



UN WATER



World Health
Organization

STRONG SYSTEMS AND SOUND INVESTMENTS

EVIDENCE ON AND KEY INSIGHTS INTO
ACCELERATING PROGRESS ON SANITATION,
DRINKING-WATER AND HYGIENE

UN-WATER GLOBAL ANALYSIS
AND ASSESSMENT OF SANITATION
AND DRINKING-WATER
GLAAS 2022 REPORT



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UN-Water Global Analysis
and Assessment of Sanitation
and Drinking-Water

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Strong systems and sound investments: evidence on and key insights into accelerating progress on sanitation, drinking-water and hygiene. UN-Water global analysis and assessment of sanitation and drinking-water (GLAAS) 2022 report

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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

The *Summary progress update 2021: SDG 6 – water and sanitation for all* report was published in 2021 ahead of the one-day high-level President of the General Assembly Meeting on Water. The report provides an executive update on progress towards all targets of SDG 6 and identified priority areas for acceleration. It was produced by the UN-Water Integrated Monitoring Initiative for SDG 6, presenting new country, regional and global data on all the SDG 6 global indicators.

SDG 6 Progress Update 2021 – eight reports, by SDG 6 global indicator

Published in 2021, 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 household drinking-water, sanitation and hygiene 2000–2020* (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) and *Progress on water-related ecosystems* (UNEP). The reports, produced by the responsible custodian agencies, presented new country, region and global data on the SDG 6 global indicators.

United Nations World Water Development Report

The United Nations *World water development report* 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 fresh water 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.

UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS)

The GLAAS report is produced by 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).

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 SDG 6 targets for universal access to safe and affordable drinking-water and adequate and equitable sanitation and hygiene services. Every 2 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.

MORE INFORMATION: <https://www.unwater.org/unwater-publications/>

UN-WATER
PLANNED
PUBLICATIONS

2023

- SDG 6 Synthesis Report 2023 on Water and Sanitation
- Country Acceleration Case Studies
- UN-Water Policy Brief on Gender and Water
- UN-Water Policy Brief on Transboundary Waters Cooperation – update



ACRONYMS AND ABBREVIATIONS

COVID-19	coronavirus disease
CRS	Creditor Reporting System
CWIS	citywide inclusive sanitation
ESA	external support agency
ESAWAS	Eastern and Southern Africa Water and Sanitation Regulators Association
GDP	gross domestic product
GLAAS	Global Analysis and Assessment of Sanitation and Drinking-Water
JMP	WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene
Mol	means of implementation
<i>n</i>	sample size
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
O&M	operations and maintenance
pp	percentage points
SDG	Sustainable Development Goal
SSP	sanitation safety planning
UN	United Nations
USAID	United States Agency for International Development
WASH	drinking-water, sanitation and hygiene
WASH FIT	Water and Sanitation for Health Facility Improvement Tool
WHO	World Health Organization
WSP	water safety planning



EXECUTIVE SUMMARY

The UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) 2022 report compiles new data on drinking-water, sanitation and hygiene (WASH) from 121 countries and territories and 23 external support agencies (ESAs). It serves as a global reference to inform commitments, priority-setting and actions during the second half of the 2030 Agenda for Sustainable Development and for the 2023 Conference for the Midterm Comprehensive Review of Implementation of the United Nations Decade for Action on Water and Sanitation (2018–2028) (UN 2023 Water Conference). The report also highlights opportunities to accelerate progress in key WASH areas that positively affect the quality and sustainability of WASH services and delivery, pandemic preparedness and resilience to climate change.

WASH and health: Implementation of policies and plans on WASH in health care facilities and on hand hygiene is constrained by a critical lack of financial and human resources

The world has been pushed to its limits over the last few years, with a pandemic that has strained hospitals, health care facilities and health centres, and highlighted the gap of WASH services in health care facilities. The coronavirus disease (COVID-19) pandemic has also provided a reminder of the importance of hand hygiene to health and infection prevention. Most countries responding to the GLAAS 2021/2022 country survey have policies on WASH in health care facilities in place. However, only 3% reported having sufficient financial and human resources to implement their policies. Similarly, the majority of countries address hand hygiene in WASH policies and plans, but funding is insufficient, and most countries do not have hand hygiene targets.

Climate resilience of WASH systems: Most WASH policies/plans do not address climate-related risks to WASH services

The increasing frequency and intensity of extreme weather events caused by climate change continue to hamper the delivery of safe WASH services, thus affecting the health of users. Despite the World Health Organization (WHO) identifying the impacts of climate change as the biggest health threat facing humanity, the latest GLAAS data show that most WASH policies and plans do not address risks of climate change to WASH services, nor the climate resilience of WASH technologies and management systems. Just over two thirds of countries have measures in WASH policies to reach populations disproportionately affected by climate change. However, only about one third monitor progress or allocate explicit funding to these populations.

National coverage targets: While acceleration is needed, factors affecting performance have been identified

More acceleration is needed to achieve national targets. While 45% of countries are on track to achieve their drinking-water coverage targets, only 25% of countries are on track to achieve their sanitation targets. Better performing countries are more likely to have:

- higher utilization of domestic capital commitments and recovery of operations and maintenance (O&M) costs from tariffs;
- regulatory authorities that carry out key regulatory functions; and
- human and financial resources in place to implement their WASH plans.

Finance: Insufficient WASH funding was reported by 75% of countries; nevertheless, government spending is stable or slightly increasing

Despite encouraging trends such as an increase in government WASH budgets, further investment is urgently needed if countries are to make significant progress towards reaching their national targets. While government WASH budgets increased

at an average rate of 5% per year for 25 countries that provided comparable data in both 2018/2019 and 2021/2022, over 75% of GLAAS 2021/2022 cycle countries reported insufficient funding to implement WASH plans and strategies.

Although governments have an important role in WASH finance, households are the largest source of WASH funding. Sixty-one per cent of WASH expenditure reported in the GLAAS 2021/2022 country survey comes from households through tariffs and self-supply. However, less than half of responding countries indicated that tariffs are sufficient to recover at least 80% of WASH O&M costs.

External support: Aid for water supply and sanitation is decreasing

Aid for water and sanitation decreased by 5.6% between 2017 and 2020, and the geographical targeting of the aid shifted. In sub-Saharan Africa, the proportion of WASH aid dropped from 32% to 23%, while in Central and Southern Asia, it increased from 12% to 20%, and in Eastern and South-Eastern Asia, it increased from 11% to 20%. Although Sustainable Development Goal (SDG) Target 6.2 on sanitation is lagging behind, more aid is directed towards drinking-water than sanitation.

Leaving no one behind: Measures to reach vulnerable populations and settings with WASH services lack monitoring and financial resources

A key aspect of the 2030 Agenda is to leave no one behind. To do so, governments must target underserved populations and settings – such as people living in poverty or in remote or hard-to-reach areas – to ensure they also have access to safe, sustainable WASH services. While a majority of countries have measures in WASH policies and plans to reach vulnerable populations and settings, these measures are not supported with monitoring or financial resources.

Local participation, which WHO monitors for SDG Target 6.b, is a way to ensure no one is left behind. Strengthening community participation is fundamental to adapt and sustain SDG 6 solutions to local community contexts. However, while most countries reported having defined procedures for participation in policy or law, far fewer have high levels of participation.

Human resources: Insufficient human resources are limiting WASH service delivery

Less than one third of countries reported they have more than 75% of the human resources needed to carry out key functions to deliver WASH services. Human resources are limited by workers not wanting to live or work in rural areas and insufficient financial resources. Over 80% of countries reported having an insufficient supply of trained professionals graduating annually from WASH training institutions that meet the needs for on-site sanitation and small drinking-water systems.

Gender: Increased inclusion, financial support and monitoring are needed to ensure women are considered in WASH decisions and services

Gender and WASH are connected in many ways – from menstrual health and hygiene to local participation and women working in WASH. In almost a quarter of countries, women hold less than 10% of government jobs, and less than a third of countries reported high women's participation in rural drinking-water planning and management. This means that women's voices are not being heard. Many countries have measures to reach women and girls in their WASH policies and plans, but these measures are not monitored in half of countries, and financial support to fully implement them is available in only about a quarter of countries. Less than two thirds of countries mention menstrual health and hygiene in their WASH policies and plans.

Regulation: Regulatory authorities often do not fully perform their functions

A majority of countries have regulatory authorities for drinking-water and sanitation; however, those authorities often do not fully perform their functions, especially for sanitation. These key functions range from collecting data and publishing reports to strengthening service providers by recommending planning and actions and enforcing the implementation of the recommendations.

Data use: Data are not sufficiently used in decisions on planning or resource allocation for WASH

Approximately two thirds of countries reported using data for a majority of decisions in planning processes and for resource allocation. Barriers to data use include lack of human and financial resources, fragmentation of data collection and processing, poor reliability and quality of data, and lack of coordination of WASH actors in collecting and sharing data.

GLAAS 2022 REPORT

SUMMARY INDICATORS

WASH and health

Percentage of countries^a with

WASH in health care facilities

Policies for WASH in health care facilities	66%
Sufficient (over 75%) human and financial resources to support a formally approved policy and costed plan for WASH in health care facilities	3%

Hand hygiene

Hand hygiene facilities addressed in WASH policies or plans	83%
Hand hygiene behaviour change addressed in WASH policies or plans	84%
National targets for handwashing facilities on household premises with soap and water	30%

COVID-19 and WASH

WASH components of COVID-19 preparedness and response plans costed	47%
Sufficient (over 75%) financial resources for WASH components of COVID-19 preparedness and response plans	25%

Climate resilience of WASH systems

Percentage of countries^a

Using climate change preparedness approaches for WASH in national planning	71%
Addressing the risks of climate change in WASH policies or plans	45%
Implementing climate change preparedness approaches at significant scale for local-level risk assessment and management of WASH	20%

National targets for drinking-water and sanitation

Drinking-water

Sanitation

Percentage of countries ^a on track to reach national targets	45%	25%
Percentage of countries ^a in need of acceleration to reach national targets	43%	63%
Average annual rate of change needed in countries in need of acceleration to reach national targets (percentage points per year)	3.6	5.7

WASH finance

2016/2017

2018/2019

2021/2022

Percentage of countries ^a providing cost estimates for WASH plans	—	66%	74%
Average annual increase in government WASH budgets	4.9%	11.1%	5.0%
Government WASH budget per capita (US\$, current), average of all respondents excluding China	8.98	9.14	12.45
Total WASH expenditure per capita (US\$, current), average	32	31	39
Total WASH expenditure as a percentage of gross domestic product (GDP), average	0.73%	0.76%	1.10%
Breakdown of non-household WASH expenditure between drinking-water/sanitation/hygiene	53% / 46% / 1%	58% / 35% / 7%	76% / 22% / 2%
Percentage of WASH funding derived from households, average	66%	66%	61%

External support and international cooperation (SDG Target 6.a)	2018	2019	2020
SDG Target 6.a: International cooperation and capacity-building			
Official development assistance (ODA) disbursements for the water sector (constant 2020 US\$)	9.6 billion	9.1 billion	8.7 billion
Percentage of countries ^a where donor funds are fully (95–100%) aligned with national plans for the water sector	–	–	30%
Water and sanitation aid			
Percentage of total aid commitments for water and sanitation	4.6%	4.6%	3.6%
Breakdown of water and sanitation aid commitments between water/sanitation	65% / 35%	63% / 37%	60% / 40%

Leaving no one behind and local participation (SDG Target 6.b)	Percentage of countries ^a	
Leaving no one behind	Drinking-water	Sanitation
With measures to reach populations living in poverty in national WASH policies and plans	84%	80%
Where progress to extend service provision to populations living in poverty is tracked and reported	56%	53%
With measures that are consistently applied to direct financial resources to populations living in poverty	38%	32%
Where affordability schemes exist and are widely used, urban/rural	35% / 31%	30% / 23%
SDG Target 6.b: Local community participation	Rural drinking-water	Water resources planning and management
With defined procedures in law or policy for community and user participation	91%	89%
With sufficient (over 75%) financial resources to support local community and user participation	17%	18%

Human resources for WASH	Percentage of countries ^a		
	Drinking-water	Sanitation	Hygiene
With national plans/strategies for human resources	37%	33%	27%
With sufficient (over 75%) human resources	27%	23%	21%

Gender and WASH	Percentage of countries ^a		
	Drinking-water	Sanitation	Hygiene
With measures to reach women and girls in national WASH policies and plans	71%	71%	62%
Where progress to extend service provision to women and girls is tracked and reported	46%	47%	40%
With measures that are consistently applied to direct financial resources to women and girls	26%	21%	21%

WASH regulation, risk management and surveillance	Percentage of countries ^a	
	Drinking-water Urban / rural	Sanitation Urban / rural
With regulatory authorities responsible for setting tariffs	79% / 65%	70% / 51%
With regulatory authorities that publish publicly accessible reports on drinking-water quality/treated wastewater flows and faecal sludge volumes	42% / 30%	19% / 13%
Implementing risk management approaches at a significant scale	31% / 19%	16%

Data use for WASH	Percentage of countries ^a	
	Drinking-water	Sanitation
Using data in a majority of decisions on resource allocation	66%	61%
With a formally approved policy and costed plan with sufficient (over 75%) human and financial resources, urban/rural	8% / 6%	7% / 3%
Conducting joint sector reviews	67%	

GLAAS process	Percentage of countries ^a
Conducting a multistakeholder review to validate the GLAAS survey response	97%
Basing GLAAS survey responses on documents and evidence	81%
Using government funds to support the GLAAS process	82%
In which women represented over half of GLAAS process participants	51%

^a The denominator for each percentage varies based on the number of responding countries per question.

Sources: GLAAS 2016/2017, 2018/2019 and 2021/2022 country surveys; GLAAS 2021/2022 ESA survey; OECD-CRS, 2022; GLAAS 2021/2022 country feedback forms.



SECTION 1

Context of the GLAAS 2022 report

Introduction

Since the previous UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) report in 2019, the COVID-19 pandemic has spread across the globe, climate change has accelerated and conflicts have arisen. Nevertheless, efforts have continued to end poverty, improve health, reduce inequality, and extend access to drinking-water, sanitation and hygiene (WASH), thus underscoring the continued relevance of the Sustainable Development Goals (SDGs). During this period of global turmoil, several countries reported to GLAAS their significant efforts towards improving WASH. With millions of people still unserved, and systems becoming increasingly vulnerable to climate change, accelerating sustainable access is important now and for the future.

Halfway through the SDG period, the world is dramatically off track to reach the SDGs by 2030 (1). With 8 years remaining, new insights to guide future commitments, planning and reforms could prove crucial. This GLAAS report provides new data relating to the status of systems necessary to deliver WASH services including governance, finance, human resources and monitoring. In light of the threat of pandemic and endemic diseases, the report also examines the ongoing critical importance of safe and adequate WASH in preventing negative health outcomes, as well as efforts to improve WASH resilience to climate change.

This report comes at a key moment for SDG 6 on water and sanitation. The 2023 Conference for the Midterm Comprehensive Review of Implementation of the United Nations Decade for Action on Water and Sanitation (2018–2028) (UN 2023 Water Conference) in March 2023 will highlight successes to date and challenges that urgently need to be addressed. Expectations of the commitments made will be high, especially given its historical significance as the first UN water conference in 50 years.

The objective of this report and the GLAAS 2021/2022 dataset is to provide all stakeholders with the latest critical evidence on the status of WASH systems. This will help to formulate voluntary commitments that can be made as part of the UN 2023 Water Conference process as well as to inform other WASH decisions and processes.

About GLAAS

The main objective of GLAAS is to monitor components of WASH systems, including the governance, monitoring, finance and human resources necessary to sustain and extend WASH services to all, especially those in vulnerable situations. GLAAS collects information directly from national governments and external support agencies (ESAs) through surveys. The World Health Organization (WHO) monitors and analyses responses to the country and ESA surveys, refining and improving questions, to generate reliable, high-quality data to inform policy actions from local to global levels. Through GLAAS, WHO is a co-custodian for monitoring the SDG 6 means of implementation (MoI) targets: Target 6.a on international cooperation and capacity-building support and Target 6.b on supporting and strengthening participation of local communities (Box 1.1).

Box 1.1 Monitoring SDG 6 Mol: Targets 6.a and 6.b

SDG 6 in the 2030 Agenda for Sustainable Development is dedicated to water and sanitation. The goal seeks to “Ensure [the] availability and sustainable management of water and sanitation for all”, with six outcome targets on the broader water sector including WASH and two targets dedicated to Mol. Through GLAAS, WHO is a co-custodian of the SDG Mol Targets 6.a and 6.b in collaboration with the Organisation for Economic Co-operation and Development (OECD) and the UN Environment Programme under the UN-Water Integrated Monitoring Initiative for SDG 6 (3).^a The Mol targets in the 2030 Agenda address an interdependent combination of factors including financial resources, human capacity, technology and governance arrangements that are conducive to implementing the 2030 Agenda and making progress towards SDG 6.

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

The data collected through country survey in the GLAAS 2021/2022 cycle contribute to monitoring the target indicators and to providing insights into the systems in place to support progress towards SDG 6 overall, and SDG Targets 6.1, 6.2 and 6.3 in particular. Section 6 (External support and international cooperation (SDG Target 6.a)), section 7 (Leaving no one behind and local participation (SDG Target 6.b)) and section 9 (Gender and WASH) of this report provide specific results on SDG Targets 6.a and 6.b. The SDG 6 data portal provides comprehensive monitoring data on all SDG 6 targets and indicators (4).

^aThe UN-Water Integrated Monitoring Initiative for SDG 6 brings together the eight UN organizations that are formally mandated to compile country data on the SDG 6 global indicators.

GLAAS also complements and informs the work of others in the WASH sector, including the Sanitation and Water for All Partnership and the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP). The JMP provides internationally comparable estimates of progress on WASH at the country, regional and global levels, and GLAAS provides context for these estimates. In 2022, WHO launched the GLAAS data portal which features data from GLAAS cycles since 2013/2014 (Box 1.2).

The quality of the data collected is improving with each GLAAS cycle. Increased participation indicates that governments understand the benefits of participating in the process. WHO has worked to increase governments’ understanding of the importance of collecting data on WASH systems in order to define priorities and areas for action. For the GLAAS 2021/2022 cycle, WHO improved its rigorous feedback mechanism for reviewing each country survey submission and communicating with governments, and conducted an external validation of GLAAS data. Indicators of the improved quality of GLAAS data include an increase in the number of stakeholders involved in the process at country level, as well as an improvement in WASH financial data over GLAAS cycles because of an increasing number of countries developing WASH accounts that feed into the results. For more information on the GLAAS process and data quality, refer to section 12 (The GLAAS process, data quality and external validation), and for additional information on WASH financial data, refer to section 5 (WASH finance).

Box 1.2 GLAAS data portal

GLAAS data are now online and publicly available on the GLAAS data portal (2): <https://glaas.who.int/>. This online database allows users to search, view and export GLAAS data starting from the 2013/2014 cycle. Users can also select from a list of topics and indicators to create a variety of data visualizations. The portal allows users to create customized data tables and figures, analyse trends, and make country and regional comparisons. Additional features of the portal under development include automated generation of GLAAS country highlights and WASH accounts highlights, interactive graphs for key findings, and a library to filter and search for GLAAS and national documents.

The GLAAS data portal supports improved and increased use of GLAAS data. Results presented in this report as well as other data from the GLAAS 2021/2022 cycle can be further explored on the data portal.

Results from initial GLAAS cycles made clear there were substantial gaps in the understanding and tracking of financial flows in the WASH sector. To address this issue, over 10 years ago, WHO developed the TrackFin methodology to develop WASH accounts to support a comprehensive analysis of WASH financial flows. Governments lead the WASH accounts process and the data collected are used to inform decision-making within countries. Data from WASH accounts are found in section 5 (WASH finance) of this report when countries used their WASH accounts results in completing the GLAAS country survey.

The GLAAS 2021/2022 cycle and the GLAAS 2022 report

This report is aligned with the UN SDG 6 Global Acceleration Framework (5). It presents data directly relevant to four of the accelerators: governance, finance, capacity development, and data and information. Findings from the country and ESA surveys are reported in a way that allows the interaction between these accelerators to be clear, in line with a systems approach to WASH.

This report also includes a particular focus on health aspects of water and sanitation services and hygiene behaviour, consistent with the mandate of WHO, and also reflecting the renewed importance of health as a priority because of the COVID-19 pandemic.

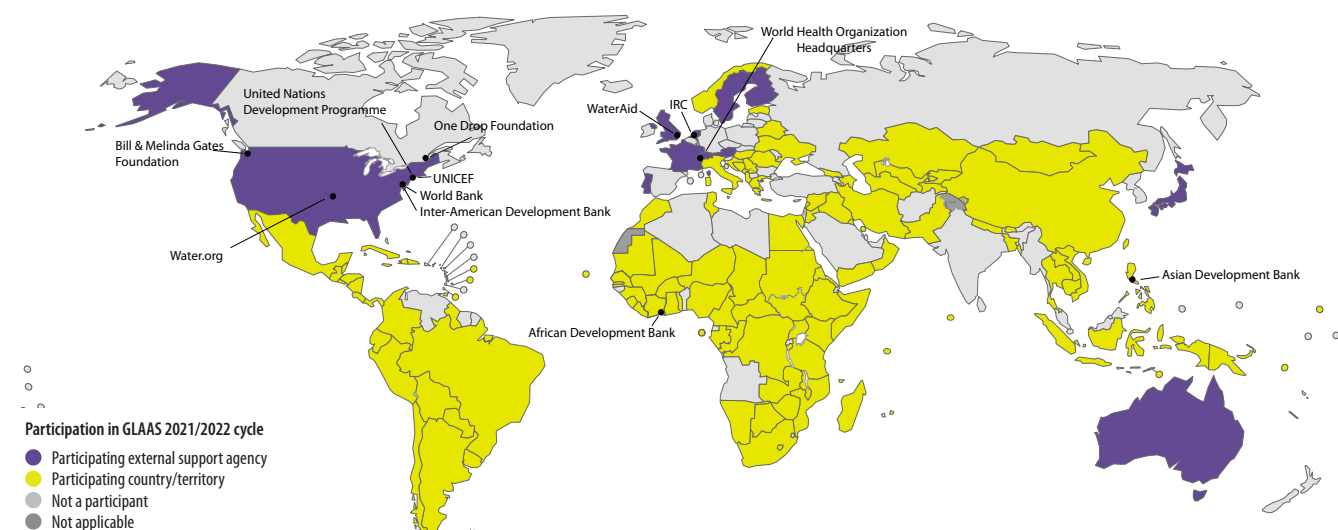
Online data collection in the GLAAS 2021/2022 cycle

In the GLAAS 2021/2022 cycle, WHO tested an electronic version of the GLAAS country survey, and data from 11 countries were collected and managed using REDCap electronic data capture tools hosted at WHO. WHO led training workshops on how to use the online data collection tool. Over 100 users in Belarus, Costa Rica, Hungary, Islamic Republic of Iran, Maldives, Morocco, Nepal, Philippines, Serbia, South Africa and Zimbabwe submitted their GLAAS 2021/2022 country surveys online. The online data collection was a success, and will be expanded in future GLAAS cycles.

Overview of participating countries, territories and ESAs

Globally, 121 countries and territories completed the GLAAS 2021/2022 country survey,^{1,2} which is the largest number ever to participate in a GLAAS cycle. This covers a population of 4.8 billion, representing 66% of the world's population. It includes 94% of the population of sub-Saharan Africa and 86% of the population of least developed countries. Twenty-three ESAs completed the GLAAS 2021/2022 ESA survey. The Annex of this report lists the thousands of individuals involved in the GLAAS 2021/2022 cycle.

Globally, 121 countries and territories and 23 ESAs participated in the GLAAS 2021/2022 cycle, involving thousands of individuals and hundreds of institutions (Fig. 1.1; Tables 1.1 and 1.2).



Map production: Water, Sanitation, Hygiene and Health, WHO.

Sources: GLAAS 2021/2022 country and ESA surveys.

Fig. 1.1 Countries, territories and ESAs participating in the GLAAS 2021/2022 cycle

¹ Including two territories: British Virgin Islands and occupied Palestinian territory, including east Jerusalem. Statistics in this report refer to countries and territories.

² While 121 countries submitted GLAAS country surveys, not every country answered every question. Therefore, throughout the report, there are different sample sizes for different analyses.

Table 1.1 Countries, territories and ESAs participating in the GLAAS 2021/2022 cycle**Countries and territories (121 total)**

Albania, Argentina, Azerbaijan, Bahrain, Bangladesh, Barbados, Belarus, Belize, Bhutan, Bolivia (Plurinational State of), Bosnia and Herzegovina, Botswana, Brazil, British Virgin Islands, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Costa Rica, Côte d'Ivoire, Croatia, Cuba, Democratic Republic of the Congo, Dominican Republic, Ecuador, Egypt, El Salvador, Eritrea, Estonia, Ethiopia, Fiji, Gabon, Gambia, Georgia, Ghana, Greece, Grenada, Guatemala, Guinea, Guyana, Haiti, Honduras, Hungary, Indonesia, Iran (Islamic Republic of), Iraq, Italy, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Lebanon, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Mexico, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Norway, Oman, occupied Palestinian territory, including east Jerusalem, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Romania, Saint Lucia, Sao Tome and Principe, Senegal, Serbia, Seychelles, Sierra Leone, Solomon Islands, Somalia, South Africa, South Sudan, Sudan, Syrian Arab Republic, Tajikistan, Thailand, Timor-Leste, Togo, Trinidad and Tobago, Tunisia, Turkmenistan, Tuvalu, Uganda, Ukraine, United Republic of Tanzania, Uruguay, Uzbekistan, Viet Nam, Yemen, Zambia, Zimbabwe

ESAs (23 total)

African Development Bank (AfDB); Asian Development Bank (ADB); Australian Government's Department of Foreign Affairs and Trade (DFAT); Austrian Development Agency (ADA); Bill & Melinda Gates Foundation (BMGF); Finland, Ministry for Foreign Affairs; France, Agence Française de Développement (AFD); Inter-American Development Bank (IDB); IRC (International Water and Sanitation Centre); Japan International Cooperation Agency (JICA); Netherlands, Ministry of Foreign Affairs, Directorate-General for International Cooperation (DGIS); One Drop Foundation; Portugal, Camões – Institute for Cooperation and Language, I.P.; Sweden, Swedish International Development Cooperation Agency (Sida); Switzerland, Swiss Agency for Development and Cooperation (SDC) and State Secretariat for Economic Affairs (SECO); United Kingdom of Great Britain and Northern Ireland, Foreign, Commonwealth & Development Office (FCDO); UNICEF; United Nations Development Programme (UNDP); United States Agency for International Development (USAID); Water.org; WaterAid; World Bank; World Health Organization (WHO)

Table 1.2 Distribution of GLAAS participating countries and territories by income group

World Bank income group	GLAAS 2013/2014 (n = 94)	GLAAS 2016/2017 (n = 84)	GLAAS 2018/2019 (n = 115)	GLAAS 2021/2022 (n = 121)
Low income	29%	24%	25%	20%
Lower-middle income	37%	39%	33%	35%
Upper-middle income	28%	32%	29%	31%
High income	5%	5%	12%	14%

References

1. 'Tremendously off track' to meet 2030 SDGs: UN chief [webpage]. United Nations; 2021 (<https://www.un.org/sustainabledevelopment/blog/2021/07/tremendously-off-track-to-meet-2030-sdgs-un-chief/>, accessed 21 October 2022).
2. UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water [database]. Geneva: World Health Organization; 2022 (<https://glaas.who.int>, accessed 21 October 2022).
3. Background. In: Integrated Monitoring Initiative for SDG 6 [webpage]. UN-Water (<https://www.unwater.org/our-work/integrated-monitoring-initiative-sdg-6/background>, accessed 21 October 2022).
4. Welcome to the UN-Water SDG 6 data portal. In: Sustainable Development Goal 6 on water and sanitation (SDG 6) [database]. UN-Water (<https://www.sdg6data.org/>, accessed 21 October 2022).
5. SDG 6 Global Acceleration Framework [webpage]. UN-Water (<https://www.unwater.org/our-work/sdg-6-global-acceleration-framework>, accessed 21 October 2022).

SECTION 2

WASH and health



WASH is critical to human health and well-being. WASH-related diseases and risks are wide ranging: they include infections transmitted by the faecal–oral route, health impacts from exposure to chemicals and contaminants in drinking-water, and other impacts on overall well-being. There continues to be an emphasis on curative strategies for disease control, rather than investment in preventative measures. Yet, millions of people globally lack adequate WASH services and consequently suffer from, or are, exposed to a multitude of preventable illnesses. Lack of safe WASH negatively affects quality of life and undermines fundamental human rights. Poor WASH services also weaken health systems, threaten health security and place a heavy strain on economies. Inadequate WASH was attributable to almost 2 million deaths and almost 123 million disability-adjusted life years in 2016 (1).

The COVID-19 pandemic has highlighted the critical importance of safe WASH services. WASH services strengthen the resilience of communities, and are fundamental to the delivery of safe and quality health services to prevent disease outbreaks and to effectively respond when they do occur. Two priority areas for government intervention on WASH during the COVID-19 pandemic have been WASH in health care facilities and hand hygiene for all.

While WASH is an integral part of health and health systems, this section focuses on WASH in health care facilities, hand hygiene and WASH in COVID-19 response plans.

WASH in health care facilities

Provision of WASH services in health care facilities is a fundamental prerequisite for achieving SDG 3 on health and SDG 6 on water and sanitation (2). Health systems continue to be strained with the direct and indirect impacts of the COVID-19 pandemic. This strain highlights the critical importance of WASH in health care facilities, among other health system strengthening measures.

The importance of WASH in health care facilities was known before the COVID-19 pandemic. The 2018 global call to action on WASH in health care facilities by the UN Secretary-General elevated this issue among all UN agencies, partners and Member States (2). At the 2019 World Health Assembly, all 194 WHO Member States approved a resolution on WASH in health care facilities (2). The resolution calls on countries to establish baselines and set targets, embed WASH in key health programmes and budgets, improve and maintain infrastructure and regularly report on progress. Of the 65 countries that have reported on efforts to implement the resolution (reported through the Country Progress Tracker (3)), progress is greatest on developing standards and plans and least on integrating with health system processes. WHO is supporting countries to improve WASH in health care facilities along with other partners (Box 2.1).

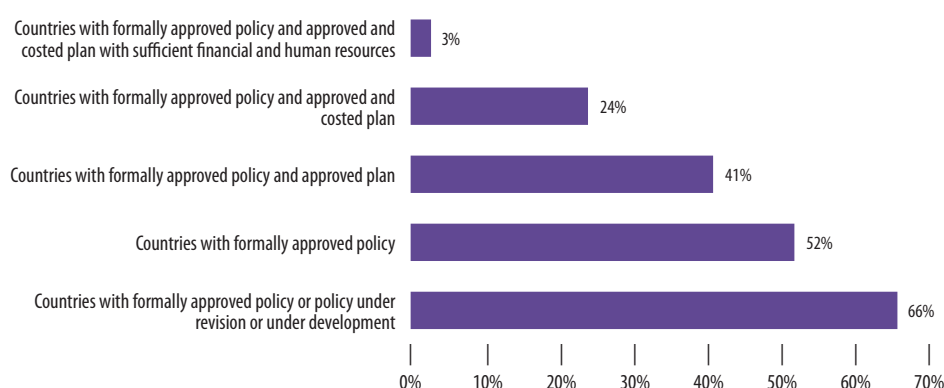
Box 2.1 Global efforts to improve WASH in health care facilities

WHO and UNICEF are co-leading global work on WASH in health care facilities with support from more than 50 partners. WHO and UNICEF have developed tools and resources to support national and health care facility actions, including the recent launch of the new Water and Sanitation for Health Facility Improvement Tool V 2.0 (WASH FIT (4)), which includes elements of climate resilience, sustainability and gender/equity. WASH FIT has now been implemented in over 45 countries as a means to support sustainable WASH and health care waste service improvements. Furthermore, a price-tag analysis for providing universal basic water, sanitation, hygiene and health care waste services in health care facilities in the 46 least developed countries found that over a 10 year period, the costs were modest (US\$ 6.5 billion to 9.6 billion), amounting to 3% of current government spending on health (5).

Yet, the JMP 2022 report on WASH in health care facilities shows persistently low levels of coverage, particularly in low- and middle-income countries (6). Half of health care facilities worldwide lack basic hygiene services with water and soap or alcohol-based hand rub where patients receive care and at toilets in these facilities. And while nearly eight out of 10 health care facilities globally have access to a basic water service, almost half of those located in least developed countries lack even an improved water source on site. Little is known about the safety, reliability and sufficiency of water in health care facilities, with reported waterborne outbreaks, such as legionellosis, on the rise in health care facilities. When it comes to sanitation, a shocking one in every 10 health care facilities globally have no service; this doubles to one in five in sub-Saharan Africa (6).

Results of the GLAAS 2021/2022 cycle show that most countries have policies on WASH in health care facilities in place or under development. However, less than a quarter of countries have an approved policy with a costed plan, and only 3% reported having sufficient (more than 75% of what is needed) financial and human resources to implement the plan (Fig. 2.1).

A majority of countries have policies for WASH in health care facilities, but they are not supported with sufficient human or financial resources.



Note: "Sufficient financial and human resources" is defined as having more than 75% of what is needed to implement plans.

Source: GLAAS 2021/2022 country survey.

Fig. 2.1 Percentage of countries that reported policies for WASH in health care facilities supported by resourced plans ($n = 118$)

Despite the gap between policy and practice, data from the GLAAS 2021/2022 country survey suggest that national data availability and use are improving.

WASH in health care facilities is covered in 71% of countries joint sector reviews, and 50% reported using data for the majority of decisions associated with identifying priority health care facilities needing WASH improvements. While this represents an increase from the pre-COVID-19 GLAAS 2018/2019 cycle, half of responding countries are still not using data to their full potential. Furthermore, only about half of the 57 countries with a WASH in health care facilities target reported progress against the target.

Hand hygiene

The practice of effective hand hygiene, in health care and in community settings, is critical to infection prevention. It is a key component of SDG 6, and contributes to other SDGs such as SDG 3 on health and SDG 4 on education. This simple practice can reduce the burden of infectious diseases and, by extension, improve other health outcomes by relieving the strain that such diseases place on health systems. While the role of hand hygiene in public health has long been acknowledged, COVID-19 has emphasized the importance of having systems in place to enable and encourage good practice across multiple settings. In the wake of COVID-19, dozens of countries have committed to strengthening their policy environment for hand hygiene as part of the WHO/UNICEF Hand Hygiene for All Global Initiative (7). To better monitor efforts on hand hygiene, WHO strengthened hand hygiene in the GLAAS 2021/2022 cycle (Box 2.2).

Box 2.2 Strengthening hand hygiene in the GLAAS 2021/2022 cycle

A summary of GLAAS hygiene findings in 2020 points to the limited availability and quality of hygiene data collected (8). Additionally, it became clear that the broad definition of hygiene used in previous GLAAS cycles (the conditions and practices that help maintain health and prevent the spread of disease) made analysis of hand hygiene specifically extremely challenging. The GLAAS 2021/2022 cycle sought to improve these data by strengthening the hygiene-related survey sections. The changes included improving the definition of hand hygiene and revising the hygiene questions to be specific to hand hygiene.

Strengthening the definition: Hygiene is multifaceted and can comprise many behaviours including handwashing, food hygiene and menstrual hygiene. The lack of an internationally agreed definition of hygiene has historically provided challenges for reporting on and comparing hygiene data. In an effort to address this, the GLAAS 2021/2022 cycle focused specifically on hand hygiene in the country and ESA surveys. This is in line with JMP reporting on hygiene, which has established handwashing with soap as the hygiene indicator for global monitoring. The GLAAS 2021/2022 country survey further clarified definitions by making the distinction, where relevant, between hand hygiene facilities (hardware and consumables) and activities to promote hand hygiene practices (software).

Embedding hand hygiene in policies: To be protective of health, hand hygiene should be practised at key moments throughout an individual's day, irrespective of whether they are at home, in an institutional setting or in a public space. Acknowledging the cross-cutting nature of hand hygiene as a policy issue, the GLAAS 2021/2022 country survey asked responding countries to identify relevant policies where hand hygiene infrastructure and behaviour change are addressed.

Eighty-three per cent of countries address hand hygiene infrastructure, and 84% address hand hygiene behaviour change, in one or more of their WASH policies or plans (Table 2.1). In these countries, hand hygiene is addressed in policies or plans for institutional WASH more frequently than in other WASH policies.

GLAAS data indicate that most countries address hand hygiene in WASH policies and plans, with a particular focus on institutional settings.

Table 2.1 Percentage of countries addressing hand hygiene in different WASH policies/plans

Content of policy/plan	WASH policies and plans				
	In at least one reported policy or plan	Sanitation	Drinking-water	WASH in schools	WASH in health care facilities
Hand hygiene facilities (n = 116)	83%	52%	45%	66%	64%
Hand hygiene behaviour change (n = 115)	84%	50%	43%	65%	62%

Source: GLAAS 2021/2022 country survey.

Less than one third of responding countries reported having national hygiene coverage targets in line with SDG indicator 6.2.1 on the proportion of the population with a handwashing facility with soap and water in the household (Table 2.2).

Half of countries do not have national targets for hand hygiene.

Table 2.2 National hygiene coverage targets and alignment with SDG 6 ($n = 113$)

Category	Target classification criteria	Percentage of countries
Basic	The target calls for handwashing facilities on household premises with soap and water	30%
Other	The target calls for other types of hygiene targets, such as those specific to WASH in schools, hygiene promotion or hygiene practices	20%
None	Countries that do not have a national coverage target for hygiene	50%

Source: GLAAS 2021/2022 country survey.

Data from the GLAAS 2021/2022 country survey offer some possible explanations for the gap between policy and execution for hand hygiene.

Financing and funding for hand hygiene are lacking. Over a third of responding countries (38%) do not have a financial plan, either in development or agreed, for hand hygiene. Of those with an agreed financial plan, three in 10 reported insufficient implementation.

Implementation of measures targeting those most in need is lacking. While most responding countries reported having measures in place to reach settings where needs are great, such as in emergencies and disasters, sufficiently resourced implementation remains a significant challenge (Table 2.3).

Table 2.3 Measures to extend hand hygiene in different settings

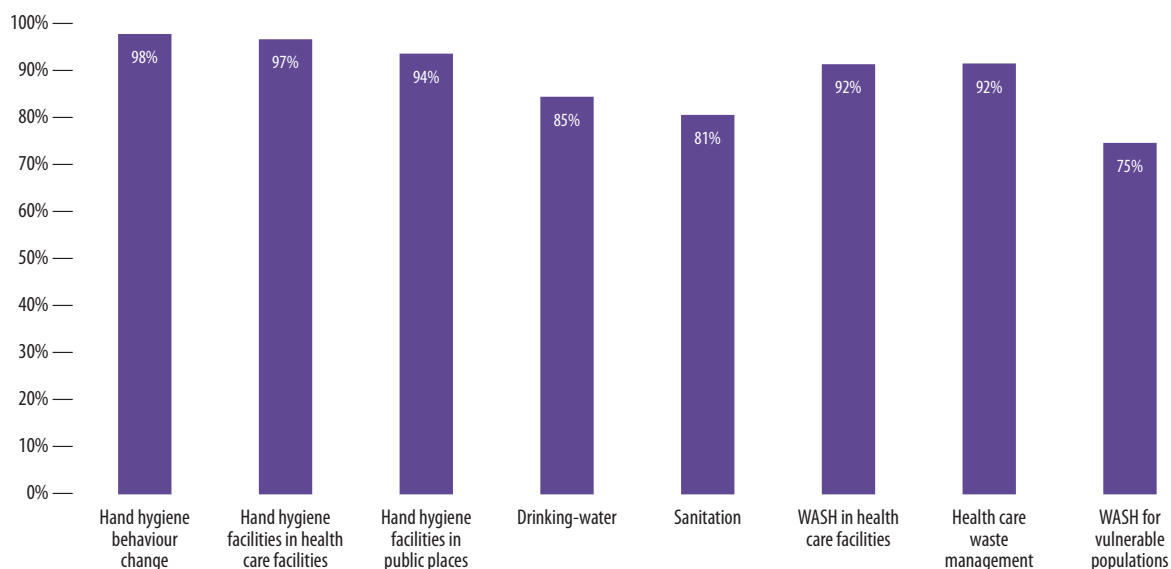
		<div> 0–39% 40–59% 60–79% 80–100% </div>		
Hand hygiene in:	n	Governance Policies and plans have specific measures to reach the setting	Monitoring Progress to extend service provision to the setting is tracked and reported	Finance Specific measures to direct resources to the setting are consistently applied
Emergencies and disasters	109	75%	69%	48%
Remote or hard-to-reach areas	102	69%	56%	27%
Internally displaced persons and/or refugee camps	71	73%	54%	25%

Source: GLAAS 2021/2022 country survey.

COVID-19 response plans and WASH

To address the COVID-19 pandemic, governments developed COVID-19 preparedness and response plans. The GLAAS 2021/2022 country survey asked if governments developed such a plan, if the plan addressed WASH components, if the WASH components were costed and if there was sufficient funding for the components.

Of the 118 countries that reported having developed a COVID-19 preparedness and response plan, the vast majority include WASH components, particularly hand hygiene (Fig. 2.2).



Source: GLAAS 2021/2022 country survey.

Fig. 2.2 Percentage of countries with WASH components addressed in national COVID-19 preparedness and response plans ($n = 118$)

Less than half of countries with COVID-19 preparedness and response plans reported having costed the WASH components, and only a quarter reported having funded these components adequately (Table 2.4).

Table 2.4 Overview of costing of WASH component(s) and sufficiency of their funding in COVID-19 preparedness and response plans

Number of countries that developed COVID-19 preparedness and response plans that address WASH	Percentage of countries that costed the WASH component(s)	Percentage of countries with sufficient funding for the WASH component(s)
118	47%	25%

Note: "Sufficient funding" is defined as having more than 75% of what is needed to implement COVID-19 preparedness and response plans.
Source: GLAAS 2021/2022 country survey.

References

1. Water, sanitation, hygiene and health: a primer for health professionals. Geneva: World Health Organization; 2019 (<https://apps.who.int/iris/handle/10665/330100>, accessed 21 October 2022).
2. Global Policy and Coordination [webpage]. WASH in Health Care Facilities; 2022 (<https://washinhcf.org/governance/>, accessed 21 October 2022).
3. Country Progress Tracker [webpage]. WASH in Health Care Facilities; 2022 (<https://washinhcf.org/country-progress-tracker/>, accessed 21 October 2022).
4. WASH FIT: A practical guide for improving quality of care through water, sanitation and hygiene in health care facilities. Second edition. Geneva: World Health Organization; 2022 (<https://www.who.int/publications/i/item/9789240043237>, accessed 21 October 2022).
5. Chaitkin M, McCormick S, Alvarez-Sala Torrealan J, Amongin I, Gaya S, Hanssen ON, et al. Estimating the cost of achieving basic water, sanitation, hygiene, and waste management services in public health-care facilities in the 46 UN designated least-developed countries: a modelling study. *Lancet Global Health*. 2022;10:E840–E849 ([https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(22\)00099-7/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(22)00099-7/fulltext), accessed 21 October 2022).
6. Progress on WASH in health care facilities 2000–2021: special focus on WASH and infection prevention and control (IPC). Geneva: World Health Organization and United Nations Children’s Fund; 2022 (<https://washdata.org/sites/default/files/2022-08/jmp-2022-wash-hcf-launch.pdf>, accessed 21 October 2022).
7. Hand Hygiene for All Global Initiative [webpage]. Geneva: World Health Organization; 2022 (<https://www.who.int/initiatives/hand-hygiene-for-all-global-initiative>, accessed 21 October 2022).
8. Hygiene: UN-Water GLAAS findings on national policies, plans, targets and finance. Geneva: World Health Organization; 2020 (<https://www.who.int/publications/i/item/9789240006751>, accessed 21 October 2022).

SECTION 3

Climate resilience of WASH systems



Globally, the increasing frequency and intensity of extreme weather events caused by climate change have a direct impact on the delivery of safe WASH services. For example: droughts reduce water availability, disrupting the functioning of all water-reliant WASH systems; rising sea levels and floods increase the risk of contamination from sanitation systems overflowing; and extreme heat events change water consumption patterns and the efficacy of treatment processes.

All climate hazards affect the use of WASH services and often result in people using unsafe water sources, reverting to open defecation or being unable to maintain good hygiene practices, thus increasing the likelihood of WASH-related disease outbreaks. There is a growing need for governments to strengthen and support sustained access to climate-resilient WASH systems. This is an essential component to building overall climate resilience, helping communities cope with extreme weather events and protecting against WASH-related diseases.

This section focuses on climate change preparedness approaches in planning, if climate risks are addressed in WASH policies and plans, local-level implementation of climate change preparedness approaches, if governments are reaching populations disproportionately affected by climate change and how ESAs are addressing climate change and WASH.

Use of climate change preparedness approaches for WASH in national planning

Mitigation, adaptation and resilience of WASH systems and services are important aspects of climate change preparedness. Seventy-one per cent of responding countries reported including climate change preparedness approaches for WASH in their national planning. Examples reported in the GLAAS 2021/2022 country survey of how countries are using climate change preparedness approaches are presented below.

- **Morocco** takes climate change into account during the development of planning documents, such as the National Water Plan and the Master Plans for the Integrated Development of Water Resources.
- **Sudan's** Ministry of Environment, Natural Resources and Physical Development and the Higher Council for Environment and Natural Resources have published a National Adaptation Plan for Sudan. The plan specifies recommendations related to water resources for responding to climate change including undertaking geophysical studies, increasing the range of water resources, repairing water points and monitoring water resources.
- **Thailand** has plans that address climate change including the Climate Change Comprehensive Master Plan 2015–2050 with guidelines for climate change response. The guidelines include having integrated water management in place, building readiness to cope with and reduce damage from floods and droughts, managing risks from floods and droughts, disease surveillance and prevention, and the promotion of access to quality public health services. The Action Plan on Climate Change Adaptation in Public Health, Phase 1, 2021–2030 is a framework for dealing with the health impacts of climate change to strengthen the public health system, which empowers people to manage health risks.

Addressing climate change risks in WASH policies and plans

Less than half of responding countries reported addressing risks of climate change to WASH services in at least one of their national WASH policies or plans. Similar results are seen for climate resilience of WASH technologies and management systems (Table 3.1).

A majority of countries do not address risks of climate change to WASH services or climate resilience of WASH technologies and management systems in their WASH policies and plans.

Table 3.1 Percentage of countries addressing climate change in national WASH policies and plans

Content of policy/plan	WASH policies and plans					
	Urban sanitation	Rural sanitation	Urban drinking-water	Rural drinking-water	WASH in schools	WASH in health care facilities
Risks of climate variability and climate change to WASH services (<i>n</i> = 114)	45%	42%	46%	45%	29%	32%
Climate resilience of WASH technologies and management systems (<i>n</i> = 115)	39%	38%	43%	42%	23%	29%

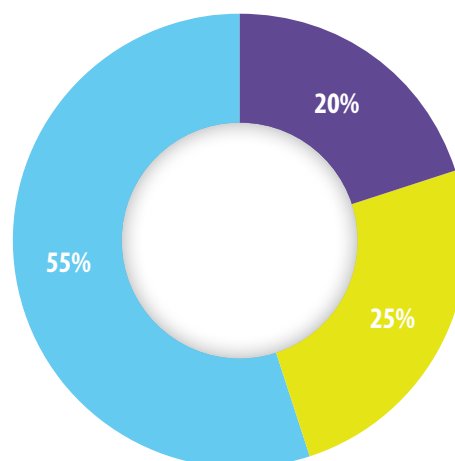
Source: GLAAS 2021/2022 country survey.

Climate change preparedness approaches for WASH at the local level

Only 20% of countries reported implementing climate change preparedness approaches for local-level risk assessment and management of WASH at a significant scale, while 25% implement them at a few pilot or model sites (Fig. 3.1).

A majority of countries do not implement climate change preparedness approaches for local-level risk assessment and management of WASH.

- Implementation at a significant scale
- Implementation at just a few pilot or model sites
- Not implemented



Source: GLAAS 2021/2022 country survey.

Fig. 3.1 Level of implementation of climate change preparedness approaches for local-level risk assessment and management of WASH (*n* = 118)

Reaching populations disproportionately affected by climate change

Around the world, there are people who are disproportionately affected by climate change.³ Billions of people lack safely managed WASH services and are, therefore, already extremely vulnerable, leaving them at higher risk from climate shocks and unable to respond effectively to such shocks. Others live in areas that are vulnerable to droughts, wildfires, coastal storms or sea level rise. Governments should take actions to identify populations disproportionately affected by climate change and ensure they have sustained access to WASH services.

³ "Populations disproportionately affected by climate change" was not defined in the GLAAS 2021/2022 country survey, as different countries have different definitions of these populations.

Although policy measures are in place in many WASH policies and plans to reach populations disproportionately affected by climate change, few are taking action to monitor progress or allocate resources (Table 3.2).

Table 3.2 Measures to improve and extend drinking-water services to populations disproportionately affected by climate change by SDG region

● 0–39% ● 40–59% ● 60–79% ● 80–100%

SDG region	<i>n</i>	Governance Policies and plans have specific measures to reach populations disproportionately affected by climate change	Monitoring Progress to extend service provision to populations disproportionately affected by climate change is tracked and reported	Finance Specific measures to direct resources to populations disproportionately affected by climate change are consistently applied
Global	76	67%	36%	29%
Central and Southern Asia	7	86%	14%	14%
East Asia and South-Eastern Asia	8	75%	50%	38%
Latin America and the Caribbean	18	50%	28%	22%
Northern Africa and Western Asia	4	75%	25%	75%
Oceania (excluding Australia and New Zealand)	4	75%	25%	25%
Sub-Saharan Africa	29	76%	48%	34%

Note: The table shows only those SDG regions for which data cover at least 50% of countries or at least 50% of the population. Based on these criteria, two SDG regions were excluded: Australia and New Zealand, and Europe and Northern America.

Source: GLAAS 2021/2022 country survey.

ESA support for WASH and climate change

ESAs are increasingly targeting WASH funding and technical assistance to climate change adaptation and climate change mitigation, reflecting growing awareness of the impacts of climate change on WASH systems. In the GLAAS 2021/2022 ESA survey, 19 of 23 ESAs reported that climate change adaptation and mitigation are high or very high priorities of their WASH work.

Donors reporting to the OECD-Creditor Reporting System (CRS) indicate how much of their aid relates to climate activities for the four Rio markers: climate change mitigation, climate change adaptation, biodiversity and desertification (1). The Rio markers that are most relevant to WASH are climate change mitigation and climate change adaptation.⁴ For each marker, donors indicate if the subject of the marker is the principal, a significant or not an objective of the aid being provided.

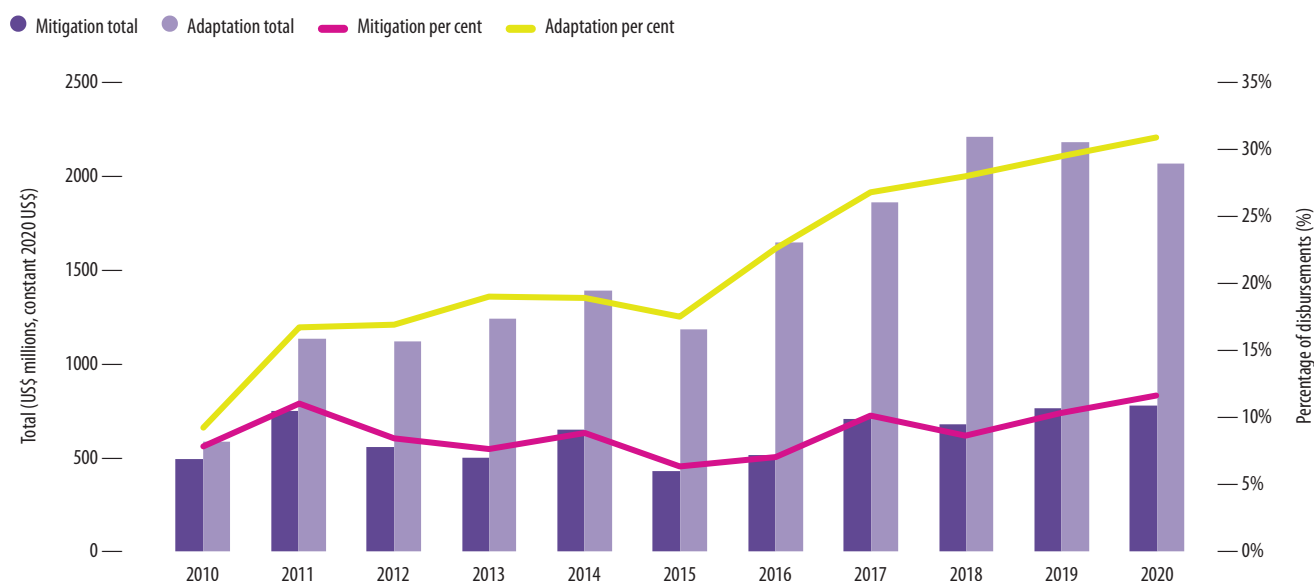
In 2020, OECD-CRS data revealed that 31% of water and sanitation aid⁵ disbursements (US\$ 2072 million) were designated for climate change adaptation as the principal or a significant objective, while 12% (US\$ 779 million) were designated for climate change mitigation as the principal or a significant objective.

The distribution of water and sanitation aid marked as principal or significant for climate change adaptation and for climate change mitigation shows that aid to the WASH sector is more focused on strengthening the resilience of WASH systems to the effects of climate change (climate change adaptation) than on reducing greenhouse gas emissions in the WASH sector (climate change mitigation). Indeed, awareness of the critical importance of improving WASH systems resilience can be seen in the significant increases in aid for WASH climate change adaptation over the last 10 years as a percentage of water and sanitation aid, as well as in absolute amounts.

⁴ “Climate change mitigation” is defined as an activity that contributes to the objective of stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system by promoting efforts to reduce or limit greenhouse gas emissions or to enhance greenhouse gas sequestration. “Climate change adaptation” is defined as an activity that intends to reduce the vulnerability of human or natural systems to the current and expected impacts of climate change, including climate variability, by maintaining or increasing resilience, through increased ability to adapt to, or absorb, climate change stresses, shocks and variability and/or by helping reduce exposure to them.

⁵ The use of the term “aid” in this section is inclusive of official development assistance (ODA) grants, ODA loans and private grants, but does not include non-concessional lending.

The proportion of water and sanitation aid designated for climate change adaptation as the principal or significant objective has tripled as a percentage of disbursements over the past 10 years (Fig. 3.2).



Source: OECD-CRS, 2022.

Fig. 3.2 Amount and percentage of water and sanitation aid disbursements marked as climate change mitigation or adaptation

Activities carried out by ESAs related to climate are varied and include implementation of their own water security programmes, direct funding to country climate resilience WASH plans, and further research on WASH and climate change. Examples from the GLAAS 2021/2022 ESA survey are listed below.

- In 2021, the Water and Sanitation Division of the **Inter-American Development Bank** dedicated 48% of all approved resources to climate finance (US\$ 277 million). The Inter-American Development Bank supports several initiatives focused on climate such as HydroBID, Transboundary Waters, Water Funds, Lazos de Agua and Water Security, with the objective to support innovation in water security.
- Through the Global Water Leadership Programme, **the United Kingdom of Great Britain and Northern Ireland's Foreign, Commonwealth & Development Office** is supporting UNICEF to strengthen the climate resilience of WASH services, develop capacity and leverage climate finance in eight countries in Africa and Asia facing extreme levels of water vulnerability.
- Ensuring safe and sustainable drinking-water supply for communities is a key concern for the **United Nations Development Programme's** support to climate change adaptation. Countries integrate climate-resilient access to drinking-water in the formulation of their national adaptation plans or other climate resilience plans. Proposed measures can focus on sustainable access to groundwater, desalination, rainwater harvesting, wastewater recycling and ecosystem-based adaptation of surface waters.
- One of the four aims in **WaterAid's** new Global Strategy is to strengthen the resilience of WASH to climate change and raise the profile of WASH as a component of climate resilience for vulnerable communities. WaterAid has been working to influence governments to take actions needed to improve water security. To support this, the organization has developed more comprehensive approaches to improve water security, successfully blending delivery of water supply, water resources management and disaster risk reduction. WaterAid plans to strengthen the resilience of WASH services for communities to cope with existing and future climate threats.

Reference

1. Handbook on the OECD-DAC climate markers. Paris: Organisation for Economic Co-operation and Development; 2011 (<https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/48785310.pdf>, accessed 21 October 2022).

SECTION 4

National targets for drinking-water and sanitation

Under SDG 6, all UN Members States agreed to global targets of universal safely managed drinking-water, sanitation and basic hygiene for all. While these are ambitions that all countries and territories share, not all countries are likely to reach these service levels by 2030. The SDG declaration states that “Targets are defined as aspirational and global, with each government setting its own national targets guided by the global level of ambition but taking into account national circumstances” (1). By setting WASH targets, governments establish and plan for the progress that their country aspires to make within a designated period of time.

This section assesses whether countries are on track to meet their national drinking-water and sanitation targets, reviews the progress needed to reach the targets and explores differences between countries that are on track to meet targets and those that are in need of acceleration.

Are countries on track to meet their national targets?

In the GLAAS 2021/2022 country survey, as in previous GLAAS cycles, countries reported national drinking-water and sanitation targets expressed in terms of coverage and level of service, with varying levels of ambition for each. Understanding the progress required for countries to reach their targets is important for planning and accountability.

The following terms are useful in understanding if countries are on track to meet their targets.

- *Annual rate of change*: A measure of the progress that countries need to achieve each year to reach their national targets. For example, in the GLAAS 2021/2022 country survey, Nepal reported having a national sanitation target aiming for 99% basic coverage by 2030 and the latest basic coverage rate was reported as 95% coverage in 2019. Therefore, the annual rate of change needed to achieve the target is 0.36 percentage points per year.
- *Historic annual rate of change*: A measure of the past progress of countries towards their targets.

Based on the national targets and the latest coverage data reported in the GLAAS 2021/2022 country survey, an annual rate of change needed for a country to achieve its target was computed for drinking-water and sanitation targets.

To understand if the annual rates of change are feasible, they can be compared with historic rates of change. Progress is not strictly linear, and rates of change will slow as the level of coverage approaches 100%. However, over a limited time interval, the historic annual rate of change can provide an approximation of expected future progress.

For most countries, the historic annual rate of change used in this analysis was the annual rate of change estimated by the JMP⁶ for the service level or technology (e.g. sewerage sanitation) that most closely matched the country's national target (2). For a handful of countries that did not have a JMP annual rate of change in line with their national target, the country-reported historic annual rate of change⁷ was used.

Based on available data,⁸ 73 countries for drinking-water and 64 countries for sanitation were categorized using the following criteria (3).

- **On track:** The rate of change needed to reach the target was less than the country's historic annual rate of change, or the target was already achieved, or the latest coverage level reported by the country was greater than or equal to 95%.⁹
- **Almost on track:** The rate of change needed to reach the target was greater than the country's historic annual rate of change, but less than two times¹⁰ the country's historic annual rate of change.
- **Acceleration needed:** The rate of change needed to reach the target was greater than two times the country's historic annual rate of change.

The categories of "on track", "almost on track" and "acceleration needed" allow for analysis of progress that is needed to achieve targets, as well as for examination of differences between "on track" and "acceleration needed" countries.

It is important to note that the categorization in this analysis shows only whether past progress matches well with reported targets. A country may be high performing and making rapid progress, yet still be categorized as "acceleration needed" if its national target is highly ambitious (e.g. it can be difficult for political reasons to set an access target below 100%). Conversely, a country that sets an under-ambitious target is more easily categorized as "on track". Hence, it remains crucial to understand the context for each country to be able to correctly assess the country's performance and identify areas in need of strengthening. Setting suitably ambitious and achievable targets is key, as it allows for rational and realistic sector planning to achieve targets and also strengthens country leadership and ownership.

The results of the assessment reveal that more countries are on track to achieve drinking-water targets than sanitation targets.

Figs. 4.1 and 4.2 show the countries in each category for drinking-water and sanitation targets, respectively.

While 45% of countries are on track to achieve their national drinking-water coverage targets, only 25% of countries are on track to achieve their national sanitation coverage targets.

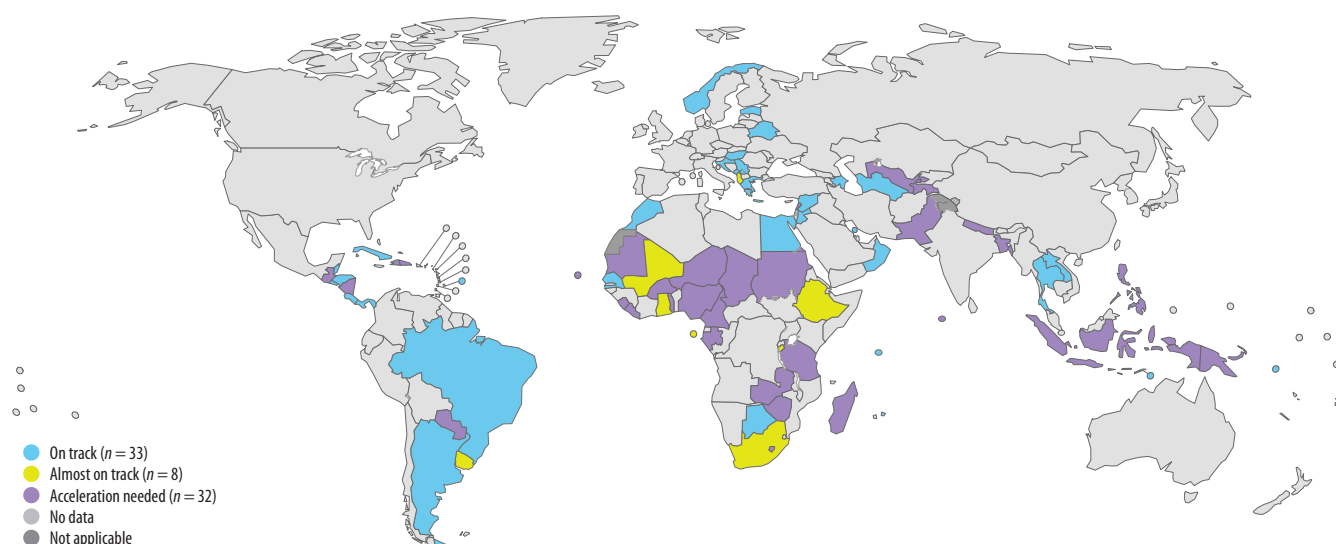
⁶ The JMP annual rate of change is computed as the difference between the estimated coverages in 2020 and 2000 divided by the length of the time period (20 years). While JMP estimated annual rates of change have the advantages of being robust, stable, and available for a number of service levels and technologies in a comparable format for a large number of countries, they also have disadvantages such as not adequately reflecting sudden and rapid changes in coverage levels in a country.

⁷ The country-reported historic annual rate of change was computed based on the baseline coverage level and year and the latest coverage level and year reported in the GLAAS 2021/2022 country survey, if the baseline year and latest coverage year were at least 3 years apart.

⁸ A country was excluded from the analysis if it: (a) had a national target that was not based on population coverage, (b) had missing or incomplete data on the target, (c) had reported a target year that had passed (e.g. 2018), (d) had missing or incomplete data on the most recent monitoring data (latest coverage value or year) or (e) was missing a JMP annual rate of change and a self-reported annual rate of change could not be calculated.

⁹ At 95% coverage or higher, countries are close to universal coverage, and annual rates of change are often very small and unstable, making the application of the criteria also unstable. These countries were categorized as "on track" as they are already very close to universal coverage.

¹⁰ Countries are not limited to the rate of progress they have achieved in the past, as policies and actions may come into force to accelerate progress. However, it is rare for a country to be able to achieve acceleration beyond a certain point. For the purposes of this analysis, rates of change up to double the historic rate of change were considered to be achievable. Also, for those countries for which the JMP estimated annual rates of change were used, allowing up to double the annual rate of change to be "almost on track" would mitigate the effect of sudden and rapid increases in the country's actual rate of progress that would not be captured in the JMP annual rate of change.



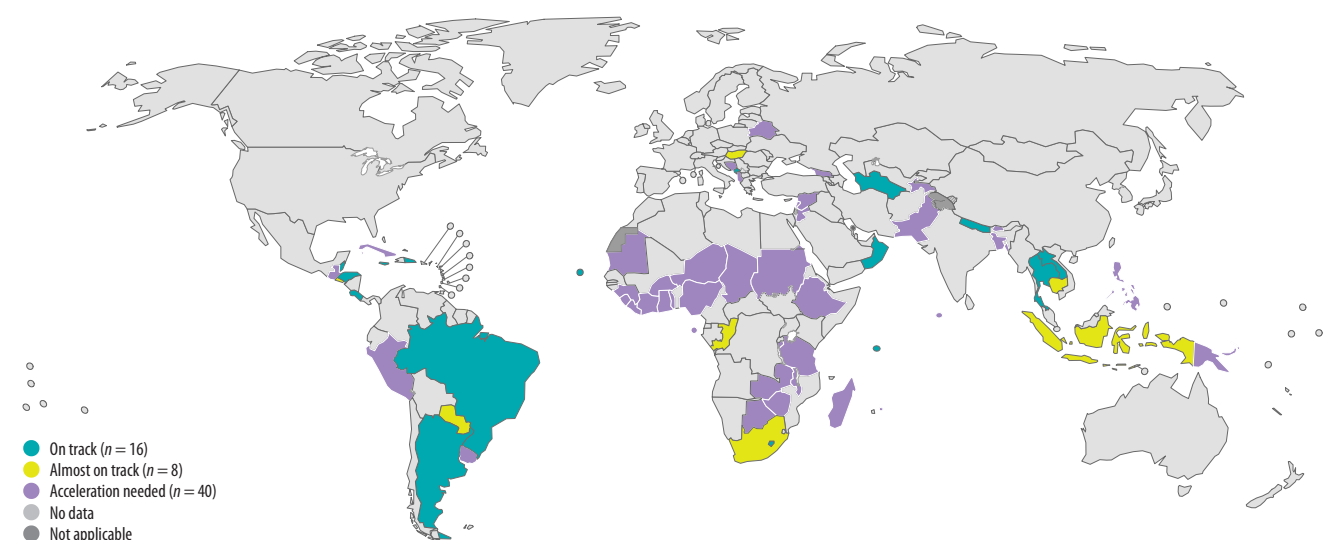
Map production: Water, Sanitation, Hygiene and Health, WHO.

Drinking-water targets ($n = 73$)

On track ($n = 33$)	Argentina, Azerbaijan, Bahrain, Barbados, Belarus, Belize, Botswana, Brazil, Costa Rica, Croatia, Cuba, Egypt, El Salvador, Estonia, Greece, Honduras, Hungary, Jordan, Lao People's Democratic Republic, Mauritius, Montenegro, Morocco, Norway, Oman, Panama, Senegal, Serbia, Seychelles, Solomon Islands, Syrian Arab Republic, Thailand, Timor-Leste, Turkmenistan
Almost on track ($n = 8$)	Albania, Burundi, Ethiopia, Ghana, Mali, Sao Tome and Principe, South Africa, Uruguay
Acceleration needed ($n = 32$)	Bangladesh, Burkina Faso, Cabo Verde, Cameroon, Chad, Dominican Republic, Gabon, Guatemala, Haiti, Indonesia, Lebanon, Lesotho, Liberia, Madagascar, Maldives, Mauritania, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Papua New Guinea, Paraguay, Philippines, Sierra Leone, Sudan, Tajikistan, Togo, United Republic of Tanzania, Uzbekistan, Zambia, Zimbabwe

Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

Fig. 4.1 Status of progress needed to reach national drinking-water coverage targets



Map production: Water, Sanitation, Hygiene and Health, WHO.

Sanitation targets (n = 64)

On track (n = 16)	Argentina, Belize, Brazil, Cabo Verde, Costa Rica, Dominican Republic, Honduras, Jamaica, Lao People's Democratic Republic, Lesotho, Montenegro, Nepal, Oman, Seychelles, Thailand, Turkmenistan
Almost on track (n = 8)	Bahrain, Cambodia, Congo, El Salvador, Hungary, Indonesia, Paraguay, South Africa
Acceleration needed (n = 40)	Albania, Bangladesh, Belarus, Bhutan, Bosnia and Herzegovina, Botswana, Burkina Faso, Burundi, Chad, Côte d'Ivoire, Cuba, Ethiopia, Georgia, Ghana, Guatemala, Guinea, Jordan, Lebanon, Liberia, Madagascar, Malawi, Maldives, Mauritania, Mauritius, Niger, Nigeria, Pakistan, Papua New Guinea, Peru, Philippines, Sao Tome and Principe, Sierra Leone, Sudan, Syrian Arab Republic, Tajikistan, Togo, United Republic of Tanzania, Uruguay, Zambia, Zimbabwe

Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

Fig. 4.2 Status of progress needed to reach national sanitation coverage targets

What progress is needed to reach drinking-water and sanitation targets?

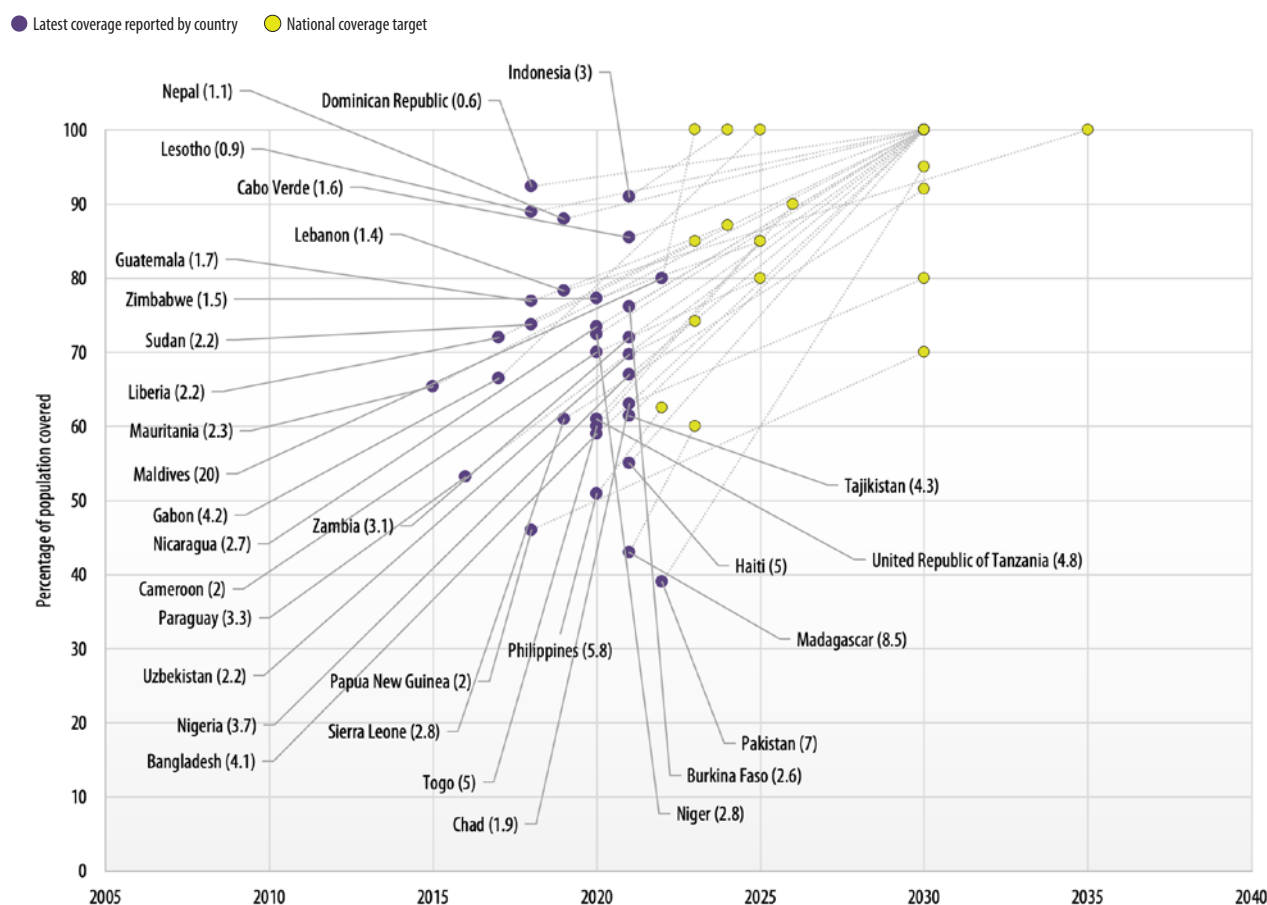
Fig. 4.3 shows the annual rates of change required to reach national drinking-water targets by the “on track”, “almost on track” and “acceleration needed” categorization of countries.

Unprecedented efforts are required to accelerate progress to reach national targets for “acceleration needed” countries.

Acceleration needed

Average annual rate of change needed = 3.6 percentage points (pp) per year

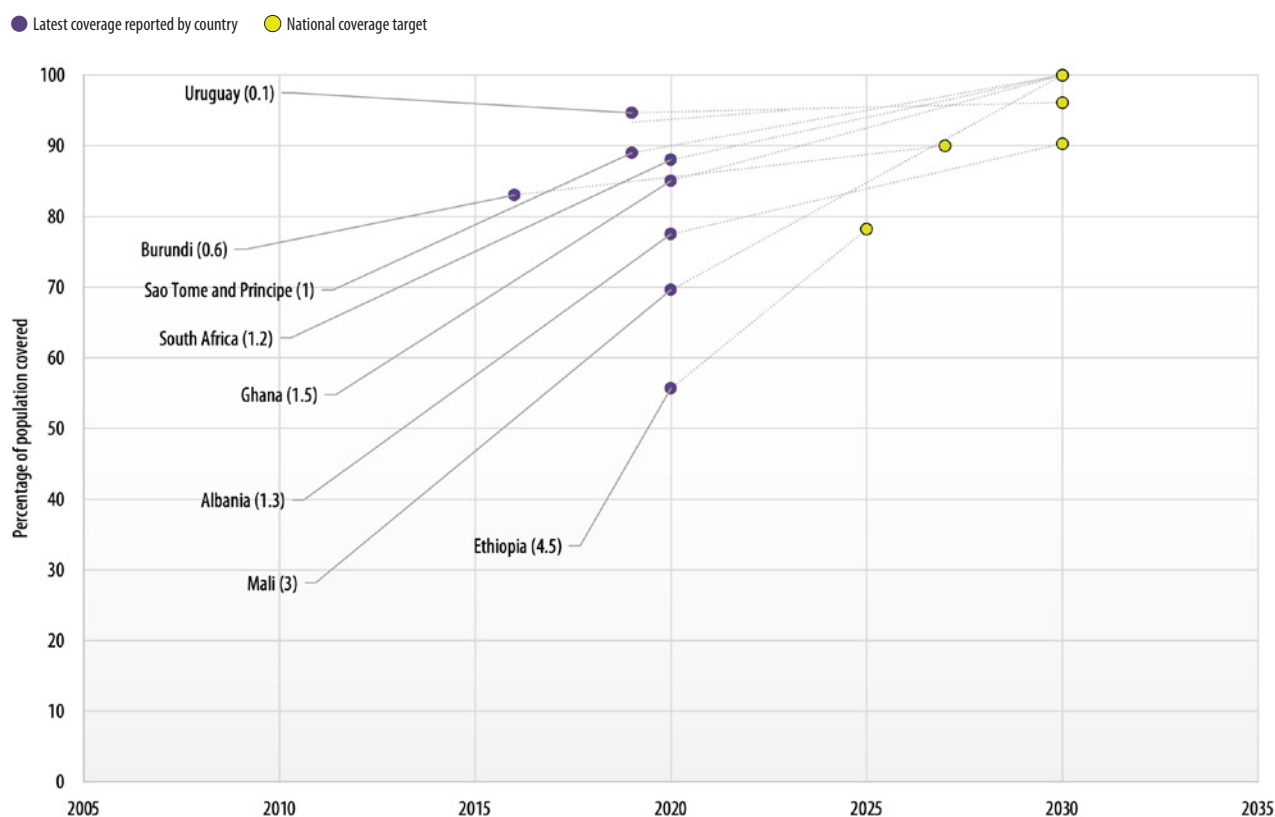
Average historic annual rate of change = 0.9 pp per year



Almost on track

Average annual rate of change needed = 1.5 pp per year

Average historic annual rate of change = 1.0 pp per year

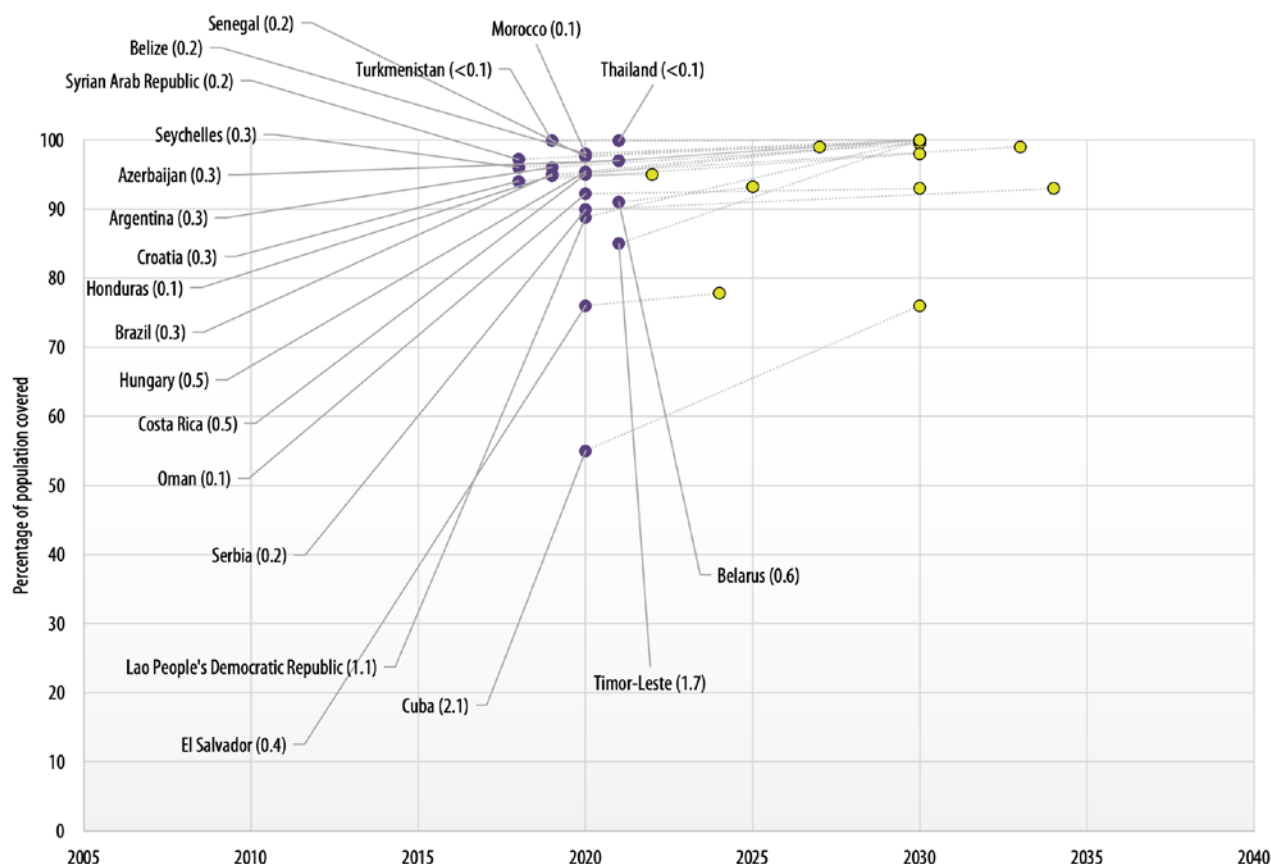


On track

Average annual rate of change needed = 0.5 pp per year

Average historic annual rate of change = 0.8 pp per year

● Latest coverage reported by country ● National coverage target



Notes: The numbers in parentheses after country names indicate the annual rate of change needed to reach the target in percentage points per year. Targets aiming for different levels of service or technologies have been included in the same chart. The latest coverage values and years are those reported by countries in the GLAAS 2021/2022 country survey. Countries that have already achieved their targets are excluded from the figures. The extended methodology and results available at the GLAAS data portal provide similar figures for sanitation (3).

Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

Fig. 4.3 Annual rates of change required to achieve national drinking-water targets for: “acceleration needed” countries ($n = 32$); “almost on track” countries ($n = 8$); and “on track” countries ($n = 21$)

As shown in Table 4.1, in “acceleration needed” countries, the annual rate of change required to reach the national target for drinking-water is four times the historic annual rate of change. For sanitation targets, the gap between the required and historic annual rates of change is even larger: progress would need to be accelerated to eight times the historic rate of progress for countries to reach their targets. As a point of comparison, the annual rate of change required to reach targets is at least 1.5 times higher than the maximum JMP annual rate of change across all countries, for drinking-water and for sanitation.

Table 4.1 Average annual rates of change required to reach drinking-water and sanitation targets and average historic annual rates of change for “on track” and “acceleration needed” countries in percentage points (pp) per year

	On track		Acceleration needed		Maximum JMP annual rate of change ^a (for basic services in pp per year)
	Required annual rate of change (pp per year)	Historic annual rate of change (pp per year)	Required annual rate of change (pp per year)	Historic annual rate of change (pp per year)	
Drinking-water	0.5	0.8	3.6	0.9	2.4
Sanitation	0.6	1.5	5.7	0.7	3.1

^a The maximum JMP annual rates of change (computed for the time period 2000–2020) over all countries for basic level services is shown. For drinking-water, Afghanistan has the maximum annual rate of change of 2.4 pp per year for basic services, while for sanitation, it is Nepal at 3.1 pp per year.

Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

On average, more progress is needed to reach national sanitation targets compared with national drinking-water targets. Of the 51 countries that provided national targets for drinking-water and for sanitation, 67% would need to make faster progress on sanitation than on drinking-water to reach their targets.

What distinguishes countries that are on track from those in need of acceleration?

The strength of the national WASH system will influence the progress a country is able to make towards its WASH goals. Because of many confounding factors, it is difficult to identify directly what elements of a WASH system need to be strengthened for countries to make faster progress towards their targets.

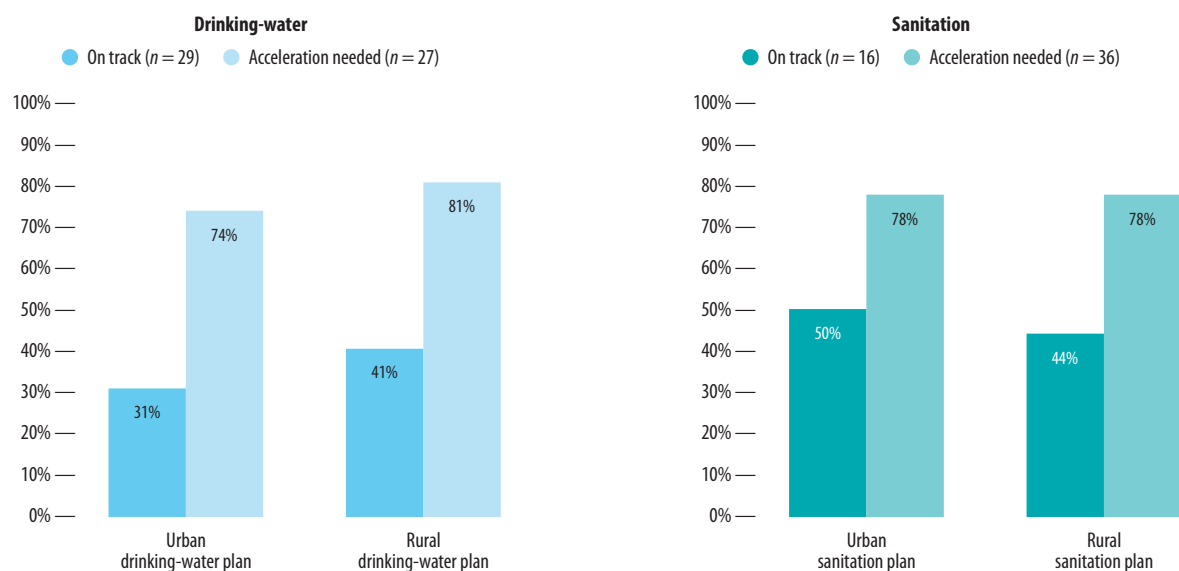
To investigate this, GLAAS conducted an exploratory analysis comparing the status of WASH systems for countries that are on track and those in need of acceleration. By comparing over 50 GLAAS indicators for drinking-water and sanitation, differences in WASH system indicators for “on track” and “acceleration needed” countries¹¹ were identified. Many WASH system indicators such as the existence of WASH policies differed little between the two groups. Other indicators showed differences for drinking-water but not for sanitation, or for sanitation but not for drinking-water. However, several WASH system indicators differed considerably between “on track” and “acceleration needed” countries for drinking-water and for sanitation,¹² such as availability of resources and implementation of regulatory functions.

In interpreting the results, it is not appropriate to draw direct causal links between any of these factors and performance, as there are likely additional underlying factors leading to specific elements being in place in “on track” countries that are absent in “acceleration needed” countries. However, the results do identify which WASH system elements are lacking in countries that are further behind with their targets.

Gaps in resourced national WASH plans

“On track” countries are more likely to have human and financial resources in place to implement their plans (Fig. 4.4).

For urban and rural drinking-water plans, approximately two-to-three times as many countries in the “acceleration needed” group reported that they have less than 50% of human and financial resources to support implementation of their plans compared with “on track” countries. For sanitation, gaps between “on track” and “acceleration needed” countries are smaller than for drinking-water for financial and human resources for urban and rural plans.



Source: GLAAS 2021/2022 country survey.

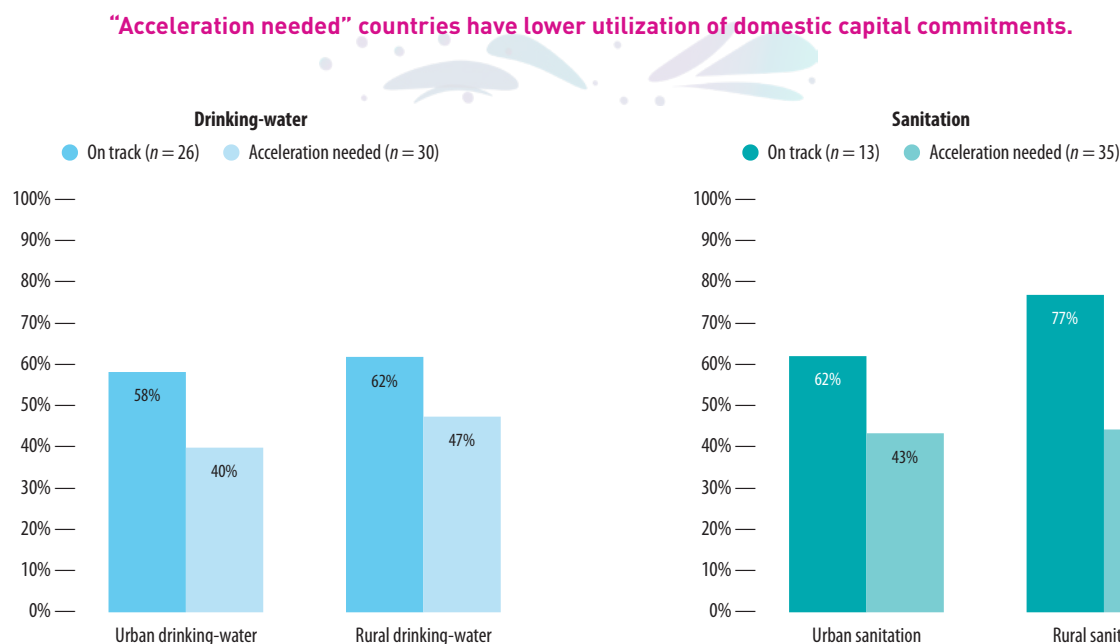
Fig. 4.4 Percentage of “on track” and “acceleration needed” countries that reported having less than 50% of financial resources needed to implement national drinking-water and sanitation plans

¹¹ Countries in the “almost on track” group were not included in the analysis since they were few in number and the aim of the comparison was to identify differences between the “on track” and “acceleration needed” groups.

¹² Not all results for all subsectors can be shown in this report; the extended methodology and results in the data portal provide more extensive and detailed results: <https://glaas.who.int/>.

Gaps in WASH finance

Utilization of capital commitments and cost recovery are two key indicators of the performance of WASH financial management. Less than half of “acceleration needed” countries reported over 75% absorption of domestic commitments for all four subsectors (Fig. 4.5).

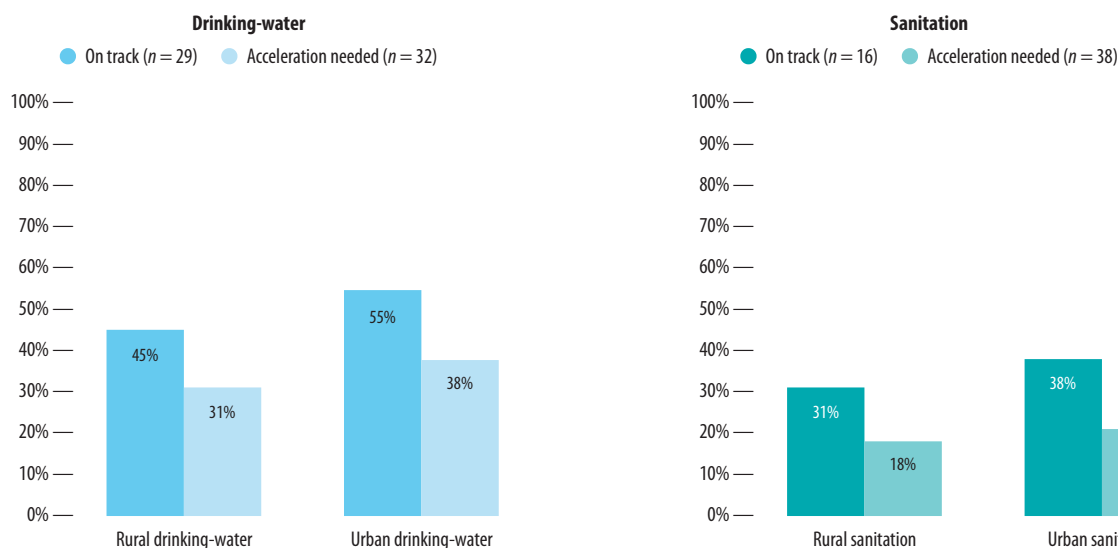


Source: GLAAS 2021/2022 country survey.

Fig. 4.5 Percentage of countries with over 75% utilization of domestic capital commitments for drinking-water and sanitation

Similarly, **cost recovery is higher for countries on track to reach their national targets**, in particular for rural drinking-water. Forty-three per cent of “on track” countries recover 80% or more of O&M costs from tariffs compared with only 19% of “acceleration needed” countries.

Affordability schemes that are widely used are more common in “on track” countries. For example, only 38% of “acceleration needed” countries reported widely used affordability schemes for urban drinking-water, while 55% of “on track” countries reported widely used schemes (Fig. 4.6).



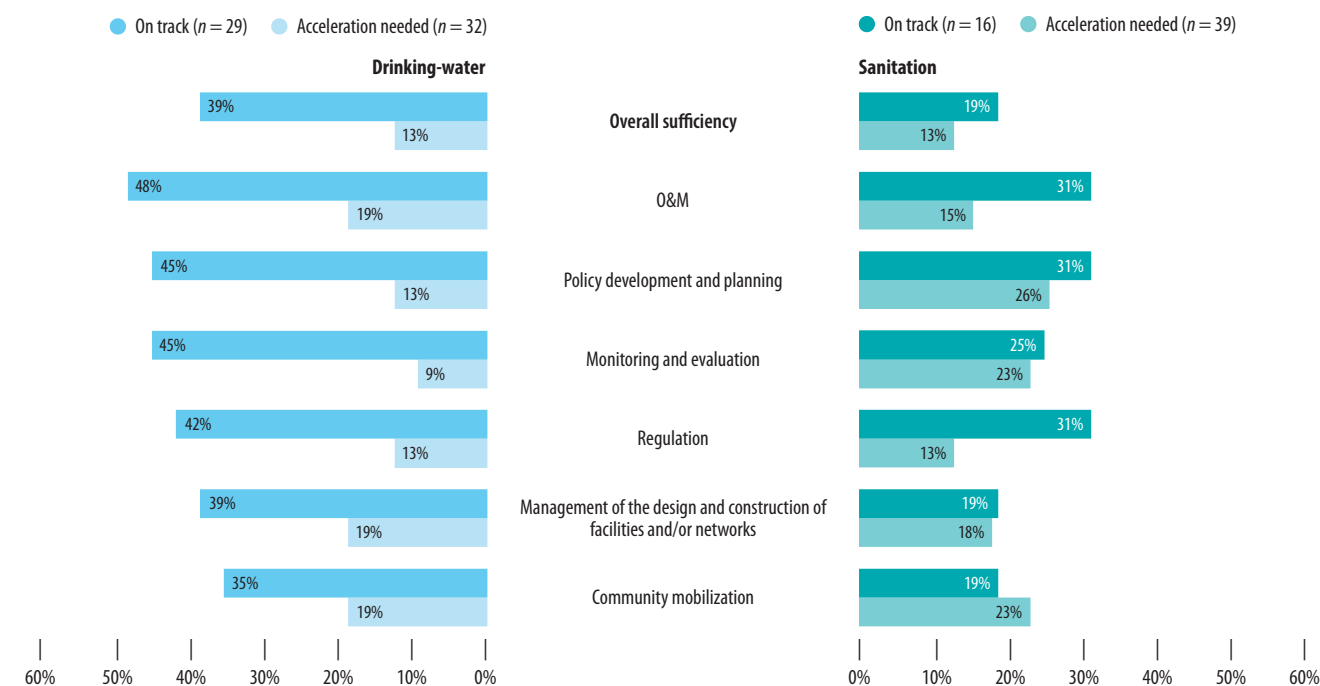
Source: GLAAS 2021/2022 country survey.

Fig. 4.6 Percentage of countries with affordability schemes that are widely used for drinking-water and sanitation

Gaps in human resources for WASH

In terms of overall sufficiency of human resources, “on track” countries are three times more likely to have over 75% of human resources needed in place for drinking-water. Large differences are seen between “on track” and “acceleration needed” countries for drinking-water functions. For sanitation, the differences tend to be smaller and reflect a lack of human resources for all functions, even in “on track” countries. However, substantial differences are seen for sanitation regulation, and policy development and planning.

“Acceleration needed” countries are more likely to have critical human resources gaps for key WASH functions (Fig. 4.7).

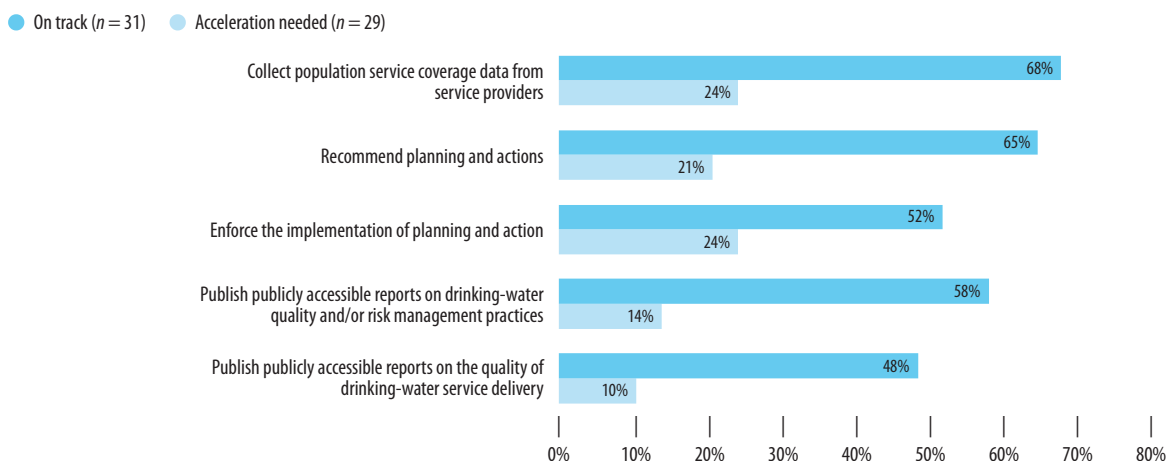


Source: GLAAS 2021/2022 country survey.

Fig. 4.7 Percentage of countries that reported having 75% or more of the human resources needed for drinking-water and sanitation

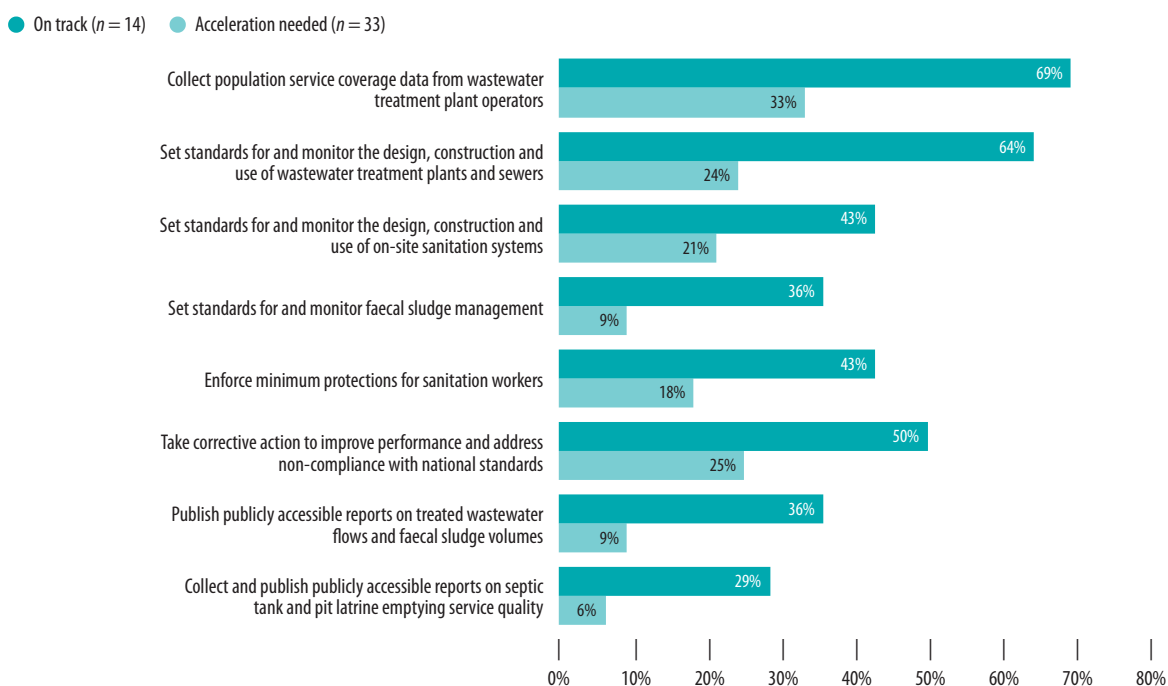
Gaps in regulatory functions, risk management and independent surveillance

“On track” countries are more likely to have regulatory authorities that perform key functions for urban and rural drinking-water and sanitation (Figs. 4.8 and 4.9). These functions include collecting data, publishing reports, and taking corrective actions to improve performance and address non-compliance with national standards. “Acceleration needed” countries are much more likely to report that they did not implement these functions.



Source: GLAAS 2021/2022 country survey.

Fig. 4.8 Percentage of countries fully implementing regulatory functions for rural drinking-water

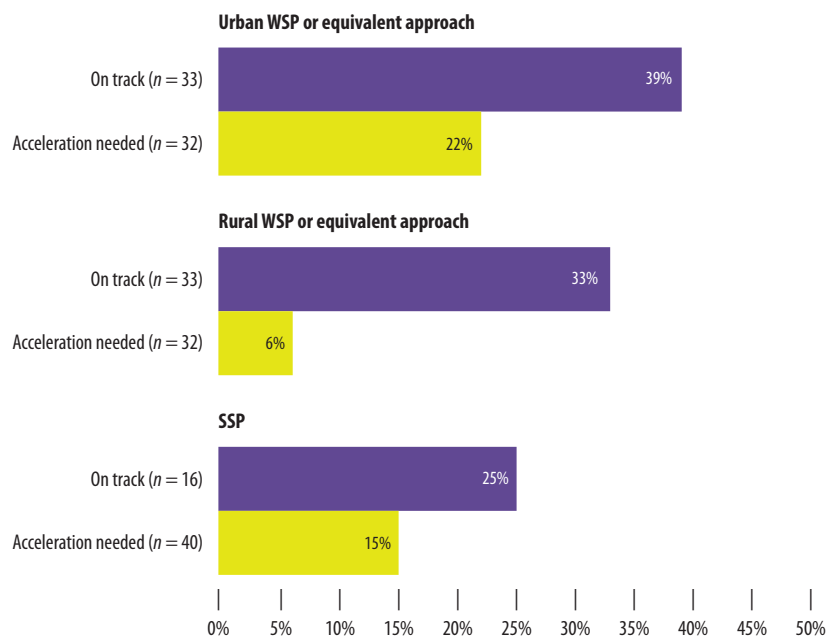


Source: GLAAS 2021/2022 country survey.

Fig. 4.9 Percentage of countries fully implementing regulatory functions for urban sanitation

Gaps in implementation of risk management approaches

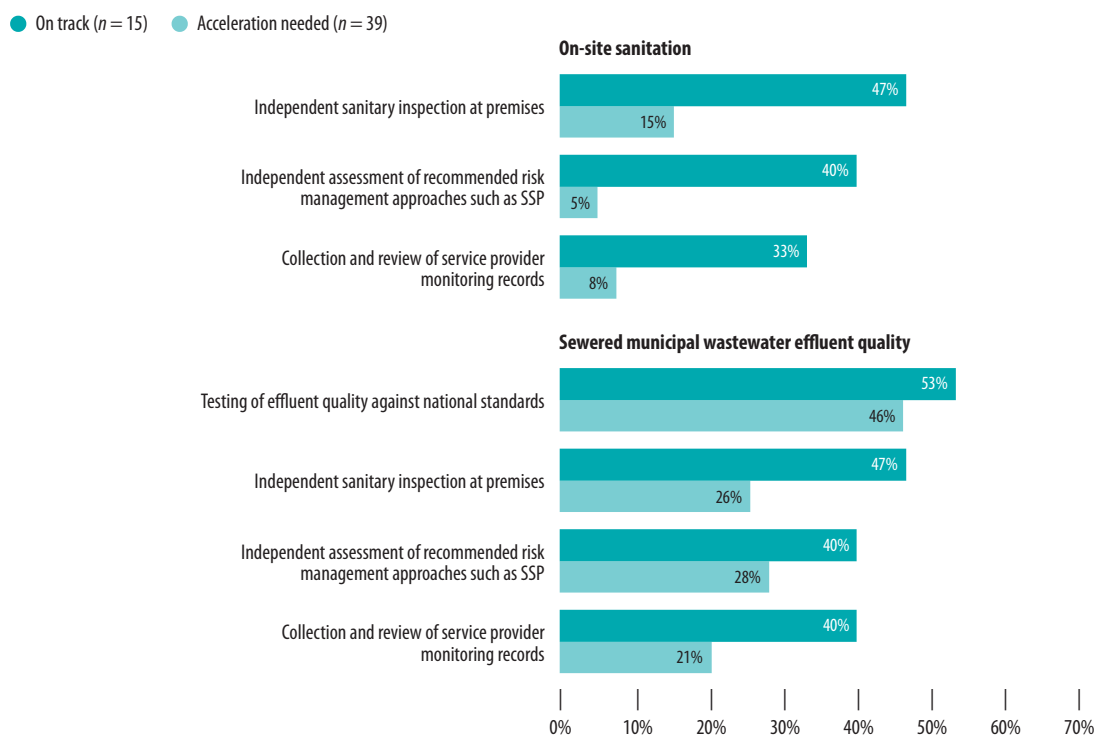
“On track” countries are more likely to implement water safety planning (WSP) and sanitation safety planning (SSP) compared with “acceleration needed” countries (Fig. 4.10). The largest gap between the “on track” and “acceleration needed” countries is for WSP in rural areas.



Source: GLAAS 2021/2022 country survey.

Fig. 4.10 Percentage of countries that implement WSP and SSP at a significant scale

Countries that are on track to meet their national targets are more likely to perform independent surveillance to inform planning and action. Differences in independent surveillance functions between “on track” and “acceleration needed” countries are seen across subsectors – for on-site sanitation, faecal sludge management and sewerage sanitation, as well as for urban and rural drinking-water. As shown in Fig. 4.11, the largest discrepancies are seen in aspects of independent surveillance for on-site sanitation.



Source: GLAAS 2021/2022 country survey.

Fig. 4.11 Percentage of countries performing independent surveillance for on-site and sewerage sanitation that informs planning and action

While it is not possible to draw any conclusions on causality nor whether a strength in the identified WASH system drives progress, this exploratory analysis has identified several gaps between countries that are on track to achieve their national targets and those that need to accelerate progress to attain their targets. It is not surprising that several of the gaps identified are linked to availability of human and financial resources, as these have been identified as common barriers to progress in the WASH sector. In addition, many of the differences between the two groups are in the implementation of various functions within the sector, such as independent surveillance and regulatory activities. The gaps that have been identified are likely to reflect broader gaps in WASH institutional mandates, capacity, planning and resources in “acceleration needed” countries. As such, attempts to bridge these gaps would need to also address strengthening the broader WASH system if countries are to be able to accelerate progress towards their national targets. It remains essential for countries to set ambitious but achievable targets based on their context, and a rational assessment of what actions can be taken to progress towards targets within the limitations of available human and financial resources.

References

1. Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1). New York: United Nations, United Nations General Assembly; 2015 (<https://sdgs.un.org/2030agenda>, accessed 21 October 2022).
2. Progress on household drinking water, sanitation and hygiene 2000-2020: five years into the SDGs. Geneva: World Health Organization and the United Nations Children's Fund; 2021 (<https://www.who.int/publications/i/item/9789240030848>, accessed 6 December 2022).
3. National drinking-water and sanitation targets: extended methodology and results from the GLAAS 2021/2022 cycle. UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water [database]. Geneva: World Health Organization; 2022 (<https://glaas.who.int>, accessed 21 October 2022).

SECTION 5

WASH finance



Recent trends in GLAAS data indicate that annual funding for WASH has increased. However, severe gaps remain for countries to fund WASH strategies and implementation plans and to reach national targets. It is also notable that country governments are increasingly able to report quantitative estimates of WASH investment needs, sources of funding and WASH expenditures.

This section explores cost estimates for plans and strategies, adequacy of financial resources for WASH, government budget data, cost recovery and WASH expenditures.

WASH finance data can be complex to understand, with different terminology and different ways of reporting. The following terms are key for understanding the finance data presented in this section.

- *Estimated costs for WASH plans and strategies:* In the GLAAS 2021/2022 country survey, governments were asked to provide cost estimates for WASH plans and strategies. These cost estimates are what the government predicts it will cost to implement its WASH plan or strategy. However, cost estimates do not mean that that amount of funding has been secured for the strategy or plan.
- *Government WASH budgets:* Government WASH budgets are funds that have been allocated to be spent on WASH. The allocations could align with WASH plans and strategies, but there could also be differences. If funding for WASH is budgeted, this does not mean that the government has spent the funding.
- *WASH expenditure:* WASH expenditure is the money that is actually spent on WASH. Expenditure funding/financing sources include the government, external sources, households and repayable finance.

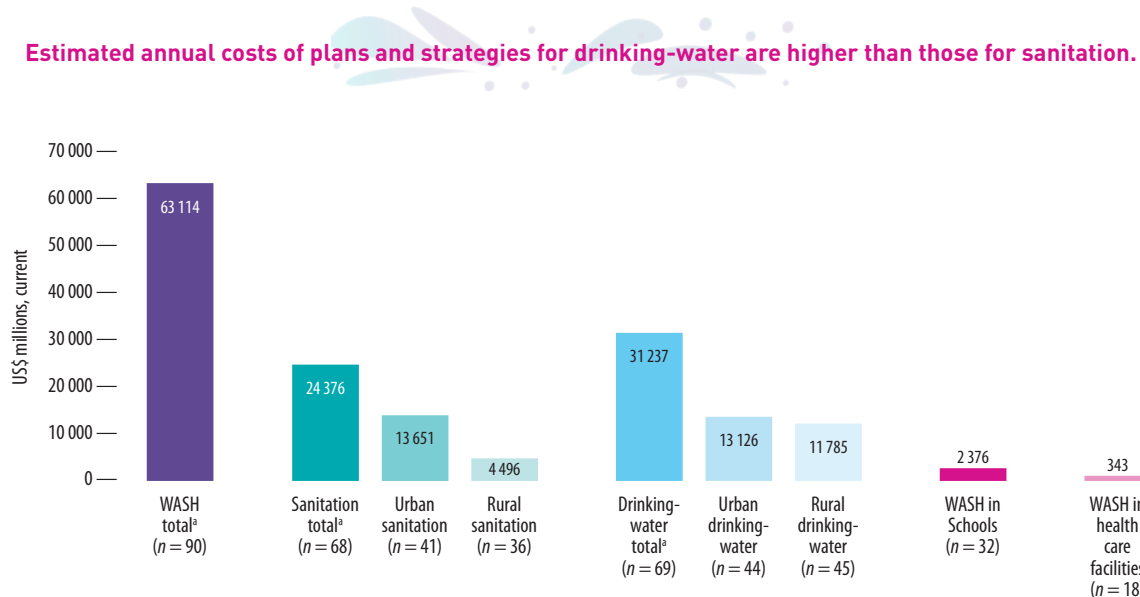
The GLAAS 2021/2022 country survey asked about estimated costs for WASH plans and strategies, government WASH budgets and WASH expenditures. Different countries were able to provide different levels of detail and data. Therefore, throughout this finance section, there are different sample sizes of countries to ensure comparability.

Estimated costs for WASH plans and strategies

In the GLAAS 2021/2022 country survey, governments were asked to report on implementation plans and strategies, including estimated investment costs, for urban and rural drinking-water, urban and rural sanitation, as well as WASH in health care facilities and WASH in schools. Survey responses indicate that governments have increasingly improved reporting of estimated WASH investment needs of strategies and plans. In the GLAAS 2021/2022 country survey, nearly three quarters of responding countries provided cost estimates for WASH strategies and plans. By comparison, two thirds of responding countries in the GLAAS 2018/2019 cycle reported estimated costs for WASH strategies and plans.

The scope and timeframe of estimated costs of strategies and plans are diverse. They range from estimated costs that cover the entire WASH sector, such as Ecuador's National Strategy for Drinking-Water and Sanitation, which estimates an investment need of US\$ 730 million per year over 10 years, to specific sector strategies such as Malawi's National Sanitation and Hygiene Strategy, which estimates sanitation/hygiene investment costs of US\$ 124 million per year over 7 years. Additionally, some countries provided cost estimates for ongoing long-term WASH strategies/plans while other countries provided cost estimates for new or more recently revised WASH strategies going forward.

Ninety responding countries, representing a population of 4.3 billion people, provided plan/strategy cost estimates for one or more WASH subsectors, or for WASH overall. Timeframes for these plans and strategies ranged from 1 to 30 years, and were annualized and converted to US dollars for comparison purposes. The data in Fig. 5.1 are estimates from governments and do not represent funding that has been secured. Additionally, while different governments estimate costs in different ways, the data provide insights into how governments are planning for WASH.



^a WASH total includes the estimated costs of sanitation and drinking-water plans, as well as plans that could not be disaggregated between sanitation and drinking-water. Sanitation and drinking-water totals include the estimated costs of urban and rural plans, as well as plans that could not be disaggregated between urban and rural areas.

Source: GLAAS 2021/2022 country survey.

Fig. 5.1 Estimated annual WASH plan/strategy costs (US\$ millions, current)

Sixty-two per cent of costed WASH plan/strategy financial needs are for urban areas.

In terms of service areas, 62% of estimated WASH strategy costs reported by countries are for urban WASH investments versus 38% for rural WASH investments. In terms of services, 56% of estimated WASH strategy costs reported by countries are for drinking-water investments, while 44% are for sanitation investments.

Sufficiency of financial resources for WASH

Countries were requested to provide information on the sufficiency of funding to implement WASH plans, as well as funding sufficiency from all sources to reach national targets (which may extend beyond current WASH planning cycles). As shown in Table 5.1, fewer than 25% of countries reported that they have sufficient funding¹³ to implement their plans, while fewer than 30% of countries estimated that they have sufficient funding from all sources to reach national targets.

More than 75% of countries reported insufficient WASH sector funding.

¹³ "Sufficient funding" is defined as having more than 75% of what is needed to implement WASH plans/strategies or reach national targets.

Table 5.1 Sufficiency of WASH funding to implement WASH plans and reach national targets

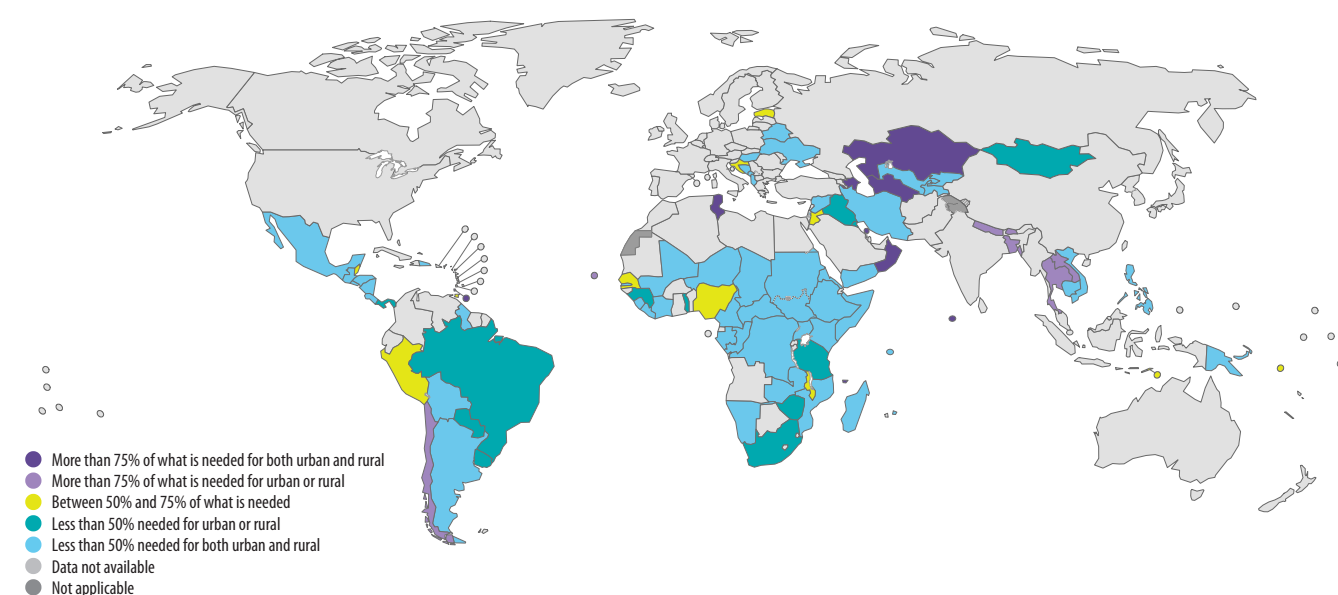
WASH area	Percentage of countries with costed plans that reported sufficient funding to implement plans ^a	Percentage of countries that reported sufficient funding from all sources to reach national targets ^a
Urban sanitation (<i>n</i> = 100, 91)	22%	14%
Rural sanitation (<i>n</i> = 96, 90)	15%	14%
Urban drinking-water (<i>n</i> = 97, 92)	23%	29%
Rural drinking-water (<i>n</i> = 95, 89)	23%	25%
Hand hygiene (<i>n</i> = 83)	— ^b	27%
WASH in health care facilities (<i>n</i> = 63, 84)	32%	25%
WASH in schools (<i>n</i> = 71, 82)	35%	23%

^a "Sufficient funding" is defined as more than 75% of what is needed to implement plans or reach national targets.

^b Sufficiency of costed hygiene plans was not asked in the GLAAS 2021/2022 country survey.

Source: GLAAS 2021/2022 country survey.

A majority of responding countries reported insufficient financial resources to meet sanitation targets (Fig. 5.2).



Map production: Water, Sanitation, Hygiene and Health, WHO.

Source: GLAAS 2021/2022 country survey.

Fig. 5.2 Sufficiency of funding from all sources to reach national sanitation targets (*n* = 89)

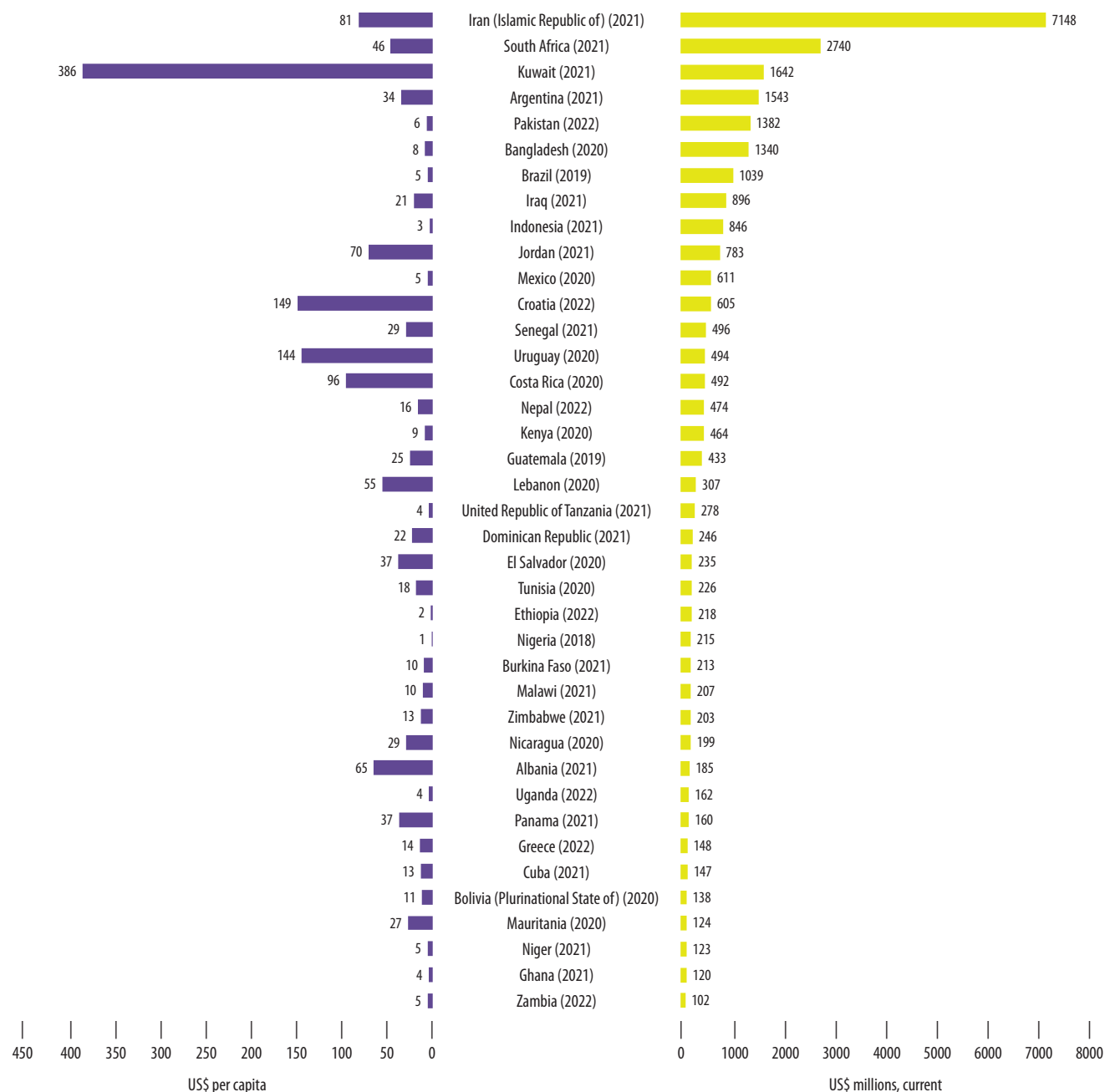
While funding gaps remain large, some countries reported decreases in funding gaps. For example, the five countries (Bangladesh, Burkina Faso, Cuba, Mauritania and Senegal) that reported urban sanitation needs and available funding in both the GLAAS 2018/2019 and GLAAS 2021/2022 country surveys, reported that needs for urban sanitation declined from US\$ 760 million to US\$ 511 million per year, while available funding increased from US\$ 203 million to US\$ 326 million per year. Conversely, for four of the five countries (Bangladesh, Burkina Faso, Mauritania and the United Republic of Tanzania) that reported urban drinking-water needs and available funding in both the GLAAS 2018/2019 and GLAAS 2021/2022 country surveys, an increased funding gap from 33% to 44% was reported.

In the GLAAS 2021/2022 country survey, countries were asked to indicate specific areas affected by funding gaps. Countries with funding gaps most often cited limitations in capital expansion of services to reach unserved populations, deferred O&M that may ultimately lead to higher capital renewal needs in the future, and limited human resources to implement programmes and services.

Budgeting for WASH

Seventy-one countries provided information on their WASH-specific government budgets.¹⁴ Annual budgets ranged from over US\$ 7 billion in the Islamic Republic of Iran, to less than US\$ 1 million in some less populated countries (Fig. 5.3). Overall, the average WASH budget per capita for these 71 countries ranged from less than US\$ 1 to US\$ 386.

More than US\$ 31 billion was budgeted for WASH in 71 countries, with an average annual per capita WASH budget of US\$ 12.¹⁵



Notes: An additional 30 countries reported national WASH budgets of under US\$ 100 million. China (not shown on the chart) reported a US\$ 915 million WASH budget for 2021 for one government institution supporting water resources. Because of lack of data from other government institutions involved in WASH, China was not included in the chart or totals shown above.

Source: GLAAS 2021/2022 country survey.

Fig. 5.3 Reported WASH budgets by most recent fiscal year (annual US\$ per capita and US\$ millions, current)

¹⁴ While financial data have improved with each successive GLAAS cycle, it is important to note:

- Some countries reported budgets for just a few ministries and institutions and not for all agencies/institutions involved in WASH.
- A few countries reported only a collective budget for all WASH.
- WASH budget allocations may be underreported due to the lack of disaggregated budgets for certain ministries.
- WASH budget allocations may vary over time because of data availability differences or different methods used to determine the budgets from one GLAAS cycle to another.
- WASH budget allocations may show some variability among countries depending on whether countries included activities beyond WASH, such as water resources and waste management.

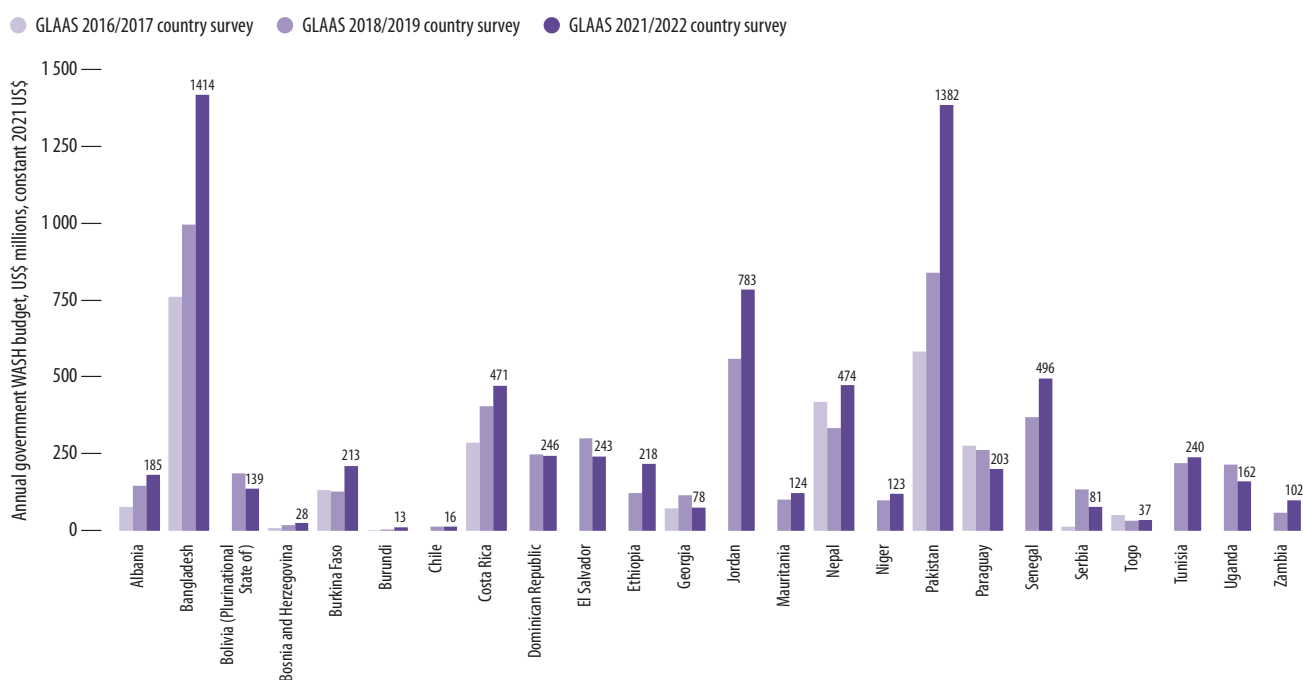
¹⁵ The annual average per capita WASH budget of US\$ 12 is calculated as a weighted average mean of reported country budgets and populations.

Government budgets for WASH may include on-budget donor grants or loans. While donor support may be a small proportion of overall WASH funding, over one third of responding countries reported that at least one government ministry or institution received a significant share (greater than 25%) of its WASH budget from donors.

National WASH budget trends

Trend data on national WASH budgets are limited, with only 25 countries able to provide comparable WASH budget data between the GLAAS 2021/2022 cycle and the previous GLAAS cycle in 2018/2019 (Fig. 5.4). The average annual rate of budget increase for these 25 countries is 5% after adjusting for inflation with local price indexes and applying constant currency exchange rates. Seventeen countries reported budget increases, while eight countries reported budget decreases.

Government WASH budgets have increased at an average rate of 5% per year.¹⁶



Note: South Africa is included in calculations of budget trends; it is, however, not shown in the figure because of the scale of its budget compared with other countries shown. While South Africa's WASH budget increased by a little over 1% to 40.5 billion rand from 2019 to 2021, this increase did not keep pace with inflation, thus South Africa shows a WASH budget decrease in constant US dollar terms from US\$ 2.9 billion to US\$ 2.7 billion from 2019 to 2021.

Sources: GLAAS 2016/2017, 2018/2019 and 2021/2022 country surveys.

Fig. 5.4 Reported government WASH budgets (US\$ millions, constant 2021 US\$)

The data on national budgets, though limited, indicate that more governments have increased their WASH budgets than the number of governments that have decreased them. Examples of budget increases reported in the GLAAS 2021/2022 country survey are presented below.

- In **Mauritania**, the Ministry of Water and Sanitation experienced a budget increase from 3536 million Mauritanian ouguiya (US\$ 99 million to 116 million) from 2017 to 2021.
- In **Pakistan**, provincial and federal budgets for WASH rose from 103 billion to 225 billion Pakistani rupees (US\$ 954 million to 1.4 billion) from 2018 to 2022.

Reductions in national WASH budget were reported in eight of the 25 responding countries. An example of a budget decrease is presented below.

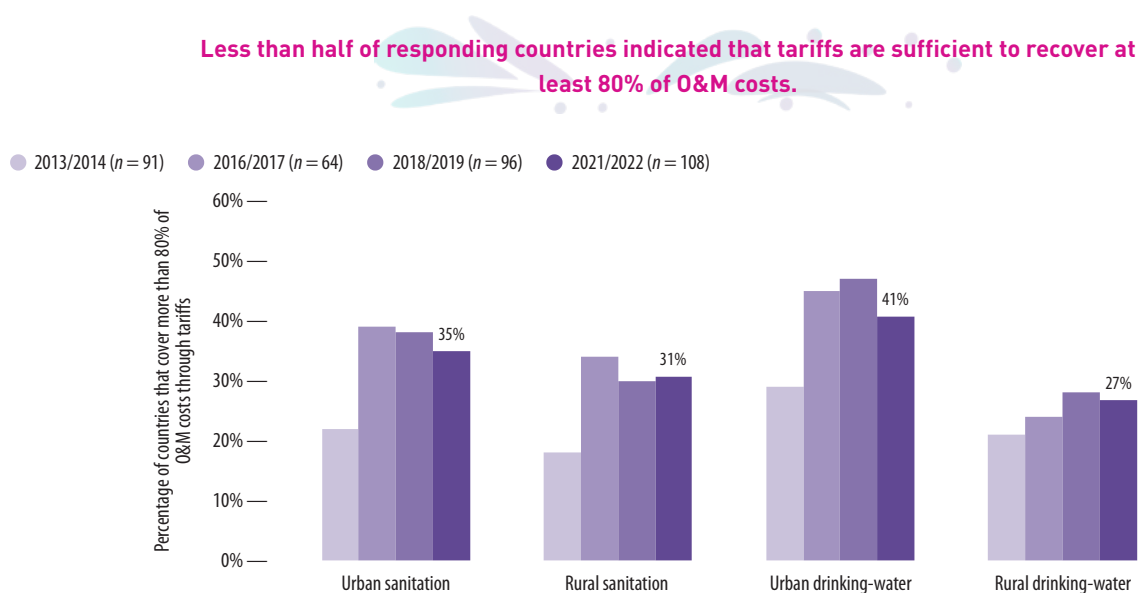
- In **Georgia**, the Ministry of Regional Development and Regional Infrastructure, which has a leading role in drinking-water and sanitation, experienced a budget decrease from 184 million to 137 million Georgian lari (US\$ 57 million to 43 million) from 2017 to 2021.

¹⁶ For 25 common responding countries in the GLAAS 2018/2019 country survey and the GLAAS 2021/2022 country survey.

While WASH budgets may be increasing, governments may be limited in their spending by how well budget allocations can be absorbed by the relevant ministries. Half of countries reported using less than 75% of domestic capital commitments for urban and rural drinking-water supply and sanitation. Lengthy and complex procurement processes were most often cited as obstacles in improving the efficient and timely use of domestic capital commitments for WASH.

Cost recovery

Despite many countries indicating that tariff reviews are performed every 1–2 years, and with most reviews being performed at least once every 5 years, less than half of responding countries indicated that user tariffs are sufficient to recover at least 80% of O&M costs (Fig. 5.5). Countries cited delayed maintenance, delayed response time and delayed household connections as a few of the many impacts of insufficient cost recovery.



Sources: GLAAS 2013/2014, 2016/2017, 2018/2019 and 2021/2022 country surveys.

Fig. 5.5 Percentage of countries indicating more than 80% of O&M costs are covered by tariffs

While GLAAS results indicate that cost recovery is low, several countries reported that cost recovery rates can differ greatly within countries from municipality to municipality, and by subsector. For example, South Africa reported that the larger the town, the more O&M is covered by tariffs, and in areas with lower capacity, poorer municipalities' tariffs do not reflect costs and the WASH service runs at a loss (which is covered by grants, despite this not being their intended use).

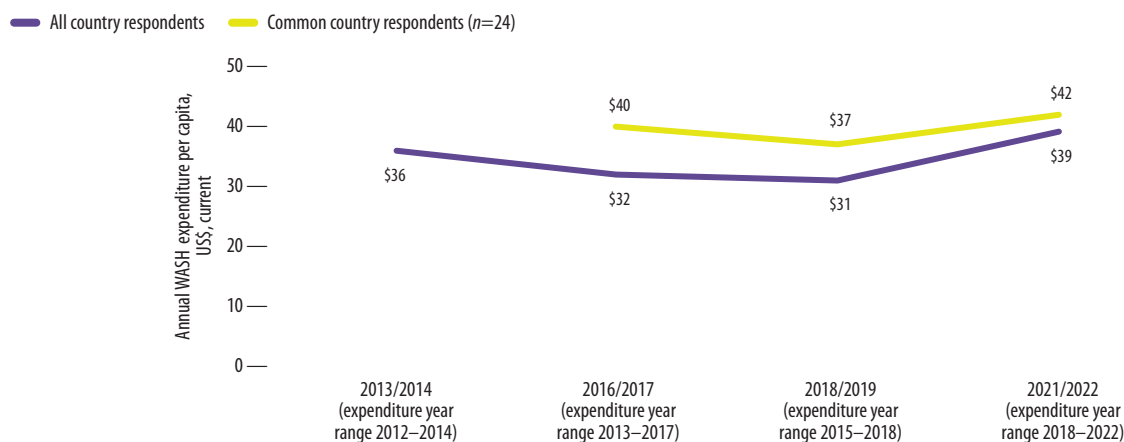
Total expenditure on WASH

In the GLAAS 2021/2022 cycle, 63 out of 121 countries and territories (52%) reported an estimated aggregate WASH expenditure of US\$ 75 billion (for capital and O&M expenses).¹⁷ These 63 countries represent a population of over 1.9 billion, and an average annual WASH expenditure of US\$ 39 per capita inclusive of public expenditure,¹⁸ as well as spending by households in the form of tariffs and out-of-pocket expenses. Fig. 5.6 highlights the trend in WASH expenditure per capita for all countries responding to GLAAS country surveys since the GLAAS 2013/2014 cycle, as well as for the 24 countries that have provided WASH expenditure data in the last three GLAAS cycles. Table 5.2 highlights how countries are increasingly reporting data on WASH expenditures.

Governments have increasingly improved tracking and reporting of estimated WASH expenditures, which have risen to an annual average of US\$ 39 per capita.

¹⁷ While data on total WASH expenditures and their sources were received from 63 countries, there was a wide variation in the details provided because of challenges in obtaining information from all sources of WASH funding.

¹⁸ Public expenditure includes central, state and local government expenditure, as well as external assistance, where reported.



Sources: GLAAS 2013/2014, 2016/2017, 2018/2019 and 2021/2022 country surveys.

Fig. 5.6 Annual WASH expenditure per capita (US\$, current)

Table 5.2 Estimated WASH expenditures^a

Indicator	2013/2014 (expenditure year range 2012–2014)	2016/2017 (expenditure year range 2013–2017)	2018/2019 (expenditure year range 2015–2018)	2021/2022 (expenditure year range 2018–2022)
Number of responding countries	34	48	54	63
Total reported expenditure (US\$ millions, current)	3 977	51 621	59 993	74 607
Population represented (millions)	1 094	1 591	1 911	1 893
Annual WASH expenditure per capita (US\$, current)	36	32	31	39
Annual WASH expenditure (as a percentage of GDP ^b)	0.86%	0.73%	0.76%	1.10%

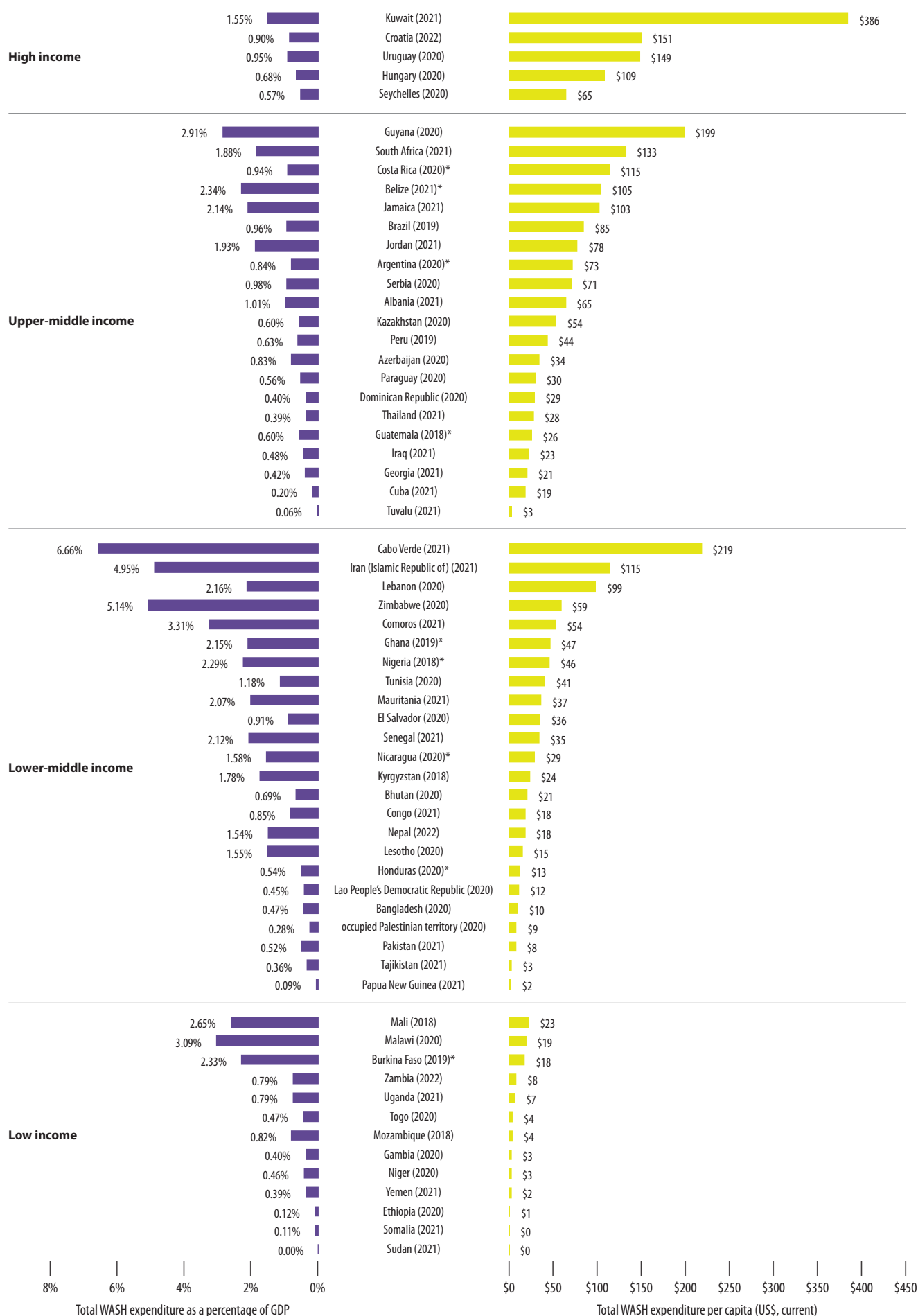
^a Expenditures that are sourced from government, external support and household contributions.

^b Information on GDP was sourced from the World Development Indicators (World Bank), which derive estimates using World Bank and OECD national accounts data.

Sources: GLAAS 2013/2014, 2016/2017, 2018/2019 and 2021/2022 country surveys.

In low- and lower-middle-income countries and territories, less is spent per capita on WASH but a greater proportion of the gross domestic product (GDP) is spent on WASH than in higher-income countries.

Fig. 5.7 provides a breakdown of WASH expenditure as a percentage of GDP and per capita.



Notes: Countries/territories included in this figure reported expenditures from all funding sources. Countries with an asterisk reported WASH accounts data in their country survey response.

Source: GLAAS 2021/2022 country survey.

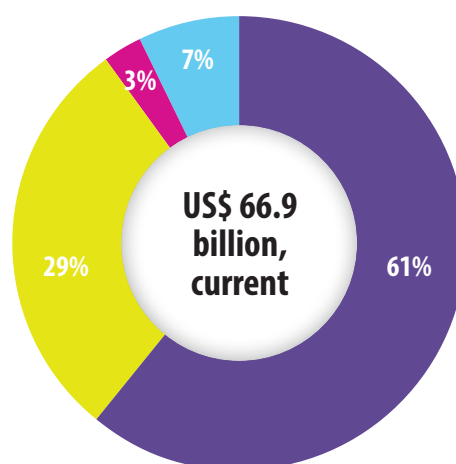
Fig. 5.7 Total WASH expenditure as a percentage of GDP and annual US\$ per capita, current

Sources of funding for WASH

In the GLAAS 2021/2022 country survey, 44 countries, representing 1.5 billion people, categorized their WASH expenditures by all funding sources: households, government, external sources (donors and international/national nongovernmental organizations) and repayable financing. The total annual WASH expenditure in those 44 countries was US\$ 66.9 billion, and the average per capita household expenditure for WASH was US\$ 27 per year.

Data from 44 countries show that household expenditures, through tariffs and out-of-pocket expenses, contributed to 61% of overall WASH spending (Fig. 5.8).

● Households ● Government ● External sources ● Repayable finance



Source: GLAAS 2021/2022 country survey.

Fig. 5.8 Sources of funding for WASH (n = 44)

While the number of countries providing estimates of household expenditures on WASH has improved, it remains likely that household contributions are underreported, as comprehensive data are not always available. Data on utility tariffs or revenues may be readily available in many countries. However, a full picture of out-of-pocket household expenditures is difficult to obtain and is generally not tracked at the national level in most countries. In the GLAAS 2021/2022 country survey, estimates for out-of-pocket expenditures were provided mainly by those countries that have developed WASH accounts.

Table 5.3 summarizes the breakdown of country expenditures by source over the last four GLAAS cycles. Data from each cycle indicate that approximately two thirds of WASH expenditures are made by households.

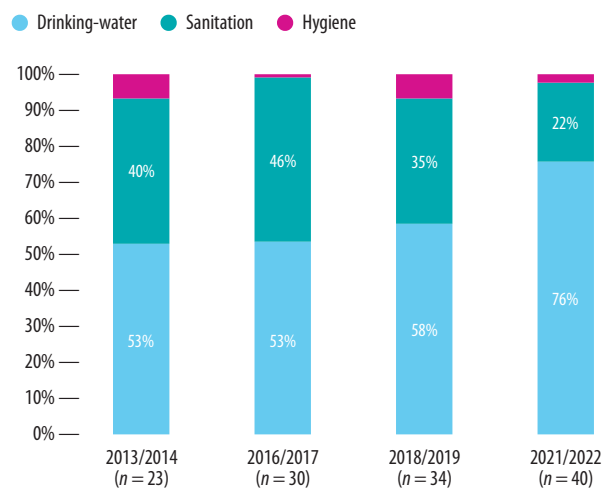
Table 5.3 Breakdown of WASH funding sources from the last four GLAAS cycles for all responding countries^a

Indicator	2013/2014 (expenditure year range 2012–2014)	2016/2017 (expenditure year range 2013–2017)	2018/2019 (expenditure year range 2015–2018)	2021/2022 (expenditure year range 2018–2022)
Number of responding countries	19	25	35	44
Total reported expenditure (US\$ millions, current)	38 532	43 557	52 196	66 863
Percentage from households	73%	66%	66%	61%
Percentage from government	13%	24%	22%	29%
Percentage from external sources		2%	3%	4%
Percentage from repayable finance	14%	8%	9%	6%

^a Includes countries that provided total WASH expenditure data and information on household and government expenditures for each GLAAS cycle.
Sources: GLAAS 2013/2014, 2016/2017, 2018/2019 and 2021/2022 country surveys.

Expenditures on drinking-water and sanitation

Looking at how much governments and donors spend on WASH subsectors can provide some insight into their prioritization. GLAAS has reported disaggregated drinking-water and sanitation expenditures since the GLAAS 2009/2010 cycle, illustrating that, on a global level, government expenditure and external aid for sanitation are lower than those for drinking-water. In the GLAAS 2016/2017 country survey, sanitation expenditure reached a peak of 46% of total WASH expenditure from government and external aid sources for 30 countries. However, in the GLAAS 2021/2022 cycle, sanitation expenditure comprises only 22% of WASH expenditure from government and external aid sources from 40 countries (Fig. 5.9).¹⁹



Sources: GLAAS 2013/2014, 2016/2017, 2018/2019 and 2021/2022 country surveys.

Fig. 5.9 Non-household expenditures on drinking-water, sanitation and hygiene

Expenditure on sanitation reported in the GLAAS 2021/2022 country survey comprises 22% of non-household expenditure for WASH, the lowest proportion reported to date in a GLAAS cycle.

¹⁹ Similar trends are found for 11 countries that reported disaggregated sanitation and drinking-water expenditures in the GLAAS 2021/2022, 2018/2019 and 2016/2017 country surveys. For these 11 countries, the proportion of non-household expenditure on sanitation fell from 42% in 2016/2017 to 36% in 2018/2019 and to 27% in 2021/2022.

SECTION 6

External support and international cooperation (SDG Target 6.a)

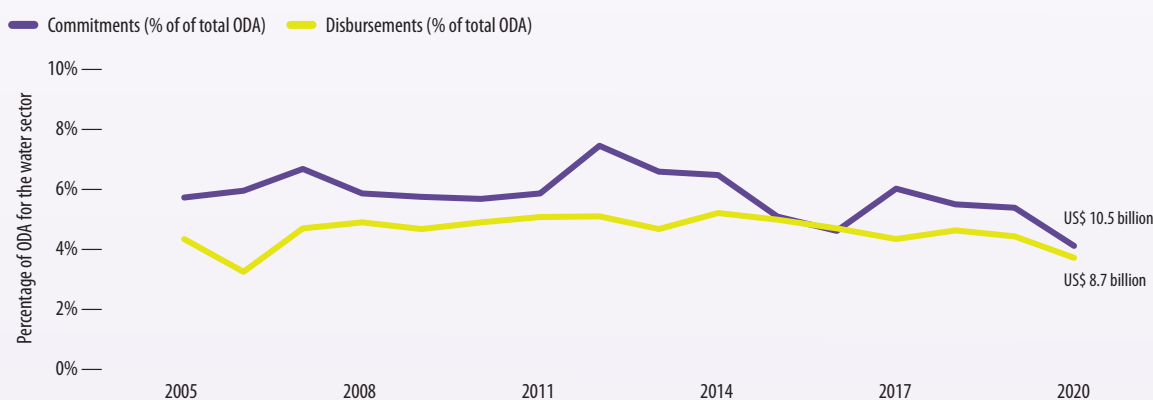
Aid and technical assistance given by ESAs to governments is an important aspect of WASH systems. This section summarizes trends in commitments and disbursements for water sector official development assistance (ODA) and water supply and sanitation aid, ESA priorities and how ESAs are addressing sanitation.²⁰

SDG Target 6.a: International cooperation and capacity-building support

Indicator 6.a.1: Amount of water- and sanitation-related ODA that is part of a government-coordinated spending plan

SDG Target 6.a aims to increase international cooperation and capacity-building support, and is monitored primarily through volume of ODA for the water sector.²¹ As an MoI target for all outcome targets under SDG 6, the scope of water sector ODA goes beyond water supply and sanitation ODA and includes agricultural water resources and hydroelectric power plants in addition to water supply and sanitation.

While overall ODA increased from US\$ 209 billion in 2019 to US\$ 248 billion in 2020, partly in response to the COVID-19 pandemic, ODA for the water sector showed a decreasing trend over the same period, with commitments falling by 11% to US\$ 10.5 billion. Similarly, ODA disbursements for the water sector decreased by 5% from 2019 to 2020, to US\$ 8.7 billion. The drop in disbursements in 2020 is likely a result of the COVID-19 pandemic slowing and disrupting the execution of projects, including large drinking-water and sanitation infrastructure projects. Fig. 6.1 shows that the percentage of ODA for the water sector has declined in recent years.



Notes: This chart includes ODA only and excludes private grants. It includes ODA for water and sanitation, agricultural water resources and hydroelectric power plants.

Source: OECD-CRS, 2022.

Fig. 6.1 ODA for the water sector as a percentage of total ODA

²⁰ The use of the term “aid” in this section is inclusive of ODA grants, ODA loans and private grants, but does not include non-concessional lending. The use of the term “ODA” in this section refers to ODA grants and ODA loans, and excludes private grants and non-concessional lending.

²¹ Private grants are excluded from the analysis shown in this subsection, as only ODA is considered within the scope of international cooperation as defined for the monitoring of SDG Target 6.a.

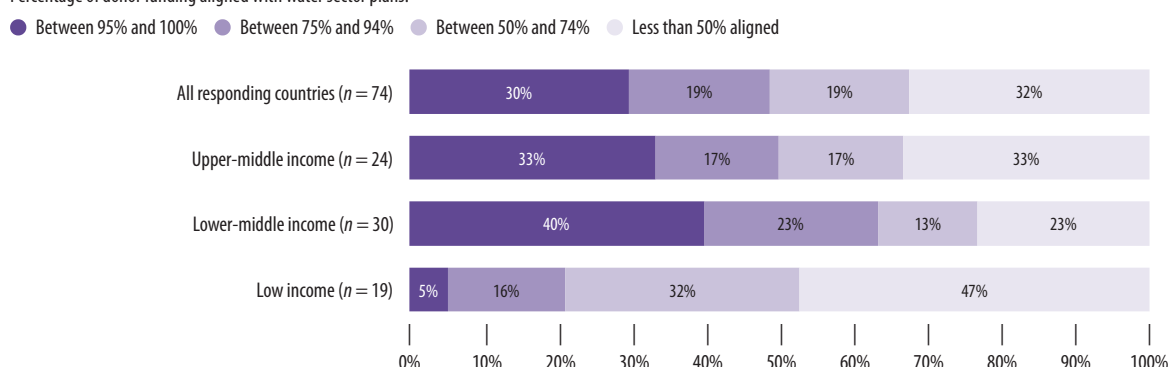
Alignment of donor funds with national plans

The indicator for Target 6.a points to the importance of donor funds being aligned with national plans for the water sector to strengthen international cooperation and support.

Overall, nearly one third of countries reported that donor funds are poorly aligned²² with national water sector plans,²³ and this poor alignment was reported in almost half of low-income countries.

Less than one third of countries receiving donor funds reported that donor funds are fully aligned²⁴ with their national plans for the water sector. Low-income countries overwhelmingly reported less alignment to national plans than lower-middle- or upper-middle-income countries that receive donor funds (Fig. 6.2).

Percentage of donor funding aligned with water sector plans:



Source: GLAAS 2021/2022 country survey.

Fig. 6.2 Percentage of ODA-recipient countries that reported alignment of donor funds with national water sector plans (by World Bank income group)

Water supply and sanitation aid

Water supply and sanitation comprises the majority of ODA for the water sector at 76%, compared with 10% for hydroelectric power plants and 14% for agricultural water resources. As WASH is the particular focus of GLAAS monitoring, a more in-depth analysis of aid (including private grants in addition to ODA) for water supply and sanitation²⁵ is included in this section.

Water supply and sanitation aid commitments

From 2017 to 2020, overall aid commitments for water supply and sanitation fell by more than 5%, while total aid commitments increased by nearly 20%. While aid for water and sanitation declined in 2020, it is still a major funding source for a number of countries. As seen in section 5 (WASH finance), external support accounts for 4% of WASH expenditure. In 2018, water supply and sanitation was ranked eighth among 42 sectors in terms of aid commitments; however, in 2020 its ranking dropped to 12th among all sectors. This decline may reflect a gradual deprioritization of water and sanitation aid compared with other sectors among donors, accelerated by the COVID-19 pandemic.

²² Less than 50% of donor funds aligned with water sector plans.

²³ A national plan for the water sector has a broader scope than a national WASH plan and covers elements in addition to WASH relevant to SDG 6, such as water quality, water-use efficiency, water resources management and water-related ecosystems.

²⁴ Between 95% and 100% of donor funding aligned with water sector plans.

²⁵ Water and sanitation aid includes specific activities related to water supply and sanitation, as well as activities relating to water sector policy and administrative management, water resources conservation and river basin development, and waste management and disposal, which are listed under the water supply and sanitation sector in the OECD-CRS aid activity database (all codes in the 140xx series).

Aid commitments for water and sanitation decreased by more than 5% from 2017 to 2020 (Table 6.1).

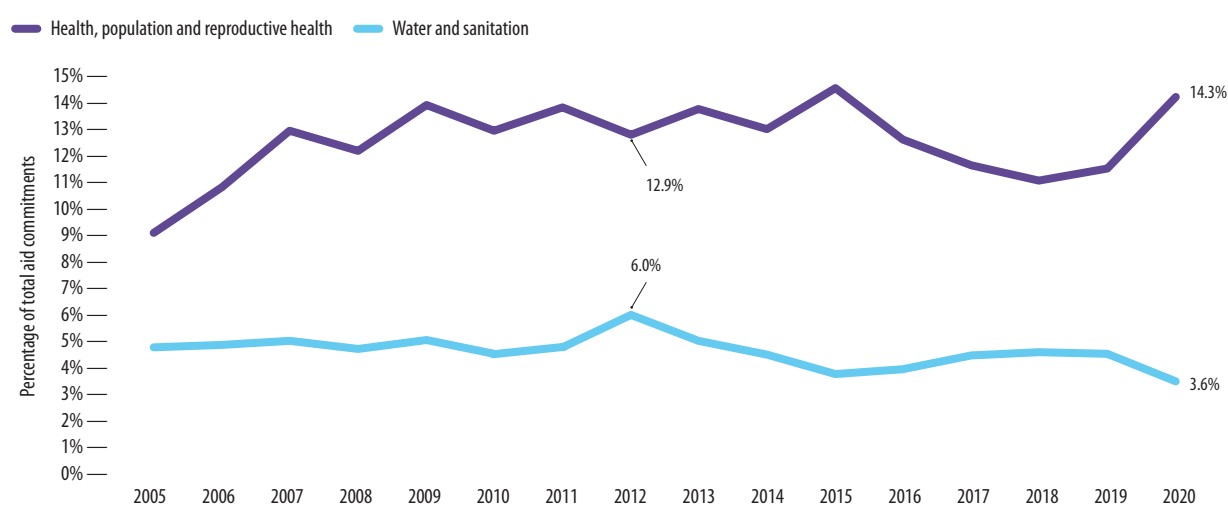
Table 6.1 Aid commitments and percentage change in 2017 and 2020

	Aid commitments (US\$ billions, constant 2020 US\$)		
	2017	2020	Change
Total aid	216.1	258.8	+19.8%
Water and sanitation aid	9.8	9.2	−5.6% ^a

^aThe difference of −5.6% is a result of rounding. In 2017, the total water and sanitation aid was US\$ 9.754 billion and in 2020 it was US\$ 9.21 billion.
Source: OECD-CRS, 2022.

Aid for health, population and reproductive health saw an increase in commitments, and comprised 14.3% of all aid commitments in 2020. The proportion of aid commitments to water and sanitation dropped from 4.5% in 2017 to 3.6% in 2020 (Fig. 6.3). The proportion of aid commitments to water and sanitation was highest in 2012 at 6%.

The proportion of aid commitments for water and sanitation declined in 2020.



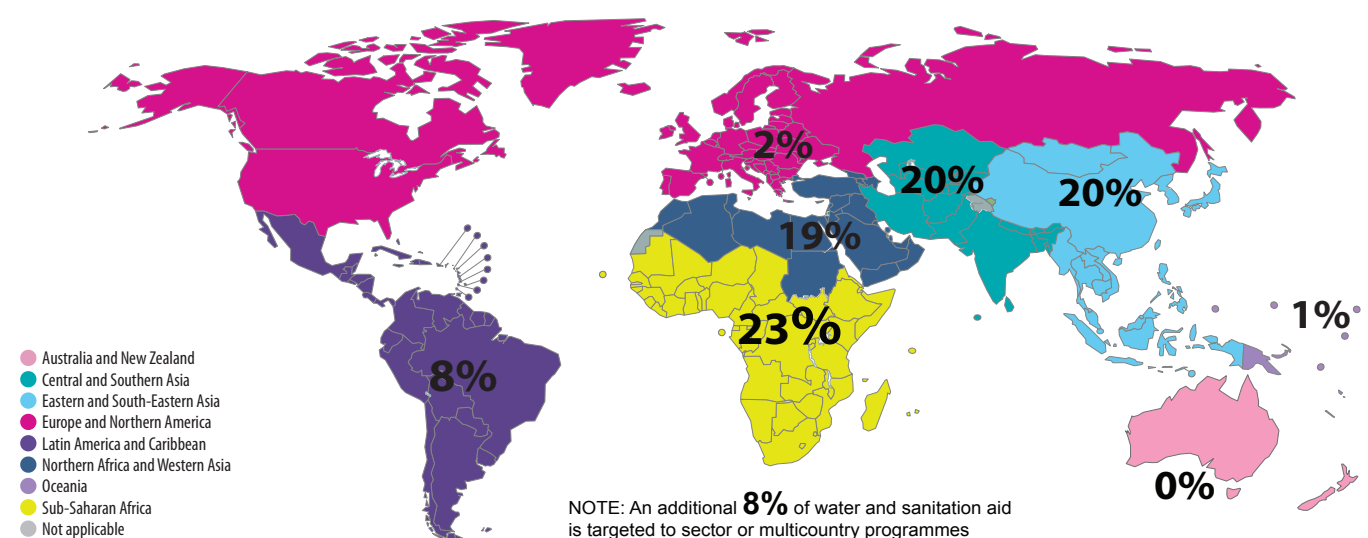
Source: OECD-CRS, 2022.

Fig. 6.3 Aid commitments to water and sanitation, and to health, population and reproductive health, as a proportion of total aid

Geographical distribution of aid

The geographical distribution of water supply and sanitation aid has also changed since 2017. In sub-Saharan Africa, the proportion of WASH aid dropped from 32% in 2017 to 23% in 2020 of the total, while in Central and Southern Asia, it increased from 12% to 20%, and in Eastern and South-Eastern Asia, it increased from 11% to 20% (Fig 6.4).

Despite a drop in the proportion of water supply and sanitation aid provided to sub-Saharan Africa, this region still receives the largest share globally.



Note: SDG regional groupings were used for regional analyses to ensure consistency with SDG reporting. SDG regions are based on the Standard Country or Area Codes for Statistical Use (known as M49) and are primarily based on geographical location. More information is available at: <https://unstats.un.org/sdgs/indicators/regional-groups/>. Map production: Water, Sanitation, Hygiene and Health, WHO.

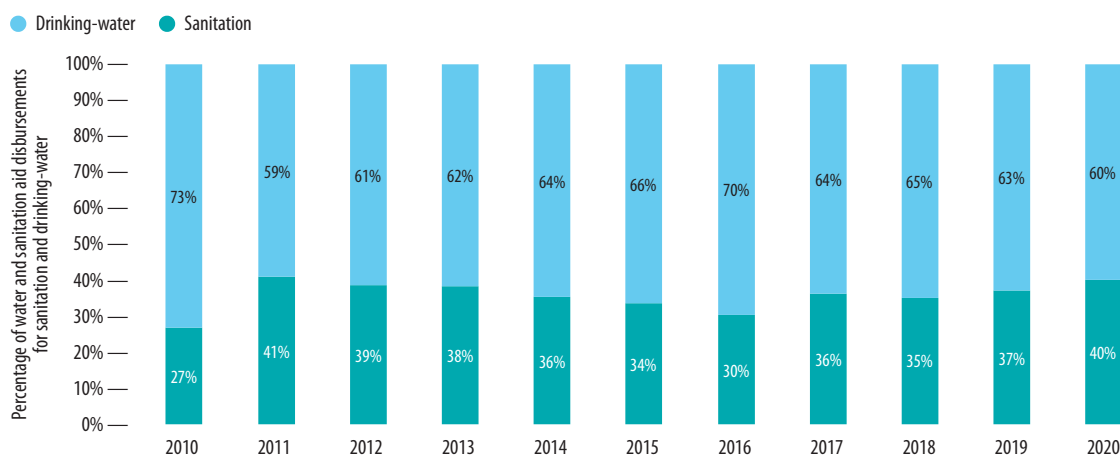
Source: OECD-CRS, 2022.

Fig. 6.4 Percentage of global water and sanitation aid commitments directed to each SDG region, 2020

Sanitation and drinking-water disbursements

While overall aid disbursements to water and sanitation decreased since 2019, the percentage of those disbursements to sanitation increased from 35% in 2018 to 40% in 2020. From 2010 to 2020, the last time the proportion of water and supply aid to sanitation was higher than 40% was in 2011 (Fig. 6.5).

The percentage of water and sanitation aid disbursements to sanitation has increased since 2018.

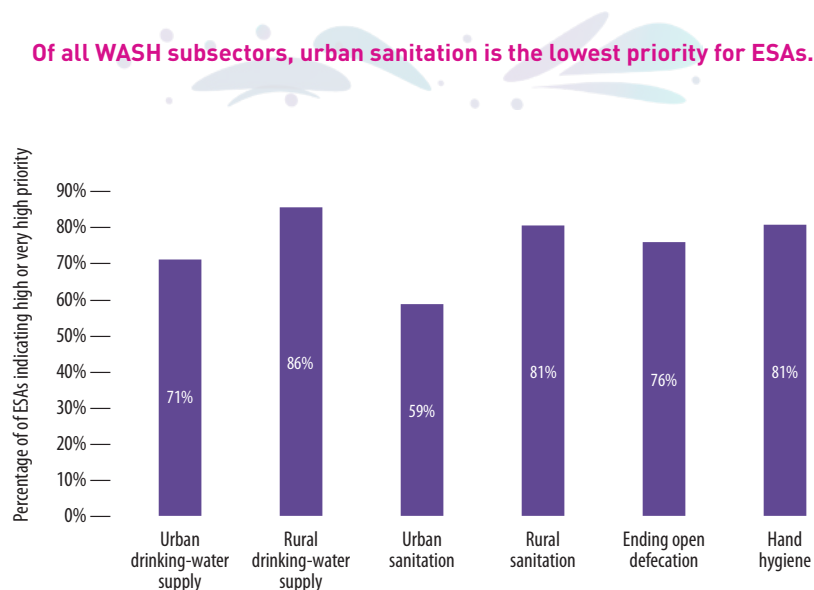


Source: OECD-CRS, 2022.

Fig. 6.5 Percentage of water and sanitation aid disbursements for sanitation and drinking-water

ESA priorities

More ESAs noted that rural sanitation and drinking-water are a higher priority than urban sanitation and drinking-water (Fig. 6.6).



Source: GLAAS 2021/2022 ESA survey.

Fig. 6.6 Prioritization of financial and technical support for WASH by subsector ($n = 22$)

Special focus: ESAs and sanitation

The GLAAS 2021/2022 ESA survey featured in-depth questions on funding and technical assistance for sanitation. ESAs were asked to provide a breakdown of sanitation disbursements/technical assistance by output/objective, along the sanitation service chain and related to specific sanitation programming or initiatives. However, most ESAs noted that they were unable to provide data on those breakdowns and instead provided qualitative information. Additionally, some ESAs noted that it is difficult to report on sanitation separately from broader WASH.

Obstacles and solutions for prioritizing sanitation aid

As shown in Fig. 6.5, while aid to sanitation as a percentage of WASH aid has been growing in recent years, it still lags behind that of drinking-water. In the GLAAS 2021/2022 ESA survey, ESAs were asked about the obstacles they face in raising the strategic profile of sanitation and increasing aid for sanitation. ESAs reported a wide range of challenges, including:

- low government demand for and prioritization of sanitation investments;
- low financial sustainability of sanitation investments, including a lack of private sector participation;
- slow progress developing and sustaining sanitation markets and private sector delivery channels, especially in rural and peri-urban areas;
- low willingness to pay among households;
- investments, when made, do not focus on inclusive services;
- fragmentation of actors within the sector with governance frameworks that are often not very well developed; and
- current global issues (e.g. inflation, food crises, reductions in aid flows, political instability and conflicts, and the COVID-19 pandemic) have resulted in less available aid dollars for sanitation.

While there are major challenges to sanitation funding and prioritization, ESAs participating in the GLAAS 2021/2022 cycle offered the following solutions:

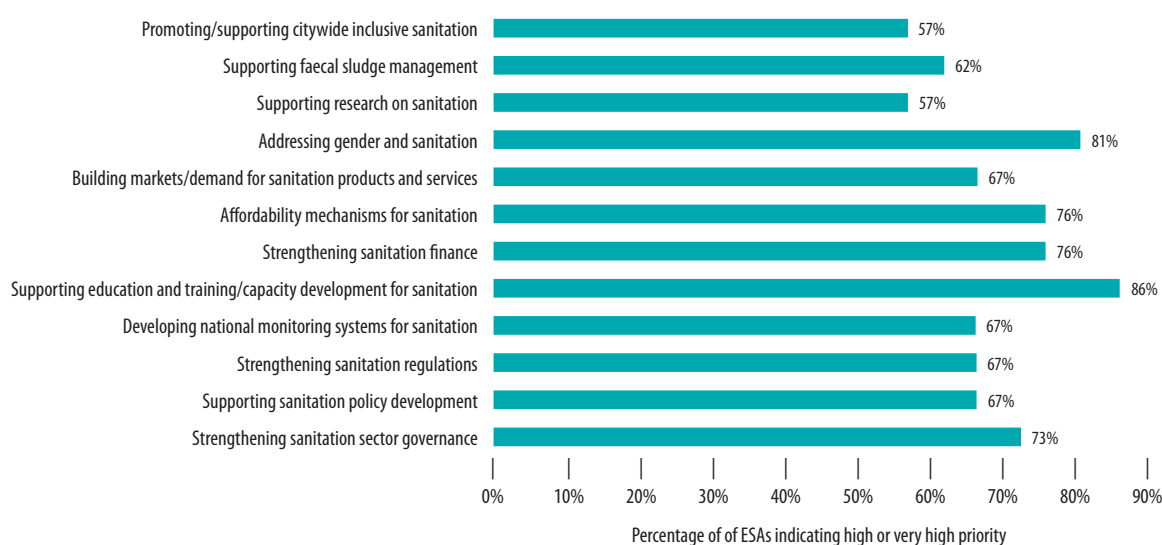
- strong advocacy to demonstrate the economic benefits of investing in sanitation services;
- domestic resource mobilization, which requires government leadership;
- promotion of the significant benefits from improved on-site sanitation systems combined with investments in strengthened faecal sludge management and other decentralized/non-networked sanitation options;
- use of blended finance, sustainable funding schemes, solidarity funds and alternative financing mechanisms; and
- development, implementation, monitoring and documentation of successful sanitation programmes.

Sanitation priorities and objectives

ESAs were asked to indicate the level of priority of specific sanitation activities. Eighty-six per cent of ESAs reported that supporting education and training/capacity development for sanitation is a high or very high priority (Fig. 6.7). As shown in section 8 (Human resources for WASH), increased capacity development and training is needed for sanitation.

It is interesting to note that only 62% of ESAs indicated that supporting faecal sludge management is a high or very high priority, even though this has been shown to be one of the greatest obstacles in achieving safely managed sanitation (1).

Supporting capacity development for sanitation is a high or very high priority for a large number of ESAs.



Source: GLAAS 2021/2022 country survey.

Fig. 6.7 Prioritization of sanitation activities ($n = 22$)

ESAs participating in the GLAAS 2021/2022 ESA survey reported the following examples of sanitation objectives.

- One of the **Japan International Cooperation Agency's** sanitation objectives is strengthening the capacity of government agencies as the regulatory body responsible for sanitation so that proper facilities for sanitation are provided, operated and maintained in a sustainable manner.
- The **Swiss Agency for Development** advocates for safe and sustainable basic sanitation and hygiene for all, as a key factor for health.

- **UNICEF's** Game Plan to Reach Safely Managed Sanitation 2020–2030 articulates an ambition to help governments achieve safely managed sanitation for their populations. Under this game plan, UNICEF will support 1 billion people to gain access to safely managed sanitation, through direct and indirect support, in collaboration with partners.
- **USAID** supports areawide approaches to sanitation, which include a citywide approach for urban areas. USAID prioritizes implementation of context-specific activities in each location. For example, in Indonesia, USAID is supporting up to 30 cities to improve their sanitation. In some cities, this support is focused on developing new regulations, increasing access to financing and establishing a dedicated municipal sanitation authority. In other cities, the support includes a focus on introducing technological or service model innovations, community organization and supporting local cooperatives to offer sanitation products.

A number of ESAs noted their work on urban sanitation (Box 6.1).

Box 6.1 Citywide inclusive sanitation (CWIS)

CWIS is an approach to address and improve urban sanitation challenges. It works to ensure everyone has access to safely managed sanitation and realizes this can come from a range of solutions such as on-site systems to sewerage sanitation. Rather than focusing on building infrastructure, it looks to improve the enabling environment. In the GLAAS 2021/2022 ESA survey, the following ESAs noted using the CWIS approach.

- The **African Development Bank** considers promoting and supporting CWIS to be a high priority.
- The **Asian Development Bank** is promoting and mainstreaming the concept of CWIS in its lending programmes and projects.
- The **Bill & Melinda Gates Foundation** has the following priorities for CWIS: development finance institution partners meet or exceed their CWIS funding commitments and adopt monitoring frameworks able to measure progress in inclusive, safely managed sanitation services; cities where CWIS approaches are developed and supported overwhelmingly achieve safely managed sanitation targets for 2025; and at least 100 cities in Bangladesh, India and Senegal start replicating CWIS approaches.
- The **World Bank** supports task teams working with national and local governments, city administrations and service providers on CWIS by further developing the Water Global Practice's knowledge in this area. The World Bank develops tools and resources to support the implementation of CWIS approaches, provides strategic support to operations, and promotes collaboration with other development partners and stakeholders.

Reference

1. Peal A, Evans B, Blackett I, Hawkins P, Heymans C. Fecal sludge management (FSM): analytical tools for assessing FSM in cities. Review paper. J Water, Sanit Hyg Dev. 2014;04:371–383 (<https://iwaponline.com/washdev/article-abstract/4/3/371/30043/Fecal-sludge-management-FSM-analytical-tools-for?redirectedFrom=fulltext>, accessed 21 October 2022).



SECTION 7

Leaving no one behind and local participation (SDG Target 6.b)

The SDG imperative to leave no one behind is reflected across the 2030 Agenda, including in SDG 6 on water and sanitation for all. Countries have committed to close WASH service gaps and expand access to all, including people living in poverty, ethnic minorities, elderly populations, internally displaced persons, refugees and other populations and settings that do not have equitable access to services. To succeed, governments must prioritize actions through measures that target their underserved populations and settings with WASH services. These actions must integrate equity measures in policies and plans, monitor progress to extend services and apply financial measures to target resources to those who need it most.

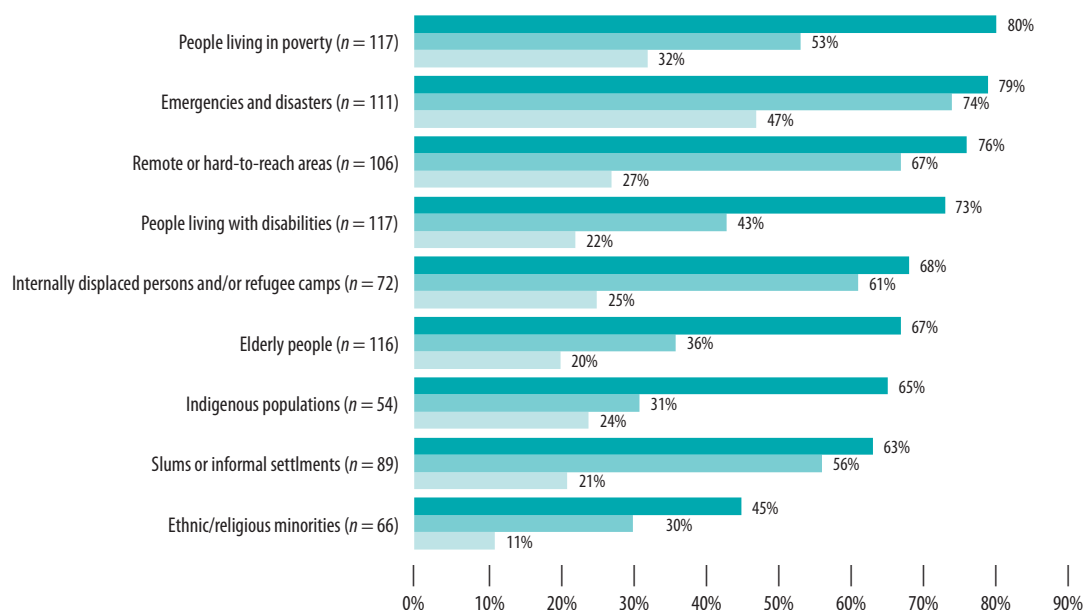
This section features measures that governments have in place to reach different populations and settings, including people living in poverty. It ends with discussions on affordability and community participation (SDG Target 6.b).

Equity measures for underserved populations and settings

Ensuring water and sanitation for all requires countries to identify and target measures to populations and settings that are being left behind, which vary from country to country. Countries are most likely to have measures for drinking-water and sanitation addressing people living in poverty and emergency or disaster settings, followed by those living in remote or hard-to-reach areas and people living with disabilities. Fig. 7.1 shows country responses for sanitation, which indicate that many countries have measures in policies or plans, but few have corresponding systems for monitoring or targeting resources to different populations or settings.

Many countries have measures in policies or plans to extend sanitation for those at risk of being left behind, but few allocate resources or monitor progress.

- Policies and plans have specific measures to reach the population or setting
- Progress to extend service provision to the population or setting is tracked and reported
- Specific measures to direct financial resources to the population or setting are consistently applied



Source: GLAAS 2021/2022 country survey.

Fig. 7.1 Percentage of countries with measures in policies and plans, that monitor service provision and direct financial resources to improve and extend sanitation services to specific populations and settings

Measures to reach people living in poverty

As in previous GLAAS cycles, countries were asked to report on specific measures in national policies and plans to reach people living in poverty. Results from the GLAAS 2021/2022 cycle indicate that many have these measures, but that measures to direct financial resources to extend services to people living in poverty, and the monitoring of progress, are often inadequate (Table 7.1).

While 80% of all countries reported having specific measures in policies and plans to reach people living in poverty, just over half have corresponding measures for monitoring and fewer have finance measures that are consistently applied.

Table 7.1 Measures to extend drinking-water and sanitation services to people living in poverty

● 0–39% ● 40–59% ● 60–79% ● 80–100%

			Governance Policies and plans have specific measures to reach populations living in poverty	Monitoring Progress to extend service provision to populations living in poverty is tracked and reported	Finance Specific measures to direct resources to populations living in poverty are consistently applied
World Bank income group					
Drinking water	All responding countries	118	84%	56%	38%
	Low income	24	88%	63%	29%
	Lower-middle income	41	88%	56%	39%
	Upper-middle income	37	78%	49%	35%
	High income	16	81%	63%	56%
Sanitation	All responding countries	117	80%	53%	32%
	Low income	24	75%	63%	21%
	Lower-middle income	42	88%	52%	31%
	Upper-middle income	37	73%	46%	32%
	High income	14	86%	57%	57%

Source: GLAAS 2021/2022 country survey.

Affordability of WASH services

The 2030 Agenda explicitly references the need for drinking-water and sanitation services to be affordable. Affordability is also an obligation articulated within the UN recognition of the human rights to water and sanitation. While affordability itself is defined, addressed and monitored differently in each country, it is universally accepted as a key measure to leaving no one behind.

The GLAAS 2021/2022 country survey collected data on affordability measures in policies or plans, targets for affordability of drinking-water and sanitation, and financial schemes in place to support the affordability of WASH services. Most countries include measures to address the affordability of drinking-water and sanitation in policies and plans, but these measures are more common in urban policies/plans.

Less than half of responding countries have established targets for affordability of sanitation and drinking-water, and only about a third have widely used financial schemes to support affordable drinking-water and sanitation services (Table 7.2).

Table 7.2 Measures to address affordability of WASH

● 0–39% ● 40–59% ● 60–79% ● 80–100%

		<i>n</i>	Address affordability in policies and plans	Targets for affordability	Financial schemes for affordability exist and are widely used
Drinking water	Urban	119	80%	46%	35%
	Rural		74%		31%
Sanitation	Urban	118	70%	41%	30%
	Rural		64%		23%

Source: GLAAS 2021/2022 country survey.

In the GLAAS 2021/2022 country survey, the types of affordability targets reported varied. Some countries reported including affordability in national coverage targets without a clear definition of affordability (Box 7.1). Other countries reported specific affordability targets that aimed to expand the provision of free services, subsidies, tax reductions, targeted tariff setting or subsidies based on household incomes.

Box 7.1 The challenge of defining and monitoring affordability for WASH

Defining affordability for WASH and determining how best to monitor it is challenging. In 2021, WHO and UNICEF published the report *The measurement and monitoring of water supply, sanitation and hygiene (WASH) affordability* (1), which reviews the available data sources and methodologies for monitoring the affordability of WASH services at national and global levels. The report notes that “given the current data sets, it will be challenging to monitor affordability at the global level in any broad sense, using the identified approaches and methodologies” (1). The report provides recommendations on the ways in which affordability of WASH services can be monitored through to the year 2030 and beyond, with the aim of stimulating further discussion and agreement between government authorities, technical partners and donor agencies. The report is the culmination of work from 2018 to 2020 on exploring how affordability can be understood and monitored for WASH.

SDG Target 6.b: Participation of local communities

Indicator 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

SDG 6 MoI Target 6.b aims to support and strengthen the participation of local communities in improving water and sanitation management. Strengthening community participation is fundamental to adapt and sustain SDG 6 solutions to local community contexts and to ensure no one is left behind. Participation may range from users having access to information to more formal representation of users or communities in government processes for joint decision-making on issues surrounding WASH and water resources management.

Most countries have defined procedures in law or policy for community and user participation in rural drinking-water and water resources management planning and management.

As found in previous GLAAS cycles, the majority of countries have defined procedures for participation in law or policy while far fewer have high levels of participation. In the GLAAS 2021/2022 cycle, over 90% of countries reported having procedures for participation defined in law or policy for rural drinking-water and water resources management. However, less than one third of countries reported high or very high participation of communities in planning and management processes for rural drinking-water and water resources management.

Financial and human resources to support participation

Participation of users and communities is constrained by a lack of financial and human resources. Only 17% of 106 responding countries indicated that they have over 75% of the financial resources needed to support participation of users and communities for rural drinking-water and sanitation. Results for water resources management are similar to those for drinking-water and sanitation. Table 7.3 shows the percentage of countries that reported they have over 75% of the necessary financial resources to support participation. The lower the income level, the less likely that countries have sufficient financial resources in place. In fact, none of the countries in the lower-income group have 75% of the needed financial resources in place to support participation.

Lack of financial and human resources constrains participation of users and communities.

Table 7.3 Percentage of countries that reported over 75% of financial resources needed to support participation of users and communities

● 0–39% ● 40–59% ● 60–79% ● 80–100%

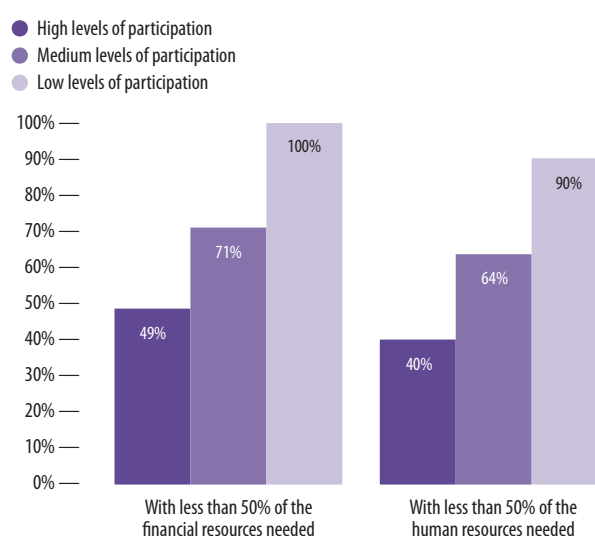
World Bank income group	Rural drinking-water and sanitation	Water resources management
All responding countries	17% (n = 106)	18% (n = 107)
Low income	0% (n = 23)	0% (n = 23)
Lower-middle income	10% (n = 39)	14% (n = 39)
Upper-middle income	27% (n = 33)	24% (n = 33)
High income	46% (n = 11)	43% (n = 12)

Source: GLAAS 2021/2022 country survey.

Countries with less financial and human resources to support participation also reported lower levels of community participation for rural drinking-water, overall. Despite this, nearly half of countries reporting high participation also reported having less than 50% of the financial resources needed to support public participation, which may imply that much of the burden gets placed on users and communities themselves (Fig. 7.2).

Forms of participation in water and sanitation

Access to various forms of participation is essential to enable communities to participate in water and sanitation planning and management processes (2). Participation entails community participation in regular fora or community groups, and also includes access to information, formal feedback systems and mechanisms to receive and resolve conflicts between users and service providers.



Source: GLAAS 2021/2022 country survey.

Fig. 7.2 Percentage of countries with less than 50% of the financial and human resources needed by levels of participation of users and communities (n = 100)

Rural populations in high-income countries are more likely to have regular opportunities for public engagement, access to public information and mechanisms to receive and resolve conflicts than those in lower-income countries. Fewer than 15% of low-income countries reported that a majority of their rural populations have opportunities for participation (Table 7.4).

Overall, rural populations in high-income countries are more likely to have opportunities for participation in sanitation and drinking-water than those in low-income countries.

Table 7.4 Percentage of countries that reported that over 75% of rural populations have opportunities for participation in sanitation and drinking-water

● 0–39% ● 40–59% ● 60–79% ● 80–100%

World Bank income group	<i>n</i>	Mechanisms to receive, document and resolve conflicts through regulatory authorities	Regular opportunities for public engagement	Access to formal feedback systems	Access to publicly available information
All responding countries	104	38%	37%	36%	34%
Low income	22	9%	14%	14%	9%
Lower-middle income	38	26%	29%	21%	21%
Upper-middle income	31	55%	52%	55%	45%
High income	13	85%	62%	69%	85%

Source: GLAAS 2021/2022 country survey.

References

1. The measurement and monitoring of water supply, sanitation and hygiene (WASH) affordability: a missing element of monitoring of sustainable development goal (SDG) targets 6.1 and 6.3. New York: United Nations Children's Fund and World Health Organization; 2021 (<https://www.who.int/publications/i/item/9789240023284>, accessed 21 October 2022).
2. Bartram J, Brocklehurst C, Bradley D, Muller M, Evans B. Policy review of the means of implementation targets and indicators for the sustainable development goal for water and sanitation. npj Clean Water. 2018;1:3 (<https://www.nature.com/articles/s41545-018-0003-0>, accessed 21 October 2022).

SECTION 8

Human resources for WASH

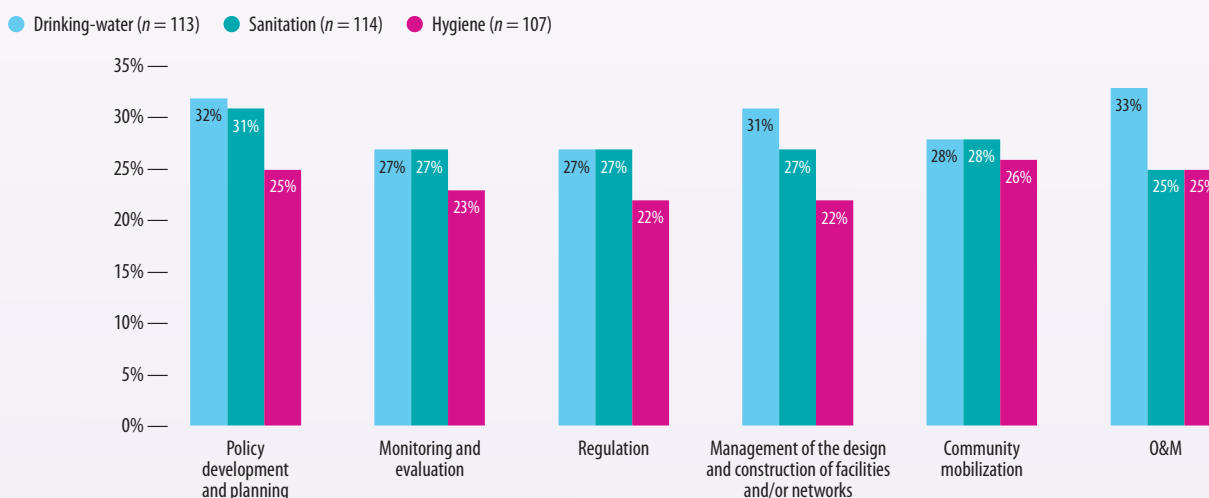
The human resources questions for the GLAAS 2021/2022 country survey were revised to gain new insights into WASH human resources. This section shares results on the sufficiency of human resources, human resources plans, strategies and needs assessments, and training for WASH professionals. It also shares new information on human resources for environmental health and protections in place for sanitation workers.

Sufficiency of human resources

Data from the GLAAS 2021/2022 country survey suggest that a lack of human resources is constraining WASH service delivery. When asked about overall sufficiency of human resources for drinking-water, sanitation and hygiene, fewer than 30% of countries reported having over 75% of the human resources needed.

The GLAAS 2021/2022 country survey also asked about the human resources needed for WASH functions including policy development and planning, monitoring and evaluation, regulation, management of the design and construction of facilities and/or networks, community mobilization and O&M. Human resources were lacking for each function for each subsector (Fig. 8.1).

Less than one third of countries reported they have more than 75% of the human resources needed to carry out key functions for the delivery of WASH services.



Source: GLAAS 2021/2022 country survey.

Fig. 8.1 Percentage of countries with over 75% of human resources needed for WASH functions

Plans, strategies and needs assessments for human resources

Carrying out human resources needs assessments and formulating a national plan or strategy for human resources development are critical to ensuring sufficient human resources for WASH. However, a majority of countries do not have plans or strategies to address human resources for sanitation, drinking-water or hand hygiene (Fig. 8.2).

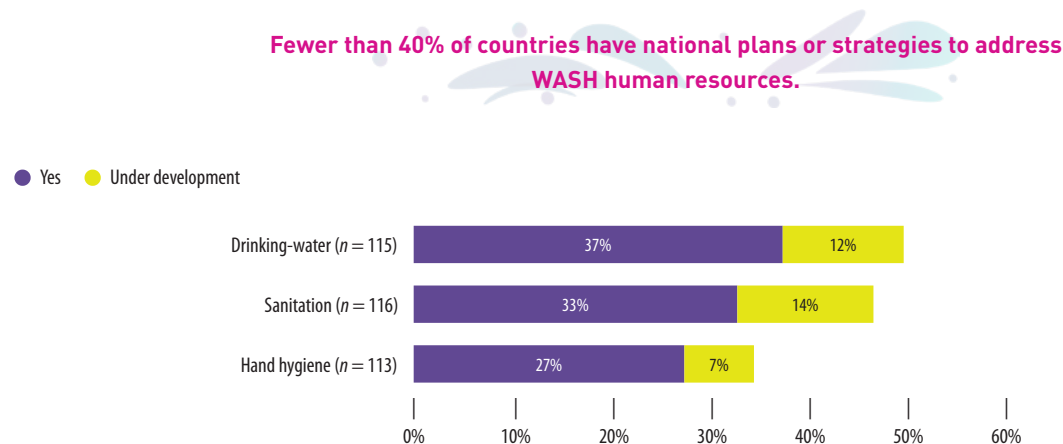


Fig. 8.2 Percentage of countries with national plans/strategies for WASH human resources

Only 28% of countries reported conducting national human resources needs assessments for WASH. Moreover, for the countries that do conduct needs assessments, they are carried out on an ad hoc basis in the majority of countries.

WASH training

Human resources are also hindered by a lack of WASH training, especially for sanitation. In the GLAAS 2021/2022 country survey, countries were asked to report the sufficiency, on an annual basis, of the supply of trained professionals to meet the needs of large and small sanitation and drinking-water systems. While the situation is slightly better for drinking-water than for sanitation, there is still a gap between the number of skilled graduates and the need for them.

Fewer than 20% of countries reported having a sufficient supply of trained professionals graduating annually from WASH training institutions that meet the needs for on-site sanitation and small drinking-water systems (Fig. 8.3).

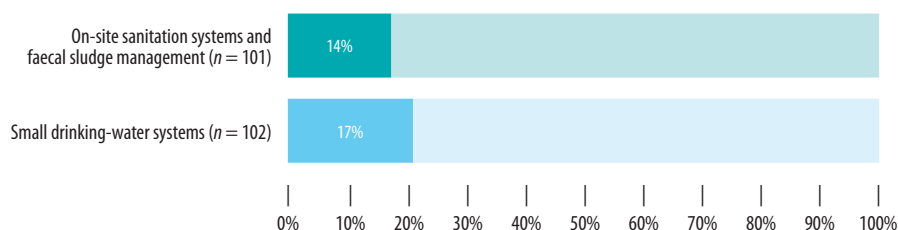


Fig. 8.3 Percentage of countries that reported sufficient supply (between 95% and 100% of need) of trained professionals from WASH training institutions on an annual basis

The lack of trained professionals to operate and maintain on-site sanitation systems, including faecal sludge management, is a major impediment to achieving safely managed sanitation. Achieving SDG Target 6.2 on safely managed sanitation will require a quadrupling of current rates of progress (1), which means that the need for these workers will continue to grow.

When countries do have skilled workers, responding countries to the GLAAS 2021/2022 country survey indicated that those workers do not want to live and work in rural areas, further limiting the availability of WASH human resources and constraining service delivery. Over one third of countries reported that the problem of skilled workers not wanting to live and work in rural areas was a severe constraint to human resources. Countries also reported that a lack of financial resources for staff (salaries, benefits, pensions, etc.) also limits human resources for WASH.

Human resources for environmental health

The WHO publication *Guidelines on sanitation and health* states that “Ministries of health normally have a team dedicated to environmental health. Environmental health covers topics such as drinking-water safety, sanitation, air pollution, occupational health and chemical safety. Environmental health departments need to engage with many more actors outside the health sector than other departments within ministries of health to achieve their public health objectives than other departments within ministries of health. ... Ministries should ensure that environmental health has a sufficient status within the ministry that reflects the foundational preventive health functions of the discipline that underpins progress on many health sector objectives” (2). The functions listed in Fig. 8.4 are critical functions that staff in the health sector should fulfil to ensure WASH protects health and reduces the burden on the health system. However, GLAAS data show that there are insufficient human resources to carry these out (Fig. 8.4).

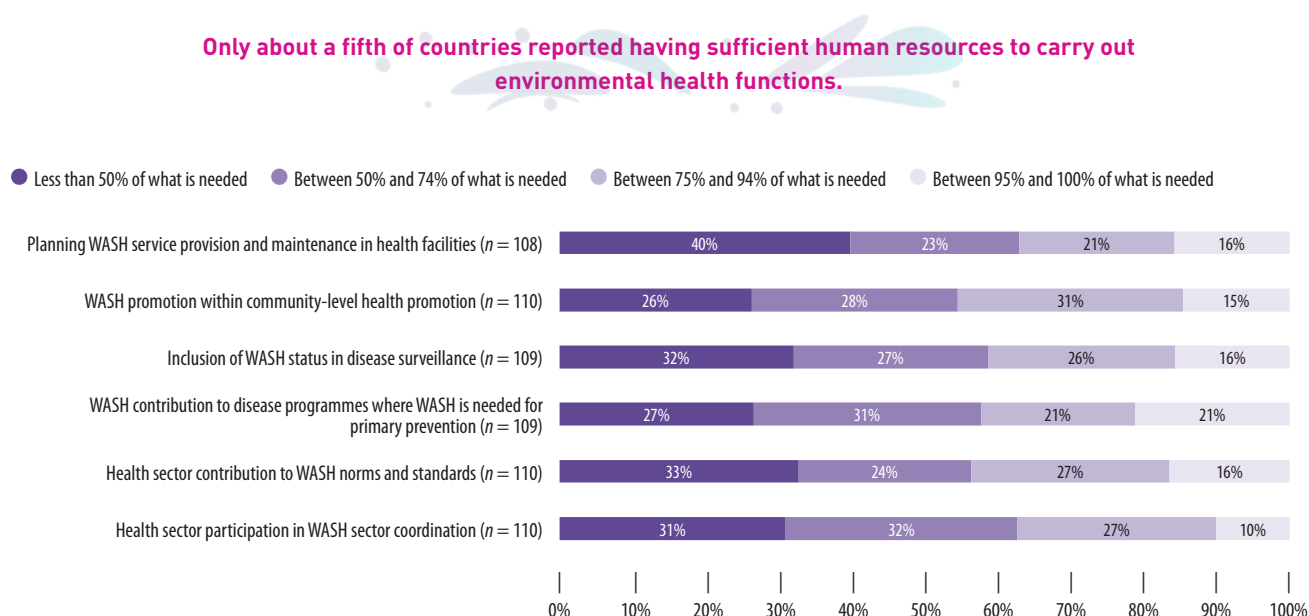


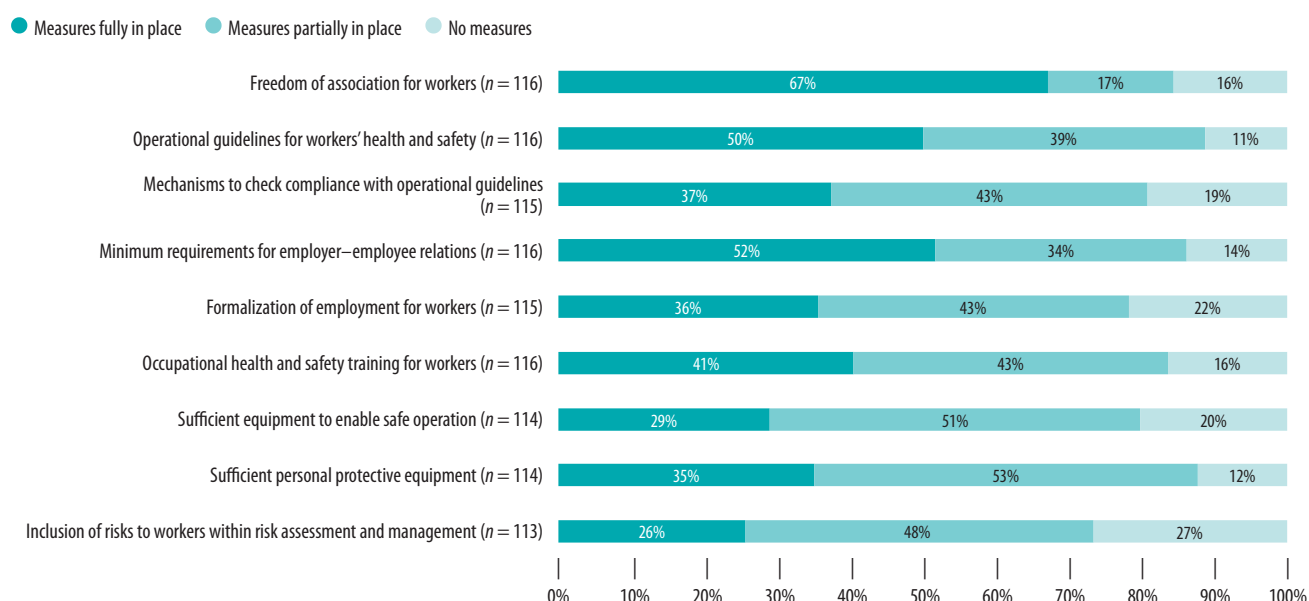
Fig. 8.4 Sufficiency of human resources for environmental health

Sanitation workers

Sanitation work is an essential public service, but often sanitation workers are employed in the informal sector and are some of the most vulnerable workers.

Approximately two thirds of countries have national laws or regulations in place to ensure the health and safety of: toilet cleaners; faecal sludge emptying, transport and treatment workers; and sewage and wastewater treatment plant workers. However, these laws and regulations are applicable to the formal sector and likely mask the informal workforce working outside any legal and regulatory protections. Responses to the GLAAS 2021/2022 country survey indicate that while measures may exist, they are often not fully in place.

Only three of the nine measures for worker protection included in the GLAAS 2021/2022 country survey were reported to be fully in place in at least half of countries (Fig. 8.5).



Sources: GLAAS 2021/2022 country survey.

Fig. 8.5 Percentage of countries with measures in place for sanitation workers

While a majority of countries have measures fully in place for the freedom of association of workers, 22% of countries do not have measures that allow for the formalization of employment for sanitation workers. Additionally, 26% of countries reported that they lack measures to include the risks to workers within risk assessment and management, such as in SSP and WSP. In less than a third of countries, the sanitation/wastewater regulator enforces minimum protections for sanitation workers, such as in health and safety, employment and pay, and freedom of association. These findings complement a recent report on sanitation workers (Box 8.1).

Box 8.1 Bringing attention to sanitation workers

In 2019, the World Bank, WHO, the International Labour Organization and WaterAid published the report *Health, safety and dignity of sanitation workers (3)*, which raises awareness of the neglected issue of sanitation workers and highlights four priority areas of action, listed below.

- **Reform policy, legislation and regulation** to acknowledge and professionalize the sanitation workforce along the sanitation service chain.
- **Develop and adopt operational guidelines** to assess and mitigate the occupational risks of all types of sanitation work, including national- and local-level standard operating procedures; carry out municipal-level oversight and enforcement of laws regarding sanitation service providers (public and private); and provide training, technology and personal protective equipment for all aspects of sanitation work.
- **Advocate for sanitation workers and promote their empowerment** to protect worker rights and amplify worker voices through unions and associations.
- **Build the evidence base** to address issues around quantifying the sanitation workforce and to document challenges workers face.

References

1. Progress on household drinking water, sanitation and hygiene 2000-2020: five years into the SDGs. Geneva: World Health Organization and United Nations Children's Fund; 2021 (<https://washdata.org/sites/default/files/2022-01/jmp-2021-wash-households-highlights.pdf>, accessed 21 October 2022).
2. Guidelines on sanitation and health. Geneva: World Health Organization; 2018 (<https://www.who.int/publications/i/item/9789241514705>, accessed 21 October 2022).
3. Health, safety and dignity of sanitation workers: an initial assessment. Washington, DC: World Bank Group; 2019 (<https://www.who.int/publications/m/item/health-safety-and-dignity-of-sanitation-workers>, accessed 21 October 2022).

SECTION 9

Gender and WASH

Linkages between gender and WASH include women's participation in the sector and menstrual health and hygiene. Additionally, for services to be suitable for all, special attention should be given to women and girls when thinking about WASH service delivery. This section discusses women in the WASH workforce and their participation, safely managed services and gender, menstrual health and hygiene, and ESA support for WASH and gender.

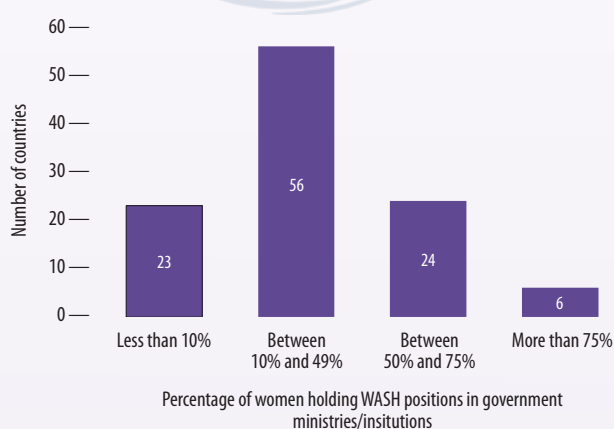
Women in the workforce and local participation

Having a gender-balanced WASH workforce is important. According to the World Bank's *Women in water utilities: breaking barriers* report, only 18% of water utility workers are women. However, World Bank research has shown that gender diversity in utility management has numerous benefits on organizational outcomes such as greater innovation, more user-friendly design and improved customer satisfaction (1).

GLAAS complements the World Bank research by examining gender diversity in the government WASH workforce. A majority of countries reported in the GLAAS 2021/2022 country survey that women hold less than half of WASH government jobs (79 of 109 responding countries). Twenty-three countries reported that women hold less than 10% of WASH positions in government ministries and national institutions (Fig. 9.1).

The inclusion of women in WASH planning and programming in communities is also essential to develop sustainable WASH facilities and services. However, less than two thirds of countries reported that women's participation is specifically mentioned in national laws and policies. Moreover, less than a third of countries reported high levels²⁶ of women's participation in rural drinking-water planning and management, indicating that in practice, women in most countries are not strongly represented in participatory processes. This percentage is higher for issues related to hygiene (39% of countries reported that women's participation is high or very high), which may be due to women's engagement in menstrual health and hygiene.

In almost a quarter of countries, women hold less than 10% of government WASH jobs.



Source: GLAAS 2021/2022 country survey.

Fig. 9.1 Women holding WASH positions in government ministries/institutions by country (n = 109)

²⁶ In the GLAAS 2021/2022 country survey, "high participation" means regular opportunities for users/communities to formally take part in relevant policy, planning and management processes. Processes are documented and acted upon by the responsible entities. "Very high participation" is defined as formal representation of users/communities in government processes contributing to joint decision-making on issues and activities, as appropriate. Processes are documented and subject to redress if responsible entities fail to act accordingly.

Only a minority of countries reported that women's participation is high or very high in WASH.

Examples of women's participation from the GLAAS 2021/2022 country survey are presented below.

- In **Bhutan**, the National Sanitation and Hygiene Policy highlights the need for engaging women in WASH planning and management of WASH programmes to ensure their needs are reflected. It also emphasizes ensuring safe and adequate menstrual hygiene management including for women and girls with disabilities. The Rural Water Supply Scheme/System Sector Policy includes text encouraging women to participate in all aspects of its programming, and in community management and organization.
- In the **Dominican Republic**, the National Institute of Drinking-Water and Sewage developed a water and sanitation pilot project in rural areas, in which women participated actively in all project activities including training and decision-making.

In addition to decision-making and participation, governments should consider the needs of women and girls when delivering and extending WASH services. For example, gender should be considered when determining the accessibility and acceptability of toilets (2).

A majority of countries have measures to reach women and girls in their national WASH policies and plans; however, fewer countries have monitoring or financial measures in place (Table 9.1).

Table 9.1 Measures to extend WASH services to women and girls

● 0–39% ● 40–59% ● 60–79% ● 80–100%

	World Bank income group	n	Governance Policies and plans have specific measures to reach women and girls	Monitoring Progress to extend service provision to women and girls is tracked and reported	Finance Specific measures to direct resources to women and girls are consistently applied
Drinking water	All responding countries	119	71%	46%	26%
	Low income	24	75%	71%	25%
	Lower-middle income	41	76%	51%	32%
	Upper-middle income	37	68%	27%	24%
	High income	17	59%	41%	18%
Sanitation	All responding countries	118	71%	47%	21%
	Low income	24	75%	75%	21%
	Lower-middle income	42	76%	52%	26%
	Upper-middle income	37	68%	27%	19%
	High income	15	60%	40%	13%
Hygiene	All responding countries	117	62%	40%	21%
	Low income	24	71%	67%	21%
	Lower-middle income	40	70%	48%	28%
	Upper-middle income	37	49%	22%	16%
	High income	16	56%	25%	19%

Source: GLAAS 2021/2022 country survey.

Gender and safely managed services

In households without drinking-water on premises, women and girls are responsible for water collection in eight out of 10 households (3). This has implications for personal safety, school attendance and economic opportunities. As part of the 2030 Agenda, the definition of safely managed drinking-water, which is the goal of SDG Target 6.1, includes that water must be located on premises. In the GLAAS 2021/2022 country survey, almost three quarters of countries (79 of 107) reported that their national drinking-water targets aim for drinking-water to be accessible on premises.

As noted in the recent *State of the world's drinking water* report, safely managed water services also empower women and girls in other ways, allowing them to manage their menstrual cycles hygienically and with dignity, enabling them to attend school and take time for learning and literacy, and providing them with opportunities for small business activities that require water, such as market gardening (4).

Menstrual health and hygiene

Globally, the menstrual health and hygiene needs of people who menstruate, including women, girls, transgender men and non-binary persons, are largely unmet due to gender inequality, cultural taboos, poverty and a lack of safe WASH (5). Managing menstruation is a major challenge when basic facilities are lacking at home and in schools (6).

To adequately meet the needs of the 1.8 billion people (5) who menstruate will require significant efforts by national governments to improve menstrual health and hygiene, especially to improve access to WASH facilities to safely manage menstruation. Despite the needs, only 60% of countries have any WASH policy or plan with measures for menstrual health and hygiene. In policies/plans on WASH in schools, only 40% of countries include measures for menstrual health and hygiene (Table 9.2).

Menstrual health and hygiene is more likely to be addressed in policies and plans for WASH in schools and WASH in health care facilities than in drinking-water or sanitation policies or plans.

Table 9.2 Percentage of countries that include menstrual health and hygiene in their WASH policies/plans (n = 114)

	Percentage of countries
Urban sanitation	26%
Rural sanitation	27%
Urban drinking-water	21%
Rural drinking-water	18%
WASH in schools	40%
WASH in health care facilities	36%

Source: GLAAS 2021/2022 country survey.

While gender was covered in 66% of joint sector reviews, menstrual health and hygiene specifically was covered in less than half of countries’ reported joint sector reviews.

In terms of prioritizing menstrual health and hygiene through target setting, only 21% of countries reported having national targets related to menstrual hygiene management. These include targets for use of improved sanitation facilities, privacy, accessibility and use of menstrual hygiene materials. Some countries indicated that their sanitation or WASH in health care facilities targets include components of menstrual hygiene management. Below are examples of menstrual hygiene management targets from the GLAAS 2021/2022 country survey.

- In **Lao People’s Democratic Republic**, by 2025, 40% of health care facilities will have improved toilets with facilities for menstrual hygiene management.
- In **Somalia**, by 2023, 90% of adolescent girls in upper primary and secondary schools will have access to menstrual hygiene kits known as “dignity kits” in schools.

ESA support for WASH and gender

When donors report to OECD-CRS on ODA, they categorize how their ODA targets gender equality. The gender equality policy marker has three categories, which are defined below (7).

- *Principal*: Gender equality is the main objective of the project/programme and is fundamental to its design and expected results. The project/programme would not have been undertaken without this objective.

- *Significant*: Gender equality is an important and deliberate objective, but not the principal reason for undertaking the project/programme, often explained as gender equality being mainstreamed in the project/programme.
- *Not targeted*: The project/programme has been screened against the gender marker but has not been found to target gender equality.

The percentage of water sector ODA disbursements with a gender equality component (principal or significant) has increased from 7% in 2005 to 30% in 2020. This is primarily because of an increase in water sector ODA marked as “significant” (29% in 2020) rather than “principal” (1% in 2020) (Fig. 9.2). This indicates a heightened awareness of gender as a key issue for donors demonstrated through increased gender mainstreaming within projects and programmes, but not much increase in the projects where gender equality is the main objective.

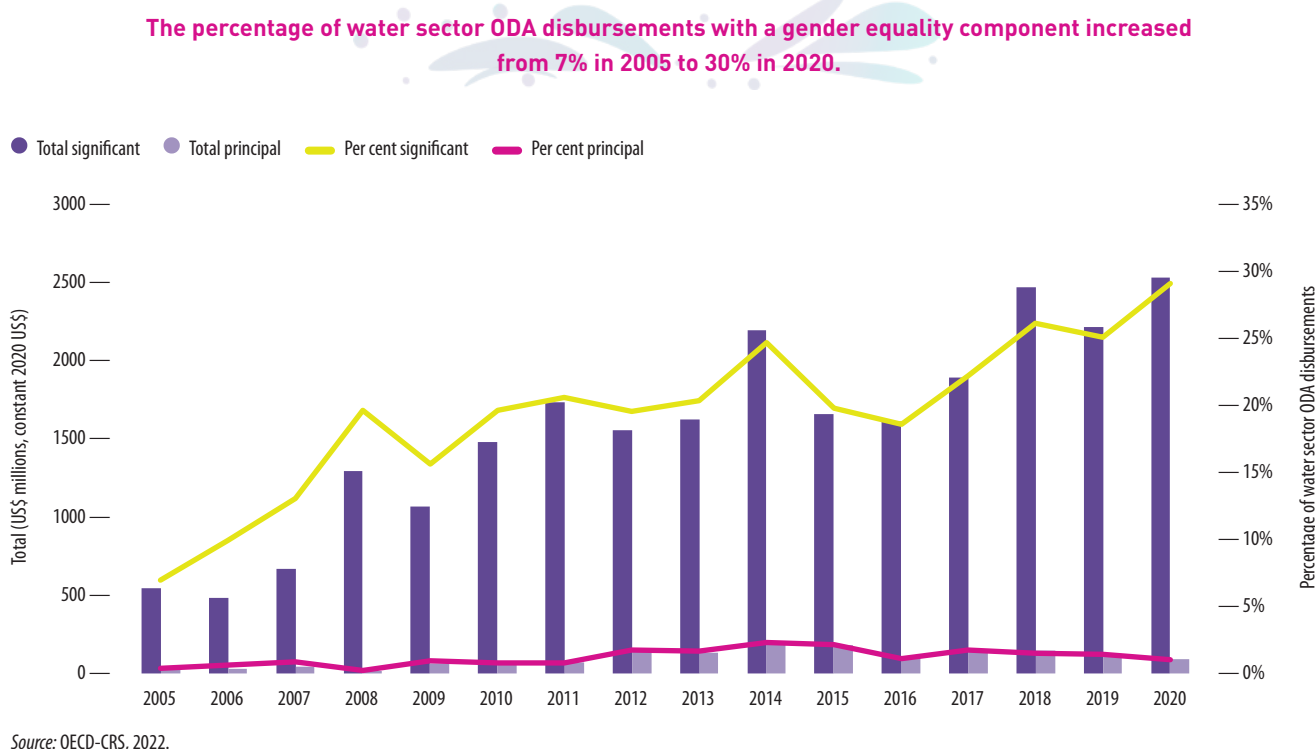


Fig. 9.2 Water sector ODA disbursements marked as significant or principal for the gender equality marker

The gender equality policy marker categorizations for water sector ODA disbursements are similar to those for overall ODA disbursements. Water and overall ODA have seen increases in disbursements marked as significant. ESAs are also working to better incorporate gender into their monitoring work (Box 9.1).

Box 9.1 Mainstreaming gender in SDG 6 monitoring

The preamble to the 2030 Agenda states that it aims “to achieve gender equality and the empowerment of all women and girls” (8). Moreover, SDG Target 6.2 calls on UN Member States to achieve universal access to sanitation “paying special attention to the needs of women and girls and those in vulnerable situations”. JMP and GLAAS worked with researchers at Emory University to develop a framework to inform national and global monitoring of gender equality and WASH. In 2021, a group of experts was convened to discuss the framework as well as to identify data gaps, discuss how to leverage existing data to better focus on gender and to consider opportunities to collect new data on gender (9). Additionally, UN-Water and the Integrated Monitoring Initiative for SDG 6 have started work on promoting gender-sensitive and inclusive analysis of water and sanitation data for SDG 6 global monitoring. After consultation with experts on gender contextualization, the Integrated Monitoring Initiative is leading country pilots to test the feasibility and relevance of suggested indicators and metrics for SDG 6 and gender.

ESAs reported that they support a variety of interventions and approaches regarding WASH and gender, reflecting the complexity of the issue. Examples of ESA WASH and gender work from the GLAAS 2021/2022 ESA survey are listed below.

- In 2021, 84% of the **Asian Development Bank's** approved WASH investment projects for that year had integrated gender mainstreaming activities into project design. Under each of these projects, a gender action plan was prepared to promote women's empowerment and equitable access to project benefits.
- **IRC** has few gender-specific programmes but aims to take a gender-sensitive approach in all its work (e.g. ensuring gender balance in WASH commissions or groups, recognizing and planning for the unique needs of women and girls, striving for genuine inclusion and uplifting of female voices in all spaces it occupies).
- The **Swiss Agency for Development Cooperation's** AIRWASH Project in Ethiopia works with men and women to enhance women's participation and to allow women to voice their needs for WASH-related activities. Participants are trained together and make visits to other regions to share and learn from other people's experiences, which they then draw on to build gender sensitivity into their own monthly community meetings.
- Advancing women's empowerment and equity is a guiding ambition for **Water.org**. Women are the primary users of the microfinance solutions that the organization supports – most loan customers through their WaterCredit programmes are women (89%).

References

1. Women in water utilities: breaking barriers. Washington, DC: World Bank Group; 2019 (<https://openknowledge.worldbank.org/bitstream/handle/10986/32319/140993.pdf?sequence=9>, accessed 21 October 2022).
2. Guidelines on sanitation and health. Geneva: World Health Organization; 2018 (<https://www.who.int/publications/i/item/9789241514705>, accessed 21 October 2022).
3. Safely managed drinking water - thematic report on drinking water 2017. Geneva: World Health Organization; 2017 (<https://washdata.org/sites/default/files/documents/reports/2017-07/JMP-2017-tr-smdw.pdf>, accessed 21 October 2022).
4. State of the world's drinking water. Geneva: World Health Organization, United Nations Children's Fund and World Bank; 2022 (<https://apps.who.int/iris/bitstream/handle/10665/363704/9789240060807-eng.pdf>, accessed 21 October 2022).
5. Guidance on menstrual health and hygiene. New York: United Nations Children's Fund; 2019 (<https://www.unicef.org/media/91341/file/UNICEF-Guidance-menstrual-health-hygiene-2019.pdf>, accessed 21 October 2022).
6. Progress on household drinking water, sanitation and hygiene 2000-2020: five years into the SDGs. Geneva: World Health Organization and United Nations Children's Fund; 2021 (<https://washdata.org/sites/default/files/2022-01/jmp-2021-wash-households-highlights.pdf>, accessed 21 October 2022).
7. DAC gender equality policy marker [webpage]. Paris: Organisation for Economic Co-operation and Development; 2019 (<https://www.oecd.org/dac/gender-development/dac-gender-equality-marker.htm>, accessed 21 October 2022).
8. Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1). New York: United Nations, United Nations General Assembly; 2015 (<https://sdgs.un.org/2030agenda>, accessed 21 October 2022).
9. Gender [webpage]. Geneva: World Health Organization and United Nations Children's Fund (<https://washdata.org/monitoring/inequalities/gender>, accessed 21 October 2022).

SECTION 10

Regulation, risk management and surveillance

Robust regulatory frameworks, risk management approaches and surveillance are essential for delivering quality drinking-water and sanitation services. This section focuses on regulations and standards, regulatory authorities and their functions, risk management approaches and surveillance activities.

Regulations and standards

Almost 90% of countries have standards in place for urban and rural drinking-water quality, including maximum allowed concentrations for contaminants. For national regulations or standards for drinking-water service delivery requirements, such as continuity of supply, 87% of countries have them for urban areas and 75% have them for rural areas.

Countries reported having regulations, standards or guidelines for the various steps of the sanitation chain (Table 10.1). However, regulations, standards or guidelines that address faecal sludge management are less common than those for sewerage sanitation.

Compared with sewerage sanitation, fewer countries reported having regulations, standards or guidelines that address faecal sludge management.

Table 10.1 Percentage of countries that reported national regulations, standards or guidelines in place for the steps of the sanitation chain

Toilets, containment and conveyance	Percentage of countries
Minimum requirements for toilets	85% (n = 118)
Minimum requirements for containment and on-site treatment	79% (n = 119)
Minimum requirements for emptying and conveyance through utility regulation covering sewer networks	72% (n = 117)
Minimum requirements for emptying and conveyance through licensing of faecal sludge management service providers	65% (n = 117)
Treatment and disposal/use	
Technologies for treatment in on-site sanitation systems	64% (n = 119)
Faecal sludge treatment	69% (n = 119)
Wastewater treatment	84% (n = 119)
Safe use of treated wastewater and/or sludge	62% (n = 117)

Source: GLAAS 2021/2022 country survey.

Regulatory authorities and their functions

More countries have regulatory authorities that oversee drinking-water than those that oversee sanitation. Table 10.2 outlines the percentage of countries with regulatory authorities²⁷ overseeing different aspects of drinking-water and sanitation services.

More countries reported having regulatory authorities for drinking-water than for sanitation.

Table 10.2 Percentage of countries that reported having drinking-water and sanitation/wastewater regulatory authorities with different responsibilities

Responsibility	Drinking-water		Sanitation/wastewater	
	Urban	Rural	Urban	Rural
Setting tariffs	79% (n = 118)	65% (n = 113)	70% (n = 118)	51% (n = 114)
Overseeing drinking-water quality and/or treated effluent	87% (n = 119)	82% (n = 116)	78% (n = 117)	67% (n = 115)
Overseeing service coverage or other aspects related to the quality of service delivery	81% (n = 118)	71% (n = 101)	76% (n = 114)	64% (n = 101)

Source: GLAAS 2021/2022 country survey.

While a country may report the existence of a regulatory authority with a specific responsibility (e.g. overseeing treated effluent in rural areas), this does not mean that the regulatory authority successfully fulfils its responsibility. Additionally, some regulatory authorities may have broader mandates covering urban and rural areas. In those instances, the focus could be predominantly on urban areas. As described in Box 10.1, different models of regulatory authorities exist in different countries.

Box 10.1 Models of regulatory authorities

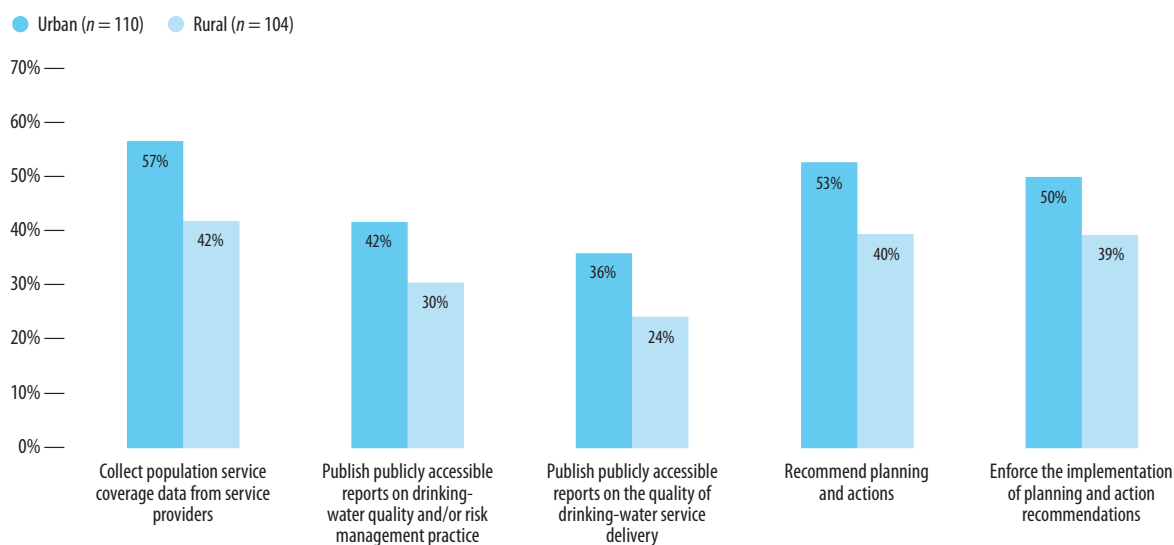
The *State of the world's drinking water report (1)* describes several regulatory models, summarized below.

- **Ministerial (or government) regulation:** A government ministry is tasked with regulating the sector.
- **Regulation by agency:** An agency is established to regulate in an autonomous manner.
- **Regulation by contract:** No separate regulatory agency is used, and the public sector asset holder that is a signatory to a contract monitors the performance of the operator against the terms of the contract.
- **Regulation by sourcing to third parties:** External contractors are used to perform certain duties, such as tariff review, benchmarking or dispute resolution.
- **Self-regulation:** Service providers, such as public utilities, regulate their own activities, set tariffs and monitor their own performance (this may be legally mandated, but often arises due to the absence of a more formal regulatory structure).

Key functions of drinking-water regulatory authorities range from collecting data and publishing reports to strengthening service providers by recommending planning and actions and enforcing implementation of the recommendations. However, the functions are often not fully performed. Although full implementation is important for regulation to be successful, only one quarter to one half of countries fully perform key functions in urban or rural areas (Fig. 10.1).

Less than half of countries reported that their regulatory authorities fully perform their key functions for drinking-water in rural areas.

²⁷ In the GLAAS 2021/2022 country survey, "regulatory authorities" refers to autonomous/dedicated regulatory authorities and departments within government ministries/institutions with a mandate for regulation.

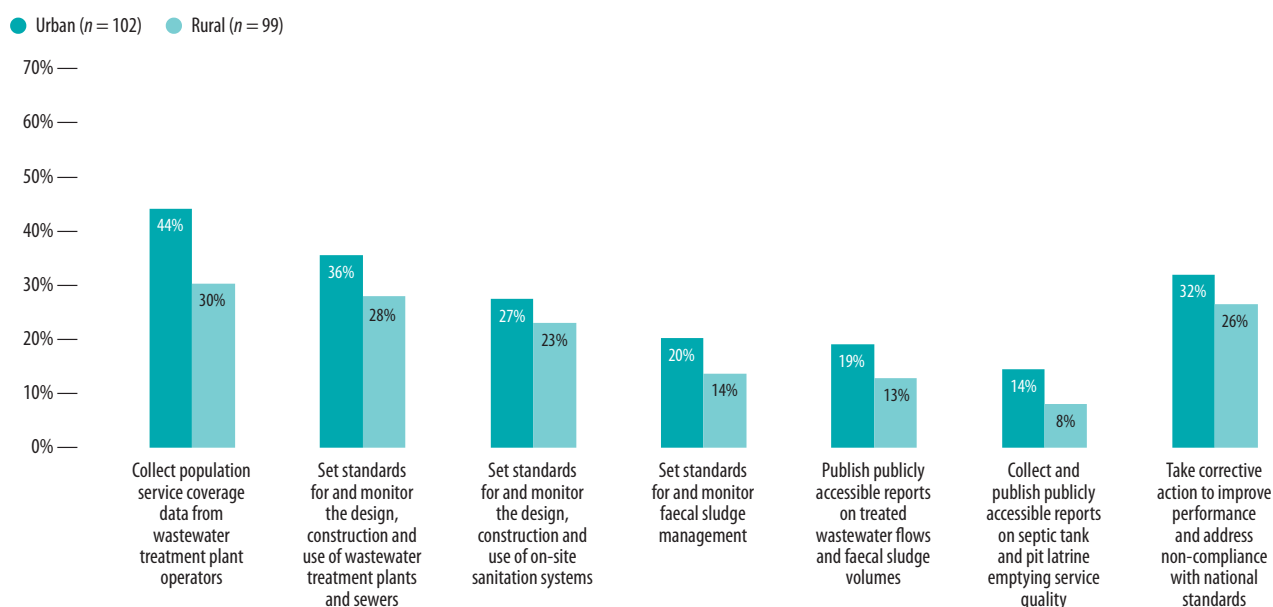


Source: GLAAS 2021/2022 country survey.

Fig. 10.1 Percentage of countries with drinking-water regulators that fully perform key functions

For sanitation and wastewater, key functions include setting standards, publishing reports and taking corrective action to improve performance and address non-compliance. In general, GLAAS 2021/2022 country survey results indicate that regulation for sanitation is weaker than that for drinking-water. Less than one third of countries reported that most key regulatory functions are fully performed in rural and urban areas. The results suggest that regulation in rural areas, especially for on-site sanitation, is particularly weak (Fig. 10.2).

Countries reported that functions related to on-site sanitation are less likely to be fully performed than those related to sewerage sanitation.



Source: GLAAS 2021/2022 country survey.

Fig. 10.2 Percentage of countries with sanitation/wastewater regulators that fully perform key functions

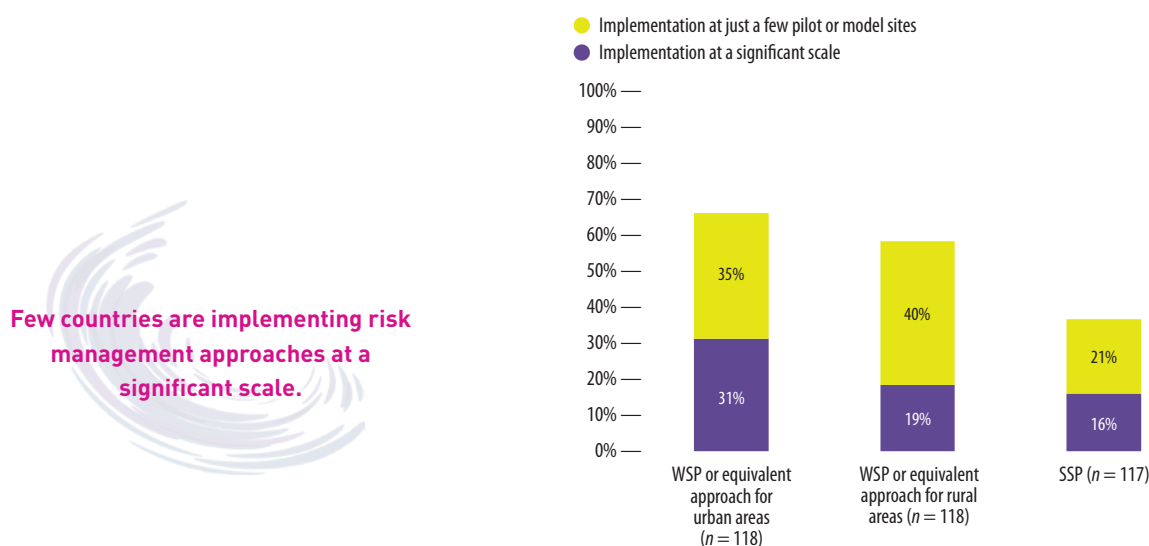
There is a need to clarify gaps and areas of overlap in regulatory responsibilities along the sanitation service chain. The recent landscape assessment of regulation across Africa by the Eastern and Southern Africa Water and Sanitation Regulators Association

(ESAWAS) supports this and provides areas for further actions, including creating or strengthening the enabling environment for sanitation, as well as expanding the mandate of regulatory authorities to move beyond sewered sanitation (2). The weaknesses in data collection and the lack of publicly accessible reports pose a major barrier to measuring progress on SDG Target 6.2 on sanitation and Target 6.3 on wastewater, which is the SDG 6 target lagging furthest behind.

Risk management approaches

Development and implementation of risk management approaches by service providers, such as water safety planning (WSP) and sanitation safety planning (SSP), are a critical component of providing safe water and sanitation services. The GLAAS 2021/2022 country survey asked countries if WSP, SSP or equivalent risk management approaches are included in policies or regulations, and if so, are they promoted or required. A majority of countries include WSP or equivalent approaches in policies or regulations for urban and rural areas. Of those countries, WSP is required in about half of the countries' policies or regulations.

While most countries include WSP or equivalent risk management approaches in policies or regulations, implementation lags behind. Only 31% of countries reported implementing WSP at a significant scale in urban areas, and this percentage is even lower in rural areas. Implementation of SSP is lower than that of WSP (Fig. 10.3).



Source: GLAAS 2021/2022 country survey.

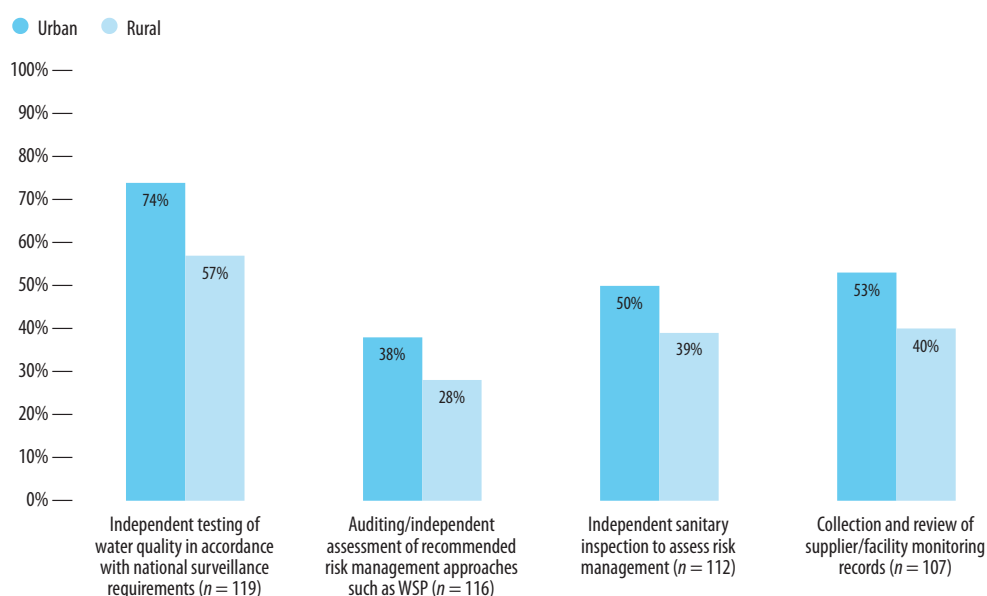
Fig. 10.3 Level of implementation of risk management approaches

Independent surveillance

Surveillance of drinking-water quality and wastewater and sludge treatment to independently check that regulations are being met consists of a range of activities, including independent testing and sanitary inspections. For surveillance to be successful, it should involve end product testing and more proactive, preventative checks of risk management.

For drinking-water quality, end product testing is carried out in more countries than sanitary inspections or auditing. Auditing also lags behind water quality testing in rural areas (Fig. 10.4).

Countries reported that surveillance activities that inform planning and actions are more likely in urban areas than rural areas.

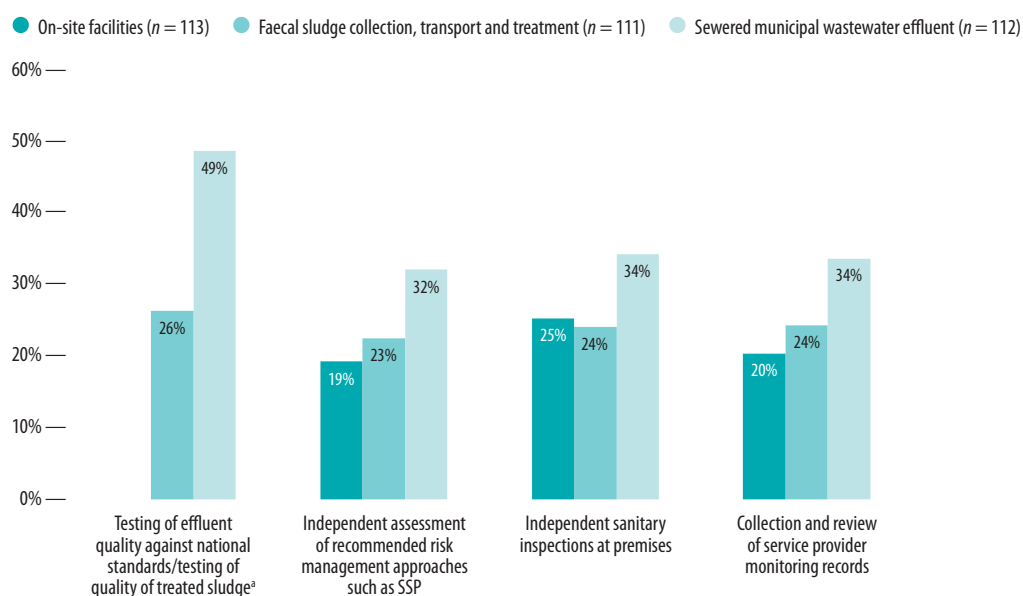


Source: GLAAS 2021/2022 country survey.

Fig. 10.4 Percentage of countries performing drinking-water quality surveillance activities that inform planning and actions

Surveillance activities for different types of sanitation services are lacking. Less than half of responding countries reported that surveillance activities are performed and inform planning and actions. Only 49% of countries reported that effluent quality is tested for municipal sewer wastewater. Surveillance of on-site facilities and faecal sludge management lags behind that of sewer municipal wastewater effluent (Fig. 10.5).

Less than half of countries reported performing key wastewater and sludge treatment surveillance activities, and some activities are performed by only a fifth of countries.



^aTreatment of effluent quality against national standards/testing of quality treated sludge was not asked about for on-site facilities.

Source: GLAAS 2021/2022 country survey.

Fig. 10.5 Percentage of countries performing wastewater and sludge treatment surveillance activities that inform planning and actions

References

1. State of the world's drinking water. Geneva: World Health Organization, United Nations Children's Fund and World Bank; 2022 (<https://apps.who.int/iris/bitstream/handle/10665/363704/9789240060807-eng.pdf>, accessed 21 October 2022).
2. The water supply and sanitation regulatory landscape across Africa: continent-wide synthesis report. Eastern and Southern Africa Water and Sanitation Regulators Association; 2022 (https://www.esawas.org/repository/Esawas_Report_2022.pdf, accessed 21 October 2022).

SECTION 11

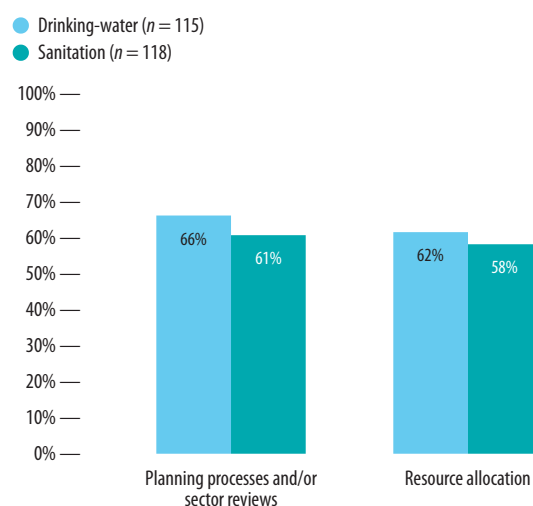
Data use for WASH

Data are a key aspect of evidence-based decision-making, and should be used during policy and planning processes, as well as when determining how to allocate resources and reviewing sector progress. This section examines if data are being used in planning processes and for resource allocation, the current status and sufficiency of resources for WASH policies and plans, if countries are conducting joint sector reviews and barriers for data use in decision-making.

Decisions for planning processes and resource allocation

While the GLAAS 2021/2022 cycle results show a slight increase from the GLAAS 2018/2019 cycle, countries still reported that data are not always used for decisions related to planning processes and/or sector reviews or for resource allocation. A way to improve data use in decisions on resource allocation is to develop WASH accounts (Box 11.1). Data are more likely to be used in decisions related to water than to sanitation (Fig. 11.1).

Approximately two thirds of countries use data in a majority of their decisions related to planning and resource allocation for WASH.



Source: GLAAS 2021/2022 country survey.

Fig. 11.1 Percentage of countries that reported data being used for a majority of decisions for drinking-water and sanitation

Box 11.1 Using WASH accounts data to inform decision-making

Previous GLAAS cycles have shown challenges with the availability of WASH financial data. Using the TrackFin methodology to develop WASH accounts is a way that countries can improve their data on WASH financial flows. WASH accounts, which provide a systematic description of financial flows in the WASH sector, show all expenditures for WASH in a country for specific years and aim to answer four key questions:

- What is the total expenditure in the WASH sector?
- What are funds being spent on?
- Who pays for WASH services and how much do they pay?
- Who are the main WASH service providers and how much are they spending?

Ghana, an original WASH accounts pilot country, completed its third cycle of WASH accounts in 2022. The scope of the WASH accounts has grown steadily since the pilot, and the quality of the data has improved from one cycle to the next. The Ministry of Finance is working towards disaggregating accounting systems to better distinguish WASH activities. Likewise, the Government of Ghana has integrated the WASH accounts process into workplans, indicating the importance of generating WASH accounts every 2 years for evidence-based planning, resource mobilization and allocation.

In the GLAAS 2021/2022 cycle, nine countries used data from WASH accounts to answer questions on WASH expenditures in the GLAAS country survey (Argentina, Belize, Burkina Faso, Costa Rica, Ghana, Guatemala, Honduras, Nicaragua and Nigeria).

Policies and plans

While many countries reported having formally approved policies, very few reported supporting them with approved, costed plans with sufficient²⁸ human and financial resources. This could be in part because decisions are not always made based on data. For instance, Fig. 11.2 shows that while almost all countries have formal sanitation policies or are developing them, very few have corresponding costed plans with sufficient financial and human resources. Similar results are seen for drinking-water.

Two thirds of countries have policies, but few countries have costed plans with sufficient financial and human resources to implement them.



Note: "Sufficient financial and human resources" is defined as having more than 75% of what is needed to implement sanitation plans.

Source: GLAAS 2021/2022 country survey.

Fig. 11.2 Percentage of countries that reported formally approved policies supported by resourced plans for urban and rural sanitation

Joint sector reviews

In the GLAAS 2021/2022 cycle, 67% of countries reported conducting joint sector reviews. However, the frequency of the reviews varies: about half of countries reported conducting them annually. Ninety-one per cent of countries reported that the Ministry of Health is involved in joint sector reviews, and 70% of countries noted that the Ministry of Finance is involved.

²⁸ "Sufficient financial and human resources" is defined as having more than 75% of what is needed to implement sanitation plans.

Although conducting a joint sector review does not necessarily imply that governments are implementing actions to improve performance, some countries reported impacts from these reviews. Impacts were reported in the following areas: legislation, policy, planning, targets, human resources, institutional arrangements, monitoring and finance, with a range of 85% of responding countries reporting impacts in planning to 59% reporting impacts in institutional arrangements. Examples of impacts of countries' joint sector reviews are listed below.

- In **Kyrgyzstan**, because of a joint sector review, the government decided to develop and adopt a single law on water supply and sanitation.
- In **Lao People's Democratic Republic**, a joint sector review was used for setting WASH targets to be achieved by 2025 and 2030.
- In **Pakistan**, a joint sector review led to the identification and allocation of institutional roles and responsibilities, including decentralization commitments.
- In **Zambia**, a Monitoring and Evaluation Framework was developed to enhance the monitoring of water and sanitation programmes following a joint sector review.
- In **Nepal**, a joint sector review led to the development of a monitoring information system for WASH (Box 11.2).

Box 11.2 Developing a monitoring information system for WASH in Nepal

In Nepal, a joint sector review led to a development plan that envisioned a national WASH monitoring information system. In 2018, the Government of Nepal, through the Ministry of Water Supply and the Department of Water Supply and Sewerage Management, launched NWASH – Nepal's web-based GIS-enabled national monitoring information system for WASH (1). NWASH supports the collection, validation and use of WASH data from local, provincial and central levels. Data in NWASH are aligned with the SDGs, including alignment with the SDG 6 indicators reported by the JMP and GLAAS, and there are plans to integrate key WASH accounts indicators into the system. The reports generated by NWASH are used by all levels of government and WASH user committees to provide evidence for informed planning and decision-making. Private sector providers are using the market reports generated by NWASH to target WASH service provision and plan for sector expansion.

Barriers for data use in decision-making and coordination

In the GLAAS 2021/2022 cycle, countries were asked to describe any barriers to using data for decision-making. From their responses, the following barriers are common across countries: a lack of human and financial resources, fragmentation of data collection and processing, poor reliability and quality of data, and a lack of coordination among WASH actors in collecting and sharing data. The example of Guyana highlights some of the barriers.

- In **Guyana**, the lack of specific sector-based data is the primary barrier to using data for decision-making. There is no formal, government-led mechanism for WASH sector review, which is critical in collecting and making available clear and accurate sector-based data. While some WASH sector data become available via assessment of WASH projects or annual national budgetary planning, these data are not always applicable for wider WASH sector decision-making. Another barrier is the absence of a data sharing or national coordination mechanism for the WASH sector. Critical WASH data may be available in one sector (e.g. health), but other key sectors such as education may be unaware of the data. The commissioning of a national coordination mechanism, with clear data collection, sharing and actioning protocols would eliminate these barriers.

The reported lack of coordination as a barrier to using data for decision-making provides insight on how well coordination mechanisms function in countries. In the GLAAS 2021/2022 country survey, 82% of countries reported having a government-led, national-level mechanism to coordinate the work of different ministries, institutions and organizations with responsibilities for WASH. However, when asked how frequently the coordination mechanisms meet or convene, the most common response was on an ad hoc basis.

ESA support for national monitoring systems for sanitation

In the GLAAS 2021/2022 ESA survey, 67% ($n = 21$) of responding ESAs noted that developing national monitoring systems for sanitation is a high or very high priority. Examples of ESA work to strengthen monitoring systems are presented below.

- The **African Development Bank** has funded the African Minister's Council on Water to support and strengthen decision-making processes at national, subregional and continental levels in the water and sanitation sector in Africa. The project will enable countries to strengthen capacity to improve the quality of data collected and prepare annual reports for the African Union.
- An objective of the **Bill & Melinda Gates Foundation** is that major data gaps are filled, including for SDG Target 6.2, and national data systems are expanded and improved in at least three countries.
- **UNICEF's** national monitoring objectives include strengthening sanitation monitoring and data systems to align with the full ambitions of SDG Target 6.2. This means contextualizing definitions of safely managed sanitation in national policy, supporting improved monitoring approaches and introducing new survey approaches.

Reference

1. Total data collected. In: NAWASH [website]. Government of Nepal, Ministry of Water Supply (<https://dwssm.gov.np/en/news/nwash/>, accessed 21 October 2022).



SECTION 12

The GLAAS process, data quality and external validation

This section provides information about the GLAAS process, and describes efforts taken to ensure data quality and the external validation of GLAAS data.

The GLAAS process

The GLAAS 2021/2022 cycle was launched in September 2021, and 121 countries and territories submitted surveys (Box 12.1). Governments were invited to participate in the GLAAS 2021/2022 cycle by their WHO regional office or WHO country office. In line with the universality principle of the SDGs, the GLAAS country survey was open to all interested countries and territories. Participation in the country survey was voluntary and involved data collection, supported in most cases by multistakeholder review workshops and data validation.

Box 12.1 GLAAS 2021/2022 country process key facts

Countries were asked to provide information on the implementation of the GLAAS process and data use through the GLAAS country feedback form. Based on the 73 countries that submitted the form, the following are key facts about the GLAAS process in countries.

- The median number of days to complete the GLAAS survey was 21 days.
- A median of seven government ministries/institutions and three nongovernmental entities were involved in the GLAAS process in each country.
- Women represented over half of participants in the GLAAS process in 51% of participating countries.
- Seventy-one per cent of countries held a meeting as part of the GLAAS process.
- Eighty-one per cent of countries based their responses on documents and evidence.
- Around 60% of countries conducted multistakeholder reviews as part of the validation of the survey, with an additional 37% performing limited multistakeholder reviews.
- Eighty-two per cent of countries used government funds in addition to seed funding from WHO to support the GLAAS process.

Data quality

Experience gained by GLAAS country teams in previous cycles and their appreciation of the benefits of GLAAS are continuing to contribute to improved data quality. Mechanisms to improve data quality have been strengthened over the past two cycles, in particular the aspects below.

- The quality assurance process following survey submission is now more thorough and systematic, with stronger engagement from WHO regional and country offices. The quality assurance process identifies missing data, internal inconsistencies within

the survey, and inconsistencies with external data sources, national documentation and data from previous cycles. Follow-up questions were sent to all 121 participating countries and territories, and over 90% of countries provided responses.

- There is broader stakeholder participation and more robust GLAAS processes at the country level, including a multistakeholder validation process in most countries.

External validation

An external validation exercise was conducted as an objective measure of data quality. In the external validation, data collected through the GLAAS 2021/2022 country survey were compared with data from two data sources: (a) the internal WHO Water Safety Planning global database and (b) matching indicators from the Eastern and Southern Africa Water and Sanitation Regulators Association (ESAWAS) report, *The water supply and sanitation regulation landscape across Africa (1)*.²⁹ For WSP, the comparison covered 96 countries in total, and showed only moderate agreement between the two data sources (59% urban, 64% rural). However, there were important differences³⁰ in the indicators from the two data sources that make it unsurprising there were many mismatches. Eight indicators from the ESAWAS regulation landscape were compared for 29 to 35 African countries for each indicator. Agreement between the two data sources was high for existence of national policies for drinking-water (91%) and sanitation (77%), establishment of regulatory authority by law for drinking-water (90%) and sanitation (79%), and existence of national drinking-water standards (77%) and standards for drinking-water service delivery (77%). Agreement was lower for the two indicators related to public participation (68% and 52%), but there were notable differences between the indicators from the two sources.

Reference

1. The water supply and sanitation regulatory landscape across Africa: continent-wide synthesis report. Eastern and Southern Africa Water and Sanitation Regulators Association; 2022 (https://www.esawas.org/repository/Esawas_Report_2022.pdf, accessed 21 October 2022).

²⁹ This is different from the method of external validation from previous cycles, in which GLAAS survey data were compared with responses from WASH experts for selected questions for a sample of countries. That method was discontinued due to increasing difficulties in recruiting WASH experts for specific countries who had not been involved in the GLAAS process.

³⁰ The GLAAS indicator monitors whether countries have WSP or equivalent approaches included in policies/regulations, whereas the WSP database monitors whether the country has a formally approved WSP policy or regulation, validated through document review of the policy/regulation.

ANNEX

Contributors

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**Oman** (Saqr Albelushi, Omar Alfarsi, Mariam Alfazari, Shamsa Alharthi, Alaa Al-Issa, Ala'A Aljardani, Jabir Alsooti, Muhammad Alyazidi, Amir Johri); **Pakistan** (Sabeen Afzal, Sana Chaudhry, Saiqa Imran, Saima Shafique, Saeed Ashraf Siddique, Rafique Tahir); **Panama** (Nicolas Alvarado, Otilia Arroyo, Mayra Botacio, Efrain Catillero, Ricardo Cerrud, Carlos Gómez, Victoria Hurtado, Atala Milord, Marcela Outten, Ricardo Ponce); **Papua New Guinea** (Edmond Bannick, Kiap Benjamin, Estella Bunbun, Gau Gau, Ray Kangu, Philip Ware); **Paraguay** (Mirtha Alcaraz, Nelson Alegre, Ruben Cubilla, Alex Gaona, Edda Garcete, Olga Marecos, Jose Silvero); **Peru** (Karina Paola Ginocchio Quintana, Julio Cesar Kosaka Harima, Norma Florentina Parra Sanchez, Giancarlo Albertho Rosazza Osorio, Alexandro Daniel Saco Valdivia, Mary Tesén Romero, Victor Alberto Varillas Borja); **Philippines** (Roderick Planta); **Romania** (Diana-Cristina Achimescu, Daniela Anastasiu, Anca Cador, Ioan Chirila, Gheorghe Constantin, Antoaneta Dragoescu, Alina Huzui-Stoiculescu, Oana Iacob, Elvira Marchidan, Monica Vanda Munteanu, Anca Tudor); 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