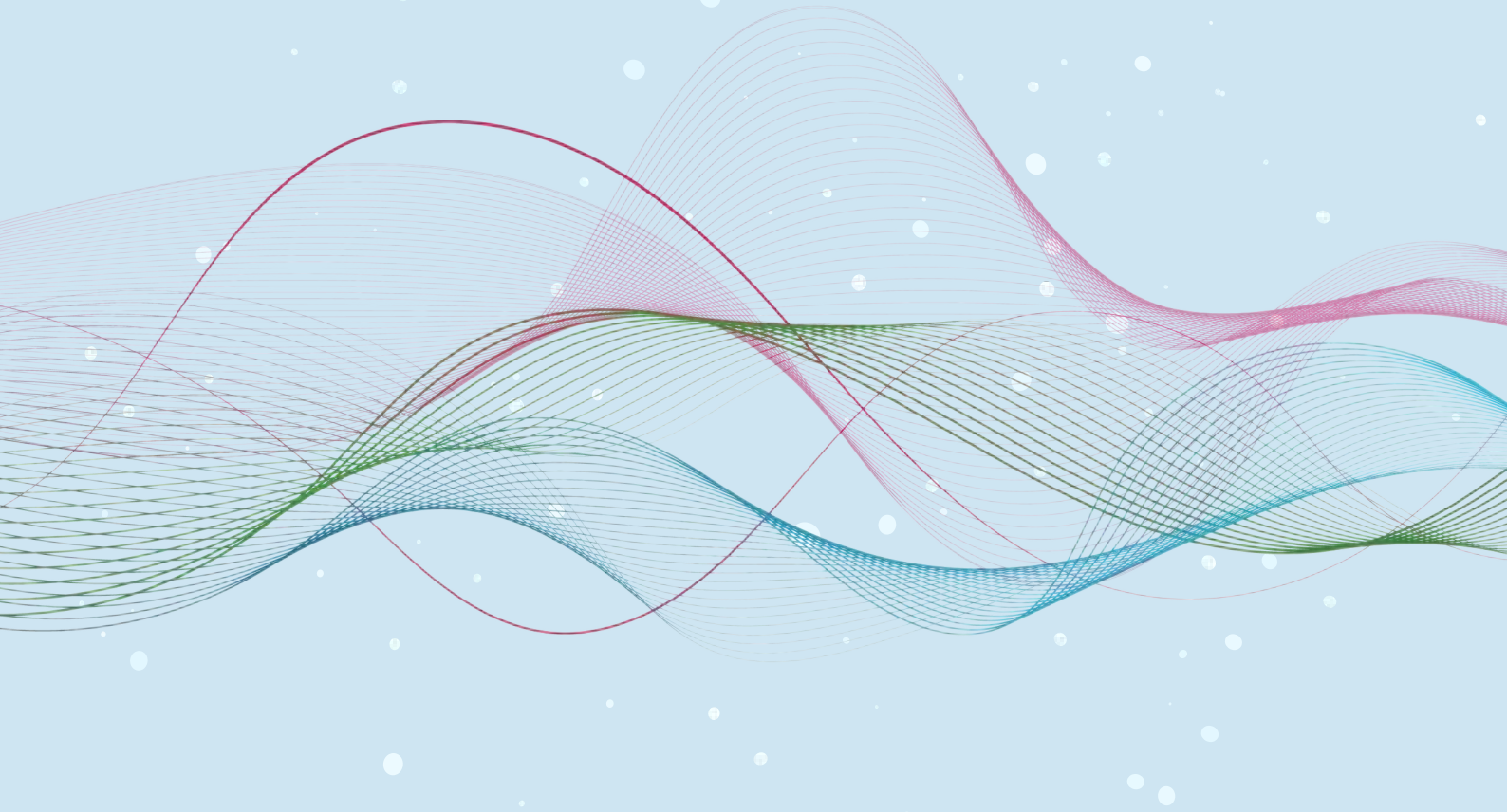
Burden of disease attributable to unsafe drinking-water, sanitation and hygiene

2019 Update



World Health Organization

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Contents

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Key findings

This report presents estimates of the burden of disease attributable to unsafe drinking-water, sanitation and hygiene (WASH) for 183 WHO Member States, disaggregated by region, age and sex for the year 2019. The estimates are based on four health outcomes – diarrhoea, acute respiratory infections (ARIs), undernutrition (protein–energy malnutrition), and soil-transmitted helminthiases (STHs) – included in the reporting of sustainable development goal (SDG) indicator 3.9.2 on mortality attributed to unsafe WASH.

In 2019, use of safe WASH services could have prevented the loss of at least 1.4 million lives and 74 million disability-adjusted life years (DALYs) from four health outcomes. This represents 2.5% of all deaths and 2.9% of all DALYs globally.

Diarrhoeal disease accounted for most of the attributable burden – over 1 million deaths and 55 million DALYs. Approximately 69% of the total diarrhoeal disease burden could be attributed to unsafe WASH. The attributable burden separated out by individual risk factor was 505 000 diarrhoea deaths from unsafe drinking-water, 564 000 for unsafe sanitation and 384 000 from unsafe hand hygiene.

The second largest cause of WASH-attributable burden of disease was ARIs attributable to inadequate hand hygiene, which was linked to 356 000 deaths and 17 million DALYs, and represented 14% of the total ARIs disease burden. In addition, 10% of the undernutrition disease burden was attributed to unsafe WASH and it was assumed that 100% of the disease burden from STHs could be attributed to unsafe WASH (Table 1).

Among children under five, the total WASH-attributable disease burden amounted to 395 000 deaths and 37 million DALYs, representing 7.6% of all deaths and 7.5% of all DALYs in this age group. This included 273 000 deaths from diarrhoea and 112 000 deaths from ARIs. These diseases are the top two infectious causes of death for children under five globally.

WASH-attributable disease burden varied by income group, with 89% of attributable deaths being from low- and lower-middle income countries. There were 270 000 deaths in low-income, 975 000 deaths in lower-middle-income and 112 000 deaths in upper-middle-income countries. In high-income countries, only the burden attributable to unsafe hygiene practices was estimated – it amounted to 44 000 deaths. Normalizing by population, the WASH-attributable mortality rates were 41.7, 29.7, 4.4 and 3.7 deaths per 100 000 population in low-income, lower-middle income, upper-middle income and high-income countries, respectively.

More than three quarters of all WASH-attributable deaths were in the WHO Africa and South-East Asia regions, with 510 000 and 593 000 deaths respectively, compared with 33 000 deaths in the European region. WASH-attributable mortality rates were 46.7 and 29.6 per 100 000 population in Africa and South-East Asia, compared to 3.6 per 100 000 in the European Region. While 18% of the diarrhoeal disease burden in high-income countries could be prevented through safe WASH, 76% and 66% could be prevented in low- and middle-income countries in Africa and South-East Asia respectively.

Table 1. WASH-attributable disease burden by health outcome, 2019

Health outcome	Population-attributable fraction	Deaths (thousands)	DALYs (thousands)
Diarrhoea	69%	1035	54 590
Acute respiratory infections	14%	356	16 578
Undernutrition	10%	8	825
Soil-transmitted helminthiases	100%	2	1942
Total	NA	1401	73 935

Important disparities in disease burden within countries are also likely because of within-country variations in access to WASH.

Although the estimated burden of disease attributable to inadequate WASH is large, the true burden is likely to be much higher because, for many health outcomes affected by WASH, quantification is not possible because of limited epidemiological evidence. Further, the analysis did not include settings such as health care facilities – where unsafe WASH conditions may expose patients and staff to many health risks. The estimates also did not consider the impact of climate change, which may exacerbate many WASH-related diseases and risks.

The evidence shows that basic services are essential to health, but greater health gains are achieved with higher levels of services. Although better data are needed to accurately capture exposures to safely managed services and the impact of higher levels of WASH services on health outcomes, the current estimates highlight the tremendous health gains that can be achieved by reaching the SDG targets on WASH for all by 2030.

Introduction

Safe drinking-water, sanitation and hygiene services, collectively referred to as WASH, are at the core of sustainable development, and are critical prerequisites to health and well-being. Governments and their supporting partners have committed to providing universal access to safe WASH by 2030, and to substantially reducing the number of associated deaths and illnesses. These commitments are enshrined in Sustainable Development Goal (SDG) targets 3.9, 6.1 and 6.2 (Fig. 1).

WHO has regularly produced estimates of the burden of disease attributable to unsafe WASH and is the custodian agency for reporting on SDG indicator 3.9.2 on mortality attributed to unsafe water, sanitation and hygiene. WHO also serves as the co-custodian agency (along with UNICEF) for indicators 6.1.1, 6.2.1a and 6.2.1b.

This report summarizes the estimates of the burden of disease attributable to unsafe WASH for the year 2019 for four health outcomes included in the reporting of SDG indicator 3.9.2, namely diarrhoea, ARIs, STHs and undernutrition. It comprises estimates for 183 WHO Member States disaggregated by region, age and sex.

The report builds on collaborative efforts between scientists and WASH experts over the past two decades and on key scientific publications developed to inform recommendations to the Lancet Commission on Water, Sanitation and Hygiene, and Health (*3*).

The estimates are derived from methods used in previous WASH-attributable disease burden assessments. They make use of updates that include the latest evidence on the links between WASH and key health outcomes, and use exposures that match more closely WASH service levels included in the monitoring framework for SDG targets 6.1 and 6.2. The estimates are largely derived from comparative risk assessment, the standard approach for burden of disease assessments.

The report is structured around the four health outcomes mentioned above. For diarrhoea and ARIs, sections summarize exposure estimates, the latest evidence on the exposure–response relationships, and the resulting burden of disease by risk factor – drinking-water, sanitation and hygiene. The discussions of undernutrition and STHs include estimates of the attributable burden associated with unsafe WASH as a whole, rather than considering drinking-water, sanitation and hygiene separately. The report concludes with reflections on the policy implications of these estimates.

Fig. 1. SDG 3 and 6 targets and indicators

Goals		Targets	Indicators
	3: Ensure healthy lives and promote well-being for all at all ages	3.9 Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe WASH services)
	6: Ensure availability and sustainable management of water and sanitation for all	6.1 Achieve universal and equitable access to safe and affordable drinking-water for all 6.2 Achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	6.1.1 Proportion of population using safely managed drinking-water services 6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a handwashing facility with soap and water

Methods

This section provides a brief overview of the methods used to produce the estimates presented in this report. More details on methods are available in Annex 1 and from other publications (*1, 4*).

WASH spans a broad range of technologies, behaviours and uses of services, all of which can prevent disease transmission by interrupting various exposure pathways. For this analysis, WASH was defined as use of services that improve access to a safe quantity and/or quality of drinking-water; use of services that safely contain, transport, treat and/or dispose of human excreta; and use of services that enable the practice of handwashing with soap and water at critical times.

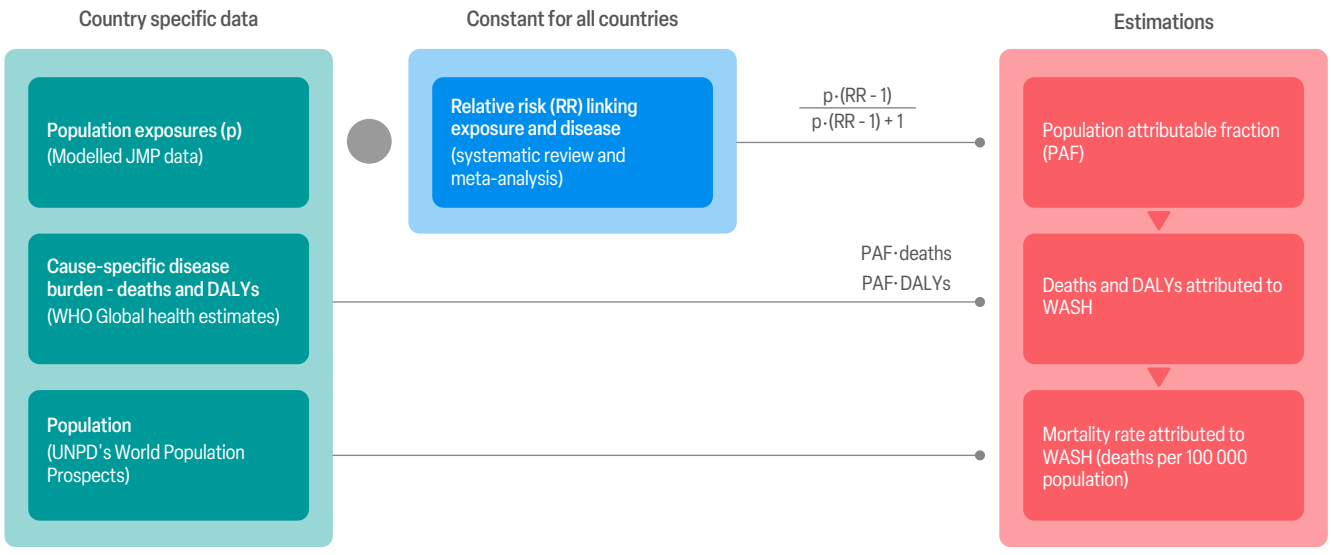
The standard method for burden of disease assessment is comparative risk assessment (CRA). In this analysis, CRA was used for estimating the WASH-attributable burden of disease for diarrhoea and ARIs, but – because of limited epidemiological evidence – alternative approaches were used for STHs and undernutrition (detailed in Annex 1). Disease burden attributable to a given risk factor – in this case, unsafe water, sanitation or hygiene – is estimated using the population attributable fraction (PAF).

The PAF is the proportion of disease or death that could have been prevented if exposures were reduced to those in an alternative minimum risk scenario, while other conditions remain unchanged. The calculation of the PAF draws on information on the proportion of the population exposed to the risk factor as well as the relative risk due to that exposure. The burden of disease attributable to unsafe water, sanitation or hygiene or all of them combined, in deaths or DALYs, is then obtained by multiplying the PAF by the total burden of each respective disease.

To produce estimates of the burden of disease attributable to unsafe WASH using CRA, the following information was used (Fig. 2):

- **Exposure:** The proportion of the population with access to different levels of water, sanitation and hygiene services in 2019 was modelled from data produced by the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), which monitors progress against SDG targets 6.1 and 6.2 on drinking-water, sanitation and hygiene (*5*).
- **Exposure–response relationship:** The relative risks linking exposures and health outcomes were obtained from two recent systematic reviews of the literature and resulting meta-analyses (*2, 6*).
- **Disease burden:** The total number of deaths and DALYs caused by diarrhoeal disease in a given year was obtained from WHO global health estimates for the year 2019 (*7, 8*).
- **Population estimates:** The population estimates were obtained from the UN Population Division's World Population Prospects, 2019 revision (*9*) to calculate the mortality rates expressed as deaths per 100 000 population.

Fig. 2. Data sources used for burden of disease estimations



The estimates are presented for the 183 WHO Member States for which total number of deaths and DALYs where available from the WHO global health estimates (*10, 11*); these represent 99% of the global population, and include 132 low- and middle-income countries (LMICs) and 51 high-income countries (HICs) (*12*). For HICs, the disease burden attributable to unsafe drinking-water and sanitation was not estimated because most high-income countries have near-universal access to safely managed drinking-water and sanitation services, and the available epidemiological evidence from intervention studies comes mainly from low- and middle-income settings. However, the burden of disease attributable to unsafe hygiene could be calculated for HICs. Table 2 includes a summary of data available and methods used for each health outcome.

Table 2. Data available and methods used by risk factor and income group for each health outcome

Health outcome	Method	Risk factor	Income group
Diarrhoea	Comparative risk assessment	Water	LMIC
		Sanitation	LMIC
		Hygiene	LMIC & HIC
		WASH combined	LMIC & HIC
ARIs	Comparative risk assessment	Hygiene	LMIC & HIC
Undernutrition	Alternative	WASH combined	LMIC
Soil-transmitted helminthiases	Alternative	WASH combined	LMIC

SECTION 1

01

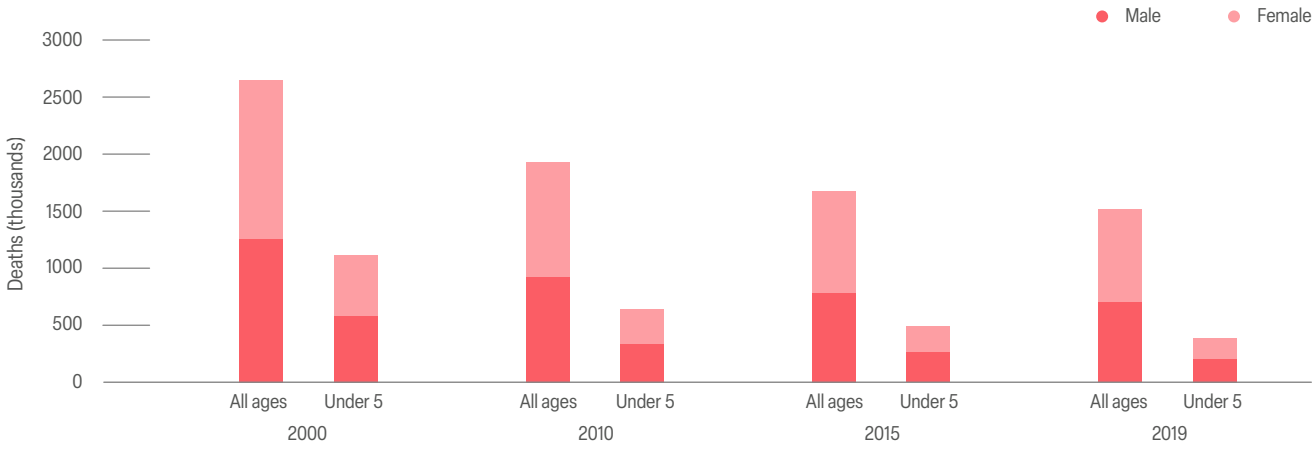
Diarrhoeal diseases

	Population-attributable fraction	Deaths	DALYs
Drinking-water	35%	505 046	27 million
Sanitation	38%	564 308	30 million
Hygiene	26%	383 786	20 million
WASH combined	69%	1 035 170	55 million

Total diarrhoeal disease deaths

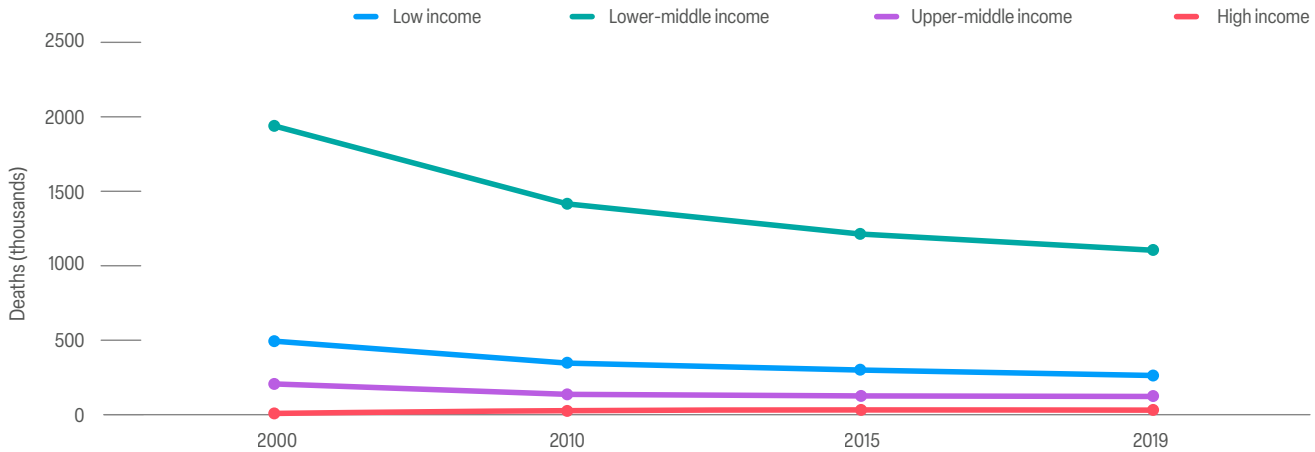
The burden of diarrhoeal disease attributable to inadequate WASH is estimated based on the total diarrhoeal disease burden. The burden of diarrhoeal disease has fallen dramatically over the past 20 years from 2.6 million in 2000 to 1.5 million in 2019. Among children under five, diarrhoea deaths dropped from 1.1 million in 2000 to 381 000 in 2019 (Fig. 3). However, diarrhoea deaths remain especially high in low- and lower-middle-income countries (*10, 13*) (Fig. 4).

Fig. 3. Diarrhoeal disease deaths by age and sex worldwide between 2000 and 2019



Source: Global Health Estimates 2019 (7).

Fig. 4. Diarrhoeal disease deaths in all ages by income group between 2000 and 2019



Source: Global Health Estimates 2019 (7).

The following sections provide summaries for each risk factor – drinking-water, sanitation and hygiene. The summaries include the exposure estimates, the results from the most recent systematic review and meta-regression on the impact of WASH interventions on diarrhoea, and the resulting burden of diarrhoeal disease.

Drinking-water

The diarrhoeal disease burden attributable to unsafe drinking-water was estimated for 132 LMICs.

Exposure to unsafe drinking-water

Sustainable Development Goal target 6.1 calls for universal and equitable access to safe and affordable drinking-water. The target is tracked with indicator 6.1.1 "safely managed drinking-water services", which is defined as drinking-water from an improved water source that is located on premises, available when needed, and free from faecal and priority chemical contamination (*14, 15*). The JMP uses a service ladder to benchmark and compare service levels across countries (Fig. 5).

For estimating the burden of disease attributable to unsafe drinking-water, the minimum risk exposure level used was access to safely managed drinking-water at the household level.

Exposures were obtained from the JMP database, which includes estimates on use of safely managed drinking-water services by country for the year 2019. The adjustments were made to account for:

- The JMP uses data on the microbiological quality of drinking-water at the point of collection and not at the household level or point of use. However, evidence shows that contamination of drinking-water often occurs after collection – for example, through unhygienic household storage practices.
- Data on accessibility, availability and quality often come from different sources and cannot always be combined at the household level. The JMP therefore takes the minimum value of these three criteria for urban and rural domains to calculate safely managed drinking-water services at the domain level.

For this assessment, adjusted estimates were produced for all countries by integrating nationally representative information on deterioration of water quality between the point of collection and the point of use, and by combining data on accessibility, availability and quality at the household rather than domain level from 38 nationally representative household surveys (mainly Multiple Indicator Cluster Surveys (*16*)) that collected all of the required information on drinking-water services.

Fig. 5. SDG drinking-water service ladder

SERVICE LEVEL	DEFINITION
SAFELY MANAGED	Drinking-water from an improved source that is accessible on premises, available when needed and free from faecal and priority chemical contamination
BASIC	Drinking-water from an improved source, provided collection time is not more than 30 minutes for a round trip, including queuing
LIMITED	Drinking-water from an improved source, for which collection time exceeds 30 minutes for a round trip, including queuing
UNIMPROVED	Drinking-water from an unprotected dug well or unprotected spring
SURFACE WATER	Drinking-water directly from a river, dam, lake, pond, stream, canal or irrigation canal

Note: Improved sources include piped water, boreholes or tube wells, protected dug wells, protected springs, rainwater, and packaged or delivered water.

Source: Adapted from (*17*).

The distribution of the population by exposure levels of drinking-water is presented in Fig. 6. After the described adjustment, 38% of the population in LMICs was estimated to use drinking-water that was accessible on premises, available when needed and free from contamination at household level (compared with 56% using safely managed drinking-water services as modelled from JMP estimates without the adjustment). Wide disparities between regions were observed – from 9% in Africa to 62% in Europe.

Drinking-water supplies are often microbiologically contaminated, and households may treat water before drinking it, potentially reducing the risk of adverse health outcomes. Information on whether people treat their water was obtained from surveys and compiled and modelled using multilevel modelling. Filtration and boiling remain the most common types of household water treatment, with an estimated 26% of the population in LMICs reporting boiling or filtering their drinking-water. Chlorination was next-most common at almost 4% (Fig. 7).

Fig. 6. Estimated drinking-water exposures by region for 132 LMICs, 2019

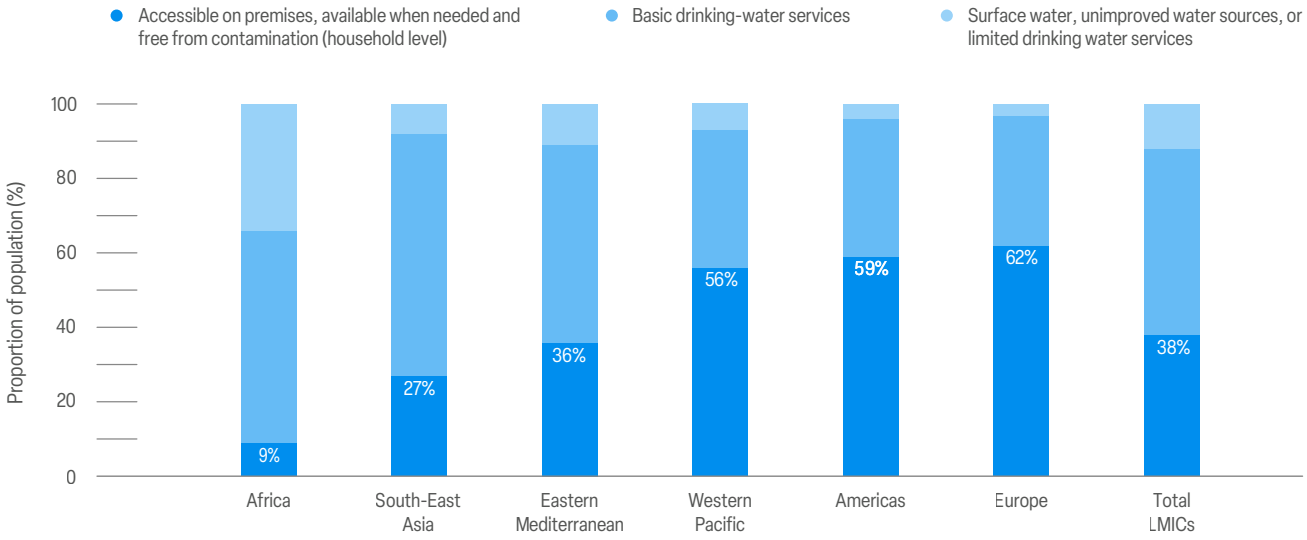
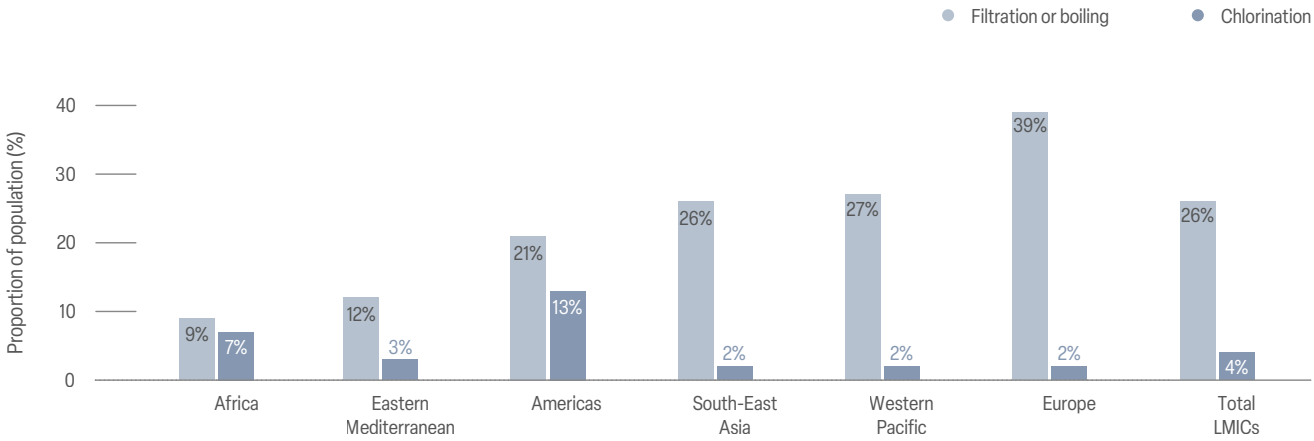


Fig. 7. Percentage of the population reporting household water treatment by region for 132 LMICs, 2019



Effect of improving drinking-water on diarrhoea

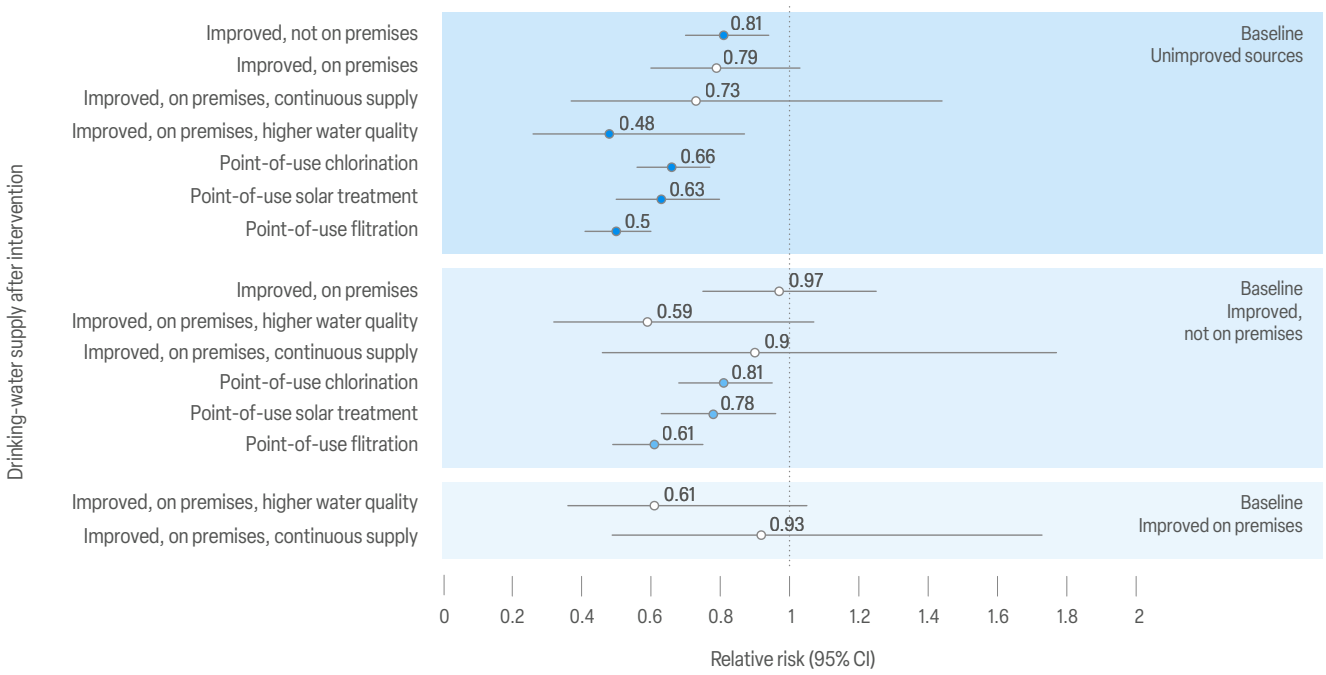
The effect of drinking-water interventions on diarrhoeal disease were taken from the systematic review and meta-analysis by Wolf et al. (2).

The meta-analysis allowed calculation of the reduction in risk of getting diarrhoeal disease that would be expected when transitioning from a low-quality drinking-water service to one of higher quality (Fig. 8). The different levels of drinking-water

services , used in this analysis, were grouped to match as closely as possible the JMP drinking-water service ladder and associated global indicators. Fig. 9 shows the diarrhoea risk reductions associated with transitions to different service levels.

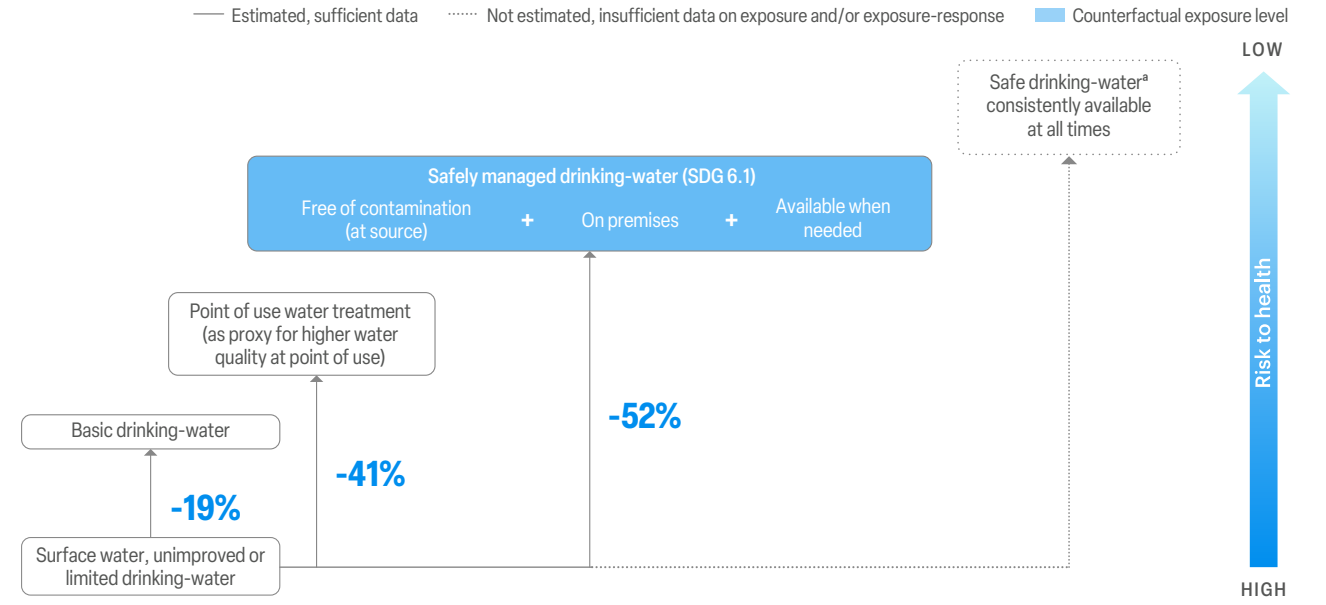
The review found that switching from using an unimproved water source to an improved water supply on premises with higher water quality was associated with the largest risk reduction (relative risk = 0.48, meaning a 52% reduction in risk). Treating water at the point of use reduced diarrhoea by 41% (pooled relative risk=0.59) compared to drinking untreated water from an unimproved source.

Fig. 8. Relative risks for transitions among drinking-water exposure groups



Source: Adapted from (2).

Fig. 9. Drinking-water supply transitions and associated reductions in diarrhoeal disease risk



[a] Safe drinking-water does not represent any significant risk to health over a lifetime of consumption (18).

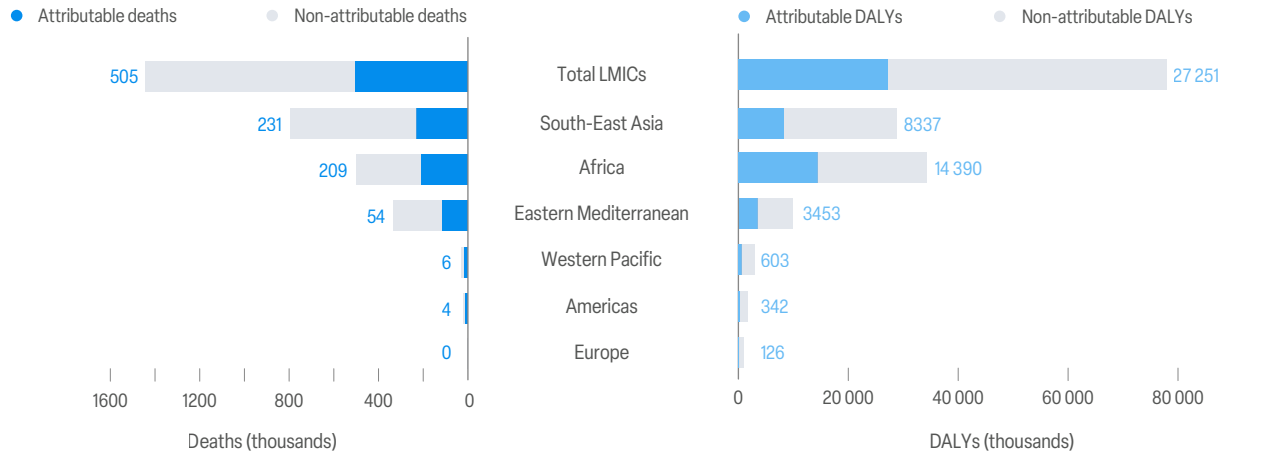
Source: Adapted from (1)

The study found that, when starting from a baseline of using unimproved sources, the health impacts of shifting to an improved source are similar whether that improved source is on premises or not (Fig. 8). Furthermore, the predicted health benefits of shifting from an improved supply located off premises to one located on premises were small and not statistically significant.

Diarrhoeal disease burden from unsafe drinking-water

In 2019, 35% of diarrhoea deaths in LMICs were attributable to unsafe drinking-water, accounting for over 505 000 deaths and 27 million DALYs (Fig. 10).

Fig. 10. Diarrhoeal disease burden in deaths and DALYs attributable to inadequate drinking-water by region for 132 LMICs, 2019



Sanitation

The diarrhoeal disease burden attributable to unsafe sanitation was estimated for 132 LMICs.

Exposure to inadequate sanitation

Fig. 11. SDG sanitation service ladder

SERVICE LEVEL	DEFINITION
SAFELY MANAGED	Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or removed and treated off-site
BASIC	Use of improved facilities that are not shared with other households
LIMITED	Use of improved facilities that are shared with other households
UNIMPROVED	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
OPEN DEFECATION	Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open places, or with solid waste

Note: Improved facilities include flush/pour flush toilets connected to piped sewer systems, septic tanks or pit latrines; pit latrines with slabs (including ventilated pit latrines); and composting toilets.

Source: Adapted from (*19*).

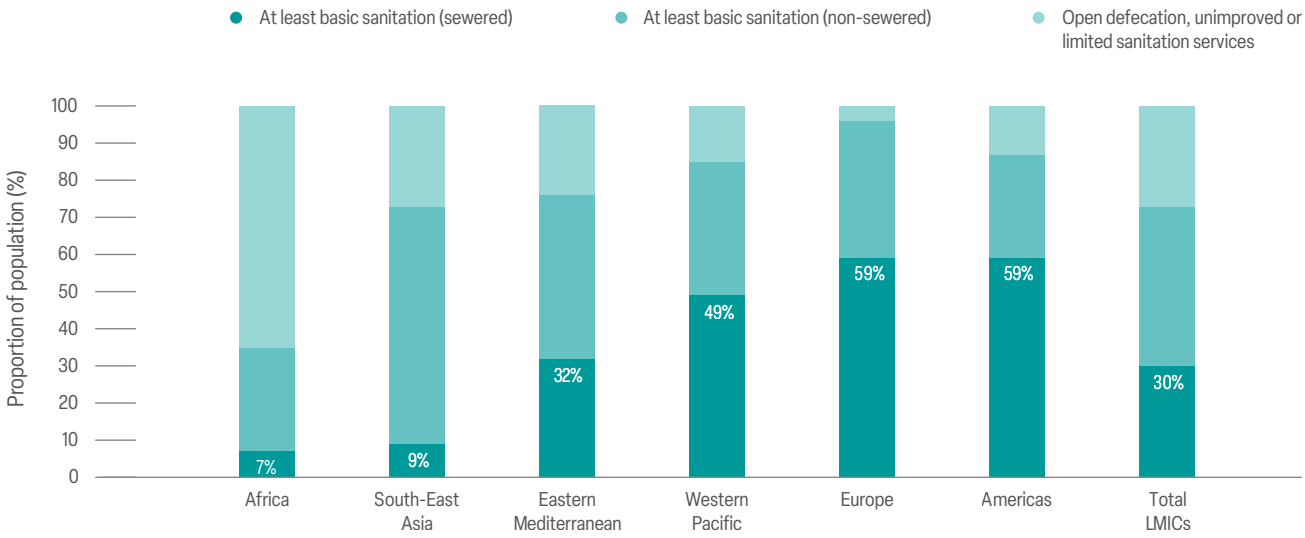
Sustainable Development Goal target 6.2 calls for access to adequate and equitable sanitation and hygiene for all and the end of open defecation, paying special attention to the needs of women

and girls and those in vulnerable situations. The target is tracked with the indicator "safely managed sanitation services" – defined as use of improved facilities that are not shared with other households and where excreta are safely disposed of in-situ or removed and treated off-site (*14, 15*). Fig. 11 shows the JMP sanitation service ladder.

For burden of disease estimation, it was not possible to use "safely managed sanitation services" as the minimum risk exposure level because there was not sufficient epidemiological evidence on the impact of safely managed sanitation services on diarrhoea. From the systematic review and meta-analysis, basic sanitation services connected to sewer was associated with the greatest diarrhoeal disease risk reductions and was accordingly used as the minimum risk exposure level instead. This level is referred to as "at least" basic sanitation because it includes both the basic and safely managed service levels as defined in the SDG sanitation services ladder (Fig. 11).

In 2019, 30% of the population living in LMICs used at least basic sanitation facilities (improved sanitation facilities not shared with other households) connected to sewer networks (Fig. 12).

Fig. 12. Estimates of sanitation exposures by region for 132 LMICs, 2019

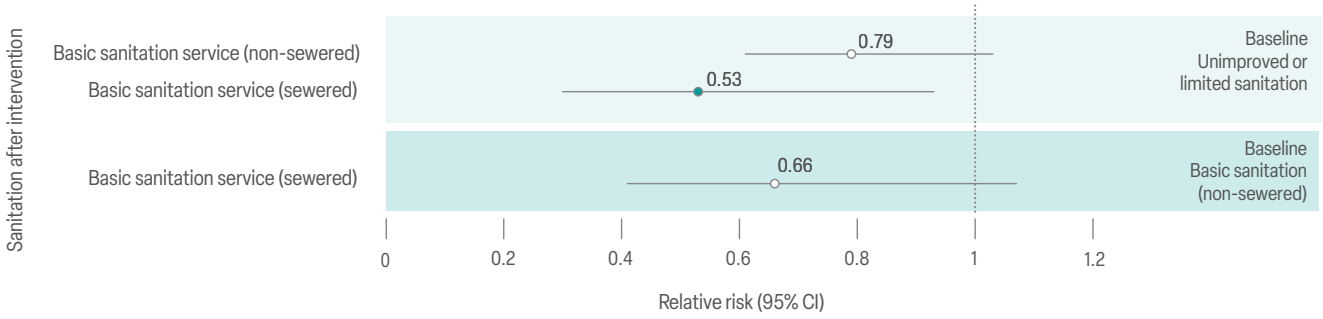


Effect of improving sanitation on diarrhoea

The effects of sanitation interventions on diarrhoeal disease were taken from the systematic review by Wolf et al. (*2*).

Fig. 13 shows the diarrhoea risk reductions associated with transitions to different service levels. Moving from an unimproved sanitation facility to use of a basic sanitation service connected to sewer was associated with the largest diarrhoeal disease reduction; diarrhoea risk fell by 47% (relative risk 0.53).

Fig. 13. Relative risks for transitions among sanitation exposure groups



Source: Adapted from (*2*).

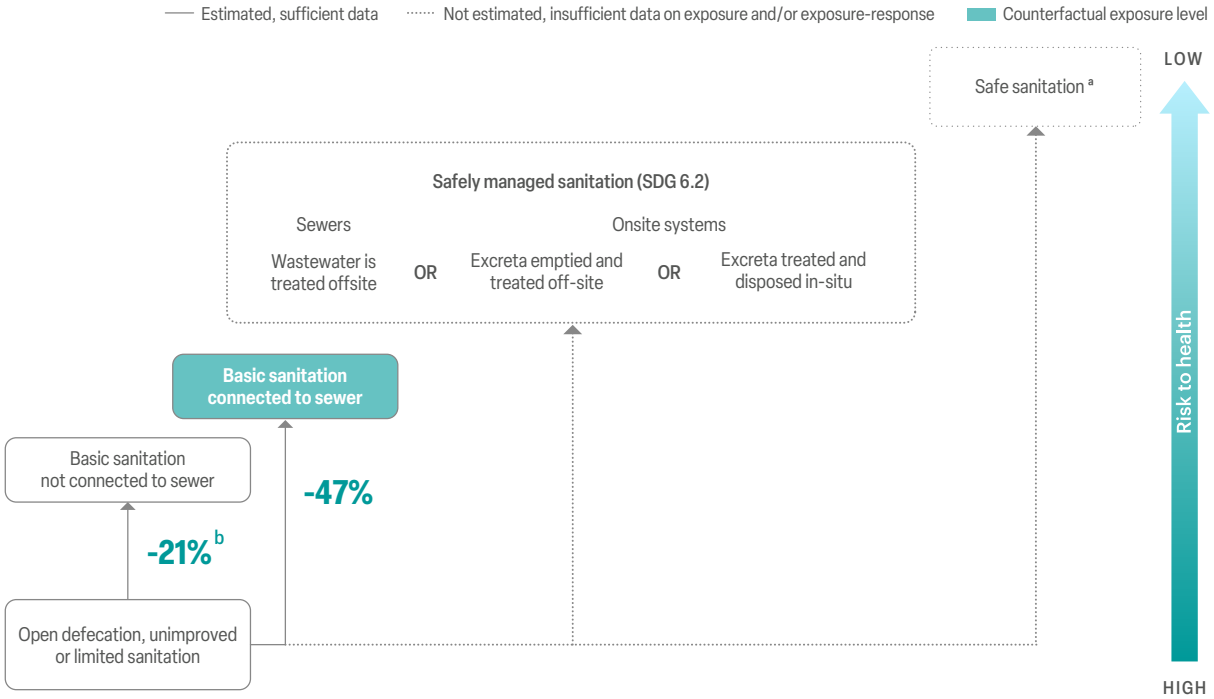
The JMP estimates of safely managed sanitation contain three important elements – wastewater treated off-site, excreta emptied and treated off-site; and excreta disposed of on-site, none of which match well the available exposure–response relationship for basic sanitation connected to sewer. As the minimum risk exposure level for this analysis, we modeled coverage of "basic sanitation connected to sewer", based on JMP estimates. (Fig. 14).

Households with sewer connections have "safely managed services" if the sewer delivers wastewater to a treatment plant that provides secondary or higher levels of treatment. The estimates of the typical quality of sanitation when connected to sewer reflect a lower service level than safely managed sanitation because the extent to which sewage is delivered to off-site wastewater treatment plants and receives secondary or higher levels of treatment is unknown. Sometimes what people report as a "sewer connection" is just a connection to an open drain or to a closed sewer that discharges directly into the environment. Even when sewer networks do deliver wastewater to treatment plants, too often those plants do not provide effective treatment, and so discharge untreated or inadequately treated sewage into receiving waters, where human exposure can occur.

The choice of basic sanitation connected to sewer as the minimum risk exposure level for this analysis does not take into account on-site systems that are classified as safely managed under the SDG definitions. On-site systems – such as pit latrines and septic tanks that safely contain excreta so that it is not released to the environment – are counted as safely managed if they have never been emptied, or if excreta are treated and disposed of on-site. On-site systems that have been emptied can be counted as safely managed if the excreta are transported to an appropriate treatment plant for off-site treatment.

In low-income and lower-middle-income countries, most of the population with safely managed sanitation services use on-site sanitation facilities. On-site sanitation is growing faster than sewered sanitation, even in urban settings (*20*). However, because of the limited epidemiological evidence of the links between safely managed on-site sanitation and diarrhoeal disease, this analysis could not estimate the health impacts of increasing safely managed on-site sanitation services.

Fig. 14. Sanitation transitions and associated reductions in diarrhoeal disease risk



[a] Safe collection, storage, treatment, disposal and/or use of human and animal excreta

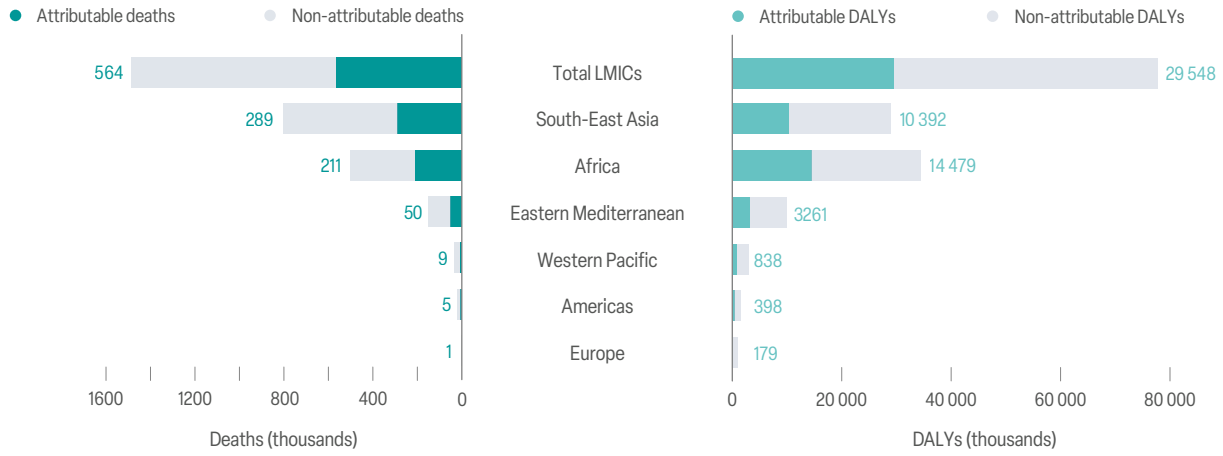
[b] Not statistically significant

Source: Adapted from (*1*)

Diarrhoeal disease burden from inadequate sanitation

Overall, 38% of the diarrhoeal disease deaths were attributable to unsafe sanitation in LMICs, accounting for 564 000 deaths and almost 30 million DALYs in 2019 (Fig. 15).

Fig. 15. Diarrhoeal disease burden in deaths and DALYs attributable to inadequate sanitation by region for 132 LMICs, 2019



Hand hygiene

The diarrhoeal disease burden attributable to unsafe hand hygiene practices was estimated for 132 LMICs and for 51 HICs.

Exposure to inadequate hand hygiene practices

The JMP monitors progress towards the SDG target on hygiene through indicator 6.2.1b, "the proportion of the population with handwashing facilities with soap and water at home" (Fig. 16). The JMP uses data on the observation of handwashing facilities with water and soap. Data on handwashing became standardized when international household survey programmes added handwashing questions to their questionnaires in 2009 (*17, 21*).

For burden of disease estimations, hygiene exposures are not drawn directly from the JMP indicator. This is because the presence of a handwashing facility with water and soap in the home does not mean that hands are consistently washed when needed.

Fig. 16. SDG service ladder for hygiene

SERVICE LEVEL	DEFINITION
BASIC	Availability of a handwashing facility with soap and water at home
LIMITED	Availability of a handwashing facility lacking soap and/or water at home
NO FACILITY	No handwashing facility at home

Note: Handwashing facilities may be located within the dwelling, yard or plot. They may be fixed or mobile and include a sink with tap water, buckets with taps, tippy-taps, and jugs or basins designated for handwashing. Soap includes bar soap, liquid soap, powder detergent, and soapy water but does not include ash, soil, sand or other handwashing agents.

Source: Adapted from (*22*)

Therefore estimates of handwashing practice were modeled based on JMP estimates of access to handwashing facilities, combined with the results of a meta-analysis of the association between the presence of a handwashing facility with soap and water and observed handwashing after potential faecal contact (*23*).

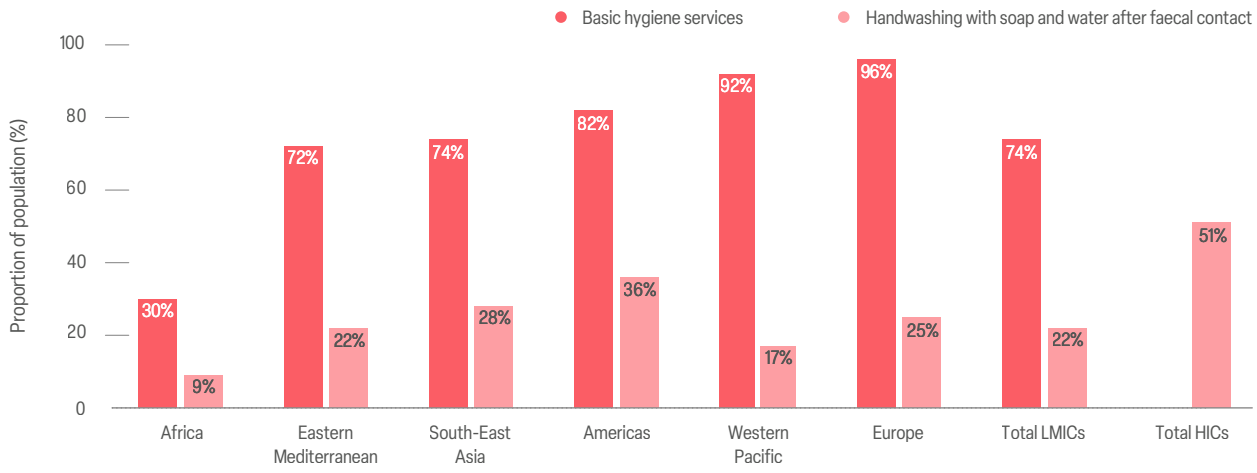
The proportion of people washing hands with soap after potential faecal contact, such as toilet use, is estimated by combining two parameters:

1. **The presence of a handwashing facility with water and soap in the home (basic hygiene services).** This was modeled for all countries using data points from the JMP database. In 2020, estimates for basic hygiene services coverage were available for 79 LMICs in the JMP database. For the purposes of this analysis, it is assumed that in HICs access to handwashing facilities with water and soap is universal.

2. **The probability of washing hands with soap after faecal contact, when handwashing facilities are available in the household.** This was modelled from a systematic review of the literature of observed handwashing practices (*23*).

Overall, 26% of the global population was estimated to wash hands with soap after potential faecal contact, ranging from 22% in LMICs to 51% in HICs (Fig. 17).

Fig. 17. Estimates of hygiene exposures by region for 183 countries, 2019



Effect of handwashing with soap on diarrhoea

The effects of handwashing interventions on diarrhoeal disease were taken from the systematic review by Wolf et al. (*2*).

Fig. 18. Hygiene transition with associated risk reductions for diarrhoeal disease and ARIs

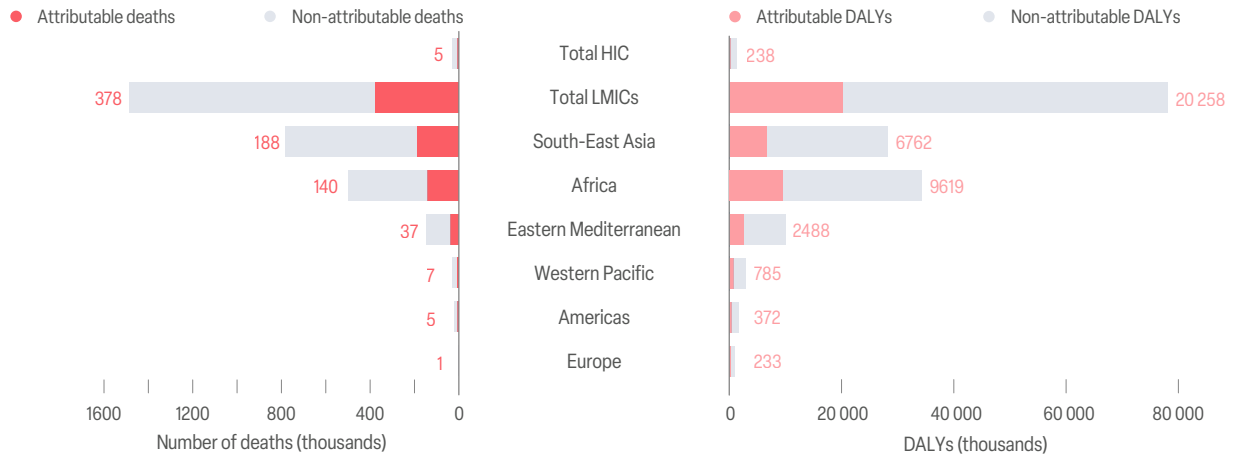
Source: Adapted from (*2*)

Handwashing interventions that promoted handwashing or improved access to handwashing materials were included in the review. Interventions exclusively concerning hand sanitizers or concerning other hygiene behaviours such as those associated with food preparation, were excluded. Overall, handwashing interventions were found to reduce diarrhoea by 30% (Fig. 18).

Diarrhoeal disease burden from inadequate hand hygiene

Overall, almost 384 000 diarrhoea deaths and 20 million DALYs were attributed to inadequate hand hygiene practices alone, largely in Africa and South-East Asia (Fig. 19).

Fig. 19. Diarrhoea burden in deaths and DALYs attributable to inadequate hygiene by region for 183 countries, 2019

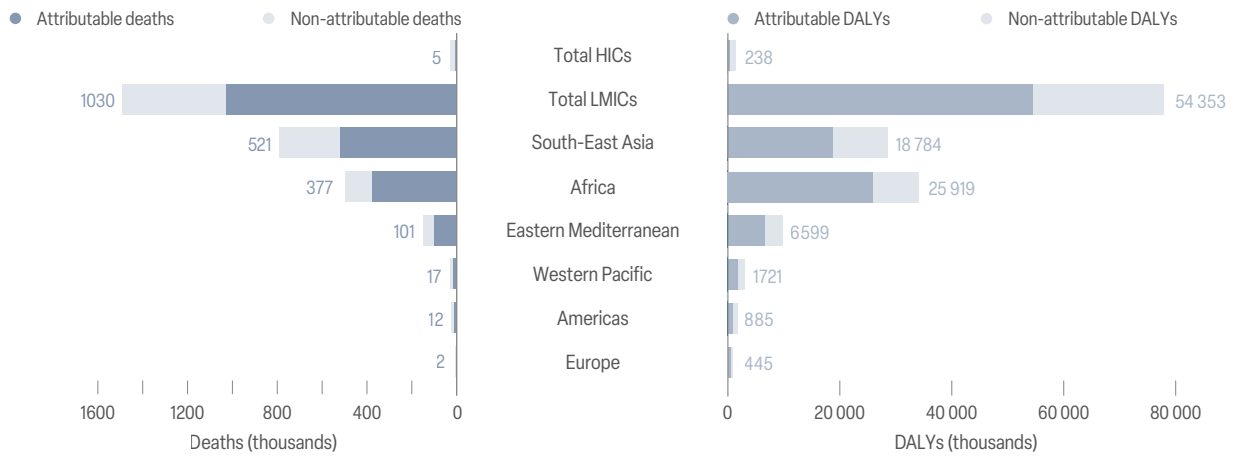


Drinking-water, sanitation, hygiene and diarrhoea

Exposures to faecal pathogens through poor drinking-water, sanitation or hygiene are not independent events. Therefore, some adjustments and assumptions are required when combining these exposures. The total disease burden does not correspond to the simple addition of the burden associated with each risk but is slightly lower, reflecting the fact that some people are exposed to more than one risk factor (unsafe drinking-water, unsafe sanitation and/or unsafe hygiene).

Globally, 1 million diarrhoea deaths and almost 55 million DALYs were attributed to inadequate WASH, representing 69% of the total diarrhoeal disease burden (Fig. 20). Most of those deaths were in the African and South-East Asia regions where WASH accounted for 76% and 66% of diarrheal disease deaths, respectively. In HICs, 18% of diarrhoea deaths were attributed to inadequate hand hygiene.

Fig. 20. Diarrhoeal disease burden attributable to inadequate WASH in deaths and DALYs by region for 183 countries, 2019

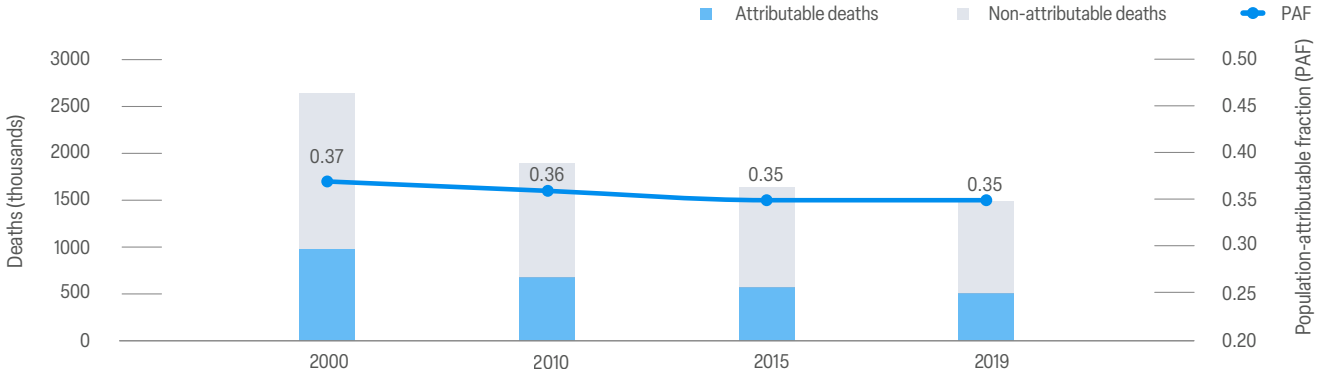


Trends in WASH-attributable diarrhoeal disease (2000–2019)

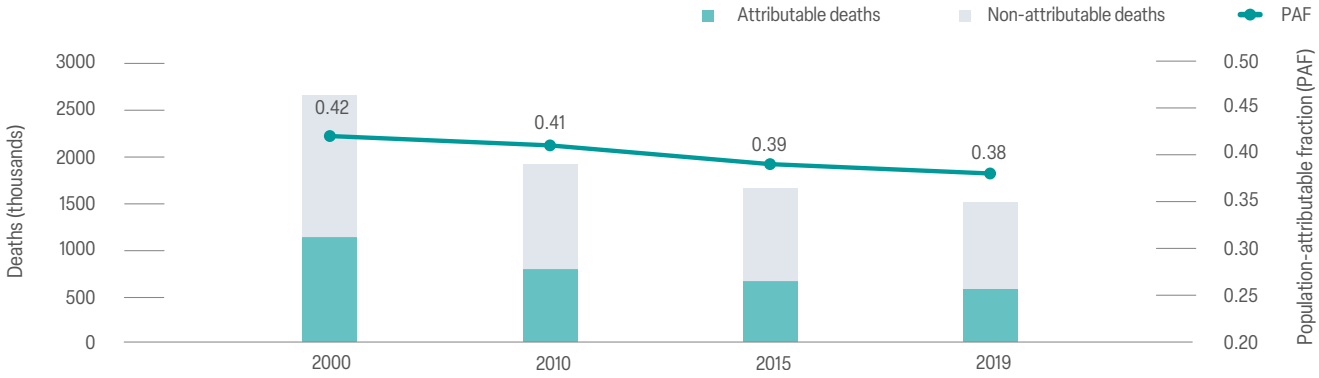
Fig 21 shows trends in diarrhoea deaths attributable to unsafe WASH by risk factor. The 2000, 2010 and 2015 estimates were produced applying the same methods used to produce the 2019 estimates, using time series data on exposure and on overall diarrhoeal disease burden. Overall, diarrhoea deaths attributable to unsafe drinking-water and unsafe sanitation declined by about half between 2000 and 2019. This is partly due to a decline in the total number of diarrhoea deaths and a reduced PAF as a result of improvements in access to water and sanitation. It seems that the decline is slightly sharper for sanitation than for drinking-water, which can be explained by greater progress on sanitation over that period. For hygiene, no notable change in the number of attributable deaths or PAF was observed.

Fig. 21. WASH-attributable diarrhoeal disease deaths and population attributable fractions between 2000 and 2019, by risk factor

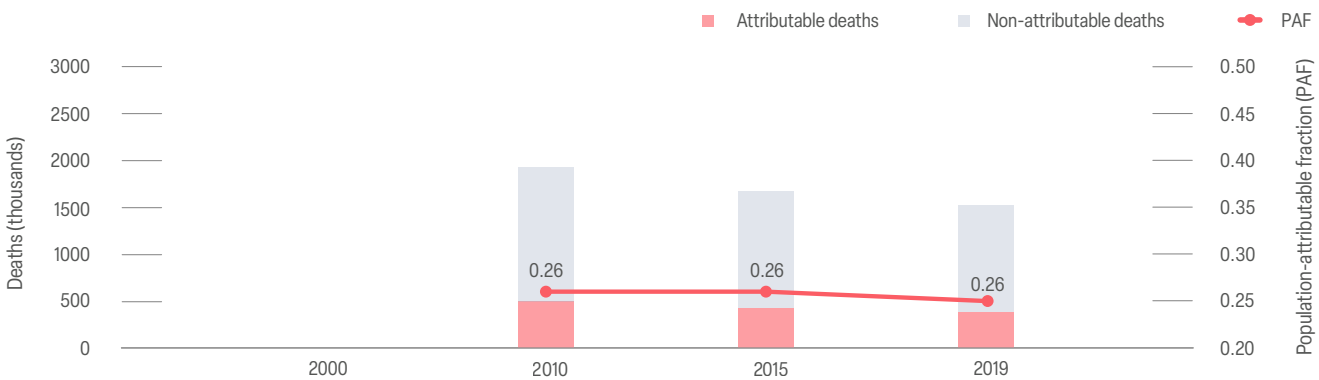
a) Drinking-water attributable deaths (132 LMICs)



b) Sanitation attributable deaths (132 LMICs)



c) Hygiene attributable deaths (132 LMICs and 51 HICs)



SECTION 2

02

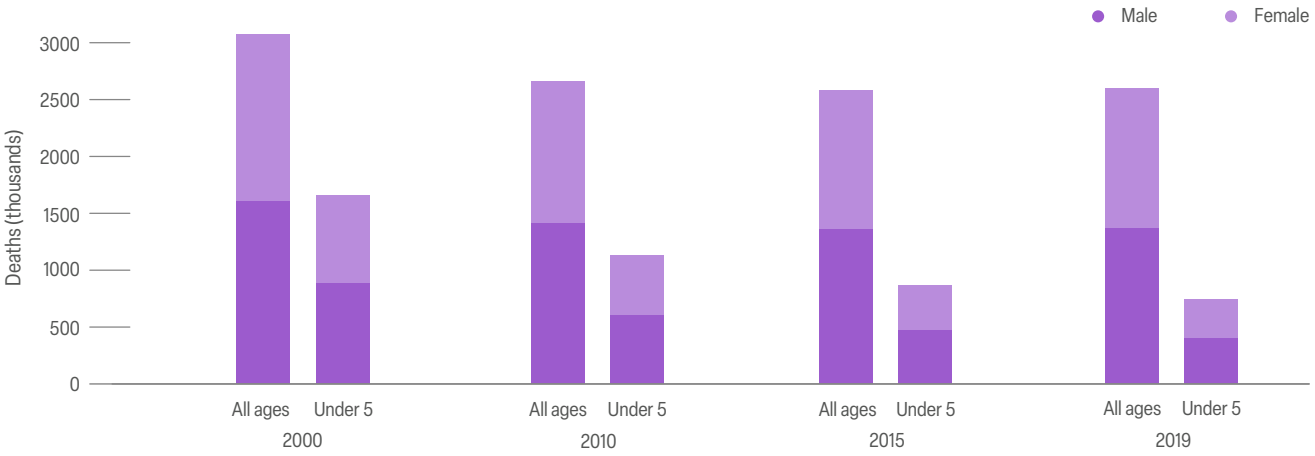
Acute respiratory infections

	Population-attributable fraction	Deaths	DALYs
Hygiene	14%	355 533	17 million

Total deaths from acute respiratory infections

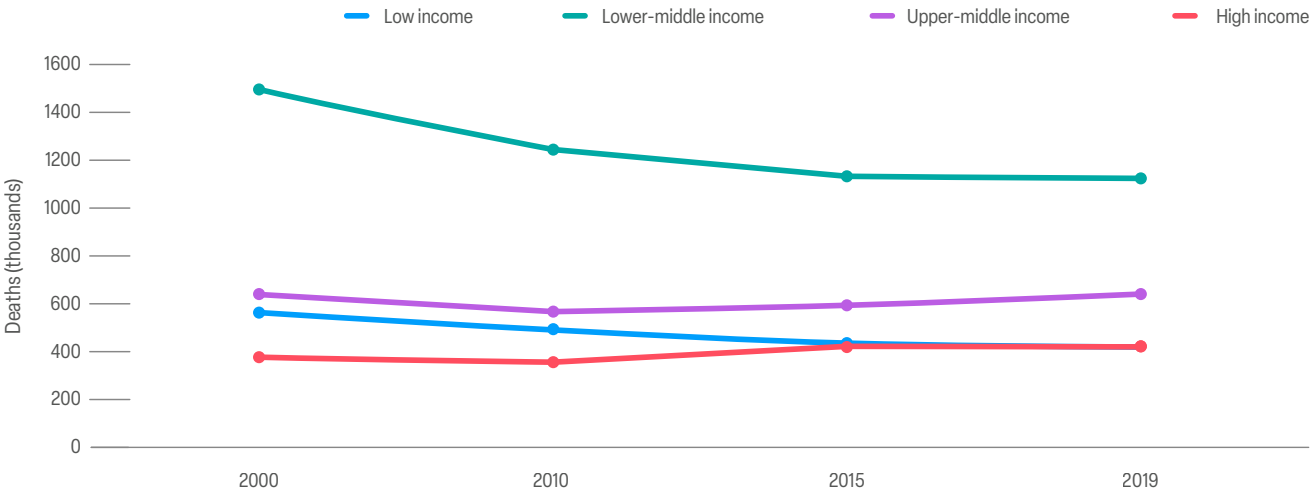
In 2019, respiratory infections caused an estimated 2.6 million deaths, including over 744 000 deaths among children under five. A decline in deaths from respiratory infections has been observed, especially among children under five – the number of deaths decreased by more than half from 1.7 million in 2000 to 744 000 in 2019 (Figs 22 and 23). ARIs can be divided into upper respiratory infections and lower respiratory infections, with lower respiratory infections having a much greater burden of disease, and remaining among the top five causes of death globally in 2019 (*10*).

Fig. 22. Deaths from respiratory infections by age and sex worldwide between 2000 and 2019



Source: Global health estimates 2019 (7)

Fig. 23. Deaths from respiratory infections in all ages by income group between 2000 and 2019



Source: Global health estimates 2019 (7) and World Bank list of economies (*12*).

Hand hygiene

Effect of improving hand hygiene on ARIs

The evidence linking inadequate hand hygiene practices and respiratory infections was obtained from a recent systematic review of the literature and meta-analysis (*6*).

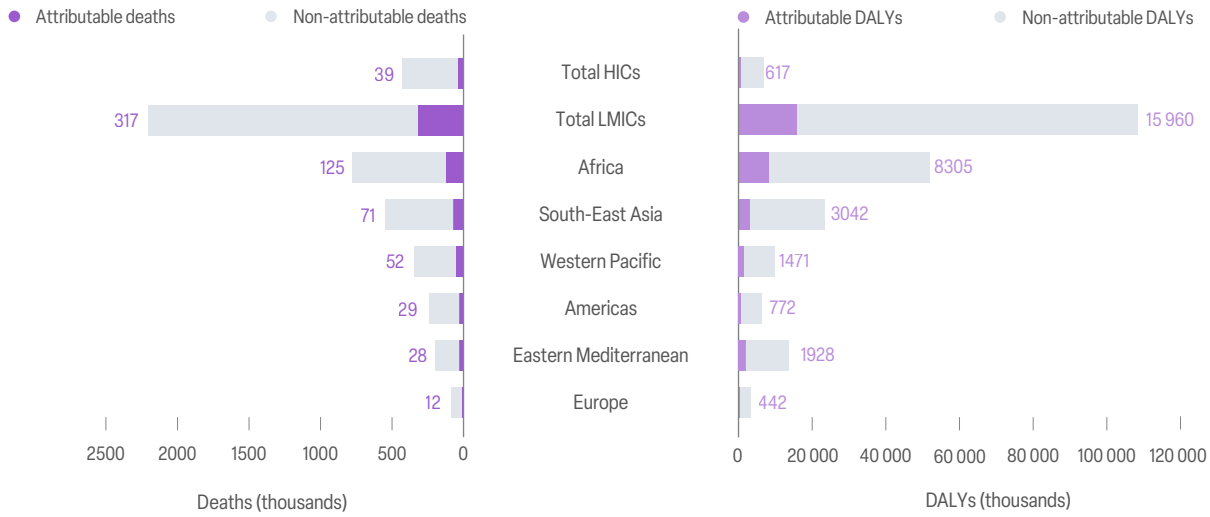
Interventions promoting handwashing with soap, including interventions that provided associated facilities and/or products, were included in the review. Examples of promotion activities include mass-media campaigns and door-to-door visits. Examples of facilities and products included handwashing stations and soap. Interventions that did not include handwashing with soap were excluded.

Interventions promoting handwashing with soap were found to reduce ARIs by 17% compared to no handwashing intervention. Interventions reduced lower respiratory infections by 22% and upper respiratory infections by 26%, with no evidence for an effect on test-confirmed influenza (*6*).

ARI disease burden from inadequate hand hygiene

Inadequate hand hygiene was associated with about 356 000 deaths and 17 million DALYs from ARIs, representing 14% of the total disease burden from respiratory infections. Fig. 24 shows the distribution of hygiene-attributable deaths by region in LMICs and in HICs.

Fig. 24. Burden of ARIs in deaths and DALYs attributable to inadequate hygiene by region, 2019



SECTION 3

03

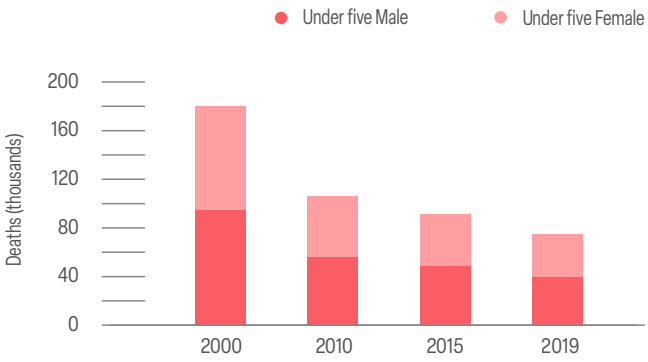
Undernutrition

	Population-attributable fraction	Deaths	DALYs
WASH combined	10%	8000	825 000

Total deaths from protein–energy malnutrition among children under 5

Protein-energy malnutrition (PEM) occurs when the body's requirements for protein or energy are unmet because of either underconsumption or poor absorption and use of nutrients. In children younger than five, PEM causes children to be underweight, wasted (too thin for height), stunted (too short for age) or have vitamin and mineral deficiencies (*25*).

Fig. 25. Deaths from PEM among children under five by sex between 2000 and 2019



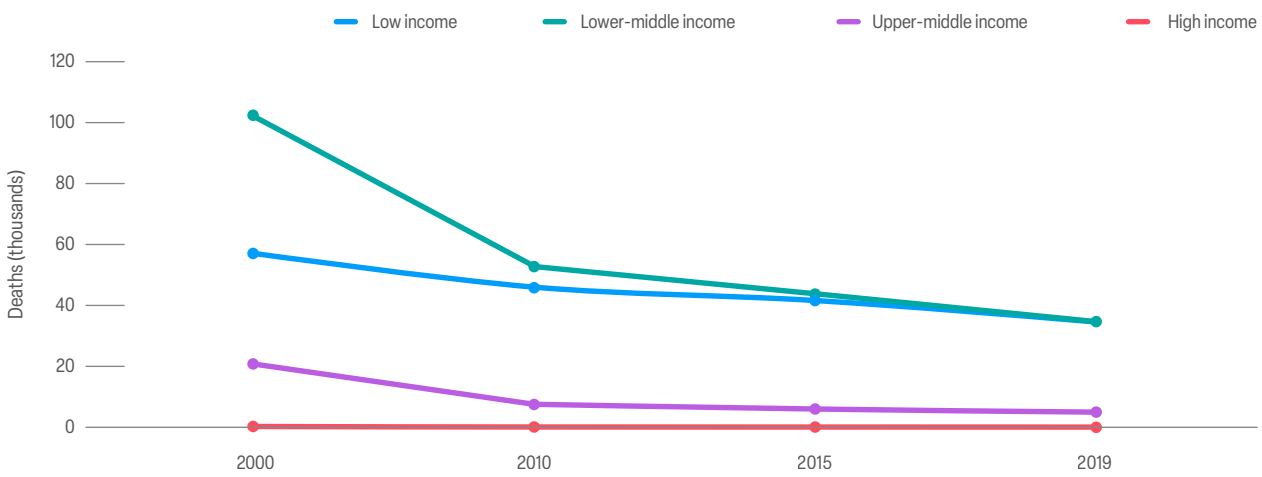
Source: Global health estimates 2019 (7)

In 2019, PEM caused over 74 000 deaths among children under five, almost all in LMICs (Figs 25 and 26).

Stunted, wasted and underweight children are at greater risk of death from infectious diseases including ARIs and diarrhoea. Stunting has significant long-term consequences on health and functional outcomes, including poor motor and cognitive development and poor educational outcomes. In 2022, 148 million or 22% of children under five worldwide were stunted and 45 million or 6.8% were wasted (*26*).

Unsafe WASH conditions may contribute to undernutrition via diarrhoea and parasitic infections (*27*, *28*, *29*). Asymptomatic carriage of some enteric pathogens (*30*), and environmental enteric dysfunction (*31*) may also contribute, although the mechanisms are less clear. WASH may also affect nutritional status indirectly by necessitating walking long distances in search of water and sanitation facilities and diverting a parent's time away from childcare (*25*).

Fig. 26. Deaths from PEM among children under five by income group between 2000 and 2019



Source: Global health estimates 2019 (7) World Bank list of economies (*12*).

PEM disease burden from unsafe WASH

The burden of disease attributable to the combination of unsafe drinking-water, sanitation and hygiene was estimated for children under five in 132 LMICs. In the present analysis, only the WASH-attributable undernutrition as a consequence of diarrhoea was quantified. The PEM burden of disease attributable to WASH was calculated based on the fraction of PEM caused by diarrhoea and the fraction of diarrhoea caused by unsafe WASH (Annex 1).

It was estimated that 10% of the burden of undernutrition (PEM) among children under five could be attributed to unsafe WASH, representing a total of 8000 deaths and 825 000 DALYs in this age group.

04

SECTION 4

Soil-transmitted helminthiases

	Population-attributable fraction	Deaths	DALYs
WASH combined	100%	2000	1.9 million

Soil-transmitted helminthiases are transmitted by eggs in human faeces, which in turn contaminate soil in areas where sanitation is poor. STHs affect an estimated 1.5 billion people or 24% of the world's population (*32*). The main species that infect people are the roundworm (*Ascaris lumbricoides*), the whipworm (*Trichuris trichiura*) and hookworms (*Necator americanus and Ancylostoma duodenale*).

STH infections have a large impact on children's nutritional status. Among girls and women of reproductive age, STH infections, especially with hookworms, cause blood loss which can exacerbate iron deficiency anaemia and increase the risk or maternal and infant mortality and low birth weight (*32*).

In this analysis, the WASH-attributable burden of disease from STHs was estimated for 132 LMICs only, as this is where these infections are most prevalent. All the STH-related burden of disease was assumed to be attributable to unsafe WASH conditions, with a resulting 2000 deaths and 1.9 million DALYs in 2019.

SECTION 5

05

Mortality from unsafe WASH

This section provides a summary of the burden of disease attributed to the combined cluster of risk factors – unsafe drinking-water, sanitation and hygiene – for the four health outcomes used for reporting on SDG indicator 3.9.2.

In 2019, safe WASH could have prevented at least 1.4 million deaths and 74 million DALYs from diarrhoeal disease, ARIs, STHs and undernutrition (Table 3). This represents 2.5% of all deaths and 2.9% of all DALYs in 183 countries.

Among children under five, the total WASH-attributable disease burden amounted to 395 000 deaths and 37 million DALYs, representing 7.6% of all deaths and 7.5% of all DALYs in this age group in the 183 countries included. This includes 273 000 deaths from diarrhoea and 112 000 deaths from ARIs.

Globally, 69% of diarrhoea, 14% of ARIs, and 10% of undernutrition disease burden were attributed to unsafe WASH, and it was assumed that 100% of the disease burden from STHs was attributable to unsafe WASH.

Table 3. WASH-attributable disease burden by health outcome, 2019

Health outcome	PAF (95% CI)	Deaths (thousands) (95% CI)	DALYs (thousands) (95% CI)
Diarrhoea	0.69 (0.65–0.72)	1035 (929–1160)	54 590 (50 033–59 562)
Acute respiratory infections	0.14 (0.13–0.17)	356 (320–405)	16 578 (14 257–19 481)
Undernutrition	0.10 (0.09–0.10)	8 (7–9)	825 (755–905)
Soil-transmitted helminthiasis	1.0	2 (2–3)	1942 (1862–2028)
Total	NA	1401 (1283–1542)	73 935 (68 248–80 186)

CI: confidence interval; NA: not applicable

Fig. 27 shows the WASH-attributable deaths for diarrhoea and ARIs – the two outcomes contributing most of the overall burden – by age, sex and risk factor. WASH-attributable diarrhoea deaths were higher in women than in men, while hygiene-attributable ARIs deaths were slightly higher in men than in women. However, the current epidemiological evidence does not provide gender-disaggregated data on risk factors or exposures, so the gender differences observed are due exclusively to the differences in the overall disease burden statistics.

Fig. 27. WASH-attributable deaths from diarrhoea and ARIs by age, sex and risk factor, 2019

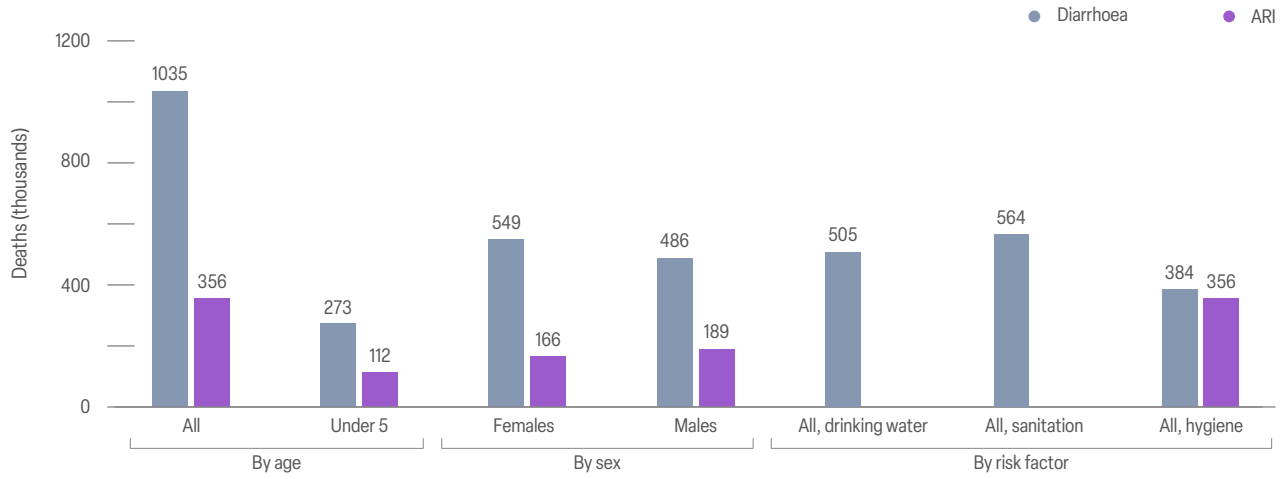


Fig. 28. WASH-attributable deaths (in thousands) from diarrhoea, ARIs, STHs and undernutrition by income group, 2019

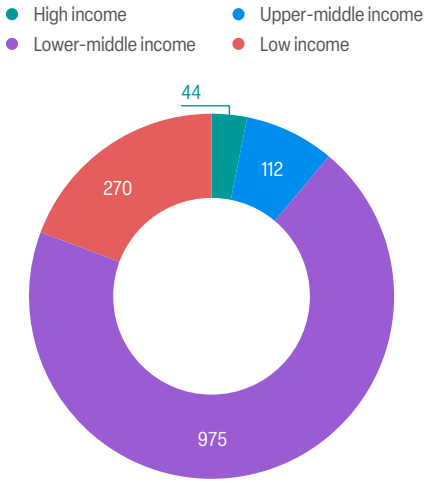
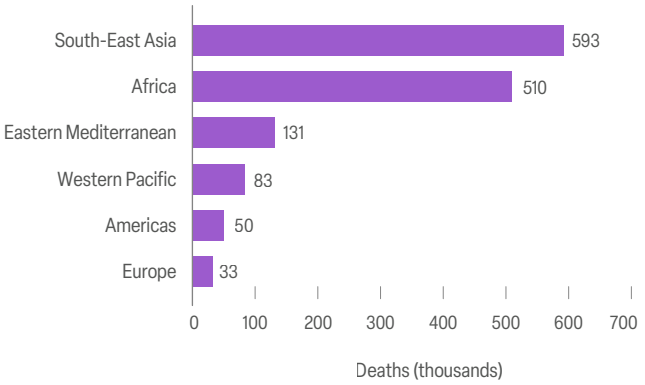


Fig. 28 and Fig. 29 show the number of deaths from the four outcomes by income group and WHO region. Low- and lower-middle-income countries account for vast majority (89%) of the total burden, as do South-East Asia and Africa (79%).

Fig. 29. WASH-attributable deaths from diarrhoea, ARIs, STHs, and undernutrition by WHO region, 2019



SDG indicator 3.9.2 is expressed as a mortality rate attributed to unsafe WASH. That is, the total number of WASH-attributed deaths per 100 000 population. The indicator is calculated by summing the number of deaths from each of the four outcomes divided by total country population and multiplied by 100 000. The global WASH-attributable mortality rate was 18.3 deaths per 100 000 population in 2019, ranging from 3.7 in HICs up to 41.7 in low-income countries (Figs 30 and 31). Country-level WASH-attributable mortality rates ranged from 0.4 to 108.1 deaths per 100 000 population, with 6 countries having mortality rates of 70 or higher.

Fig. 30. Global map of SDG indicator 3.9.2 – mortality rate from inadequate water, sanitation and hygiene, 2019 (deaths per 100 000 population)

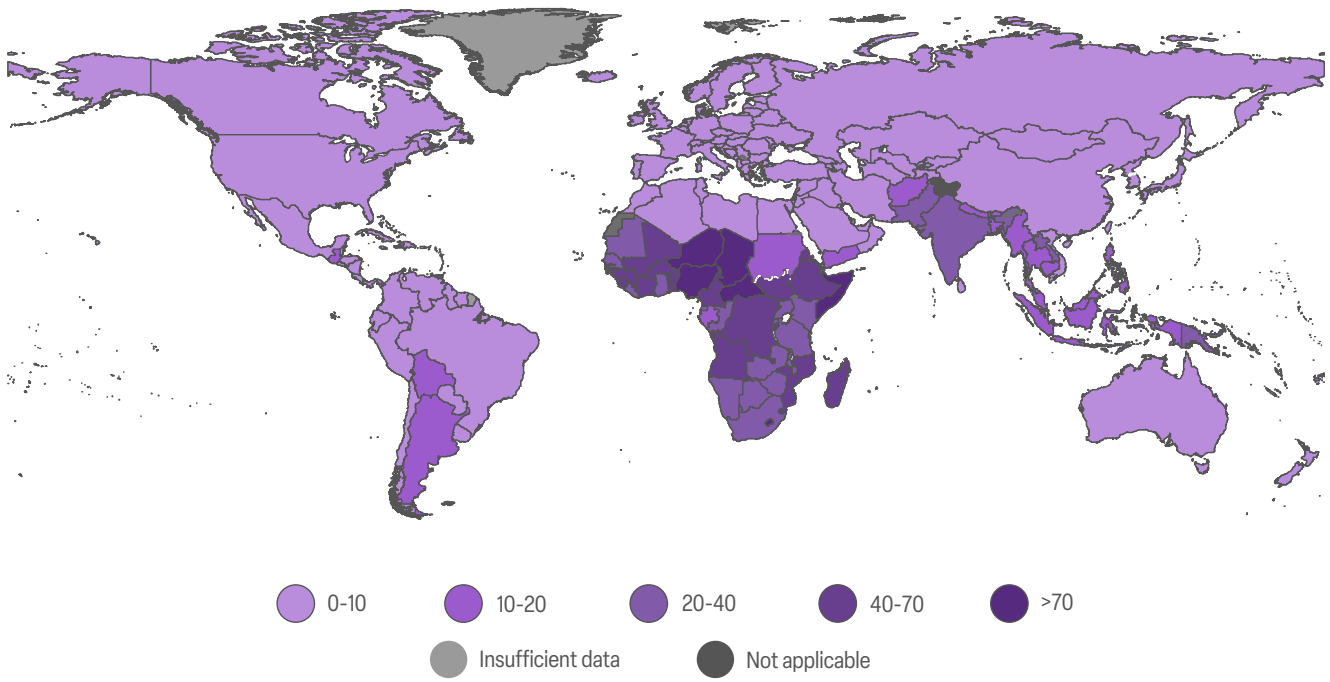
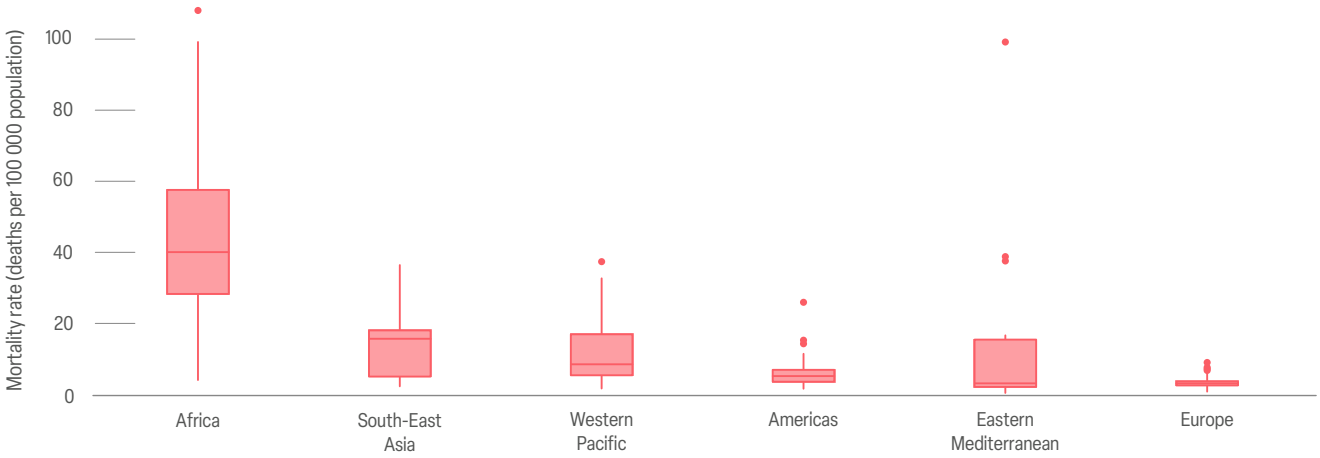
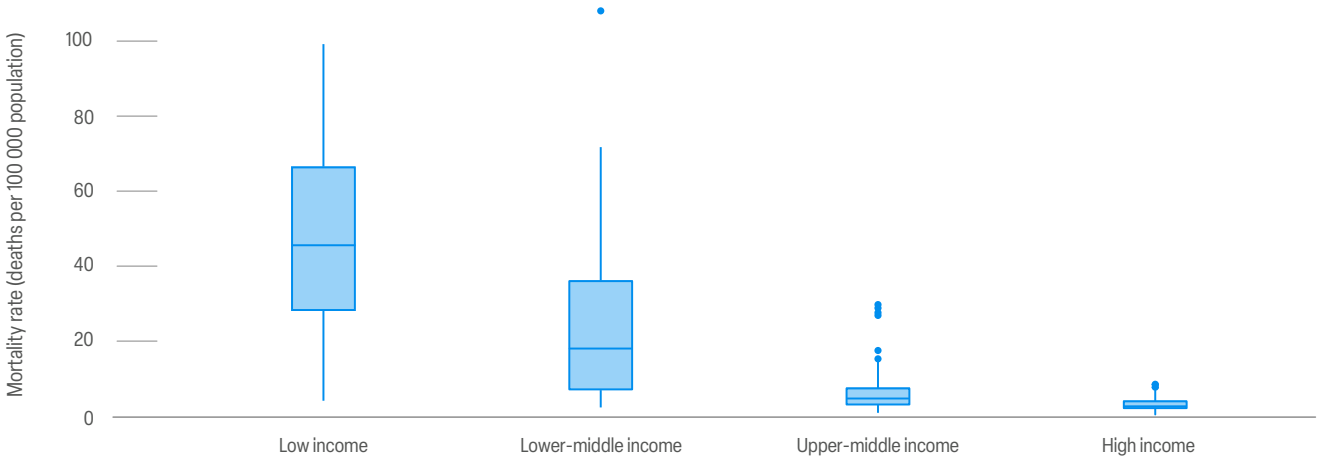


Fig. 31. WASH-attributable mortality rate (deaths per 100 000 population) by region, 2019

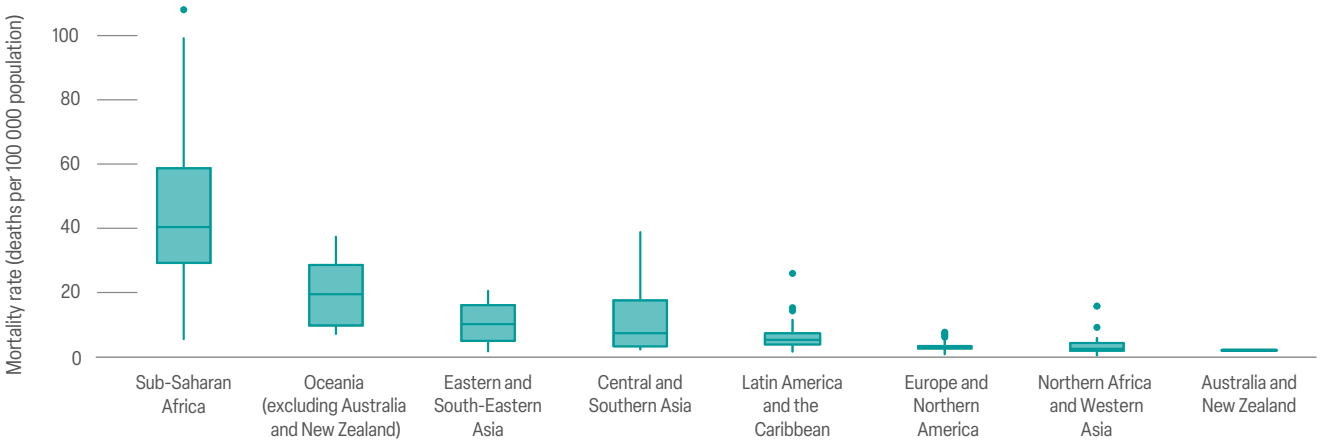
a) By WHO region



b) By World Bank income group



c) By SDG region



Note: Horizontal lines represent the median value, while the boxes cover the range from the bottom 25% to the top 25% (the interquartile range), which includes 50% of country estimates.

SECTION 6

06

Policy implications

The estimated disease burden attributable to unsafe WASH is significant

At least 1.4 million deaths and 74 million DALYs from diarrhoea, ARIs, STHs, and undernutrition could have been prevented by adequate WASH in 2019.

Diarrhoea accounted for most of this burden, with over 1 million deaths. While diarrhoea deaths have declined over the past decades, diarrhoea remains among the top 10 causes of deaths globally, and among the top five in low-income countries (24). In addition, waterborne disease outbreaks like cholera remain a significant public health challenge. In recent years, cholera has spread at an alarming rate – 30 countries reported cases and outbreaks in 2022, largely in Africa, and often in countries with low levels of access to basic water and sanitation services (*33, 34*).

The second-largest contributor to the WASH-attributable burden was ARIs from inadequate hand hygiene, resulting in 356 000 deaths and 17 million DALYs. Lower respiratory infections, including pneumonia are the fourth-largest cause of death globally (*24*). During the COVID-19 pandemic, hand hygiene received considerable attention and became a key component of national COVID-19 prevention strategies. Even so, three in 10 people globally do not have basic handwashing facilities at home, and the sustained practice of hand hygiene at critical times remains a challenge even where minimum requirements are in place (*20, 23*).

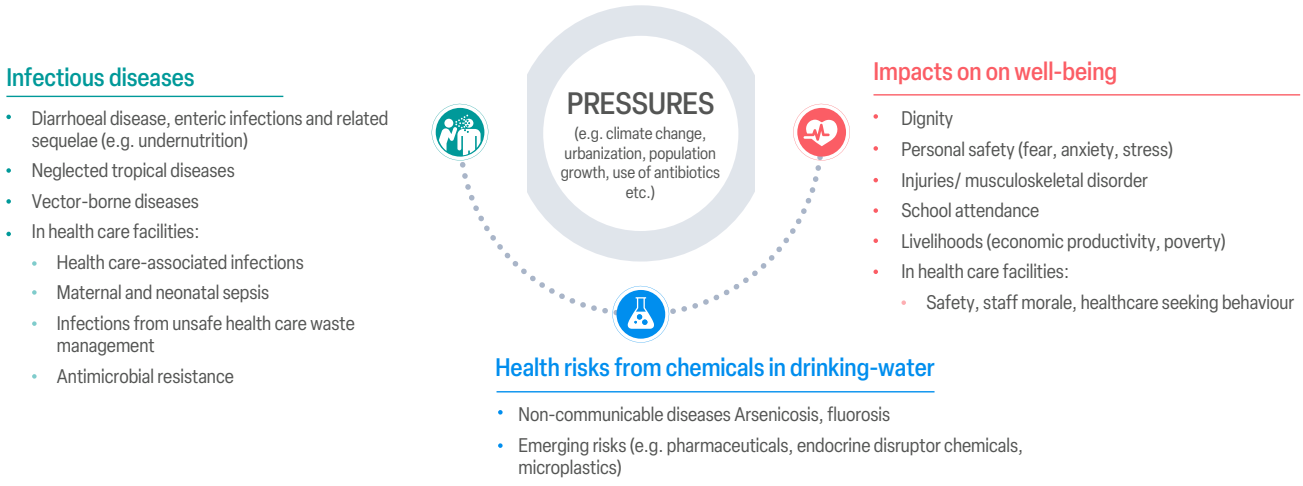
STHs and undernutrition only represent a small fraction of the total WASH-attributable burden. Nevertheless, these diseases and conditions cause significant morbidity by impairing physical and cognitive development and affecting educational outcomes (*35*). Globally, 22% of children under five are stunted and almost 7% are wasted, while a quarter of the world's population is affected by STHs (*11, 26, 32*).

The true disease burden is likely to be much higher

Data on the effect of WASH on many outcomes are lacking

Unsafe WASH has far-ranging adverse impacts on health and well-being, but only impacts with robust epidemiological evidence can be accurately quantified. This analysis includes four selected health outcomes directly linked to unsafe WASH, but numerous other infectious diseases, health conditions associated with chemically contaminated drinking-water, and several aspects of well-being, are known to be affected by unsafe WASH (Fig. 32).

Fig. 32. Examples of health impacts linked to unsafe water, sanitation and hygiene



Inadequate WASH is linked to trachoma, the leading infectious cause of blindness worldwide (*36*). Long-term exposure to high levels of arsenic in drinking-water can cause skin lesions, cardiopulmonary disease and cancer, and, when consumed in utero and during early childhood, can reduce cognitive development (*37, 38*). Carrying water from off-site sources may be a major contributor to disability from musculoskeletal disorders (*39*). Lack of adequate sanitation facilities has been linked to stress and anxiety, by exposing women and girls to the risk of sexual assault (*40*), and by affecting the means for hygienic management of menstruation (*41*).

The burden in non-domestic settings is not captured

The estimates do not capture disease burden in non-domestic settings such as health care facilities, schools, workplaces and public places. Many health care facilities, especially in low-resource settings, do not have adequate WASH services. One third of facilities do not have what is needed to clean hands where care is provided; one in four facilities have no water services, and 10% have no sanitation services (*20*).

Inadequate WASH in health care facilities can cause significant disease burden through its effect on quality of care and health care–associated infections, including surgical infections, pneumonia and bloodstream infections. Between 5.7 and 8.4 million people die each year in LMICs because of poor-quality care (*42*). Adequate WASH is associated with significant patient satisfaction and reduced care-seeking behaviour, both of which are indicators of quality of care (*43*). An estimated 15% of patients in LMICs acquire one or more infections during a typical hospital stay (*44*), and infections associated with unclean births account for 1 million deaths each year (*45, 46*). It is estimated that improved hand hygiene could halve these infections (*47*).

Climate change is likely to exacerbate many WASH-related risks and diseases

Climate change can impact WASH services in many ways including via damage to water supply and sewerage infrastructure, degradation of catchments and source-water quality, spillage of faecal waste to the environment, reduction of water availability and contamination of water supplies. Many infectious diseases, especially those that are related to WASH, are sensitive to climate (*48*). For example, the increased spread of vector-borne diseases in recent years has been linked to climate change, as well as to rapid urbanization, alteration of land use, and unsafe water management and farming practices (*49, 50*).

Malaria and dengue, spread by *Anopheles* and *Aedes* mosquitoes respectively, are major vector-borne diseases globally (*51*). The incidence of dengue has increased exponentially over the past decades, and now half of the world's population is thought to be at risk (*52*). Despite a decline in malaria cases and deaths over the past decades, the spread of invasive *Anopheles* mosquitoes – like *Anopheles stephensi* – to several African countries, including urban settings where malaria rates are typically low, poses significant challenges to malaria control efforts in the region (*53, 54, 55*).

Many of these vectors thrive in urban areas where inadequate water supply and sanitation, and poor wastewater and solid waste management provide favourable breeding conditions. Environmental control measures including improved access to reliable piped water supplies to reduce the need for water storage systems, adequate water management practices, and solid waste management to reduce presence of containers favourable to breeding play an important role in limiting the spread of these diseases.

The WASH-attributable disease burden disproportionately affects the poorest, most disadvantaged populations

The burden of disease is largely driven by inadequate access to safe WASH in LMICs. However, national estimates of safe WASH access often hide disparities within countries. Access to WASH services is typically lower among rural populations and lower socioeconomic groups (*56*). Even in HICs, where access to safely managed drinking-water and sanitation services is generally high, certain marginalized communities are underserved (*57*). Those communities may face higher health risks and, in some cases, may be the source of important disease outbreaks (*58, 59, 60*).

The estimates do not capture the burden of disease related to drinking-water and sanitation in high-income settings, because of limited data (*61*). However, waterborne outbreaks still occur, even where technical and financial resources are

available to prevent them. A recent review of causes of 24 waterborne disease outbreaks between 2001–2016 in HICs found that, in most cases, the outbreaks resulted from simple failures that could have been avoided – for example, by protecting catchment areas from livestock and sewage discharges (*62*). Small water supply systems are more vulnerable to failures and contamination than are larger systems. These types of systems are more frequently associated with outbreaks of waterborne disease, both in low- and high-income settings (*63*). Small water supplies therefore require specific consideration in policies, regulations and supporting programmes and associated support including proactive risk management (Box 1).

Box 1. Improving the safety of drinking-water from small supplies

WHO provides guidance to support governments and practitioners in improving the safety of drinking-water delivered through small water supplies. Recognizing the challenges (including technical and financial) commonly faced by small water supplies, the guidance presents practical, risk-based recommendations to progressively improve water service delivery. Recommendations will support proactive risk management by drinking-water suppliers through sanitary inspections or water safety planning; and establishing monitoring requirements, surveillance activities and programmes to best address priority public health concerns.

WASH-associated health benefits increase with higher levels of services

Extending basic services to the unserved remains a priority to protect health, and is essential for realizing human rights as well as reducing disease burdens. The evidence confirms the importance of improving access to basic WASH services to reduce disease risks, but also suggests that shifts from unimproved drinking-water and sanitation services to levels higher than basic are associated with even greater diarrhoea risk reductions. Those data support the ambitious SDG 6 targets which call for access to safe and affordable drinking-water for all, and adequate and equitable sanitation and hygiene for all.

The last decade has seen considerable improvements in WASH service levels across the globe. However, progress is uneven, and, in most regions, insufficient to meet 2030 SDG targets. Rates of improvement must on average double if the world is to achieve universal access to basic drinking-water and sanitation services by 2030. To make safely managed services universal, rates would need to quadruple (*20*). As we pass the halfway mark of the Water Action Decade (2018–2028) (*64*), these burden of disease estimates provide a powerful rationale for bolstering political prioritization and investment to accelerate progress towards SDG 6 targets.

Better data are needed to accurately quantify the WASH-attributable disease burden

Better data are needed to estimate the full WASH-attributable burden of disease. While many studies have assessed the impact on diarrhoea of interventions designed to improve access to basic WASH services, evidence on the health impact of higher levels of service and beyond remains limited. In addition, data about population exposures to safely managed service levels are missing.

Drinking-water

Data about the effects of providing drinking-water of higher quality, supplied on premises are scarce. Of the studies included in the estimates, only two studies assessed the effects of providing drinking-water of higher quality on premises, and data on the health effects of safely managed drinking-water were almost completely lacking.

For global reporting, the JMP uses the lowest-scoring of the three criteria that define safely managed drinking-water – availability, accessibility and quality – at urban and rural levels to calculate safely managed drinking-water services for each country. (Because data on these factors typically come from different sources, they cannot be integrated at the household level.) In this analysis, the available data were adjusted to model household-level use of water supplies that are accessible on premises, available when needed and free from contamination. Additional data to estimate exposures to safely managed drinking-water at the household level could provide more accurate estimates.

Sanitation

Interventions supplying basic sanitation services, including sewer connections, were associated with the largest reductions in diarrhoea. However, the quality of the data used to assess such services could be improved, to better ensure that risks are captured along the sanitation chain. Much of the excreta flushed by many households into sewers does not reach effective treatment, either because of direct discharge to the environment, or ineffective treatment plants. The impacts of unsafe sewage discharges on the environment and health of downstream communities are not captured in these estimates.

Furthermore, safe management of on-site sanitation through well-designed and managed pit latrines and septic tanks could provide positive health impacts for large populations, but existing epidemiologic studies do not allow for this analysis.

Important data about the safe management of on-site sanitation services are missing. While many countries have data on treatment of wastewater from households connected to sewers, relatively few have data on management of faecal sludge emptied from on-site systems such as septic tanks and pit latrines. Too often this faecal sludge, which has much higher concentrations of pathogens than sewage, is discharged directly into the environment (Box 2).

Box 2. Supporting safe sanitation systems and addressing data gaps on sanitation

Promoting risk-based approaches: The WHO Guidelines on sanitation and health, safe use of wastewater, recreational water quality, the sanitation safety planning methodology and sanitary inspections help with identifying, prioritizing, managing and monitoring actions to protect public health (*65*, *66*). WHO also supports countries on strengthening health-based regulations on sanitation, especially clarifying mandates and accountability mechanisms and regulation for on-site systems where they are often weak or do not exist.

Monitoring safely managed on-site sanitation: the JMP is working on strengthening national monitoring of safely managed on-site sanitation services (*67*). In-depth pilots have been conducted in six countries (Bangladesh, Ecuador, Indonesia, Kenya, Serbia and Zambia) and further pilots will be conducted in the coming years to develop guidance documents which describe the global indicators for safely managed on-site sanitation, propose different methods to collect data and suggest core questions that could be integrated into local level and existing national regulatory monitoring systems.

Hygiene

Additional data on household hygiene services could support more accurate estimates. While the number of countries with data available for SDG indicator 6.2.1.b (basic hygiene services) has risen from 70 in 2017 to 79 in 2021, this increase is relatively small compared to improvements in water and sanitation data. Data coverage is particularly low in upper-middle- and HICs, where questions on handwashing facilities are rarely included in household surveys. Likewise, data on actual handwashing practices in settings where there is access to water and soap remain limited, especially in HICs.

Collecting information on these service levels is needed to reflect the full burden of disease associated with unsafe WASH.

Box 3. Promoting hand hygiene for all

Hand Hygiene for All initiative: In part driven by COVID-19, under the banner of the UN-led Hand Hygiene for All initiative, over 50 low- and middle-income countries have announced a commitment to accelerate progress through clear action plans in the last three years.

WHO Guidelines on hand hygiene: Member States committed to accelerating progress on hand hygiene can find evidence-based recommendations to guide action in the WHO Guidelines on Hand Hygiene in Health Care, and complementary WHO Guidelines on Hand Hygiene in Community Settings (forthcoming in 2024).

Hand Hygiene Acceleration Framework Tool: This simple excel tool developed by WHO, UNICEF and WaterAid, aims to support the identification of barriers, opportunities and priority actions for accelerating progress towards universal hand hygiene (*68*).

These data limitations should be addressed by country governments as they adapt national monitoring systems taking into consideration the higher services levels called for in the SDG framework (Box 3).

Rapid progress is possible and can produce large health benefits

Many countries have made rapid progress in improving access to WASH. In Jordan in 2015, 75% of drinking-water services were safely managed; by 2020, this had risen to 86%, an increase of more than two percentage points per year. In another five countries (Gambia, Ghana, Lesotho, Morocco and Myanmar) coverage increased by more than five percentage points between 2015 and 2020. Bangladesh, Indonesia, Mongolia, Pakistan, and Sao Tome and Principe experienced the fastest progress on access to basic hand hygiene services, with coverage increasing by more than 10 percentage points between 2015 and 2020. Several countries with large populations (China, India, Indonesia, Mexico, Nepal, Peru and Romania) increased safely managed sanitation services by more than 10 percentage points over the same time period (*12*). Recent reports on the state of the world's sanitation, water and hygiene (*69, 70, 71*) have highlighted examples of success and have shown political leadership as a key contributing factor. In India, strong political commitment has been seen, with the Swachh Bharat Mission to eliminate open defecation, and more recently with the Jal Jeevan Mission, which aims to provide all rural households with water supply connections by 2024. This has the potential to greatly reduce WASH-related mortality (Box 4).

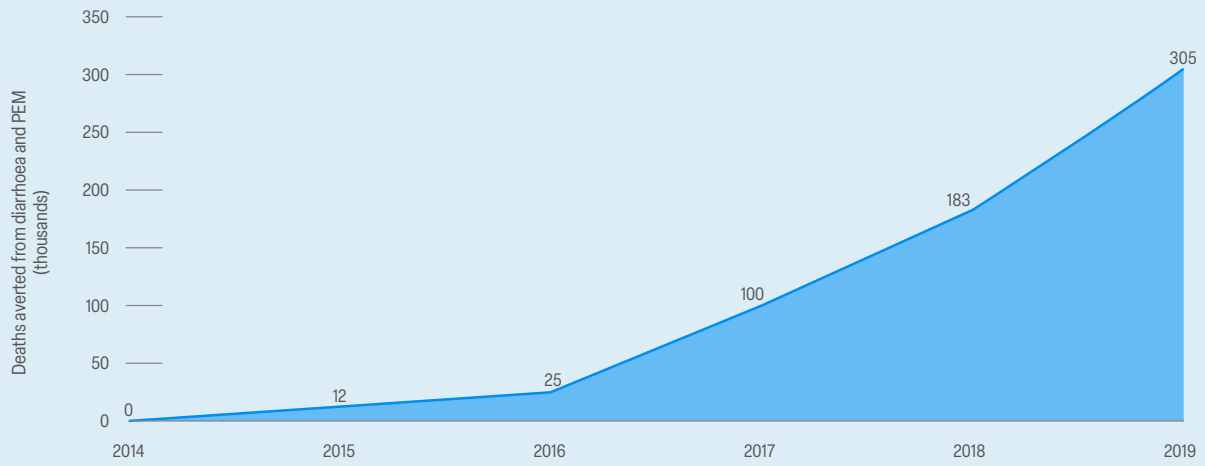
Box 4. Modelling potential health impacts of WASH initiatives: a case study from India

WHO has developed a tool to estimate health gains based on the latest available evidence linking WASH to disease burden. The tool automatically produces country-specific calculations of burden of disease tailored to user choices, and enables simulation of health impacts based on various WASH scenarios. A case study from India illustrates how the tool may be used to estimate potential health gains from WASH initiatives.

Swachh Bharat Mission

Aiming to make India free from open defecation by October 2019, the Indian Government launched a nationwide programme – the Swachh Bharat Mission – in 2014. WHO was requested by the Ministry of Drinking Water and Sanitation to estimate expected health gains due to increased sanitation coverage following the Mission. A standard comparative risk assessment approach was applied. Health impacts from seven different sanitation scenarios were estimated, drawing on various national data sources about sanitation exposures. The analysis estimated that the Swachh Bharat Mission could result in averting more than 300 000 deaths and 14 million DALYs from diarrhoea and protein–energy malnutrition between 2014 and October 2019 (Fig. 33).

Fig. 33. Preliminary projections of sanitation coverage and cumulative deaths from diarrhoea and PEM avoided during the Swachh Bharat project, India, 2014–2019



Jal Jeevan Mission

In India in 2018, 36% of the national population did not have access to an improved drinking-water source on-site. The issue is greater in rural areas, where 44% of the population lacks this access (*72*). In 2019, the government of India launched the Jal Jeevan Mission (*73*), a nationwide programme designed to provide all households in rural India with safe and adequate drinking-water through individual household tap connections by 2024.

WHO modelled expected health gains from fewer cases of diarrhoea in India due to increased access to safely managed drinking-water services following the Jal Jeevan Mission. The analysis relied on CRA methods, the standard approach used by WHO and others for burden of disease estimations.

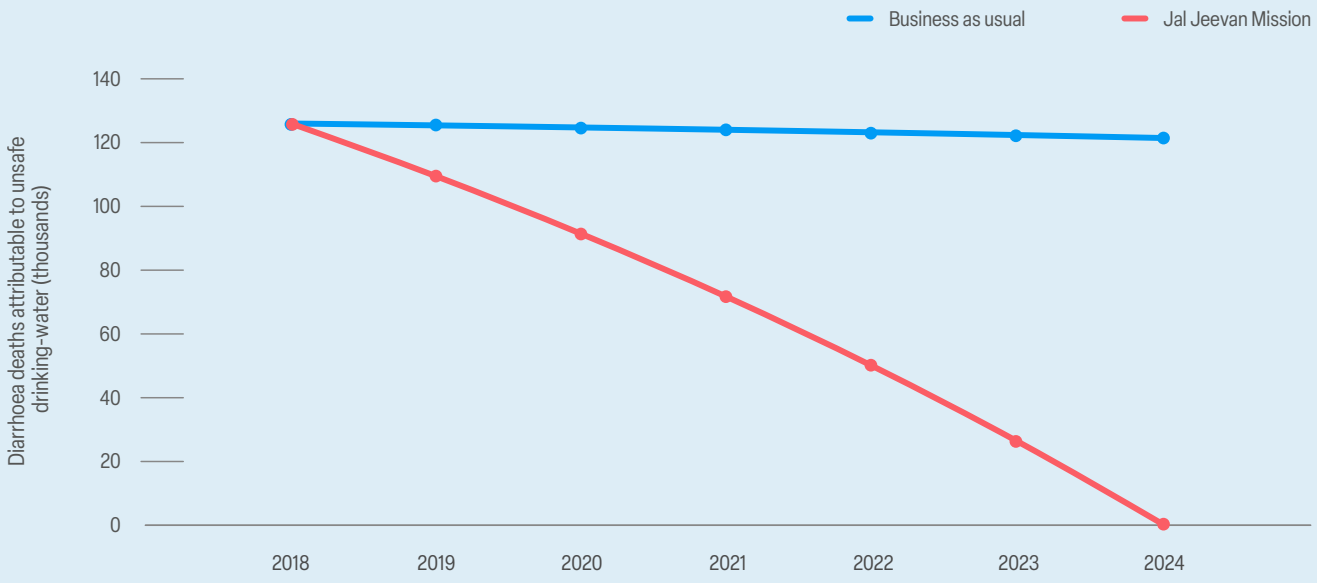
The analysis estimated potential health gains from the Mission by comparing two scenarios:

1. The Jal Jeevan Mission scenario, which assumes that coverage of safely managed drinking-water services in India increases linearly from baseline levels in 2018 (before the Mission) to 100% coverage in 2024;

2. The business-as-usual scenario, in which improvements in coverage rates are in line with historical annual rates of change.

Projections suggested that if the Jal Jeevan Mission programme provided safely managed drinking-water to all of India by 2024, diarrhoeal deaths and DALYs would be reduced by almost half (45.4%). This would represent almost 400 000 lives saved and 14 million DALYs averted (Fig. 34).

Fig. 34. Comparison of expected number of diarrhoea deaths from unsafe drinking-water over time for the Jal Jeevan Mission and the business-as-usual scenarios



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Annexes

Annex 1. Methods

This annex summarizes the methods used for estimating the WASH-attributable burden of disease as presented in this report. Additional details on methods are available from various peer-reviewed publications (*1, 4, 74*) .

The present report includes WASH-attributable burden estimates for four health outcomes – diarrhoea, acute respiratory infections (ARIs), soil-transmitted helminthiases (STHs), and undernutrition. For diarrhoea and ARIs, comparative risk assessment (CRA), the standard method employed in disease burden assessments, was used. For undernutrition and STH, alternative approaches were used because the epidemiological evidence was too limited to allow use of CRA.

CRA for estimating WASH-attributable burden from diarrhoea and ARIs

Comparative risk assessments systematically evaluate changes in population health as a consequence of changing the distribution of a risk factor's exposure in the population. (Fig. A1.1).

For each risk factor, the population attributable fraction (PAF) is calculated by comparing current exposure distributions to a counterfactual distribution for each exposure level, sex and age group:

$$PAF = \frac{\sum_{i=1}^{n} p_i\,(RR_i - 1)}{\sum_{i=1}^{n} p_i (RR_i - 1) + 1}$$

Where p_i is the proportion of the population that is exposed to the risk, RRi is the relative risk at exposure level i, and n is the total number of exposure levels.

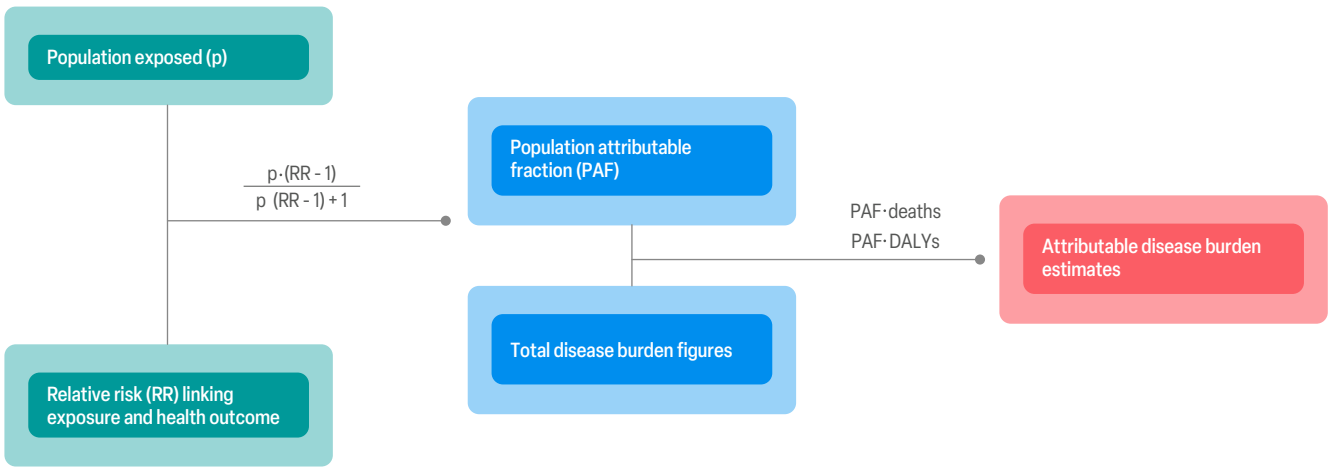
Population exposed (p)

The counterfactual minimum risk exposure levels used in this analysis were selected based on the available exposures and exposure–response relationships.

Information on the population exposed to different WASH services was obtained from the JMP database (*5*). The JMP produces national, regional, and global estimates on the use of different WASH services using a service ladder from unimproved, limited and basic up to safely managed services.

To the extent possible, the counterfactual minimum exposure risks were chosen to align with the highest rung on the JMP ladder – that is, safely managed services. However, that was not always possible because studies assessing health impacts of safely managed services may be lacking, or because some adjustments are needed to reflect more realistic exposures. Multilevel modelling of JMP data was used to derive estimates of the relevant levels of WASH services and household water treatment for the year 2019.

Fig. A1.1. CRA method for burden of disease estimations



The counterfactual minimum risk exposure levels used in this analysis were:

- safely managed drinking-water (adjusted to household level)
- basic sanitation connected to sewer
- handwashing with soap after faecal contact.

Relative risks (RR) linking exposure and health outcome

The exposure–response relationships (or pooled relative risks) linking the different WASH exposure levels and diarrhoea or ARIs were obtained from systematic reviews of the literature and meta-analyses (*2, 6*). The systematic review on WASH and diarrhoea found that the highest diarrhoea risk reductions were observed:

- Drinking-water: when switching from an unimproved water source to an improved drinking-water source on premises and with higher water quality.
- Sanitation: when moving from an unimproved sanitation facility to basic sanitation connected to sewer.
- Hygiene: when receiving handwashing promotion or improved access to handwashing materials.

Attributable burden of disease estimates

The burden of disease attributable to each risk factor in deaths or DALYs, was obtained by multiplying the PAF by the total burden of diarrhoea or ARIs, which is obtained from the WHO Global Health Estimates (*10, 11*).

Estimating burden for WASH combined

Because exposures to the cluster of risk factors – drinking-water, sanitation and hygiene – are interlinked, a formula is used to combine the burden from each risk factor so that the burden of disease attributable to water, sanitation and hygiene combined does not add up to more than 100%.

$$PAF = 1 - \prod_{r=1}^{R}(1 - PAF_r)$$

Where r is the individual risk factor, and R the number of risk factors accounted for in the cluster.

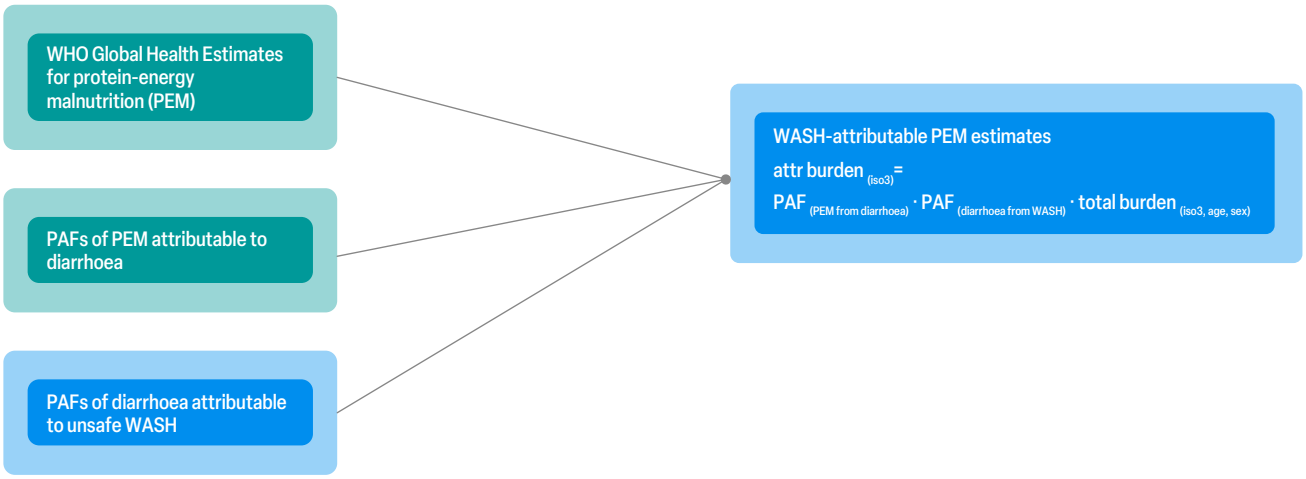
It is important to note that, for risk factors that are not related, the sum of individual exposures can exceed 100% – for example, attributing 100% of soil-transmitted helminthiases to unsafe WASH does not preclude some proportion of this WASH-attributable disease burden being eliminated through other interventions, such as deworming medication.

Estimation of uncertainty intervals at country, regional and global levels was performed with Monte Carlo simulation (*1*).

WASH-attributable burden of undernutrition

Undernutrition can be a consequence of repeated bouts of diarrhoea (*27, 28*). The country-level PAFs of diarrhoea attributable to unsafe WASH as estimated in this work were multiplied by the PAFs of protein–energy malnutrition attributable to diarrhoea obtained from Troeger et al. (*75*).

Fig. A1.2. Conceptual framework for calculating the WASH-attributable burden of undernutrition mediated via the WASH-attributable burden of diarrhoea



The attributable fractions for protein–energy malnutrition were estimated independently from a counterfactual model that quantified the expected shift in the distribution of weight-for-age and weight-for-height in the absence of diarrhoea compared to the observed distributions (75). The resulting PAF of undernutrition attributable to unsafe WASH was multiplied by WHO total disease burden figures for protein–energy malnutrition for children younger than five years in 2019. Fig. A1.2 illustrates the approach.

It should be noted that the WHO total disease burden figures on malnutrition include ICD 10 codes E40–E46, which are not further disaggregated into wasting, stunting or underweight.

WASH-attributable burden from STH

This assessment includes infections with the major STH that infect humans: *Ascaris lumbricoides, Trichuris trichiura* and hookworms (*Necator americanus and Ancylostoma duodenale*). It was assumed that 100% of the disease burden from STH infections could be attributed to unsafe WASH. In other words, we assumed transmission of STH would be interrupted if everyone used safely managed drinking-water and sanitation services and practiced handwashing with soap after potential faecal contact.

Summary of methods

The key elements of the methods – health outcomes, risk factors, WASH counterfactual exposure and relative risks – are summarized in Table A1.1.

Table A1.1. Information on counterfactual, outcome association and methods by health outcome

Health outcomes assessed through CRA	WASH counterfactual exposure	Prevalence of WASH minimum risk exposure counterfactual in 2019a (%); (95% CI)	RR for association between WASH counterfactual and outcome against lowest level of exposure; (95% CI) and p-value
Diarrhoea	Safely managed drinking-water	37.9 (27.1–49.9)	0.48 (0.26–0.87), p-value 0.017
Diarrhoea	Basic sanitation connected to sewer	29.7 (23.9–36.1)	0.53 (0.30–0.93), p-value 0.030
Diarrhoea	Handwashing with soap after potential faecal contact	26.4 (23.4–29.6)	0.70 (0.64–0.76), p-value <0.0001
Acute respiratory infections	Handwashing with soap after potential faecal contact	26.4 (23.4–29.6)	0.83 (0.76–0.90), p-value <0.0001
Health outcomes assessed through other methods	**WASH counterfactual exposure**	**Methods**	**Limitations**
Undernutrition	As for diarrhoea (because based on WASH diarrhoea PAFs)	Combining the PAF of malnutrition attributable to diarrhoea with the PAF of diarrhoea attributable to unsafe WASH	Considers only one of multiple potential pathways linking unsafe WASH and undernutrition and therefore may represent only a fraction of WASH-attributable undernutrition
Soil-transmitted helminthiasis[b]	Safely managed drinking-water, safely managed sanitation and handwashing with soap	Complete attribution of overall disease burden estimates	Assumes that all soil-transmitted helminthiasis could be prevented through safe WASH

CI: confidence interval; CRA: comparative risk assessment; RR: relative risk

[a] Aggregated across included countries.

[b] *Ascaris lumbricoides, Trichuris trichiura* and hookworms.

Source: Adapted from (*1*)

Annex 2. WHO regional groupings and country list

The 57 high-income countries are noted with asterisks (*). Curly brackets {braces} indicate countries for which no total disease burden figures are available through the WHO Global Health Observatory (*76*).

WHO African Region: 47
Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles*, Sierra Leone, South Africa, South Sudan, Togo, Uganda, United Republic of Tanzania, Zambia, Zimbabwe

WHO Region of the Americas: 35
Antigua and Barbuda*, Argentina, Bahamas*, Barbados*, Belize, Bolivia (Plurinational State of), Brazil, Canada*, Chile*, Colombia, Costa Rica, Cuba, {Dominica}, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, {Saint Kitts and Nevis*}, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago*, United States of America*, Uruguay*, Venezuela (Bolivarian Republic of)

WHO South-East Asia Region: 11
Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, Timor-Leste

WHO European Region: 53
Albania, {Andorra*}, Armenia, Austria*, Azerbaijan, Belarus, Belgium*, Bosnia and Herzegovina, Bulgaria, Croatia*, Cyprus*, Czechia*, Denmark*, Estonia*, Finland*, France*, Georgia, Germany*, Greece*, Hungary*, Iceland*, Ireland*, Israel*, Italy*, Kazakhstan, Kyrgyzstan, Latvia*, Lithuania*, Luxembourg*, Malta*, {Monaco*}, Montenegro, Netherlands (Kingdom of the)*, North Macedonia, Norway*, Poland*, Portugal*, Republic of Moldova, Romania, Russian Federation, {San Marino*}, Serbia, Slovakia*, Slovenia*, Spain*, Sweden*, Switzerland*, Tajikistan, Türkiye, Turkmenistan, Ukraine, United Kingdom of Great Britain and Northern Ireland*, Uzbekistan

WHO Eastern Mediterranean Region: 21
Afghanistan, Bahrain*, Djibouti, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait*, Lebanon, Libya, Morocco, Oman*, Pakistan, Qatar*, Saudi Arabia*, Somalia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates*, Yemen

WHO Western Pacific Region: 27
Australia*, Brunei Darussalam*, Cambodia, China, {Cook Islands}, Fiji, Japan*, Kiribati, Lao People's Democratic Republic, Malaysia, {Marshall Islands}, Micronesia (Federated States of), Mongolia, {Nauru*}, New Zealand*, {Niue}, {Palau*}, Papua New Guinea, Philippines, Republic of Korea*, Samoa, Singapore*, Solomon Islands, Tonga, {Tuvalu}, Vanuatu, Viet Nam

Annex 3. Population attributable fractions, deaths and DALYs by risk factor and WHO region for diarrhoea and acute respiratory infections, 2019

Table A3.1. Diarrhoea burden attributable to inadequate drinking-water, by region, 2019

Region	PAF	95% CI	Deaths	95% CI	DALYs	95% CI
Africa, LMIC	0.42	0.38–0.46	209 033	188 883–232 835	14 389 811	12 463 521–17 073 440
Americas, LMIC	0.20	0.17–0.27	4467	3724–5871	341 627	285 193–449 556
Eastern Mediterranean, LMIC	0.35	0.29–0.43	53 940	41 154–70 171	3 453 176	2 727 407–4 346 215
Europe, LMIC	0.13	0.10–0.20	486	389–693	125 942	93 335–189 431
South-East Asia, LMIC	0.29	0.19–0.42	230 821	145 806–342 786	8 337 219	5 429 207–12 147 332
Western Pacific, LMIC	0.20	0.15–0.31	6299	5043–8320	603 057	440 106–921 424
Total LMIC	0.35	0.31–0.40	505 046	418 147–622 247	27 250 832	23 665 814–31 915 532

PAF: population attributable fraction; CI: confidence interval; DALYs: disability-adjusted life years; LMIC: low- and middle-income countries

Notes: There are 132 low- and middle-income countries. Regional PAF aggregates relate to diarrhoea DALYs.

Table A3.2. Diarrhoea burden attributable to inadequate sanitation, by region, 2019

Region	PAF	95% CI	Deaths	95% CI	DALYs	95% CI
Africa, LMIC	0.42	0.39–0.47	211 020	190 972–235 531	14 479 134	12 593 570–17 076 920
Americas, LMIC	0.24	0.21–0.26	5273	4665–5962	398 091	353 571–450 519
Eastern Mediterranean, LMIC	0.33	0.28–0.40	49 749	39 360–63 054	3 261 357	2 672 534–3 998 589
Europe, LMIC	0.19	0.14–0.22	893	738–997	179 133	128 689–209 681
South-East Asia, LMIC	0.36	0.30–0.44	288 508	221 719–372 792	10 392 260	8 216 933–12 968 318
Western Pacific, LMIC	0.28	0.23–0.33	8865	7633–10 169	838 429	684 272–994 937
Total LMIC	0.38	0.35–0.41	564 308	494 793–653 164	29 548 404	26 550 940–33 222 352

PAF: population attributable fraction; CI: confidence interval; DALYs: disability-adjusted life years; LMIC: low- and middle-income countries

Notes: There are 132 low- and middle-income countries. Regional PAF aggregates relate to diarrhoea DALYs.

Table A3.3. Diarrhoea burden attributable to inadequate hygiene, by region, 2019

Region	PAF	95% CI	Deaths	95% CI	DALYs	95% CI
Africa, LMIC	0.28	0.23–0.31	140 058	116 147–155 565	9 618 663	7 722 377–11 285 958
Americas, LMIC	0.22	0.20–0.25	4830	4 301–5 487	371 792	331 350–421 931
Eastern Mediterranean, LMIC	0.25	0.13–0.32	37 489	15 754–51 020	2 487 854	1 237 616–3 201 902
Europe, LMIC	0.25	0.16–0.29	1014	679–1 201	232 565	147 527–276 334
South-East Asia, LMIC	0.24	0.18–0.30	187 773	138 350–249 183	6 762 433	5 156 334–8 692 073
Western Pacific, LMIC	0.26	0.23–0.31	7331	6462–8403	784 762	671 909–922 322
High-income countries	0.18	0.15–0.21	5290	4585–6224	237 797	208 576–277 249
Total	0.26	0.22–0.28	383 786	322 397–445 046	20 495 866	17 557 832–22 961 088

PAF: population attributable fraction; CI: confidence interval; DALYs: disability-adjusted life years; LMIC: low- and middle-income countries

Notes: There are 183 low-, middle- and high-income countries. Regional PAF aggregates relate to diarrhoea DALYs.

Table A3.4. Diarrhoea burden attributable to the cluster of inadequate drinking-water, sanitation and hygiene, by region, 2019

Region	PAF	95% CI	Deaths	95% CI	DALYs	95% CI
Africa, LMIC	0.76	0.72–0.79	377 170	350 598–403 477	25 918 546	22 931 680–29 713 824
Americas, LMIC	0.52	0.49–0.57	11 569	10 631–12 634	884 798	814 503–966 667
Eastern Mediterranean, LMIC	0.68	0.60–0.73	100 905	83 842–118 038	6 598 741	5 622 273–7 510 623
Europe, LMIC	0.47	0.40–0.52	1976	1690–2200	444 995	372 649–493 610
South-East Asia, LMIC	0.66	0.57–0.74	521 292	420 992–639 897	18 784 186	15 789 982–22 156 116
Western Pacific, LMIC	0.58	0.52–0.64	16 969	15 290–18 859	1 721 318	1 521 799–1 952 561
High-income countries	0.18	0.15–0.21	5290	4585–6224	237 797	208 576–277 249
Total	0.69	0.65–0.72	1 035 170	929 178–1 159 750	54 590 384	50 033 488–59 561 844

PAF: population attributable fraction; CI: confidence interval; DALYs: disability-adjusted life years; LMIC: low- and middle-income countries

Notes: There are 183 low-, middle- and high-income countries. Regional PAF aggregates relate to diarrhoea DALYs.

Table A3.5. Burden of acute respiratory infections attributable to inadequate hygiene, by region, 2019

Region	PAF	95% CI	Deaths	95% CI	DALYs	95% CI
Africa, LMIC	0.16	0.13–0.20	124 856	100 818–150 232	8 305 466	6 408 695–10 602 986
Americas, LMIC	0.12	0.10–0.15	29 224	23 486–38 290	772 123	637 583–991 966
Eastern Mediterranean, LMIC	0.14	0.08–0.20	28 295	16 500–39 487	1 928 087	1 077 763–2 833 195
Europe, LMICs	0.14	0.08–0.19	11 819	6783–16 337	442 039	262 473–605 155
South-East Asia, LMIC	0.13	0.09–0.19	71 155	49 405–103 679	3 041 998	2 079 221–4 469 792
Western Pacific, LMIC	0.15	0.12–0.20	51 557	39.445–69 130	1 470 715	1 133 788–1 975 246
High-income countries	0.09	0.08–0.12	38 628	32 552–49 372	617 391	525 496–783 303
Total	0.14	0.13–0.17	355 533	319 625–404 826	16 577 818	14 256 955–19 481 266

PAF: population attributable fraction; CI: confidence interval; DALYs: disability-adjusted life years; LMIC: low- and middle-income countries

Notes: There are 183 low-, middle- and high-income countries. Regional PAF aggregates relate to diarrhoea DALYs.

Annex 4. Deaths attributable to inadequate WASH, by WHO, World Bank Income and SDG regions, 2019

Table A4.1. Deaths attributable to inadequate WASH, by disease, age, sex and region, 2019

			All deaths			
		Population (thousands)	Diarrhoeal disease	Acute Respitatory Infections	Soil-transmitted helminthiases	Undernutrition (protein energy malnutrition)
WHO regions						
Africa	Under 5	170 238	222 873	440 605	1096	51 724
	Female	546 751	225 587	348 208	778	23 801
	Male	545 008	270 691	429 753	864	27 923
	Both sexes	**1 091 759**	**496 278**	**777 961**	**1642**	**51 724**
Americas	Under 5	73 339	6467	18 736	16	2849
	Female	511 898	18 222	161 314	23	1264
	Male	497 928	14 978	156 607	23	1585
	Both sexes	**1 009 826**	**33 200**	**317 921**	**45**	**2849**
Eastern Mediterranean	Under 5	85 278	57 618	114.266	89	11.353
	Female	344 486	70 745	88 053	75	4982
	Male	367 791	77 191	118 093	101	6370
	Both sexes	**712 276**	**147 936**	**206 146**	**176**	**11 353**
Europe	Under 5	56 445	2505	8 338	1	91
	Female	478 998	10 370	127 678	1	43
	Male	451 018	7758	139 997	2	47
	Both sexes	**930 017**	**18 128**	**267 674**	**3**	**91**
South-East Asia	Under 5	169 700	79 322	127 740	61	7054
	Female	975 896	471 964	272 423	96	4086
	Male	1 026 050	320 046	269 586	113	2968
	Both sexes	**2 001 946**	**792 010**	**542 009**	**210**	**7054**
Western Pacific	Under 5	119 791	11 731	34 205	16	1178
	Female	943 462	15 037	229 295	33	501
	Male	979 210	16 640	262 906	39	677
	Both sexes	**1 922 672**	**31 677**	**492 202**	**73**	**1178**
World Bank Income groups						
High income	Under 5	62 552	590	1844	-	-
	Female	587 859	17 789	205 346	-	-
	Male	584 282	12 263	204 197	-	-
	Both sexes	**1 172 141**	**30 052**	**409 543**	**-**	**-**
Upper-middle income	Under 5	174 464	14 664	48 595	18	4366
	Female	1 278 210	28 763	269 001	37	1964
	Male	1 291 053	28 039	319 088	46	2401
	Both sexes	**2 569 263**	**56 801**	**588 090**	**84**	**4366**
Lower-middle income	Under 5	336 690	253 943	473 425	811	35 752
	Female	1 610 450	652 614	568 622	606	17 133
	Male	1 668 771	520 130	628 684	692	18 619
	Both sexes	**3 279 221**	**1 172 744**	**1 197 305**	**1298**	**35 752**
Low income	Under 5	101 084	111 318	220 025	450	34 131
	Female	324 971	112 759	184 003	363	15 580
	Male	322 900	146 873	224 972	404	18 551
	Both sexes	**647 871**	**259 631**	**408 975**	**767**	**34 131**

	WASH-attributable deaths					
Total from selected diseases	Diarrhoeal disease	Acute Respiratory Infections	Soil-transmitted helminthiases	Undernutrition (protein energy malnutrition)	Total from selected diseases	SDG 3.9.2 (deaths per 100 000 population)
716 299	169 890	70 698	1096	5981	247 666	145.5
598 374	171 205	55 883	778	2729	230 594	42.2
729 231	205 966	68 980	864	3252	279 062	51.2
1 327 605	**377 171**	**124 863**	**1642**	**5981**	**509 657**	**46.7**
28 068	3503	2272	16	379	6170	8.4
180 823	7228	18 320	23	167	25 737	5.0
173 192	6324	17 839	23	212	24 399	4.9
354 015	**13 552**	**36 159**	**45**	**379**	**50 136**	**5.0**
183 325	39 258	16 364	89	1054	56 765	66.6
163 856	48 310	12 435	75	459	61 279	17.8
201 756	52 711	16 625	101	595	70 033	19.0
365.612	**101.021**	**29.060**	**176**	**1.054**	**131 311**	**18.4**
10.936	1.209	1.130	1	7	2.348	4,2
138.092	2.426	13.553	1	4	15.984	3,3
147.804	2.023	15.466	2	4	17.494	3,9
285.896	**4.449**	**29.019**	**3**	**7**	**33.478**	**3,6**
214 176	52 362	16 802	61	370	69 595	41.0
748 569	311 442	35 781	96	212	347 531	35.6
592 714	209 849	35 374	113	158	245 496	23.9
1 341 283	**521 292**	**71 155**	**210**	**370**	**593 027**	**29.6**
47 130	7100	5081	16	61	12 257	10.2
244 867	8164	30 305	33	26	38 529	4.1
280 263	9521	34 972	39	35	44 568	4.6
525 130	**17 686**	**65 277**	**73**	**61**	**83 097**	**4.3**
2434	104	174	-	-	277	0.4
223 135	3132	19 367	-	-	22 499	3.8
216 460	2159	19 261	-	-	21 420	3.7
439 595	**5290**	**38 628**	**-**	**-**	**43 919**	**3.7**
67 642	8015	6814	18	458	15 304	8.8
299 766	15 967	36 149	37	206	52 359	4.1
349 574	15 676	43 434	46	252	59 408	4.6
649 340	**31 643**	**79 583**	**84**	**458**	**111 767**	**4.4**
763 932	179 920	70 342	811	3260	254 333	75.5
1 238 975	442 747	81 481	606	1524	526 359	32.7
1 168 126	355 253	90 704	692	1735	448 385	26.9
2 407 100	**798 000**	**172 185**	**1298**	**3260**	**974 743**	**29.7**
365 925	85 284	35 018	450	4135	124 887	123.5
312 705	86 931	29 279	363	1865	118 437	36.4
390 800	113 306	35 858	404	2270	151 839	47.0
703 504	**200 237**	**65 137**	**767**	**4135**	**270 276**	**41.7**

			All deaths			
		Population (thousands)	Diarrhoeal disease	Acute Respitatory Infections	Soil-transmitted helminthiases	Undernutrition (protein energy malnutrition)
SDG Regions						
Australia and New Zealand	Under 5	1956	7	54	-	-
	Female	15 084	226	3011	-	-
	Male	14 902	150	2383	-	-
	Both sexes	**29 986**	**376**	**5394**	**-**	**-**
Central and Southern Asia	Under 5	184 751	108 288	181 669	96	13 469
	Female	965 684	488 912	273 655	115	7052
	Male	1 025 739	338 175	283 824	143	6417
	Both sexes	**1 991 423**	**827 087**	**557 479**	**259**	**13 469**
Eastern and South-Eastern Asia	Under 5	150 455	19 368	53 240	26	1965
	Female	1 134 733	51 711	274 140	50	843
	Male	1 168 040	55 541	316 791	62	1124
	Both sexes	**2 302 773**	**107 253**	**590 931**	**113**	**1965**
Latin America and the Caribbean	Under 5	51 755	6084	18 077	16	2849
	Female	326 811	11 860	125 429	23	1267
	Male	316 538	10 545	124 425	23	1588
	Both sexes	**643 350**	**22 405**	**249 855**	**45**	**2849**
Europe and Northern America	Under 5	60 951	685	2773	0	18
	Female	571 293	15 214	148 261	0	20
	Male	541 838	10 426	155 712	0	22
	Both sexes	**1 113 131**	**25 640**	**303 973**	**0**	**18**
Oceania	Under 5	1396	554	1403	0	48
	Female	5475	1241	1515	4	21
	Male	5694	1532	1998	3	28
	Both sexes	**11 169**	**2773**	**3513**	**7**	**48**
Sub-Saharan Africa	Under 5	168 062	229 473	452 941	1111	54 092
	Female	533 651	232 479	354 676	790	24 798
	Male	531 471	278 416	438 737	880	29 294
	Both sexes	**1 065 122**	**510 895**	**793 414**	**1670**	**54 092**
Northern Africa and Western Asia	Under 5	55 464	16 056	33 733	26	1808
	Female	248 757	10 281	46 285	24	695
	Male	262 784	12 518	53 070	32	1121
	Both sexes	**511 542**	**22 799**	**99 355**	**55**	**1808**
World						
	Under 5	674 790	380 516	743 889	1279	74 249
	Female	3 801 489	811 925	1 226 972	1006	34 678
	Male	3 867 006	707 304	1 376 941	1143	39 571
	Both sexes	**7 668 495**	**1 519 229**	**2 603 913**	**2149**	**74 249**

Total from selected diseases	WASH-attributable deaths					
	Diarrhoeal disease	Acute Respiratory Infections	Soil-transmitted helminthiases	Undernutrition (protein energy malnutrition)	Total from selected diseases	SDG 3.9.2 (deaths per 100 000 population)
61	1	5	-	-	6	0.3
3 237	40	283	-	-	323	2.1
2 533	26	224	-	-	250	1.7
5 770	**66**	**507**	**-**	**-**	**573**	**1.9**
303 523	72 748	24 675	96	891	98 410	53.3
769 735	327 070	36 558	115	456	364 199	37.7
628 560	226 482	38 095	143	436	265 156	25.9
1 398 294	**553 552**	**74 653**	**259**	**891**	**629 356**	**31.6**
74 598	11 547	7500	26	113	19 186	12.8
326 744	29 165	36 141	50	48	65 404	5.8
373 519	31 725	41 928	62	65	73 780	6.3
700 261	**60 889**	**78 068**	**113**	**113**	**139 184**	**6.0**
27 027	3435	2210	16	379	6041	11.7
138 579	6111	14 954	23	167	21 255	6.5
136 581	5546	14 821	23	212	20 602	6.5
275 154	**11 657**	**29 775**	**45**	**379**	**41 857**	**6.5**
3476	192	332	0	2	526	0.9
163 495	2859	14 852	0	1	17 713	3.1
166 161	1982	16 253	0	1	18 236	3.4
329 632	**4841**	**31 106**	**0**	**2**	**35 949**	**3.2**
2005	419	219	3	4	645	46.2
2781	935	236	4	2	1177	21.5
3561	1163	311	3	3	1480	26.0
6342	**2099**	**547**	**7**	**4**	**2657**	**23.8**
737 618	175 082	72 549	1111	6233	254 976	151.7
612 744	176 560	56 843	790	2835	237 029	44.4
747 326	211 970	70 319	880	3398	286 567	53.9
1 360 070	**388 530**	**127 162**	**1670**	**6233**	**523 596**	**49.2**
51 622	9898	4857	26	229	15 011	27.1
57 284	6035	6409	24	86	12 554	5.0
66 740	7500	7305	32	143	14 980	5.7
124 017	**13 535**	**13 714**	**55**	**229**	**27 534**	**5.4**
1 199 933	273 323	112 347	1279	7853	394 802	58.5
2 074 581	548 776	166 276	1006	3595	719 653	18.9
2 124 959	486 395	189 257	1143	4258	681 052	17.6
4 199 540	**1 035 170**	**355 533**	**2149**	**7853**	**1 400 706**	**18.3**

Annex 5. DALYs attributable to inadequate WASH, by WHO, World Bank Income and SDG regions

Table A5.1. DALYs attributable to inadequate WASH, by disease, age, sex and region, 2019

			All DALYs			
		Population (thousands)	Diarrhoeal disease	Acute Respitatory Infections	Soil-transmitted helminthiases	Undernutrition (protein energy malnutrition)
WHO regions						
Africa	Under 5	170 238	20 371 351	39 427 505	167 828	4 992 853
	Female	546 751	15 408 884	23 022 403	462 249	2 333 112
	Male	545 008	18 685 463	28 733 412	357 139	2 659 741
	Both sexes	**1 091 759**	**34 094 348**	**51 755 815**	**819 387**	**4 992 853**
Americas	Under 5	73 339	748 235	1 817 798	7918	265 335
	Female	511 898	1 097 647	3 726 603	63 625	118 050
	Male	497 928	1 130 360	4 368 105	40 372	147 285
	Both sexes	**1 009 826**	**2 228 007**	**8 094 708**	**103 997**	**265 335**
Eastern Mediterranean	Under 5	85 278	5 420 683	10 303 892	23 588	1 245 551
	Female	344 486	4 622 960	6 096 329	100 890	558 268
	Male	367 791	5 246 467	7 705 637	74 394	687 284
	Both sexes	**712 276**	**9 869 428**	**13 801 966**	**175 284**	**1 245 551**
Europe	Under 5	56 445	356 332	830 440	346	36 828
	Female	478 998	781 390	2 437 207	4227	19 868
	Male	451 018	734 461	3 503 949	976	16 959
	Both sexes	**930 017**	**1 515 851**	**5 941 156**	**5203**	**36 828**
South-East Asia	Under 5	169 700	7 293 132	11 683 675	51 650	1 608 760
	Female	975 896	15 497 686	11 234 648	356 927	850 636
	Male	1 026 050	13 014 825	11 912 242	259 255	758 124
	Both sexes	**2 001 946**	**28 512 513**	**23 146 891**	**616 182**	**1 608 760**
Western Pacific	Under 5	119 791	1 266 611	3 229 717	12 715	175 217
	Female	943 462	1 373 603	4 959 924	119 587	76 780
	Male	979 210	1 717 418	6 730 528	101 908	98 437
	Both sexes	**1 922 672**	**3 091 021**	**11 690 452**	**221 495**	**175 217**
World Bank Income groups						
High income	Under 5	62 552	160 044	284 638	-	-
	Female	587 859	696 856	2 984 967	-	-
	Male	584 282	654 025	3 564 455	-	-
	Both sexes	**1 172 141**	**1 350 882**	**6 549 422**	**-**	**-**
Upper-middle income	Under 5	174 464	1 692 662	4 611 063	11 535	466 619
	Female	1 278 210	2 481 150	7 381 444	115 617	215 791
	Male	1 291 053	2 748 423	10 011 365	84 810	250 828
	Both sexes	**2 569 263**	**5 229 573**	**17 392 808**	**200 426**	**466 619**
Lower-middle income	Under 5	336 690	23 319 406	42 679 146	164 896	4 532 268
	Female	1 610 450	27 908 565	29 275 090	696 488	2 199 976
	Male	1 668 771	27 177 207	34 649 341	530 632	2 332 293
	Both sexes	**3 279 221**	**55 085 777**	**63 924 433**	**1 227 120**	**4 532 268**
Low income	Under 5	101 084	10 284 231	19 718 181	87 614	3 325 657
	Female	324 971	7 695 598	11 835 611	295 400	1 540 948
	Male	322 900	9 949 339	14 728 713	218 602	1 784 709
	Both sexes	**647 871**	**17 644 937**	**26 564 324**	**514 002**	**3 325 657**

	WASH-attributable DALYs					
Total from selected diseases	Diarrhoeal disease	Acute Respitatory Infections	Soil-transmitted helminthiases	Undernutrition (protein energy malnutrition)	Total from selected diseases	DALYs rate (per 100 000 population)
64 959.538	15 524 422	6 326 393	167 828	576 678	22 595 321	13 273
41 226 647	11 704 473	3 694 351	462 249	267 323	16 128 397	2950
50 435 755	14 214 123	4 611 281	357 139	309 354	19 491 897	3576
91 662 404	**25 918 597**	**8 305 633**	**819 387**	**576 678**	**35 620 295**	**3263**
2 839 285	388 242	218 927	7918	35 409	650 495	887
5 005 925	474 584	426 916	63 625	15 651	980 776	192
5 686 123	505 301	502 611	40 372	19 758	1 068 043	214
10 692 048	**979 885**	**929 527**	**103 997**	**35 409**	**2 048 819**	**203**
16 993 714	3 669 480	1 475 041	23 588	117 887	5 285 995	6199
11 378 446	3 100 565	866 257	100 890	52 669	4 120 381	1196
13 713 781	3 517 507	1 092 672	74 394	65 218	4 749 789	1291
25 092 229	**6 618 072**	**1 958 929**	**175 284**	**117 887**	**8 870 171**	**1245**
1 223 946	152 830	110 688	346	2899	266 764	473
3 242 693	279 777	281 572	4227	1547	567 122	118
4 256 345	266 628	419 445	976	1353	688 402	153
7 499 038	**546 405**	**701 017**	**5203**	**2899**	**1 255 524**	**135**
20 637 216	4 808 535	1 536 755	51 650	83 398	6 480 338	3819
27 939 897	10 233 859	1 477 174	356 927	43 862	12 111 823	1241
25 944 446	8 550 326	1 564 824	259 255	39 535	10 413 940	1015
53 884 346	**18 784 187**	**3 041 997**	**616 182**	**83 398**	**22 525 764**	**1125**
4 684 260	755 552	478 805	12 715	8989	1 256 061	1049
6 529 894	769 613	695 752	119 587	3850	1 588 802	168
8 648 292	973 624	944 963	101 908	5139	2 025 634	207
15 178 185	**1 743 236**	**1 640 715**	**221 495**	**8989**	**3 614 436**	**188**
444 682	28 172	26 806	-	-	54 979	88
3 681 823	122 657	281 345	-	-	404 002	69
4 218 481	115 140	336 047	-	-	451 187	77
7 900 304	**237 797**	**617 391**	**-**	**-**	**855 189**	**73**
6 781 878	910 197	645 557	11 535	46 988	1 614 278	925
10 194 002	1 314 300	1 012 384	115 617	21 605	2 463 906	193
13 095 426	1 465 207	1 378 531	84 810	25 383	2 953 930	229
23 289 426	**2 779 506**	**2 390 915**	**200 426**	**46 988**	**5 417 836**	**211**
70 695 716	16 485 538	6 336 145	164 896	374 709	23 361 289	6939
60 080 120	19 218 891	4 264 718	696 488	178 288	24 358 385	1513
64 689 472	18 803 381	5 075 713	530 632	196 421	24 606 148	1475
124 769 598	**38 022 276**	**9 340 431**	**1 227 120**	**374 709**	**48 964 537**	**1493**
33 415 683	7 875 152	3 138 101	87 614	403 562	11 504 429	11 381
21 367 557	5 907 024	1 883 575	295 400	185 009	8 271 007	2545
26 681 364	7 643 780	2 345 505	218 602	218 553	10 426 440	3229
48 048 921	**13 550 803**	**4 229 081**	**514 002**	**403 562**	**18 697 448**	**2886**

			All DALYs			
		Population (thousands)	Diarrhoeal disease	Acute Respitatory Infections	Soil-transmitted helminthiases	Undernutrition (protein energy malnutrition)
SDG regions						
Australia and New Zealand	Under 5	1956	2835	8613	-	-
	Female	15 084	10 903	48 266	-	-
	Male	14 902	11 584	47 820	-	-
	Both sexes	**29 986**	**22 486**	**96 085**	**-**	**-**
Central and Southern Asia	Under 5	184 751	9 903 602	16 486 385	60 747	2 189 253
	Female	965 684	17 451 840	13 231 575	372 932	1 118 574
	Male	1 025 739	15 005 490	14 362 872	281 619	1 070 679
	Both sexes	**1 991 423**	**32 457 333**	**27 594 449**	**654 551**	**2 189 253**
Eastern and South-Eastern Asia	Under 5	150 455	2 030 215	4 990 280	19 087	366 690
	Female	1 134 733	2 595 983	6 577 441	166 298	167 048
	Male	1 168 040	3 239 455	8 929 644	132 367	199 642
	Both sexes	**2 302 773**	**5 835 438**	**15 507 084**	**298 665**	**366 690**
Latin America and the Caribbean	Under 5	51 755	684 819	1 713 199	7918	265 335
	Female	326 811	827 692	2 955 905	63 625	118 050
	Male	316 538	890 861	3 578 102	40 372	147 285
	Both sexes	**643 350**	**1 718 552**	**6 534 007**	**103 997**	**265 335**
Europe and Northern America	Under 5	60 951	180 834	356 174	0	11 320
	Female	571 293	809 387	2 611 996	0	5350
	Male	541 838	702 775	3 528 773	0	5969
	Both sexes	**1 113 131**	**1 512 162**	**6 140 769**	**0**	**11 320**
Oceania	Under 5	1396	54 576	127 270	1128	9077
	Female	5475	61 971	84 820	7829	3400
	Male	5694	90 503	123 832	5078	5677
	Both sexes	**11 169**	**152 474**	**208 652**	**12 907**	**9077**
Sub-Saharan Africa	Under 5	168 062	20 948 812	40 517 183	170 895	5 206 901
	Female	533 651	15 831 656	23 578 896	475 570	2 423 561
	Male	531 471	19 176 962	29 444 353	365 650	2 783 341
	Both sexes	**1 065 122**	**35 008 619**	**53 023 249**	**841 219**	**5 206 901**
Northern Africa and Western Asia	Under 5	55 464	1 650 651	3 093 922	4271	275 968
	Female	248 757	1 192 739	2 388 214	21 251	120 731
	Male	262 784	1 411 365	2 938 478	8958	155 237
	Both sexes	**511 542**	**2 604 104**	**5 326 692**	**30 208**	**275 968**
World						
	Under 5	674 790	35 456 343	67 293 026	264 045	8 324 545
	Female	3 801 489	38 782 170	51 477 113	1 107 505	3 956 714
	Male	3 867 006	40 528 995	62 953 874	834 044	4 367 830
	Both sexes	**7 668 495**	**79 311 169**	**114 430 987**	**1 941 549**	**8 324 545**

	WASH-attributable DALYs					
Total from selected diseases	Diarrhoeal disease	Acute Respitatory Infections	Soil-transmitted helminthiases	Undernutrition (protein energy malnutrition)	Total from selected diseases	DALYs rate (per 100 000 population)
11 448	499	810	-	-	1309	67
59 168	1918	4539	-	-	6456	43
59 403	2037	4496	-	-	6534	44
118 572	**3955**	**9035**	**-**	**-**	**12 990**	**43**
28 639 987	6 648 589	2 238 680	60 747	132 229	9 080 245	4915
32 174 921	11 676 135	1 780 517	372 932	66 708	13 896 292	1439
30 720 660	10 046 718	1 939 630	281 619	65 521	12 333 488	1202
62 895 587	**21 722 856**	**3 720 147**	**654 551**	**132 229**	**26 229 783**	**1317**
7 406 272	1 200 008	702 725	19 087	21 790	1 943 610	1292
9 506 771	1 473 091	903 518	166 298	9893	2 552 800	225
12 501 108	1 846 797	1 226 406	132 367	11 897	3 217 467	275
22 007 878	**3 319 888**	**2 129 924**	**298 665**	**21 790**	**5 770 267**	**251**
2 671 270	377 110	209 121	7918	35 409	629 557	1216
3 965 272	427 194	354 646	63 625	15 651	861 116	263
4 656 620	463 247	428 532	40 372	19 758	951 910	301
8 621 891	**890 441**	**783 178**	**103 997**	**35 409**	**1 813 026**	**282**
548 328	48 890	40 631	-	1134	90 655	149
3 426 733	216 451	272 394	-	529	489 374	86
4 237 518	183 786	388 880	-	605	573 271	106
7 664 251	**400 237**	**661 274**	**-**	**1134**	**1 062 645**	**95**
192 051	41 290	19 835	1128	813	63 065	4518
158 020	46 792	13 206	7829	308	68 136	1244
225 090	68 628	19 288	5078	505	93 499	1642
383 110	**115 420**	**32 494**	**12 907**	**813**	**161 634**	**1447**
66 843 791	15 982 488	6 489 877	170 895	599 661	23 242 921	13830
42 309 683	12 041 737	3 777 594	475 570	277 056	16 571 957	3105
51 770 305	14 604 959	4 717 744	365 650	322 605	20 010 957	3765
94 079 989	**26 646 697**	**8 495 338**	**841 219**	**599 661**	**36 582 916**	**3435**
5 024 812	1 000 187	444 931	4271	34 223	1 483 612	2675
3 722 934	679 552	335 609	21 251	14 757	1 051 169	423
4 514 038	811 336	410 820	8958	19 466	1 250 580	476
8 236 972	**1 490 888**	**746 429**	**30 208**	**34 223**	**2 301 748**	**450**
111 337 959	25 299 060	10 146 610	264 045	825 259	36 534 974	5414
95 323 502	26 562 871	7 442 022	1 107 505	384 902	35 497 300	934
108 684 742	28 027 508	9 135 796	834 044	440 357	38 437 705	994
204 008 249	**54 590 383**	**16 577 818**	**1 941 549**	**825 259**	**73 935 009**	**964**

Annex 6. Deaths attributable to inadequate WASH, by country, 2019

Table A6.1. Deaths attributable to drinking-water, sanitation and hygiene from diarrhoeal disease by country, 2019

Country	Population (thousands)				Diarrhoea water				
	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
Afghanistan	5639	19 530	18 512	38 042	0.40	2102	1188	1059	2248
Albania	169	1467	1414	2881	0.23	0	1	1	2
Algeria	5025	21 750	21 303	43 053	0.27	209	160	139	299
Angola	5670	15 745	16 081	31 825	0.40	3218	3363	2698	6061
Antigua and Barbuda	7	47	50	97					
Argentina	3742	21 841	22 939	44 781	0.19	10	45	63	108
Armenia	208	1391	1566	2958	0.20	1	1	1	2
Australia	1655	12 551	12 652	25 203					
Austria	442	4409	4546	8955					
Azerbaijan	848	5016	5032	10 048	0.03	7	5	3	8
Bahamas	27	189	200	389					
Bahrain	108	1055	586	1641					
Bangladesh	14 419	82 474	80 572	163 046	0.35	1482	5004	7795	12 799
Barbados	15	139	148	287					
Belarus	556	4400	5052	9452	0.06	0	0	0	1
Belgium	636	5711	5828	11 539					
Belize	39	194	196	390	0.26	1	1	1	2
Benin	1874	5891	5910	11 801	0.44	1464	1646	1354	3001
Bhutan	64	405	358	763	0.14	2	13	10	23
Bolivia	1187	5780	5733	11 513	0.23	76	88	116	205
Bosnia and Herzegovina	138	1617	1684	3301	0.20	0	1	1	2
Botswana	272	1114	1190	2304	0.26	47	83	53	135
Brazil	14 572	103 733	107 316	211 050	0.13	120	328	418	746
Brunei Darussalam	33	225	208	433					
Bulgaria	315	3400	3600	7000	0.09	1	1	1	2
Burkina Faso	3408	10 148	10 174	20 321	0.46	2374	2844	2621	5464
Burundi	2019	5719	5812	11531	0.44	873	1496	1170	2666
Cabo Verde	53	276	274	550	0.38	2	8	7	16
Cambodia	1780	8047	8439	16 487	0.33	211	351	352	702
Cameroon	4059	12 940	12 936	25 876	0.42	2339	2729	2241	4970
Canada	1980	18 564	18 847	37 411					
Central African Republic	731	2352	2393	4745	0.47	645	1206	979	2185
Chad	2872	7961	7986	15 947	0.47	3899	3735	3204	6939
Chile	1183	9342	9610	18 952					
China	85 041	735 624	698 160	1 433 784	0.16	679	743	636	1379
Colombia	3730	24 713	25 626	50 339	0.19	32	65	78	143
Comoros	122	429	422	851	0.37	58	76	58	135
Congo	813	2687	2693	5381	0.40	180	320	198	518
Costa Rica	351	2523	2525	5048	0.15	1	5	8	13
Cote d'Ivoire	4050	12 974	12 742	25 717	0.40	2227	2565	1937	4502

Diarrhoea sanitation					Diarrhoea hygiene					Diarrhoea WASH				
PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
0.41	2155	1218	1086	2304	0.26	1348	762	679	1441	0.74	3854	2179	1943	4121
0.12	0	0	1	1	0.25	0	1	1	2	0.48	1	2	3	4
0.15	117	89	78	167	0.27	212	163	141	304	0.55	426	326	284	610
0.40	3212	3356	2692	6048	0.28	2264	2366	1898	4263	0.74	5971	6239	5005	11244
					0.18	0	0	0	0	0.18	0	0	0	0
0.18	10	44	62	106	0.22	12	52	73	125	0.48	27	116	163	279
0.15	1	1	1	1	0.25	2	1	1	2	0.48	3	2	2	5
					0.18	1	21	31	52	0.18	1	21	31	52
					0.18	0	11	16	27	0.18	0	11	16	27
0.24	56	38	26	63	0.25	57	38	26	65	0.45	104	70	48	117
					0.18	0	0	0	1	0.18	0	0	0	1
					0.18	0	2	1	3	0.18	0	2	1	3
0.40	1655	5591	8708	14 299	0.25	1024	3460	5389	8849	0.71	2961	10 001	15 578	25 579
					0.18	0	0	1	1	0.18	0	0	1	1
0.13	0	1	1	2	0.24	1	1	2	3	0.39	1	2	3	5
					0.18	0	27	46	74	0.18	0	27	46	74
0.33	1	2	1	3	0.21	0	1	1	2	0.62	1	3	2	5
0.45	1516	1704	1402	3106	0.29	950	1068	879	1948	0.78	2603	2926	2408	5334
0.35	6	33	26	59	0.23	4	22	17	39	0.57	10	54	43	96
0.32	104	120	159	279	0.24	80	92	122	214	0.61	200	231	305	536
0.18	0	1	1	1	0.24	0	1	1	2	0.50	1	2	2	4
0.37	68	119	76	196	0.28	50	89	57	145	0.66	121	213	136	348
0.17	158	434	553	987	0.22	197	540	688	1229	0.45	405	1109	1414	2524
					0.18	1	0	0	1	0.18	1	0	0	1
0.16	2	2	2	4	0.25	3	3	3	6	0.43	4	6	6	11
0.45	2300	2756	2540	5296	0.29	1475	1767	1629	3397	0.78	4053	4855	4475	9331
0.42	825	1414	1105	2519	0.28	563	965	754	1719	0.77	1518	2602	2034	4636
0.33	2	7	6	13	0.28	1	6	5	12	0.70	4	15	14	29
0.37	241	399	400	799	0.27	173	286	287	573	0.69	448	743	745	1488
0.42	2324	2711	2226	4937	0.28	1565	1826	1500	3326	0.76	4212	4914	4035	8950
					0.18	1	63	85	148	0.18	1	63	85	148
0.45	627	1173	952	2125	0.28	392	733	595	1328	0.79	1092	2043	1658	3701
0.46	3807	3646	3128	6774	0.28	2363	2263	1942	4205	0.79	6605	6327	5427	11 754
					0.18	1	23	36	59	0.18	1	23	36	59
0.21	910	996	853	1849	0.26	1129	1236	1058	2294	0.52	2219	2429	2080	4509
0.14	24	47	57	105	0.22	38	76	91	167	0.47	79	158	190	348
0.42	66	87	66	153	0.28	44	58	45	103	0.74	116	152	116	269
0.45	203	361	223	584	0.28	127	225	139	364	0.76	345	613	378	991
0.28	1	10	15	25	0.21	1	7	11	19	0.53	2	18	28	46
0.43	2374	2735	2065	4799	0.28	1580	1819	1374	3193	0.75	4198	4835	3650	8485

Country	Population (thousands)				Diarrhoea water				
	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
Croatia	187	1990	2140	4130					
Cuba	587	5628	5706	11 333	0.17	1	16	20	36
Cyprus	65	599	599	1199					
Czechia	556	5261	5429	10 689					
Democratic People's republic of Korea	1743	12 553	13 113	25 666	0.20	52	41	35	76
Democratic Republic of the Congo	15 503	43 319	43 471	86 791	0.46	10 451	11 734	7379	19 113
Denmark	302	2870	2902	5772					
Djibouti	100	512	462	974	0.40	29	84	61	145
Dominican Republic	1007	5366	5373	10 739	0.32	62	85	75	159
Ecuador	1662	8690	8683	17 374	0.20	15	34	47	81
Egypt	12 804	50 723	49 665	100 388	0.23	601	446	406	852
El Salvador	578	3023	3430	6454	0.23	22	24	22	46
Equatorial Guinea	195	754	602	1356	0.41	83	80	61	141
Eritrea	491	1753	1744	3497	0.43	149	625	351	975
Estonia	69	627	699	1326					
Eswatini	144	563	585	1148	0.38	40	125	73	198
Ethiopia	16 561	56 069	56 010	112 079	0.46	5230	11 429	8907	20 335
Fiji	90	451	439	890	0.30	5	15	14	28
Finland	271	2727	2805	5532					
France	3669	31 524	33 605	65 130					
Gabon	316	1106	1066	2173	0.37	43	75	41	116
Gambia	401	1164	1183	2348	0.40	108	138	110	248
Georgia	274	1906	2091	3997	0.25	2	2	2	5
Germany	3987	41 249	42 268	83 517					
Ghana	4135	15 416	15 002	30 418	0.38	808	1444	1063	2508
Greece	420	5141	5333	10 473					
Grenada	9	56	56	112	0.26	0	0	0	0
Guatemala	2056	8660	8922	17 581	0.22	136	297	272	569
Guinea	2060	6166	6605	12 771	0.42	1132	1450	1412	2861
Guinea-Bissau	302	939	982	1921	0.44	166	200	206	406
Guyana	75	393	390	783	0.28	3	7	6	13
Haiti	1266	5558	5705	11 263	0.40	562	530	479	1009
Honduras	1011	4869	4877	9746	0.24	47	82	140	222
Hungary	457	4608	5076	9685					
Iceland	21	170	169	339					
India	116 782	710 129	656 288	1 366 418	0.30	20 045	79 898	123 964	203 863
Indonesia	23 940	136 270	134 356	270 626	0.12	628	4052	3795	7847
Iran (Islamic Republic of)	7583	41 890	41 024	82 914	0.02	20	20	17	37
Iraq	5374	19 892	19 418	39 310	0.30	393	258	210	468
Ireland	322	2422	2460	4882					
Israel	847	4237	4282	8519					
Italy	2383	29 461	31 089	60 550					
Jamaica	233	1464	1485	2948	0.19	1	3	3	7
Japan	4906	61 950	64 910	126 860					

Diarrhoea sanitation					Diarrhoea hygiene					Diarrhoea WASH				
PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
					0.18	0	4	10	14	0.18	0	4	10	14
0.21	1	19	24	43	0.21	1	20	24	44	0.49	3	45	56	101
					0.18	0	4	6	10	0.18	0	4	6	10
					0.18	1	20	25	45	0.18	1	20	25	45
0.24	62	49	41	90	0.24	62	49	41	90	0.55	140	111	94	204
0.45	10 152	11 399	7168	18 567	0.28	6406	7193	4523	11 716	0.79	17 785	19 969	12 557	32 526
					0.18	0	10	15	25	0.18	0	10	15	25
0.38	27	80	58	138	0.26	19	55	40	95	0.72	52	153	110	263
0.32	62	85	75	160	0.23	45	62	54	116	0.64	126	172	151	324
0.21	16	36	51	87	0.22	16	37	51	88	0.51	38	87	121	208
0.18	456	338	308	646	0.25	646	479	436	916	0.52	1361	1011	920	1931
0.28	26	29	26	55	0.21	20	22	20	42	0.57	52	59	54	113
0.36	75	72	55	126	0.28	58	55	43	98	0.73	150	143	110	254
0.45	156	655	367	1022	0.28	99	417	234	652	0.77	270	1132	635	1768
					0.18	0	1	1	1	0.18	0	1	1	1
0.38	40	125	73	198	0.28	30	92	54	145	0.73	76	238	139	376
0.46	5300	11 582	9026	20 608	0.29	3257	7118	5548	12 666	0.79	9033	19 740	15 384	35 124
0.29	5	15	13	28	0.27	4	13	12	26	0.63	11	32	29	61
					0.18	0	1	1	3	0.18	0	1	1	3
					0.18	5	121	199	319	0.18	5	121	199	319
0.36	43	74	40	115	0.28	33	57	31	88	0.71	84	145	79	224
0.41	113	144	115	259	0.28	78	99	79	178	0.75	204	260	207	468
0.22	1	2	2	4	0.25	2	2	2	5	0.56	3	5	5	10
					0.18	2	325	350	676	0.18	2	325	350	676
0.45	938	1677	1235	2912	0.28	590	1055	777	1832	0.76	1591	2844	2094	4938
					0.18	0	6	11	17	0.18	0	6	11	17
0.31	0	0	0	0	0.22	0	0	0	0	0.60	0	0	1	1
0.31	191	417	382	800	0.22	136	297	272	569	0.58	362	792	725	1517
0.44	1171	1500	1461	2961	0.28	761	975	949	1923	0.77	2059	2637	2567	5204
0.45	168	203	210	412	0.28	106	128	132	259	0.78	291	351	362	713
0.35	3	8	8	17	0.22	2	5	5	10	0.63	6	15	15	30
0.43	610	575	520	1095	0.24	340	321	290	611	0.74	1048	988	894	1882
0.28	55	97	164	261	0.22	42	74	125	199	0.58	113	197	335	533
					0.18	0	18	31	49	0.18	0	18	31	49
					0.18	0	0	0	0	0.18	0	0	0	0
0.36	24 020	95 741	148 546	244 287	0.24	15 635	62 321	96 694	159 015	0.66	43 818	174 655	270 983	445 638
0.35	1784	11 509	10 780	22 289	0.23	1187	7655	7169	14 824	0.56	2882	18 589	17 410	35 999
0.28	275	280	243	522	0.25	239	243	211	454	0.47	457	465	403	867
0.28	370	244	198	442	0.25	327	215	174	389	0.62	816	536	436	972
					0.18	0	3	6	9	0.18	0	3	6	9
					0.18	2	14	16	29	0.18	2	14	16	29
					0.18	1	99	186	285	0.18	1	99	186	285
0.31	1	6	5	11	0.22	1	4	4	8	0.57	2	10	9	20
					0.18	7	201	281	482	0.18	7	201	281	482

Country	Population (thousands)				Diarrhoea water				
	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
Jordan	1087	5113	4988	10 102	0.13	13	10	10	20
Kazakhstan	1948	9000	9552	18 551	0.11	26	16	12	28
Kenya	7009	26 122	26 452	52 574	0.36	1307	3077	2473	5549
Kiribati	15	58	60	118	0.15	2	3	5	8
Kuwait	297	2563	1644	4207					
Kyrgyzstan	773	3174	3242	6416	0.19	14	10	7	17
Lao People's Democratic Republic	794	3599	3570	7169	0.26	188	214	192	406
Latvia	113	878	1029	1907					
Lebanon	592	3449	3406	6856	0.11	3	5	5	9
Lesotho	253	1048	1077	2125	0.39	171	488	431	919
Liberia	730	2481	2456	4937	0.43	261	342	335	677
Libya	633	3423	3355	6777	0.03	1	2	1	3
Lithuania	147	1276	1483	2760					
Luxembourg	33	311	305	616					
Madagascar	4023	13453	13 516	26 969	0.36	846	2249	1779	4028
Malawi	2877	9185	9443	18 629	0.40	559	1352	968	2320
Malaysia	2620	16 423	15 527	31 950	0.22	14	208	176	384
Maldives	36	336	195	531	0.27	0	2	2	4
Mali	3532	9845	9813	19 658	0.41	2557	3119	2428	5547
Malta	22	221	220	440					
Mauritania	679	2272	2254	4526	0.41	389	370	305	675
Mauritius	65	627	643	1270	0.36	0	3	5	8
Mexico	11 041	62 403	65 172	127 576	0.18	150	307	332	639
Micronesia (Federated States of)	12	58	56	114	0.08	0	0	1	1
Mongolia	379	1590	1635	3225	0.19	12	7	5	13
Montenegro	37	311	317	628	0.17	0	0	0	0
Morocco	3370	18 093	18 379	36 472	0.12	71	69	68	137
Mozambique	5048	14 746	15 620	30 366	0.44	2123	3442	2287	5729
Myanmar	4511	26 045	28 001	54 045	0.28	709	1085	908	1993
Namibia	334	1209	1286	2495	0.39	63	156	93	250
Nepal	2706	13 047	15 562	28 609	0.36	359	828	1382	2210
Netherlands, Kingdom of the	863	8515	8582	17 097					
New Zealand	301	2351	2432	4783					
Nicaragua	661	3226	3320	6546	0.29	19	18	18	36
Niger	4642	11 714	11 596	23 311	0.46	3139	4121	3324	7445
Nigeria	33 409	101 832	99 132	200 964	0.43	37 107	31 443	30 738	62 180
North Macedonia	114	1042	1041	2083	0.20	0	0	0	0
Norway	301	2717	2662	5379					
Oman	450	3284	1691	4975					
Pakistan	27 668	111 448	105 118	216 565	0.37	10 869	19 974	18 900	38 874
Panama	389	2126	2120	4246	0.20	10	17	16	32
Papua New Guinea	1096	4480	4296	8776	0.43	204	569	425	994
Paraguay	698	3581	3464	7045	0.27	32	27	25	53
Peru	2810	16 148	16 362	32 510	0.28	105	150	159	309

Diarrhoea sanitation					Diarrhoea hygiene					Diarrhoea WASH				
PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
0.14	14	11	11	22	0.25	24	19	18	37	0.44	44	35	33	67
0.23	56	34	26	61	0.24	58	36	27	63	0.49	116	71	54	125
0.43	1575	3709	2981	6689	0.28	1023	2409	1936	4346	0.74	2686	6324	5083	11 406
0.40	4	8	14	22	0.27	3	6	9	15	0.63	7	13	22	35
					0.18	0	1	0	1	0.18	0	1	0	1
0.30	22	15	12	26	0.25	18	12	9	22	0.57	42	28	22	50
0.38	274	312	281	593	0.27	193	220	197	417	0.67	479	546	491	1037
					0.18	0	1	1	2	0.18	0	1	1	2
0.16	4	6	6	13	0.25	6	10	10	20	0.44	10	18	18	36
0.41	178	508	448	956	0.29	125	356	315	671	0.74	325	925	818	1743
0.45	275	360	353	714	0.29	176	231	226	457	0.77	474	622	610	1232
0.20	7	10	9	18	0.26	8	12	11	23	0.43	14	21	18	39
					0.18	0	4	6	10	0.18	0	4	6	10
					0.18	0	0	1	1	0.18	0	0	1	1
0.46	1067	2835	2243	5078	0.28	655	1741	1377	3119	0.75	1750	4649	3678	8328
0.44	614	1485	1063	2548	0.28	392	949	679	1628	0.76	1058	2560	1833	4393
0.34	22	325	274	599	0.26	17	254	214	468	0.62	41	599	506	1104
0.20	0	2	1	3	0.23	0	2	1	3	0.55	0	5	3	8
0.42	2579	3146	2449	5595	0.28	1761	2148	1672	3820	0.76	4670	5698	4435	10 132
					0.18	0	0	0	0	0.18	0	0	0	0
0.41	391	372	307	678	0.28	267	253	209	463	0.75	713	678	559	1237
0.31	0	3	4	7	0.28	0	2	4	6	0.68	0	6	9	15
0.14	116	238	257	495	0.21	174	356	384	740	0.45	371	759	819	1578
0.36	1	2	3	5	0.27	1	2	2	4	0.59	2	3	5	8
0.34	21	13	9	23	0.27	17	10	7	18	0.61	38	24	17	40
0.20	0	0	0	0	0.25	0	0	0	0	0.51	0	0	0	0
0.22	135	131	130	261	0.26	161	157	155	312	0.49	302	295	291	585
0.43	2046	3318	2205	5523	0.28	1357	2200	1462	3662	0.77	3691	5986	3978	9964
0.38	975	1494	1250	2743	0.24	605	927	775	1702	0.66	1694	2594	2171	4765
0.38	62	154	92	247	0.28	45	112	67	179	0.73	118	294	175	469
0.37	365	843	1407	2250	0.24	236	546	911	1457	0.70	687	1586	2648	4235
					0.18	0	37	66	103	0.18	0	37	66	103
					0.18	0	6	8	14	0.18	0	6	8	14
0.31	21	19	20	38	0.23	15	14	14	28	0.63	41	38	39	77
0.45	3070	4030	3251	7281	0.28	1918	2517	2031	4548	0.79	5343	7013	5658	12 671
0.41	35 629	30 190	29 513	59 704	0.28	24 240	20 540	20 079	40 619	0.76	65 564	55 556	54 311	109 867
0.13	0	0	0	0	0.24	0	0	0	0	0.48	0	0	0	0
					0.18	0	9	13	23	0.18	0	9	13	23
					0.18	2	9	5	14	0.18	2	9	5	14
0.33	9637	17 711	16 759	34 470	0.25	7353	13 514	12 787	26 301	0.69	20 022	36 795	34 816	71 611
0.30	15	25	23	48	0.22	11	18	17	35	0.56	29	47	44	91
0.44	206	576	430	1006	0.28	130	362	270	632	0.77	362	1013	756	1769
0.34	40	34	32	65	0.22	25	21	20	42	0.63	73	62	58	121
0.21	78	112	119	230	0.22	82	117	125	242	0.56	211	300	319	620

Country	Population (thousands)				Diarrhoea water				
	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
Philippines	10 775	54 316	53 801	10 8117	0.30	1163	1050	837	1887
Poland	1879	18 361	19 527	37 888					
Portugal	406	4837	5390	10 226					
Qatar	135	2134	699	2832					
Republic of Korea	1970	25 649	25 576	51 225					
Republic of Moldova	206	1938	2105	4043	0.20	0	0	0	1
Romania	940	9418	9946	19 365	0.15	0	15	19	34
Russian Federation	9400	67 603	78 269	145 872	0.17	15	30	40	69
Rwanda	1849	6206	6421	12 627	0.33	274	594	439	1033
Samoa	27	102	95	197	0.30	1	1	2	4
Sao Tome and Principe	32	108	107	215	0.37	5	5	4	9
Saudi Arabia	2996	19 784	14 485	34 269					
Senegal	2585	7946	8350	16 296	0.40	674	1211	917	2128
Serbia	422	4297	4475	8772	0.23	0	16	22	38
Seychelles	8	50	48	98					
Sierra Leone	1147	3898	3915	7813	0.45	1040	1370	998	2368
Singapore	250	3038	2766	5804					
Slovakia	284	2657	2800	5457					
Slovenia	103	1035	1044	2079					
Solomon Islands	102	341	329	670	0.38	10	36	46	82
Somalia	2749	7700	7743	15 443	0.44	3234	3589	3212	6801
South Africa	5786	28 859	29 699	58 558	0.27	822	2076	2280	4356
South Sudan	1698	5537	5526	11 062	0.46	1463	1806	1563	3369
Spain	2016	22 961	23 776	46 737					
Sri Lanka	1677	10 233	11 090	21 324	0.22	7	56	76	131
St. Lucia	11	90	93	183	0.22	0	1	0	1
St. Vincent and the Grenadines	8	56	54	111	0.24	0	0	0	0
Sudan	6246	21 388	21 425	42 813	0.41	1930	1529	1060	2589
Suriname	52	292	289	581	0.30	0	4	5	9
Sweden	598	5026	5011	10 036					
Switzerland	449	4261	4331	8591					
Syrian Arab Republic	1826	8555	8516	17 070	0.24	471	284	234	518
Tajikistan	1347	4698	4623	9321	0.11	65	44	35	79
Thailand	3648	33 905	35 721	69 626	0.27	33	867	964	1830
Timor-Leste	174	654	640	1293	0.15	19	25	19	44
Togo	1204	4021	4062	8082	0.43	467	808	572	1379
Tonga	12	52	52	104	0.32	1	1	1	1
Trinidad and Tobago	90	689	706	1395					
Tunisia	1019	5798	5897	11695	0.26	13	24	23	47
Türkiye	6658	41 174	42 256	83 430	0.13	17	44	53	96
Turkmenistan	676	2926	3016	5942	0.10	32	19	14	34
Uganda	7686	21 807	22 462	44 270	0.37	1667	2619	1878	4497
Ukraine	2184	20 379	23 615	43 994	0.14	18	14	13	27
United Arab Emirates	501	6767	3004	9771					
United Kingdom	3951	33 351	34 179	67 530					

Diarrhoea sanitation					Diarrhoea hygiene					Diarrhoea WASH				
PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
0.36	1368	1235	985	2220	0.27	1011	913	728	1641	0.67	2570	2321	1851	4172
					0.18	0	53	95	148	0.18	0	53	95	148
					0.18	0	14	27	41	0.18	0	14	27	41
					0.18	0	1	1	2	0.18	0	1	1	2
					0.18	1	55	108	163	0.18	1	55	108	163
0.29	0	0	1	1	0.24	0	0	0	1	0.58	1	1	1	2
0.23	0	22	29	51	0.25	1	24	31	55	0.50	1	49	64	112
0.17	14	29	38	67	0.25	21	43	57	100	0.48	41	83	110	193
0.39	322	699	516	1216	0.29	236	512	378	890	0.71	585	1270	938	2208
0.33	1	1	2	4	0.27	1	1	2	3	0.66	2	3	5	8
0.40	5	5	5	9	0.28	3	3	3	7	0.73	9	9	8	17
					0.18	7	43	38	81	0.18	7	43	38	81
0.40	669	1202	911	2113	0.28	479	861	652	1513	0.74	1252	2249	1704	3952
0.18	0	13	17	30	0.25	0	18	23	41	0.52	0	37	49	87
					0.18	0	0	1	1	0.18	0	0	1	1
0.45	1050	1382	1007	2389	0.28	657	864	630	1495	0.78	1816	2391	1743	4134
					0.18	0	2	3	5	0.18	0	2	3	5
					0.18	0	2	4	6	0.18	0	2	4	6
					0.18	0	0	1	1	0.18	0	0	1	1
0.41	11	40	50	91	0.27	7	27	33	60	0.74	19	71	89	161
0.42	3066	3403	3045	6448	0.27	1955	2170	1942	4111	0.76	5566	6178	5529	11 706
0.26	781	1971	2166	4137	0.28	834	2107	2315	4422	0.61	1835	4634	5091	9726
0.46	1442	1780	1540	3320	0.28	899	1109	960	2069	0.79	2496	3081	2666	5747
					0.18	1	68	119	187	0.18	1	68	119	187
0.34	11	88	120	207	0.23	7	60	81	141	0.61	19	156	212	368
0.34	0	1	1	2	0.21	0	1	0	1	0.60	0	2	1	3
0.29	0	0	0	1	0.22	0	0	0	0	0.58	0	1	1	1
0.42	1966	1558	1079	2637	0.27	1257	996	690	1686	0.75	3505	2777	1924	4701
0.35	0	5	6	11	0.22	0	3	4	7	0.65	0	9	11	20
					0.18	0	19	32	51	0.18	0	19	32	51
					0.18	0	12	21	33	0.18	0	12	21	33
0.18	348	210	173	384	0.25	491	296	244	540	0.53	1039	627	517	1144
0.31	186	126	98	225	0.25	152	103	81	184	0.54	326	221	172	394
0.32	39	1029	1144	2172	0.23	29	750	833	1583	0.62	77	2002	2226	4228
0.38	47	61	47	108	0.25	30	40	31	70	0.61	75	97	75	173
0.45	487	842	596	1438	0.28	307	531	376	907	0.78	840	1451	1027	2478
0.35	1	1	1	1	0.27	0	0	1	1	0.68	1	1	2	3
					0.18	1	2	2	3	0.18	1	2	2	3
0.18	9	17	16	33	0.25	13	23	22	46	0.54	28	51	49	100
0.09	11	30	36	66	0.25	32	82	100	182	0.41	52	137	165	302
0.27	91	55	40	95	0.25	82	49	36	86	0.50	169	102	75	177
0.45	2015	3166	2270	5436	0.28	1271	1997	1432	3428	0.75	3368	5293	3796	9089
0.20	26	19	19	38	0.25	32	24	23	46	0.49	63	47	45	92
					0.18	1	11	5	16	0.18	1	11	5	16
					0.18	1	106	176	282	0.18	1	106	176	282

Country	Population (thousands)				Diarrhoea water				
	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
United Republic of Tanzania (the)	9528	28 981	29 025	58 005	0.37	2708	3509	2987	6496
United States	19 604	162 826	166 239	329 065					
Uruguay	238	1672	1790	3462					
Uzbekistan	3435	16 450	16 532	32 982	0.07	39	24	17	42
Vanuatu	41	152	148	300	0.34	7	13	14	27
Venezuela (Bolivian Republic of)	2419	14 045	14 471	28 516	0.02	11	14	14	28
Viet Nam	7891	48 151	48 311	96 462	0.09	132	214	168	381
Yemen	4099	14 692	14 470	29 162	0.27	940	649	542	1191
Zambia	2902	8843	9018	17 861	0.37	1029	1277	1050	2328
Zimbabwe	2138	6983	7662	14645	0.42	578	1237	712	1948

Diarrhoea sanitation					Diarrhoea hygiene					Diarrhoea WASH				
PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Male	Female	Both sexes
0.43	3143	4073	3467	7540	0.28	2039	2642	2249	4892	0.74	5418	7020	5976	12 996
					0.18	66	715	1031	1747	0.18	66	715	1031	1747
					0.18	0	10	14	24	0.18	0	10	14	24
0.26	146	91	65	156	0.25	139	87	62	149	0.47	266	165	118	284
0.36	8	14	15	29	0.27	6	11	11	22	0.69	15	27	28	55
0.26	143	172	177	349	0.22	120	144	149	293	0.44	244	291	301	592
0.36	555	894	703	1597	0.26	403	649	510	1159	0.57	875	1411	1109	2520
0.32	1114	770	642	1412	0.26	881	609	508	1117	0.63	2178	1505	1256	2761
0.42	1176	1461	1201	2662	0.28	785	975	802	1777	0.74	2052	2548	2095	4643
0.40	545	1168	672	1839	0.28	380	813	468	1281	0.75	1022	2189	1259	3448

Table A6.2. Deaths attributable to drinking-water, sanitation and hygiene from ARIs, undernutrition, STHs and SDG 3.9.2 outcomes combined by country, 2019

	ARI hygiene					Nutrition WASH			
Country	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Under 5 Male	Under 5 Female
Afghanistan	0.15	1430	1153	985	2138	0.14	54	32	22
Albania	0.14	4	41	48	88	0.08	0	0	0
Algeria	0.16	378	594	536	1130	0.09	1	1	1
Angola	0.16	2661	2246	1721	3967	0.13	296	132	164
Antigua and Barbuda	0.10	0	1	1	2				
Argentina	0.12	43	2238	2606	4844	0.07	2	1	1
Armenia	0.14	8	67	101	168	0.08	0	0	0
Australia	0.09	3	188	232	420				
Austria	0.09	1	72	78	151				
Azerbaijan	0.14	65	138	110	248	0.09	1	0	0
Bahamas	0.09	1	5	4	9				
Bahrain	0.09	0	6	4	10				
Bangladesh	0.14	1180	2080	1968	4048	0.05	59	35	24
Barbados	0.09	0	9	12	21				
Belarus	0.14	3	92	57	148	0.08	0	0	0
Belgium	0.09	1	243	297	539				
Belize	0.12	0	6	5	11	0.13	0	0	0
Benin	0.16	859	908	754	1662	0.10	65	31	34
Bhutan	0.13	7	12	10	23	0.17	0	0	0
Bolivia	0.13	99	497	589	1085	0.16	20	9	12
Bosnia and Herzegovina	0.14	1	31	29	60	0.09	0	0	0
Botswana	0.16	51	145	117	262	0.07	8	3	4
Brazil	0.12	380	5590	5751	11 341	0.19	86	40	46
Brunei Darussalam	0.09	0	3	3	7				
Bulgaria	0.14	7	114	77	191	0.09	0	0	0
Burkina Faso	0.16	1583	1505	1248	2754	0.10	220	108	111
Burundi	0.16	651	694	594	1288	0.12	200	84	116
Cabo Verde	0.16	3	21	17	38	0.09	0	0	0
Cambodia	0.15	181	670	653	1323	0.08	8	3	5
Cameroon	0.16	1515	1765	1382	3147	0.14	104	51	52
Canada	0.09	3	322	386	707				
Central African Republic	0.16	425	488	363	850	0.18	47	18	29
Chad	0.16	2733	2036	1719	3755	0.16	238	109	129
Chile	0.09	4	180	190	370				
China	0.15	2687	15 687	11 845	27 531	0.02	9	4	5
Colombia	0.12	126	654	671	1325	0.07	26	12	15
Comoros	0.16	52	51	45	97	0.13	7	4	4
Congo	0.16	179	215	195	410	0.16	18	7	11
Costa Rica	0.12	3	57	42	98	0.13	0	0	0
Cote d'Ivoire	0.16	1804	2078	1378	3456	0.13	85	45	40
Croatia	0.09	0	39	58	97				
Cuba	0.12	9	520	481	1001	0.07	0	0	0

	STH WASH				SDG 3.9.2 outcomes				SDG 3.9.2 Mortality rate			
PAF	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
1	11	9	8	17	5349	3363	2967	6329	94.9	17.2	16.0	16.6
1	0	0	0	0	4	43	50	93	2.7	2.9	3.6	3.2
1	0	1	1	2	806	922	822	1744	16.0	4.2	3.9	4.1
1	24	23	18	40	8952	8671	6876	15 547	157.9	55.1	42.8	48.9
					0	1	1	2	1.1	2.5	2.5	2.5
1	0	0	0	0	71	2355	2771	5126	1.9	10.8	12.1	11.4
1	0	0	0	0	11	69	103	173	5.5	5.0	6.6	5.8
					4	209	263	472	0.2	1.7	2.1	1.9
					1	83	94	177	0.1	1.9	2.1	2.0
1	0	0	0	0	169	208	158	366	19.9	4.1	3.1	3.6
					1	6	5	10	4.2	3.0	2.3	2.6
					0	8	5	13	0.2	0.7	0.9	0.8
1	13	19	13	31	4213	12 124	17 593	29 717	29.2	14.7	21.8	18.2
					0	10	13	22	0.6	6.9	8.5	7.7
1	0	0	0	0	4	93	60	153	0.7	2.1	1.2	1.6
					1	270	343	613	0.2	4.7	5.9	5.3
1	0	0	0	0	2	10	7	17	4.7	4.9	3.7	4.3
1	27	20	20	40	3553	3889	3213	7102	189.6	66.0	54.4	60.2
1	0	0	0	0	17	66	54	120	26.7	16.3	15.0	15.7
1	1	1	1	2	320	740	903	1643	26.9	12.8	15.8	14.3
1	0	0	0	0	2	33	31	64	1.5	2.1	1.8	1.9
1	0	0	0	0	180	362	256	618	66.2	32.5	21.5	26.8
1	1	3	4	7	872	6749	7208	13 957	6.0	6.5	6.7	6.6
					1	4	4	7	2.5	1.6	1.7	1.7
1	0	0	0	0	12	120	83	203	3.7	3.5	2.3	2.9
1	53	37	36	74	5909	6510	5868	12378	173.4	64.1	57.7	60.9
1	11	9	7	16	2380	3421	2719	6140	117.9	59.8	46.8	53.3
1	0	0	0	0	7	36	30	67	12.6	13.1	11.1	12.1
1	2	3	2	5	639	1421	1404	2824	35.9	17.7	16.6	17.1
1	17	17	13	30	5847	6749	5481	12230	144.1	52.2	42.4	47.3
					4	385	471	856	0.2	2.1	2.5	2.3
1	2	3	2	5	1566	2562	2041	4603	214.3	108.9	85.3	97.0
1	45	36	36	72	9621	8528	7291	15 819	335.0	107.1	91.3	99.2
					4	203	226	429	0.4	2.2	2.4	2.3
1	3	20	14	34	4917	18 141	13 942	32 083	5.8	2.5	2.0	2.2
1	1	2	3	5	232	829	875	1704	6.2	3.4	3.4	3.4
1	0	0	0	0	175	208	165	373	143.0	48.4	39.2	43.8
1	1	1	0	1	542	839	580	1420	66.7	31.2	21.6	26.4
1	0	0	0	0	6	75	70	145	1.6	3.0	2.8	2.9
1	24	26	22	48	6111	6979	5095	12 075	150.9	53.8	40.0	47.0
					0	43	68	111	0.2	2.2	3.2	2.7
1	0	0	0	1	12	566	537	1103	2.1	10.1	9.4	9.7

	ARI hygiene					Nutrition WASH			
Country	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Under 5 Male	Under 5 Female
Cyprus	0.09	0	5	4	9				
Czechia	0.09	2	202	188	391				
Democratic People's republic of Korea	0.13	99	356	487	843	0.07	3	1	2
Democratic Republic of the Congo	0.16	6215	6792	5163	11 954	0.15	810	313	497
Denmark	0.09	0	106	107	213				
Djibouti	0.15	27	56	43	99	0.08	3	1	2
Dominican Republic	0.13	70	145	140	285	0.18	11	4	7
Ecuador	0.12	67	305	296	602	0.12	4	1	2
Egypt	0.14	797	1583	1282	2865	0.13	25	12	14
El Salvador	0.12	21	164	117	281	0.12	2	1	1
Equatorial Guinea	0.16	80	78	68	146	0.16	3	2	2
Eritrea	0.16	97	318	216	535	0.09	22	9	13
Estonia	0.09	0	18	15	33				
Eswatini	0.16	38	94	54	148	0.14	9	4	5
Ethiopia	0.16	4437	5608	4282	9890	0.11	456	225	230
Fiji	0.15	10	20	15	35	0.11	0	0	0
Finland	0.09	0	18	23	41				
France	0.09	5	837	1041	1877				
Gabon	0.16	49	94	58	152	0.14	4	1	2
Gambia	0.16	89	122	96	217	0.11	7	3	4
Georgia	0.14	6	68	56	123	0.08	0	0	0
Germany	0.09	5	1168	804	1972				
Ghana	0.16	675	1818	777	2595	0.10	108	49	59
Greece	0.09	1	331	451	782				
Grenada	0.12	0	3	4	6	0.15	0	0	0
Guatemala	0.12	191	591	516	1107	0.13	53	24	29
Guinea	0.16	1059	1067	1000	2067	0.12	84	39	45
Guinea-Bissau	0.16	100	123	102	225	0.10	7	3	4
Guyana	0.12	4	20	16	36	0.11	1	0	1
Haiti	0.13	456	465	481	946	0.21	87	36	52
Honduras	0.12	49	92	66	158	0.13	2	1	1
Hungary	0.09	1	69	77	146				
Iceland	0.09	0	4	4	8				
India	0.13	12 730	25 031	26 709	51 740	0.05	234	141	93
Indonesia	0.13	1866	3707	3040	6747	0.07	42	20	22
Iran (Islamic Republic of)	0.14	360	894	655	1549	0.10	3	1	1
Iraq	0.14	537	422	342	765	0.11	7	3	4
Ireland	0.09	0	58	65	123				
Israel	0.10	1	68	77	145				
Italy	0.09	2	732	805	1537				
Jamaica	0.12	4	24	23	47	0.09	0	0	0
Japan	0.09	14	5376	4842	10 217				
Jordan	0.14	44	66	63	128	0.07	0	0	0
Kazakhstan	0.14	68	282	189	472	0.06	1	0	1
Kenya	0.16	1423	1959	1677	3636	0.10	214	98	116

	STH WASH				SDG 3.9.2 outcomes				SDG 3.9.2 Mortality rate			
PAF	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
					0	9	10	19	0.0	1.5	1.8	1.6
					2	222	213	435	0.4	4.2	3.9	4.1
1	0	0	0	1	242	469	582	1051	13.9	3.7	4.4	4.1
1	40	46	34	80	24 850	27 303	18 067	45 371	160.3	63.0	41.6	52.3
					0	117	122	239	0.0	4.1	4.2	4.1
1	0	0	0	0	82	211	155	366	81.8	41.2	33.5	37.6
1	0	0	0	1	207	325	296	621	20.6	6.1	5.5	5.8
1	0	1	1	2	109	395	420	815	6.6	4.5	4.8	4.7
1	2	3	3	6	2186	2610	2216	4826	17.1	5.1	4.5	4.8
1	0	0	0	0	76	224	172	396	13.1	7.4	5.0	6.1
1	0	0	0	0	233	223	180	403	119.5	29.6	29.9	29.7
1	1	1	1	2	390	1465	862	2327	79.5	83.6	49.4	66.5
					0	19	16	34	0.2	3.0	2.2	2.6
1	0	0	0	0	123	337	196	533	85.8	59.9	33.6	46.5
1	82	68	61	130	14 008	25 646	19 953	45 599	84.6	45.7	35.6	40.7
1	0	0	0	0	21	52	44	96	23.9	11.5	10.1	10.8
					0	20	24	44	0.1	0.7	0.9	0.8
					10	957	1239	2196	0.3	3.0	3.7	3.4
1	0	0	0	0	136	242	138	380	43.1	21.8	13.0	17.5
1	1	1	1	2	301	386	307	693	75.0	33.2	26.0	29.5
1	0	0	0	0	9	73	61	134	3.4	3.8	2.9	3.3
					7	1493	1154	2648	0.2	3.6	2.7	3.2
1	8	7	5	12	2382	4728	2925	7653	57.6	30.7	19.5	25.2
					1	337	462	799	0.1	6.6	8.7	7.6
1	0	0	0	0	0	3	4	7	0.5	5.6	7.8	6.7
1	4	4	4	7	611	1415	1269	2684	29.7	16.3	14.2	15.3
1	12	12	10	22	3214	3761	3616	7377	156.0	61.0	54.8	57.8
1	3	2	2	4	402	480	470	950	133.3	51.2	47.8	49.4
1	0	0	0	0	12	36	31	67	15.6	9.1	8.0	8.6
1	2	2	3	5	1594	1508	1414	2921	125.9	27.1	24.8	25.9
1	0	1	1	2	164	292	403	695	16.2	6.0	8.3	7.1
					2	87	108	195	0.4	1.9	2.1	2.0
					0	4	4	8	0.0	2.3	2.4	2.4
1	33	66	60	126	56 815	199 845	297 893	497 738	48.7	28.1	45.4	36.4
1	6	16	13	29	4796	22 333	20 483	42 816	20.0	16.4	15.2	15.8
1	0	1	1	3	820	1361	1060	2422	10.8	3.2	2.6	2.9
1	0	1	1	2	1359	964	782	1745	25.3	4.8	4.0	4.4
					0	61	71	132	0.1	2.5	2.9	2.7
					3	82	93	174	0.3	1.9	2.2	2.0
					2	831	991	1822	0.1	2.8	3.2	3.0
1	0	0	0	0	6	35	32	67	2.5	2.4	2.2	2.3
					21	5577	5122	10 699	0.4	9.0	7.9	8.4
1	0	0	0	0	88	101	96	196	8.1	2.0	1.9	1.9
1	0	0	0	0	185	354	244	598	9.5	3.9	2.6	3.2
1	5	5	4	9	4328	8404	6861	15 266	61.7	32.2	25.9	29.0

	ARI hygiene					Nutrition WASH			
Country	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Under 5 Male	Under 5 Female
Kiribati	0.15	4	5	4	9	0.11	1	0	0
Kuwait	0.09	2	23	9	32				
Kyrgyzstan	0.14	57	56	42	98	0.08	0	0	0
Lao People's Democratic Republic	0.15	165	220	209	428	0.08	4	2	2
Latvia	0.09	0	26	22	48				
Lebanon	0.14	7	77	51	128	0.09	0	0	0
Lesotho	0.16	90	284	242	526	0.13	27	12	15
Liberia	0.16	228	231	211	443	0.16	31	14	17
Libya	0.14	14	54	52	107	0.09	0	0	0
Lithuania	0.09	0	35	26	62				
Luxembourg	0.09	0	5	6	11				
Madagascar	0.16	875	1141	1206	2347	0.09	123	64	59
Malawi	0.16	521	731	517	1248	0.14	94	39	54
Malaysia	0.15	36	1967	1532	3499	0.06	0	0	0
Maldives	0.13	0	2	2	4	0.04	0	0	0
Mali	0.16	1922	1302	1122	2424	0.11	385	206	180
Malta	0.09	0	9	11	20				
Mauritania	0.16	253	225	214	438	0.11	32	14	18
Mauritius	0.16	3	27	27	54	0.07	0	0	0
Mexico	0.12	343	1624	1284	2908	0.05	20	9	11
Micronesia (Federated States of)	0.15	2	4	4	8	0.06	0	0	0
Mongolia	0.15	24	37	25	62	0.09	0	0	0
Montenegro	0.14	0	7	5	11	0.07	0	0	0
Morocco	0.15	240	532	534	1066	0.10	5	2	3
Mozambique	0.16	1679	2027	1645	3672	0.09	171	84	87
Myanmar	0.13	565	1214	968	2182	0.07	10	2	8
Namibia	0.16	56	136	96	232	0.12	17	7	10
Nepal	0.13	224	386	448	834	0.08	19	10	9
Netherlands, Kingdom of the	0.09	1	208	264	473				
New Zealand	0.09	2	36	51	87				
Nicaragua	0.13	43	76	68	144	0.12	7	3	4
Niger	0.16	2000	1864	1563	3426	0.09	156	76	80
Nigeria	0.16	26 595	17 890	15 204	33 094	0.10	511	227	284
North Macedonia	0.14	1	11	10	21	0.09	0	0	0
Norway	0.09	0	77	95	171				
Oman	0.09	7	39	27	66				
Pakistan	0.14	8005	7104	4708	11 812	0.08	520	235	285
Panama	0.12	17	47	38	84	0.14	4	2	2
Papua New Guinea	0.16	187	232	174	406	0.08	3	1	1
Paraguay	0.12	33	107	90	197	0.29	9	4	5
Peru	0.12	85	864	970	1834	0.10	11	5	7
Philippines	0.15	1187	6766	7255	14 021	0.06	34	14	20
Poland	0.09	7	993	904	1897				
Portugal	0.09	2	319	331	650				
Qatar	0.09	1	5	5	10				

	STH WASH				SDG 3.9.2 outcomes				SDG 3.9.2 Mortality rate			
PAF	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
1	0	0	0	0	11	18	26	44	74.0	31.0	43.6	37.4
					2	24	9	33	0.8	0.9	0.6	0.8
1	0	0	0	0	99	84	64	148	12.8	2.6	2.0	2.3
1	1	1	1	2	649	769	702	1471	81.7	21.4	19.7	20.5
					0	27	23	50	0.4	3.1	2.2	2.6
1	0	0	0	0	17	95	69	164	2.9	2.7	2.0	2.4
1	0	0	0	1	442	1225	1072	2297	174.9	116.9	99.5	108.1
1	3	2	2	4	736	873	837	1709	100.8	35.2	34.1	34.6
1	0	0	0	0	28	75	71	146	4.5	2.2	2.1	2.2
					0	39	33	72	0.1	3.1	2.2	2.6
					0	5	6	12	0.2	1.7	2.0	1.9
1	2	3	3	5	2749	5852	4952	10 803	68.3	43.5	36.6	40.1
1	2	3	2	4	1675	3348	2391	5739	58.2	36.4	25.3	30.8
1	0	1	1	2	77	2567	2038	4605	2.9	15.6	13.1	14.4
1	0	0	0	0	1	7	5	12	2.2	2.1	2.7	2.3
1	26	27	30	56	7003	7206	5792	12 998	198.3	73.2	59.0	66.1
					0	9	12	20	0.3	3.9	5.2	4.6
1	2	1	1	3	1000	922	789	1710	147.3	40.6	35.0	37.8
1	0	0	0	0	4	33	37	69	5.4	5.2	5.7	5.5
1	2	3	2	5	737	2397	2115	4512	6.7	3.8	3.2	3.5
1	0	0	0	0	4	8	8	16	33.8	13.5	14.6	14.0
1	0	0	0	0	62	60	42	102	16.4	3.8	2.6	3.2
1	0	0	0	0	0	7	5	11	0.3	2.2	1.5	1.8
1	1	3	2	5	548	831	829	1661	16.3	4.6	4.5	4.6
1	16	17	12	28	5557	8117	5719	13 835	110.1	55.0	36.6	45.6
1	7	8	6	13	2275	3823	3147	6970	50.4	14.7	11.2	12.9
1	0	0	0	0	191	440	279	719	57.2	36.4	21.7	28.8
1	1	2	2	4	932	1984	3109	5093	34.4	15.2	20.0	17.8
					1	246	330	576	0.1	2.9	3.8	3.4
					2	42	60	102	0.7	1.8	2.5	2.1
1	0	0	1	1	92	119	111	229	13.9	3.7	3.3	3.5
1	74	61	64	125	7572	9018	7360	16 378	163.1	77.0	63.5	70.3
1	522	358	327	685	93 192	74 088	70 070	144 157	278.9	72.8	70.7	71.7
1	0	0	0	0	2	12	10	22	1.5	1.1	1.0	1.0
					0	86	108	194	0.1	3.2	4.1	3.6
					10	48	32	80	2.1	1.5	1.9	1.6
1	37	44	31	75	28 584	44 228	39 790	84 018	103.3	39.7	37.9	38.8
1	0	0	0	0	50	96	84	180	12.9	4.5	3.9	4.2
1	3	3	4	7	555	1249	935	2184	50.6	27.9	21.8	24.9
1	0	0	0	0	115	175	152	327	16.5	4.9	4.4	4.6
1	1	1	1	2	307	1172	1295	2467	10.9	7.3	7.9	7.6
1	6	6	7	13	3797	9113	9128	18 240	35.2	16.8	17.0	16.9
					7	1046	999	2045	0.4	5.7	5.1	5.4
					2	333	358	691	0.6	6.9	6.6	6.8
					1	7	5	12	0.6	0.3	0.8	0.4

	ARI hygiene					Nutrition WASH			
Country	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Under 5 Male	Under 5 Female
Republic of Korea	0.09	2	1274	1228	2502				
Republic of Moldova	0.14	15	105	38	142	0.09	0	0	0
Romania	0.14	48	747	535	1282	0.12	0	0	0
Russian Federation	0.14	106	3010	1533	4543	0.09	0	0	0
Rwanda	0.16	314	464	404	867	0.11	77	35	42
Samoa	0.15	1	4	4	8	0.10	0	0	0
Sao Tome and Principe	0.16	5	9	9	18	0.12	1	0	0
Saudi Arabia	0.09	18	340	240	580				
Senegal	0.16	513	592	569	1162	0.12	42	19	22
Serbia	0.14	2	146	107	252	0.12	0	0	0
Seychelles	0.09	0	4	3	7				
Sierra Leone	0.16	635	631	568	1198	0.12	86	39	47
Singapore	0.09	1	258	230	488				
Slovakia	0.09	3	108	83	191				
Slovenia	0.09	0	13	25	39				
Solomon Islands	0.16	8	33	25	58	0.11	1	0	0
Somalia	0.15	2203	1877	1454	3331	0.11	250	106	145
South Africa	0.16	1128	3456	2830	6286	0.11	144	65	79
South Sudan	0.16	1167	874	748	1622	0.15	151	77	74
Spain	0.09	2	655	641	1296				
Sri Lanka	0.13	18	372	290	661	0.04	0	0	0
St. Lucia	0.12	1	5	3	8	0.20	0	0	0
St. Vincent and the Grenadines	0.12	0	3	2	5	0.12	0	0	0
Sudan	0.15	1286	1059	854	1913	0.15	119	40	78
Suriname	0.12	1	11	9	21	0.16	0	0	0
Sweden	0.09	1	125	129	254				
Switzerland	0.09	1	85	100	185				
Syrian Arab Republic	0.14	127	219	196	415	0.07	2	1	1
Tajikistan	0.14	277	247	198	445	0.10	0	0	0
Thailand	0.13	67	2167	1817	3984	0.06	0	0	0
Timor-Leste	0.14	46	47	43	89	0.08	2	1	1
Togo	0.16	377	558	374	931	0.11	12	5	7
Tonga	0.15	1	3	2	5	0.10	0	0	0
Trinidad and Tobago	0.09	2	11	8	19				
Tunisia	0.14	30	140	125	265	0.10	0	0	0
Türkiye	0.14	61	824	935	1759	0.08	3	1	2
Turkmenistan	0.14	113	92	66	159	0.11	0	0	0
Uganda	0.16	1543	1695	1374	3068	0.14	263	107	156
Ukraine	0.14	34	627	309	936	0.11	1	1	0
United Arab Emirates	0.09	3	50	16	67				
United Kingdom	0.09	12	1752	2089	3841				
United Republic of Tanzania (the)	0.16	2310	2200	1955	4155	0.08	318	151	167
United States	0.09	59	2696	2980	5676				
Uruguay	0.09	1	55	75	130				
Uzbekistan	0.14	205	384	288	672	0.04	0	0	0

	STH WASH				SDG 3.9.2 outcomes				SDG 3.9.2 Mortality rate			
PAF	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
					4	1330	1335	2665	0.2	5.2	5.2	5.2
1	0	0	0	0	15	105	39	144	7.4	5.4	1.8	3.6
1	0	0	0	0	50	796	599	1395	5.3	8.5	6.0	7.2
1	0	0	0	0	147	3093	1644	4737	1.6	4.6	2.1	3.2
1	3	3	2	5	980	1779	1378	3157	53.0	28.7	21.5	25.0
1	0	0	0	0	3	7	9	16	10.3	6.7	9.8	8.2
1	0	0	0	0	14	18	18	36	45.8	16.8	16.5	16.7
					25	383	278	661	0.8	1.9	1.9	1.9
1	12	10	8	18	1818	2873	2300	5173	70.3	36.2	27.6	31.7
1	0	0	0	0	3	183	156	339	0.6	4.3	3.5	3.9
					0	4	4	8	2.3	8.7	8.0	8.4
1	8	7	7	15	2545	3076	2357	5433	221.9	78.9	60.2	69.5
					1	260	233	493	0.5	8.6	8.4	8.5
					3	111	87	197	1.1	4.2	3.1	3.6
					0	14	26	40	0.0	1.3	2.5	1.9
1	0	0	0	0	28	105	114	219	27.1	30.7	34.7	32.7
1	15	16	13	30	8034	8216	7101	15 317	292.2	106.7	91.7	99.2
1	1	2	1	3	3108	8171	7987	16 158	53.7	28.3	26.9	27.6
1	8	6	5	11	3821	4035	3496	7531	225.1	72.9	63.3	68.1
					3	723	760	1483	0.2	3.1	3.2	3.2
1	0	0	0	1	37	528	502	1030	2.2	5.2	4.5	4.8
1	0	0	0	0	1	6	4	11	6.5	7.0	4.7	5.8
1	0	0	0	0	0	3	3	6	6.0	5.4	5.1	5.3
1	14	13	8	21	4923	3927	2827	6754	78.8	18.4	13.2	15.8
1	0	0	0	0	2	21	20	41	3.6	7.2	7.0	7.1
					1	143	162	305	0.2	2.9	3.2	3.0
					1	96	121	218	0.1	2.3	2.8	2.5
1	0	1	0	1	1167	848	713	1561	63.9	9.9	8.4	9.1
1	0	0	0	0	604	469	370	839	44.8	10.0	8.0	9.0
1	0	2	2	4	144	4172	4044	8216	4.0	12.3	11.3	11.8
1	0	0	0	1	123	145	119	264	70.5	22.2	18.6	20.4
1	3	3	3	6	1232	2019	1409	3427	102.3	50.2	34.7	42.4
1	0	0	0	0	2	4	4	7	15.2	7.1	7.1	7.1
1					3	13	10	22	3.2	1.9	1.4	1.6
1	0	0	0	1	59	192	174	365	5.8	3.3	2.9	3.1
1	0	1	1	1	116	963	1102	2065	1.7	2.3	2.6	2.5
1	0	0	0	0	283	195	141	336	41.8	6.7	4.7	5.7
1	8	10	6	16	5182	7153	5282	12 435	67.4	32.8	23.5	28.1
1	0	0	0	0	98	674	355	1029	4.5	3.3	1.5	2.3
					4	61	21	83	0.8	0.9	0.7	0.8
					13	1858	2265	4123	0.3	5.6	6.6	6.1
1	42	31	25	56	8088	9418	8107	17 524	84.9	32.5	27.9	30.2
					125	3412	4012	7423	0.6	2.1	2.4	2.3
					1	65	89	154	0.6	3.9	5.0	4.4
1	0	0	0	1	472	550	407	957	13.7	3.3	2.5	2.9

	ARI hygiene					Nutrition WASH			
Country	PAF	Under 5	Male	Female	Both sexes	PAF	Under 5	Under 5 Male	Under 5 Female
Vanuatu	0.16	6	11	8	19	0.11	0	0	0
Venezuela (Bolivian Republic of)	0.12	159	451	397	848	0.13	30	14	16
Viet Nam	0.15	561	2180	1966	4146	0.05	1	0	1
Yemen	0.14	1225	926	789	1715	0.11	67	27	40
Zambia	0.16	868	869	678	1547	0.12	190	83	107
Zimbabwe	0.16	462	952	763	1715	0.11	136	62	74

	STH WASH				SDG 3.9.2 outcomes				SDG 3.9.2 Mortality rate			
PAF	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
1	0	0	0	0	22	38	37	75	52.9	25.1	24.9	25.0
1	2	3	2	5	434	761	714	1475	18.0	5.4	4.9	5.2
1	2	5	4	9	1438	3597	3079	6676	18.2	7.5	6.4	6.9
1	7	10	7	17	3477	2481	2079	4560	84.8	16.9	14.4	15.6
1	6	5	3	9	3116	3529	2859	6388	107.4	39.9	31.7	35.8
1	1	1	1	2	1621	3216	2085	5301	75.8	46.0	27.2	36.2

Annex 7. DALYs attributable to inadequate WASH, by country, 2019

Table A7.1. Deaths attributable to drinking-water, sanitation and hygiene from diarrhoeal disease by country, 2019

	Diarrhoea water				Diarrhoea sanitation			
Country	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
Afghanistan	196 338	121 218	108 152	229 370	201 246	124 249	110 855	235 104
Albania	133	569	695	1264	67	288	352	639
Algeria	23 184	21 221	19 550	40 772	12 932	11 838	10 906	22 743
Angola	294 059	242 085	195 012	437 097	293 436	241 573	194 599	436 171
Antigua and Barbuda								
Argentina	2188	5397	4400	9798	2145	5290	4313	9603
Armenia	215	554	626	1180	157	406	459	866
Australia								
Austria								
Azerbaijan	711	678	555	1233	5497	5245	4292	9536
Bahamas								
Bahrain								
Bangladesh	138 919	250 402	288 863	539 265	155 199	279 747	322 715	602 462
Barbados								
Belarus	79	351	463	814	166	742	979	1720
Belgium								
Belize	73	135	113	248	92	172	144	316
Benin	132 228	116 368	93 145	209 514	136 866	120 450	96 413	216 863
Bhutan	225	578	472	1050	563	1447	1181	2628
Bolivia	8001	7415	7109	14 524	10 931	10 130	9712	19 842
Bosnia and Herzegovina	92	543	611	1155	80	474	533	1008
Botswana	4433	5037	3470	8507	6409	7283	5017	12 300
Brazil	16 364	29 838	30 070	59 908	21 656	39 487	39 795	79 282
Brunei Darussalam								
Bulgaria	144	449	501	950	252	790	881	1671
Burkina Faso	216 145	202 475	177 665	380 140	209 467	196 220	172 176	368 396
Burundi	81 875	99 833	77 355	177 188	77 354	94 321	73 083	167 404
Cabo Verde	223	530	438	967	194	461	380	841
Cambodia	20 660	22 384	19 137	41 521	23 502	25 464	21 770	47 233
Cameroon	215 154	202 527	163 328	365 856	213 739	201 196	162 255	363 451
Canada								
Central African Republic	58 892	65 543	48 856	114 399	57 285	63 755	47 523	111 278
Chad	351 989	272 770	231 329	504 099	343 630	266 293	225 836	492 128
Chile								
China	83 617	141 489	117 021	258 510	112 131	189 737	156 926	346 663
Colombia	4677	8179	7646	15 826	3420	5981	5592	11 573
Comoros	5313	5200	3992	9192	6035	5906	4534	10 440
Congo	17 499	19 437	12 463	31 901	19 727	21 912	14 051	35 963
Costa Rica	186	568	558	1126	344	1048	1029	2078
Cote d'Ivoire	204 005	188 922	148 263	337 186	217 456	201 379	158 039	359 418
Croatia								
Cuba	334	2572	2243	4815	399	3071	2679	5749
Cyprus								
Czechia								
Democratic People's republic of Korea	5860	6777	5959	12 736	6893	7972	7010	14 982

Diarrhoea hygiene				Diarrhoea WASH			
Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
125 908	77 735	69 356	147 090	420 573	360 006	198 307	222 266
142	609	744	1353	2669	281	1468	1202
23 567	21 572	19 874	41 446	83 174	47 294	39 883	43 291
206 834	170 277	137 167	307 444	810 862	545 510	361 768	449 094
4	16	15	31	31	4	15	16
2528	6237	5085	11 321	25 325	5656	11 374	13 951
268	691	782	1473	2884	524	1531	1353
386	1587	1444	3031	3031	386	1444	1587
176	667	672	1339	1339	176	672	667
5600	5343	4372	9715	17 601	10 146	7921	9680
35	73	65	138	138	35	65	73
62	325	194	519	519	62	194	325
96 048	173 127	199 718	372 845	1 077 681	277 620	577 271	500 410
8	68	65	133	133	8	65	68
320	1425	1881	3306	5209	504	2964	2246
290	1385	1579	2964	2964	290	1579	1385
59	110	92	201	581	170	264	316
85 812	75 520	60 449	135 969	372 394	235 024	165 558	206 836
375	965	787	1752	4326	927	1943	2383
8359	7746	7427	15 173	38 040	20 956	18 620	19 420
110	647	728	1375	2845	227	1506	1339
4750	5398	3718	9117	21 899	11 411	8931	12 967
26 958	49 155	49 538	98 693	202 724	55 374	101 755	100 969
54	41	35	76	76	54	35	41
395	1235	1377	2612	4542	686	2395	2147
134 351	125 854	110 432	236 286	649 104	369 075	303 370	345 734
52 796	64 377	49 882	114 258	308 087	142 360	134 501	173 586
166	395	326	721	1794	414	812	983
16 853	18 259	15 610	33 869	87 967	43 771	40 544	47 424
143 982	135 532	109 300	244 833	658 826	387 445	294 119	364 708
787	5361	3919	9280	9280	787	3919	5361
35 785	39 827	29 687	69 514	193 771	99 752	82 753	111 019
213 322	165 311	140 196	305 508	853 931	596 260	391 865	462 066
493	2027	2027	4054	4054	493	2027	2027
139 072	235 323	194 629	429 951	845 243	273 401	382 621	462 622
5443	9518	8898	18 415	38 434	11 360	18 570	19 864
4059	3973	3050	7023	18 337	10 599	7964	10 374
12 300	13 662	8760	22 422	61 019	33 472	23 840	37 179
260	791	776	1567	3854	638	1909	1944
144 679	133 983	105 148	239 130	635 491	384 486	279 431	356 061
73	487	569	1056	1056	73	569	487
408	3142	2741	5883	13 527	939	6302	7225
29	132	134	267	267	29	134	132
267	1729	1953	3682	3682	267	1953	1729
6904	7985	7022	15 006	34 055	15 668	15 935	18 120

	Diarrhoea water				Diarrhoea sanitation			
Country	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
Democratic Republic of the Congo	961 209	829 871	550 055	1 379 926	933 750	806 163	534 342	1 340 505
Denmark								
Djibouti	2692	4502	3312	7814	2560	4281	3149	7431
Dominican Republic	6813	7497	6391	13 888	6836	7522	6413	13 935
Ecuador	2184	3958	4050	8008	2351	4259	4359	8618
Egypt	65 906	54 961	50 294	105 254	49 988	41 687	38 147	79 833
El Salvador	2373	2401	2216	4617	2811	2844	2625	5469
Equatorial Guinea	7658	6192	4811	11 002	6856	5542	4307	9849
Eritrea	14 143	29 105	15 886	44 991	14 819	30 495	16 645	47 140
Estonia								
Eswatini	3834	6948	4055	11 003	3827	6935	4048	10 983
Ethiopia	487 310	619 321	498 960	1 118 281	493 859	627 645	505 666	1 133 311
Fiji	529	934	725	1 659	521	921	714	1635
Finland								
France								
Gabon	4221	4801	2841	7642	4163	4735	2802	7537
Gambia	10 164	9670	7935	17 604	10 637	10 120	8304	18 424
Georgia	277	889	925	1814	245	788	820	1608
Germany								
Ghana	77 089	97 163	72 877	170 040	89 535	112 850	84 643	197 493
Greece								
Grenada	7	33	32	65	8	39	37	76
Guatemala	13 493	17 551	14 461	32 013	18 959	24 662	20 320	44 982
Guinea	102 719	98 252	87 384	185 636	106 310	101 687	90 438	192 125
Guinea-Bissau	15 103	13 380	12 383	25 763	15 363	13 610	12 596	26 207
Guyana	291	472	415	886	370	599	526	1125
Haiti	52 701	39 177	34 035	73 212	57 224	42 539	36 956	79 495
Honduras	5061	5568	6003	11 571	5956	6553	7064	13 617
Hungary								
Iceland								
India	1 818 162	3 200 789	4 013 212	7 214 002	2 178 687	3 835 477	4 808 996	8 644 474
Indonesia	63 696	148 181	118 539	266 720	180 935	420 922	336 720	757 642
Iran (Islamic Republic of)	2199	2801	2573	5374	30 959	39 440	36 231	75 671
Iraq	40 699	31 501	26 495	57 997	38 363	29 693	24 974	54 667
Ireland								
Israel								
Italy								
Jamaica	160	504	439	943	263	827	722	1549
Japan								
Jordan	1580	1763	1655	3418	1767	1971	1850	3821
Kazakhstan	2622	2556	2305	4861	5679	5536	4991	10 527
Kenya	123 390	186 401	149 699	336 099	148 744	224 702	180 459	405 161
Kiribati	156	193	189	382	406	504	494	998
Kuwait								
Kyrgyzstan	1504	1648	1499	3147	2318	2540	2310	4 850
Lao People's Democratic Republic	17 257	14 665	11 784	26 449	25 190	21 406	17 200	38 607
Latvia								
Lebanon	489	942	868	1810	678	1306	1204	2510
Lesotho	15 623	24 088	20 647	44 734	16 249	25 053	21 474	46 527
Liberia	24 336	23 213	19 758	42 972	25 630	24 448	20 809	45 257

Diarrhoea hygiene				Diarrhoea WASH			
Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
589 184	508 679	337 163	845 842	2 348 341	1 635 773	936 077	1 412 263
139	633	690	1322	1322	139	690	633
1765	2952	2171	5123	14 200	4893	6018	8182
4949	5445	4642	10 087	28 199	13 833	12 977	15 222
2395	4340	4441	8781	20 668	5638	10 453	10 215
70 853	59 087	54 069	113 155	238 510	149 345	113 967	124 543
2163	2188	2019	4207	11 198	5756	5375	5823
5307	4291	3334	7624	19 743	13 743	8633	11 110
9450	19 447	10 615	30 061	81 538	25 631	28 791	52 747
31	183	249	432	432	31	249	183
2809	5091	2971	8063	20 863	7269	7689	13 174
303 521	385 744	310 777	696 522	1 931 531	841 698	861 820	1 069 711
479	846	656	1502	3562	1136	1556	2005
105	318	311	629	629	105	311	318
1726	5395	5623	11 018	11 018	1726	5623	5395
3187	3625	2145	5770	14 731	8138	5477	9255
7285	6931	5688	12 619	33 209	19 174	14 968	18 241
281	902	939	1841	4117	628	2100	2017
1950	11 662	11 964	23 626	23 626	1950	11 964	11 662
56 318	70 984	53 241	124 225	334 823	151 794	143 501	191 322
167	603	653	1256	1256	167	653	603
6	27	27	54	150	16	74	76
13 497	17 556	14 465	32 021	85 331	35 966	38 548	46 783
69 051	66 047	58 742	124 789	337 614	186 815	158 924	178 690
9655	8553	7916	16 469	45 327	26 572	21 786	23 540
229	370	325	696	2 031	668	950	1081
31 927	23 734	20 619	44 353	136 620	98 345	63 512	73 108
4531	4985	5374	10 359	27 769	12 146	14 406	13 363
234	1844	2402	4246	4246	234	2402	1844
9	26	24	50	50	9	24	26
1 418 185	2 496 649	3 130 348	5 626 997	15 769 606	3 974 450	8 772 769	6 996 835
120 337	279 948	223 947	503 894	1 223 661	292 226	543 834	679 827
26 888	34 254	31 467	65 720	125 684	51 420	60 177	65 507
33 818	26 175	22 015	48 190	120 363	84 465	54 987	65 376
115	272	308	580	580	115	308	272
517	935	845	1780	1780	517	845	935
971	3211	3971	7183	7183	971	3971	3211
185	580	506	1087	2817	478	1313	1504
657	5107	5456	10 563	10 563	657	5456	5107
2998	3346	3140	6485	11 691	5405	5660	6031
5884	5736	5171	10 906	21 761	11 740	10 317	11 444
96 627	145 971	117 229	263 200	690 859	253 631	307 708	383 150
274	340	333	673	1572	640	778	794
176	627	410	1037	1037	176	410	627
1900	2082	1894	3976	9291	4440	4425	4866
17 694	15 037	12 082	27 119	67 451	44 010	30 051	37 400
48	285	323	608	608	48	323	285
1073	2065	1903	3969	7082	1914	3396	3686
11 414	17 598	15 084	32 683	84 839	29 630	39 157	45 683
16 415	15 658	13 328	28 986	78 145	44 256	35 932	42 214

	Diarrhoea water				Diarrhoea sanitation			
Country	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
Libya	182	320	291	611	1062	1860	1696	3556
Lithuania								
Luxembourg								
Madagascar	81 051	143 703	104 017	247 721	102 173	181 154	131 125	312 279
Malawi	54 725	80 379	56 140	136 519	60 102	88 277	61 657	149 934
Malaysia	3031	11 196	8844	20 040	4727	17 463	13 794	31 257
Maldives	49	185	115	300	37	140	87	227
Mali	231 381	215 426	167 328	382 754	233 396	217 303	168 785	386 088
Malta								
Mauritania	35 808	27 901	22 478	50 379	36 004	28 055	22 601	50 656
Mauritius	94	376	366	742	81	320	312	633
Mexico	17 693	22 654	21 254	43 908	13 717	17 563	16 478	34 042
Micronesia (Federated States of)	31	38	36	75	136	169	160	329
Mongolia	1216	1114	961	2075	2187	2004	1729	3733
Montenegro	12	61	72	134	14	72	85	158
Morocco	7749	8047	7221	15 269	14 720	15 287	13 718	29 004
Mozambique	194 583	223 100	159 834	382 934	187 585	215 076	154 085	369 161
Myanmar	66 731	65 633	51 124	116 757	91 838	90 326	70 359	160 685
Namibia	6083	9137	5598	14 735	6009	9027	5530	14 557
Nepal	33 773	49 834	61 778	111 611	34 396	50 753	62 918	113 671
Netherlands, Kingdom of the								
New Zealand								
Nicaragua	2228	2417	2186	4603	2407	2611	2362	4973
Niger	287 847	289 077	233 474	522 551	281 518	282 720	228 340	511 061
Nigeria	3 336 901	2 431 181	2 271 994	4 703 175	3 203 985	2 334 341	2 181 496	4 515 838
North Macedonia	68	306	397	703	42	190	247	437
Norway								
Oman								
Pakistan	991 257	1 128 296	1 017 235	2 145 532	878 938	1 000 450	901 973	1 902 423
Panama	1134	1403	1283	2686	1695	2097	1918	4014
Papua New Guinea	19 908	33 578	21 963	55 541	20 152	33 989	22 232	56 221
Paraguay	3350	3208	2824	6032	4158	3981	3505	7487
Peru	12 188	15 803	14 301	30 104	9075	11 766	10 649	22 415
Philippines	113 246	91 736	72 795	164 531	133 191	107 892	85 616	193 508
Poland								
Portugal								
Qatar								
Republic of Moldova	96	582	707	1289	136	822	998	1820
Republic of Korea								
Romania	345	2270	2858	5128	518	3404	4285	7689
Russian Federation	5587	20 726	26 629	47 356	5364	19 900	25 568	45 468
Rwanda	26 508	36 310	26 995	63 304	31 194	42 728	31 767	74 495
Samoa	104	145	141	287	113	158	153	311
Sao Tome and Principe	457	402	366	768	482	424	387	811
Saudi Arabia								
Senegal	65 085	77 577	59 512	137 089	64 620	77 022	59 086	136 109
Serbia	197	1523	1581	3104	154	1188	1234	2422
Seychelles								
Sierra Leone	94 269	91 042	67 553	158 595	95 127	91 871	68 169	160 039
Singapore								

Diarrhoea hygiene				Diarrhoea WASH			
Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
1352	2367	2159	4526	7550	2255	3601	3949
60	402	568	970	970	60	568	402
15	52	49	101	101	15	49	52
62 748	111 253	80 529	191 782	512 130	167 562	215 042	297 088
38 393	56 391	39 386	95 777	258 468	103 609	106 289	152 179
3692	13 640	10 774	24 413	57 634	8716	25 434	32 200
41	157	97	254	616	100	236	380
159 357	148 369	115 242	263 611	699 186	422 670	305 662	393 524
7	20	19	39	39	7	19	20
24 547	19 127	15 409	34 536	92 366	65 650	41 211	51 155
73	289	282	571	1 399	178	690	709
20 507	26 258	24 636	50 894	108 499	43 719	52 520	55 979
103	127	121	248	535	222	260	275
1708	1565	1350	2916	6690	3920	3098	3592
17	87	103	191	390	36	211	179
17 600	18 276	16 400	34 677	65 040	33 009	30 760	34 279
124 360	142 585	102 151	244 736	665 962	338 401	277 968	387 994
56 971	56 033	43 647	99 680	279 075	159 503	122 198	156 877
4362	6553	4015	10 567	27 678	11 425	10 515	17 163
22 264	32 851	40 724	73 575	213 900	64 725	118 395	95 505
323	1447	1608	3055	3055	323	1608	1447
113	450	474	924	924	113	474	450
1738	1885	1705	3589	9936	4810	4719	5217
175 832	176 583	142 618	319 201	889 341	489 893	397 355	491 986
2 179 792	1 588 140	1 484 154	3 072 294	8 310 040	5 895 970	4 014 386	4 295 652
81	365	474	839	1634	158	924	711
137	505	531	1036	1036	137	531	505
522	1403	805	2208	2208	522	805	1403
670 641	763 356	688 217	1 451 573	3 952 289	1 825 997	1 873 851	2 078 437
1241	1535	1404	2939	7619	3216	3640	3980
12 663	21 359	13 971	35 329	98 837	35 427	39 084	59 753
2639	2527	2225	4752	13 795	7661	6459	7336
9520	12 343	11 171	23 514	60 285	24 407	28 640	31 646
98 481	79 775	63 304	143 079	363 704	250 336	160 918	202 787
757	3723	4570	8293	8293	757	4570	3723
148	644	829	1472	1472	148	829	644
79	407	164	570	570	79	164	407
116	699	849	1548	3643	272	1997	1645
187	3308	3531	6838	6838	187	3531	3308
554	3644	4587	8230	16 835	1134	9382	7453
8087	30 001	38 546	68 547	131 935	15 566	74 190	57 745
22 833	31 276	23 252	54 528	135 288	56 651	57 691	77 598
94	132	128	260	629	228	310	319
341	300	273	573	1493	888	712	781
2329	6712	5363	12 074	12 074	2329	5363	6712
46 257	55 136	42 296	97 432	254 580	120 866	110 516	144 064
214	1655	1718	3373	7110	452	3622	3488
7	28	23	51	51	7	23	28
59 498	57 461	42 637	100 098	276 900	164 590	117 945	158 955
20	246	240	486	486	20	240	246

	Diarrhoea water				Diarrhoea sanitation			
Country	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
Slovakia								
Slovenia								
Solomon Islands	1037	1896	1656	3552	1145	2094	1829	3922
Somalia	290 759	247 464	215 616	463 080	275 656	234 609	204 416	439 025
South Africa	75 942	117 254	113 977	231 230	72 132	111 371	108 258	219 630
South Sudan	132 715	115 119	100 962	216 081	130 789	113 449	99 497	212 946
Spain								
Sri Lanka	1593	3913	3942	7855	2519	6187	6233	12 420
St. Lucia	8	55	46	101	12	85	72	157
St. Vincent and the Grenadines	9	30	27	57	11	36	32	69
Sudan	187 047	139 816	103 734	243 550	190 493	142 392	105 646	248 038
Suriname	56	272	256	528	67	323	304	627
Sweden								
Switzerland								
Syrian Arab Republic	43 112	27 762	23 197	50 958	31 910	20 548	17 170	37 718
Tajikistan	6229	4556	3734	8290	17 736	12 972	10 631	23 603
Thailand	5094	35 765	28 319	64 083	6045	42 446	33 609	76 055
Timor-Leste	1793	1621	1218	2839	4429	4005	3009	7014
Togo	43 914	52 268	36 929	89 197	45 764	54 470	38 485	92 955
Tonga	58	70	66	135	63	75	71	146
Trinidad and Tobago								
Tunisia	2047	3632	3469	7101	1425	2529	2416	4945
Türkiye	4575	11 717	11 493	23 210	3148	8062	7908	15 971
Turkmenistan	2951	2019	1602	3621	8344	5707	4530	10 237
Uganda	158 590	186 921	134 035	320 956	191 722	225 972	162 037	388 009
Ukraine	2232	4856	5294	10 151	3139	6829	7445	14 274
United Arab Emirates								
United Kingdom								
United Republic of Tanzania (the)	248 480	240 826	197 608	438 434	288 397	279 513	229 352	508 865
United States								
Uruguay								
Uzbekistan	3817	3564	2974	6538	14 378	13 425	11 204	24 629
Vanuatu	719	786	688	1474	771	842	738	1580
Venezuela (Bolivian Republic of)	1153	1158	1003	2160	14 410	14 469	12 529	26 998
Viet Nam	13 425	16 383	10 441	26 824	56 197	68 580	43 705	112 286
Yemen	89 581	62 594	53 444	116 038	106 235	74 231	63 380	137 611
Zambia	95 193	91 726	72 186	163 912	108 855	104 891	82 546	187 437
Zimbabwe	54 551	71 025	45 200	116 225	51 497	67 049	42 669	109 718

Diarrhoea hygiene				Diarrhoea WASH			
Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
127	807	755	1562	1562	127	755	807
39	208	235	444	444	39	235	208
755	1381	1206	2587	6962	2032	3246	3716
175 767	149 595	130 342	279 937	797 074	500 468	371 128	425 946
77 091	119 028	115 701	234 729	516 285	169 562	254 484	261 801
81 510	70 703	62 008	132 711	368 591	226 385	172 220	196 371
878	3700	4219	7919	7919	878	4219	3700
1716	4215	4246	8462	22 032	4469	11 057	10 975
7	54	45	99	276	21	127	150
8	27	24	51	137	23	65	73
121 791	91 038	67 544	158 582	442 267	339 661	188 373	253 894
42	201	189	389	1 147	122	556	592
269	1063	1150	2213	2213	269	1150	1063
177	673	778	1450	1450	177	778	673
44 953	28 947	24 188	53 135	112 449	95 135	51 188	61 261
14 512	10 615	8699	19 313	41 336	31 060	18 618	22 718
4405	30 926	24 487	55 413	148 019	11 765	65 410	82 609
2876	2601	1954	4555	11 216	7083	4812	6405
28 871	34 363	24 279	58 642	160 244	78 893	66 344	93 900
49	58	55	113	285	123	138	147
86	221	199	420	420	86	199	221
1972	3500	3343	6843	14 954	4310	7305	7648
8651	22 157	21 734	43 891	72 815	14 352	36 056	36 759
7553	5166	4101	9267	19 079	15 551	8443	10 636
120 905	142 504	102 185	244 689	648 663	320 516	270 889	377 774
3821	8311	9061	17 372	34 616	7613	18 055	16 561
351	1914	1009	2923	2923	351	1009	1914
1590	5075	5743	10 818	10 818	1590	5743	5075
187 106	181 342	148 799	330 141	877 110	497 098	395 325	481 784
10 345	36 692	43 471	80 164	80 164	10 345	43 471	36 692
98	442	424	866	866	98	424	442
13 681	12 774	10 661	23 435	44 682	26 085	20 327	24 355
588	643	563	1206	3038	1482	1419	1620
12 098	12 147	10 518	22 665	45 836	24 465	21 271	24 565
40 788	49 776	31 721	81 497	177 209	88 690	68 976	108 234
84 031	58 716	50 132	108 848	269 014	207 678	123 900	145 114
72 668	70 022	55 105	125 127	326 894	189 846	143 962	182 933
35 856	46 684	29 710	76 394	205 677	96 536	79 988	125 689

Table A7.2. DALYs attributable to drinking-water, sanitation and hygiene from ARIs, undernutrition, STHs and SDG 3.9.2 outcomes combined by country, 2019

Country	ARI hygiene				STH WASH				Undernutrition WASH		
	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes	Under 5	Female	Male
Afghanistan	128 354	85 461	72 020	157 481	3050	7926	8261	16 188	6132	3477	2655
Albania	350	943	812	1755	0	0	0	0	9	4	5
Algeria	35 000	29 156	26 272	55 428	79	199	443	642	1029	533	496
Angola	238 002	161 835	128 468	290 303	3412	6528	9448	15 975	27 112	12 186	14 926
Antigua and Barbuda	9	28	24	52							
Argentina	4656	42 834	39 036	81 870	71	350	1062	1412	226	104	121
Armenia	752	1867	1768	3634	3	11	42	53	6	5	1
Australia	584	3723	3724	7447							
Austria	129	1450	1263	2712							
Azerbaijan	5910	7282	5071	12 353	10	48	348	396	105	45	59
Bahamas	81	178	135	313							
Bahrain	33	270	142	412							
Bangladesh	109 286	107 083	94 561	201 643	13 787	71 276	78 785	150 060	7643	4320	3323
Barbados	11	143	151	294							
Belarus	346	3516	1574	5089	0	0	0	0	23	7	17
Belgium	229	3567	3492	7058							
Belize	46	195	141	336	2	8	21	29	17	9	8
Benin	76 649	58 588	46 990	105 578	2883	3647	4899	8546	6376	3096	3281
Bhutan	607	556	455	1011	15	45	88	133	51	30	21
Bolivia	9092	13 901	13 744	27 646	102	246	415	661	1809	777	1033
Bosnia and Herzegovina	135	830	687	1517	0	0	0	0	3	1	2
Botswana	4644	6435	5043	11 478	53	228	391	619	699	315	384
Brazil	37 799	143 803	116 527	260 331	977	7445	15 581	23 026	8601	4010	4591
Brunei Darussalam	24	121	84	205							
Bulgaria	703	3399	2023	5422	0	0	0	0	21	10	12
Burkina Faso	141 253	102 762	83 535	186 297	4942	4113	4858	8971	21 263	10 486	10 777
Burundi	58 340	46 168	38 022	84 190	1951	3894	4742	8636	18 179	7671	10 508
Cabo Verde	264	636	416	1053	3	8	30	38	15	6	8
Cambodia	16 572	26 544	21 803	48 347	272	703	2119	2822	1093	450	643
Cameroon	135 635	112 299	87 634	199 932	2694	7448	8441	15 889	9949	4959	4989
Canada	669	6646	6560	13 206							
Central African Republic	38 148	30 992	22 154	53 145	442	1 131	1 632	2 763	4 440	1 756	2 685
Chad	242 806	153 663	129 126	282 789	6 566	13 035	18 174	31 209	23 273	10 938	12 335
Chile	533	4101	3401	7502							
China	256 882	472 606	341 586	814 192	2 989	33 725	39 158	72 883	1 247	598	648
Colombia	12 185	21 655	18 843	40 498	891	4 615	5 689	10 304	2 347	1 039	1 309
Comoros	4664	3392	2878	6270	36	81	158	239	691	336	355
Congo	16 199	13 158	10 653	23 811	135	388	733	1121	1694	662	1032
Costa Rica	334	1668	1144	2812	39	249	420	669	24	12	11
Cote d'Ivoire	161 420	130 951	94 810	225 761	3055	5843	7175	13 017	8649	4533	4116
Croatia	45	807	783	1590							
Cuba	944	9107	7533	16 640	42	369	574	943	19	9	10
Cyprus	12	126	109	234							
Czechia	216	4024	2978	7002							

SDG 3.9.2 outcomes				SDG 3.9.2 outcomes (rate per 100 000 population)			
Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
497 541	98 221	282 066	600 374	8824	503	1524	1578
639	950	2284	4433	378	65	161	154
83 402	30 176	67 132	140 273	1660	139	315	326
814 036	189 527	511 870	1 144 252	14 356	1204	3183	3595
12	44	39	83	166	94	77	85
10 609	43 421	51 577	108 833	284	199	225	243
1286	1881	3345	6578	617	135	214	222
970	5310	5168	10 479	59	42	41	42
305	2117	1935	4051	69	48	43	45
16 171	7459	13 386	30 455	1906	149	266	303
116	251	200	451	436	133	100	116
96	594	336	931	88	56	57	57
408 337	191 682	754 937	1 437 028	2832	232	937	881
19	211	216	427	128	152	146	149
873	3534	4544	10 322	157	80	90	109
519	4952	5070	10 022	82	87	87	87
235	215	435	963	598	111	222	247
320 933	68 442	220 543	492 894	17 124	1162	3732	4177
1600	677	2516	5522	2517	167	703	724
31 960	15 410	33 556	68 156	2692	267	585	592
365	834	2194	4365	265	52	130	132
16 806	7260	14 680	34 694	6176	652	1234	1506
102 751	156 949	237 874	494 682	705	151	222	234
78	162	119	281	240	72	57	65
1411	3417	4428	9986	449	100	123	143
536 534	122 508	402 249	865 635	15 742	1207	3954	4260
220 830	63 172	184 936	419 092	10 939	1105	3182	3635
695	668	1264	2899	1321	242	461	527
61 708	28 633	64 916	140 230	3466	356	769	851
535 723	129 650	395 152	884 596	13 200	1002	3055	3419
1456	12 007	10 479	22 486	74	65	56	60
142 783	36 850	108 294	254 120	19 536	1567	4525	5355
868 906	185 360	550 103	1 191 202	30 257	2328	6888	7470
1026	6128	5429	11 557	87	66	56	61
534 519	509 409	763 964	1 733 565	629	69	109	121
26 784	27 736	44 141	91 583	718	112	172	182
15 990	3980	11 335	25 537	13 054	927	2688	3001
51 500	15 191	35 887	87 645	6335	565	1333	1629
1034	1946	3485	7358	295	77	138	146
557 609	145 745	385 948	882 918	13 767	1123	3029	3433
118	1294	1352	2646	63	65	63	64
1944	9531	14 418	31 129	331	169	253	275
41	258	243	501	62	43	41	42
483	5753	4931	10 684	87	109	91	100

Country	ARI hygiene				STH WASH				Undernutrition WASH		
	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes	Under 5	Female	Male
Democratic People's republic of Korea	9113	13 845	12 695	26 540	76	421	1693	2115	595	258	337
Democratic Republic of the Congo	559 134	436 669	329 572	766 241	15 579	42 705	54 581	97 286	79 308	31 642	47 666
Denmark	63	1623	1341	2965							
Djibouti	2388	2608	2061	4669	15	26	60	86	322	137	185
Dominican Republic	6415	6532	5300	11 832	22	50	253	303	1033	401	632
Ecuador	6353	9947	8172	18 120	372	1976	2103	4079	350	145	204
Egypt	73 512	85 660	67 380	153 041	510	1409	2055	3464	4751	2272	2478
El Salvador	2028	3936	3015	6952	86	494	839	1333	162	72	91
Equatorial Guinea	7231	5315	4566	9880	48	279	257	536	336	172	164
Eritrea	8745	13 030	8277	21 307	225	582	1417	1999	2148	920	1229
Estonia	21	403	258	661							
Eswatini	3395	4823	2706	7529	45	264	381	644	789	347	442
Ethiopia	397 539	317 369	243 684	561 053	19 346	56 929	70 484	127 413	45 982	23 404	22 577
Fiji	955	1035	812	1846	16	177	204	381	55	22	32
Finland	68	576	536	1112							
France	1087	13 384	12 779	26 162							
Gabon	4435	4625	2942	7567	38	126	183	310	334	138	196
Gambia	7953	6666	5375	12 041	146	273	552	825	702	337	365
Georgia	555	2104	1403	3507	2	11	82	94	13	3	9
Germany	1174	20 541	14 124	34 665							
Ghana	60 960	81 404	42 123	123 527	1793	4910	8520	13 429	10 434	4825	5610
Greece	131	4277	4651	8928							
Grenada	4	62	59	121	0	2	5	7	2	1	1
Guatemala	17 478	23 003	18 309	41 312	1195	4372	6722	11 094	4769	2154	2614
Guinea	94 595	70 095	60 854	130 949	1943	4362	5476	9838	7984	3740	4244
Guinea-Bissau	8944	7299	5896	13 195	522	1104	1709	2813	729	333	396
Guyana	404	720	511	1231	5	15	40	55	110	48	62
Haiti	40 858	29 405	27 050	56 455	539	1604	5347	6951	8033	3308	4725
Honduras	4556	4580	3277	7857	398	2437	3144	5581	208	78	129
Hungary	162	1871	1527	3398							
Iceland	4	59	54	113							
India	1 159 607	1 122 133	1 129 785	2 251 918	28 476	141 247	200 652	341 899	59 843	32 002	27 841
Indonesia	172 687	181 089	132 715	313 803	4059	22 519	35 133	57 652	11 112	5407	5705
Iran (Islamic Republic of)	33 939	40 695	32 583	73 279	91	334	531	865	1001	477	524
Iraq	49 043	34 105	27 502	61 608	89	203	604	807	1800	843	957
Ireland	79	941	909	1850							
Israel	216	1469	1269	2738							
Italy	572	11 351	10 542	21 894							
Jamaica	365	803	687	1490	38	323	457	780	45	19	26
Japan	2179	67 632	49 853	117 485							
Jordan	4121	3975	3339	7314	23	92	172	264	83	41	42
Kazakhstan	6338	12 359	7389	19 747	50	161	588	749	174	91	83
Kenya	128 836	115 972	96 308	212 280	1454	6220	8213	14 433	20 092	9282	10 811
Kiribati	324	294	235	528	7	56	61	117	61	30	31
Kuwait	259	953	459	1411							
Kyrgyzstan	5168	4257	3176	7432	55	183	399	582	20	16	4

SDG 3.9.2 outcomes				SDG 3.9.2 outcomes (rate per 100 000 population)			
Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
25 452	14 714	30 581	63 304	1460	117	233	247
2 289 794	547 008	1 351 873	3 291 176	14 770	1263	3110	3792
202	2256	2031	4287	67	79	70	74
7617	2971	8276	19 276	7612	580	1793	1980
21 303	7386	18 931	41 367	2116	138	352	385
12 712	12 214	20 874	43 216	765	141	240	249
228 117	90 558	185 675	399 765	1782	179	374	398
8033	4580	9301	19 645	1391	151	271	304
21 358	5901	13 628	30 496	10 946	783	2263	2249
36 750	15 973	39 404	106 992	7490	911	2259	3059
52	586	507	1093	75	94	72	82
11 498	5766	11 123	29 826	8010	1025	1900	2598
1 304 565	416 615	1 199 393	2 665 980	7877	743	2141	2379
2161	1276	2594	5844	2399	283	591	657
173	894	847	1741	64	33	30	31
2813	18 779	18 401	37 180	77	60	55	57
12 945	5093	8740	22 942	4093	460	820	1056
27 976	7564	21 233	46 778	6972	650	1794	1992
1199	2130	3588	7730	437	112	172	193
3124	32 203	26 089	58 291	78	78	62	70
224 982	94 767	198 968	482 214	5441	615	1326	1585
298	4880	5304	10 184	71	95	99	97
23	66	139	280	256	116	250	250
59 408	30 782	65 732	142 505	2890	355	737	811
291 337	81 338	228 994	486 385	14 145	1319	3467	3808
36 767	9149	29 725	62 063	12 188	974	3027	3231
1187	812	1549	3426	1592	206	398	438
147 774	36 722	99 217	208 058	11 674	661	1739	1847
17 308	7344	20 905	41 415	1712	151	429	425
397	3715	3929	7644	87	81	77	79
13	85	77	163	64	50	46	48
5 222 376	1 465 876	10 135 208	18 423 266	4472	206	1544	1348
480 085	227 902	717 088	1 606 228	2005	167	534	594
86 452	42 018	93 769	200 829	1140	100	229	242
135 397	35 802	83 936	184 578	2520	180	432	470
194	1213	1218	2430	60	50	50	50
732	2404	2114	4518	86	57	49	53
1543	14 563	14 513	29 076	65	49	47	48
926	1161	2476	5131	397	79	167	174
2836	72 739	55 308	128 048	58	117	85	101
9632	4144	9212	19 352	886	81	185	192
18 301	12 674	18 385	42 432	940	141	192	229
404 013	139 326	421 512	937 664	5764	533	1594	1784
1033	394	1103	2278	6903	681	1845	1937
435	1580	869	2448	146	62	53	58
9683	4472	8015	17 325	1253	141	247	270

Country	ARI hygiene				STH WASH				Undernutrition WASH		
	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes	Under 5	Female	Male
Lao People's Democratic Republic	14 925	12 446	10 628	23 074	580	2638	4608	7246	499	237	262
Latvia	57	748	424	1173							
Lebanon	797	2277	1639	3916	2	10	19	30	61	30	31
Lesotho	8109	13 531	11 154	24 685	38	94	146	239	2428	1118	1311
Liberia	20 521	15 172	12 272	27 443	520	1340	1616	2956	2892	1293	1600
Libya	1444	2623	2237	4859	8	35	96	131	55	24	31
Lithuania	28	959	571	1530							
Luxembourg	10	97	86	183							
Madagascar	78 993	64 396	69 038	133 434	1910	9087	13 779	22 866	12 166	6452	5714
Malawi	47 185	42 905	29 741	72 647	506	1446	2944	4389	8540	3626	4913
Malaysia	3883	47 472	33 086	80 559	576	7999	8045	16 045	511	226	284
Maldives	48	106	77	183	1	4	7	11	6	3	4
Mali	171 238	104 811	88 375	193 187	3233	5568	9129	14 697	35 092	18 589	16 502
Malta	10	127	129	256							
Mauritania	22 583	15 226	12 816	28 041	324	546	1210	1757	3078	1385	1693
Mauritius	296	859	601	1459	2	4	17	21	21	10	11
Mexico	32 922	59 863	44 220	104 083	1730	8525	11 398	19 923	1927	889	1038
Micronesia (Federated States of)	164	240	176	416	3	15	31	46	5	2	3
Mongolia	2166	2310	1646	3956	8	39	184	223	10	6	3
Montenegro	16	176	120	296	0	0	0	0	2	1	1
Morocco	22 288	24 452	22 582	47 033	273	725	1244	1969	856	412	444
Mozambique	150 959	125 662	100 780	226 442	3589	9819	14 175	23 994	15 519	7596	7923
Myanmar	51 554	56 249	41 217	97 465	3193	11 349	16 091	27 440	1400	452	947
Namibia	5085	6497	4416	10 913	115	547	772	1318	1612	692	920
Nepal	20 639	19 500	19 312	38 812	1753	10 321	21 236	31 557	1934	1008	926
Netherlands, Kingdom of the	245	3443	3548	6991							
New Zealand	227	773	814	1588							
Nicaragua	3930	3759	3071	6831	118	352	732	1084	657	283	375
Niger	178 138	130 402	108 017	238 419	7687	8617	11 797	20 414	15 655	7743	7911
Nigeria	2 369 576	1 437 749	1 187 370	2 625 119	59 947	80 738	89 021	169 759	57 153	26 663	30 489
North Macedonia	141	455	371	825	0	0	0	0	3	0	3
Norway	81	1158	1129	2287							
Oman	711	1623	981	2604							
Pakistan	718 955	488 239	376 644	864 883	13 178	48 947	59 010	107 957	54 251	24 668	29 583
Panama	1564	1802	1443	3244	22	73	514	587	374	170	204
Papua New Guinea	16 929	15 423	10 324	25 747	1037	4543	6997	11 540	600	212	388
Paraguay	3098	4193	3119	7311	20	93	310	404	843	388	456
Peru	8176	23 417	20 694	44 111	203	992	1566	2558	1001	419	582
Philippines	108 959	191 777	153 266	345 042	4322	30 736	35 287	66 023	3932	1639	2293
Poland	817	19 790	13 125	32 916							
Portugal	280	4556	3852	8408							
Qatar	88	410	182	592							
Republic of Korea	560	20 450	15 250	35 699							
Republic of Moldova	1347	4305	1769	6074	0	0	0	0	6	5	1
Romania	4467	20 440	12 227	32 666	0	0	0	0	103	23	80
Russian Federation	11 112	112 060	49 592	161 652	0	0	0	0	426	230	196

SDG 3.9.2 outcomes				SDG 3.9.2 outcomes (rate per 100 000 population)			
Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
60 014	15 891	45 524	98 270	7555	442	1275	1371
105	1033	747	1781	93	118	73	93
2774	2336	5085	11 089	469	68	149	162
40 205	15 860	51 574	112 192	15 895	1513	4787	5279
68 190	18 733	51 112	111 437	9339	755	2081	2257
3763	2709	5958	12 596	594	79	178	186
88	1360	1139	2500	60	107	77	91
25	149	135	284	76	48	44	46
260 631	83 846	304 311	680 596	6479	623	2251	2524
159 840	51 825	142 600	344 043	5556	564	1510	1847
13 687	56 355	66 792	154 748	522	343	430	484
155	118	323	816	425	35	166	154
632 232	132 579	421 756	942 161	17 900	1347	4298	4793
17	146	149	295	77	66	68	67
91 636	18 143	56 623	125 242	13 495	799	2512	2767
497	880	1318	2901	767	140	205	228
80 298	70 185	109 028	234 432	727	112	167	184
394	260	470	1001	3235	450	839	880
6104	2376	4934	10 877	1612	149	302	337
54	177	332	688	146	57	105	110
56 427	25 915	54 998	114 898	1674	143	299	315
508 467	149 390	400 519	931 917	10 073	1013	2564	3069
215 649	71 139	179 958	405 380	4781	273	643	750
18 237	8257	16 395	41 521	5454	683	1275	1664
89 052	32 333	159 951	286 203	3291	248	1028	1000
568	4889	5157	10 046	66	57	60	59
339	1223	1288	2512	113	52	53	53
9514	4523	8805	18 508	1439	140	265	283
691 373	153 944	524 912	1 163 828	14 894	1314	4527	4993
8 382 646	1 604 533	5 317 440	11 162 070	25 091	1576	5364	5554
303	458	1294	2463	267	44	124	118
218	1663	1659	3323	72	61	62	62
1232	3026	1786	4812	274	92	106	97
2 612 380	603 563	2 334 172	4 979 379	9442	542	2221	2299
5176	2126	5767	11 825	1330	100	272	278
53 993	21 366	56 618	136 724	4928	477	1318	1558
11 623	4804	10 275	22 353	1665	134	297	317
33 788	25 292	51 318	107 956	1202	157	314	332
367 549	227 126	351 110	778 701	3411	418	653	720
1574	23 514	17 695	41 209	84	128	91	109
428	5199	4681	9880	105	107	87	97
167	817	346	1163	124	38	49	41
747	23 757	18 780	42 538	38	93	73	83
1625	4307	3771	9722	787	222	179	240
5704	20 568	21 632	49 605	607	218	217	256
27 103	112 339	124 012	294 013	288	166	158	202

Country	ARI hygiene				STH WASH				Undernutrition WASH		
	Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes	Under 5	Female	Male
Rwanda	28 431	26 011	21 208	47 219	1313	7371	8244	15 615	7033	3221	3813
Samoa	90	170	160	331	1	3	6	9	0	0	0
Sao Tome and Principe	418	435	371	806	6	13	17	29	70	32	37
Saudi Arabia	2108	13 341	9435	22 776							
Senegal	46 175	36 787	31 769	68 556	2539	6269	10 977	17 245	4110	1977	2132
Serbia	277	3518	2465	5983	0	0	0	0	32	15	17
Seychelles	15	104	63	167							
Sierra Leone	56 879	42 172	35 743	77 915	1229	2623	3255	5878	8023	3656	4366
Singapore	135	4484	3093	7576							
Slovakia	282	2351	1547	3898							
Slovenia	14	240	321	561							
Solomon Islands	732	1419	950	2370	43	195	341	535	56	24	33
Somalia	196 094	133 011	107 454	240 464	3131	8684	13 704	22 388	23 691	10 130	13 561
South Africa	102 229	165 836	131 951	297 787	631	4544	8824	13 368	13 725	6342	7383
South Sudan	103 854	64 032	55 070	119 103	1681	4819	7440	12 259	14 469	7388	7080
Spain	570	10 179	8438	18 617							
Sri Lanka	2004	10 219	7474	17 693	118	825	1619	2445	306	148	158
St. Lucia	49	111	79	190	1	4	11	15	16	7	9
St. Vincent and the Grenadines	34	73	50	123	0	2	7	8	0	0	0
Sudan	115 794	80 035	62 382	142 418	1624	2542	4233	6775	16 535	6588	9947
Suriname	120	331	241	572	2	8	26	33	31	13	18
Sweden	216	2066	1825	3891							
Switzerland	125	1428	1352	2780							
Syrian Arab Republic	11 693	13 428	11 107	24 535	72	315	438	752	531	240	291
Tajikistan	24 862	17 753	13 752	31 505	80	150	359	510	295	171	124
Thailand	7048	51 104	36 440	87 544	122	1099	1397	2495	281	133	148
Timor-Leste	4163	2942	2444	5386	51	149	226	375	226	102	124
Togo	33 823	31 721	21 443	53 163	1178	4191	5495	9686	1212	537	675
Tonga	68	90	81	171	1	3	10	13	3	2	1
Trinidad and Tobago	226	411	301	712							
Tunisia	2945	4862	4164	9027	17	41	72	113	132	69	63
Türkiye	7176	26 159	24 221	50 380	53	212	1012	1223	581	390	191
Turkmenistan	10 116	7339	5353	12 692	30	59	259	318	130	61	69
Uganda	139 474	115 278	88 623	203 901	3646	12 600	15 183	27 783	23 783	9725	14 058
Ukraine	3457	26 798	10 843	37 641	0	0	0	0	505	234	271
United Arab Emirates	375	2194	852	3046							
United Kingdom	1759	26 347	26 057	52 404							
United Republic of Tanzania (the)	207 998	151 192	124 916	276 109	8435	25 296	34 433	59 729	28 662	13 623	15 039
United States	9138	67 433	65 710	133 143							
Uruguay	141	1071	1111	2182							
Uzbekistan	18 759	23 932	17 937	41 869	63	141	1137	1278	442	236	206
Vanuatu	573	616	468	1085	20	87	179	266	33	16	17
Venezuela (Bolivian Republic of)	14 709	16 900	13 256	30 156	1043	5771	6389	12 160	2804	1296	1508
Viet Nam	51 875	75 338	47 713	123 051	2840	20 990	22 357	43 347	885	385	500
Yemen	110 100	72 450	61 112	133 562	1505	3105	10 390	13 495	7687	3262	4425
Zambia	78 020	59 689	45 039	104 728	1417	4682	6401	11 082	17 213	7523	9689
Zimbabwe	41 605	47 512	35 271	82 783	490	2630	4480	7110	12 016	5512	6504

SDG 3.9.2 outcomes				SDG 3.9.2 outcomes (rate per 100 000 population)			
Under 5	Male	Female	Both sexes	Under 5	Male	Female	Both sexes
93 429	38 465	90 363	205 155	5053	620	1407	1625
319	176	477	969	1158	173	502	492
1382	493	1133	2398	4379	458	1054	1115
4437	20 053	14 797	34 850	148	101	102	102
173 690	47 436	155 240	344 491	6719	597	1859	2114
761	3572	6102	13 125	180	83	136	150
22	132	86	218	273	264	180	223
230 719	51 553	160 599	368 715	20 110	1322	4102	4719
155	4729	3333	8062	62	156	120	139
409	3159	2302	5461	144	119	82	100
53	449	556	1004	51	43	53	48
2864	1718	4561	9923	2809	504	1385	1481
723 385	161 433	502 416	1 083 618	26 313	2096	6489	7017
286 147	182 397	401 601	841 165	4946	632	1352	1436
346 389	79 013	242 119	514 421	20 402	1427	4382	4650
1448	13 879	12 658	26 536	72	60	53	57
6896	11 358	20 298	42 475	411	111	183	199
87	126	224	498	795	139	241	272
57	76	121	269	729	135	223	243
473 615	95 302	261 575	607 994	7583	446	1221	1420
275	365	836	1783	525	125	289	307
486	3129	2975	6104	81	62	59	61
302	2101	2130	4231	67	49	49	49
107 432	14 660	62 973	138 267	5882	171	740	810
56 296	18 249	32 900	73 646	4180	388	712	790
19 216	54 352	103 380	238 339	527	160	289	342
11 522	3313	7584	17 203	6619	507	1186	1330
115 105	38 037	93 819	224 305	9560	946	2310	2775
195	96	231	473	1594	183	443	452
312	632	501	1133	346	92	71	81
7403	5017	11 611	24 225	726	87	197	207
22 162	26 698	61 679	124 999	333	65	146	150
25 827	7568	14 116	32 219	3823	259	468	542
487 420	147 229	384 421	904 130	6342	675	1711	2042
11 574	27 115	29 132	72 761	530	133	123	165
726	4108	1861	5969	145	61	62	61
3349	31 423	31 800	63 222	85	94	93	94
742 193	198 548	568 298	1 241 610	7789	685	1958	2141
19 483	104 126	109 181	213 307	99	64	66	65
239	1514	1535	3049	101	91	86	88
45 350	24 444	39 636	88 270	1320	149	240	268
2108	747	2082	4422	5096	491	1408	1475
43 021	24 470	42 212	90 956	1778	174	292	319
144 290	98 240	139 430	344 492	1829	204	289	357
326 970	81 486	198 663	423 758	7977	555	1373	1453
286 495	76 608	202 925	459 918	9874	866	2250	2575
150 647	58 835	125 251	307 587	7046	843	1635	2100

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