



©WaterAid/ Tom Greenwood

Wild Water

The State of the World's Water 2017



A young girl walks through a tidal pool near Morondava, Madagascar. When the rains came this whole area flooded and many families were affected.

©WaterAid/ Kate Holt

Introduction

It's official. In 2016, global temperatures reached a record high for the third year in a row, and reports of extreme weather events continued to come in from around the world.

Drought gripped southern Africa, leaving 14 million people in countries including Mozambique, Madagascar and Malawi facing severe food shortages.¹ The Indian government acknowledged that more than a quarter of the country's population was affected by drought², amid media reports of wells running dangerously low³ and farmers falling heavily into debt.⁴

Climate change manifests itself mainly as water change. Unpredictable weather patterns – referred to here as 'wild water' – mean more storm surges, ruinous flooding, prolonged droughts and contaminated water sources.⁵

The UN's World Meteorological Organisation (WMO) warns extreme weather events like these will become increasingly common.⁶ That is bad news for the world's poorest people.

Climate change is expected to make an already difficult situation worse for the 663 million people in the world without access to clean water. It is predicted that over 40% of the global population is likely to be living in areas characterised as being under 'severe water stress' by 2050.⁷

Tough competition for limited water resources, and poor decision-making by governments and

utilities on prioritising how those resources are used, are already making it hard for the world's poorest people to access clean water. Land use alters as populations, agriculture and industry move, change and grow; if it isn't controlled, the result may be land erosion, pollution and depletion of groundwater.

Wild water events can wipe out fragile infrastructure, dry up rivers, ponds and springs which are sometimes the main source of water for the poorest people, and contribute to the spread of waterborne diseases.

Rural populations in poor and geographically isolated areas face particular challenges. Of all the people in the world without access to clean water, more than half a billion – enough to circle the world over six times – are in rural areas.⁸ Here, help is often slow to arrive after natural disasters, infrastructure is poor to non-existent, and a continued lack of funding is most acutely felt.⁹

In this briefing, we look at how the struggle of vulnerable rural communities to access clean water is compounded by wild water events. We explore how improving access to water, sanitation and hygiene services makes them better able to withstand catastrophe, and why working towards the Sustainable Development Goal of reaching everyone everywhere with access to clean water by 2030 will be essential in building adaptable, more climate-resilient communities.

Four reasons people struggle to access clean water¹⁰

Water, sanitation and hygiene services are already seriously under-prioritised and underfunded by governments, particularly in rural areas. Drought, flooding and water scarcity make headlines – but only compound the challenges that already exist in the daily struggle for water. These include:

1. Poor management and sustainability of services

Substantial progress has been made to get clean water to more people.¹¹ But another challenge is making sure that the supply lasts. If governments don't make a reliable water supply a priority; don't manage competing demands on water; or don't devote budget to maintaining and improving infrastructure, as well as training and paying water service employees, then their countries will fall further behind.

2. Social inequalities and poverty

While the UN recognises access to clean water and sanitation as basic human rights, these are effectively denied in some countries because of people's gender, ethnicity, social status, political affiliation or disability. Communities that don't understand their rights, or don't feel able to effect change, are further isolated. And even if communities do gain access to clean water, the higher costs of that supply can mean that the poorest are unable to benefit.

3. Population growth

In 2015, the world's population was 7.3 billion people. It's projected to reach 8.5 billion by 2030 and 9.7 billion by 2050, with much of that growth occurring in the developing world. In Africa, the population is projected to rise from 1.2 billion in 2015 to nearly 2.5 billion by 2050. The population of Asia is expected to grow by nearly 1 billion people by 2050.¹²

This means greater demand and competition for already fragile water resources and food, leading to intensive farming and livestock operations, which can, without proper management, have an impact on the quality and quantity of water resources.

4. Existing climate variability

Unpredictable weather patterns are particularly challenging to the water and food supplies of agriculture-reliant rural communities. Longer dry spells result in crop failure and shortages of food and clean drinking water. Flooding can pollute clean water sources and may lead to cholera outbreaks. Climate change is likely to exacerbate these challenges and place an even greater strain on people.



Monks collect water from a dirty pond. This pond is the main source of water for communities in the Pursat province, Cambodia.

What wild water means for the world's poorest people

The threat isn't just to the 663 million people in the world without access to clean water. Around 80% of the global population already faces threats to its water security;¹³ less water availability and growing demand is threatening livelihoods, health and wellbeing. The situation is especially dire for poor people in Africa, where the Intergovernmental Panel on Climate Change (IPCC) projects that temperatures will increase faster than the global average rise during the 21st century, increasing the risk of intense weather events.¹⁴

Impact on... health

Cholera¹⁵, blinding trachoma¹⁶, malaria and dengue¹⁷ are among the diseases expected to become more common along with extreme weather events.

Growing evidence suggests rising seawater temperatures are linked to greater incidences of cholera, as well as other waterborne diseases.¹⁸ The bacterial eye infection trachoma thrives when water is scarce and water quality is poor.

The World Health Organization warns incidences of mosquito-borne malaria and dengue are also expected to increase as a result of warmer temperatures, and higher rainfall and humidity levels. Dengue, for which there is no cure or vaccine, has already resurfaced in countries where it hasn't been reported for nearly a century.¹⁹

Finally, the IPCC warns malnutrition is likely to rise in poor regions as people struggle to grow food.²⁰ This growing threat will be compounded by infections caused by unsafe water, poor sanitation and a lack of hygiene, which has been estimated to account for up to 50% of all cases of malnutrition.²¹

Tigist, five-months-old, takes a weight test for malnutrition, Amhara, Ethiopia.





Impact on... livelihoods

Those living in rural areas who depend on farming to make a living are among the worst affected by persistent dry spells. Soaring temperatures make it difficult to cultivate crops and feed livestock, and affect a person's capacity to work, with a heavy impact on productivity.²²

A young girl helps her mother plant sweetcorn in Madagascar. Rising temperatures could make life particularly hard for rural communities who depend on farming to make a living.

Impact on... women

If communities don't have a reliable source of clean water nearby, longer dry seasons mean people having to walk ever greater distances to collect water from rivers, streams and unprotected wells. Women and girls are typically responsible for collecting water and feel this additional burden the most, spending hours a day walking between their home and the nearest water source.²³ More time spent fetching water means less time available to earn money or to spend in a classroom.²⁴



Women return home to the village of Miarinarivo, Madagascar, after collecting water.

Why water, sanitation and hygiene are essential to build resilience to wild water events and climate change

Just as wild water and climate change will hurt the ability of the poor to access clean drinking water, we know that water, sanitation and hygiene have a critical role to play in helping poor communities cope.

With contaminated water and a lack of decent toilets in the aftermath of disaster, disease is not far behind. A community with a deep borehole or other well-maintained water source is much more likely to maintain a water supply during drought. Systems to collect rainwater are one way of providing a source of clean

drinking water during floods. Well-built and well-maintained toilets and sanitation systems help prevent the spread of human waste and reduce the proliferation of waterborne diseases, like cholera and typhoid.

For the world's poorest people, for whom access to clean water is already a struggle, a lengthening dry season or unpredictable rains wipes out years of hard work to get ahead. A well-maintained water system may mean the difference between managing to hold on until the rains return, and total financial ruin.

What is El Niño?

El Niño – a natural event occurring every two to seven years, most recently in 2015-16 – is one of the biggest fluctuations in the Earth's climate system, involving the warming of sea-surface temperatures, typically in the central-east equatorial Pacific. It is experienced around the world as changes to regional weather patterns and, in some places, extreme weather events, such as cyclones, flooding and drought.²⁴ This phenomenon is expected to become more dramatic as climate change occurs.²⁵

A woman collects water in the village of Narai Ka Pura in Madhya Pradesh, India. Most of the community – 90% – practises open defecation, which means the village becomes contaminated by human excrement during the rainy season.



The world's worst countries for rural water access

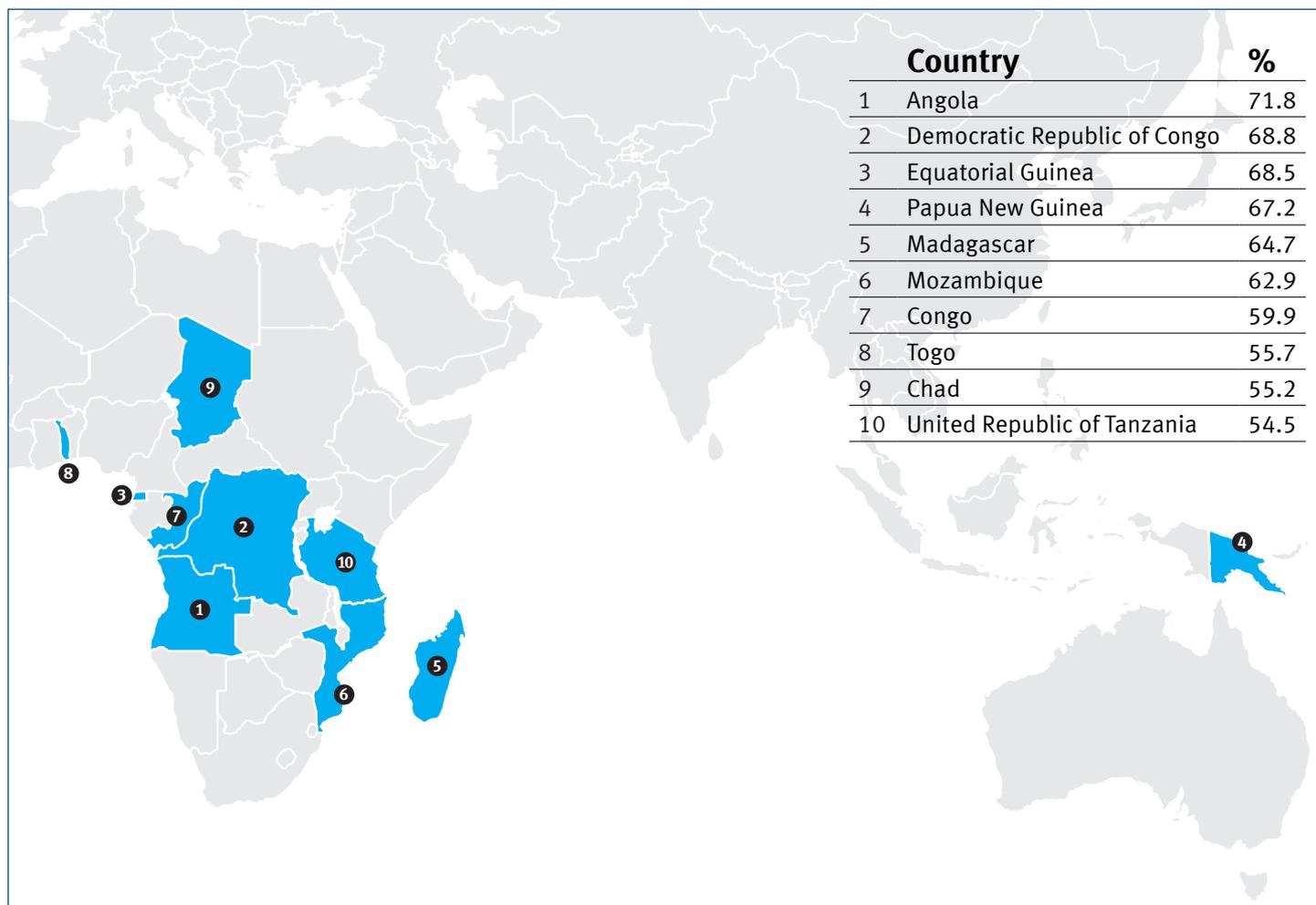
Top 10 countries with the greatest percentage of rural population without clean water²⁶

Following years of civil war, Angola has shown signs of real economic growth in the past two decades and now ranks as Africa's fifth largest economy. But it also tops the list of countries with the greatest percentage of the rural population without access to clean water, as a result of poor infrastructure and a lack of government prioritisation and investment.

The Pacific island nation of Papua New Guinea – considered as one of the world's most vulnerable nations to climate change – ranks fourth. Access

to water here is a daily struggle for 67% of the rural population, who are often on the frontline of extreme weather events.

For fifth-ranked Madagascar and sixth-ranked Mozambique it's a similar story. Both have almost two-thirds of their rural populations living without safe water and both are among the countries most vulnerable and least able to adapt to climate change, according to the Notre Dame Global Adaptation Index.²⁷



Papua New Guinea

Fourth in the world for percentage of rural population without safe water

87%

of the population lives in rural areas²⁸



67%

of the rural population without access to clean water

4.4M

people in rural areas without access to clean water



Top 4%

of countries most vulnerable to climate change²⁹

Top 13%

of countries least ready to adapt to climate change³⁰



Case study

Papua New Guinea – home to 7.2 million people – already experiences cyclones, river flooding, coastal erosion and droughts, among other natural disasters. The annual rainy season is often followed by drought, making food and water shortages commonplace. Just last year, the World Food Programme estimated there were nearly 80,000 people affected.³¹

With global temperatures projected to rise, this could have dire consequences for the 87% of the country's population living in rural areas – two-thirds of which lives without access to clean water. El Niño will also compound these challenges, making matters even worse.

Sandra Gaudi lives with her husband and four children on the Air Transport Squadron settlement on the outskirts of Port Moresby.

Sandra and her family collect water from a communal tap.



Sandra Gaudi washes up using water collected from the communal tap in her village on the outskirts of Port Moresby. When drought hits, Sandra struggles to find enough clean water for her family.

She says, “The water can shut down any time, so you have to make it a priority. You make sure you have it before you do anything else.”

Sometimes, especially when the water pressure is low, there are big queues – a growing problem, as a rising population means greater demand for water.

When drought hits, Sandra struggles to find enough water to prepare food, wash dishes or clean clothes.

“When things were really bad, we couldn't wash our clothes,” she says, “We'd just wipe our faces instead of having a shower.”

The lack of water also affected the family diet as Sandra was unable to prepare food as normal. Often, they would eat just breakfast and dinner, or packaged snacks, as they didn't have enough water to prepare a proper meal. “It was a very stressful time to be a mother,” says Sandra.

Madagascar

Fifth in the world for percentage of rural population without safe water

65%

of the population lives in rural areas³²



65%

of the rural population without access to clean water

10.2M

people in rural areas without access to clean water



Top 12%

of countries most vulnerable to climate change³³

Top 13%

of countries least ready to adapt to climate change³⁴



Case study

Madagascar is often exposed to cyclones that bring torrential rains and catastrophic flooding. Parts of the country experienced intense droughts in 2016, with 1.14 million Malagasy exposed to severe food shortages and malnutrition at the height of El Niño.³⁵

For the majority of the population that lives in rural areas and depends on agriculture to make a living, the consequences of climate change could be severe.

Angenie, 20, was forced to move with her young family from her childhood home in southern Madagascar to the village of Tanambao – on the outskirts of the coastal city of Morondava – after experiencing crippling droughts.

“What we went through was really tough,” recalls the mother of two, “It wasn’t always that dry, but these days it’s getting a lot drier. There is just no rain, and we



Angenie stands outside her home in the village of Tanambao, Madagascar. After fleeing her home in southern Madagascar because of drought, Angenie and her young family now struggle to cope with coastal flooding.

weren’t able to grow any crops. That’s why we moved here.”

In 2015, Tanambao had to be evacuated during flooding, a common occurrence in this village. Many homes still have no roofs, and the only tap in the village, which supplies water to at least 50 families – including

Angenie and her two children – looks close to collapsing. The local water point owner says he is afraid the next flood will destroy the pipe completely and contaminate the water supply.

“I don’t know about the future,” says Angenie, “I just live for today.”

Mozambique

Sixth in the world for percentage of rural population without safe water

68%

of the population lives in rural areas³⁶



63%

of the rural population without access to clean water

11.5M

people in rural areas without access to clean water



Top 18%

of countries most vulnerable to climate change³⁷

Top 18%

of countries least ready to adapt to climate change³⁸



Case study

Mozambique already experiences extreme weather events, including cyclones, flooding and droughts. In January 2015, torrential rains in northern and central Mozambique caused severe flooding, leaving tens of thousands of people homeless and devastating crops and livestock.³⁹ Drought also gripped parts of southern Mozambique in 2016, with 1.5 million people in need of humanitarian assistance and 95,000 children at risk of severe malnutrition.⁴⁰

Julietta Chauque, 42, lives with her four children in the rural village of Marien Ngouabi, in south-western Mozambique. In February 2016, storms battered Julietta's village, leaving her home badly damaged and forcing the family to move into a tent provided by the government. The area is now in drought.

"The drought is very strong, so we cannot cultivate anything.



Julietta Chauque, 42, picks the drought resistant vegetable, Kakana, from her garden in the village of Marien Ngouabi, Mozambique. When drought hits, Julietta sells Kakana to make a living.

Under normal circumstances, I can sell vegetables I grow, or, in extreme circumstances, I find Kakana [a wild, drought-resistant vegetable] to sell to those with money, but our situation is very hard," explains Julietta, "I wish for rain. Our only hope is farming, and without rain there is no farming, no food, and no means to survive and feed my children."

Water – a 5km round-trip away – is usually supplied by a tap. When the supply runs out during prolonged dry spells, Julietta must buy water from a local water tanker. She says, "I normally have to pay for water, but it is very difficult with no way to raise money."

The world's worst countries for rural water access

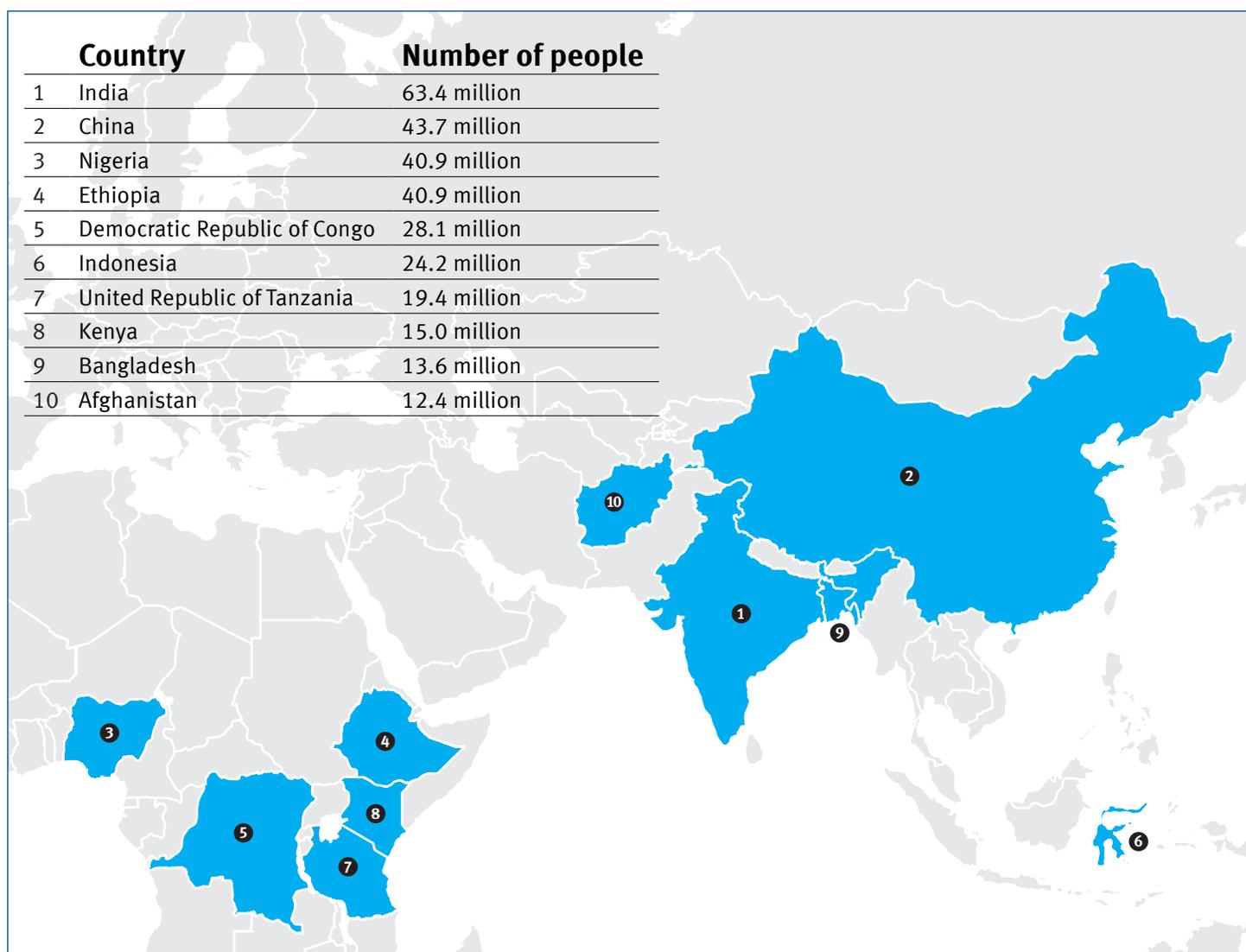
Top 10 countries with the greatest numbers of rural people without clean water⁴¹

India receives the unenviable title of having the greatest number of people living in rural areas without access to clean water – 63 million. This is almost the population of the United Kingdom, enough people to form a line from New York to Sydney and back again.

Lack of government planning, competing demands, a rising population and water-draining

agricultural practices are all placing increasing strain on water resources.

Ethiopia ranks fourth in the world for the number of rural people without safe water. Just two years ago it suffered its worst drought in three decades and ranks in the top quarter of countries most vulnerable and least able to adapt to climate change.



India

Worst in the world for the greatest number of rural people without safe water

67%

of the population lives in rural areas⁴²



7%

of the rural population without access to clean water

63.4M

people in rural areas without access to clean water



Top 38%

of countries most vulnerable to climate change⁴³

Top 38%

of countries least ready to adapt to climate change⁴⁴



Case study

India is one of the world's fastest growing economies, yet ensuring water security for its growing population is one of the main challenges facing the country.

According to India's official Ground Water Resources Assessment, more than one-sixth of the country's groundwater supply is currently overused.⁴⁵

Droughts have become almost a way of life in the Bundelkhand region of North-Central India. Here, three consecutive droughts have pushed millions of people into a vicious cycle of hunger and poverty.

Chhoti, 50, lives with her four children in the remote Kubri village in Bundelkhand region, Uttar Pradesh.

Droughts have brought significant hardship for every family here. The water table has fallen and wells have dried



Chhoti, 50, lives with her children in the drought-prone village of Kubri, Uttar Pradesh.

up; nearly all the village's hand pumps have failed.

"In this far-off village, there is no source of livelihood except farming. Due to scant rainfall in the last few years, we are almost dying of hunger. Whatever little we were able to sow, we are consuming it cautiously as we can never be sure of rainfall next

season," explains Chhoti, "You can see women taking water from hand pumps now because there was some rainfall in the last season, but one rainfall cannot make up for almost decades of drought."

In summer, they rely on a government-operated water tanker service. "There are around 15 members in my family and the tanker gives us four cans of water. Sometimes kids fight as there is very little water left and we are not sure when the tanker will arrive again. In extreme shortages, we fill our cans from a far-off river and transport them using an ox-cart," says Chhoti.

Last year, many families let their cattle loose. "When there is no water and food for humans, how do you expect us to feed our cattle?" asks Chhoti.

Ethiopia

Fourth in the world for the greatest number of rural people without safe water

81%

of the population lives in rural areas⁴⁶



51%

of the rural population without access to clean water

40.9M

people in rural areas without access to clean water



Top 20%

of countries most vulnerable to climate change⁴⁷

Top 23%

of countries least ready to adapt to climate change⁴⁸



Case study

Ethiopia has been gripped by an El Niño-induced drought in recent years. Some 5.6 million people are expected to need food assistance during 2017.⁴⁹

Ethiopia has made significant progress in access to clean water since 1990. However, temperatures are predicted to rise, threatening dire consequences for the country's mainly rural population, which is highly dependent on agriculture.

Access to water can help make communities more resilient to drought. After decades of failed attempts to find water, for 71-year-old Bayu Muluneh, the installation of six water points in his home village of Alefa, was a long-awaited lifeline.

“In winter, the rivers would flow and the springs would spit out water again, but during the dry summer we would go back to hand-dug wells, where we found dead rats and snakes. We had to



A young boy washes his face at one of the newly installed water points in the village of Alefa, Ethiopia.

©WaterAid/ Behailu Shiferaw

pick those things out and purify the water painstakingly,” Bayu recalls.

But two years ago, and after months of consultations with elders, a team of experts from WaterAid and partner organisation, Water Action, found a reliable underground water source.

“The whole time the rigging machine was working I didn’t leave the area. I kept thinking,

‘Is this going to fail again?’” remembers Bayu, “Finally the machine struck water. It was a very joyous moment. We couldn’t believe it.

“The first day the water points were opened, I walked from one to another to see with my own eyes the water flowing out. I cannot describe how I felt that day. Water everywhere. I could die the next day and would not regret it; what more could I wish for, really?”

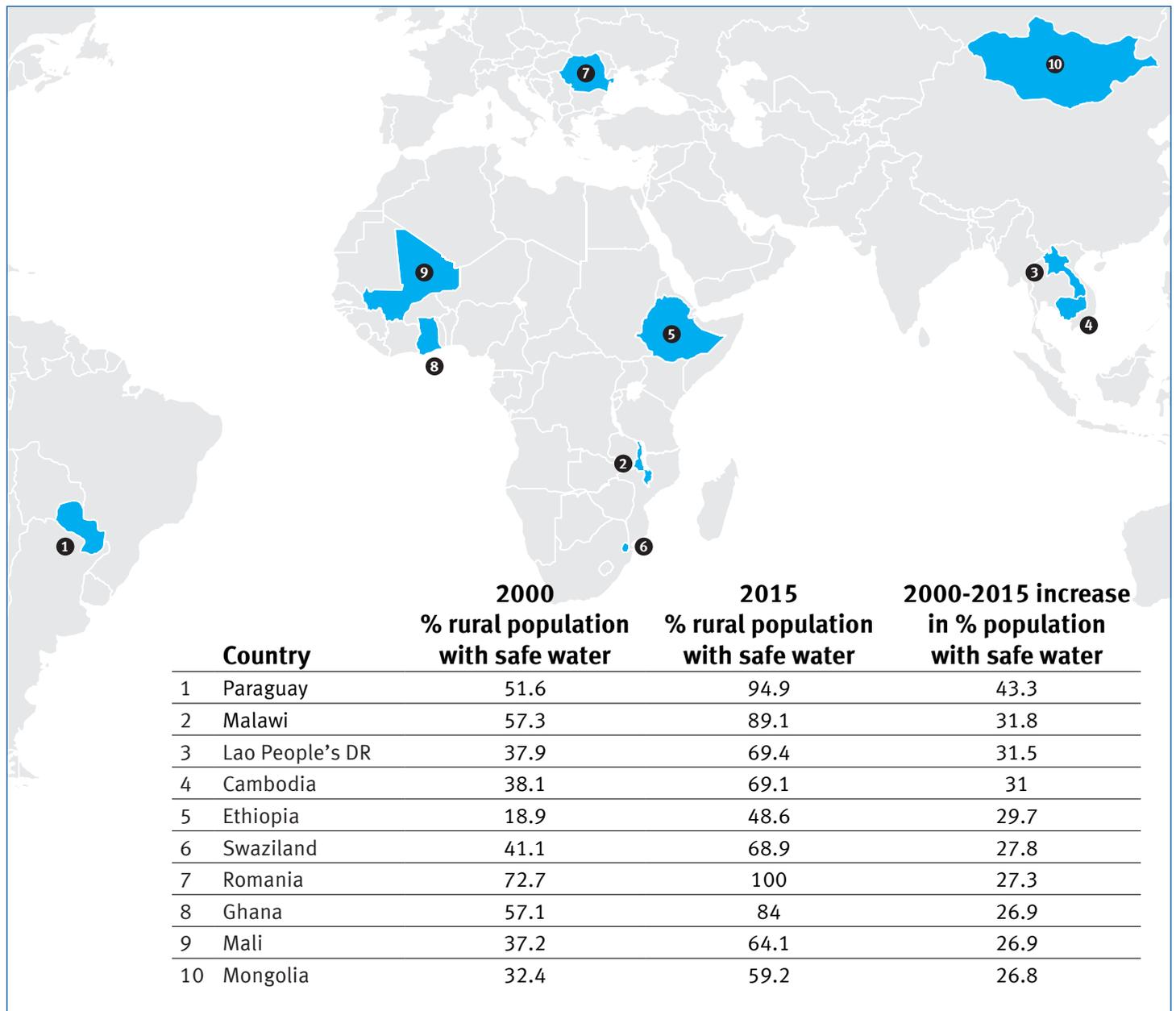
The world's most improved countries for rural water access⁵⁰

Top 10 most improved countries for rural water access

Since 1990, real progress has been made towards ending the water crisis, with 2.6 billion more people across the world gaining access for the first time.

However, even in countries like Cambodia and Malawi, where great strides have been made in

bringing clean water to rural communities, this access is often fragile. Both nations are particularly vulnerable to climate change and many millions are still struggling to access safe drinking water. This is likely to be made even harder in a changing climate.



Malawi

Second most improved rural access to water in the world

84%

of the population lives in rural areas⁵¹



11%

of the rural population without access to clean water

1.5M

people in rural areas without access to clean water



Top 22%

of countries most vulnerable to climate change⁵²

Top 12%

of countries least ready to adapt to climate change⁵³



Case study

Described as the warm-heart of Africa, Malawi is also one of the continent's poorest nations. More than 80% of the population lives in rural areas where many people depend upon subsistence farming, meaning erratic and unpredictable rainfall can play havoc on livelihoods.

In the last 20 years, this landlocked nation has had two serious droughts, as well as severe flooding in 2015 and 2016, which left thousands of people displaced and disrupted water supplies.

The southern district of Nsanje was one of the areas hardest hit by the 2015 flooding. Across the country, more than 145,000 people were displaced and 620 cholera cases were reported.

Nsanje is also particularly susceptible to blinding trachoma because of the lack of clean water, sanitation and hygiene in the area. The condition – primarily transmitted by contact



A girl collects water from the Pimbi river in the southern district of Nsanje, Malawi.

©WaterAid/ Dennis Lupenga

with eye discharge from an infected person's hands or belongings – is particularly hard to control during the rainy season, when many villagers are cut off from boreholes and have no choice but to collect dirty water from overflowing rivers.

But the rates of eye infections at Mgoma school in Nsanje have dramatically decreased after the introduction of clean water and hygiene training.

“In the past, we used to have a lot of students suffering from

trachoma. At times, we would have four to five students reporting sick from each class. It was devastating and unbearable for us teachers as well as the young people,” said deputy head teacher Alex Chuma.

Mgoma is a positive example of how access to water, sanitation and hygiene can address trachoma, which is expected to become more frequent during droughts and floods when hygiene is poor.

Cambodia

Fourth most improved rural access to water in the world

79%

of the population lives in rural areas⁵⁴



32%

of the rural population without access to clean water

3.8M

people in rural areas without access to clean water



Top 29%

of countries most vulnerable to climate change⁵⁵

Top 31%

of countries least ready to adapt to climate change⁵⁶



Case study

Still recovering from its turbulent past, Cambodia is one of Southeast Asia's poorest countries, with the vast majority of the population living in rural areas. The devastating legacy of the Khmer Rouge means there's an entire lost generation of professionals, creating major shortages of skilled engineers, technicians and health workers.⁵⁷ The next generation will have to work hard to ensure all Cambodians have access to clean water and are able to adapt to future climate challenges.

Pouk Kann is a farmer who lives with his family in Kohsvay village near Pursat, in eastern Cambodia, an area plagued by drought and flooding.

The family used to collect water from a river 3km away, which was especially difficult for Kann, who lost a leg after stepping on a landmine.

Kann says, "I can't describe how hard it was for me to collect



Pouk Kann, who lost his leg after stepping on a landmine, stands in his rice fields near the village of Kohsvay, near Pursat. Kann lost half his crop to severe drought during the winter harvest of 2016.

water, but I struggled on as I had to provide for my family. Before, we didn't care whether the water was clean or not; we didn't understand it was important for your health, even though we often got diarrhoea."

With support from WaterAid and its partner DDSP, the family now

has large clay rainwater harvesting jars and a water filter to provide enough clean water to drink all year round.

A government-installed irrigation system designed to help farmers harvest rice twice a year has also helped mitigate the risks of drought to Kann's rice crop, after he lost half of his rice harvest to severe drought in 2016.

He says, "My children no longer have to miss school because of diarrhoea, and without the irrigation system, I couldn't have earned any money this year because the drought was so bad."

However, the area still suffers from flooding, which in 2016 destroyed 60% of Kann's crops.

"Sometimes the flood water comes up to my neck; once it came right over my head. Last year there was very bad flooding... but at least I've had the chance of a second harvest so I was still able to earn money," Kann says.

What we can do about it:

Making communities more water secure also helps them become more resilient to extreme weather and better able to adapt to climate change. Now, more than ever, governments must make access to water, sanitation and hygiene a political and financial priority, particularly for their poorest people.

That means making sure communities have a reliable supply of safe water, accessible

to everyone. It means moving towards what developed countries already enjoy: a water system that is regulated, well-planned and maintained, and with skilled technicians and enough money to keep things running properly.

If poor communities are going to be able to adapt to a changing climate, governments must prioritise water and sanitation in their agendas.

What WaterAid is calling for

1 **An increase in public and private financing for water, sanitation and hygiene.**

Governments must help bring about a substantial and long-term increase, building the strong national systems needed to achieve universal access to sustainable services.

2 **Recognition of the importance of water, sanitation and hygiene in building resilience.**

Decision-makers on climate change, water and disaster risk management must acknowledge the fundamental role of sustainable services in building communities' resilience to extreme weather events, climate variability and climate change.

3 **An integrated approach.**

Governments must take an integrated approach to improving access to water, sanitation and hygiene services, by embedding their plans in relevant policies and programmes – not only on climate change, water resources and disaster risk management, but also in policies relating to areas such as health, nutrition, education, gender equality and employment.

4 **The promises of Paris to be kept.**

Governments must keep the pledges made at the 2015 Paris climate summit as they shift their focus to implementation at the national level. An increase in global finance for climate adaptation and clarity on the channels through which funds flow will provide more certainty for recipient countries and enable them to start taking action.

5 **Equitable allocation of climate finance.** Less than a third of available international public climate finance is reaching least-developed countries, which need it most.⁵⁸ Forthcoming WaterAid research shows middle-income countries have benefitted most from climate spending on water, sanitation and hygiene, so better mechanisms are needed to ensure money is allocated based on climate vulnerability and need, not on a first-come, first-served basis.⁵⁹ The poorest countries also need support to identify needs, create programmes to address them, and navigate the complicated bureaucracy involved in accessing funding.

6 **Increased efforts by government leaders to meet their commitments to the Sustainable Development Goals.** These include achieving targets to reach everyone everywhere with safe, clean drinking water, adequate sanitation and hygiene by 2030.

Appendix

Percentage of rural population living without access to water, highest to lowest, 2015

Country	(%)	Country	(%)	Country	(%)
Angola	71.8	Lao People's Democratic Republic	30.6	Malawi	10.9
Democratic Republic of the Congo	68.8	Nicaragua	30.6	Comoros	10.9
Equatorial Guinea	68.5	Iraq	29.9	Jamaica	10.6
Papua New Guinea	67.2	Rwanda	28.1	Cuba	10.2
Madagascar	64.7	Benin	27.9	Pakistan	10.1
Mozambique	63	Burundi	26.2	Philippines	9.7
Congo	60	Colombia	26.2	Lithuania	9.6
Togo	55.8	Myanmar	25.6	Fiji	8.8
Chad	55.2	Ecuador	24.5	Russian Federation	8.8
United Republic of Tanzania	54.5	Bolivia (Plurinational State of)	24.4	Nepal	8.2
Afghanistan	53	Burkina Faso	24.2	Costa Rica	8.1
Haiti	52.4	Uganda	24.2	Iran (Islamic Republic of)	7.9
Sierra Leone	52.2	Lesotho	23	Mexico	7.9
Niger	51.4	Solomon Islands	22.8	Botswana	7.7
Ethiopia	51.4	Azerbaijan	22.2	Jordan	7.7
Kiribati	49.4	Venezuela (Bolivarian Republic of)	22.1	India	7.4
Zambia	48.7	Indonesia	20.5	Vanuatu	7.1
Cameroon	47.3	Republic of Moldova	18.6	China	7
Eritrea	46.7	South Africa	18.6	Malaysia	7
Central African Republic	45.6	Palestine	18.5	Tunisia	6.8
Kenya	43.2	Algeria	18.2	Chile	6.7
South Sudan	43.1	Dominican Republic	18.1	Sao Tome and Principe	6.4
Mauritania	42.9	Honduras	16.2	Uruguay	6.1
Nigeria	42.7	Ghana	16	Paraguay	5
Mongolia	40.8	Gambia	15.6	Sri Lanka	5
Guinea-Bissau	39.7	Namibia	15.4	Saint Vincent and the Grenadines	5
Timor-Leste	39.5	Kazakhstan	14.4	Trinidad and Tobago	4.9
Liberia	37.4	Oman	13.9	Albania	4.8
Mali	35.9	Kyrgyzstan	13.8	Grenada	4.7
Djibouti	35.3	El Salvador	13.5	Saint Lucia	4.4
Morocco	34.7	Guatemala	13.2	Seychelles	4.3
Gabon	33.3	Brazil	13	Viet Nam	3.1
Tajikistan	33.3	Bangladesh	13	Poland	3.1
Zimbabwe	32.7	Syrian Arab Republic	12.8	Tuvalu	3
Senegal	32.7	Cape Verde	12.7	Saudi Arabia	3
Guinea	32.6	Micronesia (Fed. States of)	12.6	Northern Mariana Islands	2.5
Côte d'Ivoire	31.2	Suriname	11.6	Marshall Islands	2.4
Swaziland	31.1	Panama	11.4	Ukraine	2.2
Cambodia	30.9			Réunion	2.2
Peru	30.8			Ireland	2.2

Appendix continued

Country	(%)	Country	(%)	Country	(%)
Antigua and Barbuda	2.1	Bahrain	0	China, Hong Kong SAR	no data
Maldives	2.1	Belgium	0	China, Macao SAR	no data
Thailand	2	Belize	0	Dominica	no data
Aruba	1.9	Bhutan	0	Faeroe Islands	no data
United States of America	1.8	Cyprus	0	Falkland Islands (Malvinas)	no data
Saint Kitts and Nevis	1.7	Czech Republic	0	French Guiana	no data
Latvia	1.7	Denmark	0	Isle of Man	no data
Guyana	1.7	Finland	0	Libyan Arab Jamahiriya	no data
Bahamas	1.6	France	0	Liechtenstein	no data
New Caledonia	1.5	French Polynesia	0	Mayotte	no data
Niue	1.4	Georgia	0	Monaco	no data
TFYR Macedonia	1.1	Germany	0	Nauru	no data
Serbia	1.1	Greece	0	Netherlands Antilles	no data
Lebanon	1	Greenland	0	Palau	no data
Estonia	1	Hungary	0	Puerto Rico	no data
Montserrat	1	Iceland	0	Republic of Korea	no data
Bulgaria	1	Israel	0	San Marino	no data
Egypt	1	Italy	0	Singapore	no data
Canada	1	Japan	0	Somalia	no data
Kuwait	1	Luxembourg	0	Sudan	no data
Belarus	0.9	Malta	0	Turkmenistan	no data
Montenegro	0.8	Netherlands	0	Turks and Caicos Islands	no data
Samoa	0.7	New Zealand	0	Uzbekistan	no data
Slovenia	0.6	Norway	0	Western Sahara	no data
Democratic People's Republic of Korea	0.6	Portugal	0	Yemen	no data
Guam	0.5	Qatar	0		
Tonga	0.4	Romania	0		
Croatia	0.3	Slovakia	0		
Barbados	0.3	Spain	0		
Guadeloupe	0.2	Sweden	0		
Martinique	0.2	Switzerland	0		
Mauritius	0.2	Tokelau	0		
Cook Islands	0.1	Turkey	0		
Argentina	0	United Kingdom	0		
United Arab Emirates	0	United States Virgin Islands	0		
Bosnia and Herzegovina	0	Anguilla	no data		
American Samoa	0	Bermuda	no data		
Andorra	0	British Virgin Islands	no data		
Armenia	0	Brunei Darussalam	no data		
Australia	0	Cayman Islands	no data		
Austria	0	Channel Islands	no data		

Endnotes

- 1 Food Security Cluster (2016) *2015-2016 El Niño: WFP and FAO overview*. Available at: <http://fsccluster.org/el-nino/document/2015-2016-el-nino-wfp-and-fao-overview>
- 2 <http://timesofindia.indiatimes.com/india/Over-25-of-Indias-population-hit-by-drought-Centre-tells-Supreme-Court/articleshow/51901956.cms>
- 3 www.huffingtonpost.com.au/2016/04/22/maharashtra-drought-11-year-old-boy-dies-fetching-water-from-we/
- 4 <http://www.bbc.co.uk/news/world-asia-india-36410866>
- 5 OECD (2013) *Water and climate Change adaptation: policies to navigate unchartered waters*, OECD studies on water, OECD Publishing, Chapter 1, p23-24. Available at: www.keepeek.com/Digital-Asset-Management/ocd/environment/water-and-climate-change-adaptation_9789264200449-en#page25
- 6 <https://public.wmo.int/en/media/press-release/provisional-wmo-statement-status-of-global-climate-2016>
- 7 OECD (2013) *Water and climate Change adaptation: policies to navigate unchartered waters*, OECD studies on water, OECD Publishing, Preface, p9. Available at: www.keepeek.com/Digital-Asset-Management/ocd/environment/water-and-climate-change-adaptation_9789264200449-en#page9
- 8 www.wssinfo.org
- 9 www.who.int/mediacentre/news/releases/2014/water-sanitation/en/
- 10 Adapted from: WaterAid (2012) *Water security framework*, p16-19. Available at: www.wateraid.org/~media/Publications/water-security-framework.pdf
- 11 www.washwatch.org
- 12 United Nations (2015) *World populations prospects: key findings and advance tables* (2015 revision), p1-3. Available at: https://esa.un.org/unpd/wpp/Publications/Files/Key_Findings_WPP_2015.pdf
- 13 IPCC (2009) 5th assessment report, chapter 3, p248-250. Available at: www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap3_FINAL.pdf
- 14 www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap22_FINAL.pdf pg1206
- 15 WaterAid (2016) *Cholera: ancient disease, growing threat*. Available from: www.wateraid.org/policy-practice-and-advocacy/health/resources
- 16 www.sciencedaily.com/releases/2013/11/1311107204233.htm
- 17 World Health Organization (2015) *Third WHO report on neglected tropical diseases: investing to overcome the global impact of neglected tropical diseases*, p15. Available at: http://apps.who.int/iris/bitstream/10665/152781/1/9789241564861_eng.pdf?ua=1
- 18 WaterAid (2016) *Cholera: ancient disease, growing threat*. Available from: www.wateraid.org/policy-practice-and-advocacy/health/resources
- 19 World Health Organization (2015) *Third WHO report on neglected tropical diseases: investing to overcome the global impact of neglected tropical diseases*, p15. Available at: http://apps.who.int/iris/bitstream/10665/152781/1/9789241564861_eng.pdf?ua=1
- 20 www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap11_FINAL.pdf, p713
- 21 Prüss-Üstün A, Bos R, Gore F, Bartram J (2008) *Safer water, better health: costs, benefits and sustainability of interventions to protect and promote health*, World Health Organization, Geneva, p7. Available at: http://apps.who.int/iris/bitstream/10665/43840/1/9789241596435_eng.pdf
- 22 The Royal Society (2014) *Resilience to extreme weather*, p47-48. Available at: <https://royalsociety.org/~media/policy/projects/resilience-climate-change/resilience-full-report.pdf>
- 23 www.wateraid.org/uk/what-we-do/the-crisis/women
- 24 www.metoffice.gov.uk/learning/learn-about-the-weather/what-is-el-nino-la-nina
- 25 www.nature.com/nclimate/journal/v4/n2/full/nclimate2100.html
- 26 www.wssinfo.org
- 27 The Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index measures a country's adaptive capacity based on two dimensions: vulnerability and readiness. Vulnerability is a measure of 'a country's exposure, sensitivity and capacity to adapt to the negative effects of climate change', and readiness is a measure of 'a country's ability to leverage investments and convert them to adaptation actions', taking into account economic readiness, governance readiness and social readiness. Find out more at: <http://index.gain.org/about>
- 28 <http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=PG>
- 29 <http://index.gain.org/country/papua-new-guinea>
- 30 <http://index.gain.org/country/papua-new-guinea>
- 31 <http://reliefweb.int/report/papua-new-guinea/papua-new-guinea-drought-and-floods-response-situation-report-31-august-2016>
- 32 <http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=MG>
- 33 <http://index.gain.org/country/madagascar>
- 34 <http://index.gain.org/country/madagascar>
- 35 <http://reliefweb.int/report/madagascar/madagascar-food-insecurity-echo-wfp-fao-unicef-ocha-echo-daily-flash-30-march-2016>
- 36 <http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=MZ>
- 37 <http://index.gain.org/country/mozambique>
- 38 <http://index.gain.org/country/mozambique>
- 39 <http://reliefweb.int/disaster/fl-2015-000006-mwi>
- 40 Mozambique: Drought – Office of the Resident Coordinator, Situation Report No. 4 (As of 10 June 2016): <http://reliefweb.int/report/mozambique/mozambique-drought-office-resident-coordinator-situation-report-no-4-10-june-2016>
- 41 www.wssinfo.org
- 42 <http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=IN>
- 43 <http://index.gain.org/country/india>
- 44 <http://index.gain.org/country/india>
- 45 WaterAid (no date) *Universal access by 2030: will there be enough water?*, p2. Available at: www.wateraid.org/~media/Publications/Universal-access-by-2030-will-there-be-enough-water.pdf
- 46 <http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=ET>
- 47 <http://index.gain.org/country/ethiopia>
- 48 <http://index.gain.org/country/ethiopia>
- 49 <http://reliefweb.int/disaster/dr-2015-000109-eth>
- 50 www.wssinfo.org
- 51 <http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=MW>
- 52 <http://index.gain.org/country/malawi>
- 53 <http://index.gain.org/country/malawi>
- 54 https://siteresources.worldbank.org/ENVIRONMENT/Resources/ESW_EcosystemBasedApp.pdf
- 55 <http://index.gain.org/country/cambodia>
- 56 <http://index.gain.org/country/cambodia>
- 57 www.wateraid.org/uk/where-we-work/page/cambodia
- 58 The International Institute for Environment and Development (IIED) (2015) *A fair climate deal in Paris means adequate finance to deliver INDCs in LDCs*, p1. Available at: <http://pubs.iied.org/pdfs/17333IIED.pdf>
- 59 Forthcoming WaterAid Research, 2017

Written by Rosie Stewart with support from

Carolynne Wheeler, Fiona Callister, Jo Lehmann, Laura Crowley, Stephanie Lyons, Vincent Casey, Henry Northover, Erik Harvey, Pragma Gupta, WaterAid India, Behailu Shiferaw, WaterAid Ethiopia, WaterAid Papua New Guinea, WaterAid Madagascar, WaterAid Mozambique, WaterAid Malawi, WaterAid Cambodia.

March 2017

www.wateraid.org

#StateOfWater

Media contacts:

Global/UK: Fiona Callister, fionacallister@wateraid.org; or Carolynne Wheeler, carolynnewheeler@wateraid.org; or Rosie Stewart, rosiestewart@wateraid.org; or pressoffice@wateraid.org

Australia: Kirrily Johns, kirrilyjohns@wateraid.org.au

Canada: Christine LaRocque, clarocque@wateraidcanada.com

India: Pragma Gupta, pragyagupta@wateraid.org

Sweden: Magdalena Olsson, magdalena.olsson@wateraid.se; or Petter Gustafsson, petter.gustafsson@wateraid.se

USA: Alanna Imbach, alannaimbach@wateraid.org

WaterAid

WaterAid is a registered charity:
Australia: ABN 99 700 687 141.
Canada: 119288934 RR0001.
India: U85100DL2010NPL200169.
Sweden: Org.nr: 802426-1268, PG: 90 01 62-9, BG: 900-1629.
UK: 288701 (England and Wales) and SC039479 (Scotland).
US: WaterAid America is a 501(c) (3) non-profit organization.



The views and opinions expressed in this report do not necessarily reflect those of the Government of Sweden. The Government of Sweden is not responsible for any errors or omissions in the translation of this report from the original version to other languages.

Cover image: Chan Srey Nuch, 31, lives with her two young daughters in the Chong Kaosou community, Siem Reap, Cambodia. Srey Nuch fears that her children could drown in filthy flood water when she is out working.