



# 2021 GLOBAL WATER POLICY REPORT

## LISTENING TO NATIONAL WATER LEADERS



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Global Water  
Institute



# ABOUT WATER POLICY GROUP

The Water Policy Group is comprised of people who have been decision makers and trusted advisers within governments and international bodies handling complex water policy and strategy.

Water Policy Group members have the common goal that their knowledge, networks and practical experience can help achieve the sustainable development of water resources.

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# PREFACE



Water is essential to every element of the economy, environment and social fabric of every country across the world. As a limited resource, it has to be shared across competing uses and used to the best effect for the community overall, over the long term.

Every decision that a government makes about water will have social, economic and environmental consequences, and that makes achieving sustainable water outcomes for all a key challenge for governments - one that can be politically very difficult.

Not only is success with water integral to the sustainable development agendas of individual countries, it is essential to achieving the collective global Sustainable Development Goals (SDGs) of Transforming our world: the 2030 Agenda for Sustainable Development (Agenda 2030). SDG 6 is to “Ensure availability and sustainable management of water and sanitation for all”, reflecting the increased attention to water and sanitation issues in the global political agenda. Successive Global Risks Reports, published by the

World Economic Forum, in every year from 2012 to 2020 identified ‘water crises’ as one of the top five risks identified from their surveys, in terms of the severity of impact at a global level ([www.weforum.org/global-risks/reports](http://www.weforum.org/global-risks/reports)).

Good water outcomes are also pivotal for adapting to climate change. More broadly, improved water outcomes underpin wider efforts to end poverty, advance sustainable development and sustain peace and stability ([UN SDG 6 Synthesis Report 2018](#)).

Yet, the United Nations has reported the world as a whole is not on track to achieve SDG 6 and many countries are going backwards ([UN Water Summary Progress update 2021](#)). The clear picture is that collectively there is a long way to go.

Why is achieving the availability and sustainable management of water for all so difficult? This inaugural Global Water Policy Report seeks to answer this question by identifying the key issues faced in improving water outcomes globally, as perceived through the eyes of national water leaders - the people with water leadership responsibility - in a wide range of countries.

This report provides governments with both a comparative perspective and opportunities to learn from others’ experiences. In doing so, we hope to provide a common understanding of these factors to assist governments to overcome them.

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We recognise the numerous individuals and organisations who assisted in realising the survey across the globe, including the African Ministers' Council on Water (AMCOW), International Commission on Irrigation and Drainage (ICID) and Sanitation and Water for All Partnership (SWA).

Most of all, Water Policy Group thanks the national water leaders who participated in the survey, who must remain unnamed - you know who you are!

# AT A GLANCE

This report is based on the experiences and perspectives of national water leaders from **88 countries of all regions.**

Among them they have responsibility for achieving sustainable water for all for **over 6 billion people.**

## In summary, this is what they are saying:

The highest water-related **risks** their countries face are from **climate change** and associated pressures on water supplies and worsening floods and droughts.

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The greatest **challenges** many face are with **integration and prioritisation of water issues within governments**. Administrative problems of fragmented water institutions are of as much, if not greater, concern than factors such as public resistance to reforms.

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COVID-19 has not much affected the priority of water and sanitation services.

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For most, the **Sustainable Development Goal 6** targets are '**challenging**' or '**impossible**', with governance problems and lack of financing the main reasons for this.

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On **development assistance**, there are **very different perspectives** between donor and recipient countries about the adequacy of current arrangements.

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While **groundwater** is considered by many national water leaders to be **essential** to their country's future water supply, far fewer consider their groundwater is being used sustainably.

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# CHAPTER 1

## INTRODUCTION



The *Global Water Policy Report 2021* is intended to support the achievement of better water outcomes globally. This Report is derived from and reflects the opinions, perspectives and experience of Ministers, agency heads, senior officials and others whose job it is to make difficult decisions on water management in their respective countries. These are the 'national water leaders' described in this report.

These opinions, perspectives and experiences were obtained from a comprehensive survey, the 2021 Water Leaders Survey, that was open to national water leaders of all United Nations member States, conducted during 2021.

In this survey, 127 persons participated from 88 countries of all regions with combined populations of 6 billion, around 75% of the global population.

The 88 countries for which data are available include six small island

developing states (SIDS) and 20 land locked developing countries (LLDC) and are from all country income groups and water stress levels, as explained in the Appendix.

For 58 countries, survey respondents were a national government Minister or water agency head (currently serving or serving in the past five years). For another 24 countries, the most senior respondent was a national government senior official or adviser. For the remaining 6 countries, the respondents were persons with other national water leadership roles, such as sub-national Government Ministers and/or civil society leaders.

This Report collates the survey results across all of these countries with responses to some questions broken down further by country income group and/or water stress status. The method for processing and presenting the respondents' answers to the survey questions is explained in the Appendix. The research method used in the survey was reviewed and approved by UNSW's Human Research Ethics Committee to protect the anonymity of the respondents, including national affiliation, and to ensure compliance with ethical standards.

The survey was in three parts, asking about: (1) water management risks and challenges; (2) Sustainable Development Goal 6 water targets and the value of the *SDG 6 Global Acceleration Framework*; and (3) groundwater issues. This Report is structured accordingly, providing aggregate survey outcomes under each topic, broken down by income group and water stress status where that is most relevant.

This Report contains a selection of graphs and tables illustrating some of the data that is discussed. Graphs and/or tables of all the data upon which this report is based is available online ([www.waterpolicygroup.com](http://www.waterpolicygroup.com)).

This Report reflects perspectives and opinions held in 2021. Water Policy Group intends to repeat the survey regularly making it possible to see how attitudes to these matters change over time.

# CHAPTER 2

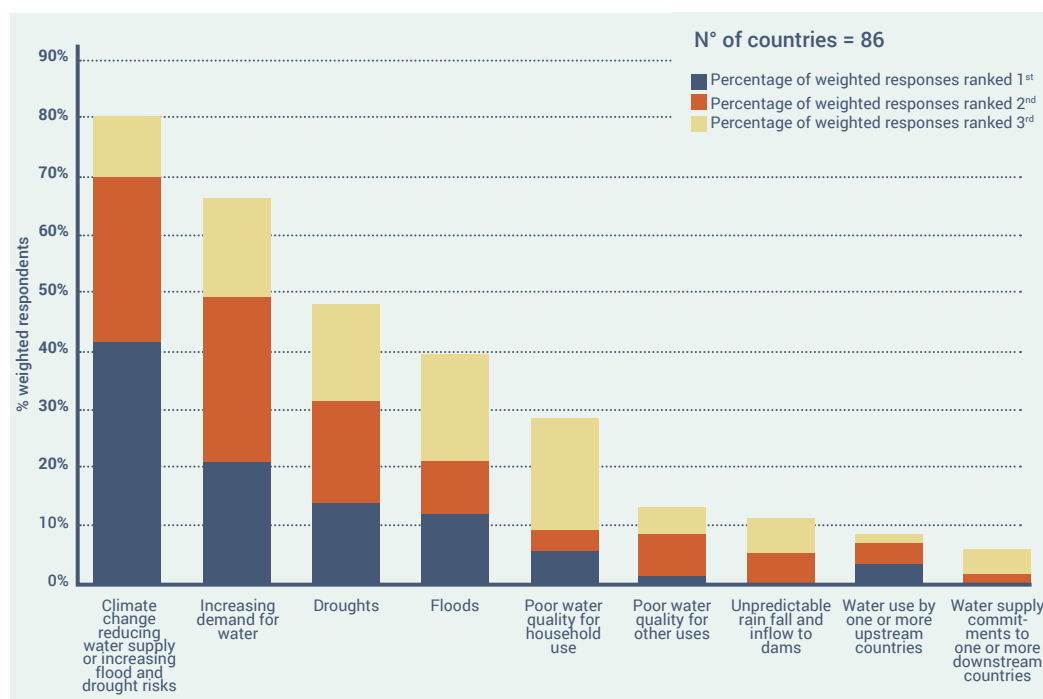
## PERCEPTIONS

### OF RISKS AND CHALLENGES

#### ■ WATER MANAGEMENT RISKS

National water leaders were asked to identify from a set of nine risks, at least three risks which they think are the greatest risks to maintaining or achieving good water management in their country and to rank them in order of importance. These 'risks' are matters that are generally **outside the immediate control of governments** and that water management policies need to address.

Fig 2.1: Risks to achieving good water management for all surveyed countries



#### MINISTER PERSPECTIVES

A former (in the past 5 years) Minister of a country in the Northern Africa and Western Asia region describes risks: *"Drought constitutes the most important risk for [my country]. It has a huge impact on the economy and employment."*

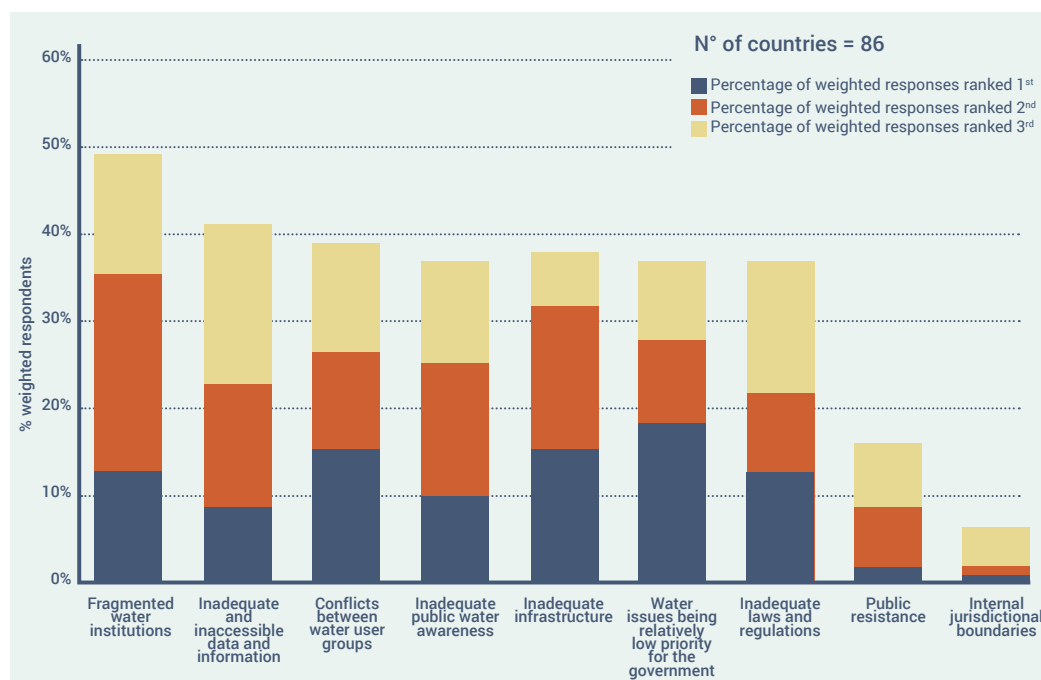
Climate change is perceived to be the greatest risk. 'Climate change reducing water supply or increasing flood and drought risks' is the highest 'first ranked' risk and features in the 'top three' risks for the vast majority (80%) of surveyed countries. This holds true regardless of the country income level, though for upper-middle income countries it is equally ranked with 'increasing demand for water.' 'Increasing demand for water' is also the highest ranked risk for countries affected by water stress. The water-based disasters of droughts and floods were the third and fourth ranked risks, adding to the overall climate risk profile.

Poor household water quality is ranked in the top three risks for only 29% of all surveyed countries. However, as country income reduces, a higher proportion of national water leaders cite this a 'top three' risk. Other water quality issues, unpredictable rainfall and inflows, and cross-border water management issues rank as 'top three' risks for relatively few countries in all income groups.

## WATER MANAGEMENT CHALLENGES

National water leaders were asked to identify from a list of nine 'challenges' which they think are the greatest challenges to maintaining or achieving good water management in their country and to rank them in order of importance. These 'challenges' are issues largely

**Fig 2.2: Challenges to achieving good water management for all surveyed countries**



of a policy and administrative nature **which are within the control of governments.**

When only the first ranked challenge is considered, 'water issues being a relatively low priority for the government' is the most often identified challenge. When the 'top two' and 'top three' ranked challenges are considered, 'fragmented water institutions' is the most often identified challenge.

Considerable differences emerge when these results are broken down by country income group. For example, 'inadequate and inaccessible data and information' and 'inadequate infrastructure' ranks more highly for low and middle income group countries, with national water leaders of high income group countries more concerned about other governance issues such as 'conflict between user groups' and 'inadequate public awareness'.

**Fig 2.3: Challenges to achieving good water management reported by Income Group**

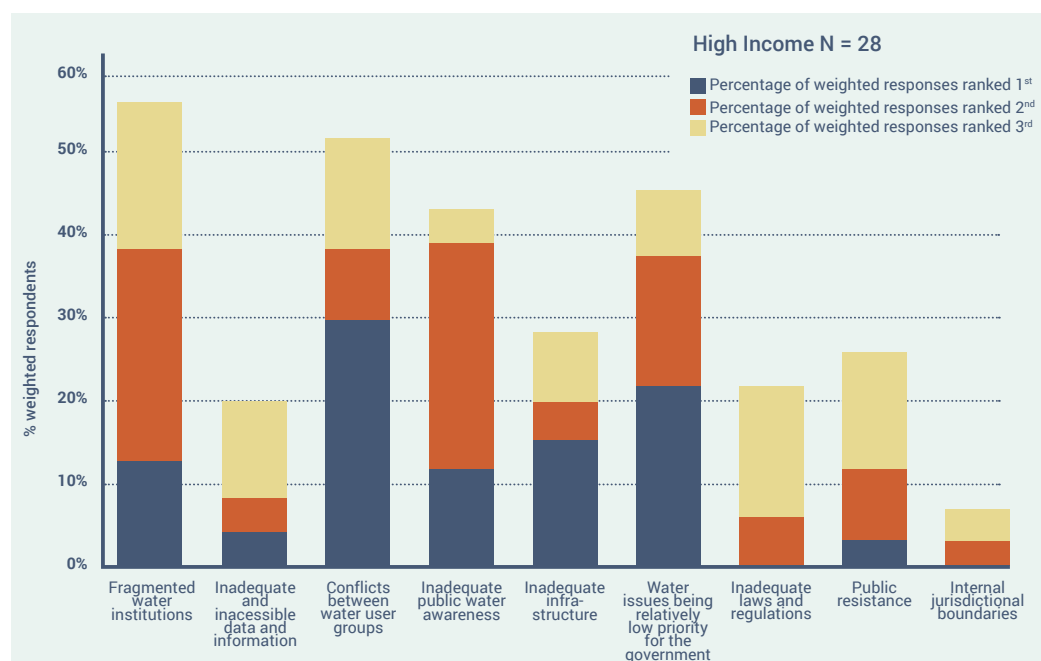


Fig 2.3: Challenges to achieving good water management reported by Income Group

**MINISTER PERSPECTIVES**  
A serving Minister of a country in the Latin America and Caribbean region describes another challenge:  
*“Water use and ecosystems services trade-offs in a basin according to downstream/upstream relations.”*

A former (in the past 5 years) Minister from a country in the Northern Africa and Western Asia region says what caused him or her to feel constrained in achieving better water outcomes for their country:  
*“resistance of users and convergence between sectorial policies especially agriculture.”*







## MINISTER PERSPECTIVES

A serving Minister of a country in the Latin America and Caribbean region describes another effect of COVID-19: *“Spaces for participation with stakeholders were reduced.”*

## THE IMPACT OF COVID-19

The COVID-19 pandemic has demonstrably affected government priorities globally and caused unprecedented levels of investment (and debt) in many countries striving to maintain both public health and economic activity. There have been many calls to direct some of this increased investment to fast-track new water infrastructure - particularly in the areas of safe drinking water and sanitation - and ultimately accelerate the achievement of SDG 6. A key issue for the survey was to investigate how the pandemic had actually affected water management within countries and how governments had responded to this potential opportunity.

### COVID-19 has not greatly affected water prioritisation.

Asked whether the COVID-19 pandemic has caused their government to be more concerned or less concerned about water issues, national water leaders of nearly half (47%) of the surveyed countries consider there has been no change. For 42% of the surveyed countries, national water leaders consider it has made the government to be more concerned, and for 11% less concerned.

Asked how the pandemic has affected their priorities in regard to drinking water services and sanitation, national water leaders of a majority (57%) of surveyed countries advise it has made this more urgent for them. For the other surveyed countries, they say COVID-19 has not made these services more urgent (34%), or they are not sure (9%).

Asked how the pandemic has affected their priorities in regard to infrastructure, national water leaders of only 40% of surveyed countries advise it has made this more urgent for them. For the other surveyed countries, they say COVID-19 has not made these services more urgent (45%), or they are not sure (15%).

Asked whether COVID-19 has changed government attention to achieving water sector improvements, national water leaders of most (59%) of the surveyed countries consider there has been no change. For 36% of the surveyed countries, they consider there has been more attention, and for 6%, less attention.

# CHAPTER 3

## ACHIEVING

# GLOBAL GOALS

In 2015, the United Nations General Assembly adopted *Transforming our world: the 2030 Agenda for Sustainable Development* ('Agenda 2030'), embodying 17 Sustainable Development Goals (SDGs) to be achieved by all countries by 2030. Water and sanitation goals are the subject of SDG 6 'Ensure availability and sustainable management of water and sanitation for all' which has eight water management targets:

### Box 1: SDG 6 Targets

**Target 6.1:** By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

**Target 6.2:** By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

**Target 6.3:** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

**Target 6.4:** By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

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

**Target 6.6:** By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

**Target 6a:** By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.

**Target 6b:** Support and strengthen the participation of local communities in improving water and sanitation management.

The United Nations has reported many countries are not on track to achieve these SDG 6 water targets and some are going backwards.

Recognising that 'business as usual' was not good enough to achieve SDG 6, the United Nations adopted the SDG 6 Global Acceleration Framework (GAF) in 2020 to focus the in-country water and sanitation work of all UN agencies on SDG 6 outcomes and five 'accelerators' to expedite progress.

The 2021 Water Leaders Survey sought the perspectives of national water leaders on what they see as the main issues in achieving each of the SDG 6 'water targets' within their country. All the targets were explored except 6.2, due to 'sanitation and hygiene' involving issues going well beyond water. In the case of target 6.4, the 'water-use efficiency' and 'water scarcity' elements were subject to separate questions. In the case of target 6.5, the



'integrated water resources management' and 'transboundary cooperation' elements were subject to separate questions. The Survey sought to determine their views on the relative difficulty of achieving these targets and for those that are the most challenging to achieve, the reasons why they are so difficult, framed in the terms of the GAF accelerators. This is aimed at a better understanding of the potential usefulness of each accelerator for each SDG6 target.

### Box 2: United Nations Global Acceleration framework 'accelerators'

- 1. Financing.** Optimized financing is essential to get resources behind country plans.
- 2. Data and information.** Data and information targets resources and measures progress.
- 3. Capacity development.** A better-skilled workforce improves service levels and increases job creation and retention in the water sector.
- 4. Innovation.** New, smart practices and technologies will improve water and sanitation resources management and service delivery.
- 5. Governance.** Collaboration across boundaries and sectors will make SDG 6 everyone's business.

[www.unwater.org/sdg6-action-space](http://www.unwater.org/sdg6-action-space)

## ACHIEVING THE SDG 6 WATER TARGETS

Only two of the SDG 6 water targets surveyed are considered either 'achieved' or 'not difficult to achieve' by national water leaders of more than 50% of surveyed countries - 'transboundary cooperation' and 'participation'. The positive outcome in relation to 'transboundary cooperation' may be the result of the Survey including island countries with no external borders.

The remaining six SDG 6 targets are all considered to be either 'challenging' or 'impossible' to achieve for the majority of surveyed countries.

Table 3.1: Difficulty achieving SDG 6 water targets: overall and by country income group

SDG Target	SDG Target is 'Impossible or Challenging'				
	All Countries (n=88)	Responses for each Income Group			
		High (n=28)	Upper Middle (n=21)	Lower Middle (n=24)	Low (n=15)
Protecting/restoring water-dependent ecosystems	73%	56%	81%	80%	81%
Increasing water use efficiency	69%	42%	78%	80%	78%
Improved water quality	67%	44%	75%	73%	75%
Safe and affordable drinking water	58%	22%	75%	63%	75%
Implementing IWRM	58%	28%	67%	73%	67%
Impact of water scarcity	56%	23%	75%	63%	75%
Strengthening local participation	46%	28%	56%	50%	56%
Transboundary Cooperation	37%	21%	39%	34%	39%

Figures in red indicate increased proportions of countries finding the target 'impossible or challenging' compared to the all countries aggregate. Figures in light blue indicate decreased proportions of countries finding the target 'impossible or challenging' compared to the all countries aggregate.

Table 3.1 shows that the proportion of surveyed countries for which achieving an SDG target is considered 'challenging' or 'impossible' is broadly similar for upper middle, lower middle and low income countries. However the only target considered 'challenging' or 'impossible' by a majority of high income countries is Target 6.6: protecting and restoring water-dependent ecosystems.

## WHY SDG 6 TARGETS ARE NOT BEING REACHED: THE ROLE OF THE 'ACCELERATORS'

National water leaders were asked why it is so difficult to achieve each SDG 6 target they rated as 'impossible' or 'challenging' for their country, ranking reasons based on the five SDG 6 accelerators (listed above, Box 2). This question aimed to discern which of the accelerators were likely to be the most (and least) useful for countries in different income groups in achieving each target.



The tables below focus on what national water leaders ranked as their most important reasons for each target being 'impossible' or 'challenging'. Graphs available on the website also show the full rankings, revealing what national water leaders in each country income category consider to be the least important reasons, as briefly summarised below.

## DRINKING WATER

For the 58% of surveyed countries where 'safe and affordable drinking water for all' is considered to be an 'impossible' or 'challenging' target, the most cited highest ranked reason is 'lack of financing'. The next most cited highest ranked reason is 'governance problems'. Interestingly, for low income group countries, 'governance' rates higher than 'finance' as the most cited first ranked reason for this target being challenging or impossible.

Table 3.2: Relative importance of reasons for SDG 6.1 (drinking water) being rated 'challenging' or 'impossible': by income group

Income Group	Considered 'Impossible or Challenging' (by %age of surveyed countries)	Reasons for considering 'Safe and Affordable Drinking Water' to be Impossible or Challenging (Relative Importance)				
		Lack of Financing	Lack of Information	Lack of Capability	Lack of Innovation	Governance Problems
All Countries	58% (N=88)	**	*	*	—	**
High Income	22% (N=28)	**	*	*	—	**
Upper Middle	75% (N=21)	**	—	**	—	*
Lower Middle	63% (N=24)	***	*	—	—	**
Low	75% (N=15)	*	*	*	—	*

Note: the relative importance of the 5 key Reasons is assessed using the following. \*\*\* = ranked as a 'top two' reason by 75%+ of surveyed countries, \*\* = ranked as a 'top two' reason by 50-74% of surveyed countries, \* = ranked as a 'top two' reason by 25-49% of surveyed countries, — = ranked as a 'top two reason' by 0-24% of surveyed countries. Scores on the boundary between groups have been rounded up.

## WATER QUALITY

For 67% of surveyed countries where 'improved water quality' is considered to be an 'impossible' or 'challenging' target, the most cited highest ranked reason is 'lack of financing', increasingly so as income group declines. The next most cited highest ranked reason is 'governance problems'. The most cited 'least important' reason is 'lack of innovation'.

**Table 3.3: Relative importance of reasons for SDG 6.3 (water quality) being rated 'challenging' or 'impossible': by income group**

Income Group	Considered 'Impossible or Challenging' (by %age of surveyed countries)	Reasons for considering 'Safe and Affordable Drinking Water' to be Impossible or Challenging (Relative Importance)				
		Lack of Financing	Lack of Information	Lack of Capability	Lack of Innovation	Governance Problems
All Countries	67% (N=88)	**	*	*	—	**
High Income	44% (N=28)	*	*	**	—	**
Upper Middle	75% (N=21)	**	—	**	—	**
Lower Middle	73% (N=24)	**	*	—	—	**
Low	75% (N=15)	***	*	—	—	*

Note: the relative importance of the 5 key Reasons is assessed using the following. \*\*\* = ranked as a 'top two' reason by 75%+ of surveyed countries, \*\* = ranked as a 'top two' reason by 50-74% of surveyed countries, \* = ranked as a 'top two' reason by 25-49% of surveyed countries, — = ranked as a 'top two reason' by 0-24% of surveyed countries. Scores on the boundary between groups have been rounded up.

## WATER USE EFFICIENCY

For the 69% of surveyed countries where 'improved water use efficiency' is considered to be an 'impossible' or 'challenging' target, the most cited highest ranked reasons are 'lack of financing' and 'governance', with 'lack of human and institutional capability' the most cited highest ranked reason for countries in the upper-middle income group. The most cited least important reason overall is 'lack of innovation' innovation' except for countries in the low income group, where this is 'governance problems'.

**Table 3.4: Relative importance of reasons for SDG 6.4 (efficiency element) being rated 'challenging' or 'impossible': by income group**

Income Group	Considered 'Impossible or Challenging' (by %age of surveyed countries)	Reasons for considering 'Safe and Affordable Drinking Water' to be Impossible or Challenging (Relative Importance)				
		Lack of Financing	Lack of Information	Lack of Capability	Lack of Innovation	Governance Problems
All Countries	69% (N=88)	*	*	*	*	*
High Income	42% (N=28)	*	*	**	*	**
Upper Middle	78% (N=21)	*	*	**	*	*
Lower Middle	80% (N=24)	**	*	—	—	**
Low	78% (N=15)	**	*	*	—	*

Note - the relative importance of the 5 key Reasons is assessed using the following. \*\*\* = ranked as a 'top two' reason by 75%+ of surveyed countries, \*\* = ranked as a 'top two' reason by 50-74% of surveyed countries, \* = ranked as a 'top two' reason by 25-49% of surveyed countries, — = ranked as a 'top two reason' by 0-24% of surveyed countries. Scores on the boundary between groups have been rounded up.

## ■ WATER SCARCITY

For 56% of surveyed countries where 'substantially reducing the number of people suffering from water scarcity' is considered to be an 'impossible' or 'challenging' target, the most cited highest ranked reason is 'lack of financing' followed by 'governance problems' - though 'governance' is the most cited for countries in the high income group. The most cited 'least important' reason is 'lack of innovation'.

Table 3.5: Reasons for SDG 6.4 (water scarcity element) being rated 'challenging' or 'impossible'

Income Group	Considered 'Impossible or Challenging' (by %age of surveyed countries)	Reasons for considering 'Safe and Affordable Drinking Water' to be Impossible or Challenging (Relative Importance)				
		Lack of Financing	Lack of Information	Lack of Capability	Lack of Innovation	Governance Problems
All Countries	56% (N=88)	*	*	**	*	*
High Income	23% (N=28)	*	*	*	—	***
Upper Middle	75% (N=21)	**	—	—	*	**
Lower Middle	63% (N=24)	**	*	*	—	**
Low	75% (N=15)	***	—	*	—	*

Note - the relative importance of the 5 key Reasons is assessed using the following. \*\*\* = ranked as a 'top two' reason by 75%+ of surveyed countries, \*\* = ranked as a 'top two' reason by 50-74% of surveyed countries, \* = ranked as a 'top two' reason by 25-49% of surveyed countries, — = ranked as a 'top two reason' by 0-24% of surveyed countries. Scores on the boundary between groups have been rounded up.

## ■ INTEGRATED WATER RESOURCES MANAGEMENT

For the 58% of surveyed countries where 'implementing integrated water resources management' is considered to be an 'impossible' or 'challenging' target, the most cited highest ranked reasons are 'governance problems' and 'lack of financing' - though this reason is more cited than 'governance problems' for countries in the low income group. The next most cited reason is 'lack of human and institutional capability'. The most cited 'least important' reason is 'lack of innovation'.

Table 3.6: Relative Importance of reasons for SDG 6 target on IWRM being rated 'challenging' or 'impossible'

Income Group	Considered 'Impossible or Challenging' (by %age of surveyed countries)	Reasons for considering 'Safe and Affordable Drinking Water' to be Impossible or Challenging (Relative Importance)				
		Lack of Financing	Lack of Information	Lack of Capability	Lack of Innovation	Governance Problems
All Countries	58% (N=88)	*	*	*	—	**
High Income	28% (N=28)	—	*	*	—	***
Upper Middle	67% (N=21)	*	—	**	*	**
Lower Middle	73% (N=24)	*	*	*	—	**
Low	67% (N=15)	**	*	*	—	**

Note - the relative importance of the 5 key Reasons is assessed using the following. \*\*\* = ranked as a 'top two' reason by 75%+ of surveyed countries, \*\* = ranked as a 'top two' reason by 50-74% of surveyed countries, \* = ranked as a 'top two' reason by 25-49% of surveyed countries, — = ranked as a 'top two reason' by 0-24% of surveyed countries. Scores on the boundary between groups have been rounded up.

## TRANSBOUNDARY COOPERATION

For the 37% of surveyed countries where 'transboundary water cooperation with your neighbors' is considered to be an 'impossible' or 'challenging' target, the most frequently cited highest ranked reason is 'governance problems', across all income groups.

Table 3.7: Relative importance of reasons for SDG 6.5 (transboundary element) being rated 'challenging' or 'impossible': by income group

Income Group	Considered 'Impossible or Challenging' (by %age of surveyed countries)	Reasons for considering 'Safe and Affordable Drinking Water' to be Impossible or Challenging (Relative Importance)				
		Lack of Financing	Lack of Information	Lack of Capability	Lack of Innovation	Governance Problems
All Countries	37% (N=88)	—	*	*	—	***
High Income	21% (N=28)	—	*	**	—	***
Upper Middle	39% (N=21)	—	*	*	*	***
Lower Middle	34% (N=24)	—	**	*	—	***
Low	39% (N=15)	**	**	—	—	***

Note - the relative importance of the 5 key Reasons is assessed using the following. \*\*\* = ranked as a 'top two' reason by 75%+ of surveyed countries, \*\* = ranked as a 'top two' reason by 50-74% of surveyed countries, \* = ranked as a 'top two' reason by 25-49% of surveyed countries, — = ranked as a 'top two reason' by 0-24% of surveyed countries. Scores on the boundary between groups have been rounded up.

## ECOSYSTEMS

For the 73% of surveyed countries where 'protecting and restoring water-related ecosystems' is considered to be an 'impossible' or 'challenging' target, 'lack of financing' and 'governance problems' are considered to be the most important reasons for the most (32% and 31% respectively), and a 'top two' reason for 47% and 51% respectively. The next highest ranked reasons are 'lack of data and information' (the top reason for 18% and a 'top two' reason for 42%) and 'human and institutional capability' (the top reason for 11% and a 'top two' reason for 39%). Overall, the most cited 'least important' reason is 'lack of innovation' (lowest ranked for 30%). For countries in the low income group, the most cited 'least important' reason is 'governance problems' (lowest ranked for 44%).

Table 3.8: Relative importance of reasons for SDG 6.6 target (ecosystems) being rated 'challenging' or 'impossible': by income group

Income Group	Considered 'Impossible or Challenging' (by %age of surveyed countries)	Reasons for considering 'Safe and Affordable Drinking Water' to be Impossible or Challenging (Relative Importance)				
		Lack of Financing	Lack of Information	Lack of Capability	Lack of Innovation	Governance Problems
All Countries	73% (N=88)	*	*	*	—	**
High Income	56% (N=28)	*	*	*	—	*
Upper Middle	81% (N=21)	*	*	*	*	**
Lower Middle	80% (N=24)	**	*	*	—	**
Low	81% (N=15)	**	*	*	*	*

Note - the relative importance of the 5 key Reasons is assessed using the following. \*\*\* = ranked as a 'top two' reason by 75%+ of surveyed countries, \*\* = ranked as a 'top two' reason by 50-74% of surveyed countries, \* = ranked as a 'top two' reason by 25-49% of surveyed countries, — = ranked as a 'top two reason' by 0-24% of surveyed countries. Scores on the boundary between groups have been rounded up.

### MINISTER PERSPECTIVES

A serving Minister of a country in the Latin America and Caribbean region expands on the 'lack of information' reason:

*"...there is a lot of scattered information, nevertheless, it is necessary to improve (the) hydrological data base...(and) information from other government institutions, academia and other sectors, as well as monitoring network improvement and the development of instruments for risk management planning."*

## PARTICIPATION OF LOCAL COMMUNITIES

For the 46% of surveyed countries where 'supporting and strengthening the participation of local communities in water-related policy matters' is considered to be an 'impossible' or 'challenging' target, the most frequently cited highest ranked reason is 'governance problems'. The next most frequently cited highest ranked reason is 'lack of financing', though this is the most cited for countries in the low income group. 'Lack of human and institutional capability' is the next most cited highest ranked reason and is more cited than 'governance' as a 'top two' reason for countries in the low and middle income groups. For most countries in the low income group, 'governance problems' is the most cited as the lowest ranked reason for this target being difficult. 'Lack of data and information' is the most cited as a 'top two' reason for countries in the high income group.

Table 3.9: Reasons for SDG 6.6a (local participation) being rated 'challenging' or 'impossible': by income group

Income Group	Considered 'Impossible or Challenging' (by %age of surveyed countries)	Reasons for considering 'Safe and Affordable Drinking Water' to be Impossible or Challenging (Relative Importance)				
		Lack of Financing	Lack of Information	Lack of Capability	Lack of Innovation	Governance Problems
All Countries	46% (N=88)	*	*	*	—	**
High Income	28% (N=28)	*	**	*	—	*
Upper Middle	56% (N=21)	*	*	**	*	*
Lower Middle	50% (N=24)	**	—	**	—	**
Low	56% (N=15)	***	—	—	*	*

Note - the relative importance of the 5 key Reasons is assessed using the following. \*\*\* = ranked as a 'top two' reason by 75%+ of surveyed countries, \*\* = ranked as a 'top two' reason by 50-74% of surveyed countries, \* = ranked as a 'top two' reason by 25-49% of surveyed countries, — = ranked as a 'top two reason' by 0-24% of surveyed countries. Scores on the boundary between groups have been rounded up

### MINISTER PERSPECTIVES

A serving Minister of a country in the Northern Africa and Western Asia region says:

*"It is challenging to widen the cooperation for increased investment in water and sanitation and to achieve [SDG]"*

## DEVELOPMENT ASSISTANCE

Asked why it is challenging to expand international cooperation and capacity-building support for water and sanitation-related activities and programmes in their country, 'lack of financing' is the highest ranked reason for national water leaders of the most countries, followed by 'governance problems' and 'lack of human and institutional capability.'

Asked about the adequacy of international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, national water leaders of 47% of all the surveyed countries consider these programmes and activities to be not adequate. For 33%, they consider the programmes and activities to be adequate, and for 21% they have responded that they are not sure.

However for 70% of surveyed donor countries, national water leaders consider their country is doing enough to achieve international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programs.



## OVERALL CONCLUSIONS ON THE UNITED NATIONS ACCELERATORS

'Lack of financing' is the highest ranked reason for the targets on drinking water, water quality, water use efficiency and water scarcity being viewed as 'challenging' or 'impossible'. Governance is the highest ranked reason for targets on integrated water resources management, transboundary water cooperation, ecosystems and participation of local communities being viewed as 'challenging' or 'impossible'.

When the 'top two' reasons are counted, the same picture emerges except that in the case of 'water use efficiency', 'governance' is more cited than 'finance'. If 'finance' is itself seen as a governance issue, and the ranks for both are combined, then they rank far higher than any other factors as reasons for SDG 6 targets being difficult to achieve.

The generally low ranking of 'lack of innovation' as a reason for not achieving SDG 6 targets may be due to this being narrowly interpreted as only about technology.

When the results are broken down by country income group, some further differences emerge. For low income countries, 'lack of finance' is the most cited first ranked reason for difficulties with all targets except for the targets on drinking water and transboundary cooperation.

In the case of the development cooperation target, the question about the reasons for this being 'challenging' or 'impossible' was asked only for the surveyed countries that are recipients of international development assistance. Their national water leaders also most often ranked 'financing' as the top, and 'top two' reason, followed by 'governance'.



# CHAPTER 4

## GROUNDWATER



The theme for United Nations World Water Day 2022 is 'Groundwater: Making the Invisible Visible'. This is also the topic for the 2022 *World Water Development Report*. A Groundwater Summit scheduled for December 2022 is aimed at improving the science-policy-practice interface by highlighting the role of groundwater in the broader socioeconomic and environmental context.

Water Policy Group aims to support both these projects by sharing the perspectives of national water leaders on what they see as the main issues in managing groundwater at the national level.

National water leaders have given their perspectives on the importance of groundwater to their country's future water supply, the sustainability of their country's groundwater use, the relative difficulty for their country to achieve SDG 6 targets in relation to groundwater, and constraints in improving groundwater management in their country, including the adequacy of groundwater governance arrangements.

Table 4.1: Importance of groundwater to a country's future water supplies by Income Group and Water Stress

Group	Number of Surveyed Countries	Importance of groundwater to a country's future water supplies			
		Essential	Very Important	Important	Not Important
<b>All Countries</b>	<b>88</b>	<b>53%</b>	<b>35%</b>	<b>10%</b>	<b>2%</b>
<b>Income Group</b>					
High Income	28	65%	21%	14%	–
Upper Middle	21	40%	48%	14%	1%
Lower Middle	24	66%	20%	7%	7%
Low	15	28%	64%	8%	–
<b>Water Stress</b>					
Low Stress	62	51%	38%	10%	–
Some Stress	21	61%	25%	11%	4%

Note – 5 countries did not have a water stress rating.

### ■ IMPORTANCE OF GROUNDWATER TO FUTURE WATER SUPPLY

National water leaders of around 90% of surveyed countries, of all income groups, consider groundwater to be 'very important' or 'essential' to the future of their country's water supply. For over half, groundwater is considered 'essential'.

## SUSTAINABILITY OF GROUNDWATER USE

For only 27% of surveyed countries do national water leaders believe their groundwater is being used sustainably in most places. For 16% of surveyed countries, national water leaders consider that groundwater is not being managed sustainably anywhere, and for 47% of surveyed countries, that groundwater is being managed adequately somewhere, some of the time only. For 10% of surveyed countries, national water leaders say they do not have enough information to answer the question about where in their country water is managed sustainably.

For the 74% of surveyed countries where national water leaders consider there is at least some sustainable groundwater use, the areas with the most sustainable use are considered to be the prosperous urban and peri-urban areas (36%). The areas with the least sustainable use are considered to be the poorer urban and peri-urban areas (12%). Rural areas are considered to have the most sustainable groundwater use in 24-28% of the surveyed countries.

The two reasons most often cited for sustainable groundwater use practices are 'abundance of groundwater' and 'government policy constraints on water uses'. 'Self-regulation by water users or other cultural practices' is most often cited as the reason for sustainable groundwater practices in countries in low and lower-middle income groups.

**Table 4.2: Reasons for Sustainable Use of Groundwater (where it occurs) by Income Group**

Group	Number of Surveyed Countries	Reasons for Sustainable Use of Groundwater			
		Abundance of groundwater	Government policies limiting water use or promoting replenishment	Self-regulation by water users or other cultural practices	Other
<b>All Countries</b>	<b>88</b>	<b>28%</b>	<b>30%</b>	<b>21%</b>	<b>21%</b>
<b>Income Group</b>					
<b>High Income</b>	<b>28</b>	<b>26%</b>	<b>47%</b>	<b>18%</b>	<b>48%</b>
<b>Upper Middle</b>	<b>21</b>	<b>29%</b>	<b>26%</b>	<b>5%</b>	<b>24%</b>
<b>Lower Middle</b>	<b>24</b>	<b>24%</b>	<b>19%</b>	<b>52%</b>	<b>26%</b>
<b>Low</b>	<b>15</b>	<b>21%</b>	<b>8%</b>	<b>26%</b>	<b>2%</b>

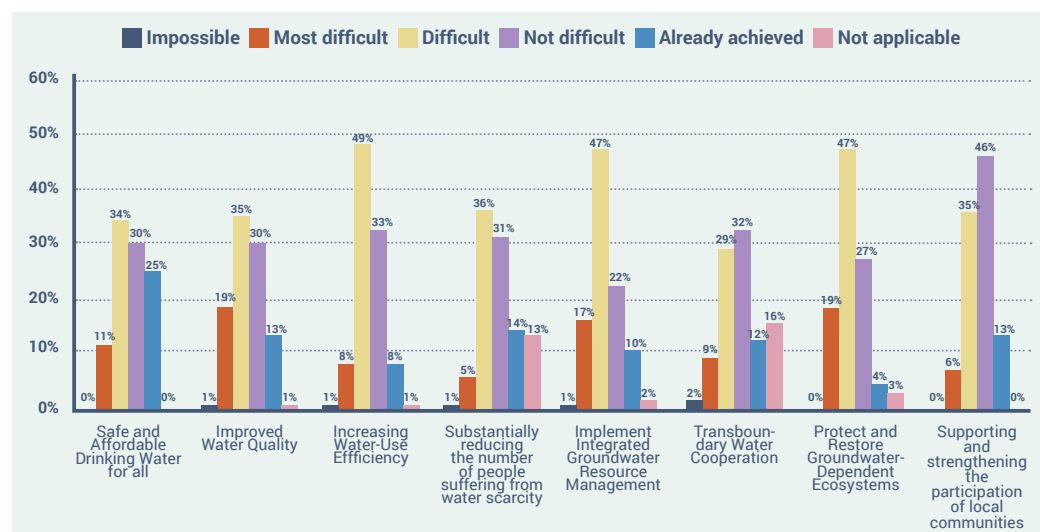
For the 16% of the surveyed countries considered to lack sustainable water use anywhere, there is no dominant reason for this perceived failure. Neither of the reasons suggested in the survey question ('resistance from water users' and 'not a sufficient priority for the relevant agencies') stand out in the responses.

In the 10% of the surveyed countries whose national water leaders do not have enough information to know whether groundwater is being used sustainably, the most commonly cited reason is 'lack of suitable government programmes for groundwater assessment and monitoring'.

## SDG 6 TARGETS IN RELATION TO GROUNDWATER

National water leaders were asked for their perception of the relative difficulty of achieving the 'SDG 6 targets' relating to groundwater in their country, specifically concerning drinking water, water quality, water-use efficiency, water scarcity, integrated water resources management, groundwater dependent ecosystems, transboundary water and local participation.

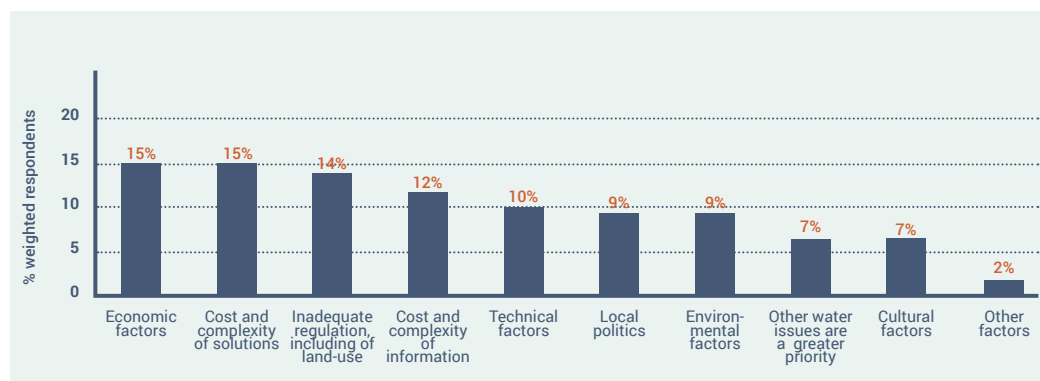
Fig 4.1: Difficulty achieving SDG 6 water targets in relation to groundwater: proportion of all surveyed countries (N = 84)



For very few of the surveyed countries (2% or less), national water leaders consider the targets to be ‘impossible’ to achieve when considering national groundwater policy. However, across the majority of target areas, the most common weighted response is the middle choice suggesting that overall countries find these targets ‘somewhat difficult’ in relation to groundwater. This did not apply to two targets – ‘participation of local communities’ and ‘transboundary cooperation’. For these, the most common weighted response is ‘not difficult.’ Three target areas that are rated as either ‘impossible’ or ‘most difficult’ by more than 15% of weighted responses are ‘improved water quality’ (20%), ‘protect and restore groundwater dependent ecosystems’ (19%) and ‘implement integrated water resource management’ (18%). These results are considerably affected by income group. For example, the drinking water target is considered to be ‘not difficult’ or ‘already achieved’ by national water leaders of 55% of the surveyed countries overall, yet 61% of these are countries in the high and upper-middle income group and only 39% are countries in the low and lower-middle income groups. The target on groundwater-dependent ecosystems is considered to be ‘most difficult’ for only 19% of all surveyed countries but for 41% of countries in the high income group.

## CONSTRAINTS TO IMPROVING GROUNDWATER MANAGEMENT AND THE ADEQUACY OF GROUNDWATER GOVERNANCE ARRANGEMENTS

Fig 4.2: Constraints to improving how groundwater is managed: proportion of all surveyed countries



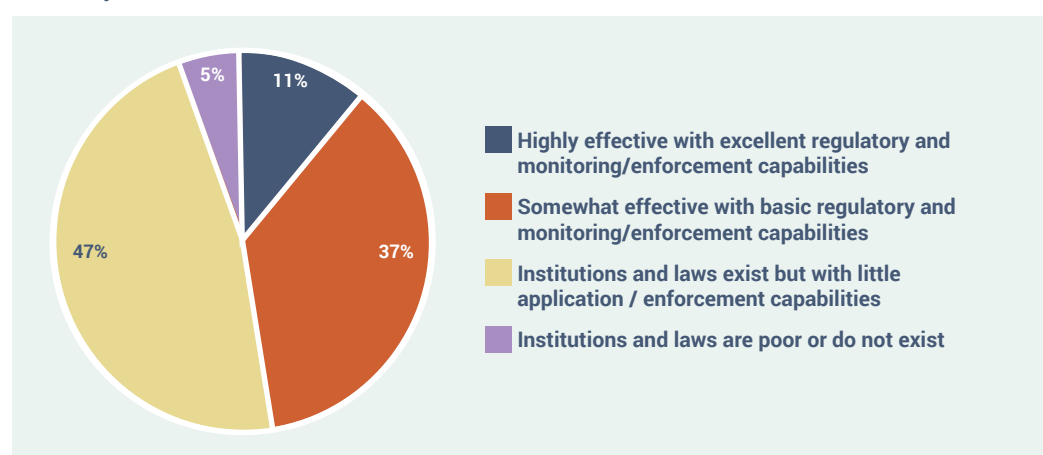


When asked about the five main ‘constraints and impediments’ to sound groundwater management (from nine listed), ‘economic factors’ (15%), ‘cost and complexity of solutions’ (15%), and ‘inadequacy of regulations’ (14%) are the most commonly cited. The two constraints that feature the least in the ‘top five’ are ‘cultural factors’ (7%) and ‘other water issues of greater priority’ (2%).

When asked whether groundwater outcomes are well enough integrated into national water management institutions and plans, weighted responses are positive overall (yes 55%; no 45%).

Opinion is more clearly divided on the effectiveness of the institutions and laws that govern groundwater resources. For only 11% of the surveyed countries do national water leaders say their institutions and laws are ‘highly effective with excellent regulatory and monitoring/enforcement capabilities.’ For 84% of countries, they say their institutions and laws are ‘somewhat effective with basic capabilities’ (36%) or have ‘little application and enforcement capability’ (48%).

**Fig 4.3: Effectiveness of institutions and laws governing groundwater resources: proportion of all surveyed countries**



When asked about whether groundwater resources planning takes into account climate change scenarios, national water leaders of only 5% of the surveyed countries are confident this is occurring everywhere in the country. For around 62% of countries, they consider this is occurring in most (20%) or some (42%) places. For 16% of the surveyed countries, national water leaders consider groundwater resources planning never adequately takes climate change scenarios into account. For 17% of countries, national water leaders advise they do not have enough information to answer this question.

These survey results suggest that while groundwater is seen as important to national development, it is not necessarily well managed.

National water leaders of almost all the surveyed countries (98%) consider groundwater to be important, very important or essential but for around half of the countries, they consider that groundwater is not sufficiently integrated into national water management plans, that laws and regulations have little application and enforcement, and that climate change scenarios are not regularly considered in groundwater planning.

It is concerning that for 10% of the surveyed countries, national water leaders say they do not have enough information to answer the question whether their groundwater is used sustainably, and for 17% they don't have enough information to know whether groundwater planning adequately takes into account climate change scenarios. This suggests more may need to be done to present groundwater information in ways that can be understood and acted on by the people in leadership and decision making roles.

# CHAPTER 5

## CONCLUSIONS



This project set out to answer the question ‘why is achieving the availability and sustainable management of water for all so difficult?’ It invited the perspective of national water leaders - those with the responsibility and opportunity to achieve the best outcomes at the national level. Respondents represented 88 countries with a combined population of over six billion people.

Ultimately readers can draw their own conclusions from this report and the further data on the Water Policy Group website. They may use it to broaden their own outlook and understanding based on the experiences the results reveal. For our part, Water Policy Group considers the following to be particularly interesting and useful messages from 127 national water leaders, of all global regions.

### ■ WATER RISKS — IN 2021, IT’S MAINLY ABOUT CLIMATE CHANGE

When water leaders consider the risks their country faces, for most of the surveyed countries, of all income groups, their greatest concern is about climate change reducing the water supply or worsening floods and droughts. Increasing demand for water, and more water-based disasters, all amplified by climate change, are also seen as very high risks. While poor household water quality was ranked in the top three risks for fewer countries, this ranking tends to increase as country income group status reduces, reflecting their struggle to ‘stay on track’ with SDG 6 implementation.

### ■ WATER CHALLENGES — IN 2021, IT’S MAINLY ABOUT GOVERNANCE

When asked to identify the key challenges to achieving good water outcomes in their country, ‘fragmented water institutions’ and ‘water issues being a relatively low priority for the government’ are highly ranked for more of the surveyed countries than other challenges. This may explain why ‘integration’ and ‘prioritisation’ are such common calls from water professional and policy events. Infrastructure and data



are also highly ranked challenges in all surveyed countries except those in the high income group. Broader political concerns such as public resistance to reforms, are generally seen as less challenging.

### ■ COVID-19 HAS NOT GREATLY AFFECTED THE PRIORITY OF WATER

For most surveyed countries, national water leaders advise that while the COVID-19 pandemic has made water and sanitation services more urgent for them, overall government attention to water matters has not changed.

### ■ SUSTAINABLE DEVELOPMENT GOALS FOR WATER SEEM OUT OF REACH FOR MANY

National water leaders of most of the surveyed countries, including many countries in the high income group, consider most of the SDG 6 targets to be 'challenging' or 'impossible' to achieve. Water leaders of the majority of countries in the low income group say this for all the targets covered by the survey, except for 'transboundary cooperation'. This confirms the urgency given by the United Nations to supporting member states to implement SDG 6 through the SDG 6 Global acceleration Framework and may bring into question the realism of some of the targets.

### ■ GOVERNANCE AND FINANCING ARE THE KEY ISSUES FOR MOST COUNTRIES

The opinions of national water leaders as to why the most challenging targets were so difficult may be an indicator of the overall usefulness of each of the GAF accelerators. 'Governance problems' is the most frequently cited obstacle to achieving targets on protecting ecosystems, integrated water resource management, local participation and transboundary cooperation. 'Lack of financing' is the

reason most cited for difficulties in achieving the targets on drinking water, water use efficiency, water quality and water scarcity. Reasons relevant to the other three accelerators ('lack of data and information' 'human and institutional capability' and 'lack of innovation') ranked as lower concerns.

### ■ DEVELOPMENT ASSISTANCE – DIFFERING PERSPECTIVES BETWEEN DONORS AND RECIPIENTS

National water leaders of around half of surveyed countries do not consider international cooperation and capacity-building support to developing countries in water and sanitation to be adequate. However, a much higher proportion of those from donor countries consider their country is providing enough support. There seems a need for more mutual understanding between donor and recipient countries. National water leaders of the most aid recipient countries consider 'lack of financing' and 'governance problems' to be the highest ranked reasons for it being challenging to expand water and sanitation aid.

### ■ GROUNDWATER MATTERS AND IS NOT CURRENTLY SUSTAINABLE FOR MOST

National water leaders of more than half of the countries surveyed consider groundwater to be essential to their country's future water supply.

Despite this message about the intrinsic importance of groundwater resources, national water leaders of only a quarter of surveyed countries believe their groundwater is being used sustainably in most locations in their countries.

For another quarter of surveyed countries, national water leaders consider groundwater is not being managed sustainably anywhere or they say they do not have enough information to know.

## SDG 6 TARGETS NOT AS DIFFICULT WITH GROUNDWATER

Overall, national water leaders of most of the surveyed countries consider the SDG 6 targets involving groundwater to be not as difficult to achieve as for water resources as a whole. With groundwater, the targets rated as 'impossible' or 'most difficult' by the national water leaders of the most countries are those concerning water quality, ecosystems and integrated water resource management.

## GROUNDWATER'S DIVERSE CHALLENGES

National water leaders of the most surveyed countries identify the top three constraints and impediments to sound groundwater management as economic factors, cost and complexity of solutions and inadequacy of regulations. As is the case with water resources as a whole, there

is less concern about the other constraints which are of a more political nature.

While national water leaders of almost all the surveyed countries consider groundwater to be important, for around half of the countries, they consider groundwater is not sufficiently integrated into national water management plans, and that laws and regulations governing groundwater are not being applied or enforced adequately. Very few national water leaders consider that climate change scenarios are routinely considered in groundwater planning.

## WRAPPING UP

Water Policy Group encourages readers to look, listen and learn from the national water leaders who have been so generous with their time in sharing their experience and perspectives. We take several overarching messages from their collective input:

- > Caring about water means caring about climate change.
- > Improving water outcomes for many countries will require improving integration within the administration, and raising the overall priority of water in the government.
- > Despite all the effort to emphasise the importance of water for COVID-19 management and recovery, the pandemic has not much changed water priorities.
- > Agenda 2030 targets for water may be out of reach for many countries, and assistance with governance and financing may be the most useful to them.
- > Groundwater is important, at risk from unsustainable use in many places, and needs more attention in planning and management.



Readers are encouraged to draw their own conclusions.

# APPENDIX

## EXPLANATORY

### INFORMATION

#### OVERVIEW

The research used in the Global Water Policy report used qualitative and quantitative techniques to analyse alphanumeric and text responses to the 2021 Water Leaders Survey. The survey opened on 1 March 2021 and contained 26 questions covering; meta-data on the nationality and role of the respondent; water risk and challenges, including from COVID-19; issues with Sustainable Development Goal 6; and groundwater resources. The survey was made available to respondents in an on-line format through the QualtricsXM platform and in a portable document format. All responses were consolidated at the conclusion of the survey on 1 October 2021.

#### ETHICAL STANDARDS

To ensure the project complied with the highest standards in ethical research an application was filed with the UNSW Sydney Human Research Ethics Committee (HC200546) which operates in accordance with, and applies the criteria specified in, the Commonwealth of Australia's National Health and Medical Research Council's (NHMRC) National Statement on Ethical Conduct in Human Research<sup>1</sup>. Approval to proceed with the research was received from the committee on the 25 August 2020. Opportunity to participate in the survey was widely promoted on social media and at meetings and conference events. Invitations were sent to Ministers and other potential respondents directly, through their staff or through official channels.

.....  
1. [www.nhmrc.gov.au/about-us/publications/national-statement-ethical-conduct-human-research-2007-updated-2018](http://www.nhmrc.gov.au/about-us/publications/national-statement-ethical-conduct-human-research-2007-updated-2018)

#### ENSURING THE ANONYMITY OF RESPONDENTS

Participation in the survey was voluntary and respondents were not asked to supply information on their name or gender. To further maintain confidentiality and encourage candid responses, meta-data on the professional status of an individual national water leader, nor their country of affiliation can be identified from the data presented in this report.

Respondents to the survey were classified based on their leadership role including as National Government Minister (or equivalent) with responsibility for water portfolio (Category 1), chief executive or equivalent of national sector or utility (Category 2) or other positions, including leadership of civil society or industry associations (Category 3). While respondent classifications were used to weight aggregated responses from each country, the leadership status of any respondent cannot be identified from data presented in this report.

Respondents were asked to identify and select one of the 194 countries on the register of the United Nations Member States<sup>2</sup>, however, the national affiliation of any respondent cannot be identified from data presented in this report.

#### DISTRIBUTION OF SURVEYED COUNTRIES

The responses were grouped according to the geographic regions defined under the Standard Country or Area Codes for Statistical Use (known as M49) of the United Nations Statistics Division<sup>3</sup>. In addition, responses were grouped according

.....  
2. [www.un.org/en/member-states/index.html](http://www.un.org/en/member-states/index.html)  
3. [unstats.un.org/sdgs/indicators/regional-groups](http://unstats.un.org/sdgs/indicators/regional-groups)

Table 1: Numbers of countries this report is based on according to geographical region and income group\*

Region	Low income	Lower middle income	Upper middle income	High income	Total for region
Sub-Saharan Africa	12	7	2	0	21
Northern Africa & Western Asia	1	3	5	2	11
Central & Southern Asia	2	7	2	0	11
East & Southeast Asia	0	2	3	3	8
Latin America & the Caribbean	0	1	8	1	10
Oceania	0	3	1	2	6
Europe & North America	0	1	1	19	21
<b>Total for income group</b>	<b>15</b>	<b>24</b>	<b>22</b>	<b>27</b>	<b>88</b>

\* Note to table: not all questions were responded to by national water leaders of all 88 countries. The regional and income classifications are based on United Nations and World Bank published lists as set out in the Appendix.

to income group (GNI per capita) in accordance with the World Bank country classifications by income-level 2020-2021<sup>4</sup> and Water stress classifications based on UN Sustainability Goals<sup>5</sup> as reported by the UN Food and Agriculture Organisation<sup>6</sup>. This report consolidates these into two categories 'no or low stress' and 'higher stress'. The designations employed and the presentation of the material in this survey do not imply the expression of any opinion whatsoever on the part of Water Policy Group or UNSW Sydney concerning the legal status of any place or concerning the delimitation of its frontiers or boundaries.

## EQUAL REPRESENTATION PARTICIPATING COUNTRIES

To acknowledge and value the contribution of all respondents that completed the survey, all responses received before 1 October 2021 were included in the analysis. However, to ensure equal representation of each country's contribution, a weighting process was used to scale all the responses from each country to a value of 1.0. This was achieved by considering the 'respondent categories', reflecting their degree of seniority and influence, and assigning a fractional weight. For example, if multiple responses were received from respondents at the same category, an equal fractional weighting was applied based on the number of responses (i.e. two responses weighted 0.5 each, three

responses weighted 0.33 each). In the event that multiple responses were received from respondents in different categories the responses were weighted so that category one responses were weighted at twice the value of category two and category two responses were weighted at three times the value of category three (i.e. a weighting ratio of 6:3:1 for Category 1, 2 and 3).

## REPRESENTATION OF RANKED RESPONSES

Selected questions were designed to identify risks and challenges faced by water leaders in areas such as general water management and progress on the SDGs. In these questions, respondents were asked to select and rank risks and challenges from most (highest) to least (lowest) priority. Again, these responses were weighted to ensure equitable contribution from all countries irrespective of the number of responses. The weighted rankings were presented in column charts, where a single column corresponded to a particular risk and the column value represents an aggregate of all the weighted rankings (from high to low) arranged from the bottom (highest) to the top (lowest) of the column. The data was presented on the same scale with each column displaying how the challenged was ranked by the respondents, weighted according to their category and with each country having the same total weight. In each case the total number of countries represented in each category was displayed on the graph to indicate sample size per question.

4. [datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups](https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)

5. [sdg6data.org/indicator/](https://sdg6data.org/indicator/)

6. [www.fao.org/3/cb6241en/cb6241en.pdf](https://www.fao.org/3/cb6241en/cb6241en.pdf)







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