National drinking-water and sanitation targets: Extended methodology and results from the GLAAS 2021/2022 cycle

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

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Acronyms and abbreviations

GLAAS	Global Analysis and Assessment of Sanitation and Drinking-Water
JMP	WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene
JSR	Joint sector review
n	Sample size
O&M	Operations and maintenance
pp	Percentage points
SDG	Sustainable Development Goal
SSP	Sanitation safety planning
UN	United Nations
WASH	Water, sanitation and hygiene
WHO	World Health Organization
WSP	Water safety planning

Glossary

See the Methodology for further details on the terminology used in this document.

Annual rate of change needed: The annual rate of change needed is a measure of progress that countries need to achieve each year to reach their national targets. The annual rate of change needed is computed as the difference between the target coverage value and the latest coverage value reported by the country divided by the length of time. It is expressed as percentage points increase needed each year for the country to reach their national target.

Historic annual rate of change: The historic annual rate of change is a measure of the past progress of countries towards their targets. It is expressed as percentage points per year.

JMP historic annual rate of change: The JMP historic annual rate of change is computed as the difference between the estimated coverages in 2020 and 2000 reported by the JMP divided by the length of time (20 years).

Country-reported historic annual rate of change: The country-reported historic annual rate of change is computed as the difference between the baseline and latest coverage values reported by countries divided by the length of time.

Annual rate of change ratio: The annual rate of change ratio is the comparison between the annual rate of change needed and the historic annual rate of change. It is computed as the annual rate of change needed divided the historic annual rate of change. Therefore, this number represents the factor by which progress will have to accelerate for a given country to meet its target.

On track countries: Countries for which the annual rate of change ratio was less than or equal to one, or the reported coverage was greater than or equal to 95%, or the target was already achieved.

Almost on track countries: Countries for which the rate of change ratio was greater than one, but less than two.

Acceleration needed countries: Countries for which the rate of change ratio was greater than two.

Introduction

Under Sustainable Development Goal (SDG) 6,[1] all United Nations (UN) Members States agreed to global targets of universal safely managed[2] 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.[3] 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 drinking-water and sanitation targets, governments establish and plan for the progress that their country aspires to make within a designated period of time.

Since 2008, the UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) initiative led by the World Health Organization (WHO) has collected data directly from national governments on their drinking-water, sanitation and hygiene (WASH) coverage targets. The overall 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.

Objectives

While previous GLAAS cycles have provided valuable insights on national target-setting in response to SDG 6, it is not known if these coverage targets are realistic, how much progress is needed to reach them or what factors may contribute to the likelihood that countries reach their national targets.

The GLAAS 2021/2022 cycle, featuring data from over 120 countries, included updated information on coverage targets for drinking-water and sanitation. The main findings from that GLAAS cycle are presented in the GLAAS 2022 report (*4)*. Key findings on coverage targets were presented in the report section *National drinking-water and sanitation targets.*

This document presents an extended methodology and additional results on national drinking-water and sanitation targets going beyond what was presented in the GLAAS 2022 report. The analysis conducted on targets data from the GLAAS 2021/2022 cycle aimed to answer the following questions:

- Are countries on track to meet their national targets?
- What progress is needed to reach national drinking-water and sanitation targets?
- What distinguishes countries that are on track from those in need of acceleration to meet their national targets?

[1] SDG 6 aims to "Ensure availability and sustainable management of water and sanitation for all,"(*1*).
[2] Safely managed drinking-water accounts for drinking-water from an improved water source that is accessible on premises, available when needed and free from faecal and priority chemical contamination. Safely managed sanitation is the use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or removed and treated offsite (*2*).
[3] According to the WHO/UNICEF Joint Monitoring Programme on Water supply, Sanitation and Hygiene, in 2020 two billion lacked access to safely managed water, 3.6 billion lacked access to safely managed sanitation and 2.3 billion lacked access to basic hygiene services (*3*).

Methodology

Data sources

The primary data source used for this analysis of national drinking-water and sanitation targets was the GLAAS 2021/2022 country survey (*5*). Question A7 (see Annex) in the survey asked countries to report[4] their national targets[5] for drinking-water and sanitation including information on:

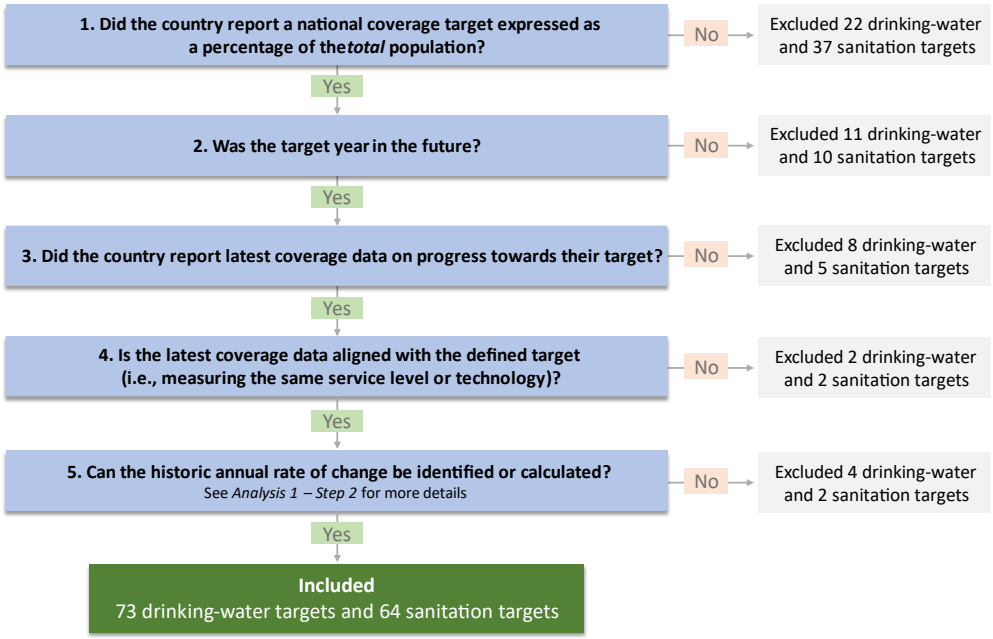
- *Target year* (e.g., 2030)
- *Target value* (e.g., 100%)
- *Target description* (i.e., what the target measures)
- *Other descriptive information*: Such as the types of facilities that are included in the target, service provision requirements, and service quality requirements
- *Source of the target* (i.e., where the government established the target, usually a policy)
- *Most recent coverage data for the target:* Including the source of the data reported

As described further in the sections below, secondary data on drinking-water and sanitation coverage from the WHO/UNICEF Joint Monitoring Programme on Water supply, Sanitation and Hygiene (JMP) was used in the analysis to complement the GLAAS survey data. The JMP is responsible for global monitoring of progress towards SDG 6 targets for universal access to safe and affordable drinking-water and equitable sanitation and hygiene services (*2*). Every two years, the JMP releases updated estimates and progress reports for WASH in households.

Inclusion and exclusion criteria

Responses to question A7 from 120 countries were reviewed and assessed to determine eligibility for inclusion in the analysis. The inclusion and exclusion criteria described in Figure 1 below were applied to both drinking-water targets and for sanitation targets, separately, for each country.

Figure 1. Criteria for including national drinking-water and sanitation targets in the final analysis



[4] In most countries, the GLAAS country survey is completed as a multi-stakeholder process. To read more about the GLAAS country survey process in countries, see the section *The GLAAS process, data quality and external validation* in the GLAAS 2022 report (*4*).

[5] Question A7 also asked about coverage targets specific for urban and rural populations. However, this analysis only reviewed national coverage targets *(5)*.

To ensure comparability, the first criterion was that reported targets were national coverage targets expressed as a percentage of the *total* population. The percentage of the population could not be specific to only urban or rural populations. For example, some countries reported targets aiming to increase the total number of households with basic drinking-water or sanitation in rural areas. Countries that reported targets that were not expressed as a percentage of the total population or countries that did not report a target were excluded from the analysis. Twenty-two drinking-water targets and 37 sanitation targets were excluded from the analysis due to this criterion.

The second criterion was that the target year had to be in the future. The latest data collection cycle for GLAAS took place in the second half of 2021 and the first half of 2022. Countries that submitted in 2021 were required to have a target year of 2022 or beyond. Countries that submitted in 2022 were required to have a target year of 2023 or beyond. If countries reported a target set in the past the target was excluded from the analysis. Eleven drinking-water targets and 10 sanitation targets were excluded from the analysis due to this criterion.

The third criterion was that countries had to have reported coverage data. The GLAAS country survey asked for baseline coverage and latest coverage[6] on progress towards a national target. If either of these values were reported, the criterion was fulfilled because the analysis required only one of those data points. Eight drinking-water targets and five sanitation targets were excluded from the analysis for not reporting coverage data.

The next criterion ensured that the coverage rates reported were in line with the defined target. In other words, the criterion requires that the definition of the target matched what was being monitored and reported as the most recent coverage data. For example, some countries defined a national sanitation target aiming for safely managed sanitation but reported most recent coverage data for basic sanitation. To identify these cases, the source of the target and source of the most recent coverage data were reviewed and compared. At this stage, two drinking-water targets and two sanitation targets were excluded from the analysis. Countries that reported having reached their national targets were also included in the analysis.

The last criterion was that a historic annual rate of change aligned with the defined target could be identified or calculated. This criterion is described further in the section below Analysis 1 – Step 2.

Validation process

The source of the target and the source of the most recent coverage data were reviewed to validate both the target and the latest data reported. This was especially important in cases where the target description was difficult to interpret, or the most recent coverage data did not align with the defined target. If further clarification was needed on the target or most recent coverage data, the GLAAS team followed-up with the government focal point to determine whether to include or exclude the national target from the final analysis.

From the initial inclusion and exclusion criteria, drinking-water targets from 73 countries and sanitation targets from 64 countries were included in the next step of the analysis.

[6] Baseline coverage rate is the earliest coverage rate measured for monitoring progress towards the target. Latest coverage rate is the most recent monitoring progress measured towards the target (*5*).

Analysis 1: Are countries on track to meet their national targets?

The first analysis assessed if countries are on track to meet their national targets. The objective of the analysis was to ultimately categorize national drinking-water and sanitation targets as either "on track", "almost on track" or "acceleration needed". To determine if countries are on track to meet their national targets, the progress needed to reach their national target was compared with past progress. 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. Therefore, the analysis required the calculation of the annual rate of change needed for countries to reach their targets as well as the identification of a point of comparison - the historic annual rate of change.

The following steps were taken to classify country targets and are described in the section below:

- Step 1: Calculate the annual rate of change needed to reach the national target
- Step 2: Determine the historic annual rate of change
- Step 3: Compare the annual rate of change and historic annual rate of change
- Step 4: Categorize drinking-water and sanitation targets as "on track", "almost on track" or "acceleration needed"

Step 1: Calculate the annual rate of change needed to reach the national target

The annual rate of change is a measure of progress that countries need to achieve each year to reach their national 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 using the following equation:

$$Annual\ rate\ of\ change\ needed\ to\ reach\ target = \frac{(\%\ coverage\ target\ \boldsymbol{value}) - (\%\ latest\ coverage\ \boldsymbol{value})}{(Coverage\ target\ \boldsymbol{year}) - (Latest\ coverage\ \boldsymbol{year})}$$

The calculation shows the percentage point increase needed each year for the country to reach their national target. For example, in the GLAAS 2021/2022 country survey, Nepal reported a national sanitation target aiming for 99% basic coverage by 2030 and the latest basic coverage was reported as 95% in 2019. Therefore, the annual rate of change needed to achieve the target is an increased coverage of 0.36 percentage points (pp) per year.

Step 2: Determine the historic annual rate of change

The historic annual rate of change is a measure of the past progress of countries towards their targets. A few possibilities for the historic annual rates of change were considered for the analysis including: 1) using the maximum JMP historic annual rate of change recorded by any country as of 2020;[7] 2) using the JMP historic annual rate of change for each country for a specific service level or technology; or 3) calculating a historic annual rate of change using national data reported by countries to GLAAS.

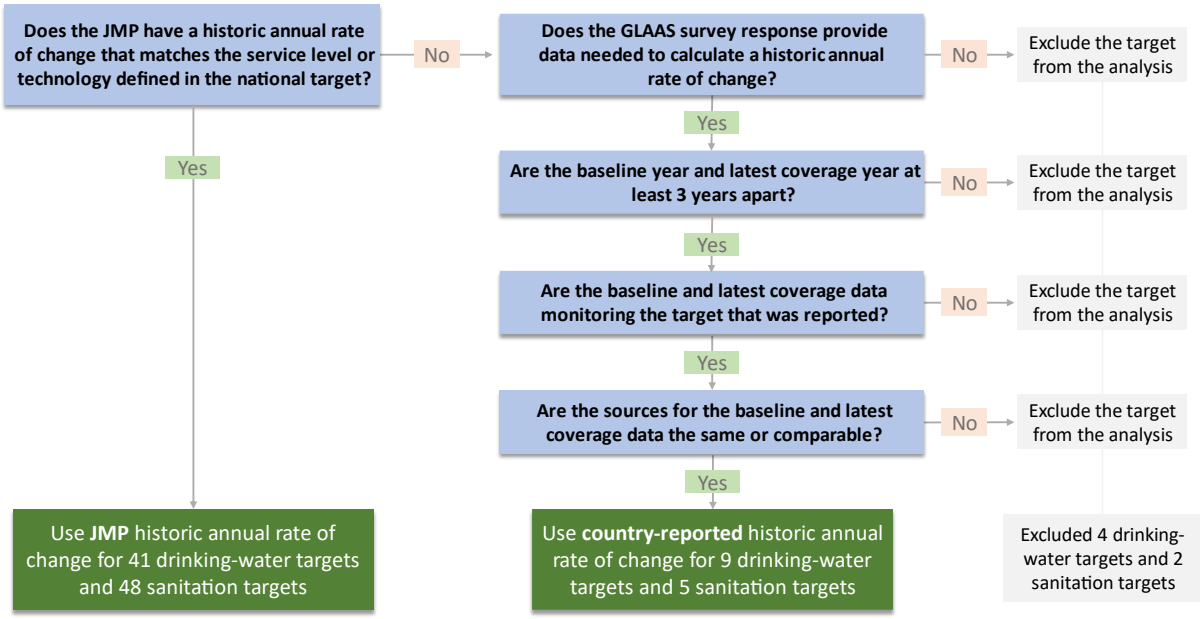
For each option, the GLAAS team considered advantages or disadvantages, such as the likelihood of countries being able to achieve the rate of change (i.e., how fair is it to use this rate of change to assess whether the country is on track to reach their national target), the comparability between countries, and availability of data. In the end, the team chose a mixed approach to identify the historic annual rate of change in order to maximize the number of countries included in the analysis. The flowchart

[7] For the time period 2000–2020, the JMP computed annual rates of change for individual countries to track achievement across different service levels and technologies. The maximum JMP historic annual rate of change is the maximum value across all countries for a specific service level or technology. For example, 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 as 3.1 pp per year for basic services (*3*).

in Figure 2 outlines the final approach taken to identify the historic annual rates of change used for the analysis.

A historic annual rate of change was not calculated or identified in the following instances: 1) one country for drinking-water and four countries for sanitation that had already reached their targets; and 2) 22 countries for drinking-water and seven countries for sanitation that have already achieved over 95% coverage. In the categorization described further in Step 4, these countries were considered "on track" and, therefore, a historic annual rate of change did not need to be calculated or identified. Historic annual rates of change were identified/calculated for 51 countries for drinking-water and 53 countries for sanitation. This measurement is used as a comparison point with the annual rate of change needed calculated in Step 1.

Figure 2. Flowchart to identify a historic annual rate of change



For most countries, the historic annual rate of change used in this analysis was the annual rate of change estimated by the JMP. The JMP historic annual rate of change is computed as the difference between the estimated coverages in 2020 and 2000 divided by the length of time (20 years). While JMP-estimated annual rates of change have the advantages of being robust, stable and available for many 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 (*2*). The JMP historic annual rate of change used was that which most closely matched the service level or technology (e.g., sewered sanitation) identified in the country's national target.

A handful of countries did not have a JMP annual rate of change in line with their national target. In these cases, the country-reported historic annual rate of change was used. The GLAAS survey asked countries to report two data points for their national target monitoring – a baseline coverage value and the latest coverage value – which allowed a historic annual rate of change to be calculated using country-reported data. Historic annual rates of change should ideally be calculated using progress data across a span of many years. Therefore, an additional criterion for using the country-reported values was that the baseline year and latest coverage year had to be at least three years apart.[8] The GLAAS team verified that the country-reported coverage data measured the same type of coverage as the target. For example, if the target aimed for safely managed sanitation, the coverage data reported

[8] The average number of years between the two progress points used to calculate country-reported historic annual rates of change were 4.5 years for drinking-water and 4.6 years for sanitation.

also needed to be for safely managed sanitation. The GLAAS team also ensured that the baseline and latest coverage data were comparable by confirming that the source of the data were the same or comparable. If the criteria were met, the historic annual rate of change was computed using country-reported data in the following equation:

$$Historic\ annual\ rate\ of\ change = \frac{(\%\ latest\ coverage\ \boldsymbol{value}) - (\%\ baseline\ coverage\ \boldsymbol{value})}{(Latest\ coverage\ \boldsymbol{year}) - (Baseline\ coverage\ \boldsymbol{year})}$$

Four drinking-water targets and two sanitation targets were excluded from the analysis because a historic annual rate of change could not be identified from JMP or calculated from country-reported data.

Step 3: Compare the annual rate of change and historic annual rate of change

With both the annual rate of change needed to reach the national target and a historic annual rate of change identified, it was possible to compare the two. The following ratio was computed for the comparison:

$$Annual\ rate\ of\ change\ ratio = \frac{Annual\ rate\ of\ change\ needed\ to\ reach\ target}{Historic\ annual\ rate\ of\ change}$$

Step 4: Categorize drinking-water and sanitation targets as "on track", "almost on track" or "acceleration needed"

The final categorization of countries into "on track", "almost on track" and "acceleration needed" groups was based on the following criteria:

- ***On track**:* The rate of change ratio was *less than or equal to one*. In addition, if the latest coverage value reported by the country was greater than or equal to 95%,[9] then the target was classified as "on track". Likewise, countries that reported having already reached their national targets were categorized as "on track".
- ***Almost on track**:* The rate of change ratio was *greater than one, but less than two*.
- ***Acceleration needed**:* The rate of change ratio was *greater than two*.

Targets for 73 countries for drinking-water and 64 countries for sanitation were categorized as either "on track", "almost on track" or "acceleration needed".

While countries are not expected to make constant and linear progress towards their national targets, it is expected that progress made in the past provides a good indication of future progress, particularly for years in the near future. Hence, in this analysis a country was considered to be "on track" if it had been making faster progress in the past than was needed to reach the target, i.e., the historic annual rate of change was greater than the annual rate of change needed to reach the target.

Countries are not limited to the rate of progress they have achieved in the past, as policies and implementation of plans may come into force to accelerate progress; therefore, having an annual rate of change needed greater than the historic annual rate of change does not imply that countries will not reach their target. In addition, for countries that had a sudden and rapid increase in coverage, the historic annual rates of change could be underestimated, which could result in a country being erroneously categorized as "acceleration needed". At the same time, it is rare for a country to be able

[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.

to achieve acceleration beyond a certain point, as evidenced by the maximum JMP historic annual rates of change. Based on these considerations, a threshold was defined, beyond which it was considered difficult or challenging for a country to achieve their target without fundamental changes in the national WASH landscape. Hence a country that would need to more than double[10] their historic annual rate of change was considered to be in need of acceleration to reach their target.

Analysis 2: What progress is needed to reach drinking-water and sanitation targets?

Analysis 2 directly compared the annual rate of change needed for each country to reach their targets with the historic annual rate of change. The results are presented by the categories established in analysis 1 ("on track", "almost on track" or "acceleration needed"). For each group, progress charts showing the target, current coverage rate and annual rate of change needed for each country were developed. The average annual rates of change needed and historic annual rates of change were calculated as a point of comparison for each group.

Analysis 3: What distinguishes countries that are on track from those in need of acceleration to meet their targets?

Analysis 3 was an exploratory analysis comparing the status of WASH systems for countries that are on track and those in need of acceleration. The "almost on track" targets were excluded from this analysis since they were few in number and the primary objective of the overall analysis was to distinguish "on track" from "acceleration needed" countries.

The GLAAS team compared over 50 GLAAS indicators for drinking-water and sanitation to identify differences in WASH system indicators for "on track" and "acceleration needed" countries. The analysis included indicators on WASH systems that are important drivers for WASH progress. For each indicator, the GLAAS team assessed the following for drinking-water and for sanitation:

1. Are there differences in the results between the "on track" and the "acceleration needed" groups?
2. If so, which group is performing better on the indicator?

Once indicators with differences between "on track" and "acceleration needed" countries were identified, the GLAAS team reviewed whether the *same* difference was seen for both drinking-water and for sanitation.

Many WASH system indicators differed little between the "on track" and "acceleration needed" 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 between "on track" and "acceleration needed" countries for drinking-water and for sanitation, such as availability of resources and implementation of regulatory functions. In order to identify robust differences between "on track" and "acceleration needed" groups, the results section presents indicators that showed differences between the two groups for both drinking-water and sanitation.

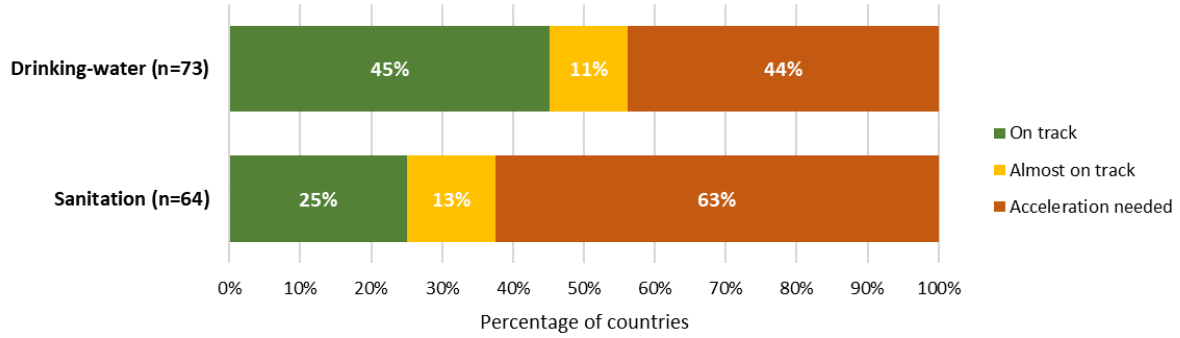
[10] The robustness of setting the threshold at 2 was tested by varying the threshold between 1.5 and 3 and checking how the grouping of countries changed. A maximum of three countries changed categories between "acceleration needed" and "almost on track" by varying the threshold values, hence the categorization of countries seems quite robust to changes in the threshold value.

Results

Analysis 1 results: Are countries on track to meet their national targets?

The results of the assessment presented in Figure 3 reveal that more countries are on track to achieve drinking-water targets than sanitation targets. 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.

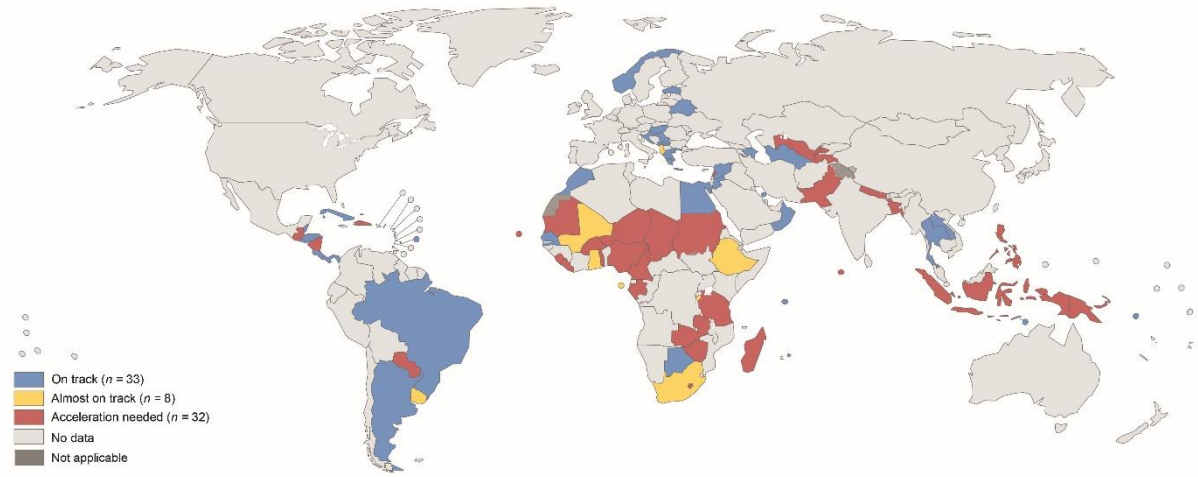
Figure 3. Percentage of countries with national drinking-water and sanitation coverage targets categorized as progress "on track", "almost on track" or "acceleration needed"



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

Of the 73 countries assessed for drinking-water, 33 were on track, eight were almost on track and 32 needed to accelerate their progress in order to reach their target. For sanitation, of the 64 countries that were assessed, 16 were on track, eight were almost on track and 40 needed to accelerate their progress to reach their target. Figure 4 and Figure 5 show the countries in each category for drinking-water and for sanitation targets respectively.

Figure 4. Status of progress needed to reach national drinking-water coverage targets

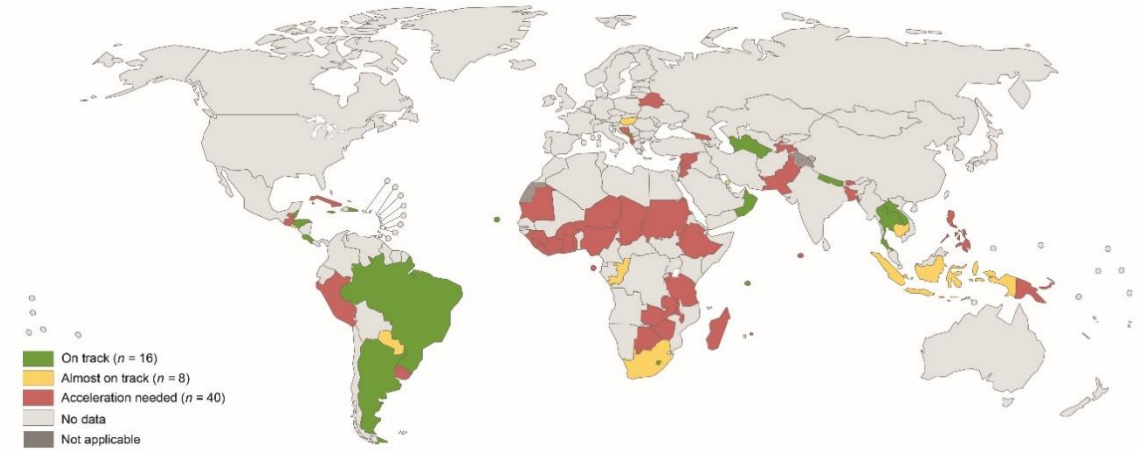


Map production: Water, Sanitation, Hygiene and Health, WHO.

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.

Figure 5. Status of progress needed to reach national sanitation 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.

Analysis 2 results: What progress is needed to reach drinking-water and sanitation targets?

Table 1 shows that the average annual rate of change needed for "acceleration needed" countries to reach their drinking-water targets is an increase of 3.64 pp per year, while historically the annual rate of change achieved by these countries is an average of 0.94 pp per year. This comparison shows that "acceleration needed" countries will need to make unprecedented progress to reach their national drinking-water targets.

Table 1 and Table 2 present a summary of the progress needed to reach drinking-water and sanitation targets by category. The average annual rate of change needed and the average historic annual rate of change is presented for each group. Overall, this comparison reveals that "acceleration needed" countries will require unprecedented efforts – far beyond what has historically been achieved – to reach their national targets.

To further assess each country, targets were plotted on "progress charts" that show 1) the latest coverage value and year, 2) the target value and year, and 3) the annual rates of change needed to achieve the target for each group – "on track"; "almost on track" and "acceleration needed". The charts include national targets of differing levels of service and technologies, as per country definition. Countries that have already achieved their targets are excluded from the figures. Countries classified as "on track" because of having coverage values above 95% that did not provide sufficient data to calculate an annual rate of change needed are also excluded from the figures.

Progress needed to reach drinking-water targets

Table 1 shows that the average annual rate of change needed for "acceleration needed" countries to reach their drinking-water targets is an increase of 3.64 pp per year, while historically the annual rate of change achieved by these countries is an average of 0.94 pp per year. This comparison shows that "acceleration needed" countries will need to make unprecedented progress to reach their national drinking-water targets.

Table 1. Average annual rates of change required to reach national drinking-water targets and average historic annual rates of change for countries by category in pp per year

Categorization	*n*	Average annual rate of change needed to reach target (pp per year)	Average historic annual rate of change (pp per year)
All drinking-water targets[11]	**61**	**2.3**	**0.9**
On track	21	0.5	0.8
Almost on track	8	1.7	1.1
Acceleration needed	32	3.6	0.9

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

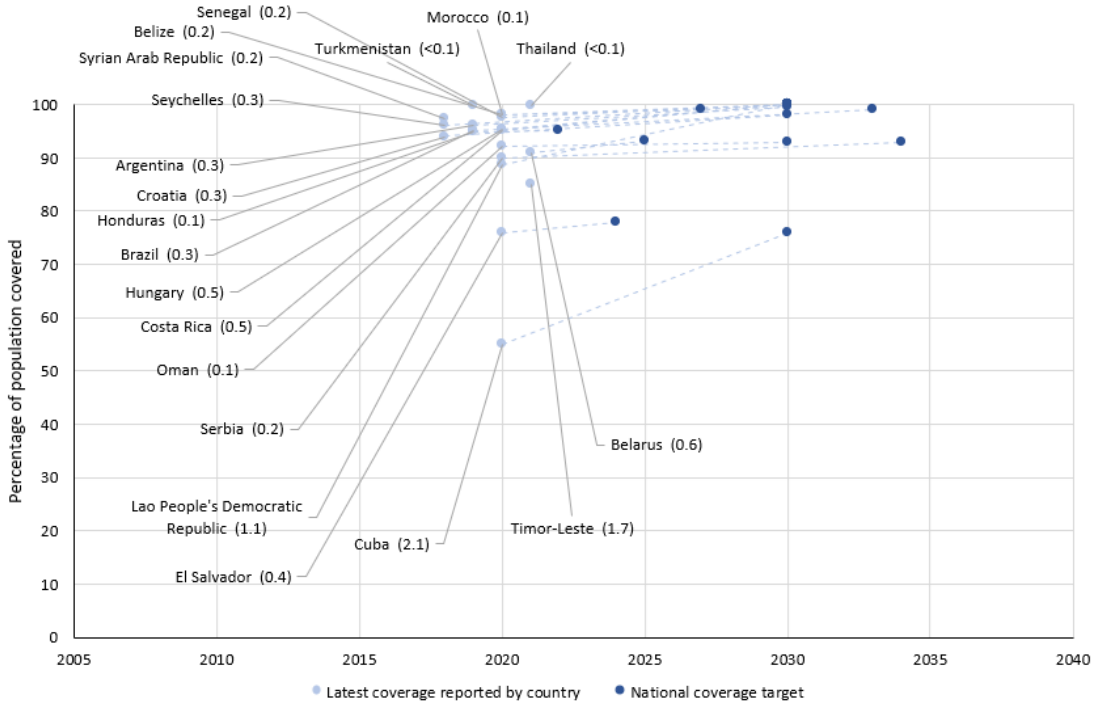
Ten countries would need to accelerate their progress by more than five times to reach their drinking-water targets. Of these countries, five would need to accelerate by more than ten times their current rate of change if they want to achieve their national drinking-water targets.

Figure 6, Figure 7 and Figure 8 below show the progress needed for individual countries in the "on track", "almost on track", and "acceleration needed" groups to reach their drinking-water targets. In

[11] Countries that have already achieved their targets are excluded from Table 1 and Figures 6, 7 and 8. Countries considered as "on track" because of having coverage values above 95% but which did not provide sufficient data to calculate an annual rate of change needed are also excluded.

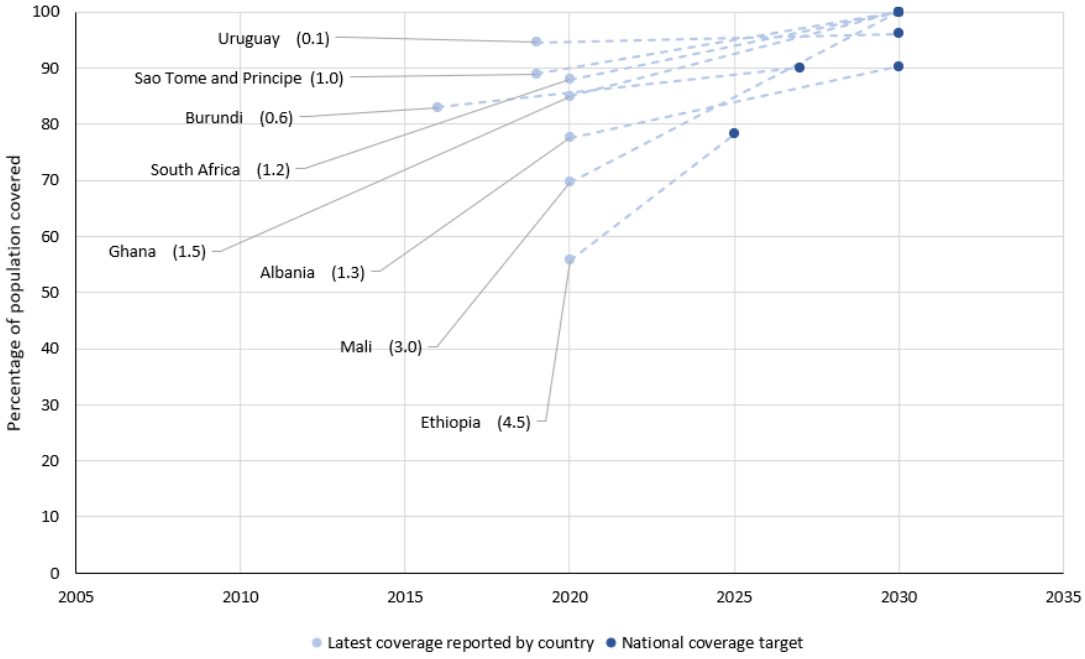
Figure 6, two countries (Cuba and El Salvador) have coverage targets less than 80%. Because the targets are more aligned with their current coverage (El Salvador), or their current rate of change (Cuba), the countries are categorized as “on track”.

Figure 6. Annual rates of change required for "on track" countries to achieve national drinking-water targets (*n*=21)



Note: The numbers in parentheses after country names indicate the annual rate of change needed to reach the target in pp per year. The chart includes national targets of differing levels of service and technologies, as per country definition.
Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

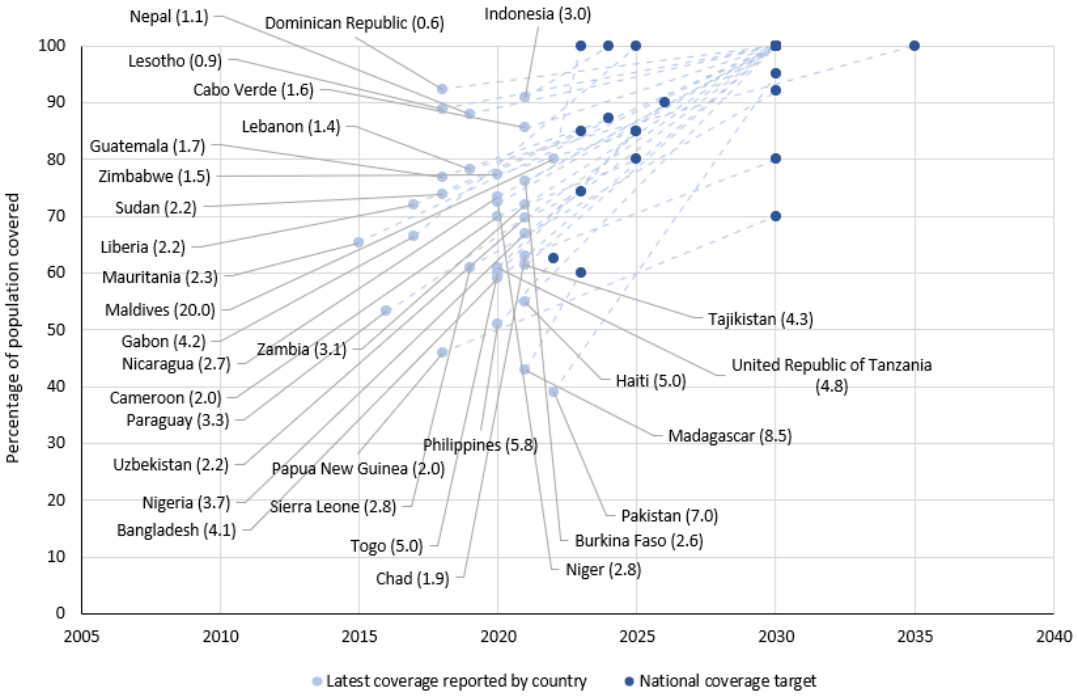
Figure 7. Annual rates of change required for "almost on track" countries to achieve national drinking-water targets (*n*=8)



Note: The numbers in parentheses after country names indicate the annual rate of change needed to reach the target in pp per year. The chart includes national targets of differing levels of service and technologies, as per country definition.
Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

Countries categorized as “acceleration needed” are presented in Figure 8. It is interesting to note that even countries with high coverage are categorized as “acceleration needed”. For example, even though Dominican Republic and Indonesia have coverage of over 90%, their comparatively low historic annual rates of change as they approach universal coverage do not support achieving the national targets.

Figure 8. Annual rates of change required for "acceleration needed" countries to achieve national drinking-water targets (*n*=32)



Note: The numbers in parentheses after country names indicate the annual rate of change needed to reach the target in pp per year. The chart includes national targets of differing levels of service and technologies, as per country definition.
Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

Progress needed to reach sanitation targets

For sanitation targets, Table 2 reveals an even larger gap between the annual rate of change needed and the historic annual rate of change than for drinking-water.

Table 2. Average annual rates of change required to reach national sanitation targets and average historic annual rates of change for countries by category in pp per year

Categorization	*n*	Average annual rate of change needed to reach target (pp per year)	Average historic annual rate of change (pp per year)
All sanitation targets[12]	**60**	**4.2**	**0.9**
On track	12	0.6	0.9
Almost on track	8	2.0	1.5
Acceleration needed	40	5.7	0.7

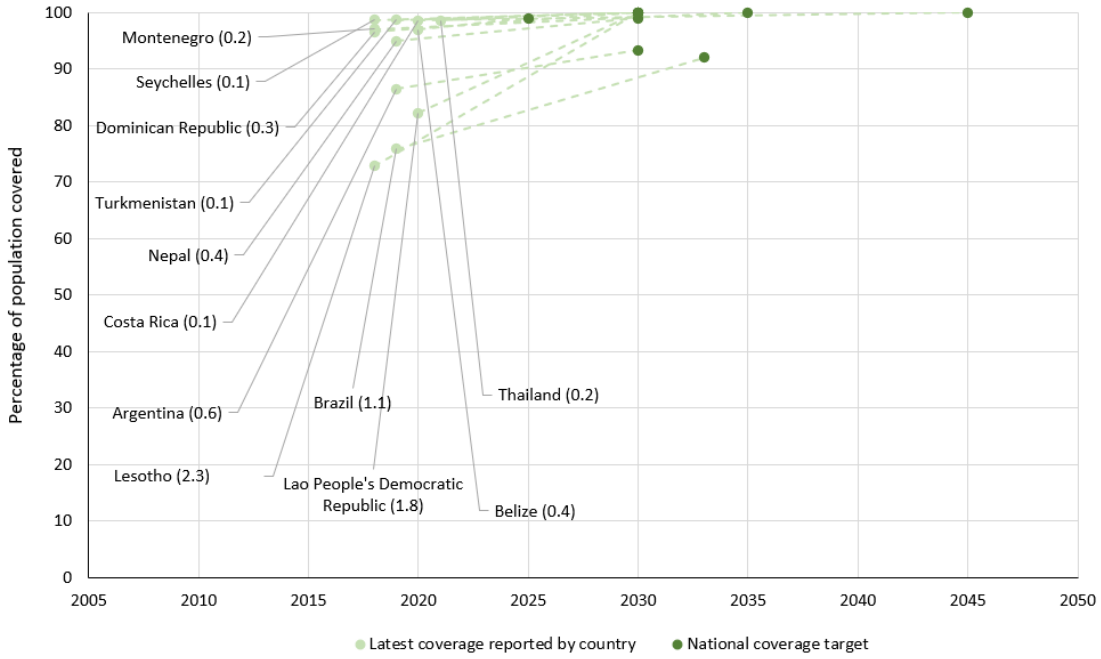
Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

[12] Countries that have already achieved their targets are excluded from Table 2 and Figures 9, 10 and 11. Countries considered “on track” because of coverage above 95% but which did not provide sufficient data to calculate an annual rate of change needed are also excluded.

Fourteen countries would need to accelerate their progress by more than ten times to reach their sanitation targets. Of these countries, six would need to accelerate by more than 20 times their current rate of change if they want to reach their sanitation targets.

Figures 9, 10 and 11 show the progress needed for individual countries in the “on track”, “almost on track” and “acceleration needed” groups to reach their sanitation targets. Even though countries such as Lesotho and Lao People’s Democratic Republic require higher rates of progress than others in the “on track” category, they are categorized as such due to their historic achievements that could make it possible for them to achieve the progress needed to reach their national targets.[13]

Figure 9. Annual rates of change required for "on track" countries to achieve national sanitation targets (*n*=12)

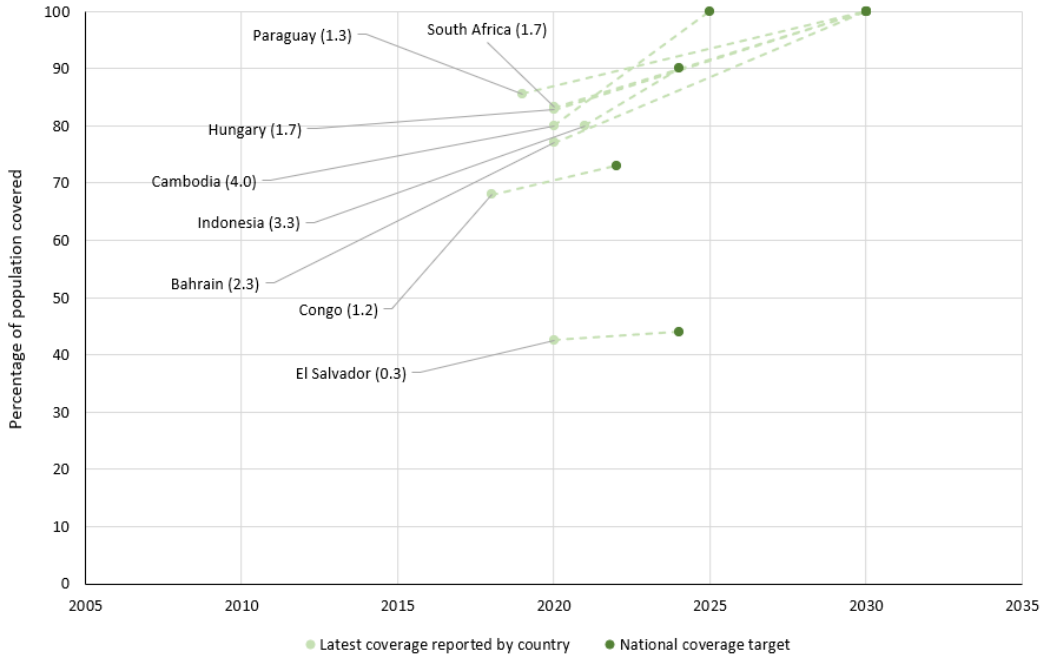


Note: The numbers in parentheses after country names indicate the annual rate of change needed to reach the target in pp per year. The chart includes national targets of differing levels of service and technologies, as per country definition.
Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

Figure 10 presents the progress needed for “almost on track” countries to achieve national sanitation targets. Although some countries like Cambodia and Indonesia will need to achieve rates of progress greater than 3 pp per year, these rates are not unprecedented. As of 2020, JMP recorded a maximum annual rate of change for basic sanitation of 3.13 pp per year in Nepal.

[13] In practice, progress is not linear and is likely to slow as the country approaches universal coverage.

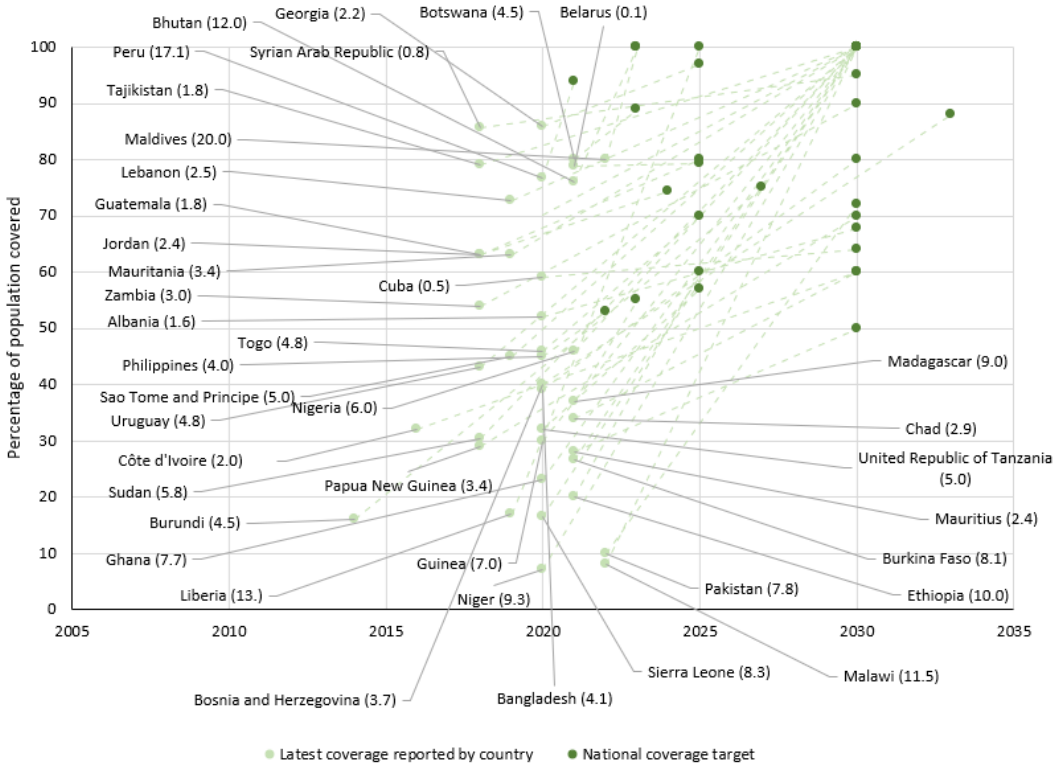
Figure 10. Annual rates of change required for "almost on track" countries to achieve national sanitation targets (*n*=8)



Note: The numbers in parentheses after country names indicate the annual rate of change needed to reach the target in pp per year. The chart includes national targets of differing levels of service and technologies, as per country definition.
Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

Over 40% of the "acceleration needed" countries have set sanitation targets aiming for universal (100%) coverage, which will require unprecedented rates of progress to achieve (Figure 11).

Figure 11. Annual rates of change required for "acceleration needed" countries to achieve national sanitation targets (*n*=40)

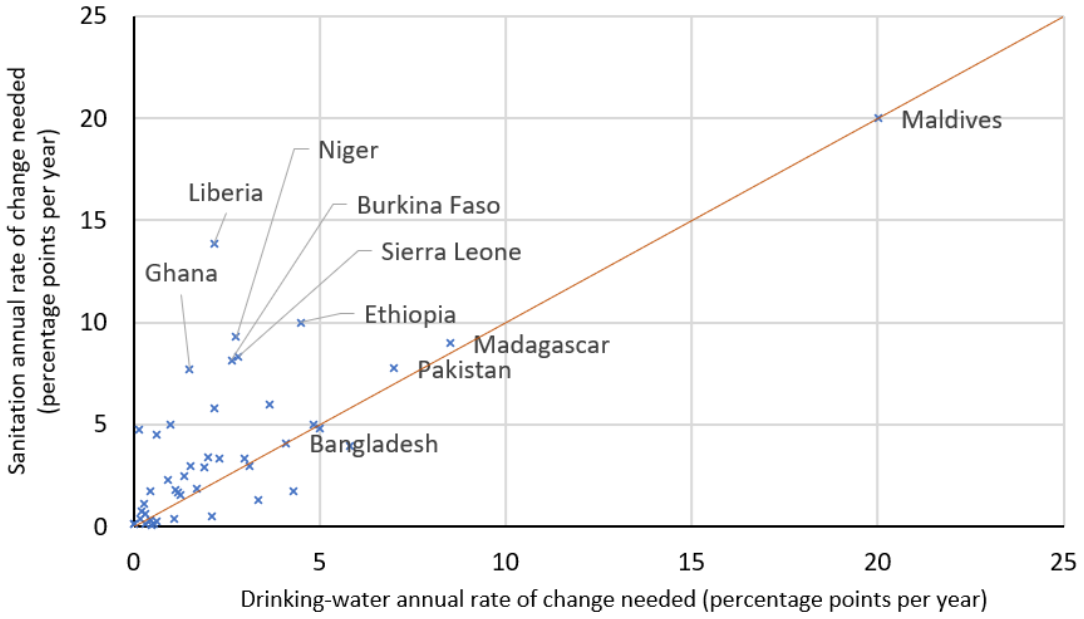


Note: The numbers in parentheses after country names indicate the annual rate of change needed to reach the target in pp per year. The chart includes national targets of differing levels of service and technologies, as per country definition.
Sources: GLAAS 2021/2022 country survey; WHO/UNICEF JMP 2021.

Comparison of progress needed for drinking-water vs. sanitation

On average, more progress is needed to reach national sanitation targets compared to national drinking-water targets. Countries that fall above the orange line in Figure 12 require faster progress (i.e., higher annual rates of change) to reach their national sanitation targets than the progress required to reach national drinking-water targets. Of the 51 countries that provided national targets for both drinking-water and sanitation, 67% would need to make faster progress on sanitation than on drinking-water to reach their target.

Figure 12. Comparison between annual rates of change needed to reach sanitation targets vs annual rates of change needed to reach drinking-water targets



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

Many countries, such as Bangladesh, Pakistan and Madagascar, are clustered around the line where the sanitation annual rate of change needed equals the drinking-water annual rate of change needed. This implies that the annual rates of change needed for sanitation and drinking-water are similar. However, in the majority of countries, the annual rate of change needed for sanitation is higher than that for drinking-water.

Analysis 3 results: What distinguishes countries that are on track from those in need of acceleration to meet their national targets?

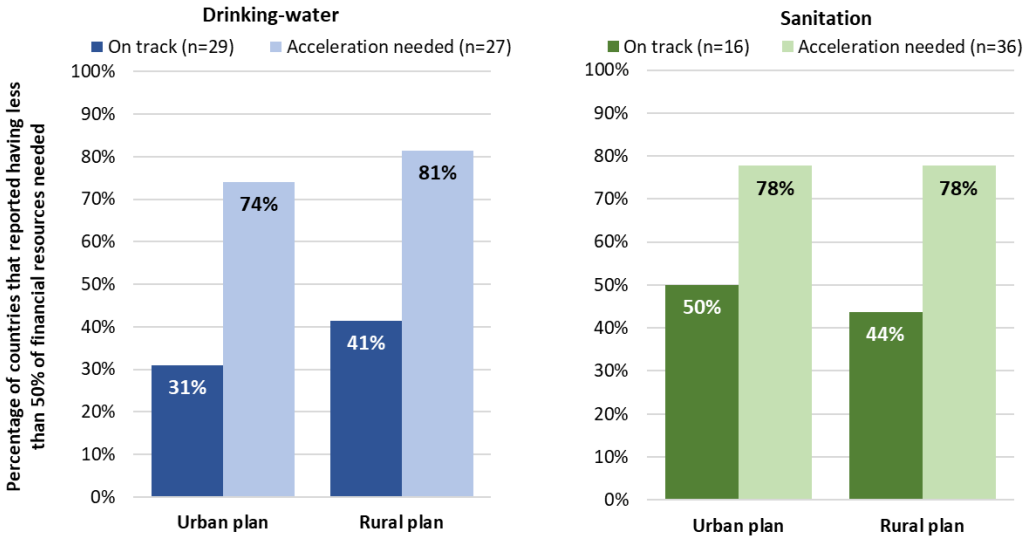
The results of this analysis present WASH system indicators that differed between the "on track" and "acceleration needed" countries. In interpreting the results, it is not appropriate to draw direct causal links between any of these factors and performance, as there are likely additional underlying 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.

Indicators where "on track" countries perform well

Resourced national WASH plans

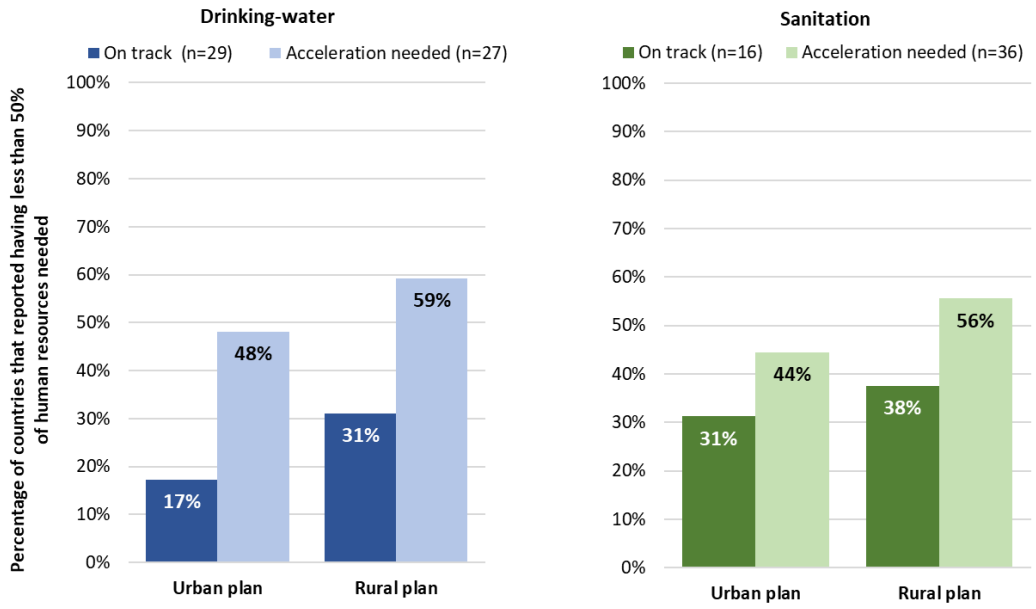
"On track" countries are more likely to have human and financial resources in place to implement their plans (Figure 13 and Figure 14). For urban and rural drinking-water plans, approximately two-to-three times as many countries in the "acceleration needed" group reported that they have less than 50% of human and financial resources to support implementation of their plans compared to "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.

Figure 13. 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



Source: GLAAS 2021/2022 country survey.

Figure 14. Percent of "on track" and "acceleration needed" countries that reported having less than 50% of human resources needed to implement national drinking-water and sanitation plans

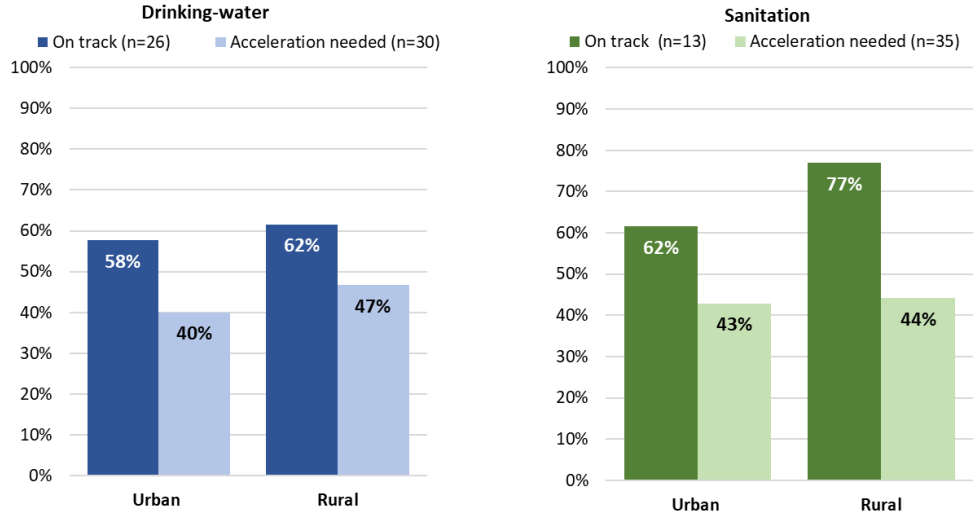


Source: GLAAS 2021/2022 country survey.

Absorption of domestic capital commitments

Less than half of "acceleration needed" countries reported over 75% absorption of domestic capital commitments for all four subsectors (Figure 15). "Acceleration needed" countries have lower utilization of domestic capital commitments.

Figure 15. Percentage of countries with over 75% utilization of domestic capital commitments for drinking-water and sanitation

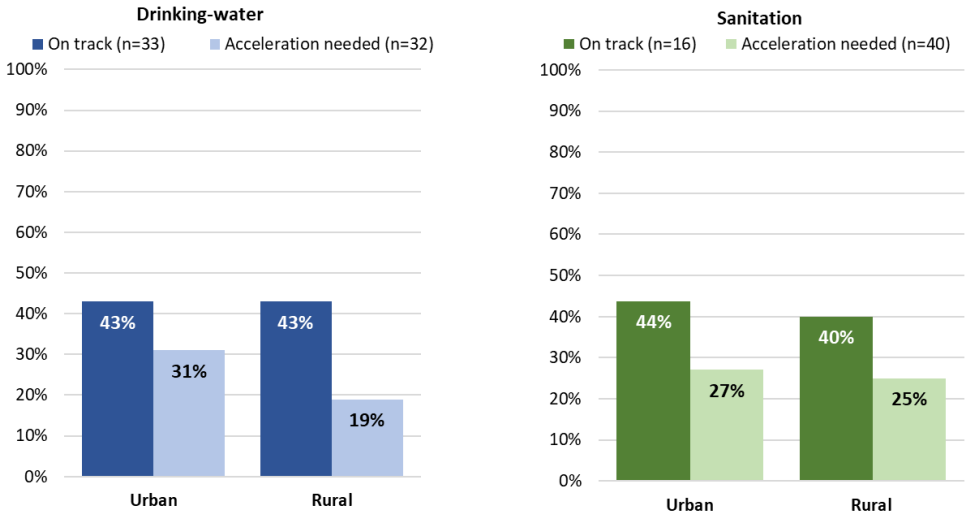


Source: GLAAS 2021/2022 country survey.

Cost recovery

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 operations and maintenance (O&M) costs from tariffs compared to only 19% of "acceleration needed" countries (Figure 16).

Figure 16. Percentage of countries that recover 80% or more of O&M costs from tariffs for drinking-water and sanitation

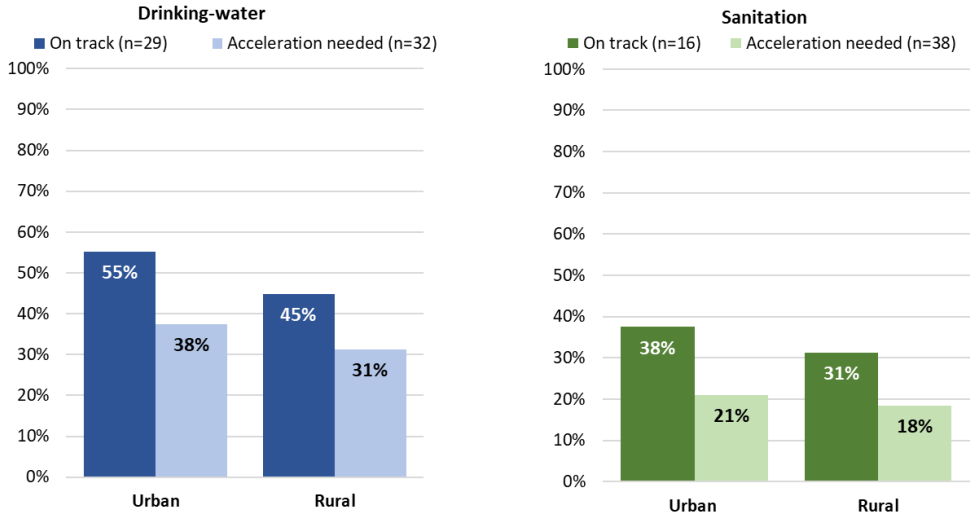


Source: GLAAS 2021/2022 country survey.

Affordability schemes

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 (Figure 17).

Figure 17. Percentage of countries with affordability schemes that are widely used for drinking-water and sanitation

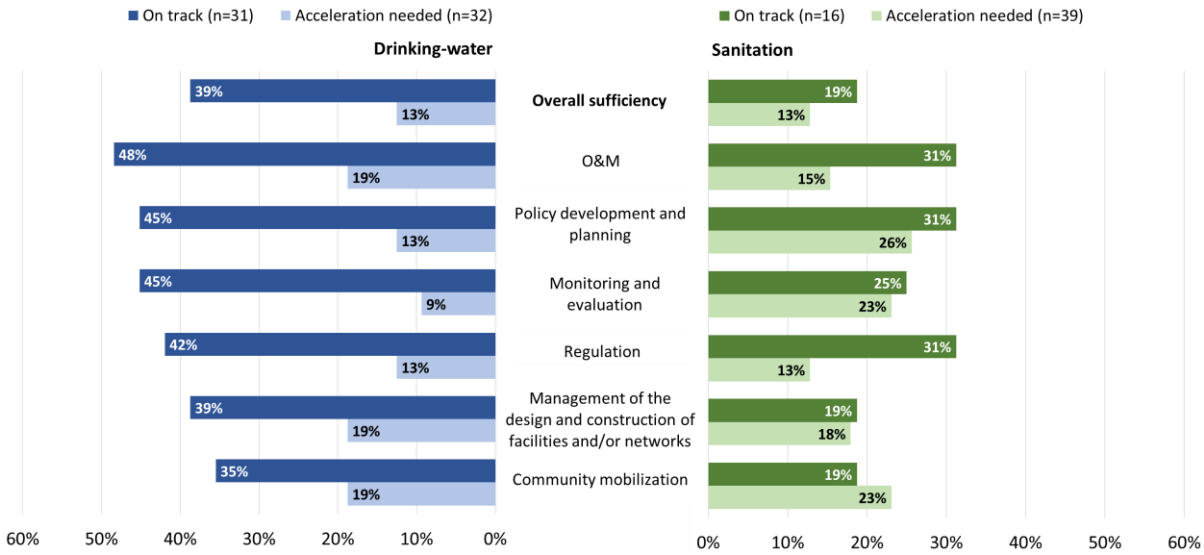


Source: GLAAS 2021/2022 country survey.

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 overall 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 (Figure 18).

Figure 18. Percentage of countries that reported having 75% or more of the human resources needed for drinking-water and sanitation

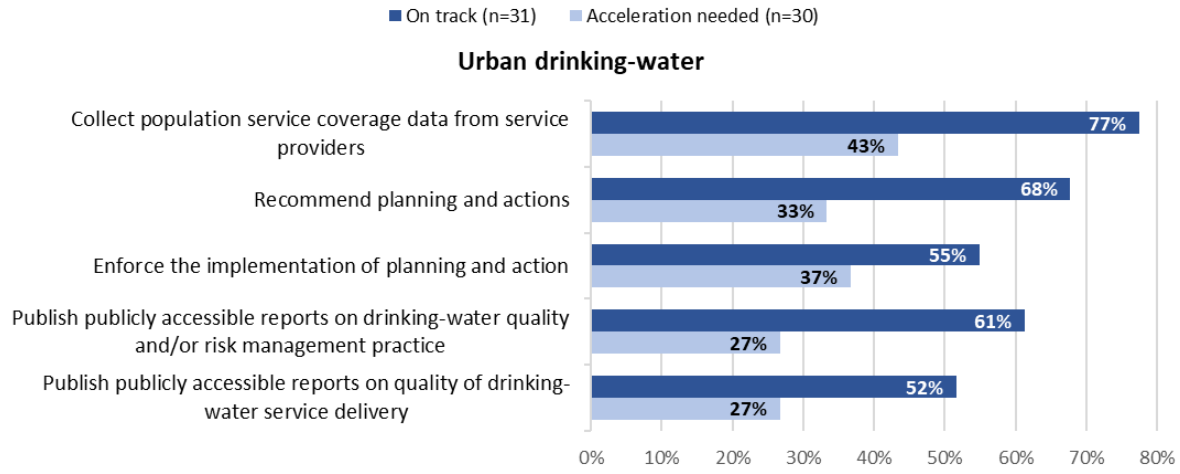


Source: GLAAS 2021/2022 country survey.

Regulatory authorities that perform key functions

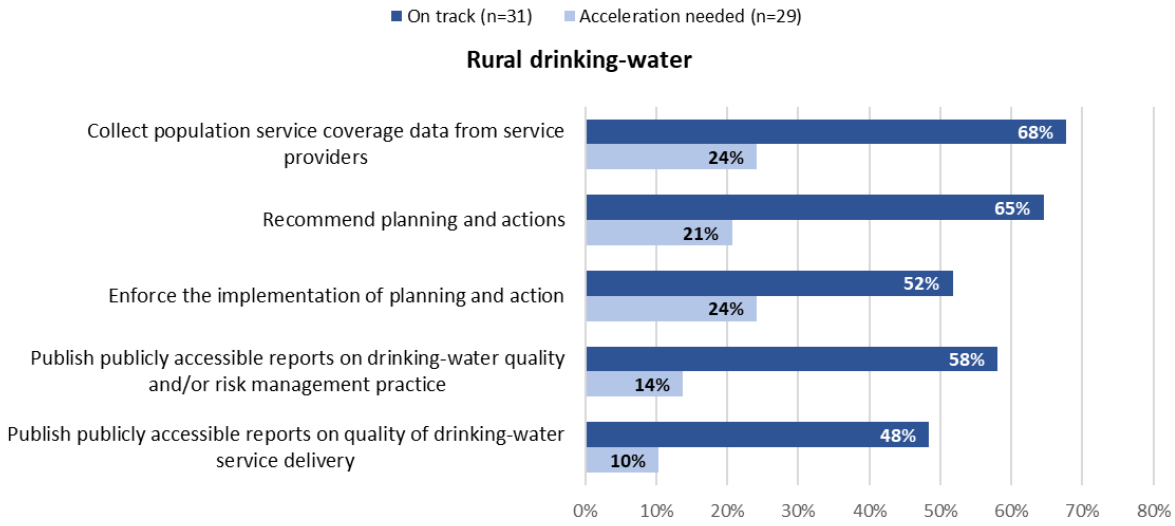
"On track" countries are more likely to have regulatory authorities that perform key functions for urban and rural drinking-water and sanitation (Figure 19 - Figure 22). These functions include setting standards, collecting data, publishing reports, enforcing implementation and taking corrective actions 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.

Figure 19. Percentage of countries fully implementing regulatory functions for urban drinking-water



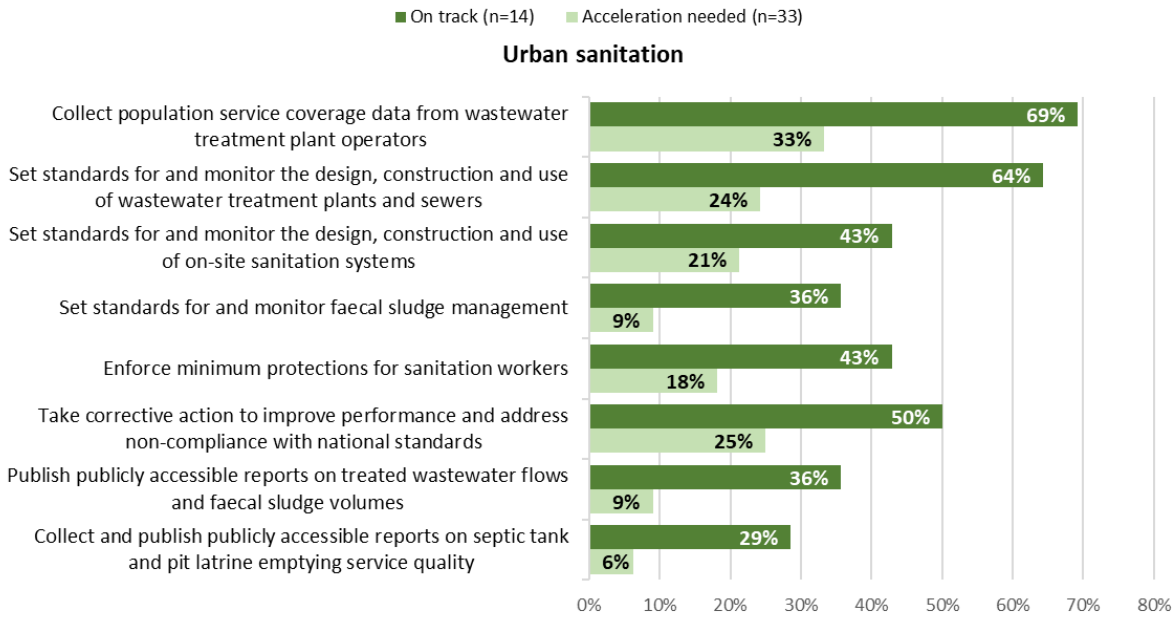
Source: GLAAS 2021/2022 country survey.

Figure 20. Percentage of countries fully implementing regulatory functions for rural drinking-water



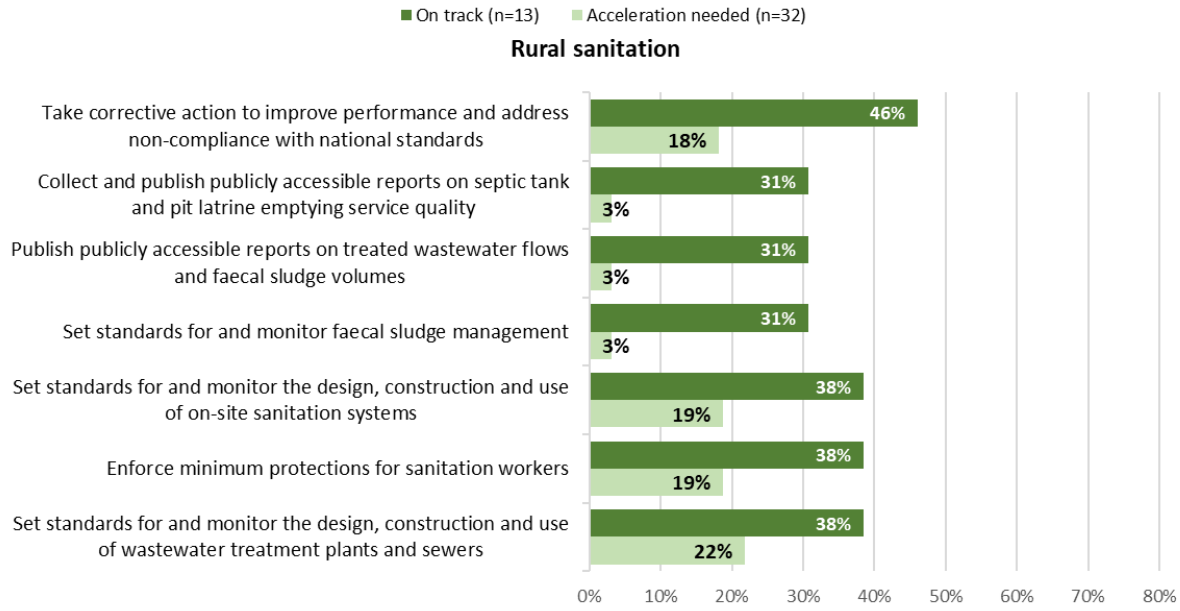
Source: GLAAS 2021/2022 country survey.

Figure 21. Percentage of countries fully implementing regulatory functions for urban sanitation



Source: GLAAS 2021/2022 country survey.

Figure 22. Percentage of countries fully implementing regulatory functions for rural sanitation

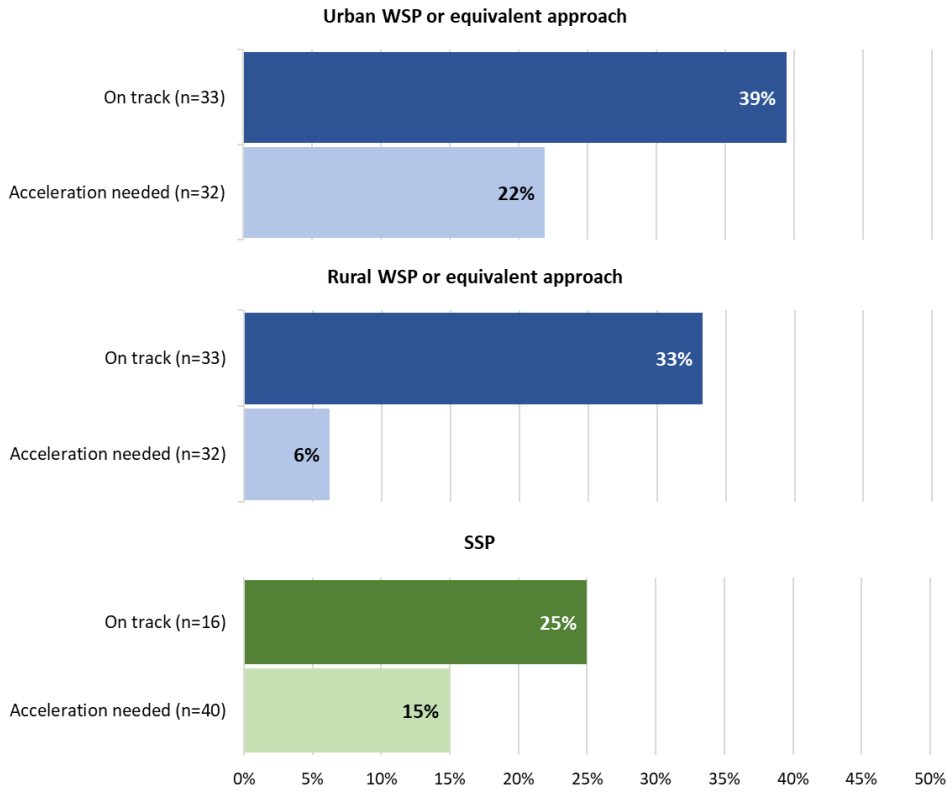


Source: GLAAS 2021/2022 country survey.

Implementation of risk management approaches

"On track" countries are more likely to implement water safety planning (WSP) and sanitation safety planning (SSP) compared to "acceleration needed" countries (Figure 23). The largest gap between the "on track" and "acceleration needed" countries is for WSP in rural areas.

Figure 23. Percentage of countries that implement WSP and SSP at a significant scale

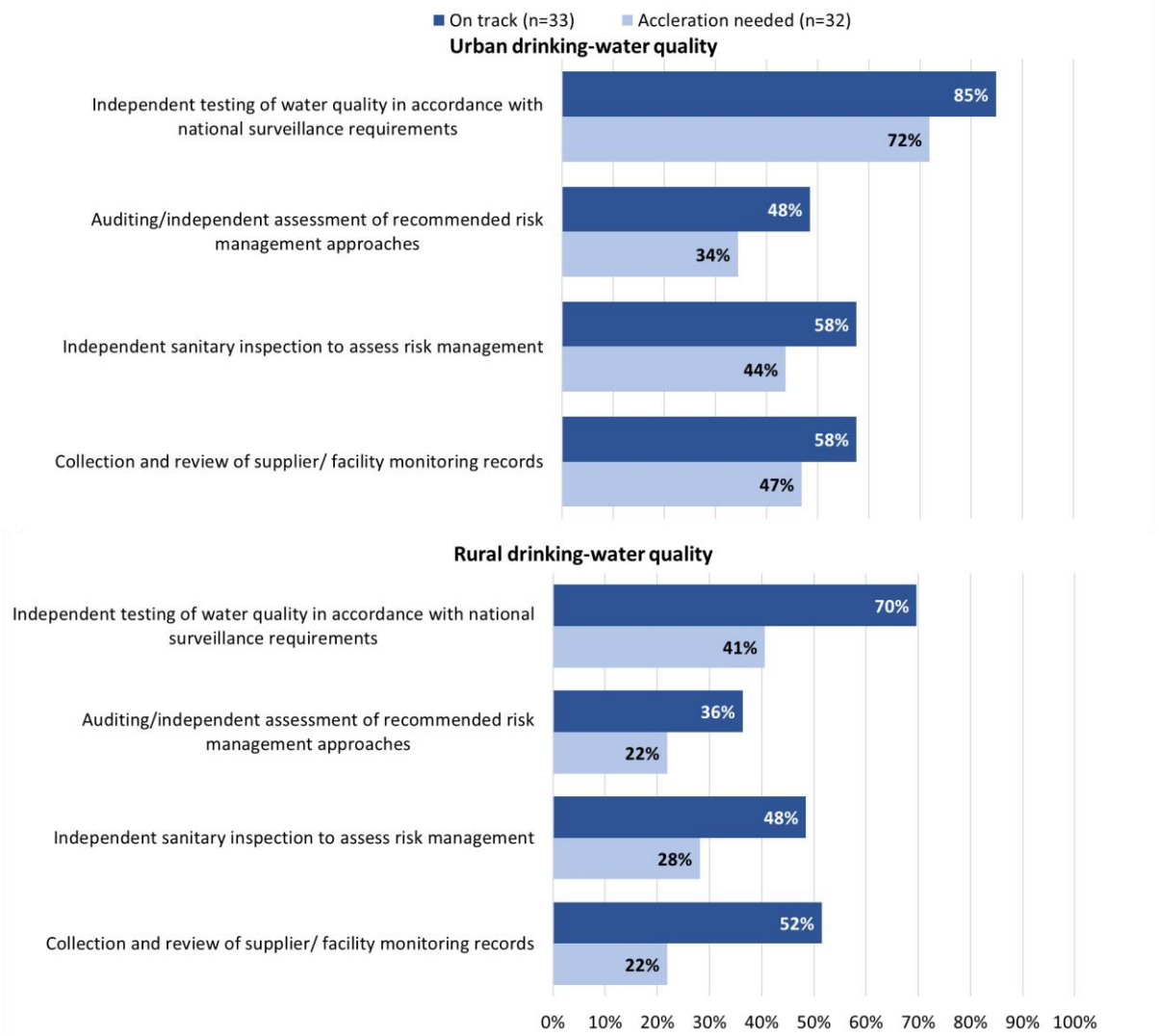


Source: GLAAS 2021/2022 country survey.

Performing independent surveillance

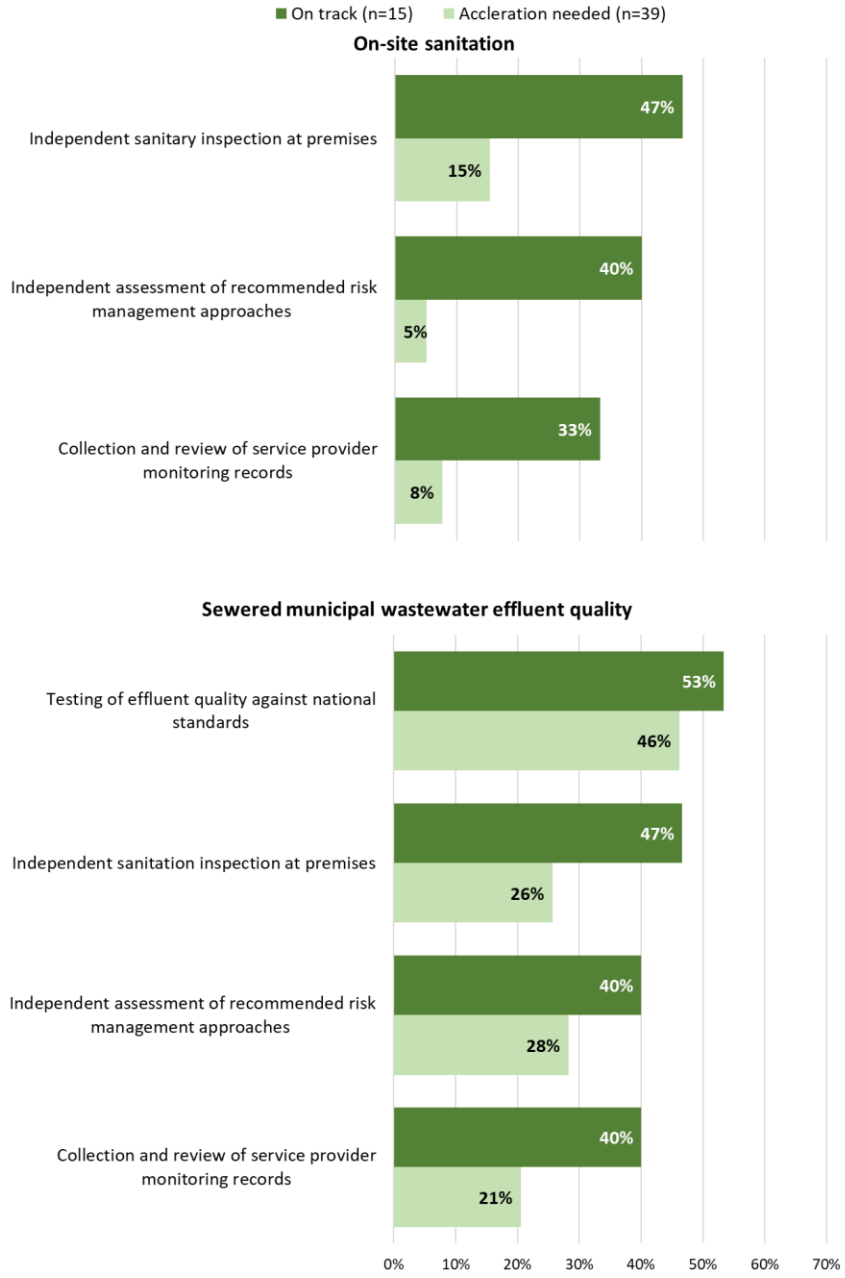
Countries that are on track to meet their national targets are more likely to perform independent surveillance that informs planning and action. Differences in independent surveillance functions between "on track" and "acceleration needed" countries are seen across subsectors – for on-site sanitation, faecal sludge management and sewered sanitation, as well as for urban and rural drinking-water. As shown in Figure 24, the largest discrepancies are seen in aspects of independent surveillance for on-site sanitation.

Figure 24. Percentage of countries performing independent drinking-water quality surveillance and informing remedial actions



Source: GLAAS 2021/2022 country survey.

Figure 25. Percentage of countries performing independent surveillance for on-site and sewered sanitation that informs planning and action



Source: GLAAS 2021/2022 country survey.

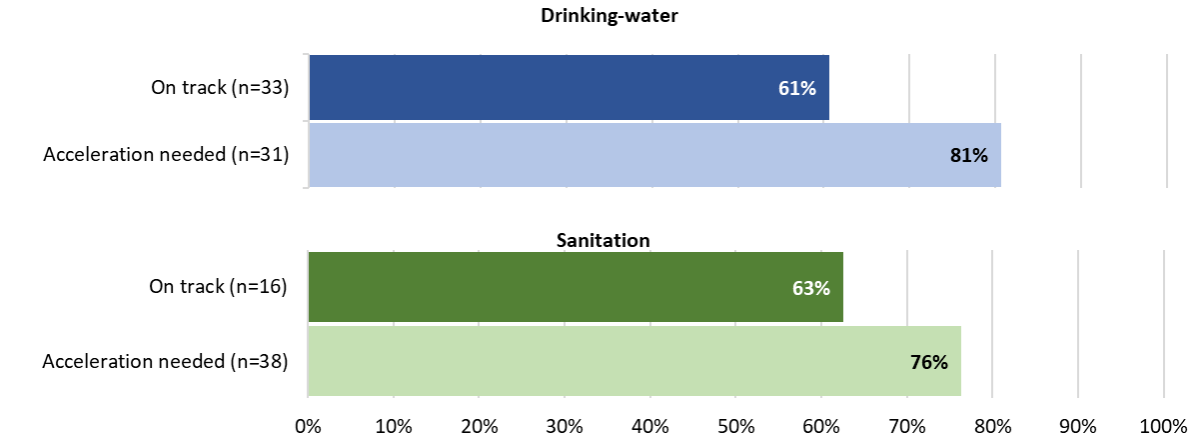
Indicators where "acceleration needed" countries perform well

To a lesser extent, some of the GLAAS WASH sector indicators showed "acceleration needed" countries doing well compared to "on track" countries. Two WASH systems indicators related to joint sector reviews (JSRs) were identified.

JSRs

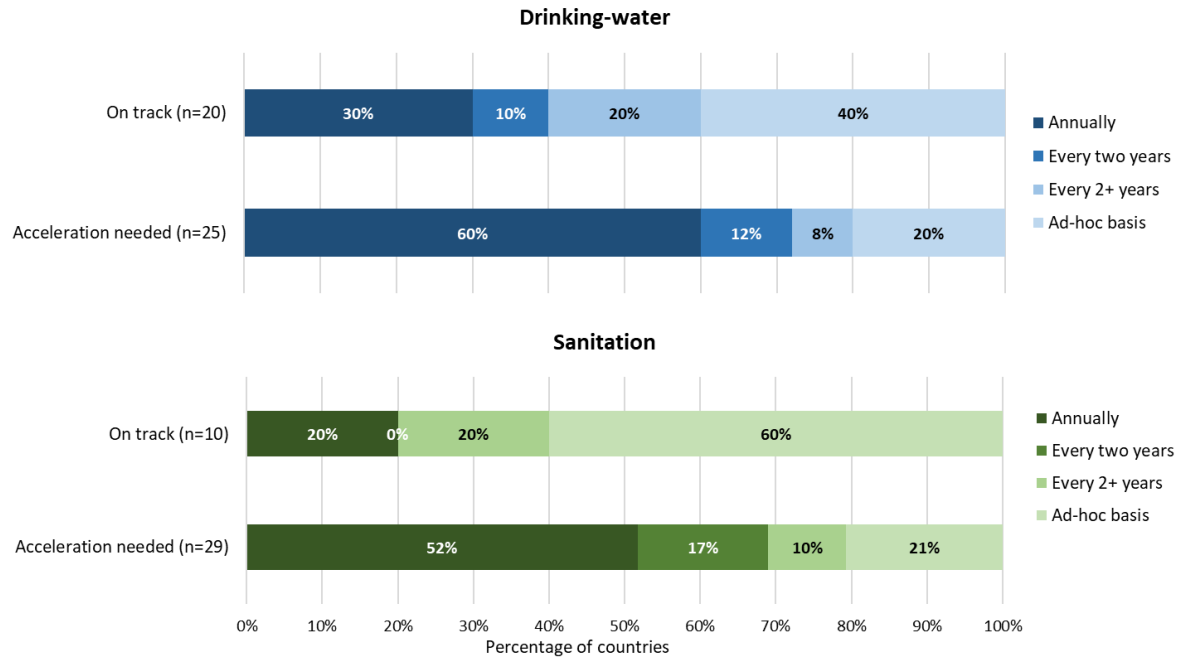
"Acceleration needed" countries are more likely to conduct JSRs for the WASH sector (Figure 26). Likewise, of those countries that conduct JSRs, "acceleration needed" countries are more likely to conduct them on an annual basis as compared to "on track" countries (Figure 27). "On track" countries were more likely to conduct such reviews on an ad hoc basis.

Figure 26. Percentage of countries where JSRs



Source: GLAAS 2021/2022 country survey.

Figure 27. Frequency of JSRs



Source: GLAAS 2021/2022 country survey.

Limitations

There are a number of limitations to the current analysis. First, despite best efforts, it is possible that the interpretation of the targets used for the analysis based on the information that was submitted through the GLAAS country survey may be incorrect or flawed. There may be mismatches between targets and coverage data that were not identified, or other inconsistencies that were not evident from the data provided.

Second, there are limitations to using the annual rates of change estimated by the JMP. As the JMP estimates the historic annual rate of change over a period of 20 years (2000 to 2020), it does not capture sudden and rapid changes in the rate of progress. Hence a country that has suddenly accelerated its progress over a short time period may have its annual rate of change underestimated by the JMP, and mistakenly be categorized as "acceleration needed" when it is actually "on track". There is also a possibility of miscategorization if the country-reported estimate was very different from the JMP estimate of coverage, as it may not be appropriate to apply the JMP annual rate of change if the underlying estimates are very different. To mitigate this effect, the JMP annual rate of change corresponding to the closest match for the national target service level or technology was used. Countries for which the coverage reported to GLAAS had a large (>10%) discrepancy with the JMP estimated coverage received extra scrutiny.

There is an inherent assumption that countries that have been progressing at a certain rate in the past will continue to be able to achieve a similar linear rate of progress in the future. This is a simplification as the rate of progress is thought to follow a nonlinear distribution ("S-curve") relative to coverage level. In particular, as a country approaches near-universal coverage, the rate of progress necessarily slows. For this reason, countries with coverage at 95% or above were considered to be "on track" without further reference to their rate of progress.

The analyses shown are meant to be exploratory in nature, and there was no attempt to assess the statistical significance of differences between "on track" and "acceleration needed" groups. There was no defined threshold for the magnitude of the difference between "on track" and "acceleration needed" countries above which differences between the two groups were deemed "significant". The purpose was to highlight those indicators where the magnitude of the difference between the two groups was the greatest. Further analysis would be needed to assess statistical significance of the difference between the two groups. Due to the limited sample size, the results for sanitation are less stable than those for drinking-water, particularly for the "on track" category.

Some simplification was necessary; hence this analysis did not explicitly consider factors such as the starting point and level of ambition in setting targets. The current analysis does not assess whether the national targets are appropriate for the country's situation and context. It also conflates countries with coverage targets across service levels and technologies in grouping into "on track", "almost on track" and "acceleration needed" groups. Hence, a country with a basic level target and another with a safely managed level target would equally be considered "on track" as long as the stated criteria were fulfilled.

The categorization of countries into "on track", "almost on track" and "acceleration needed" groups should not constitute an assessment of performance: a country making rapid progress towards its national target may still be categorized as "acceleration needed" if their target is highly ambitious. Similarly, there is a risk in conflating "on track" with well-performing, as it may be the case that some of these countries have set under-ambitious targets. It remains essential for countries to set ambitious but achievable targets based on the national context, and a rational assessment of what actions can be taken to progress towards targets within the limitations of available human and financial resources.

The strength of the national WASH system will influence the progress a country is able to make towards its WASH goals. Due to 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. In addition, the elements of a WASH system are very much interconnected and do not operate in isolation. The gaps identified are likely a mix between causal elements and covariates of being on track, with no way of distinguishing between the two.

Discussion

In assessing whether countries are on track to meet their national targets, it is clear that sanitation is lagging behind drinking-water: 63% of countries were categorized as "acceleration needed" for sanitation compared to 44% for drinking-water, and the acceleration needed to reach targets is much greater for sanitation than for drinking-water. This reinforces the calls for additional attention and support being provided in countries to improve access to sanitation services, both from governments and development partners.

In comparing the WASH systems indicators between "on track" and "acceleration needed" countries, it was expected that "on track" countries would be better resourced than "acceleration needed" countries. Indeed, it was found that "acceleration needed" countries were less likely to have resourced plans, and greater gaps in human resources. However, it is interesting to also note the implementation gap in "acceleration needed" countries: they were less likely to conduct key regulatory functions and implement independent surveillance and risk management approaches, particularly in rural areas. "Acceleration needed" countries also have poorer absorption of domestic commitments and cost recovery, which are indicative of lower performance and implementation. They are more likely to conduct annual JSRs; however, if these reviews are not followed up with actions and course corrections then they will not yield improvements to the country situation. More broadly, the results point to a need for greater support to implement actions to accelerate progress towards national targets.

Income level is a clear underlying factor: while the results are not shown by income level, lower income countries had on average higher annual rates of change needed to reach their targets, and therefore, were more likely to be categorized as "acceleration needed". In addition, economic status is clearly an underlying factor for many of the gaps identified, whether directly in the availability of financial and human resources, or indirectly, in having the resources available for implementation of regulatory functions and risk management approaches. An interesting area for further analysis could be to look at which countries are overperforming relative to their economic status.

It is important to note that the categorization in this analysis shows only whether past progress matches well with reported targets. 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.

In this study, WASH system indicators were compared between countries in the "on track" and "acceleration needed" groups. It would be interesting to do a similar comparison of performance on WASH systems indicators but using different groupings of countries. For example, it may be interesting to compare countries that have shown the greatest increase in access levels according to the JMP and those that have shown the least progress. Indeed, such an analysis would get around some of the existing limitations of the current study, such as the heterogeneity of target service levels within groups and confounding of "on track" and well-performing.

Conclusion

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 is hoped that the current analysis can be used by governments and sector stakeholders to consider the impact of WASH systems on their programming and that the elements identified in the analysis can be brought into sector planning processes in countries. It remains essential for countries to set ambitious but achievable targets based on their context and assess what actions can be taken to progress towards targets within the limitations of available human and financial resources.

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Annex

Question A7 in the GLAAS 2021/2022 country survey

NATIONAL WASH TARGETS						
A7I. Sanitation coverage targets	National coverage target		Urban coverage target		Rural coverage target	
a. Does your country have coverage targets for national and/or urban and/or rural sanitation?	☐ Yes ☐ No		☐ Yes ☐ No		☐ Yes ☐ No	
If yes:	Target value	Target year	Target value	Target year	Target value	Target year
i. Target value / target year						
ii. Specify what the coverage target measures.						
iii. Title and link of policy/plan where target is established.						
b. What types of sanitation facilities are captured in the target? *Provide a description and select all that apply below.*						
Toilet and containment	Yes	No	Yes	No	Yes	No
i. Use of improved sanitation facilities[6] that are not shared between two or more households	☐	☐	☐	☐	☐	☐
ii. Use of shared improved facilities	☐	☐	☐	☐	☐	☐
c. What aspects of service provision along the sanitation service chain[7] are captured in the target? *Provide a description and select all that apply below.*						
Conveyance	Yes	No	Yes	No	Yes	No
i. Provisions for safe networked sewerage	☐	☐	☐	☐	☐	☐
ii. Provisions for faecal sludge emptying	☐	☐	☐	☐	☐	☐
Treatment						
iii. Provisions for centralized sewage treatment	☐	☐	☐	☐	☐	☐
iv. Provisions for faecal sludge treatment	☐	☐	☐	☐	☐	☐
v. Provisions for excreta treatment and disposal on-site	☐	☐	☐	☐	☐	☐
Disposal/end-use						
vi. Productive use of wastewater and sludge	☐	☐	☐	☐	☐	☐

[6] Including flush/pour flush to piped sewer system, septic tanks or pit latrines, ventilated improved pit latrines, composting toilets or pit latrines with slabs.

[7] See the glossary in the Country Survey Guidance Document for the sanitation service chain.

A7I. *(Continued from previous page)*

d. Report the baseline and most recent coverage data for the sanitation targets described above.
If data are not available, please write 'Not available'.

	National coverage target		Urban coverage target		Rural coverage target	
	Value	Year	Value	Year	Value	Year
i. Baseline value / baseline year						
ii. Latest value / latest year of data						
iii. Source of the data. If available, provide a link.						

A7II. Drinking-water coverage targets	National coverage target		Urban coverage target		Rural coverage target	
a. **Does your country have coverage targets for national and/or urban and/or rural drinking-water?**	☐ Yes ☐ No		☐ Yes ☐ No		☐ Yes ☐ No	
If yes:	Target value	Target year	Target value	Target year	Target value	Target year
i. Target value / target year						
ii. Specify what the coverage target measures.						
iii. Title and link of policy/plan where target is established.						
b. **What types of drinking-water sources are captured in the target?** *Provide a description and indicate below if improved drinking-water sources are captured.*						
i. Use of improved drinking-water sources[8]	☐ Yes ☐ No		☐ Yes ☐ No		☐ Yes ☐ No	
c. **What aspects of service quality are captured in the target?** *Provide a description and select all those that apply below.*						
	Yes / No	*If yes*, specify value or details:	Yes / No	*If yes*, specify value or details:	Yes / No	*If yes*, specify value or details:
i. Minimum volume of water per day	☐ / ☐		☐ / ☐		☐ / ☐	
ii. Minimum service hours per day / days per week	☐ / ☐		☐ / ☐		☐ / ☐	
iii. Maximum roundtrip collection time, including queuing	☐ / ☐		☐ / ☐		☐ / ☐	
iv. Maximum roundtrip distance	☐ / ☐		☐ / ☐		☐ / ☐	
v. Drinking-water must be accessible on premises	☐ / ☐		☐ / ☐		☐ / ☐	
vi. Drinking-water must be free from faecal and chemical contamination	☐ / ☐		☐ / ☐		☐ / ☐	

[8] Improved drinking water sources are those that have the potential to deliver safe water by nature of their design and construction, and include: piped water, boreholes or tubewells, protected dug wells, protected springs, rainwater, and packaged or delivered water.

A7II. *(Continued from previous page)*

d. Report the baseline and most recent coverage data for the drinking-water targets described above.
If data are not available, please write 'Not available'.

	National coverage target		Urban coverage target		Rural coverage target	
	Value	Year	Value	Year	Value	Year
i. Baseline value / baseline year						
ii. Latest value / latest year of data						
iii. Source of the data. If available, provide a link.						