Advancing the global water and health agenda

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Technical lead for sanitation & wastewater,
WHO HQ

World Health Organization

World Health Organization (WHO) at-a-glance

We lead and champion global efforts to give everyone, everywhere an equal chance at a safe and healthy life

Who we are

We are the UN specialized agency working to:

- promote health
- keep the world safe
- serve the vulnerable

Governed though the World Heath Assembly, executive board, constitution and Director General

What we do

We put science to work, leading and coordinating global efforts to:

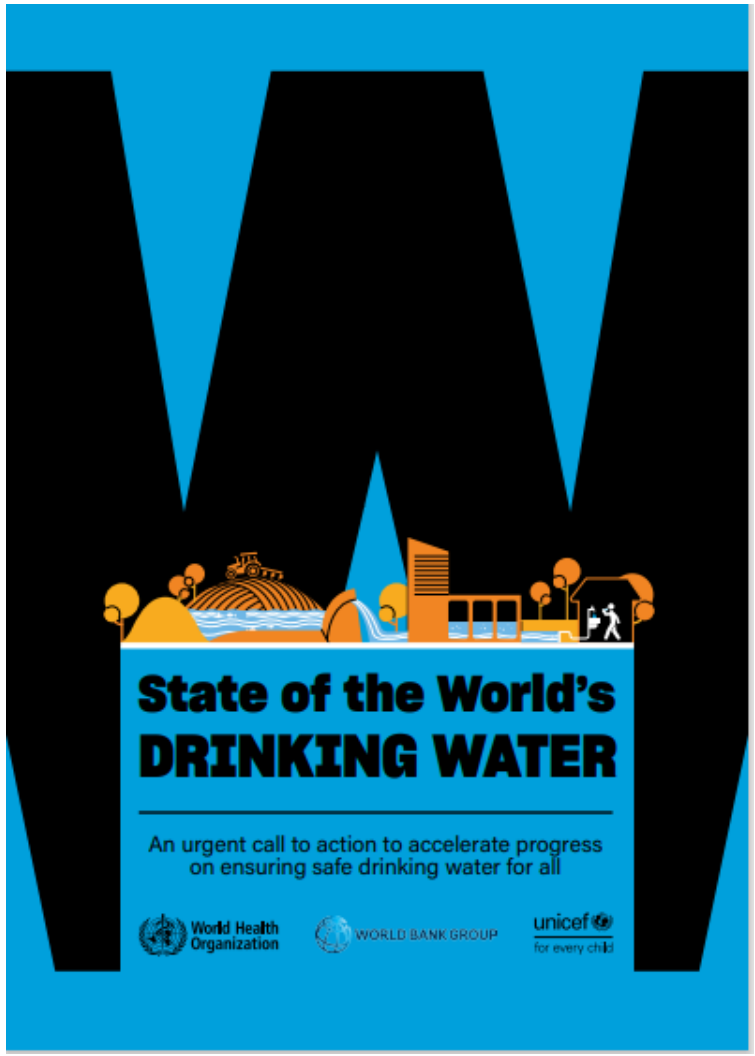
- expand Universal Health Coverage
- respond to health emergencies
- promote healthier lives

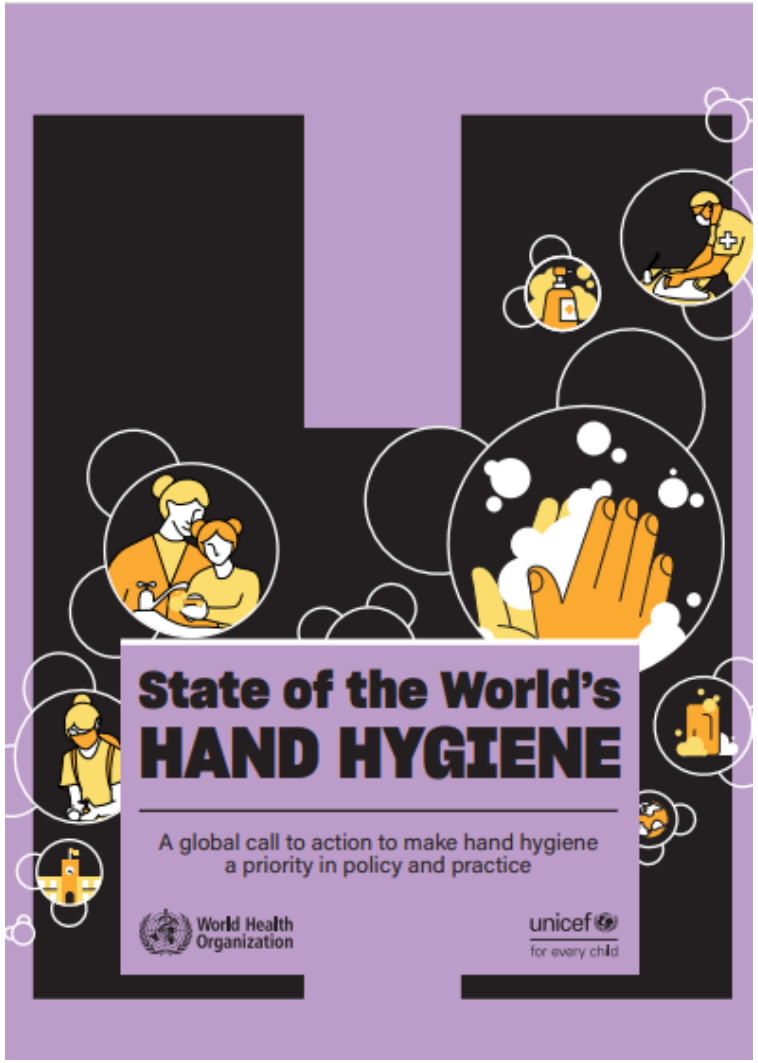
Our role

WHO is a leading voice for science, solutions and solidarity in today's deeply polarized world where misinformation and disinformation is putting public health at risk

World Health Organization

Overview – The State of the World's series



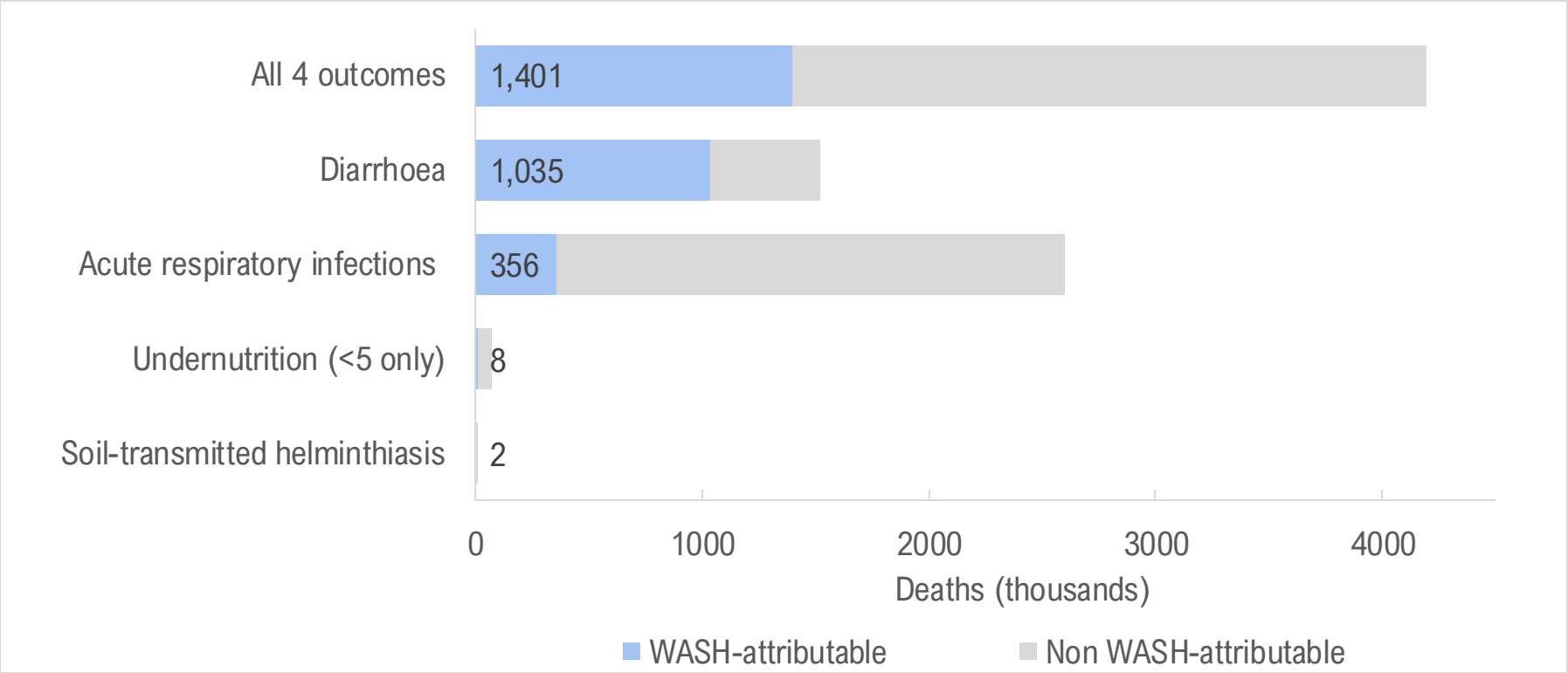


Global status - water, sanitation, hygiene and health outcomes

World Health Organization

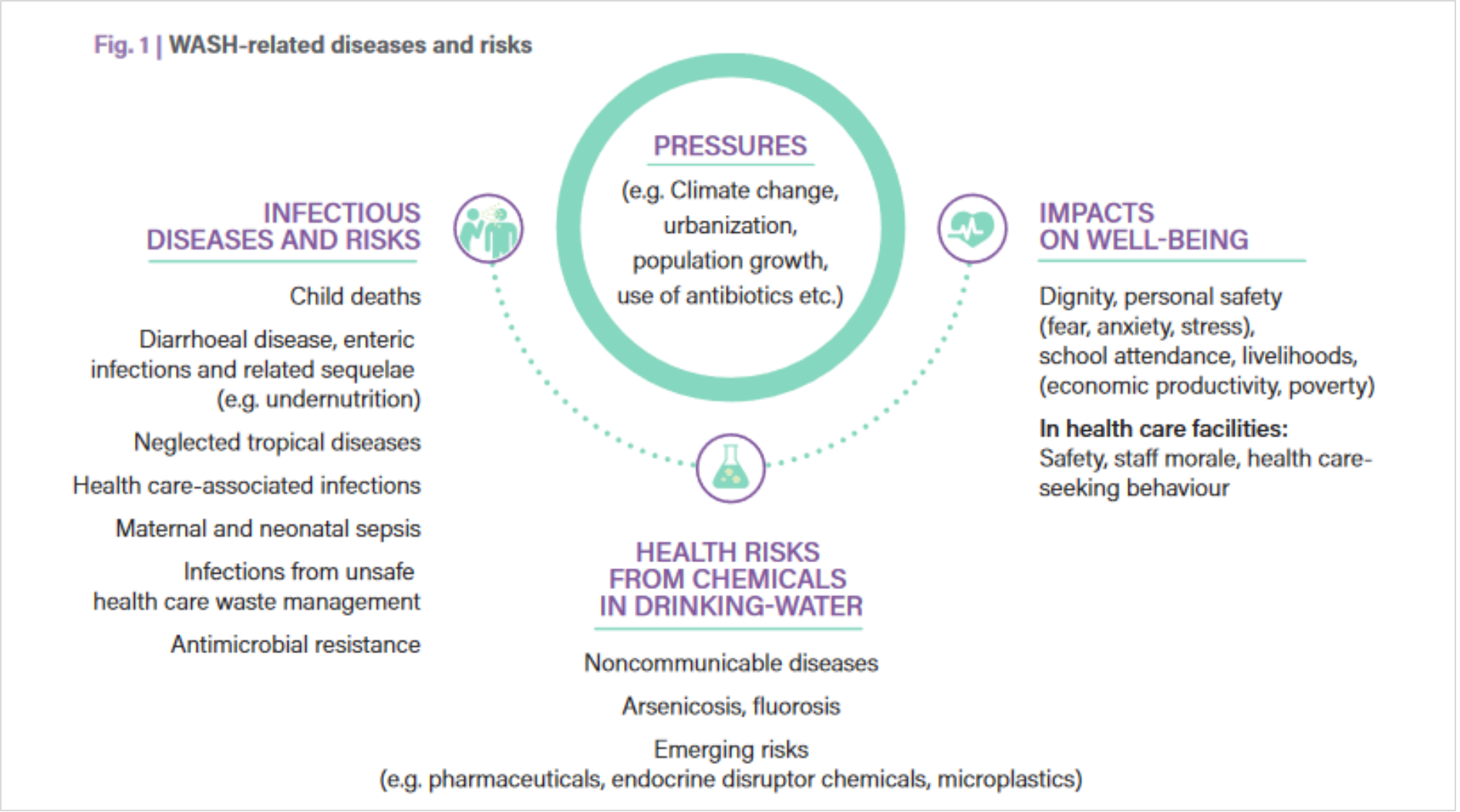
Globally, unsafe drinking-water, sanitation and hygiene cause an estimated **1.4 million deaths** and **74 million DALYs** a year

Fig 2. Deaths attributable to unsafe drinking-water, sanitation and hygiene out of total deaths for each health outcome (in thousands), 2019



WASH related infections are much higher and decreasing more slowly

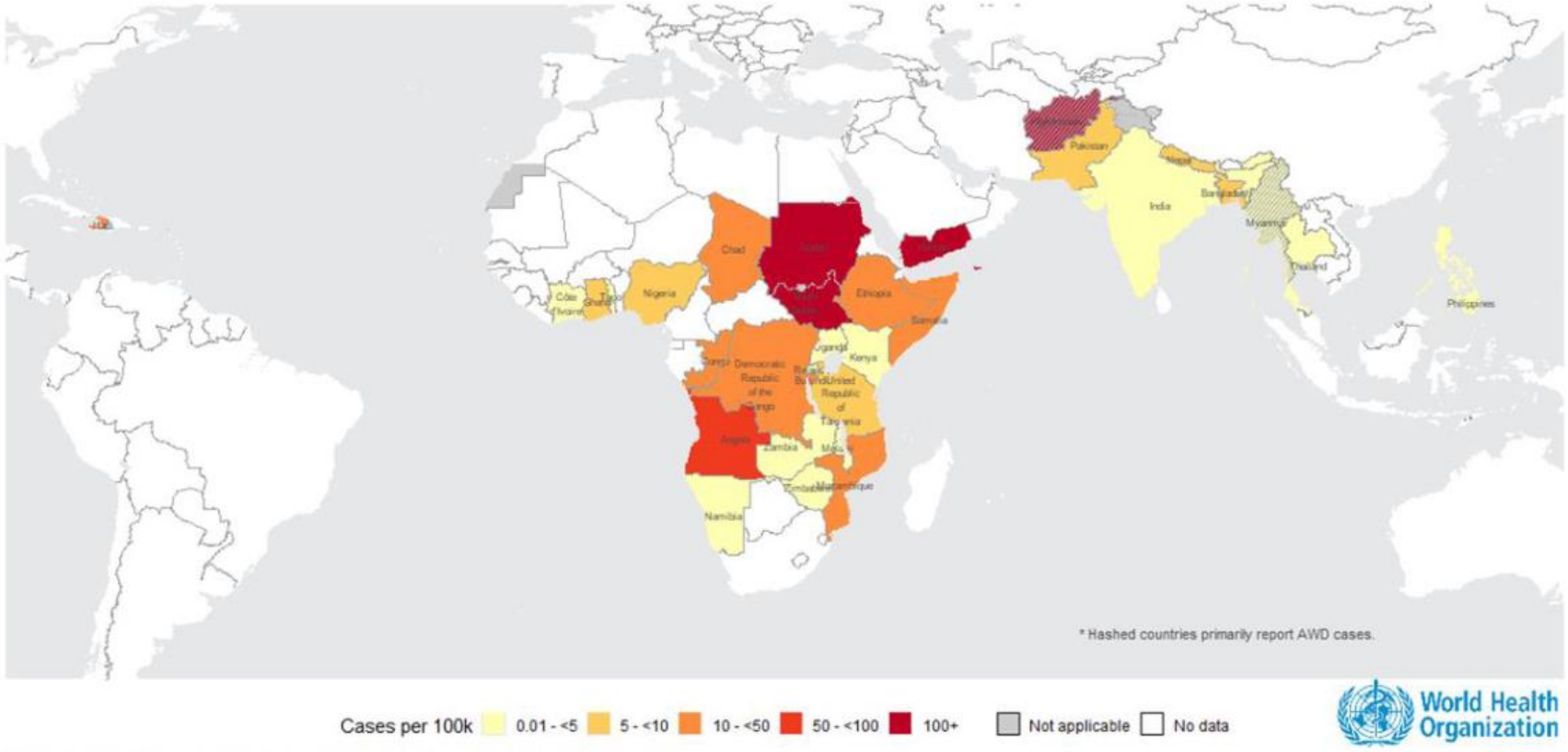
Impacts of inadequate water, sanitation and hygiene are numerous, but cannot all be quantified due to limited evidence



Cholera is entirely preventable through WASH

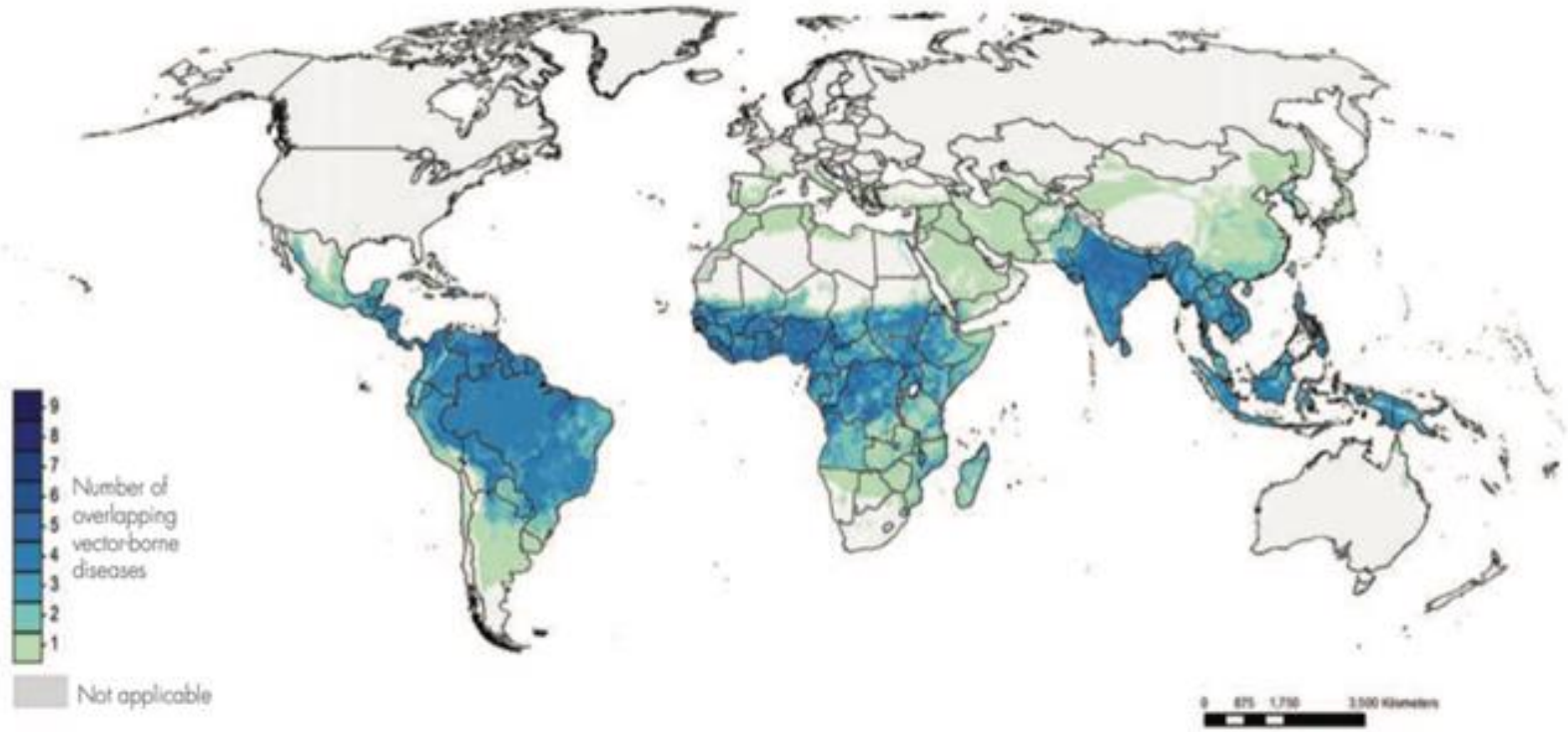
From 1 January to 28 September 2025 > 500,000 cases and > 6,500 deaths in 32 countries.
Most cholera cases occur in countries with low water and sanitation coverage

Figure 1. Cholera and acute watery diarrhoea (AWD) cases per 100 000, 1 January to 28 September 2025



Larger, more deadly outbreaks, in more countries than ever, exacerbated by conflict and climate change, vaccine shortages

Vector-borne diseases are on the rise – spreading into cooler areas and thriving where water storage, wastewater management and drainage is poor.

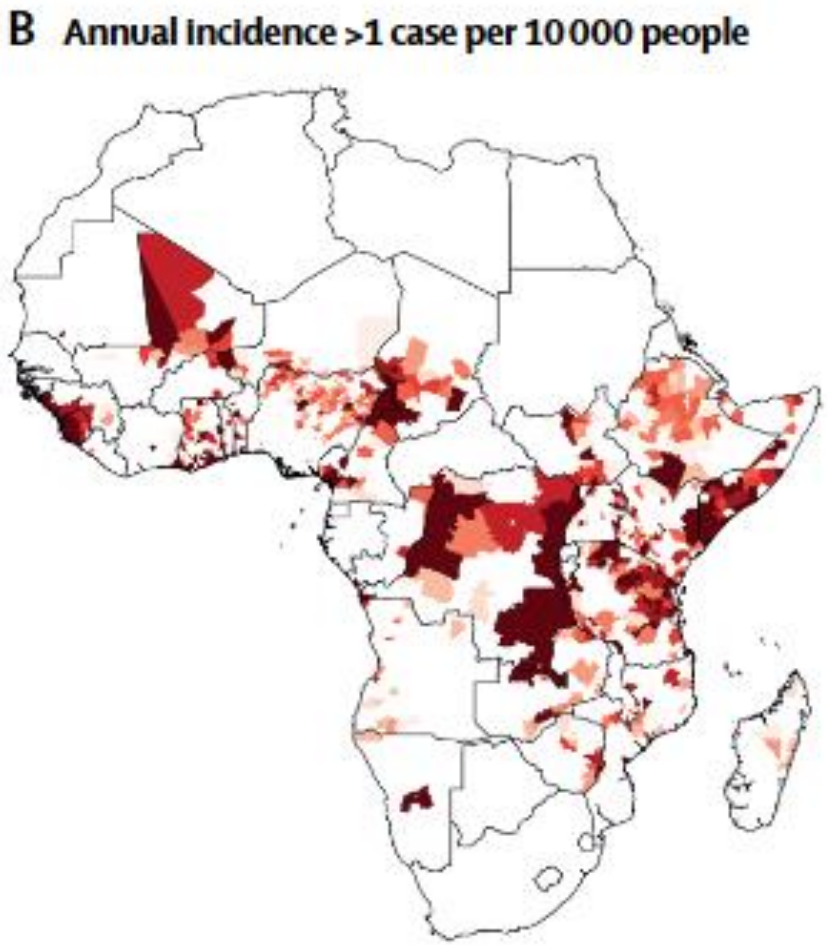


Colours indicate the number of VBD that pose a risk at each 5 x 5 km grid cell (Mayes. C., 2017. Developed from Golding. N et al., 2015.)

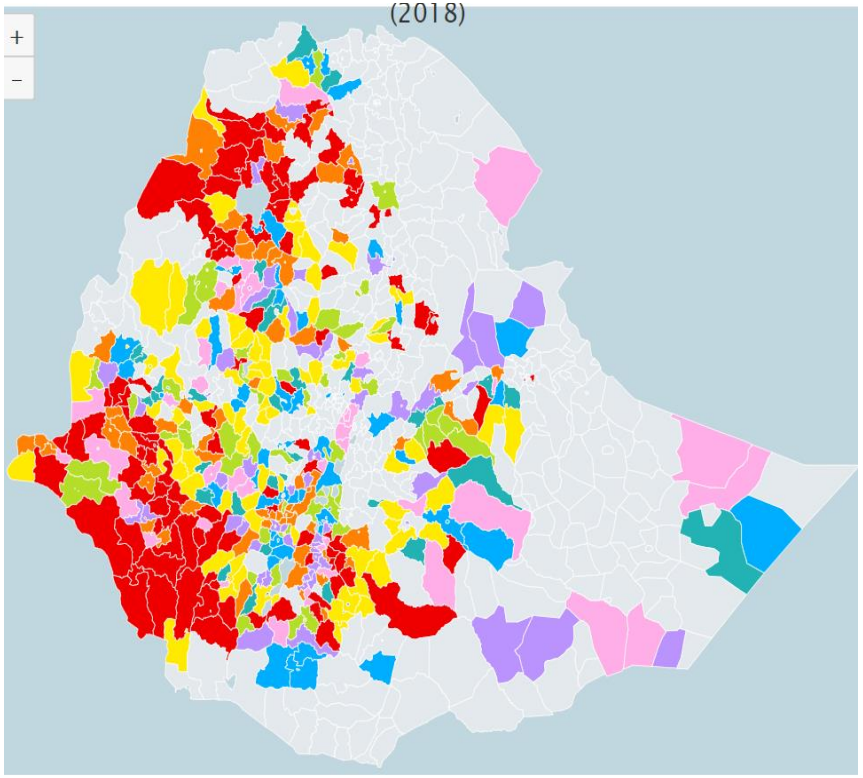
Image 1: Overlapping global distribution of malaria, leishmaniasis, dengue, yellow fever, lymphatic filariasis, Japanese encephalitis, and Chagas disease (WHO 2017 Global vector control response 2017-2030).

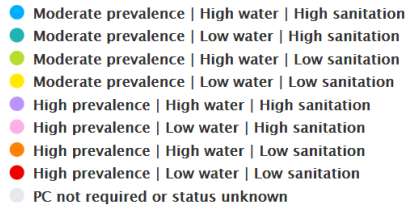
Target WASH to disease hotspots

Cholera in Africa



Intestinal worms in Ethiopia





Data source: https://espen.afro.who.int/countries/ethiopia

Available for all African countries

Global status - water, sanitation, hygiene access and the enabling environment

World Health Organization

JMP report 2000-2024

35 YEARS JMP

World Health Organization

WHO UNICEF JMP

unicef

Achieving the 2030 targets for ending open defecation and universal access to basic WASH services will require acceleration, and universal coverage of safely managed services is increasingly out of reach

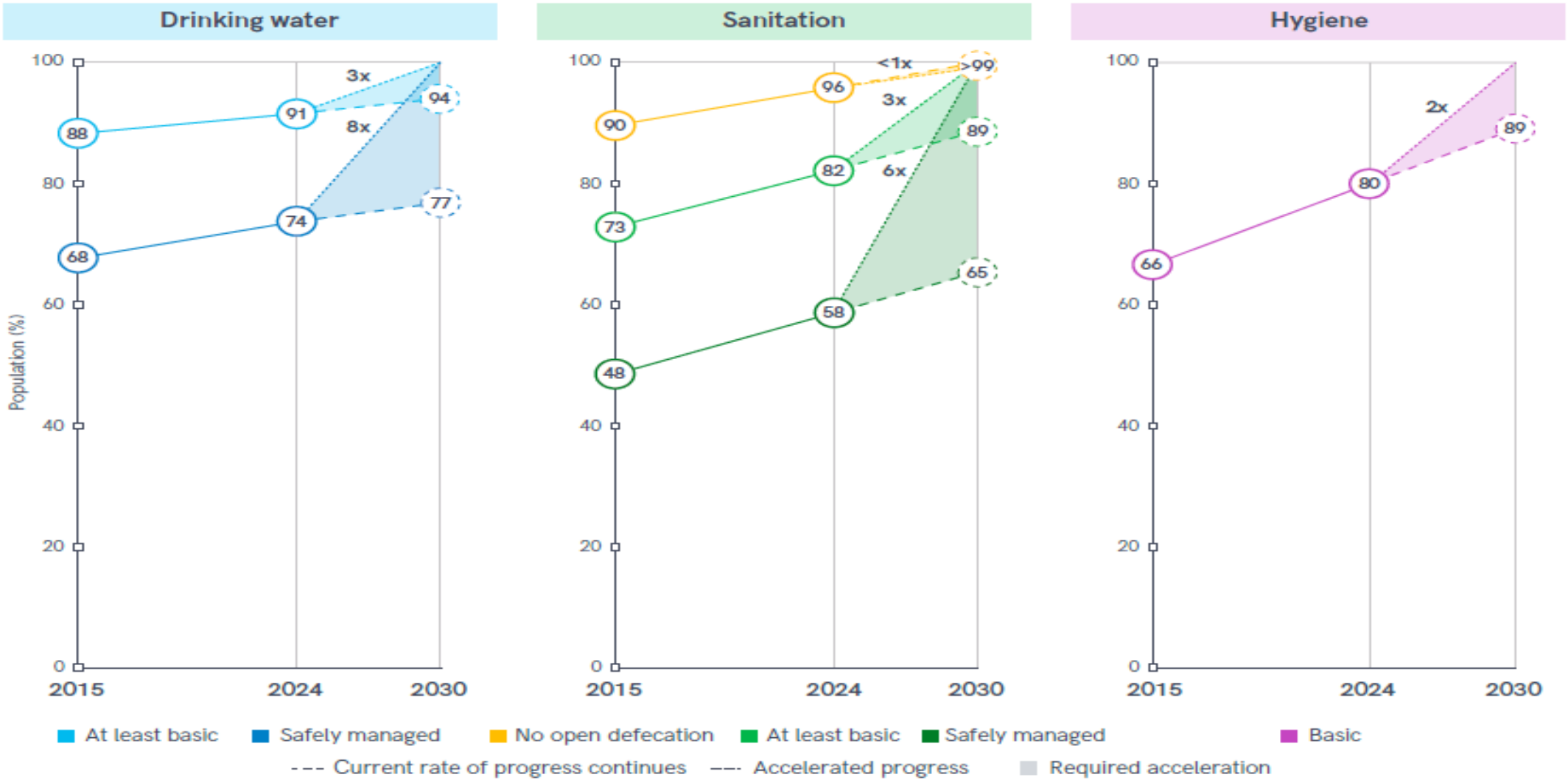
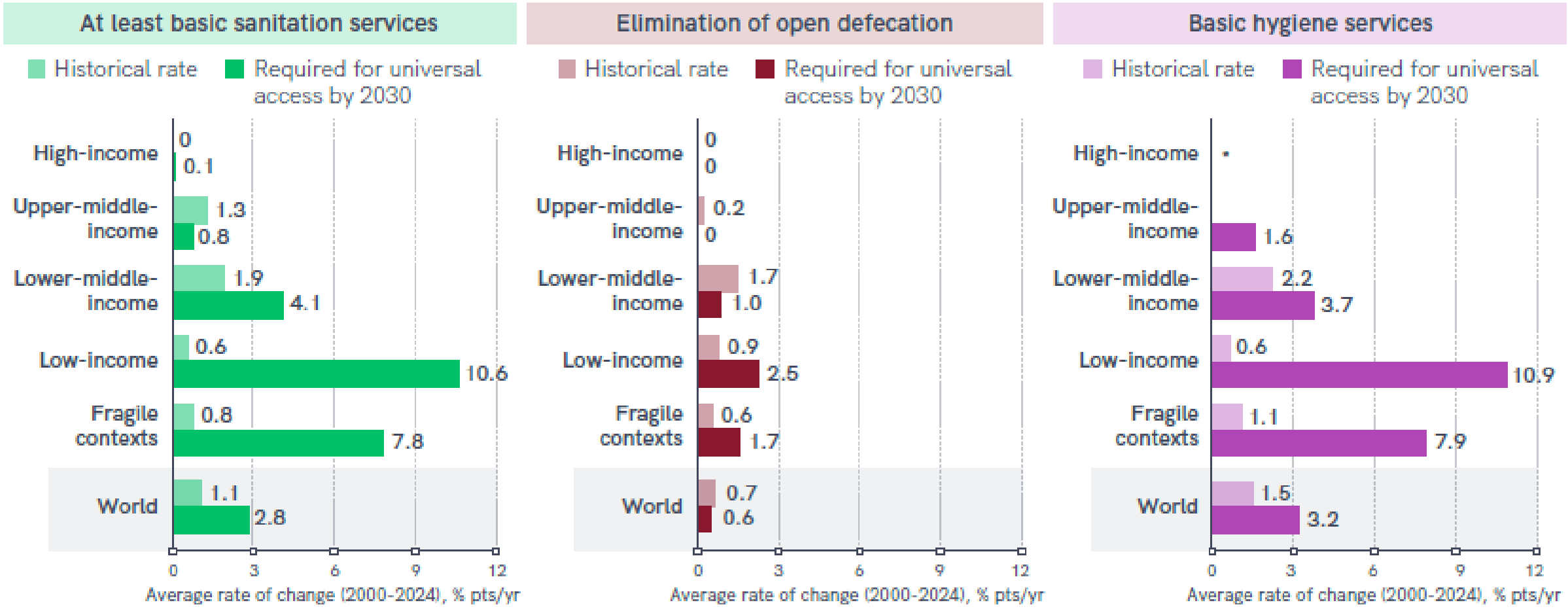


FIGURE 1 Global coverage of WASH services, 2015–2024 (%), and acceleration required to reach universal coverage (>99%) by 2030

Historical rates of progress are insufficient to reach universal access by 2030, especially in low-income countries and fragile settings



*Insufficient data to estimate current rate of progress in basic hygiene coverage for upper-middle-income and high-income countries.

FIGURE 10 Annual rate of change for key WASH indicators by income group, and required average rate of change to reach universal access (>99%) by 2030 (% pts/yr)

Inequalities in unserved populations

The unserved population has decreased rapidly, but stagnated or continue to rise in urban areas and low-income countries

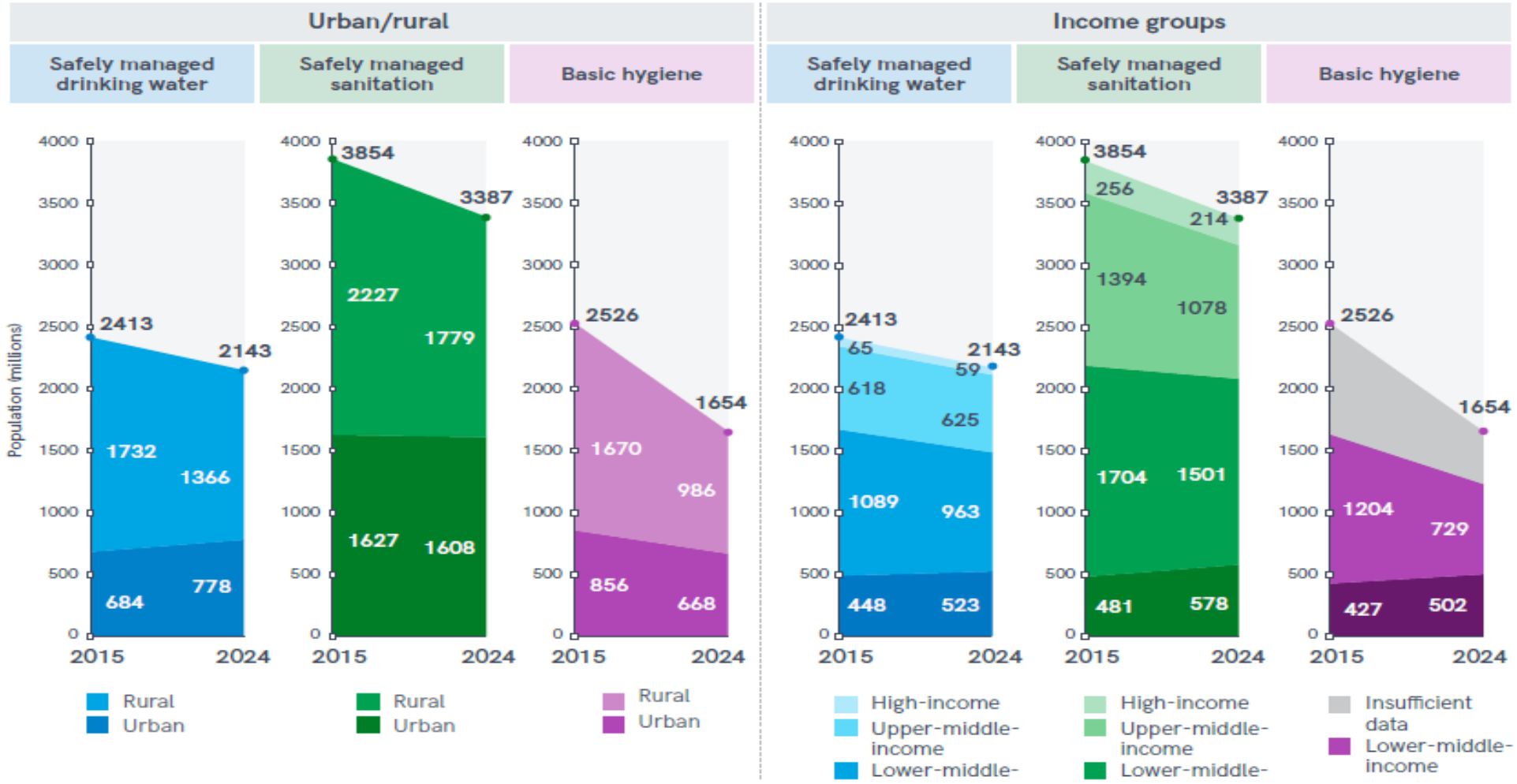
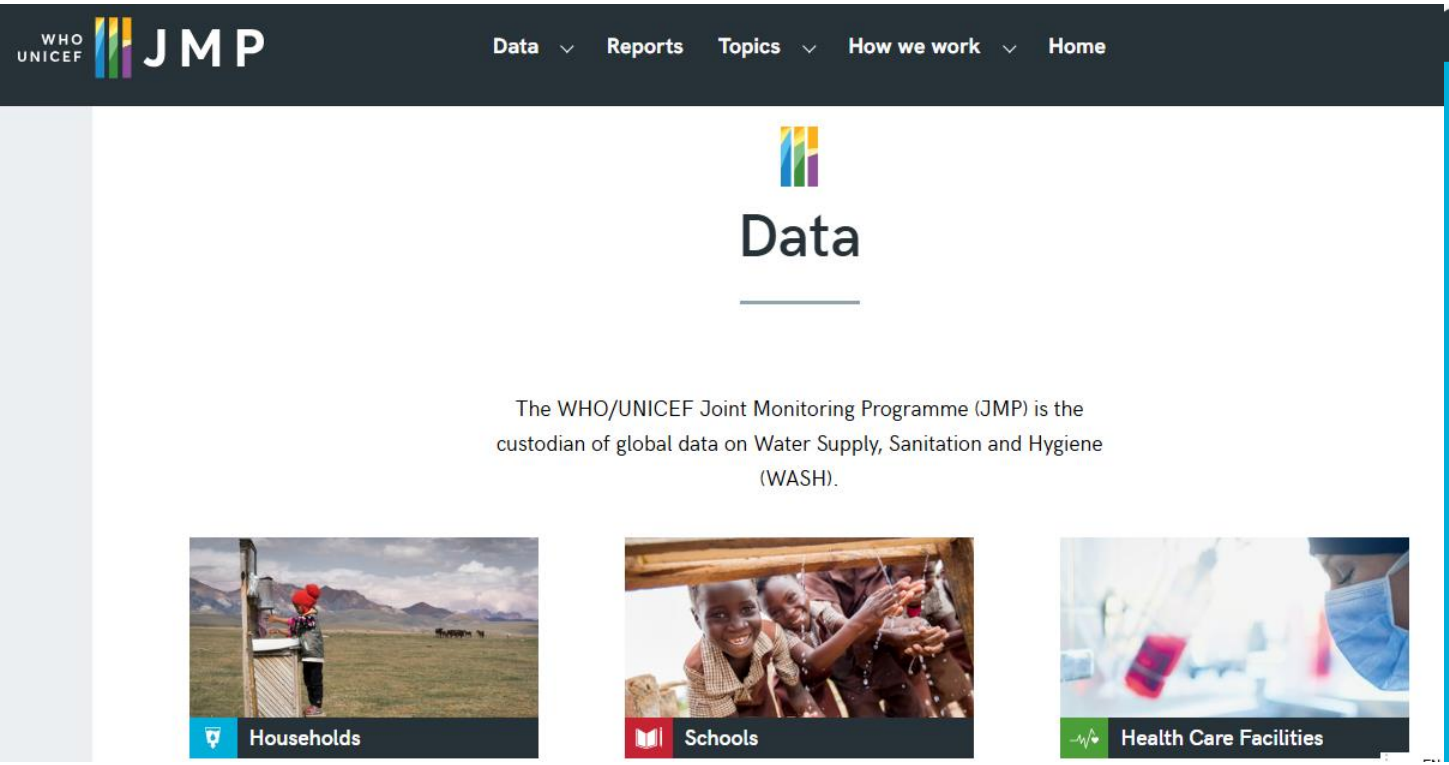
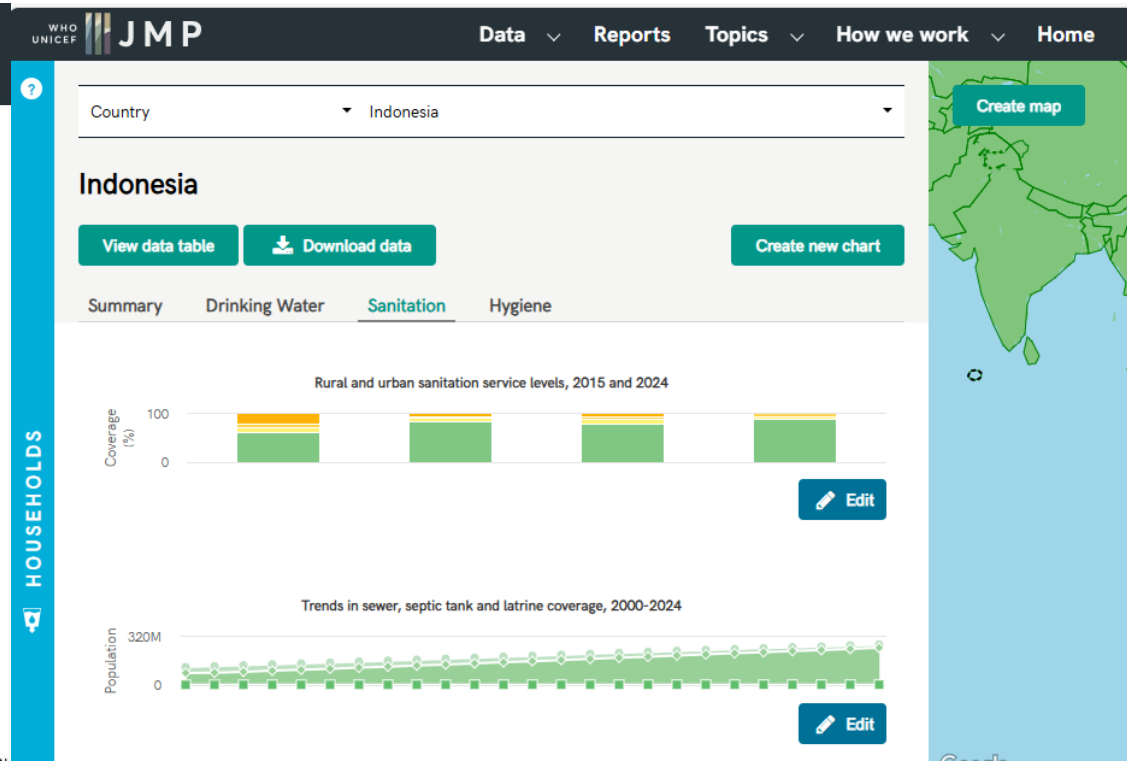


FIGURE 11 Population without safely managed drinking water, safely managed sanitation and basic hygiene services,

Explore detailed data at: www.washdata.org



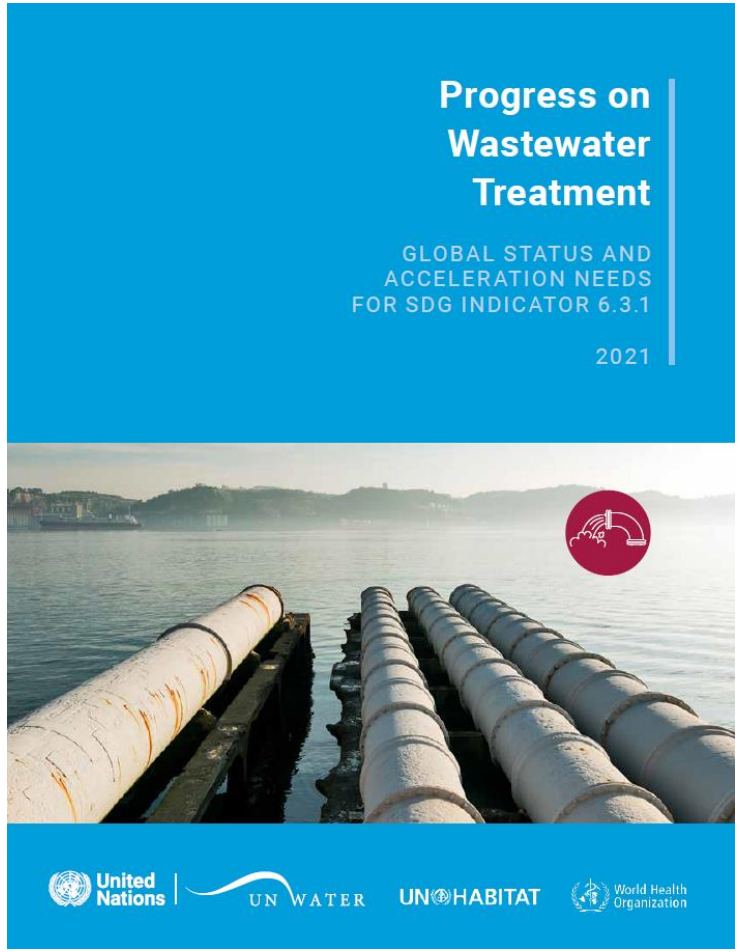


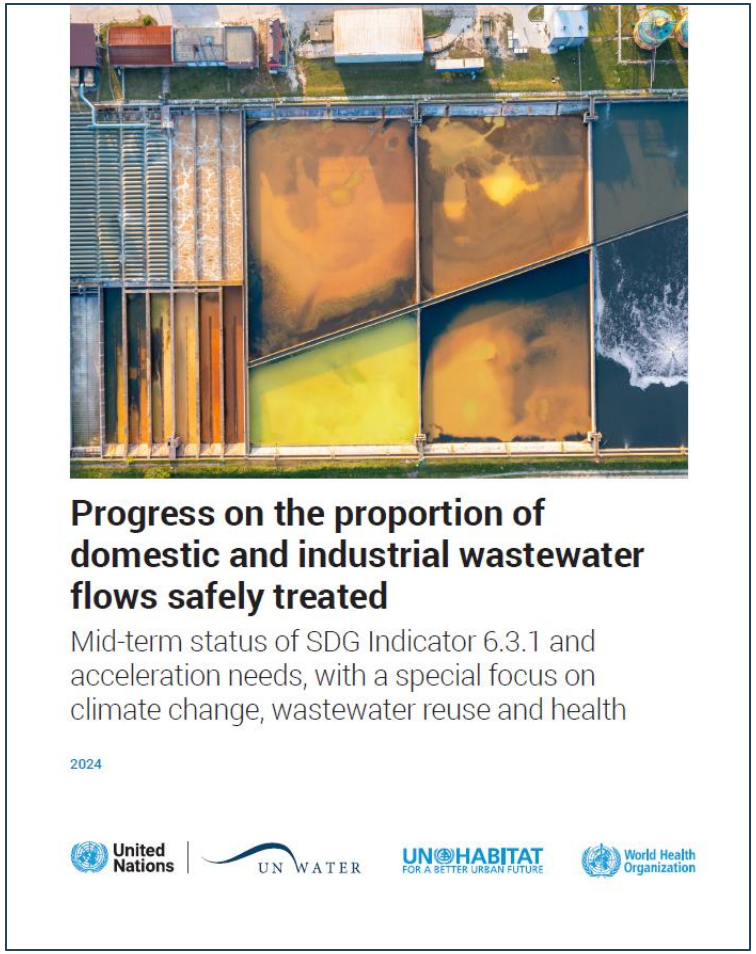
World Health Organization

WHO UNICEF JMP

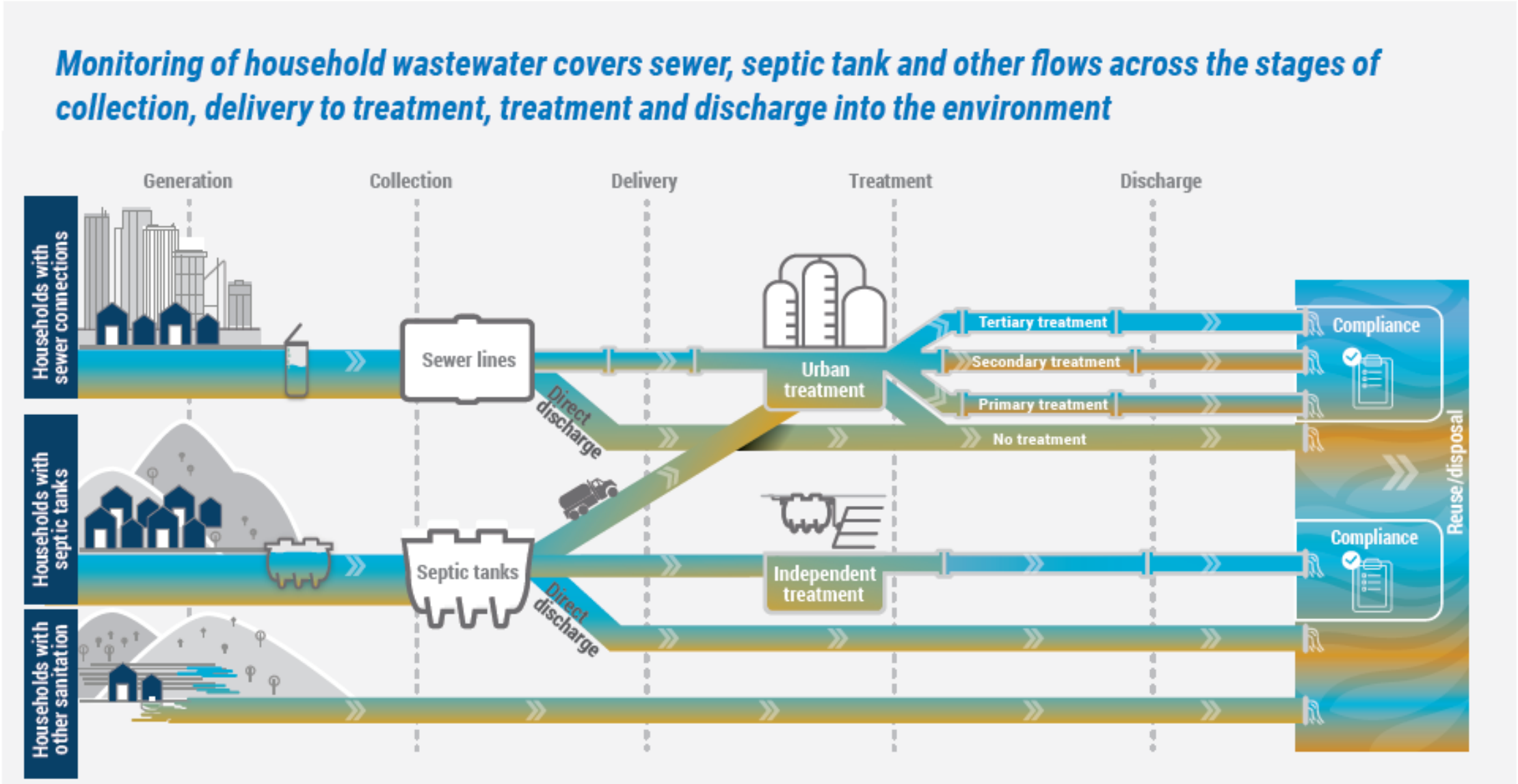
unicef

SDG 6.3.1: Wastewater treatment (and reuse)

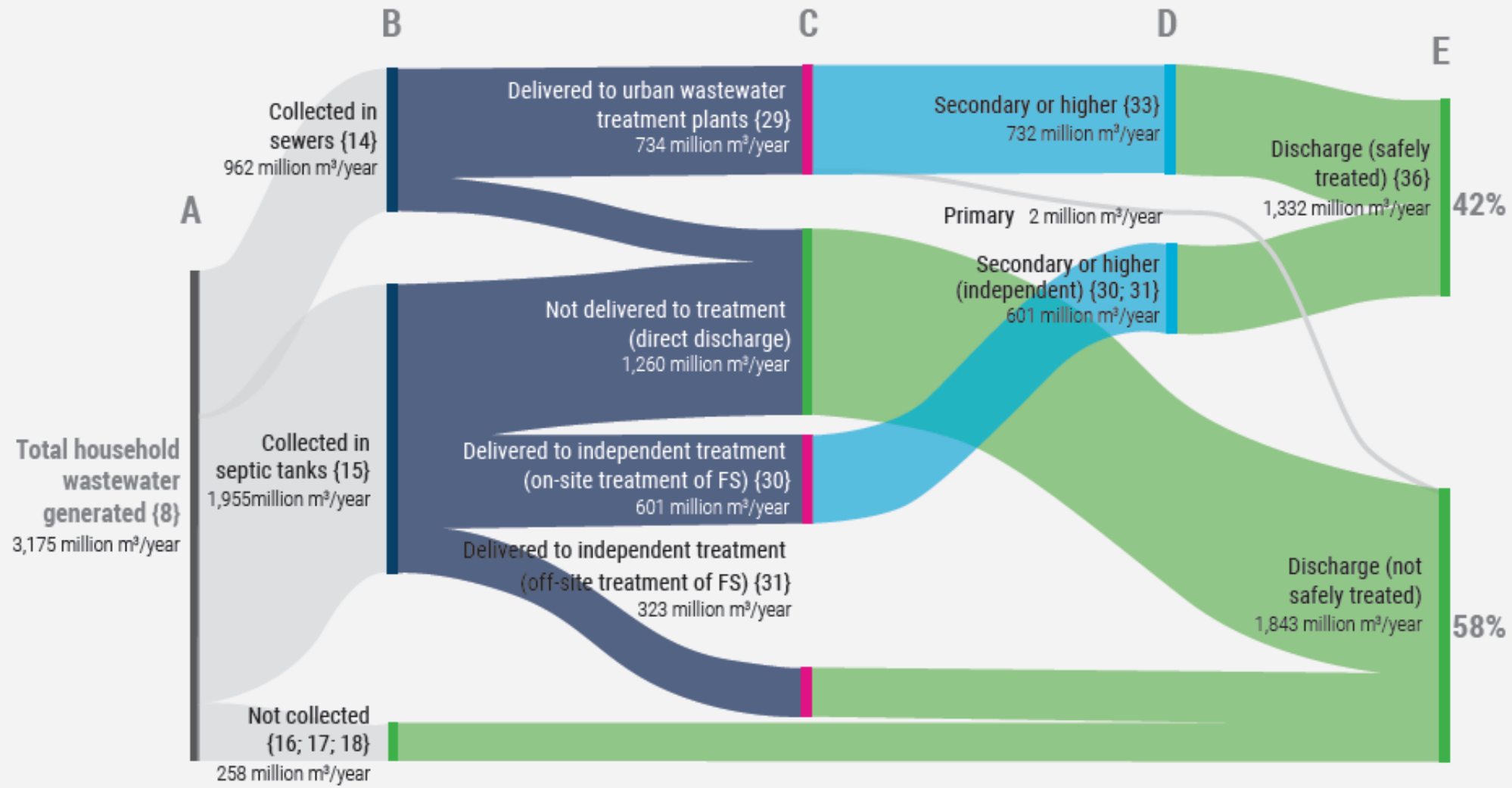




6.3.1 (domestic component)



Inadequately treated septic tank flows are the main contributor to unsafe household wastewater discharges in Iraq



Country files: https://tinyurl.com/631household2022

6.3.1 (domestic component)

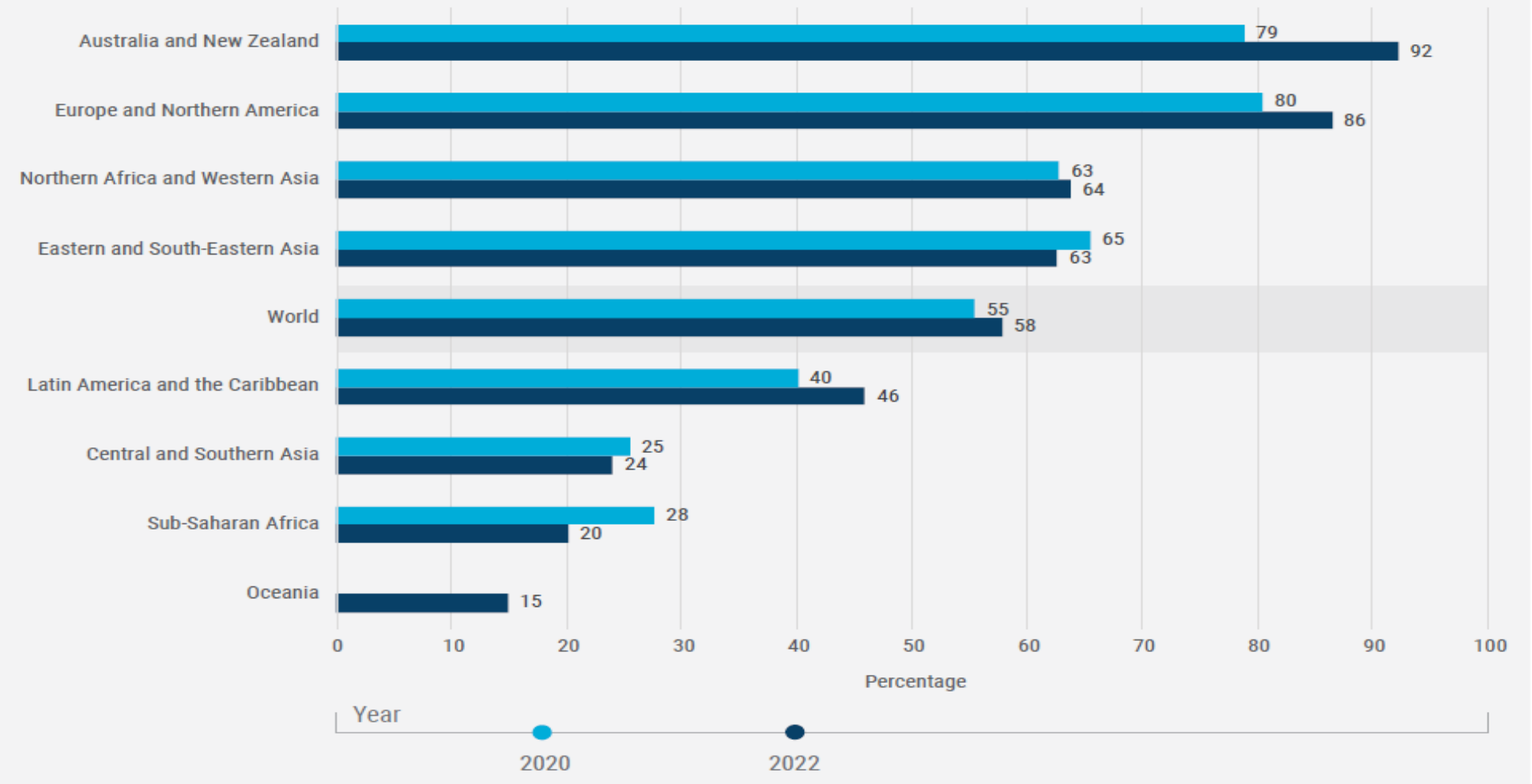
Variable/ component of the indicator	Data coverage						Statistic/estimate		
	Number of UN Member States			Proportion of global population					
	2020	2022	2024	2020	2022	2024	2020	2022	2024
Volume of household wastewater generated	193	193	193	>99%	>99%	>99%	271 billion m^3	268 billion m^3	332 billion m^3
Volume of household wastewater safely treated	116	129	130	80%	89%	84%	150 billion m^3	155 billion m^3	185 billion m^3
Volume of household wastewater not safely treated	116	129	130	80%	89%	84%	121 billion m^3	113 billion m^3	147 billion m^3
Proportion of household wastewater safely treated	116	129	130	80%	89%	84%	55.5%	57.8%	55.8%

UN WATER INTEGRATED MONITORING INITIATIVE FOR SDG 6

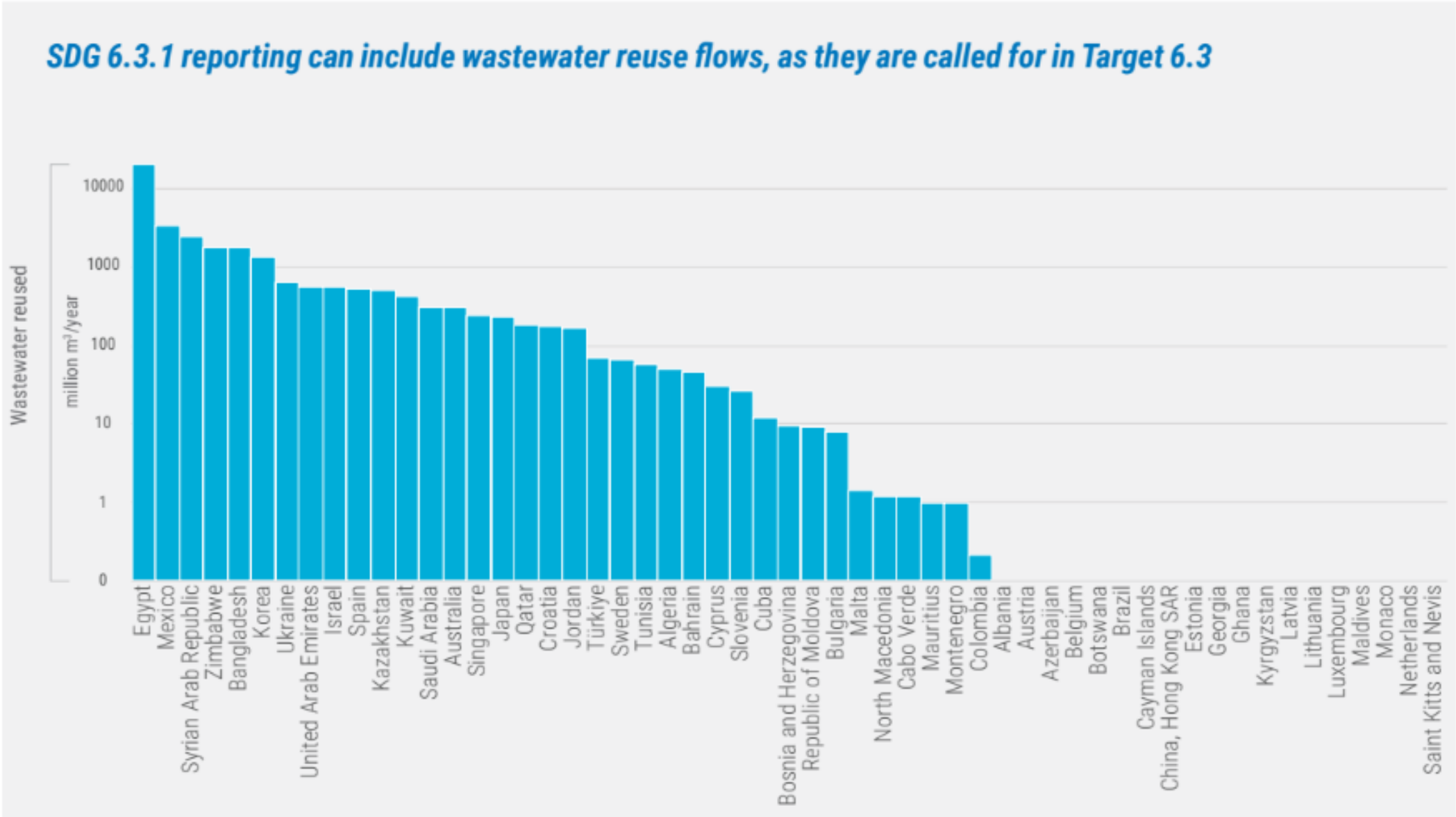
https://www.unwater.org/publications/domestic-wastewater-treatment-briefing-note-2025

Regional variability 2020 - 2022

(limited scope for trend analysis)



Some data on wastewater reuse



Global status - the enabling environment

World Health Organization

2025 GLAAS – just launched!

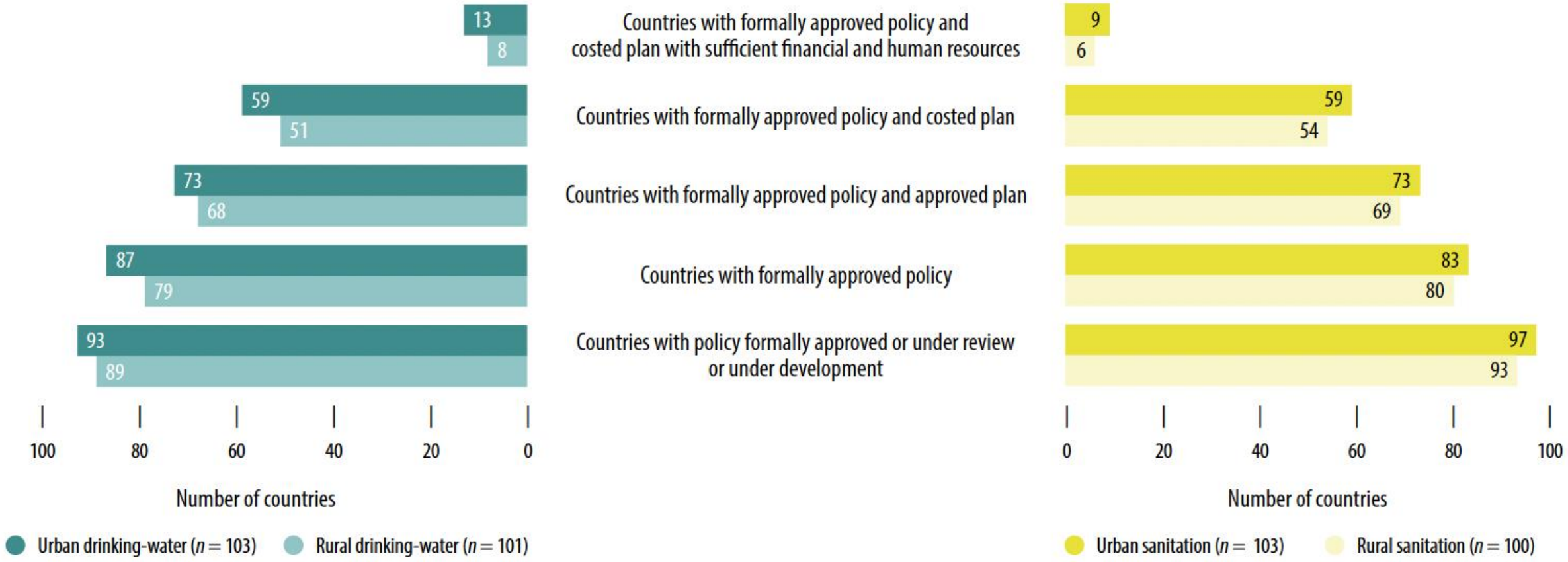
2026 UN Water Conference preparatory meeting in Senegal

See interactive keys messages and the GLAAS data portal

Key facts about the GLAAS 2024/2025 cycle

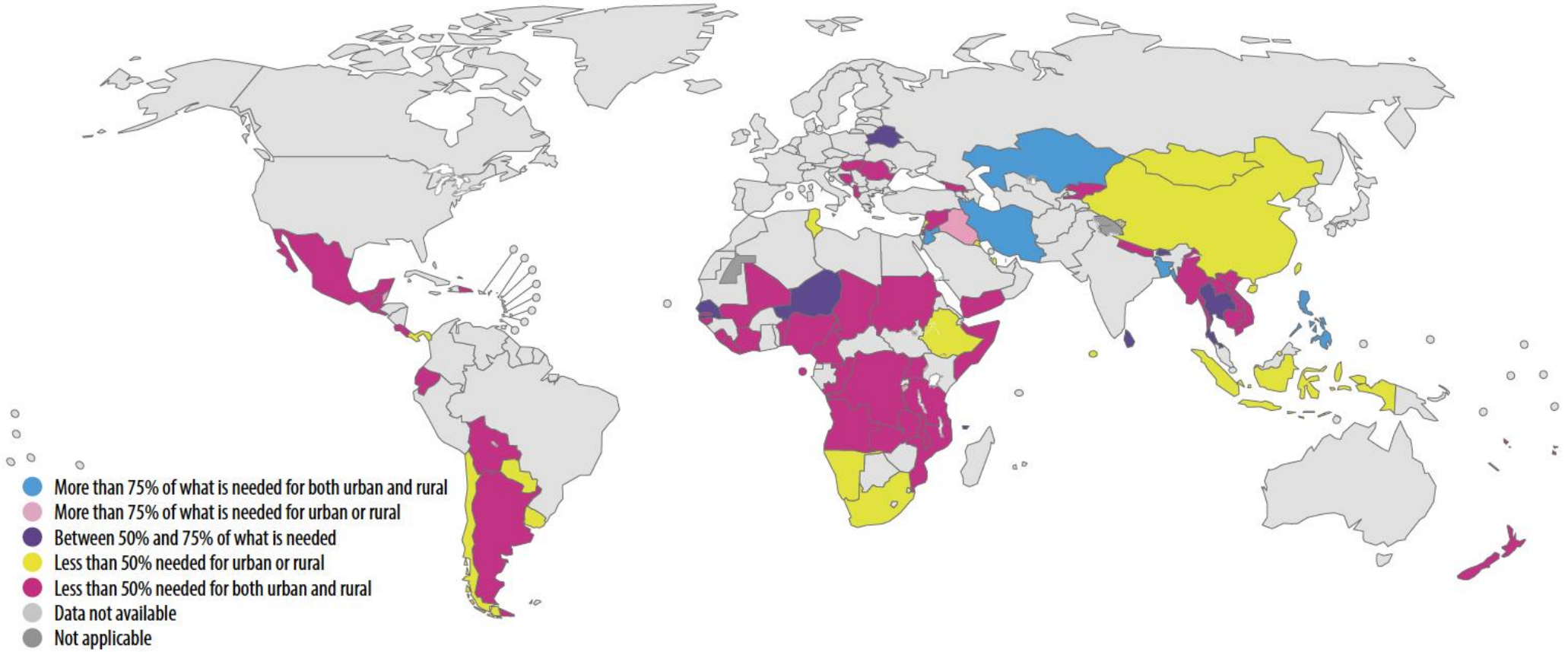
- 105 countries and 21 development partners participated
- Covers the status of key components of WASH systems:
  - policy, plans, institutional arrangements;
  - national targets;
  - monitoring, review and use of data for decision-making;
  - regulation and surveillance;
  - human resources;
  - finance.
- Analysis of the two SDG 6 MoI targets and indicators: (6.a) and capacity-building support and (6.b) as well as development partner support, LNOB and climate and WASH.

Number of countries reporting formally approved policies supported by resourced plans for urban and rural drinking-water and sanitation



Source: GLAAS 2024/2025 country survey.

A majority of countries reported insufficient financial resources to meet national targets, most notably in sub-Saharan Africa

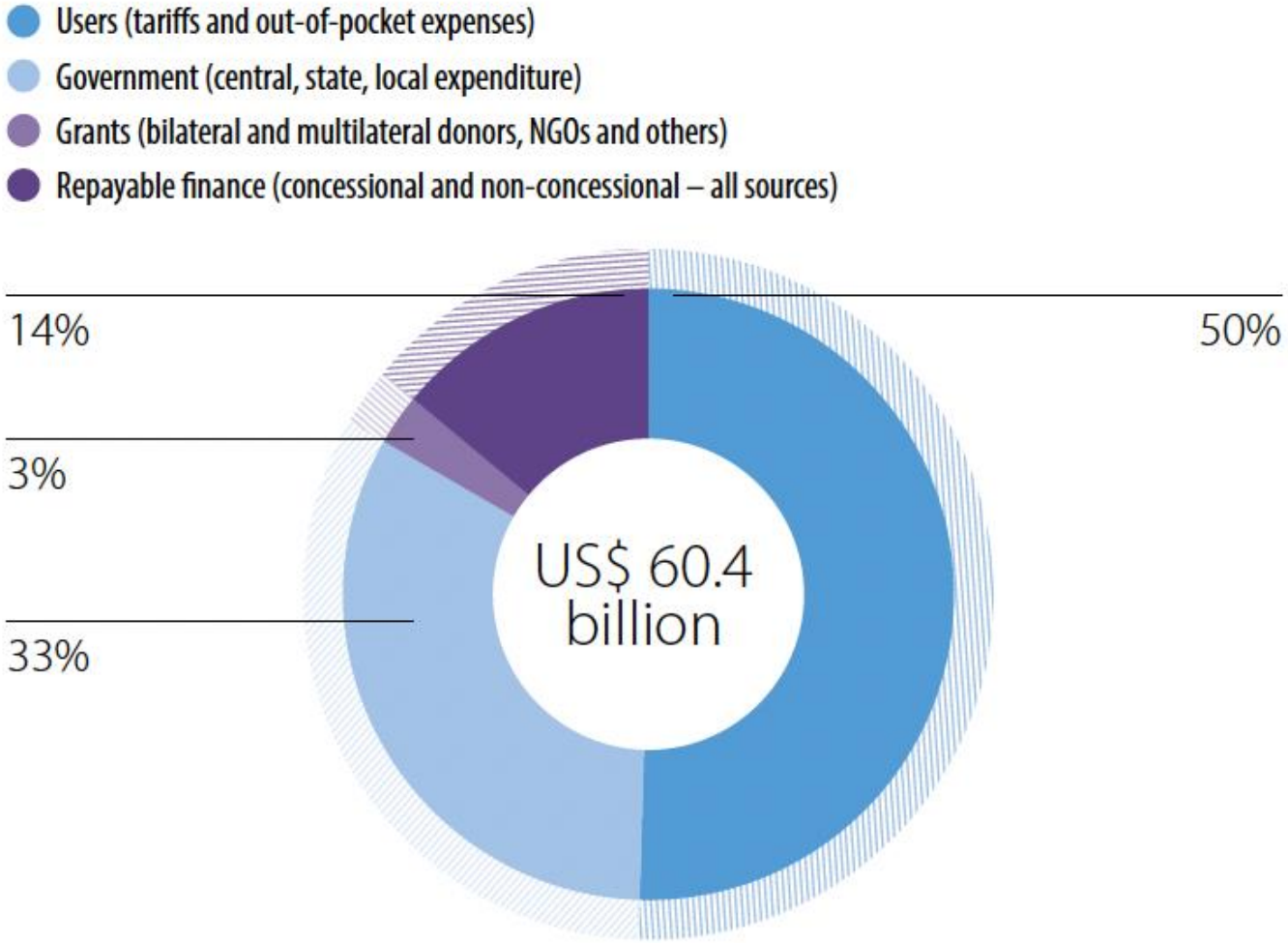


Map production: Water, Sanitation, Hygiene and Health, WHO.

Source: GLAAS 2024/2025 country survey.

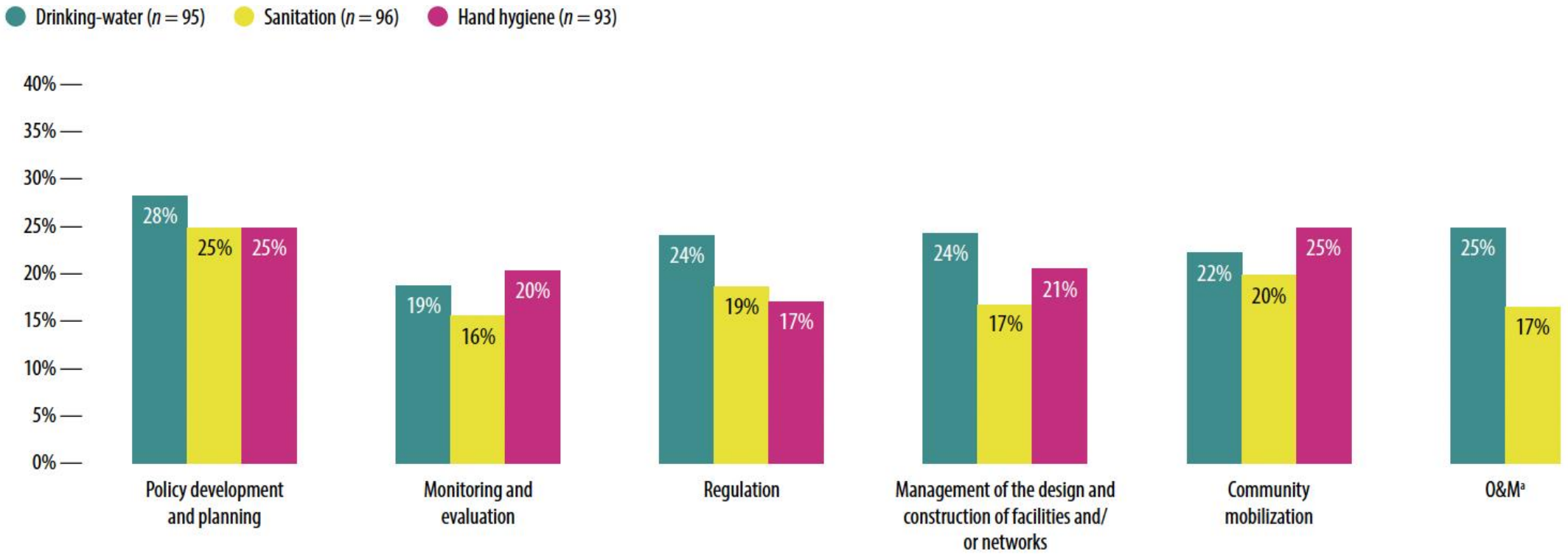
Sufficiency of funding from all sources to reach national sanitation targets (*n* = 77)

Users and Governments are the main sources of funding for WASH
Grants and repayable finance are relatively small



Sources of funding for WASH (*n* = 40)

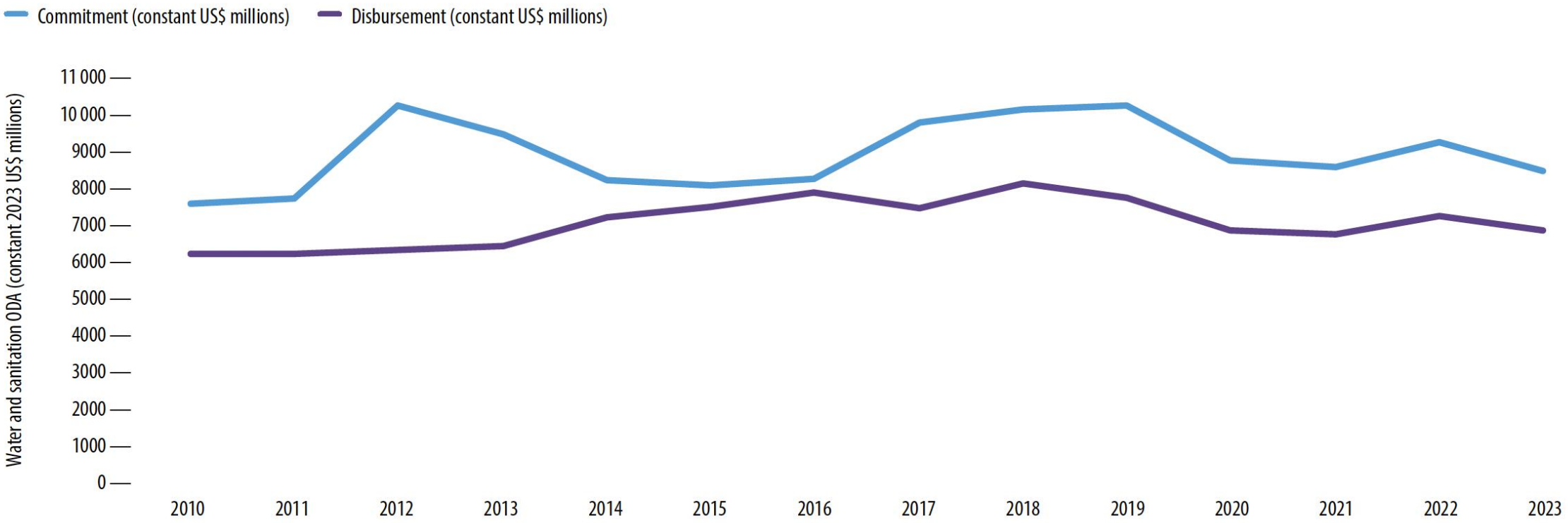
Percentage of countries with at least 75% of human resources needed for key WASH functions



[a] A question on sufficient human resources for O&M in hand hygiene was not asked in the GLAAS 2024/2025 country survey.

Source: GLAAS 2024/2025 country survey.

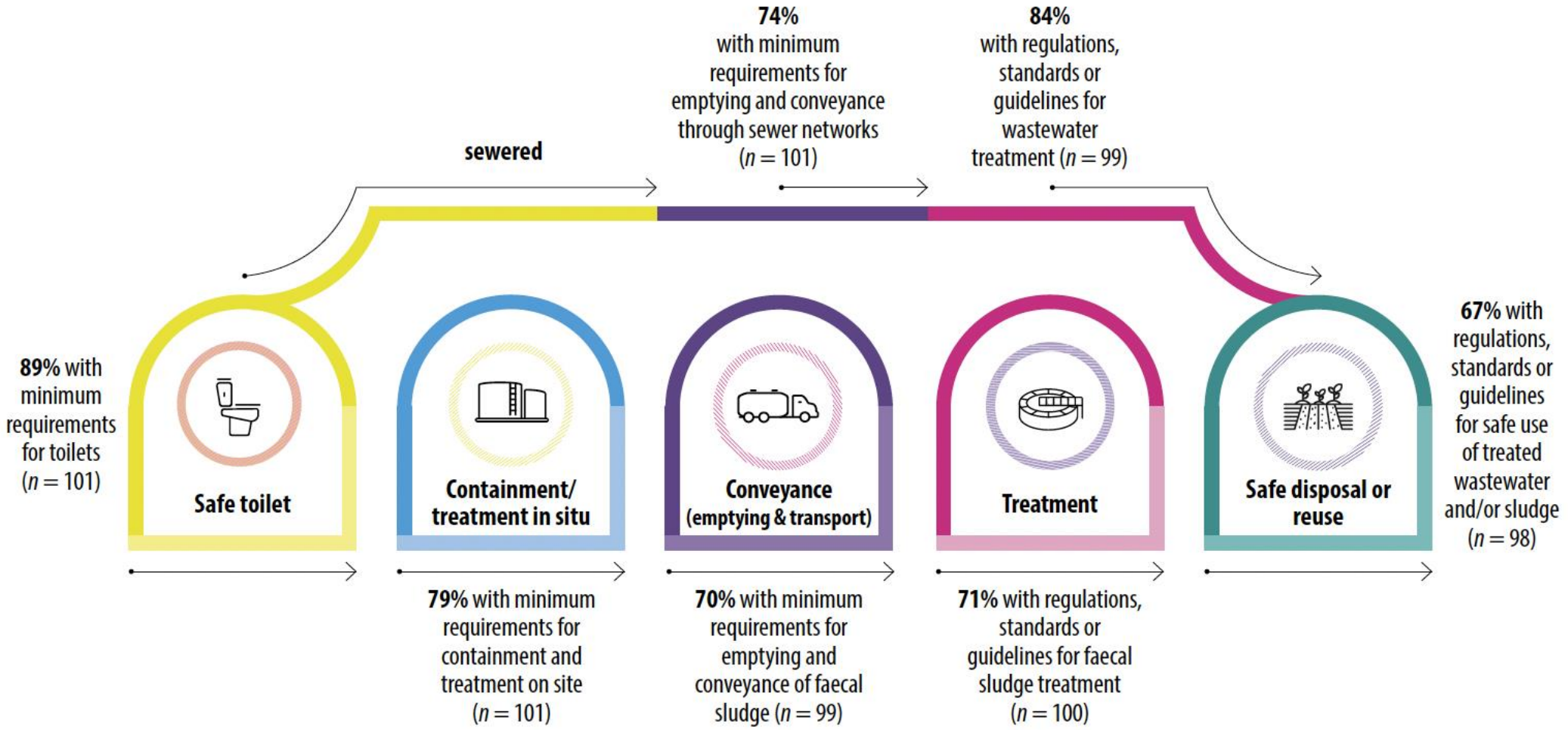
ODA commitments to water supply and sanitation decreased by 9% from 2022 to 2023.



Source: OECD-CRS, 2025.

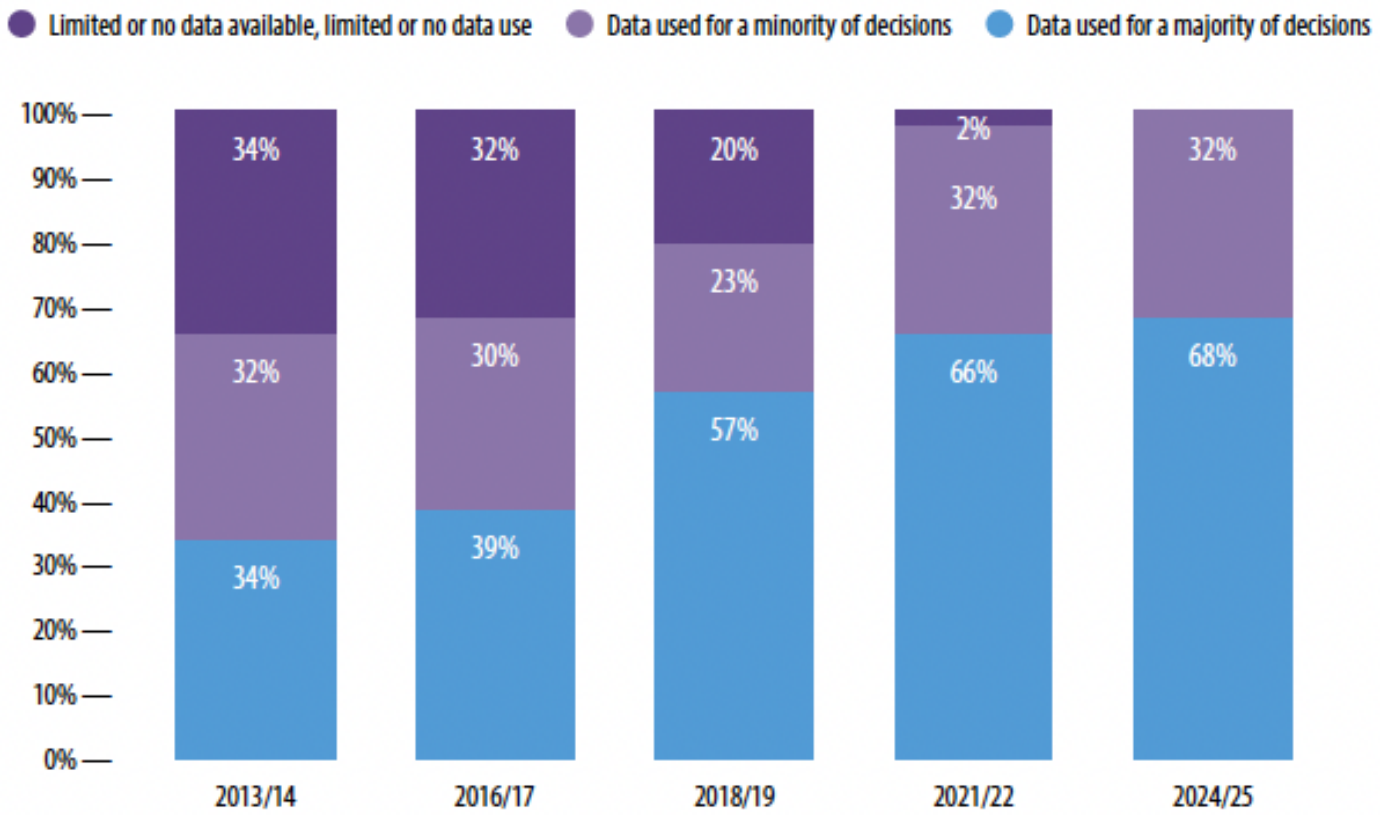
ODA commitments and disbursements to water supply and sanitation, 2010–2023, US$ millions (constant 2023 US$)

Percentage of countries with national regulations, standards or guidelines along the sanitation service chain



Sources: GLAAS 2024/2025 country survey; *Guidelines on sanitation and health (1)*.

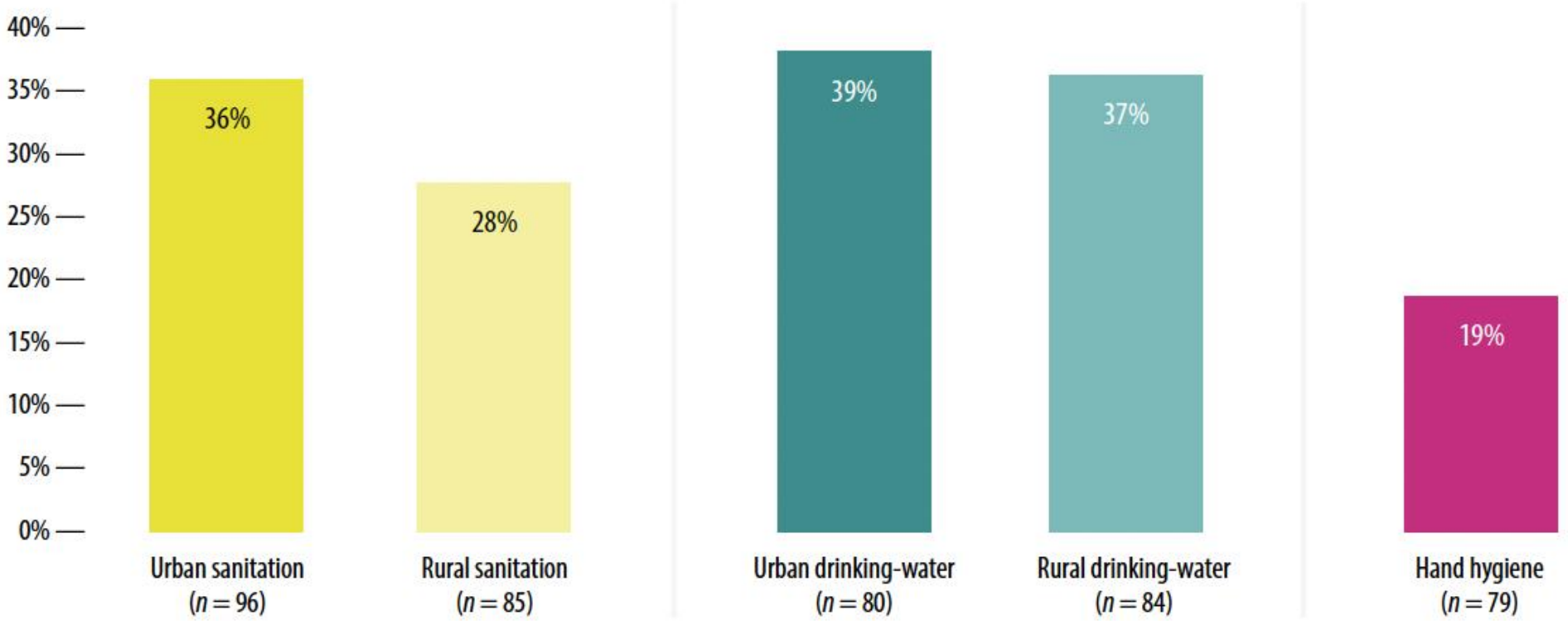
Since the GLAAS 2013/2014 cycle, more countries report using sanitation data for decision-making



Sources: GLAAS 2013/2014, 2016/2017, 2018/2019, 2021/2022 and 2024/2025 country surveys.

Percentage of countries using sanitation data in decision-making for sector review and planning, across five GLAAS cycles (*n* = 44)

Percentage of countries with indicators to monitor climate-resilient WASH



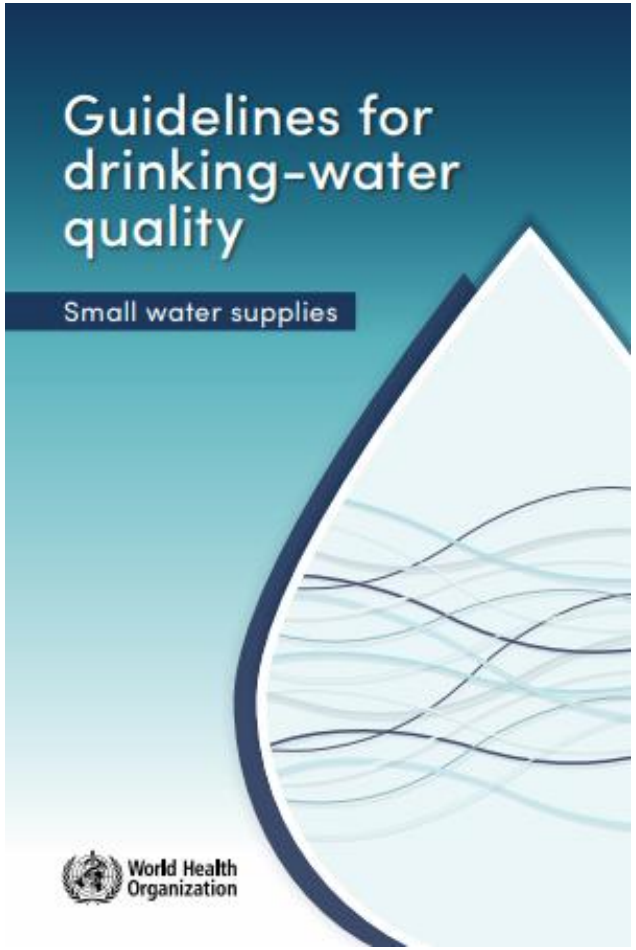
Source: GLAAS 2024/2025 country survey.

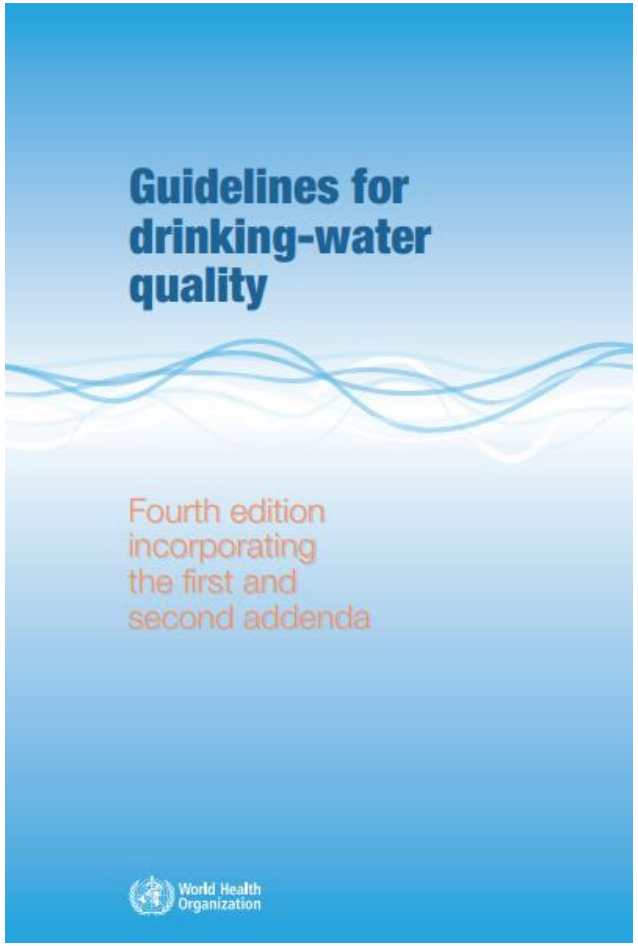
What is WHO doing about it?

Key WASH norms, capacity and health sector collaborations

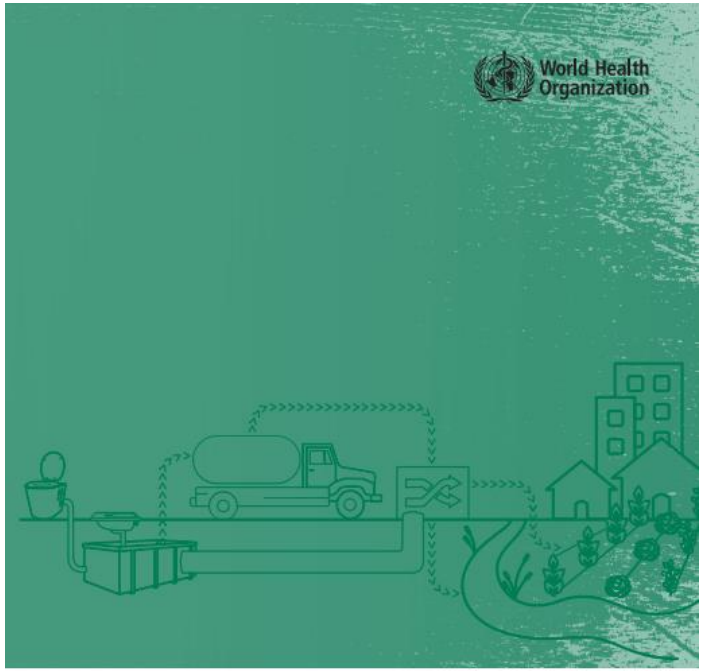
World Health Organization

Drinking water safety

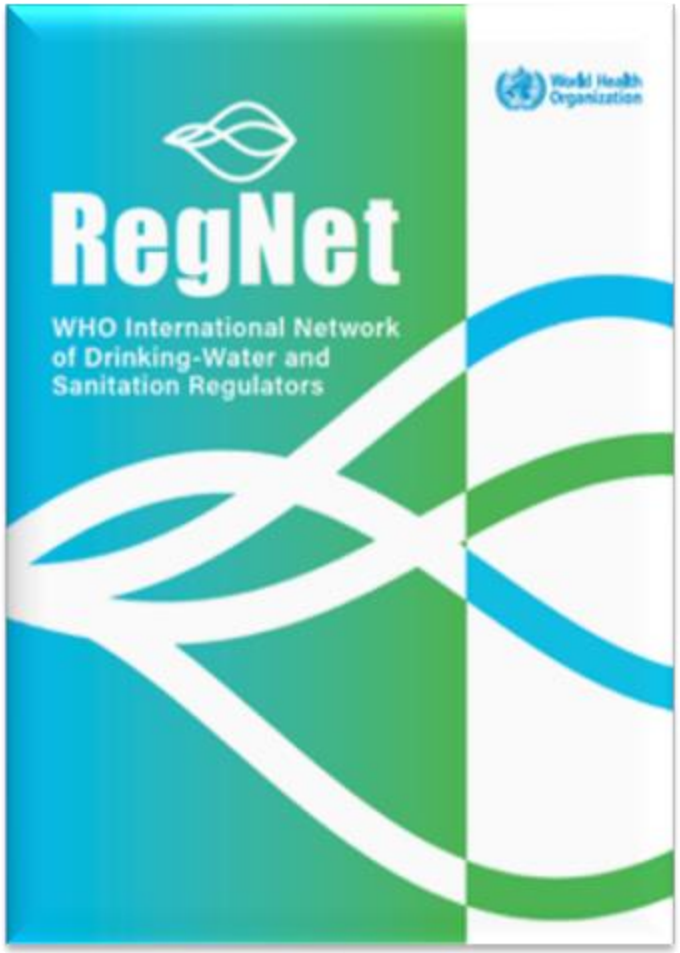




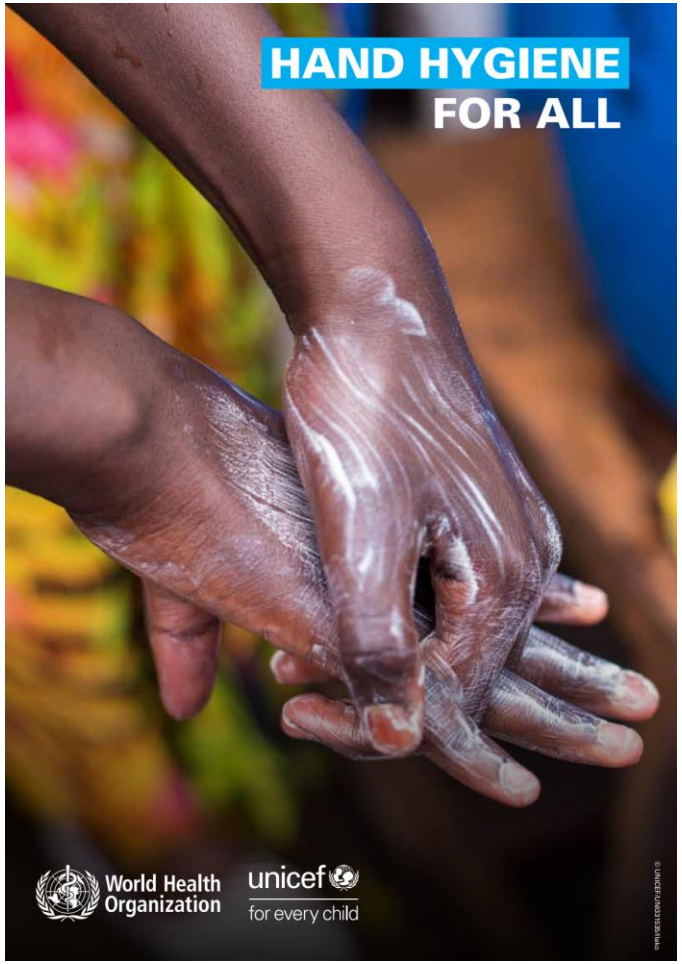
Sanitation and wastewater

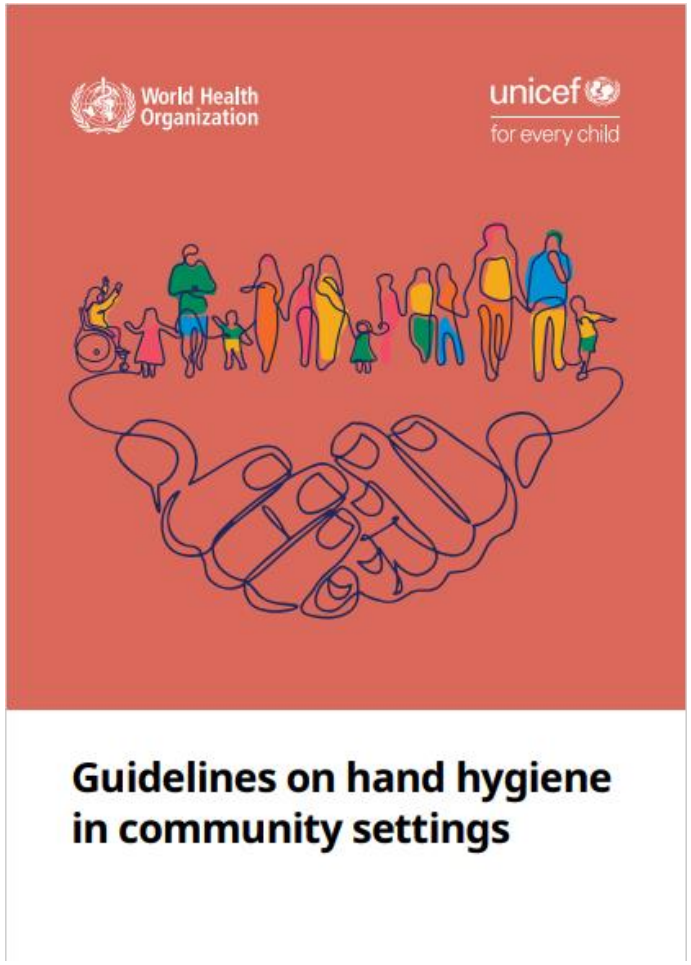


Regulators Network (RegNet)



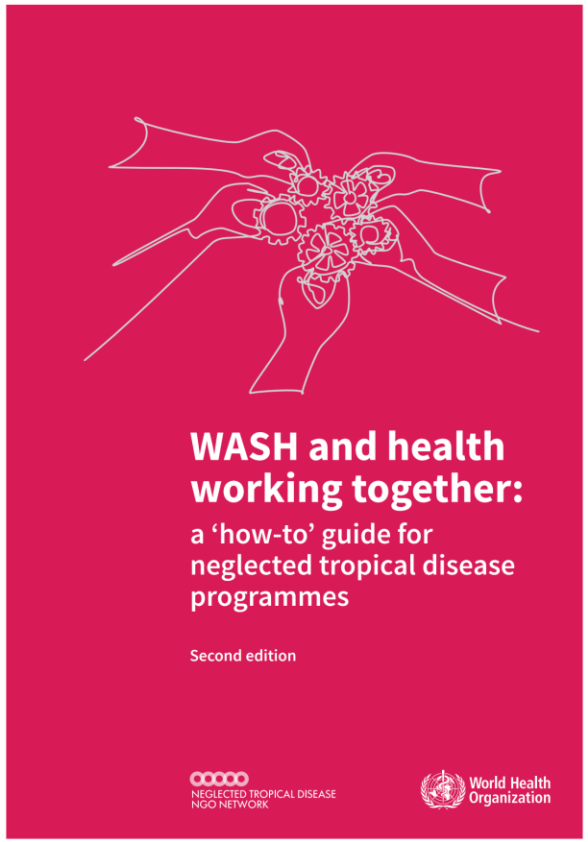
Hygiene - new hand hygiene guidelines just launched!

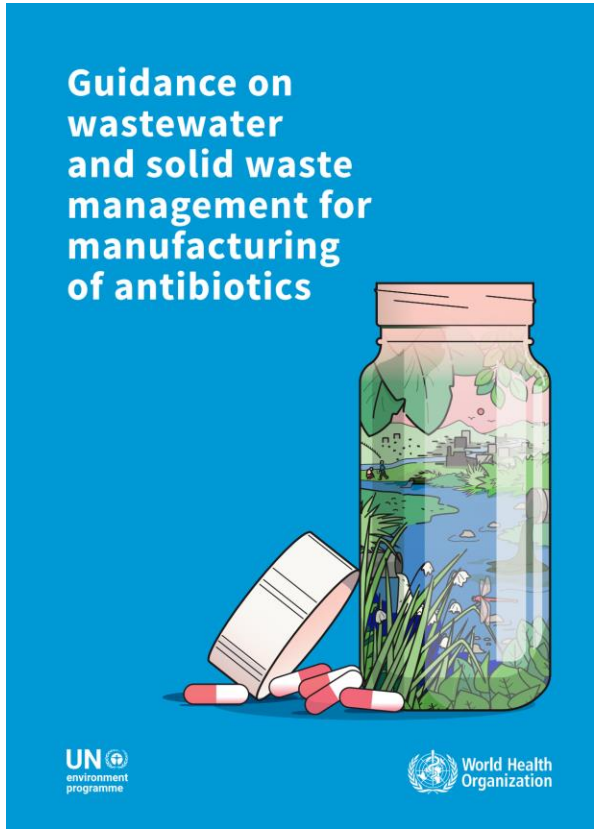




WASH in health care facilities – new report 2025!

Key health sector collaborations: AMR, NTDs, public health emergencies





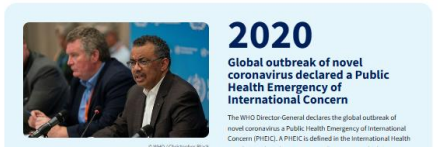
An emerging area:

Wastewater and environmental surveillance (WES)

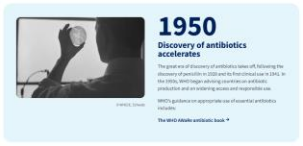
World Health Organization

Looking back: Pandemic and epidemic threats

PHEICs → | 2002 SARS-COV-1 | 2009 H1N1 "swine flu" | 2014 Polio | 2014 Ebola | 2016 Zika | 2020 COVID | 2022 MPOX | **What's next?**



Endemic diseases – Cholera, NTDs, HIV/TB/Malaria, Hepatitis etc

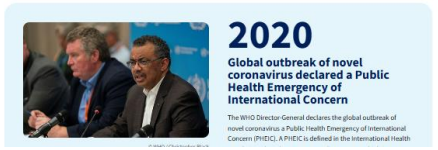


Antimicrobial Resistane (AMR)

https://www.who.int/campaigns/75-years-of-improving-public-health/milestones#year-2020

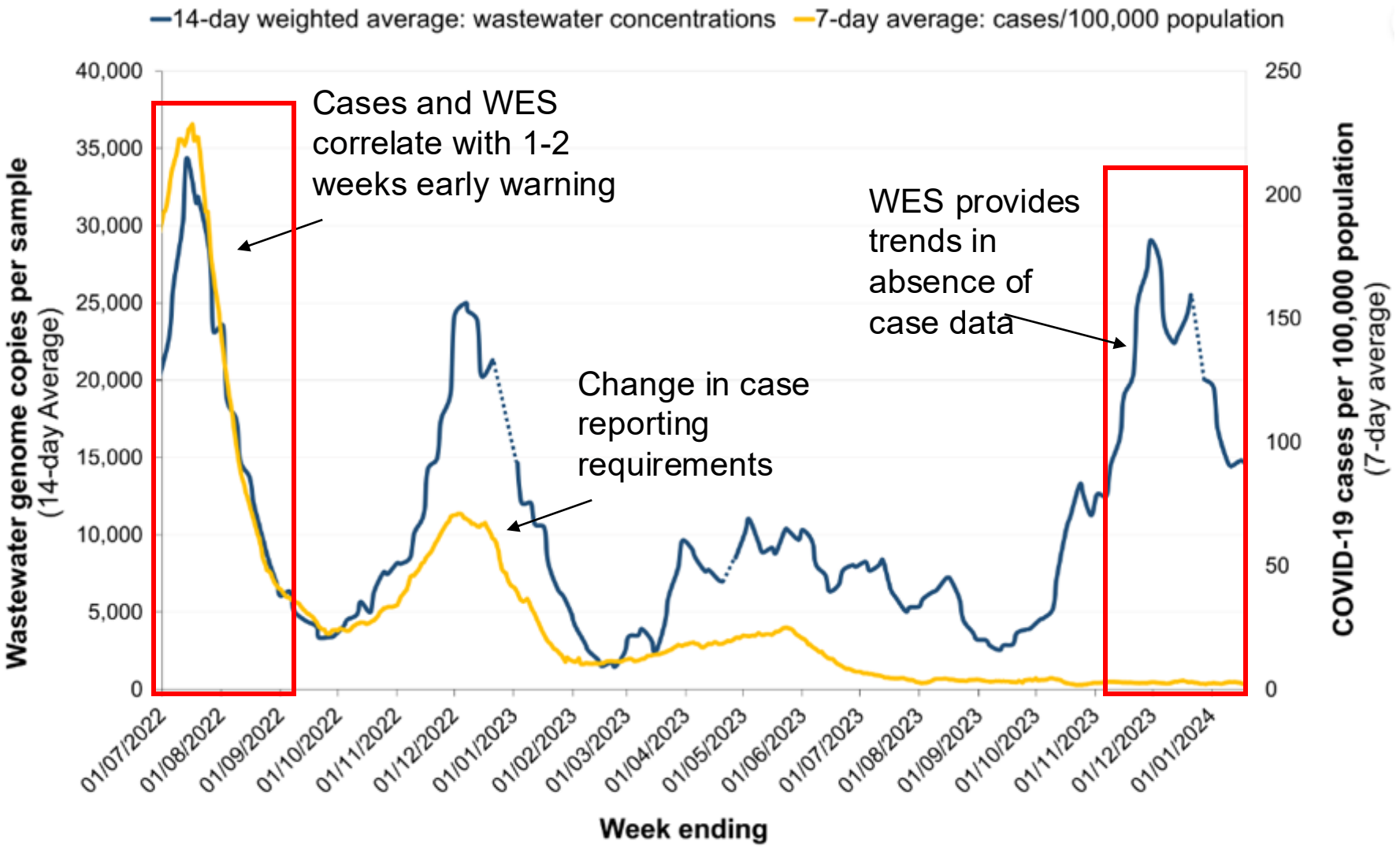
How can we better prepare and respond?

PHEICs → | 2002 SARS-COV-1 | 2009 H1N1 "swine flu" | 2014 Polio | 2014 Ebola | 2016 Zika | 2020 COVID | 2022 MPOX | **What's next?**



- **Are we ready for outbreaks and emerging threats?**
- **How can surveillance systems work better together?** (rather than separately for each disease)
- **What gaps might WES fill in existing surveillance systems?**

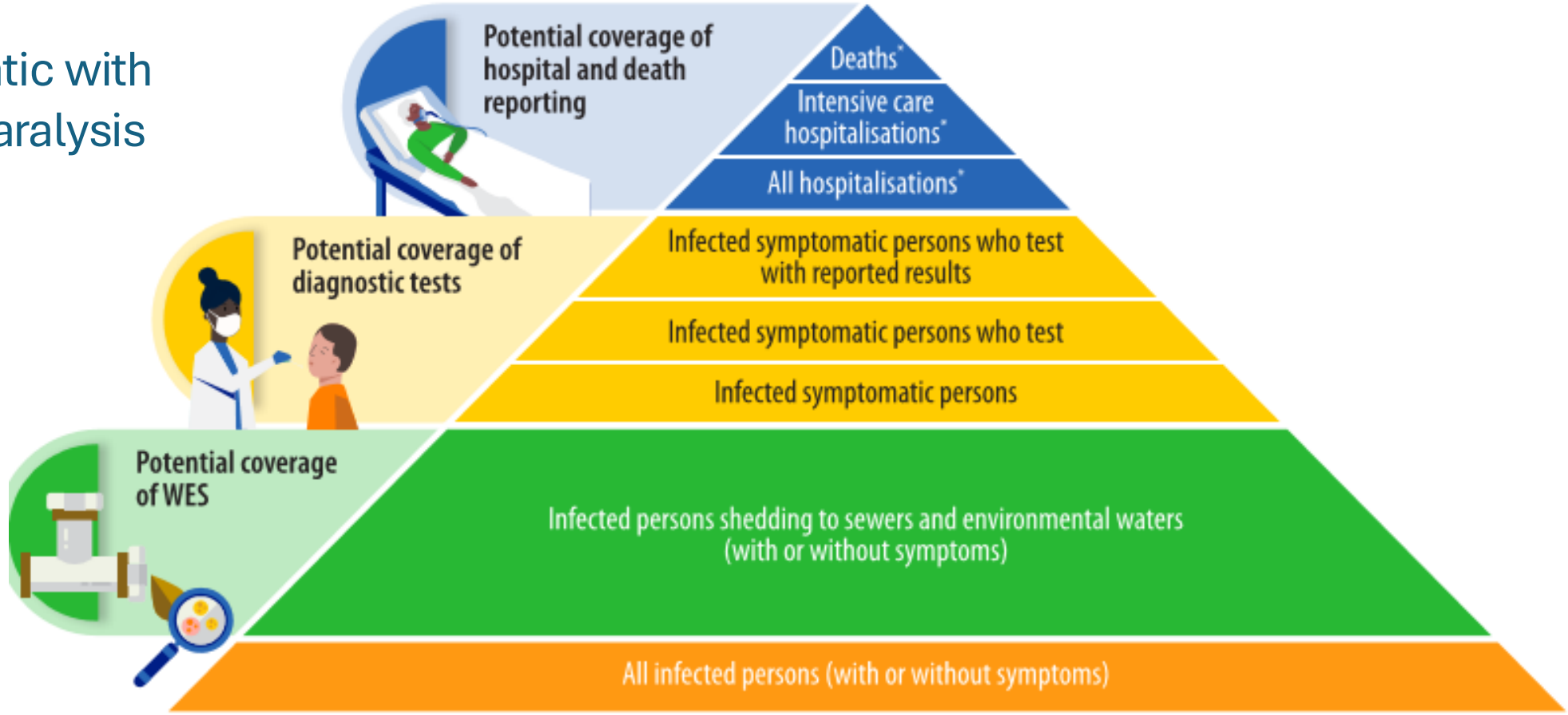
COVID showed the world that WES can provide early warning and fill gaps in clinical surveillance



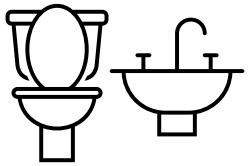
WES is already well-established globally for polio eradication

<1% symptomatic with acute flaccid paralysis

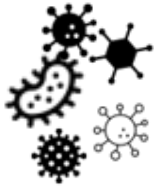
99% asymptomatic WES detects all polio shedding into wastewaters



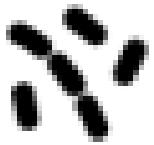
Therefore WES is a potentially powerful to tool compliment clinical surveillance for many threats



Shedding

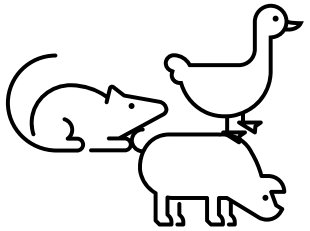


Persistence

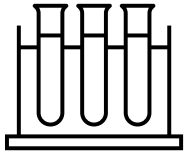


Environmental niches

Sewer/catchment features

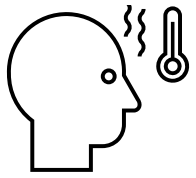


Animal inputs

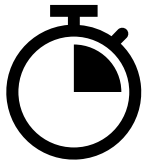


Limits of detection

.....but usefulness depends on a lot of factors.....



% without symptoms

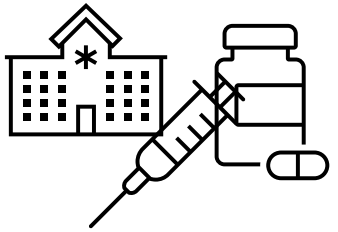


Time to symptoms

Health seeking/ access

Gaps in clinical data

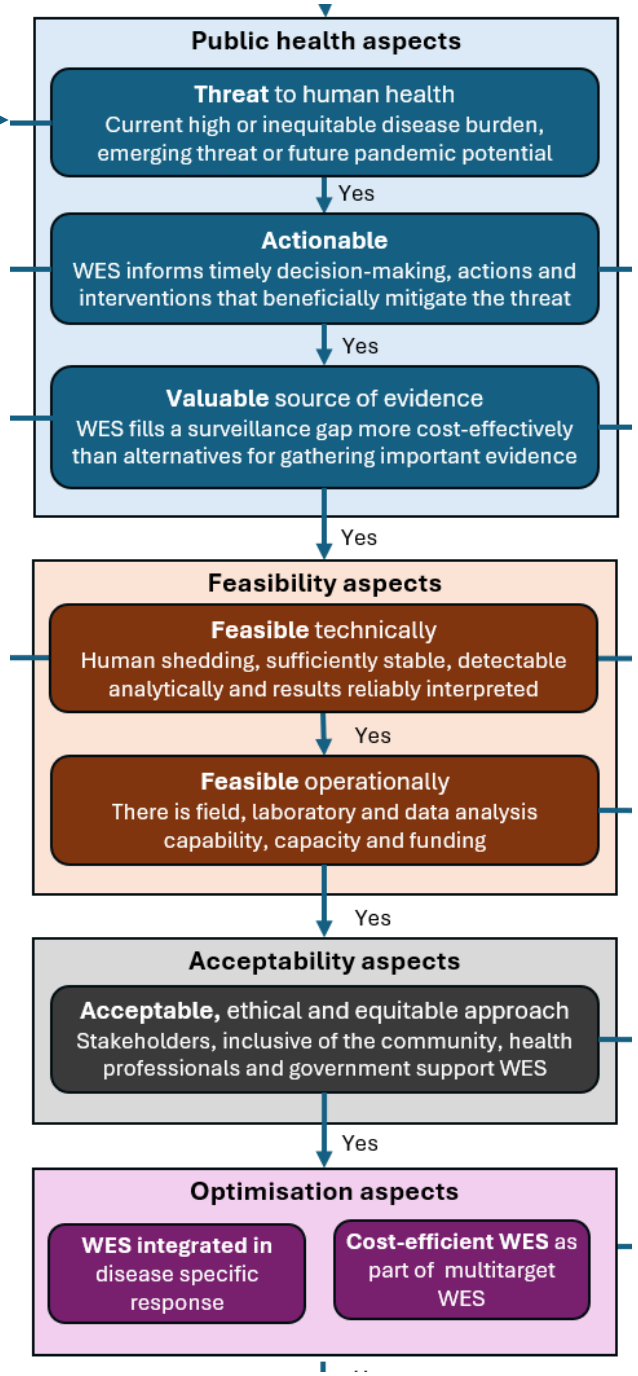
Data interpretation



Data use

Guidance on WES for one or more pathogen

Potential human p
threats
relevant to geogra



WES pathogen summaries

- Polio
- Influenza
- Cholera
- Typhoid
- SARS-CoV-2
- MPOX

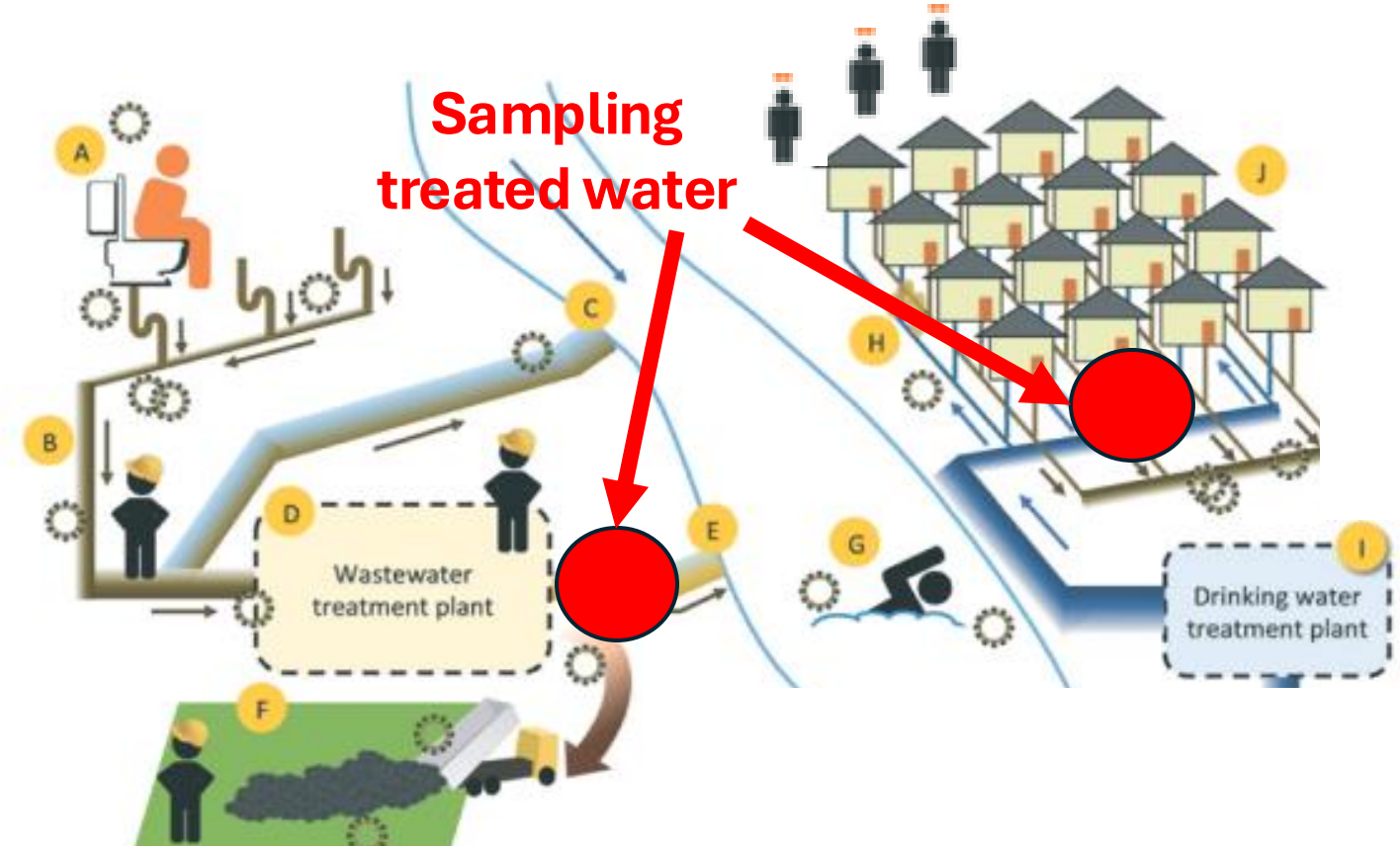
- Measles
- AMR
- Arboviruses
- Respiratory group
- Hepatitis A and E

A key thing wastewater and sanitation professionals need to understand about WES

Questions:

- **Are our treatment process working as intended?**
- **Is the community and environment protected from water-borne risks?**

Drinking-water and effluent monitoring



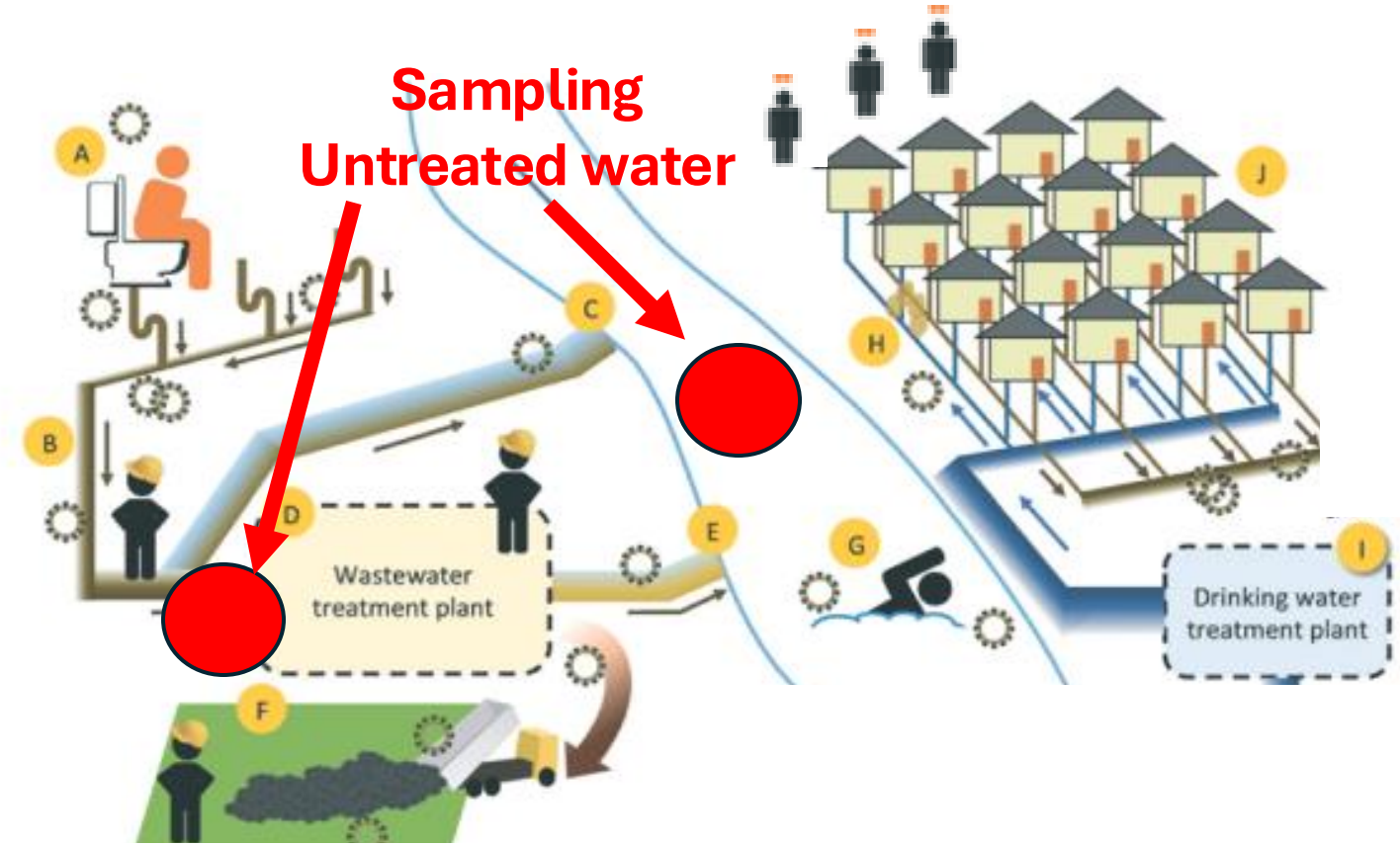
A key thing wastewater and sanitation professionals need to understand about WES

Questions:

- **What diseases are circulating in the community?**
(many are not water-borne but RNA is shed into wastewater e.g. COVID, MPOX, Flu**)**

- **What can WES tell us that clinical data is missing?**

Wastewater and environmental surveillance



WES is a multi-sector collaboration that needs water professionals

Wastewater and Surveillance Group (lead)

- Liaise with other public health groups (eg communicable disease, public health response, decentralised public health units, communication)
- Coordinate with partners: sanitation authorities, environmental laboratory and research community
- Coordinate data management, interpretation of WES results and integration with case and other data
- Coordinate with other sectors and stakeholders as is relevant to WES activity and affected communities

Public Health Authority

- Provide advice for site selection and sampling design and interpretation of results related to sanitation system expertise
- Provide static and dynamic catchment detail
- Collect and transport quality samples
- Worker and public safety

Sanitation and Environmental Authority

Research Commuity

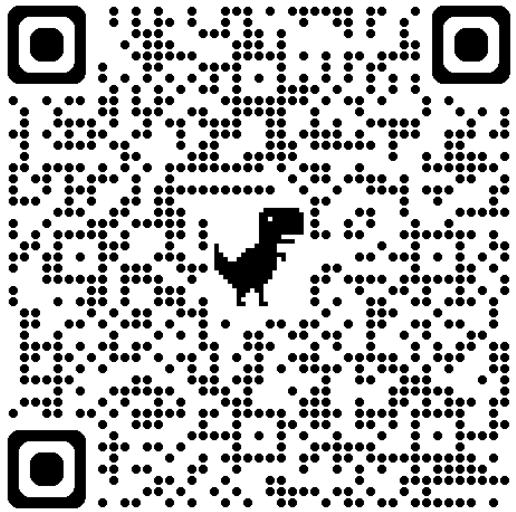
- Identify and address key knowledge gaps
- Support innovations, technology development including improved cost-efficiency
- Translational research (discovery to scale)
- Multifaceted : eg social licence, communications, sampling, analysis, integration, modelling with use of artificial intelligence and other

Environmental Laboratory

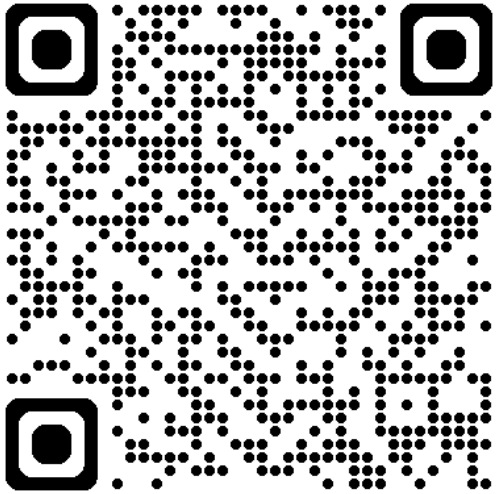
- Provide expert advice for analytics and bioinformatics
- Provide quality results
- Assist with interpretation including laboratory-related limitations
- Worker safety
- Secure sample storage

- Provide advice for site selection and sampling design and interpretation of results related to sanitation system expertise
- Provide static and dynamic catchment detail
- Collect and transport quality samples
- Worker and public safety

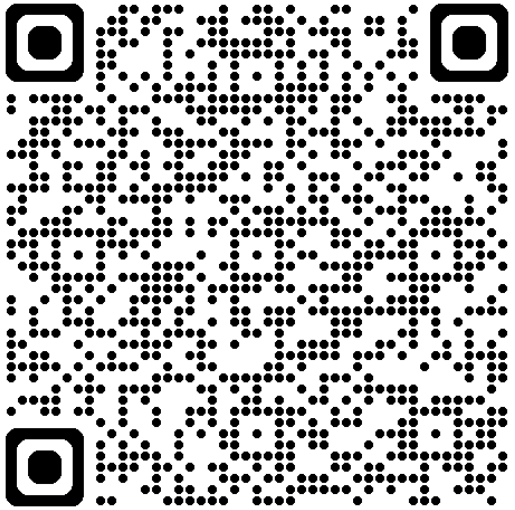
WES



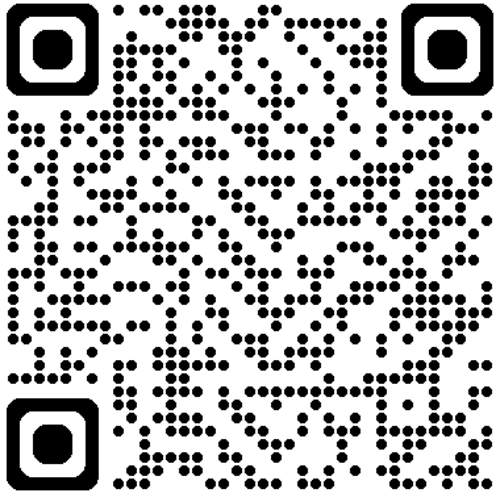
JMP



GLAAS



WASH in HCF



World Health Organization

Thank you

More info at:
www.who.int/teams/environment-climate-change-and-health/water-sanitation-and-health

World Health Organization