Living in a fragile world

The impact of climate change on the sanitation crisis

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Introduction

Everyone, everywhere has the right to safe and accessible sanitation. However, two billion people do not have access to even a basic toilet[i] at home.[1]

Poor sanitation is linked to the transmission of deadly, preventable illnesses, such as cholera, diarrhoea and dysentery. Tragically, more than 310,000 children under five – that is one child every two minutes – die every year of diarrhoeal diseases as a result of lack of access to decent toilets and also clean water.[2,3] Inadequate sanitation is also a main factor in the transmission of neglected tropical diseases, such as trachoma and intestinal worms.

Less than half of the world's population can rely on a toilet that is connected to a system that safely manages and disposes of human waste.[1] Many people still lack access to even basic sanitation, and so have to use hanging latrines or pits that empty into rivers or lakes – that people collect water from for drinking, cooking and cleaning. Others have to share their toilet with multiple households.

Further, today 9% of the world's population – that is a staggering 673 million people – have no choice but to defecate outside due to lack of access to a toilet.[1] Women and girls in particular can be exposed to gender-based violence, including sexual assault, when open defecation is their only option. Human faeces contaminates water sources, exposing vulnerable communities to harmful bacteria and viruses that lead to fatal illnesses – such as cholera – placing more pressure on over-stretched healthcare services.

At current rates of progress, everyone in sub-Saharan Africa will not have access to safely managed sanitation until 2403[ii] and in some countries the proportion of the population without access to a decent toilet is increasing.[1]

Adjeratou, 37, stands next to a new family latrine in the commune of Tenkodogo, in the Centre-East region, Burkina Faso. May 2019.

WaterAid/Basile Ouedraogo

The world's sanitation crisis is nothing short of a global disgrace, and now climate change threatens to escalate it. Between 2030 and 2050, a quarter of a million additional deaths per year are predicted due to climate change – many of these deaths will be related to preventable diseases linked to poor sanitation.[4]

Frequent, extreme weather events – such as severe cyclones, heavy rainfall and rising sea levels – often cause damage to already weak sanitation infrastructure.

Inadequate sanitation perpetuates a vicious cycle of disease and poverty, because when communities do not have access to decent toilets and clean water, disease spreads fast.

Good sanitation services and disaster-resilient infrastructure is needed to withstand health and climate change crises. But national governments and the global community are failing to respond.

The worldwide COVID-19 pandemic has highlighted the importance of everyone having access to basic resource, such as clean water, to stop the spread of disease. Climate change is a growing global crisis too and decent toilets are a vital resource that can help protect vulnerable people from its impact.

The communities featured in this report are living with the devastating intersection of poor sanitation, the adverse effects of climate change and the uncertainty of fragile health services. Safely managed and resilient sanitation is one of the first lines of defence against climate change and disease outbreaks, so we need to act now to save lives.

Kalabogi village is situated in the Sutarkhali Union at Dacope Upazila. Most people in this area use the open-air hanging toilets which empty into the river. Often households are forced to throw children's faeces directly into the tidal water. Dacope, Khulna, Bangladesh. August 2020.

WaterAid/Habibul Haque

i A hygienic household toilet, where human waste is not treated but ends up in rivers or is dumped in the surrounding environment after emptying.
ii This is calculated by extrapolating a yearly rate of progress of 0.21 for the region from the time period 2000–2017.

Toilets around the world

Living without access to a decent toilet has a direct impact on the health, education and livelihoods of billions of people around the world, and certain groups – such as women and girls – are more affected by poor or non-existent sanitation facilities. Women and girls are disproportionately impacted by the sanitation crisis; lack of access to decent toilets makes it extremely difficult for them to manage their periods with the dignity and privacy they deserve both at home and school.

The needs of disabled people and those with limited mobility are also often overlooked when it comes to providing sanitation services. People with disabilities face multiple barriers when using facilities, such as steps leading to toilets and narrow doorways. A lack of inclusive facilities means disabled people often have to perform dangerous and unhygienic practises, for example wheelchair users are forced to crawl on the floor of latrines.

Everyone, everywhere has the right to safely managed sanitation, but progress on achieving this goal is still very slow.

WaterAid/Tapas Paul

A ramp has been established for the aid of the disabled patients at the Kolagaon Community Clinic, Sunamganj Tahirpur, Bangladesh. October 2019.

What does access to sanitation look like around the world?[1]

- **Safely managed sanitation:**
  A hygienic household toilet where human waste is treated and safely disposed of or reused. This is the standard set by the UN's Sustainable Development Goals (SDGs).
  How many people have this?
  3.4 billion (45%)
- **Basic sanitation:**
  A hygienic household toilet, such as a pour-flush latrine, where human waste is not treated but ends up in rivers or is dumped in the surrounding environment after emptying.
  How many people have this?
  2.2 billion (29%)
- **Limited sanitation:**
  A hygienic toilet that is shared between several households.
  How many people have this?
  627 million (8%)
- **Unimproved sanitation:**
  A toilet that does not hygienically separate human waste from contact with people, such as a latrine over an open pit or body of water.
  How many people have this?
  701 million (9%)
- **Open defecation:**
  People relieving themselves outside, for example in open fields, near railway tracks or in secluded areas.
  How many people do this?
  673 million (9%)

Jamila carries water to use for the toilet on the banks of the river Rupsha. Tidewaters overflow this area regularly and cyclone Amphan destroyed most of the riverside toilets. Gorkathi, Chalna, Khulna, Bangladesh. August 2020.

WaterAid/Habibul Haque

How good sanitation keeps people healthy

WaterAid/Basile Ouedraogo

Inadequate sanitation can lead to the spread of diseases in vulnerable communities and similarly under-resourced healthcare facilities are left to fight these health crises. One in ten healthcare facilities have no sanitation and 1.8 billion people lack basic water services at their local facility.[5]

This leaves health services in a weakened state and under more strain to cope with infectious diseases, such as superbugs and cholera, that can be spread by poor sanitation and unhygienic environments. Some of these health threats are now exacerbated by extreme weather episodes caused by climate change, placing a further burden on healthcare systems and health workers, and compounding the desperate situation faced by communities.

Decent toilets are essential for people to live healthy, productive and dignified lives, but not enough is being done to ensure the most vulnerable communities have access to sanitation services as a basic human right.

Sétou stands next to a family latrine in Dio-Ba, Kati district, Koulikoro region, Mali. October 2019.

WaterAid/Habibul Haque

Tania, 26, lives in at the bank of the river Rupsha with her husband and two sons. Her family uses open-air toilets. Tidewaters overflow this area regularly. Gorkathi, Chalna, Khulna, Bangladesh. August 2020.

Cholera

Cholera is a disease of poverty and inequality, afflicting and killing the most vulnerable people in the world. It is commonly spread by water infected with bacteria found in human faeces. The disease causes diarrhoea and vomiting, and can lead to severe dehydration and septic shock, which can be fatal.

Estimates suggest there are around 2.9 million cases of cholera and 100,000 deaths every year.[6] Communities most affected by cholera tend to lack decent toilets, clean water and good hygiene – all essential for stopping its spread.

Despite the World Health Organization (WHO) making global recommendations aimed at reducing cholera deaths by 90% and eliminating the disease in 20 countries by 2030,[7] progress has been minimal. Countries with the lowest levels of access to sanitation are least likely to have plans that align with global recommendations.[8]

But now climate change makes eliminating the deadly disease harder than ever.

Increased flooding further aids the spread of cholera, with sanitation infrastructure (such as open sewers) overflowing and spreading human waste. Furthermore, climate change has caused a rise in temperatures, conducive to the growth of cholera bacteria and combined with intense rainfall, the bacteria can spread to places not previously exposed to cholera.[9]

Cholera outbreaks are often predictable and largely preventable; decent toilets are needed to help eliminate the disease.

WaterAid/Farzana Hossen

Onita at her toilet in the Assasuni district, Bangladesh. September 2019. A five-year project funded by Severn Trent will improve sanitation and water services for 100,000 people in the area.

Superbugs

Resilient water and sanitation systems are fundamental in tackling one of the world's top health threats – antimicrobial resistance (AMR).

While overuse of antibiotics is a significant factor behind AMR, poor sanitation can also play a part. Human waste carries millions of bacteria, including superbugs,[10] so if water sources are contaminated, people can become exposed to harmful diseases.

The WHO has reported that AMR is on the rise in every part of the world.[11] While more research is needed on the link between AMR and climate change, studies have suggested a connection between increasing temperatures and the rise of AMR.[11]

Access to decent toilets must form part of the global effort to tackle AMR.

COVID-19

COVID-19 has affected every corner of the globe and has further highlighted the divide in global health through social inequalities. This pandemic has exposed how governments have neglected to invest in the basics of clean water, soap and decent toilets for decades.

Nearly a third of the world's urban population live in informal settlements and while health agencies recommended physical distancing to prevent the spread of COVID-19, vulnerable communities contend with overcrowded living conditions and busy communal toilets.

Although more research is needed in this area, shared sanitation facilities could contribute to the spread of the virus responsible for COVID-19. When used by infected individuals, communal toilets could become a source for exposure – especially where people do not have access to clean water and soap.[12]

Sanitation and climate change

Climate change is a devastating reality that vulnerable people are living with right now. Extreme weather episodes have become a staple in our world. Between 1995 and 2015, flooding alone made up 47% of all weather-related disasters, affecting 2.3 billion people, with 95% of those living in Asia.[13] But as the number of extreme weather events (including severe droughts and rising temperatures) increase due to climate change, already-stretched sanitation services become damaged or malfunction causing these infrastructures to fail, with catastrophic consequences for the communities they serve.

With the impact of climate change already felt across the world, water and sanitation systems are buckling under the strain of its severe effects. There needs to be a much greater focus placed on climate change adaptation. Protecting sanitation services from climate change strengthens the resilience of entire communities, helps them bounce back from weather disasters more quickly and takes the pressure off health services. Sanitation plans that don't take into account climate vulnerability and extreme weather events are likely to fail in the long term, leaving entire communities at risk of illness and death.

Floods

Water-related weather events – such as storms, cyclones and increased rainfall – have caused devastating floods around the world. Toilets become damaged or are destroyed, leading to spillages and increases in the practise of open defecation. This poses an extreme risk to human health, as water sources used for drinking, cooking and cleaning can become contaminated with human faeces.

Rising sea levels

A rise in sea levels can expose sewage pipes to corrosive saltwater. With sewage pipes mostly built underground, sea level rises will make installing and maintaining these pipes difficult. Water can also flow back into sewage systems, leading to untreated sewage flowing out and getting into waterways.

Dry periods

Rising temperatures can contribute to water scarcity and prolonged periods of drought put further strain on depleted water supplies. As water sources dry up, communities may find they do not have enough water to empty their pour-flush toilets or latrines. Those who have to fetch water – usually women and girls – to maintain latrines, will have to depend on water sources that are further away, and may instead avoid using water, deciding to practise open defecation.


WaterAid/Habibul Haque

Sumi, 18, lives on the banks of the Sutarkhali river with her family. The community use hanging toilets that empty into the river. Dacope, Khulna, Bangladesh. August 2020.


WaterAid/Habibul Haque

Many of the countries that are most vulnerable to climate change also have some of the lowest levels of access to sanitation in the world. Niger is ranked the second most climate-vulnerable country in the world,[14] but a staggering 86% of the population do not have a decent toilet.[1]

The greatest injustice is that the people who will suffer most from our changed climate, have done the least to cause it. Africa, which is the second most populous continent in the world, accounts for less than 4% of total global carbon emissions,[15] but is home to 33 of the 50 countries most vulnerable to climate change.[14]

Mofizul uses an open-air hanging toilet on the banks of the Sutarkhali River. There are no water or hygiene facilities. Dacope, Khulna, Bangladesh. August 2020.

WaterAid/Habibul Haque

Open-air hanging toilets are common in this area and human waste is emptied into rivers. Kalabogi, Dacop, Khulna, Bangladesh. August 2020.

Table 1: Sanitation access for the ten countries most at risk from climate change.[14]

Country and climate vulnerability ranking[iii]	Percentage of people without access to basic sanitation[1]	Number of people without access to basic sanitation[1]
1. Somalia	62	9,090,773
2. Niger	86	18,563,589
3. Solomon Islands	66	406,370
4. Chad	92	13,656,965
5. Micronesia	12	12,338
6. Guinea-Bissau	79	1,479,012
7. Sudan	63	25,708,250
8. Liberia	83	3,928,735
9. Mali	61	11,248,414
10. Eritrea	Data unavailable	Data unavailable

iii 'Vulnerability' refers to a country's vulnerability to climate change and other global challenges, in combination with its readiness to improve resilience. It aims to help governments, businesses and communities to better prioritise investments for a more efficient response to the immediate global challenges ahead.

More money is needed to protect vulnerable communities from the impacts of climate change. Current investment is not enough.

In 2017–18, a total of $579 billion was provided as climate finance, from both public and private actors. Of this, public finance (from multilateral and bilateral sources) accounted for $253 billion or 44% of this total.

Despite being a basic human right and a first line of defence, a paltry amount of climate finance is currently invested in getting clean water to everyone, everywhere. Money for water, sanitation and hygiene (WASH) adaptation accounts for just $9 billion, or 1.6%, of total climate finance. The ten countries with the lowest number of people who have access to water close to home get on average 84 US cents per person, per year to help tackle the impacts of climate change on their water services – despite also being some of the most vulnerable communities in the world.[16]

WaterAid/Habibul Haque

A child is using an open-air hanging toilet. Without water or somewhere to wash hands, it's impossible to maintain good hygiene practises. Kalabogi, Dacope, Khulna, Bangladesh. August 2020.

Why doesn't everyone have a decent toilet?

Despite commitments by governments and international donors to improve sanitation, little is being done to ensure this human right becomes a reality. This is due to:

Government inaction

One of the key obstacles has been the absence of political will, with national governments failing to prioritise sanitation services for vulnerable communities. Governments often underestimate the role of WASH as a significant indicator of a country's progress.

Inadequate investment

In a WHO and United Nations (UN) WASH survey completed by 115 countries and territories representing 60% of the world's population – including 93% of the population of least developed countries – out of 104 respondents, only six reported having the necessary components (including sufficient financial resources) in place for urban sanitation and only three out of 101 for rural sanitation.[17] But toilets are a good investment, every $1 invested returns $5.50 in increased productivity.[18]

People

There are insufficient human resources to reach sanitation targets. Building and maintaining decent toilets will require a considerable workforce, including sanitation workers who provide an essential service emptying pits and maintaining sewers. But these workers often face dangerous working conditions and are on the margins of society.

WaterAid/Sam Vox

Salim, 71, stands next to the small temporary toilet he built round the back of his house in Dar es Salaam, Tanzania. January 2020.

WaterAid/Basile Ouedraogo

Paul, 42, manual emptier, inside a pit, emptying a family latrine. Ouagadougou, Burkina Faso. July 2019.

What does climate-resilient sanitation look like?

There are ways that sanitation systems can be adapted to become climate change-resilient.

These include:

- **Appropriate technologies** that ensure sanitation infrastructures are resilient to extreme weather episodes. For instance, building raised toilets with ramps for accessibility can prevent floods from damaging the structure and waste spilling into the environment.
- **Early warning systems** that signal the arrival of extreme weather events can enable households and sanitation workers to take precautions to protect toilets and sanitation systems.
- **Investing in human resources** to ensure that the delivery and running of sanitation services is uninterrupted by extreme weather. More sanitation workers and specialists are required to respond to this challenge and need to be offered training and decent working conditions.
- **Identifying** areas vulnerable to climate-related weather episodes and prioritising those areas for climate-resilient sanitation investments. For instance, authorities should avoid setting up sewage treatment facilities in areas prone to flooding.
- **Strengthening services** to complement appropriate technologies and robust infrastructures. Establishing effective sanitation services is critical to disaster preparedness; the running and maintaining of services needs to be climate-resilient. For instance, regularly emptying pits and septic tanks to reduce the level of contamination triggered by heavy rainfall and flooding.

WaterAid/DRIK/Habibul Haque

WaterAid/DRIK/Habibul Haque

Anita, 40, lives on the coastal region with her husband and son. They use a climate-resilient toilet which is protected from the threat of rising tidewaters. Trimohoni, Dacope, Khulna, Bangladesh. August 2020.

WaterAid/Sam Vox

Teodora, outside her toilet showing how the flood waters have gone into the water storage tanks and filled up the pit latrines, causing more flooding in Kigamboni, Tanzania. January 2020.

Country focus

Bangladesh

Bangladesh is one of the most vulnerable countries in the world to the impact of climate change. Two-thirds of Bangladesh sits less than five metres above sea level,[19] leaving these areas highly susceptible to river and tidal flooding. Drought, rising sea levels and cyclones also significantly impact access to clean water.

In Dacope, a climate-vulnerable region of Khulna District in coastal Bangladesh, WaterAid has been working with communities to build durable, disaster-resilient WASH facilities. These have been built using heavier construction materials and by raising toilets above ground level to protect them from future flooding. A fund was also created to allow the community to maintain the facilities to keep them operational for many years to come.

In May 2020, the region was hit by Cyclone Amphan, which caused torrential rain, flash flooding and storm surges. Many homes in the Khulna District were damaged and destroyed. Despite this, only a small number of the new WASH facilities were damaged in Dacope, proving that the disaster-resilient structures are more able to withstand the impacts of extreme weather events.

Having a functioning, hygienic and reliable toilet has made a big difference to people's lives in the region.

Shabana, 25, lives with her son and husband in a village in Dacope. They used to use a pit latrine on the edge of a busy field.

"I did not have any privacy at all. We somehow managed to surround the latrine with four pieces of burlap sack. However, I always felt exposed while using that toilet."

WaterAid helped to build Shabana's family a toilet that is private and raised above the ground to prevent damage from potential floodwaters.

"Now we have a modern latrine. I can use it when I need to. I do not have to wait until it gets dark. It has an overhead roof and a door I can lock. I am not scared anymore while going to the toilet."

Shabana, 25, cleans her climate-resilient toilet. Trimohoni, Dacope, Khulna, Bangladesh. August 2020.

An open-air hanging toilet. Kalabogi, Dacope, Khulna, Bangladesh. August 2020

Country focus

Madagascar

Madagascar lies off the south eastern coast of Africa and is home to around 25 million people.

Climate change has already brought frequent, extreme weather episodes to this country. A continued rise in sea levels has led to severe floods in recent years – which has had a considerable impact on its sanitation systems and has had an impact on its economic development due to the tourism sector being affected.

In Madagascar, fewer than 11% of households (around 2.5 million people) have access to a decent toilet[1] – among the lowest rates of sanitation in the world.

Maida, 55, lives with her husband in Morondava, a seaside resort on the west of Madagascar that is home to 5,000 people. Only roughly 1% to 2% of the community have a latrine and the rest are forced to use the beach.[20]

Maida was determined to build a toilet for her beach-front home when she moved to Morondava: **"It's sad to see so many people having to use the beach. It's sad not only for me, it's sad for the environment."**

But Maida and her husband only had eight months in their new home before disaster struck. One night, there was an extremely high tide and as the sea pounded the beach, the ground beneath the toilet caved in. Days later the latrine collapsed, along with her house. She attributes the destruction of her toilet and her home to climate change: **"Far away from us, icy mountains are melting because of the heat. The ice becomes water, the sea level gets higher and higher. I think this is what happened to us."**

Maida's home is now rubble on the beach. Her and her husband now stay with relatives.

Her dream had been to live in a beautiful house with a working toilet:

"I was very proud because having a house with a toilet is something amazing."

Maida, 55, Morondava, Madagascar, 2019.

Zambia

Zambia is a landlocked country in southern Africa, with a population of just under 18 million people. Today, 74% of the population don't have access to basic sanitation – that is around 13 million people.[1]

In the 1970s, as its economy began to decline, Zambia experienced its first cholera outbreak.[21] The last major epidemic occurred between October 2017 and June 2018 in the Lusaka District, a heavily populated area in the country's south. The outbreak infected thousands and killed 114 people.[22]

Zambia's poor sanitation services – which include inadequate faecal disposal – are a significant factor in cholera transmissions. Outbreaks occur in the rainy season and the inadequate drainage systems that frequently flood contribute to the spread of disease.

But extreme weather as a result of climate change has also been linked to increased cholera infections. A rise in temperature before the rainy season can lead to a higher number of people affected by cholera and heavy floods can further spread the disease.

The Zambia Government joined global efforts to eliminate cholera worldwide by 2030 and plans to eliminate the disease nationally by 2025. But increased investment in the country's WASH sector is critical to stamping out cholera.

Jonathan, 39, lives with his family in the Chipata sub-district in Lusaka. His daughter Mirriam, 9, contracted cholera during the 2017 outbreak:

"Mirriam fell ill at the very start of the outbreak. The people in charge of the water supply also came. At that time, we would get drinking water from a kiosk when we could and relied on shallow wells shared by other people in the community for the rest. They found the water was contaminated. We also shared a pit latrine between four families."


WaterAid/Chileshe Chanda

Cholera survivor, Mirriam, 9, draws clean water with her mother, Monica. Tap water was recently installed near her home in Mazyopa Compound in the Chipata sub-disrict, Lusaka, Zambia. May 2018.


WaterAid/Chileshe Chanda

Nigeria

Nigeria is the seventh most populous country in the world and despite several years of economic growth, the progress towards universal access to adequate sanitation is slow. Between 2000 and 2017, those with at least basic sanitation grew from only 30% to 39%, and in 2017 nearly 38 million people still practised open defecation.[1]

This impacts the entire country – it is estimated that Nigeria loses 1.3% of its GDP annually due to poor sanitation.[23] In 2018, the Nigerian Federal Government declared a state of emergency for WASH, and launched a National WASH Action Plan in response to the huge challenges linked to poor sanitation. This was followed the next year by the 'Clean Nigeria' campaign which aims to end open defecation by 2025.

However, the 2019 WaterAid report *Equal to the task: financing for a state of emergency in Nigeria's water, sanitation and hygiene sector*, found that there was a $20 billion annual funding gap for WASH in Nigeria if they are to achieve universal access to water and sanitation by 2030. It is clear that there will need to be a significant upscaling of resourcing over the next decade if the National WASH Action Plan is going to create real results for the people of Nigeria.

Jacinta, 32, has been living in Guzape village on the outskirts of Abuja for more than 15 years. Jacinta has six children and she is worried about what the future holds for her family.

"Our problem here is lack of good toilet facilities and we are worried. We have contracted diseases here because of the toilet we share with others. The toilet overflows every six months, and we contribute money to fix it. Another toilet will help us a great deal, but we are battling with space."

Jacinta has to purchase water at a high cost in her village, but the COVID-19 pandemic has affected her income and reduced what she can spend on basic essentials.

"We have to purchase water for drinking, cleaning and general use. Our source of income has been affected by the COVID-19 pandemic. We want those concerned to come to our aid and uplift our living standard."

Jacinta, 32, stands near her toilet. Guzape, Nigeria. September 2020.


WaterAid/Nelson Owoicho


WaterAid/Nelson Owoicho

Rose Isa, 42, is a trader who hopes for a better life for her children where they will have access to water and good toilet facilities. Guzape, Nigeria. September 2020.

What needs to change?

Urgent action is needed to ensure everyone has access to decent toilets to help prevent the spread of diseases and protect communities from the impacts of climate change. To tackle this issue, we will need to see:

Investment

- Lack of decent toilets contributes to the spread of deadly diseases, placing a strain on fragile healthcare services. Governments must commit more money to the sanitation sector, so everyone has access to decent sanitation services that are safe, reliable and inclusive.

Government action

- Governments need to factor sanitation services into national climate adaptation plans.
- Climate change has led to severe weather events destroying sanitation infrastructure. Governments need to plan and roll out appropriate sanitation infrastructure, to help communities become more resilient to extreme weather events.

People

- Ensuring everyone, everywhere has access to a decent toilet and delivering climate-resilient sanitation infrastructure will require a considerable workforce – including more sanitation workers. Safely managed sanitation must accompany a safe and dignified working environment for sanitation workers. Governments need to ensure decent working conditions through legislation, monitoring and enforcement.
- Planning for sanitation services must include the participation and requirements of women, girls and disabled communities to ensure toilets are inclusive and safe.
- Climate change adaption must be holistic, ensuring that there is sufficient expertise and resource at every level of sanitation services planning.

Ousseini, 53, a mason involved in latrine building, washes his hands with soap next to his family latrine. Dankoumani, Mali. October 2019.

Anita, 40, stands next to her climate-resilient toilet. Trimohoni, Dacope, Khulna, Bangladesh. August 2020.

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Appendix: Global access to sanitation and climate vulnerability index

Country	Climate vulnerability ranking (out of 181 countries)[14]	% of population with at least basic sanitation[1]	% of population without at least basic sanitation[1]
Afghanistan	11	43	57
Albania	91	98	2
Algeria	141	88	12
American Samoa	-	54	45
Andorra	-	>99	<1
Angola	46	50	50
Anguilla	-	97	2
Antigua and Barbuda	56	88	12
Argentina	142	-	-
Armenia	96	94	6
Aruba	-	-	-
Australia	177	>99	<1
Austria	168	>99	<1
Azerbaijan	101	93	7
Bahamas	135	95	5
Bahrain	72	>99	<1
Bangladesh	36	48	52
Barbados	128	97	2
Belarus	158	98	2
Belgium	147	>99	<1
Belize	64	88	11
Benin	17	16	84
Bermuda	-	>99	<1
Bhutan	53	69	31
Bolivia (Plurinational State of)	70	61	39
Bosnia and Herzegovina	140	95	4
Botswana	66	77	23
Brazil	129	88	11
British Virgin Islands	-	-	-
Brunei Darussalam	109	-	-
Bulgaria	156	86	14
Burkina Faso	20	19	81
Burundi	14	46	54
Cabo Verde	-	74	26
Cambodia	45	59	41
Cameroon	58	39	61
Canada	176	>99	<1
Cayman Islands	-	-	-
Central African Republic	16	-	-
Chad	4	8	92
Channel Islands	-	99	2
Chile	155	>99	<1
China	116	85	15
China, Hong Kong Special Administrative Region	-	96	4
Colombia	119	90	10
Comoros	61	36	64
Congo	44	20	80
Cook Islands	-	98	2
Costa Rica	115	98	1
Côte d'Ivoire	48	32	68
Croatia	122	97	2
Cuba	87	93	7
Curaçao	-	99	1
Cyprus	148	>99	<1
Czech Republic	170	>99	<1
Democratic People's Republic of Korea	-	83	17
Democratic Republic of the Congo	12	20	80
Denmark	157	>99	<1
Djibouti	52	64	36
Dominica	107	-	-
Dominican Republic	86	84	16
Ecuador	77	88	11
Egypt	89	94	6
El Salvador	76	87	12
Equatorial Guinea	60	66	34
Eritrea	10	-	-
Estonia	136	>99	<1
Eswatini	32	58	42
Ethiopia	23	7	93
Falkland Islands (Malvinas)	-	>99	<1
Faroe Islands	-	-	-
Fiji	75	95	5
Finland	171	>99	<1
France	175	99	1
French Guiana	-	92	8
French Polynesia	-	97	3
Gabon	80	47	53
Gambia	41	39	61
Georgia	98	90	10
Germany	178	>99	<1
Ghana	68	18	82
Gibraltar	-	>99	<1
Greece	153	99	1
Greenland	-	>99	<1
Grenada	113	91	9
Guadeloupe	-	>99	<1
Guam	-	-	-
Guatemala	73	65	35
Guinea	35	23	77
Guinea-Bissau	6	21	79
Guyana	59	86	14
Haiti	27	35	65
Honduras	69	81	19
Hungary	145	98	2
Iceland	169	99	1
India[iv]	51	68	32
Indonesia	78	73	27
Iran	123	88	12
Iraq	83	94	6
Ireland	154	91	9
Isle of Man	-	-	-
Israel	162	>99	<1
Italy	167	99	1
Jamaica	85	87	12
Japan	139	>99	<1
Jordan	134	97	2
Kazakhstan	163	98	2
Kenya	33	29	71
Kiribati	-	48	52
Kuwait	84	>99	<1
Kyrgyzstan	114	97	3
Lao People's Democratic Republic	42	74	26
Latvia	111	92	8
Lebanon	102	98	1

iv Source: National Sample Survey Office (NSSO), 2018

Country	Climate vulnerability ranking (out of 181 countries)[14]	% of population with at least basic sanitation[1]	% of population without at least basic sanitation[1]
Lesotho	49	43	57
Liberia	8	17	83
Libya	126	>99	<1
Liechtenstein	-	>99	<1
Lithuania	121	93	7
Luxembourg	179	98	2
Madagascar	13	11	89
Malawi	31	26	74
Malaysia	133	>99	<1
Maldives	24	>99	<1
Mali	9	39	61
Malta	149	>99	<1
Marshall Islands	-	83	16
Martinique	-	>99	<1
Mauritania	22	48	52
Mauritius	82	96	4
Mayotte	-	-	-
Mexico	127	91	8
Micronesia	5	88	12
Monaco	-	>99	<1
Mongolia	103	58	42
Montenegro	120	98	2
Montserrat	-	-	-
Morocco	132	89	11
Mozambique	39	29	71
Myanmar	38	64	36
Namibia	54	35	65
Nauru	-	66	34
Nepal	47	62	38
Netherlands	150	98	2
New Caledonia	-	>99	<1
New Zealand	165	>99	<1
Nicaragua	74	74	26
Niger	2	14	86
Nigeria	55	39	61
Niue	-	97	3
Northern Mariana Islands	-	79	21
Norway	180	98	2
Oman	94	>99	<1
Pakistan	50	60	40
Palau	-	>99	<1
Panama	104	83	17
Papua New Guinea	19	13	87
Paraguay	124	90	10
Peru	88	74	26
Philippines	71	77	23
Poland	166	99	1
Portugal	151	>99	<1
Puerto Rico	-	97	3
Qatar	138	>99	<1
Republic of Korea	137	>99	<1
Republic of Moldova	93	76	24
Réunion	-	>99	<1
Romania	97	84	15
Russian Federation	164	90	10
Rwanda	28	67	33
Saint Helena	-	>99	<1
Saint Kitts and Nevis	92	-	-
Saint Lucia	112	88	11
Saint Vincent and the Grenadines	131	87	13
Samoa	57	98	2
San Marino	-	>99	<1
Sao Tome and Principe	62	43	57

Country	Climate vulnerability ranking (out of 181 countries)[14]	% of population with at least basic sanitation[1]	% of population without at least basic sanitation[1]
Saudi Arabia	118	>99	<1
Senegal	43	51	49
Serbia	99	98	2
Seychelles	65	>99	0
Sierra Leone	26	16	84
Singapore	95	>99	<1
Slovakia	146	98	2
Slovenia	159	>99	<1
Solomon Islands	3	34	66
Somalia	1	38	62
South Africa	108	76	24
South Sudan	-	11	89
Spain	172	>99	0
Sri Lanka	67	96	3
Sudan	7	37	63
Suriname	106	84	16
Sweden	173	>99	<1
Switzerland	181	>99	<1
Syrian Arab Republic	79	91	8
Tajikistan	81	97	2
Thailand	100	99	1
Timor-Leste	25	54	46
Togo	40	16	84
Tokelau	-	97	3
Tonga	18	93	7
Trinidad and Tobago	105	93	6
Tunisia	110	91	9
Turkey	161	97	2
Turkmenistan	90	99	1
Turks and Caicos Islands	-	88	12
Tuvalu	-	84	16
Uganda	15	18	82
Ukraine	143	96	4
United Arab Emirates	130	99	<1
United Kingdom	174	>99	<1
United Republic of Tanzania	30	30	70
United States of America	160	>99	<1
Uruguay	125	97	2
Uzbekistan	117	>99	<1
Vanuatu	21	34	65
Venezuela (Bolivarian Republic of)	152	94	6
Vietnam	63	84	16
Wallis and Futuna Islands	-	>99	0
West Bank and Gaza Strip	-	97	3
Western Sahara	-	-	-
Yemen	29	59	41
Zambia	37	26	74
Zimbabwe	34	36	64

About this briefing

Two billion people around the world currently lack access to decent toilets, making it harder to cope with the growing impact of climate change and to face increasing health threats. In order to withstand future health crises and extreme weather events, strong and reliable sanitation services and disaster-resilient infrastructures are needed to protect vulnerable communities.

Living in a fragile world: The impact of climate change on the sanitation crisis explores the devastating intersection of poor sanitation and the fragility of health services, all impacted by the unpredictable nature of the world's changing climate.

Image of Maida, Morondava, Madagascar on page 15, taken by Elena Heatherwick for the photo gallery, *Toilet Stories* to mark World Toilet Day 2020. This gallery and our work across sub-Saharan Africa is supported by players of the People's Postcode Lottery.

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#WorldToiletDay

WaterAid is an international not-for-profit, determined to make clean water, decent toilets and good hygiene normal for everyone, everywhere within a generation. Only by tackling these three essentials in ways that last can people change their lives for good.

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