NETZERO WATCH

CLEAN WATER FOR AFRICA

A DREAM WHOSE TIME HAS COME

GEOFF HILL

Clean Water for Africa: A Dream Whose Time Has Come

Geoff Hill

Contents

About this paper

Net Zero Watch (NZW) has published my essay, but I do not have any links to them or any other group. However, if you have ideas on how to improve this paper, NZW will forward your comments to me and it will be my honour to reply.

About the author

Geoff Hill is a Zimbabwean writer working across Africa. His media career began at the *Manica Post* in Mutare in 1980 and he has worked on all six continents.

In Sydney, from 1983 to 1989, he was special reports manager for Rupert Murdoch's flagship paper, *The Australian*, leaving to start his own publishing firm, which he sold in 2000. In that year, Hill became the first non-American to win a John Steinbeck Award for his writing, along with a BBC prize for the best short story from Africa.

In the publicity that followed, he was approached to write a definitive account of his home country. *The Battle for Zimbabwe* became a bestseller in South Africa, and the US edition was launched in Washington by Assistant Secretary of State for Africa, Walter Kansteiner (who served under George W. Bush). The London launch was at the Royal Institute for International Affairs (Chatham House). The sequel, *What Happens After Mugabe?* enjoyed nine reprints and sold globally with a cover endorsement from author, John le Carré.

Hill has served as deputy chair for the Foreign Correspondents' Association of Southern Africa. From 2011 to 2013, he was vice president at the International Association of Genocide Scholars; he has lectured at The Hague on crimes against humanity.

Since 2002 he has been Africa correspondent for *The Washington Times,* and his work is published in the *Mail & Guardian* (Johannesburg), *The East African* (Nairobi), and across the continent.

A life-long conservationist, he has written extensively about the environment, and rescued more than 5,000 snakes from urban homes for release in the wild, catching his first brown house snake at 10 years old and a mamba at 14.

Hill is a director of the African risk firm, Something of Value Ltd, and is fluent in English, Afrikaans and Shona (Zimbabwe).

Executive summary

Africa has abundant water. In many places rainfall levels are high, and the continent is home to giant river systems including the Nile, Congo, Zambezi and Volta. Dams and lakes are plentiful. The challenge lies in getting water to where it is needed.

Urbanisation in the past 50 years has been very rapid, creating some of the world's largest cities. Urban demand for water is huge and supply is often pitiful.

Without water, hospitals can't function, schools close, factories often have to shut for hours at a time, food can't be washed and diseases such as typhoid and cholera begin to spread. Defecation outdoors increases the risk.

Since Roman times, gravity has been used to move water into homes and factories. But first, it must be pumped to a high point from where it can flow downhill. We have long had the ability to do this, although it requires a vast amount of energy. The chronic water problems of African cities – either poor or undrinkable supply – mostly come down to a shortage of electricity.

Hydro power is good, but not on rivers that run low in the dry season. Wind and solar can help, as they do in Morocco, but when it comes to water there can be no down time when the wind doesn't blow, or at night when solar panels don't work. Fossil fuels are therefore the most effective source of power. Gas and coal are plentiful in many countries and are key in Botswana, Namibia, Zimbabwe and South Africa. In addition, several nuclear plants are being built across the continent.

Abundant energy could also bring water to drier parts. Desalination has made the desert bloom in Israel, Saudi Arabia and Kuwait. Africa has a coastline of more than 120,000 kilometres yet there has been little effort to use this simple system for turning salt water into fresh.

People living with a shortage of water, electricity, cooking fuel and other basic needs are unlikely to be picky as to how the problem might be fixed. Green solutions speak for themselves as a better way of doing things, but if we are to help Africa develop – and stop suicidal efforts to cross the Mediterranean and the English Channel – then Africans must be able to choose their own way of doing things. This is not the time for a colonial mentality of 'we know best'.

We have the means to put a tap in every home and, if not a flushing toilet, then at least a clean one. All that's needed now is the will to make it happen.

Introduction: Not missing, just in another place

On the Yale University[1] website, there is a ranking of countries by the proportion of population with access to water and sanitation. Of the 30 nations at the bottom, 26 are in Africa. Finland, Norway and the UK are among the top five. The lower 10 include dry places such as Niger, most of which lies in the Sahara Desert, and others with rivers aplenty: Cameroon, Burundi (on Lake Tanganyika), Nigeria and Lesotho.

There's pretty much the same amount of water now on the planet as there was 1000 years ago, or even when the dinosaurs roamed, and most of it is salty. Over eons of change in climate and global temperature, water has been frozen at the poles and as snow, and become liquid again when the planet warmed. Inland seas have come and gone, oceans have formed and divided, glaciers carved out lakes, volcanoes pushed up tiny islands and large areas of land, but the amount of water in all its forms hasn't changed. Yet Africa has a problem.

When people say there's a shortage of water, we need to ask: 'Why?' Rain patterns alter, populations rise, agriculture consolidates to create economies of scale, aquifers are drained, lakes are emptied and rivers dammed to a trickle. Cyclones blow in and the flood undoes years of human progress. But it's all the same water. With our pipes, pumps and electricity, we can move it from place to place, but it hasn't left the planet.

What you learned at school about the earth being 70 per cent covered by water is true. The key word is 'covered'. Even the deepest ocean forms a relatively thin layer of liquid given the planet has a diameter of just under 13,000 kilometres. More than 96% is saline, and when you take out the polar ice caps and permafrost, less than 1%[2] of the total is available to us unsalted: in rivers, lakes, swamps, dams and under the ground.[3]

What has changed is population. In 1800 the world had just a billion people, and the number had only doubled by 1927. Since then, in less than a century, our numbers have grown fourfold.

The way we cook and keep warm has evolved, from firewood and charcoal, in use for thousands of years, to gas and liquid fuel, and, of course, electricity, generated by turbines in dams, and by gas, coal, wind and the sun. But water is still delivered to your tap the way it was in Roman times.[4] First it is collected in a tank or reservoir on higher ground, then gravity takes it down a series of pipes, thick at first and branching endlessly, until one veers off and connects to your plumbing.

All this follows the laws of physics and, while supplying even a small town is a feat of engineering, gravity does most of the work. The challenge lies in pumping the water to a high point, and the common power source used to do this, on all six continents, is electricity; no watts, no water.

The addition of six billion people in under a century has changed our planet, not always for the good, and this includes the climate. The loss of forest and draining of lakes for irrigation has an impact on precipitation and the weather.

Some parts of Africa are dry, but much of the continent is lush and wet. Why then should taps and toilets be such a problem?

To give Africans a better quality of life, we need to do more than blame the climate. There are solutions, and most of them involve electricity. That's the key to granting everyone the basic human right of clean water.

My cup runneth empty

In January 2022, *The Washington Post* published a story showing how water had grown as a problem in Africa since 2011.[5] It was based on research from renowned polling firm Afrobarometer, which conducted more than 38,000 face-to-face interviews across the continent. A few countries were acceptable – Kenya, Ghana, Morocco and South Africa performed better than most – but overall, it was not a happy tale. For example, only a third of those surveyed said they had a toilet in the home. An equal number had one nearby, but not where they lived, and 14% had none at all.

Those were the averages; go country-by-country and it's worse. In Niger, 59% lacked any kind of sanitation. It was the same for at least one in five in Liberia, Togo, Benin and Burkina Faso. Water, or the lack of it, was among the top concerns of those interviewed, and only 41% thought their government was doing enough.

And when it came to citizens complaining about how things had worsened since 2011, Zimbabwe, Guinea and Cameroon were all near the top.

The story explained how climate change was either affecting the problem or could make it worse, but that doesn't tell us why the supply of water is going backwards. Answers are not hard to find.

The researcher and former prime minister of Niger, Ibrahim Mayaki, estimates that in the past 30 years, 500 million Africans have moved from a rural home to the city in search of a better life.[6] That's more than the population of the United States and Russia combined. Slums spread for miles around urban areas, with wires draped between the rooftops to give a makeshift electricity supply (often there's none) and queues for a single tap.

How many of these 500 million people have less water now than when they lived in a village by a river? It's a field waiting for research to be undertaken, but the likelihood is surely that, in this area at least, the quality of life has *not* gone up. Old pipes, long outages of power, the growing price of purification chemicals, even the price of gas to boil water before it is drunk; none of these factors help.

On the Afrobarometer graph, Cameroon had the most gripes. When president Paul Biya first came to office in 1975, Elvis Presley was performing on stage. Biya turned 90 in 2023; the next election is two years away and he may yet stand. Under his rule, democracy never had a chance, and in recent years his army has been at war with secessionist groups in the north-east and south-west. According to the Brussels-based Crisis Group, at least half a million have fled their homes because of conflict.

In the chaos, the terror group Boko Haram has launched a number of attacks on this largely Roman Catholic nation. And

Cameroon hosts thousands of refugees from other conflicts, notably in Chad and the Central African Republic. Has the supply of water got worse? It's hard to imagine how any aspect of life might be on the mend.

Zimbabwe used to have one of Africa's best circulatory (piping) systems. It also had numerous dams, built in the 20 years after World War II; at least one outside every major town. When the late tyrant Robert Mugabe came to power in 1980, he expanded the supply of both water and electricity. However, Zimbabwe's human rights record is among the worst in Africa, and after a string of dubious elections, donors have pulled away, leaving a broken economy and a treasury short of cash to pay for imports of electricity. Residents in the capital, Harare, have water delivered once a week in a council bowser. It is not safe to drink, so there's a trade in bottled water, while some club together and sink a borehole. Power outages can last for 15 hours at a time.

It's become popular to talk of people on the move in Africa as 'climate refugees' rather than as people escaping oppressive regimes or looking for work. Weirdly, Poles and Romanians coming to Britain are never referred to in this way. The same can be said of the growth of cities in Australia or the US. When a village child in Uganda or Botswana learns Shakespeare and algebra, do we really expect them to finish 12 years of school and keep goats or grow a few stalks of maize around their hut? We don't ask that of rural school leavers in Britain.

Where the climate has been a driver of change, we need to recognise it. But deforestation, rapid population growth and political oppression must also be taken into account. Blaming everything on the weather gives government a get-out-free card instead of being held accountable for creating a hell from which any rational person would want to escape.

Pick just about any country in Africa from any survey where quality of life is in decline and you'll find a political system that's broken. And there's another issue. Look at some of those high on the Afrobarometer list for problems with water and they're also short of energy, making it a challenge to pump, filter and distribute (Table 1).

Table 1: Energy shortages in Africa

Country	% not on the grid[31]
Chad	89
Sierra Leone	74
Liberia	72
Benin	59
Guinea	55
Sudan	45

Building dams and power stations – whether solar or fossil fuel, or even nuclear – takes money, which these small economies don't usually have. Most have been independent for 60 years or more, aid has come and gone, but the infrastructure is either old or has not kept pace with a growing population. In recent times, a further problem has emerged: traditional donors have switched their funding to Ukraine and its neighbours.

Across Africa, Asia, and Latin America, the story is largely the same, according to more than two dozen aid workers who were interviewed by *The New Humanitarian*[7] magazine: 'Despite increasingly urgent fundraising campaigns, political interest remains fixed on Ukraine'. The magazine estimates that more than 80% of money needed by Ukraine to resist the Russian invasion has already been given, whereas a request for Somalia stalled at just one-fifth of the budget.

Human habitation cannot prevail without water. Supplying it at levels enjoyed in Europe and the US is key to the development of industry and putting an end to diseases such as cholera and typhoid. In 2031, if the *Washington Post* were to revisit the surveys done in 2011 and a decade later, what would they find?

There are many variables: good governance, dams to trap water that otherwise goes to sea, pipes built to last, and a peace firm enough to encourage people to settle and invest. But top of the list is surely an abundant supply of baseload power that doesn't waiver or fail.

There is huge opportunity for solar. The output is clean, and a system can be up and running in a relatively short time. Critics call the output 'intermittent' because it relies on sunshine. However, it is an option favoured by donors, and the push for renewables is unlikely to wane any time soon.

If there's a problem with solar, it's that pumps need to run 24/7 and, ironically, the hours of darkness can be even more important. Why? Because of the peaks and troughs[8] in demand.

During the day, the amount of water we use may exceed the inflow from dams or rivers, but with good planning, there won't be a snag because overnight, while the city sleeps, reservoirs refill. Obviously, this game of nocturnal catch-up needs an energy source that works in the dark.

Look at the developing regions that have industrialised – including India, China, and South Africa – solar is a growing part of the mix, but coal, gas and hydro still dominate. And there are more fossil-fuel plants under construction.

There is an argument that the Industrial Revolution happened thanks to coal. We now know a lot more about this fuel and the harm it can do, but we're also able to burn it more cleanly. The argument runs that it would be hypocritical to condemn those countries who are now developing their economies through its use.[9]

Africa's only nuclear power station is at Koeberg, 24 miles

(40 km) north of Cape Town, and dates from 1984. The initial expense has ruled out nuclear for many small economies until now, but, within a decade, Koeberg will be joined by new plants:[10] in Kenya, Uganda, Morocco, Ghana and Egypt.

When nuclear goes wrong, it not only makes headlines but also finds its way into books, films and the public mind. Names like Three Mile Island in Pennsylvania (1979), Chernobyl (1986) and Fukushima (2011) have become shorthand for catastrophe, but, given the hundreds of reactors now in place across Asia, Europe and North America, there have in reality been relatively few accidents, and each one has led to better safety standards.

So, given how far some African countries have yet to go in providing their people with both energy and water, nuclear must play a role. People who don't have water are unlikely to care how it's pumped. The goal must be to get a reliable energy system in place; not in 20 years' time, but now. With new technologies allowing us to use both gas and coal more cleanly, and turbine dams giving not just power and water on tap, but the chance for fishing and irrigation, should we not put all options on the table and allow Africans to choose for themselves?

It is they who have to live with the problem.

Water, water everywhere!

The Vaal reservoir covers 120 square miles, a man-made lake on the border of Gauteng, South Africa's smallest and richest province, home to Johannesburg and the national capital, Pretoria. A third of the country's 60-million people live in Gauteng and, thanks to the dam, which was built in 1938, there's no shortage of water.

So why, in October 2022 and the first half of 2023, did taps in parts of Johannesburg run dry? The dam was 94% full, the rains were good, but hospitals in the city were being serviced by tankers to make sure healthcare didn't become yet another casualty of the crisis.

Johannesburg uses an estimated 1.6 billion litres of water per day,[11] and with one litre weighing one kilogramme, that's 1.6 million tons of the stuff that needs to be pumped uphill to a reservoir. And there's the problem: South Africa doesn't have enough electricity. There are power cuts almost every day. That's why the pipes go dry.

The state-owned power firm, Eskom, is a bumbling giant that many believe is not fit for purpose. New managers try their hands and leave. The company has 15 coal-fired power stations, 1 nuclear facility, 4 gas turbines and 7 hydroelectric plants,[12] but much of the fleet is down for repairs. There are four outages a day, of two hours each, and the government scrambles to buy electricity from neighbouring states or private operators.

This gap between demand and supply, and how it curtails the pumping of water, is a story repeated across Africa, a conti-

nent with giant river systems such as the Nile, Zambezi, Congo and Limpopo and, in West Africa, the Volta. There are lakes and dams aplenty and, while urbanisation – rapid and growing – is a challenge, the water problem is more about planning, and especially the supply of power.

Table 2 shows Africa's seven longest rivers, plus a few others for comparison (figures rounded).

Table 2: Africa's longest rivers.

	Kilometres	Miles
White Nile	6,650	4,130
Congo	4,700	2,900
Niger	4,200	2,600
Volga	3,600	2,270
Rio Grande	3,060	1,900
Zambezi	2,740	1,700
Orange	2,100	1,300
Limpopo	1,800	1,120
Rhine	*1,230*	*760*
Thames	*350*	*215*

With this much water, it's hard to see the problem. Most rivers have at least one dam, and some, like the Zambezi, have several. Across much (though not all) of the continent, ground water lies not far beneath the surface. In rural areas, there are boreholes and water tanks, known in South Africa as 'jojos' after a company that supplies so many of them that its products have become ubiquitous. The jojo stands on a platform and gravity does the work. But whereas a reservoir can hold millions of litres, the capacity of domestic tanks is mostly between 500 and 1000.

The outages, common now for more than a decade, have led to what's termed 'panic pumping,' topping up the jojo every few hours so that, when the power goes off, there will be something to drink. But what about the economy?

Farouk Hussain has a car-wash and tea room in the Johannesburg suburb of Crown Gardens, providing work to a team of four in a city where unemployment is chronic, especially among the youth. Mpho Koka of *The Sowetan* daily newspaper asked Hussain how the cuts to the water supply were affecting his business.[13]

> 'We had to close,' he said. 'We operate with water and we had to turn away customers.' On a recent weekend he had already taken the car-wash fee from a number of clients, 'and I was about to open the taps. There was no water.' He refunded the money and shut the doors.

Chicken farmers are another casualty. The industry is water intensive because the birds drink a lot as they grow, and their housing must be washed to prevent disease. South Africans eat a billion chickens a year and raising them provides jobs for more than 50,000 workers.[14]

Power cuts affected the abattoirs and, by January 2023, the drop in supply of poultry had seen KFC shut 70 of its outlets. Frozen portions of chicken along with freshwater fish are among the few meats still within the price range for low-income families. Those on limited means rely on what's known locally as 'walkie-talkie', a one kilo bag of frozen chicken heads and feet.

Chris Schutte is CEO of Astral Foods, one of South Africa's biggest poultry firms. He told *The Sowetan*[15] that in the financial year to 30 September 2022, load shedding – power cuts – and a lack of water had, together, cost his company an estimated R132 million ($7.7m).

> Mr Schutte said the country had experienced more than 200 days of power cuts in 2022. He said chickens raised for meat matured at 33 days but often could not be taken for slaughter because the abattoir was continually shutting down. 'You calculate the cost of feed for the 33 days and when that time has elapsed, as a farmer it is costing you more because you have to keep feeding the chicken. The entire supply chain is disrupted.'
>
> He said this was raising the price to consumers. 'Chicken becomes more expensive to produce…and we see record high costs for both feed and energy sources.' Some have installed diesel generators, a further overhead.

According to Statistics South Africa, manufacturers have shed over 400,000 jobs since 2008,[16] although the causes are complex and not confined to power cuts. Nevertheless, the sector is fragile, at a time when government is already under pressure over unemployment.

As with Eskom, Johannesburg Water is a government entity and controls more than 10,000 kilometres of distribution pipes, 87 reservoirs[17] and the all-important pumping stations. Its labs are rated among the best in the world, taking 500 samples at random every month. And you can drink straight from the tap. Filtration is done via a system of membranes, sometimes sand and stones, or even float tanks where chemicals bind particles so they sink to the bottom. But once again, there's need for a pump, and that means electricity.

When the power goes off, consumers continue to draw water, and the reservoirs slip below the level where they can be refilled before the next outage. In the long, rainy summer, this creates the irony of a city skidding on puddles but with nothing in the pipes.

President Cyril Ramaphosa of the ruling African National Congress (ANC) has made a commitment to phase out coal in favour of renewable energy and liquefied natural gas as a bridge to Net Zero by 2050. An international partnership, including the UK, France, US and Germany, has pledged $8.5 billion to help the process. The newsletter *Africa Confidential* summed it up:[18] Eskom is already in debt to the tune of R400 billion ($22.4bn). The state plans to take over a third of this liability and 'break-up the utility into separate generation, transmission and distribution entities'. But all these will still be owned by government, and there is a fear that 'the massive investment needed to transition', will not be forthcoming.

> …the debilitating power cuts, the worst in the country's history and which are heavily constraining industrial output, are set to continue for at least two or three years while renewable energy is added to the national grid and ageing coal-fired power stations are overhauled. Polls suggest that the power cuts could cost the ANC heavily in the 2024 elections.

Across the continent there are small-scale solar pumps, some installed by aid groups to work a borehole. Morocco is an example of national transformation, with a massive $9 billion in renewables either planned or underway, including the Noor (Arab for light) solar installation, which, when complete, will see panels across an area of 2,500 hectares, or just over 6,000 acres. Sun and wind account for 20% of the country's electricity, but nearly all the rest comes from oil, gas, and especially coal, which makes up a third of the total.[19] There's also a cable under the Mediterranean to import kilowatts from Spain.

Morocco has extensive desert where, in summer, the skies are clear for up to 13 hours a day. As technology improves and equipment becomes cheaper and output stronger, sun and wind must be the future. But here's the worry: in a year, the tiny state of Kuwait, with just four million people, uses double the electricity of Morocco with 37 million. A green dream or a country short on energy? By August 2022, in spite of its solar investment, Morocco's power and gas imports[20] had reached a four-year high.

So, back to the Vaal. Eskom relies on coal-fired generators for most of its output and, even with those at full tilt, it's not enough to keep the lights on, let alone the pumps. South Africa is prone to drought but, in the summer of 2023, the dams around Johannesburg were spilling. Without electricity, there was no way of getting that water into the reservoirs and through to the taps.

Man-made climate change is real, but it's not the problem here. The first two words hold true, in that the problem is man-made, but it happened in a year when the weather was kind.

Heaven help us when it's not.

Against the flow

Look up the greatest inventions of all time on a list of ten, twenty, even a hundred. The gulf between humans and other primates results from our learning to make fire, allowing us to migrate from the warmth of central Africa and populate the world. The wheel, more than 5000 years ago, made that journey easier, and nails allowed us to build homes that withstood the elements. Electricity harnessed by, among others, Ben Franklin and Thomas Edison, changed everything, but so did penicillin, printing, cars, planes, the Internet and nuclear fission.

Weirdly, the one that rarely shows up is the screw pump, and before you shout 'Archimedes!' the idea was in play at least 500 years before his birth in 287 BC. Take a tube and create within it a giant screw that touches the sides. Now place one end of the pipe in water and turn the screw. Eureka![21] Archimedes drew and described it, but the Pharaohs had something similar and, if the Hanging Gardens of Babylon existed, chances are this is how they were irrigated.

The technology has changed; we now have a source of power in electricity, but screws and propellers are common in the movement of liquid. Anyone who has a filing cabinet knows what a curse they are: the bigger the drawer, the more paper we keep! Water has proved to be not so different: the more we have, the more we use. Over the past century, global demand has increased at double the rate of population growth.[22]

Numbers on this controversial topic are difficult to pin down. One aid organisation may have figures showing its target area is in need. This not necessarily untrue, but there can be a range of reasons why people don't use a lot of water, or pipe it everywhere. The United Arab Emirates was a desert until oil money made it possible to irrigate the land via a combination of desalinated sea water and very deep wells. All those green lawns mean its per-capita water usage is as much as 2400 litres a day,[23] double that of Germany.

Israel is another case where industry and agriculture push up consumption. It has no oil, but its economy, valued at half a trillion dollars, is bigger[24] than those of Qatar, Kuwait, Oman and Bahrain combined. On the World Bank's list, 'Ease of Doing Business' – a measure of how well the bureaucracy works and how quickly investors can get going – Israel ranks No 1 in the Middle East. Aside from grain, Israel is almost totally self-sufficient in food and an exporter of fruit, much of it grown under drip irrigation.

The country produces all its own electricity, mostly from gas and imported coal, and is a leader in solar research, with new power plants under construction in the Negev Desert. The Israeli manufacturing sector produces everything from weapons to medical equipment. All of this consumes water, used with care and efficiency, but used all the same. It's pumped to high points

and piped around the country so that, even in the driest towns, the taps still run.

In both the UAE and Israel, desalination has been vital. Could it work in Africa? The continent has a coastline of more than 120,000 kilometres (74,500 miles) and 38 countries have access to the sea. Algeria, Tunisia, Egypt and South Africa already run plants in which salt can be removed from sea water. In hot weather, evaporation is the enemy so, after treatment, covered reservoirs are vital for storage.

The challenge is what to do with the left-over concentrate, known as brine. It is liquid, but harmful to the environment.[25] One option is pumping it back out to sea; if this is done with a single pipe, the brine can damage plants and fish around the outlet, but dispersing it via a network of small pipes fanning out from the source overcomes the problem.

The obvious advantage is that, in a drought, the oceans are still there. So long as the desalination plant continues working, prosperity is within reach, as shown in the Middle East.

There is one hitch: bringing water from the sea, taking it through a system of reverse osmosis, sending some to storage and returning the brine uses more energy than simply pumping from a dam to a tank. And no matter how long the coastline, a country without electricity from a reliable source can't make the desert bloom.

Bob Geldof's lesson to the world

In 1982, the news from Ethiopia was ghastly: skeletal images of adults and children the like of which we hadn't seen since Auschwitz was liberated in 1945.

The pictures were appalling. Babies dying because their emaciated mothers had no milk. Bodies piled up, soil dry as the surface of Mars. The human cost was horrendous:

- Dead: Up to 1.2 million, though deaths were often not recorded
- Displaced: 2.5 million
- Orphaned: 0.2 million.

'Thousands were dying every week,' the BBC's Mike Wooldrich wrote in a retrospective 30 years later. His colleague Michael Buerk described it as 'the closest thing to Hell on Earth'.

Only the extraordinary fundraising efforts of Bob Geldof – Band Aid and Live Aid and so on – put a stop to the crisis, although these addressed symptoms rather than causes. Ethiopia was a country about which the average viewer knew little, and which many couldn't even find on the map but, from Sydney to San Francisco, money poured in to help the hungry and thirsty.

The scale of the catastrophe was real enough, but it wasn't the whole story. Many of the deaths had more to do with politics

than nature. By 1984, Ethiopia was a dictatorship, in the hands of Colonel Haile Mariam Mengistu (b. 1937), a career soldier who was set on holding together a country where many yearned to secede. A series of regional spats grew into all-out civil war. When the drought came, Mengistu saw it as a useful weapon in his armoury, and he denied food and water to the provinces pushing to separate. He even moved people[26] into areas affected by the drought.

As a result, Human Rights Watch estimates that perhaps half the deaths were political.[27] Charities and the media were not always clear about this. If the truth came out, would the public have been so willing to give? And if Geldof had blamed Mengistu, would he and the camera crews have been allowed to enter the country?

Moreover, Ethiopia is no stranger to natural disaster, with records of such catastrophes dating back more than a thousand years. The causes have varied from a failure of rain to invasions of locusts and outbreaks of rinderpest, a virus deadly to cattle herds. A particularly bad drought in the 1880s left a third of the population dead. We weren't told this in 1984, and both the news and appeals for help portrayed the crisis as one of a kind.

Yet Ethiopia is among the best-watered countries in Africa. The Blue Nile runs for around 1450 kilometres (900 miles) within its borders, a massive waterway that now has dams along the route. There were not so many in 1984, but the river was still there. In one of Africa's oldest and greatest civilizations, why was water not piped to drought-prone areas? Centuries of neglect – under the communists and the Emperor before that – had left Ethiopia without a functioning water system. If there'd been a network of pipes and pumps (and the electricity to power them) to bring water from the Nile – and if the Cold War hadn't made Moscow and the West fearful of pressuring Mengistu lest he went to the other side – it would have been easier to bring relief.

Ethiopia is not yet a democracy, but progress is at least being made. The country's population has grown from around 38 million in 1984 to over 120 million in 2023. Water storage and movement is better now, but still needs investment. And piping water is difficult. The country struggles with electricity,[28] and only half its population has access to the grid. But there are plans to boost the use of coal, some from an estimated local reserve of 300 million tons, the rest imported from South Africa. New projects for gas, hydro and solar are also underway.

The crisis 40 years ago put a focus on water and irrigation, sustainable agriculture, and aid that is more accountable and less likely to be stolen or hijacked. Even so, not a year goes by without some call to respond to disasters in Somalia, South Sudan or the once food-exporting Zimbabwe, now a net importer. Time after time, the same problems are found behind the headlines:

- poor governance
- a lack of transparency
- intolerance of political opposition
- the media harassed
- not enough electricity
- water management that's not fit for purpose
- population growth beyond the capacity of even a well-run state.

Whatever the weather, or how much the climate changes over time, it is only by dealing with these issues that we can ensure the human tragedies so common in Africa are not still happening ten, twenty or a hundred years from now.

In Ethiopia, and anywhere there's want and poverty, a regime of industrialisation, jobs for the young, a sensitive campaign to encourage smaller families, rapid electrification and a tap in every home can make sure Sir Bob Geldof, now in his 70s, won't again have to rescue a country from itself.

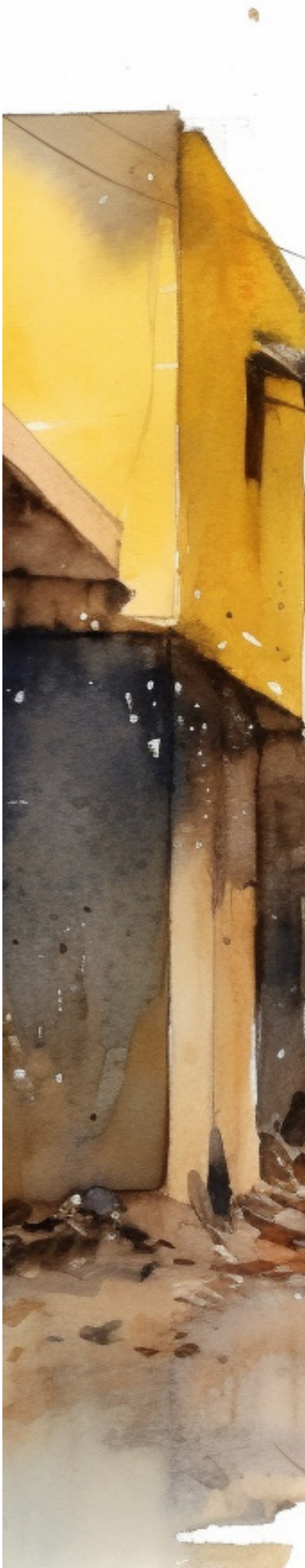
A dream whose time has come

The United Nations has long declared water a basic human right. That doesn't stop suppliers in Africa – mostly at local government level – closing the valve to a property if the residents don't pay. In Johannesburg, your water bill can be up to date, but arrears on rates and other charges will still see the council at your gate, threatening to leave you dry. It usually works; accounts are paid or a payment timetable put in place to clear the debt.

Illegal connections are common, and parts of the city have no meters. Makeshift shacks set up by those newly arrived in search of work are connected to neither power nor water, and human waste is dumped in the river, in what is arguably Africa's most modern metropolis.

Outages aside, the circulation system in South Africa is advanced and extensive. Across much of the continent it is not. Think of a country known for being wet, and many would point to Britain. Days of rain have given rise to jokes, and the weather is a topic of conversation. With an average of 1220 millimetres per year, it's no surprise so many Brits carry a 'brolly'. Ironically, nearly a third of African countries have an equal or higher rainfall, including Liberia and Cameroon, high on the list in the *Washington Post* story on a shortage of water.

The UN's '2030[29] agenda' for development centres on a pledge that 'no one will be left behind', and a pledge to bring water and sanitation to the world in just a few years. By the organisation's own figures, 4.5 billion people[30] or 60% of the global population 'don't have a toilet that safely manages human waste at home'. Around 750 children die every day from an illness related to hygiene.



After decades of aid and endless programs to make the world better for all, how have we fallen so short? Perhaps because the focus has been on the goal rather than how to get there.

The world has water, plenty of it, from boreholes, dams, lakes, rivers and the sea. Piping it to every last building, every factory, store, school and shack should be our starting point; campaigns to dig wells in villages are not a bad idea, and are still used to woo the British public into parting with money, but we need more than that.

First should be a commitment to the UN ideal that all people are equal, human rights are universal, and if access to water is one of these, then those who live in Mali or the Congo should enjoy the same access as a family in London or Zurich, and at a price they can afford. And while the state or other supplier might limit the flow if bills are not paid, no home should ever run dry.

Is it a pipe dream? If we fiddle to put a tap here and a toilet there, the answer will be a tragic 'Yes!'

A real agenda for water and hygiene starts with a plentiful supply – and most of Africa has that – and ample electricity to move it. That may mean a thermal plant (but not scaled for a million people in a city of ten times that number, as so often happens in Africa). In the future, it may also mean a solar farm – the price of panels has come down markedly – but supplying a city 24/7 is still asking too much of current technology, especially for pumping water. In the meantime, we should aim for power sources that can actually deliver what is needed, and just require that it be as clean as possible.

Ensuring the supply of water by 2030, or even 2050, doesn't look likely, given how far behind we are. That doesn't mean the aim should be abandoned. Only when we think big will we ever be able to truly open the taps.

Notes

1. https://epi.yale.edu/epi-results/2020/component/h2o.
2. https://www.usgs.gov/special-topics/water-science-school/science/how-much-water-there-earth.
3. Recent discoveries about water trapped deep within the planet are unlikely to give us access to this source any time soon. See https://www.iflscience.com/there-is-a-massive-ocean-of-water-underneath-our-feet-68099.
4. https://education.nationalgeographic.org/resource/roman-aqueducts/.
5. https://www.washingtonpost.com/politics/2022/01/28/is-africa-losing-ground-battle-water-sanitation/.
6. https://www.esi-africa.com/reports/urbanisation-a-powerful-engine-for-africas-economic-growth/.
7. https://www.thenewhumanitarian.org/news-feature/2022/07/07/Ukraine-aid-Russia-invasion-funding-donors.
8. www.researchgate.net/figure/Average-water-consumption-for-the-24-h-of-each-day-2_fig1_324490389.
9. There's a view on this from The Guardian (UK) at https://www.theguardian.com/global-development/2022/jan/28/west-accused-of-climate-hypocrisy-as-emissions-dwarf-those-of-poor-countries.
10. https://energycapitalpower.com/examining-the-state-of-nuclear-power-in-africa/.
11. https://mg.co.za/special-reports/2022-03-15-water-conservation-and-water-demand-management-in-johannesburg/.
12. https://businesstech.co.za/news/energy/652481/deepening-crisis-at-eskom/.
13. The Sowetan, 'Businesses close shop due to water cuts.' 4 October, 2022.
14. https://www.poultryworld.net/poultry/broilers/billions-invested-in-south-africas-poultry-sector/.
15. The Sowetan 6 January 2023. Crunch time for chicken market as power cuts take toll.
16. https://mg.co.za/business/2023-01-09-what-is-hamstringing-sas-industrial-growth/.
17. https://www.joburg.org.za/media_/Newsroom/Pages/2020%20News%20Articles/January%202020/Joburg-Water-to-repair-aging-infrastructure.aspx.
18. Africa Confidential 5 January, 2023.
19. https://www.trade.gov/country-commercial-guides/morocco-energy.
20. https://www.mees.com/2022/8/26/power-water/morocco-turns-to-spain-for-power-amid-summer-heat-lack-of-gas/8c084560-2531-11ed-b3d8-fb63deaa50c2.
21. This is the word Archimedes is said to have shouted after jumping naked from his bath and running down the street when he worked out that his body displaced a finite amount of water. You can read an account of it at https://www.scientificamerican.com/article/fact-or-fiction-archimede/.
22. https://unstats.un.org/sdgs/report/2019/goal-06/.
23. https://www.worldometers.info/water/.
24. World Bank estimates. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=ZQ&most_recent_value_desc=true https://en.wikipedia.org/wiki/Ease_of_doing_business_index.
25. https://www.reuters.com/article/us-environment-brine-idUSKCN1P81PX.
26. https://www.cbc.ca/documentarychannel/features/ethiopias-unforgettable-famines-heres-why-they-really-happen.
27. https://en.wikipedia.org/wiki/1983%E2%80%931985_famine_in_Ethiopia.
28. https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS.

29. https://www.unwater.org/water-facts/human-rights-water-and-sanitation.
30. https://www.unicef.org/stories/7-fast-facts-about-toilets.
31. https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS.


For further information about Net Zero Watch, please visit our website at www.netzerowatch.com.
NETZERO
WATCH