figure III.1. Overview of national focal point affiliations

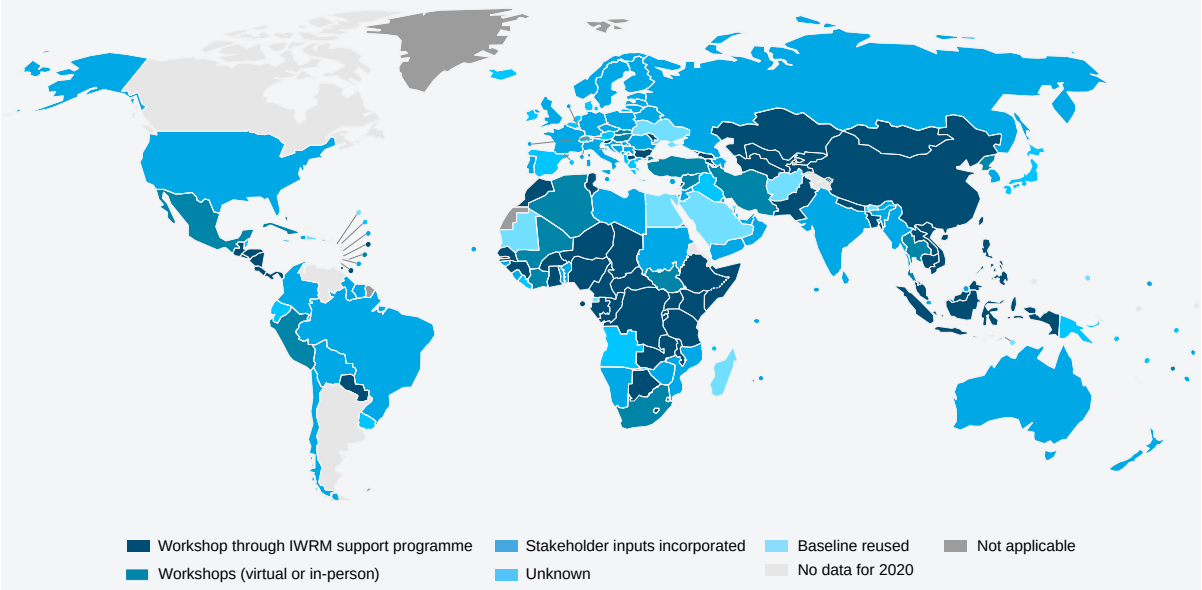


*"Water ministry (or similar)" indicates a ministry with chief responsibility for water resources management, often merged with other areas such as natural resources, the environment, climate change, land, energy, agriculture, fisheries, forestry or mines.

84 The process for completing the surveys is recorded in Annex E of each country report, available at http://iwrmdataportal.unepdhi.org/countrydatabase.

Countries used various means for stakeholder consultation, typically involving one or more workshops, sometimes virtually in line with COVID-19 restrictions. Approximately 80 countries held one or more in-person or virtual workshops. Of these, 61 countries were directly supported through the Sustainable Development Goal (SDG) 6 IWRM Support Programme[85] (Figure III.2), convening approximately 3,000 stakeholders from a variety of sectors (approximately 50 stakeholders per country). The resulting stakeholder consultation reports[86] provide further detail on which stakeholders participated and how, as well as the key discussion points, challenges and opportunities for progress on IWRM implementation in the respective countries. Of the remaining countries, approximately 70 countries received broad stakeholder inputs through other means (e.g. emails, phone calls, Google forms), 14 reused the baseline submission from 2017, and in approximately 25 countries, the extent of stakeholder consultation is not well known, but it is understood that discussions were mainly held within relevant government departments.

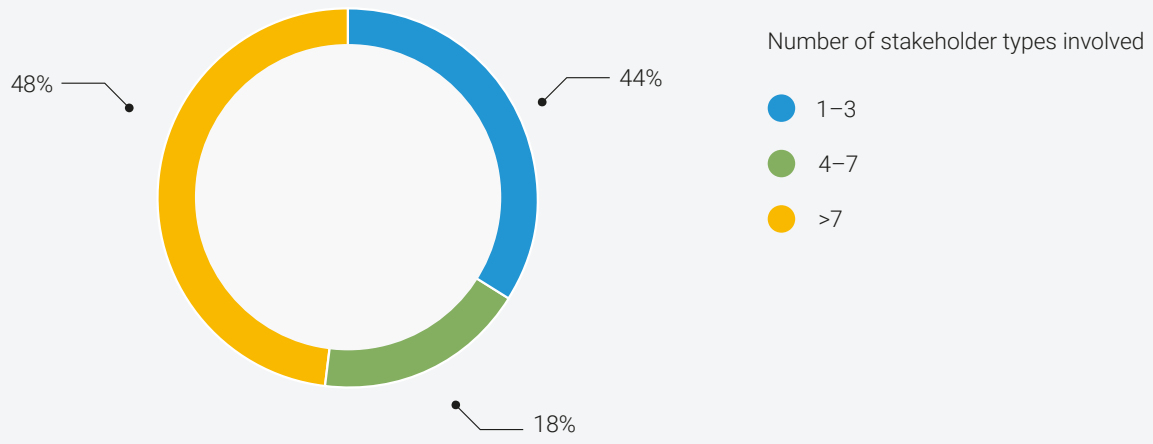
Figure III.2. Stakeholder consultation for reporting on indicator 6.5.1 (2020)



Most countries consulted a wide range of stakeholders at different governance levels and across sectors (Figure III.3).

85 See https://www.gwp.org/en/sdg6support/sdgmap/.
86 See https://www.gwp.org/en/sdg6support/sdgmap/.

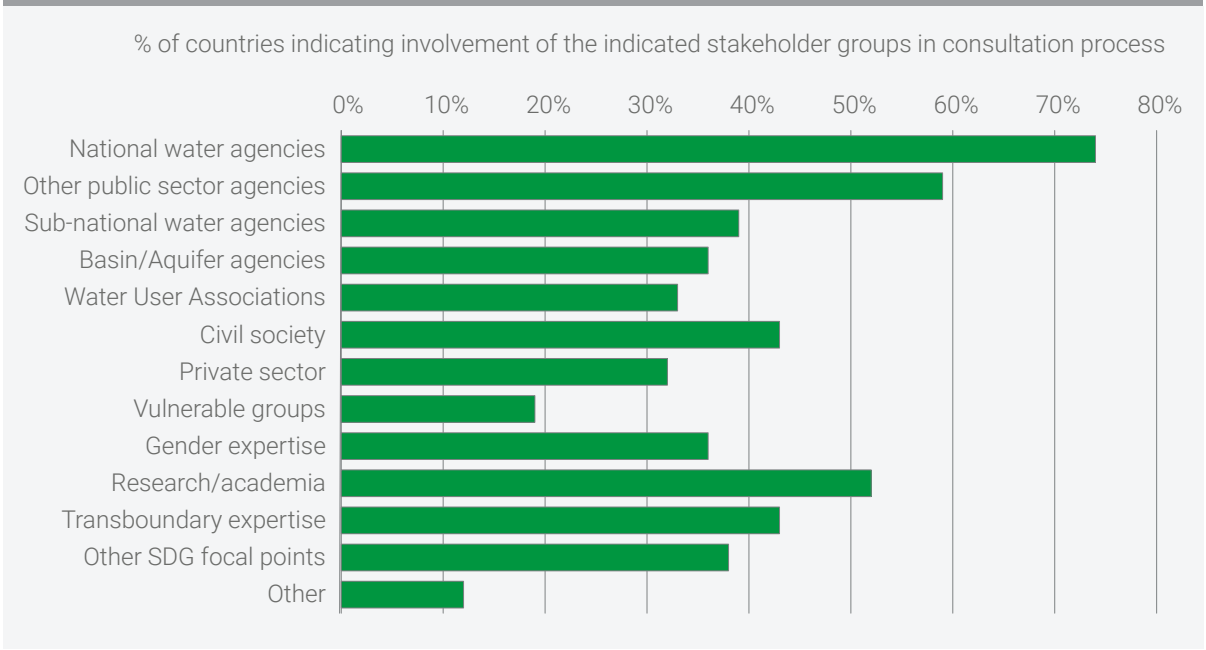
Figure III.3. Number of stakeholder types involved in the consultation process[87]



Countries were asked to define the level of engagement from stakeholder groups as low (given opportunity to contribute), medium (some input) or high (discussion/ negotiation). Looking at medium and high levels of engagement, the highest levels of engagement came from national water agencies, other public sector agencies and research/academia (Figure III.4).

87 There may be more than one organization represented within each stakeholder group.

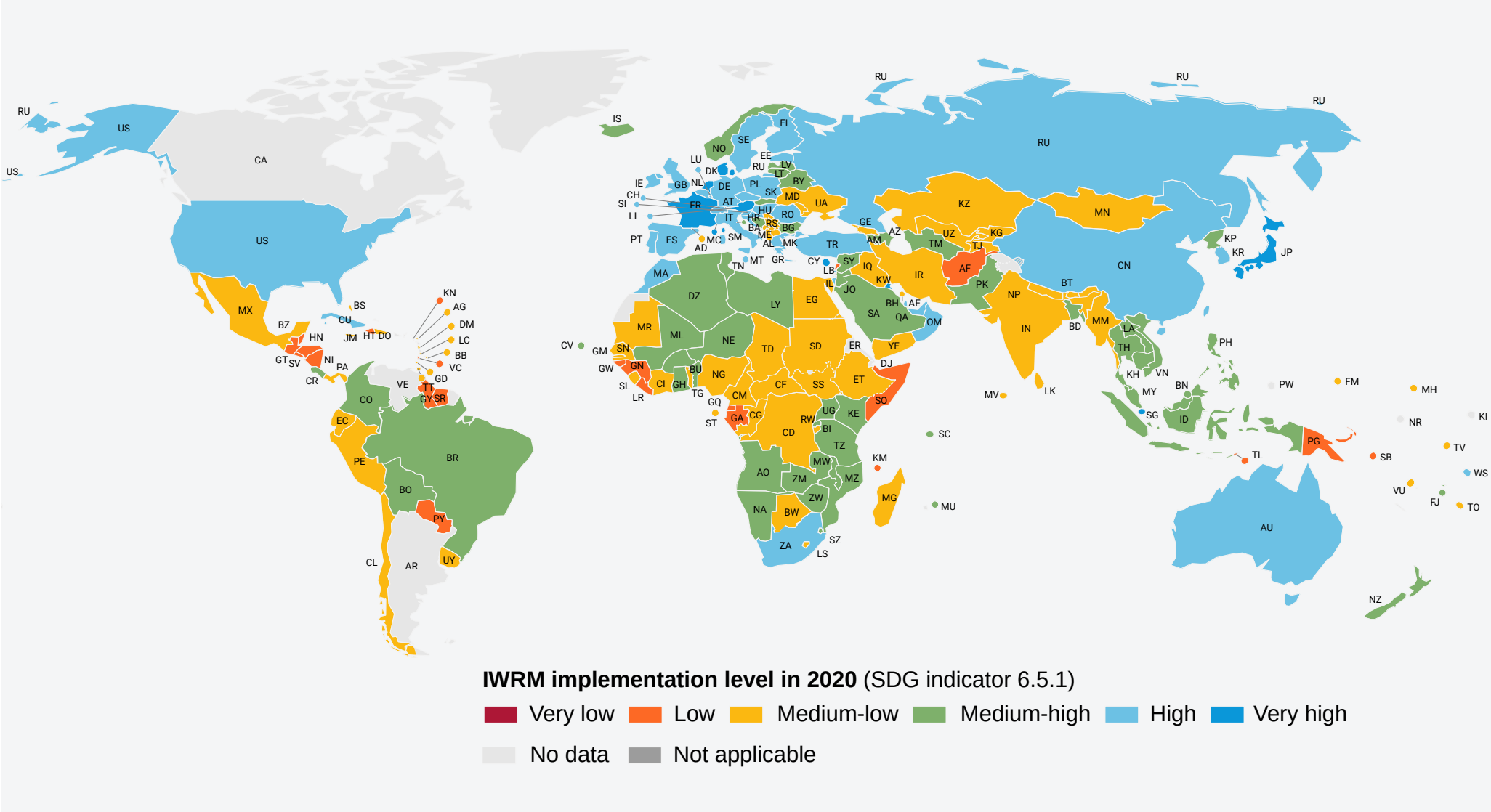
Figure III.4. Involvement of stakeholders in consultation processes, by stakeholder type (based on medium or high engagement levels) (2020)



Note: **Based on medium or high engagement levels as indicated by the 171 countries that submitted an updated survey.**

The broad range of stakeholders represented point to a fairly comprehensive consultation process in most countries. However, in many countries there is a need for more involvement of other SDG 6 focal points (and focal points from other SDGs); local-level actors such as basin organizations, water-user associations and subnational water agencies; and the private sector.

IV. Integrated water resources management implementation level map with country codes



Country codes are available at https://www.iso.org/obp/ui.

V. Lists of figures, boxes and tables

Learn more about progress towards SDG 6

How is the world doing on **Sustainable Development Goal 6**? View, analyse and download global, regional and national water and sanitation data: https://www.sdg6data.org/

Sustainable Development Goal (SDG) 6 expands the Millennium Development Goal (MDG) focus on drinking water and basic sanitation to include the more holistic management of water, wastewater and ecosystem resources, acknowledging the importance of an enabling environment. Bringing these aspects together is an initial step towards addressing sector fragmentation and enabling coherent and sustainable management. It is also a major step towards a sustainable water future.

Monitoring progress towards SDG 6 is key to achieving this SDG. High-quality data help policymakers and decision makers at all levels of government to identify challenges and opportunities, to set priorities for more effective and efficient implementation, to communicate progress and ensure accountability, and to generate political, public and private sector support for further investment.

The 2030 Agenda for Sustainable Development specifies that global follow-up and review shall primarily be based on national official data sources. The data are compiled and validated by the United Nations custodian agencies, who contact country focal points every two to three years with requests for new data, while also providing capacity-building support. The last global "data drive" took place in 2020, resulting in status updates on nine of the global indicators for SDG 6 (please see below). These reports provide a detailed analysis of current status, historical progress and acceleration needs regarding the SDG 6 targets.

To enable a comprehensive assessment and analysis of overall progress towards SDG 6, it is essential to bring together data on all the SDG 6 global indicators and other key social, economic and environmental parameters. This is exactly what the SDG 6 Data Portal does, enabling global, regional and national actors in various sectors to see the bigger picture, thus helping them make decisions that contribute to all SDGs. UN-Water also publishes synthesized reporting on overall progress towards SDG 6 on a regular basis.

Summary Progress Update 2021: SDG 6 – Water and Sanitation for All	Based on latest available data on all SDG 6 global indicators. Published by UN-Water through the UN-Water Integrated Monitoring Initiative for SDG 6. https://www.unwater.org/publications/summary-progress-update-2021-sdg-6-water-and-sanitation-for-all/
Progress on Household Drinking Water, Sanitation and Hygiene – 2021 Update	Based on latest available data on SDG indicators 6.1.1 and 6.2.1. Published by World Health Organization (WHO) and United Nations Children's Fund (UNICEF). https://www.unwater.org/publications/who-unicef-joint-monitoring-program-for-water-supply-sanitation-and-hygiene-jmp-progress-on-household-drinking-water-sanitation-and-hygiene-2000-2020/
Progress on Wastewater Treatment – 2021 Update	Based on latest available data on SDG indicator 6.3.1. Published by WHO and United Nations Human Settlements Programme (UN-Habitat) on behalf of UN-Water. https://www.unwater.org/publications/progress-on-wastewater-treatment-631-2021-update/
Progress on Ambient Water Quality – 2021 Update	Based on latest available data on SDG indicator 6.3.2. Published by United Nations Environment Programme (UNEP) on behalf of UN-Water. https://www.unwater.org/publications/progress-on-ambient-water-quality-632-2021-update/
Progress on Water-Use Efficiency – 2021 Update	Based on latest available data on SDG indicator 6.4.1. Published by Food and Agriculture Organization of the United Nations (FAO) on behalf of UN-Water. https://www.unwater.org/publications/progress-on-water-use-efficiency-641-2021-update/
Progress on Level of Water Stress – 2021 Update	Based on latest available data on SDG indicator 6.4.2. Published by FAO on behalf of UN-Water. https://www.unwater.org/publications/progress-on-level-of-water-stress-642-2021-update/
Progress on Integrated Water Resources Management – 2021 Update	Based on latest available data on SDG indicator 6.5.1. Published by UNEP on behalf of UN-Water. https://www.unwater.org/publications/progress-on-integrated-water-resources-management-651-2021-update/
Progress on Transboundary Water Cooperation – 2021 Update	Based on latest available data on SDG indicator 6.5.2. Published by United Nations Economic Commission for Europe (UNECE) and United Nations Educational, Scientific and Cultural Organization (UNESCO) on behalf of UN-Water. https://www.unwater.org/publications/progress-on-transboundary-water-cooperation-652-2021-update/
Progress on Water-related Ecosystems – 2021 Update	Based on latest available data on SDG indicator 6.6.1. Published by UNEP on behalf of UN-Water. https://www.unwater.org/publications/progress-on-water-related-ecosystems-661-2021-update/
National Systems to Support Drinking-Water, Sanitation and Hygiene – Global Status Report 2019	Based on latest available data on SDG indicators 6.a.1 and 6.b.1. Published by WHO through the UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) on behalf of UN-Water. https://www.unwater.org/publication_categories/glaas/

UN-Water reports

UN-Water coordinates the efforts of United Nations entities and international organizations working on water and sanitation issues. By doing so, UN-Water seeks to increase the effectiveness of the support provided to Member States in their efforts towards achieving international agreements on water and sanitation. UN-Water publications draw on the experience and expertise of UN-Water's Members and Partners.

SDG 6 Progress Update 2021 – summary	This summary report provides an executive update on progress towards all of SDG 6 and identifies priority areas for acceleration. The report, produced by the UN-Water Integrated Monitoring Initiative for SDG 6, present new country, region and global data on all the SDG 6 global indicators.
SDG 6 Progress Update 2021 – 8 reports, by SDG 6 global indicator	This series of reports provides an in-depth update and analysis of progress towards the different SDG 6 targets and identifies priority areas for acceleration: Progress on Drinking Water, Sanitation and Hygiene (WHO and UNICEF); Progress on Wastewater Treatment (WHO and UN-Habitat); Progress on Ambient Water Quality (UNEP); Progress on Water-use Efficiency (FAO); Progress on Level of Water Stress (FAO); Progress on Integrated Water Resources Management (UNEP); Progress on Transboundary Water Cooperation (UNECE and UNESCO); Progress on Water-related Ecosystems (UNEP). The reports, produced by the responsible custodian agencies, present new country, region and global data on the SDG 6 global indicators.
UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS)	GLAAS is produced by the World Health Organization (WHO) on behalf of UN-Water. It provides a global update on the policy frameworks, institutional arrangements, human resource base, and international and national finance streams in support of water and sanitation. It is a substantive input into the activities of Sanitation and Water for All (SWA) as well as the progress reporting on SDG 6 (see above).
United Nations World Water Development Report	The United Nations World Water Development Report (WWDR) is UN-Water's flagship report on water and sanitation issues, focusing on a different theme each year. The report is published by UNESCO, on behalf of UN-Water and its production is coordinated by the UNESCO World Water Assessment Programme. The report gives insight on main trends concerning the state, use and management of freshwater and sanitation, based on work done by the Members and Partners of UN-Water. Launched in conjunction with World Water Day, the report provides decision-makers with knowledge and tools to formulate and implement sustainable water policies. It also offers best practices and in-depth analyses to stimulate ideas and actions for better stewardship in the water sector and beyond.

The progress reports of the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP)	The JMP is affiliated with UN-Water and is responsible for global monitoring of progress towards SDG6 targets for universal access to safe and affordable drinking water and adequate and equitable sanitation and hygiene services. Every two years the JMP releases updated estimates and progress reports for WASH in households, schools and health care facilities.
Policy and Analytical Briefs	UN-Water's Policy Briefs provide short and informative policy guidance on the most pressing freshwater-related issues that draw upon the combined expertise of the United Nations system. Analytical Briefs provide an analysis of emerging issues and may serve as basis for further research, discussion and future policy guidance.

UN-Water planned publications

- **UN-Water Policy Brief on Gender and Water**
- **Update of UN-Water Policy Brief on Transboundary Waters Cooperation**
- **UN-Water Analytical Brief on Water Efficiency**

More information: https://www.unwater.org/unwater-publications/

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