

AFRICA'S BURNING ISSUE
CHARCOAL AND THE LOSS OF FOREST
GEOFF HILL

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Africa's Burning Issue: Charcoal and the Loss of Forest

Geoff Hill

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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.

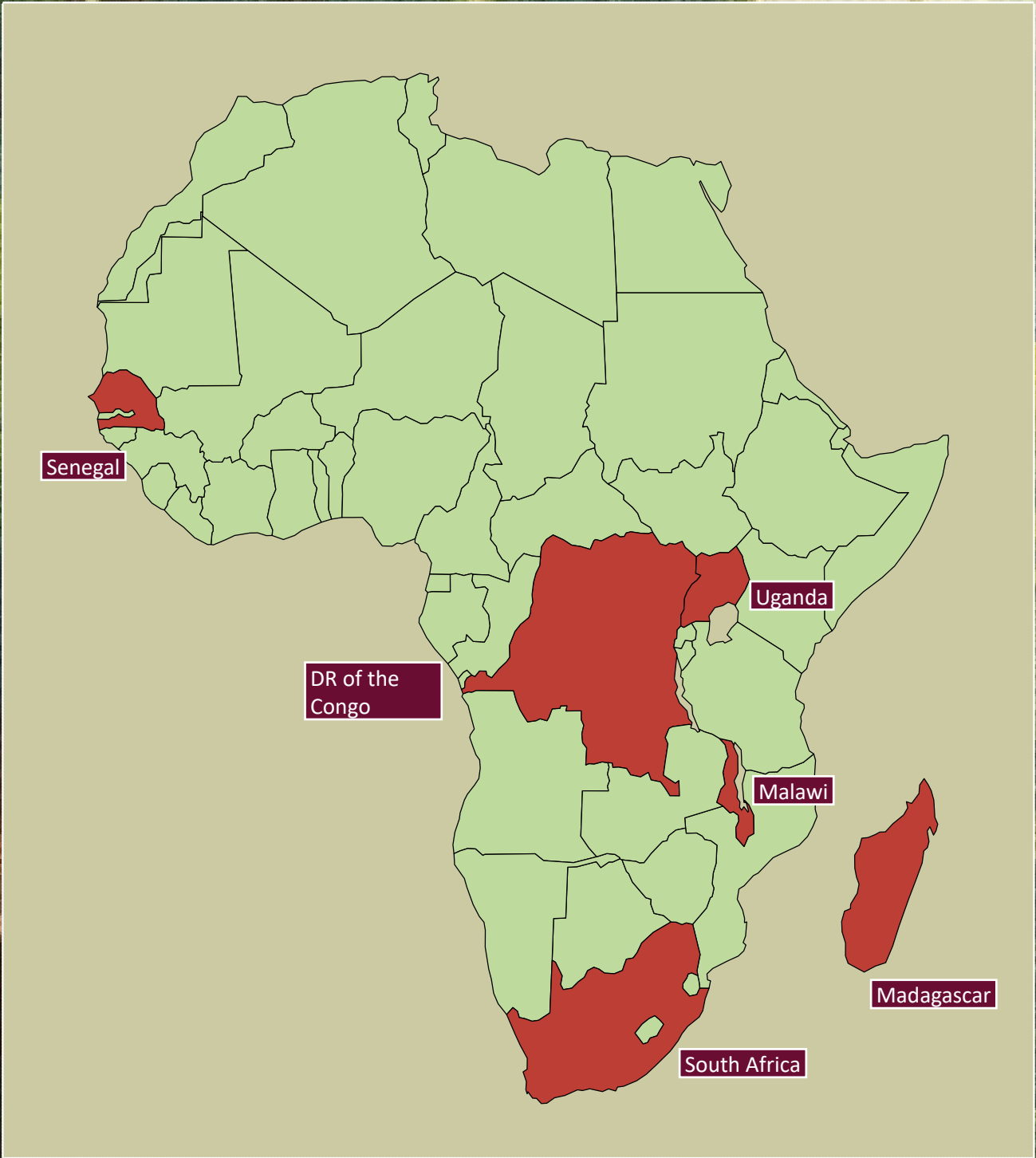
In the publicity that followed, he was approached to write a definitive account of his home country. *The Battle for Zimbabwe* became a bestseller in South Africa, and the US edition was launched in Washington by Assistant Secretary of State for Africa, Walter Kansteiner (who served under George W. Bush). 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

In 2023, charcoal and firewood remain the dominant fuel for many households in Africa.

Rapid population growth has seen an exponential rise in demand. Trees are not being cut down by people who don't care about the environment, but by those with few alternatives. In countries such as Malawi, where deforestation is especially serious, the trade in charcoal is banned, but continues openly. A mix of corrupt officials and buyers desperate for the product make it hard to enforce the law. On a continent marked by poverty and a shortage of electricity, consumers either have no alternative to charcoal, or can't afford it. Cutting down a tree is free.

In Africa, an area the size of Switzerland is cleared of forest every year, with an estimated 90% of the wood used for cooking or to heat the home. Dust storms across the continent and on the island of Madagascar have become more serious because, with the forest gone, there is little to hold down the soil. The loss of forest leaves wildlife without a home, and has been shown to affect rain patterns and the spread of desert.

There is a need for reliable energy, and at a price local people can afford. Without this, the forest will continue to fall and, ultimately, vanish.

It is not too late to reverse the damage, but we need to begin now.



Introduction

Forest is my favourite landscape. My late father worked as a water engineer across Africa and, in his spare time, he kept bees. From an early age, he taught me about the forest flowers that gave the best honey, and how trees along the mountains and valleys kept soil in place when the rain came, and water flowed down the slopes and into rivers and dams.

Growing up, my heroes were Jane Goodall, who changed our understanding of chimpanzees in the wild, and George Schaller, who did the same with gorillas, followed later by Diane Fossey, who lost her life trying to protect them.

In Warwickshire, there's a patch of wilderness where an old rail line was removed during the Beeching cuts of the early 1960s, which rationalised the British train system. Over more than half a century, a woodland has filled the space where the tracks once ran, slow but continuous in its growth, until now there is nothing more than a path between the trees, an example of how quickly nature can regenerate. Given time, there is no reason why areas like these can't regain the glory of how they looked before human settlement. But what chance of that if the UK still depended on wood for energy or to build our homes?

In Africa there's a war against trees. No one sees them as the enemy – indeed they feature in much of local folklore – but on a continent where millions have no electricity, the only fuel is wood, usually reduced to charcoal.

Take a day flight from London to Johannesburg and, if the sky is clear, you will see the second-largest rainforest after the Amazon, filling the Congo basin and serving as a lung to the planet. But there are also great open tracts, where the trees have gone and more are being cut. This is not an act of vandalism but a need to cook and stay warm.

Africa is neglected by the world press, and too often the only headlines are linked to violence and bad government. The good news, and there is plenty of it, rarely gets a mention. Coverage of the forest is just as scant. In 2018, when conservative president Jair Bolsonaro took office in Brazil, there was near hysteria in the media over speculation he might allow farming and mining in the Amazon. Yet elections in the seven countries surrounding the greater Congo basin are treated as non-events, and candidates are rarely asked about conservation and the environment.

On trees, Britain has no room to lecture. Under the Tudors, much of the oak forest was taken to build the ships that made the Royal Navy, and the vessels that took people out to colonise the world. The plains and grassy knolls of England were not the original landscape.

In Africa, the loss of forest has happened far faster, but over a period during which the population has doubled and doubled again, to the current 1.4 billion.

Almost half have no electricity, and so: charcoal. There are projects to reforest parts of Kenya, the Congo, Madagascar, Malawi and others, but while these saplings are planted, 400-year old giants come down.

The solution is to electrify. Fast! The choice of how this is done must rest with Africa. Hydro, solar, wind, coal, oil and gas – each has its own problems, but this is not the time for a colonial mentality, where those outside set the rules.

The world can help with funding, and technology to make the power clean. And this is no time to think small; too many papers from NGOs and academics seem to focus on local off-the-grid projects that wouldn't pass muster in the developed world. What's the point of saving a few acres of forest by powering one village, while entire regions turn to desert? We need to electrify a continent, not a speck on the map.

It's easy to accuse NGOs of being too limited in scope, building a dozen toilets for a village or supplying a tractor to plough fields. Resources only stretch so far, and better a small step forward than no help for a community in need. But that's not what built the world's great economies. If we believe Australia, Britain and the US have a right to growth and prosperity, then we must move on from seeing Africa as a charity case. We must plan for economy of scale and the kind of infrastructure that remade Germany and Japan in the wake of World War II. Get that right and there'll be no need for aid or NGOs. Is that too ambitious, too crazy? As airline billionaire Richard Branson puts it, 'If people aren't calling you crazy, you aren't thinking big enough.'

Any solution must be in tandem with the facts. There is no point building hydro-power on a river that dries up for much of the year, or laying solar panels in an area that has storms strong enough to blow them away.

The most important fact is that millions of people are used to cutting wood for free. It is easy to lecture from the comfort of Europe or the US, even to protest far away from the action and then go home to a stove or cooker, and warmth at the press of a button. Until Africa can do the same, the forest will not be safe.

There are more than 50 nations on the continent, and each has its own story. The common thread is a problem with energy. I have used two countries – Malawi and Madagascar – as examples, and encourage you to look up others on the Net.

Africa's thin green line is unravelling. Land left bare is more vulnerable to extreme weather, but it's not the weather or climate that cleared it. We need to replace wood as a fuel. It really is that simple. And if we bicker among ourselves too long over how to do this, the forest will be gone.

Geoff Hill
Johannesburg

A continent on fire

Africa is losing its forest. Not just a few trees here and there: an area the size of Switzerland is cleared every year. That's four million hectares, or just under 10 million acres. A staggering 90% of the timber is used as firewood,¹ commonly turned into charcoal and sold in markets across the continent.

It's the five-to-one rule that makes it work. Five tons of wood can be reduced to one ton of charcoal by burning off the moisture, gas and other elements, leaving a solid block of energy.² This allows large amounts of fuel to be moved even where transport is a challenge. The seller can pack a dozen bags on a bicycle, and for buyers, a single bag (8–12 kg) can last a week.

Charcoal is among the most important materials in the story of civilisation. It burns hotter than logs, with enough energy to liquify metal. Without it, the Pharaohs would not have had their jewellery and gold coffins, and the Greeks, Romans and Zulus would have fought with clubs instead of spears. It is used to filter drinking water and to keep your fishtank clean. Later came coking or mineral coal, the two often used together, and without them we'd have had no nails, barrels, warships or cannons, and no bronze or iron age. The industrial revolution and, later, the wires that made possible Edison's capture of electricity and Alexander Graham Bell's telephone, all relied on the ability to melt the various metals and blend them into alloys.

Sometime around 900 AD, a Chinese alchemist took charcoal and mixed it with sulphur and saltpetre (potassium nitrate). The result was gunpowder, which was carried west by the Mongols to the Middle East and Europe. Some, seeing it for the first time, called it 'Black Magic', and with it they made guns, moved rocks for roads and mines, blasted tunnels, and let loose a slaughter upon nature and humankind.

Today our methods for smelting and making weapons have altered, but charcoal stands behind a devastation far greater than any war. With human population now just over eight billion, and electricity unavailable or too expensive for 600-million people in Africa and half-as-many again in Asia, vast areas of forest are being used to cook and to warm the home by those who have no other fuel.

There are also regions where trees are being cleared for crops. Côte d'Ivoire is the world's leading producer of cocoa, and in the past 20 years around 2.4 million hectares of forest have been replaced by cocoa plantations.³ Ghana has suffered a similar fate.

Logging in the Democratic Republic of Congo (DRC) has been devastating, with half a million hectares of tree cover lost every year.⁴ In 2021, a British-led initiative pledged US\$500 million in aid from various donors to save the jungle and re-forest a further 8 million hectares across the Congo.

In the formal economy there are a few options. Logging firms can have their permits revoked if they break the rules, and crops can be farmed intensively under irrigation. But those with no other source of energy will chop trees, breaking the law if they must.

On the Congo River, barges move slowly west with the current, decks piled high with charcoal from thousands of trees cut elsewhere, along a waterway that flows for close on 5000 km, making it the second-longest in Africa after the Nile. The forest here absorbs 4% of the world's carbon emissions, and is home to endangered species such as western lowland gorillas and the okapi antelope.

While the donor plan to save trees – and plant more – seems to be working, an estimated 90% of Congolese use charcoal to cook their food.⁵ Where efforts are made to curb the trade, locals complain they have no other source of energy, and sellers bribe the underpaid police and army to let them continue.

The city of Goma lies in the east of the DRC, on the border with Rwanda, and is home to more than a million people. More than half the charcoal sold here comes from trees felled illegally in the nearby Virunga National Park. Armed rebels are active in the area, and the trade in timber and so-called bush-meat – wild animals killed and sold as food – is run by criminal gangs.

In an effort to change habits, the World Wildlife Fund (WWF) has handed out thousands of stoves that use less fuel and burn it for longer. No question, this is a good move, but it's still charcoal and unsustainable. Better stoves should be in the footnotes of a plan to electrify the continent. The WWF has also sponsored farmers to plant some 20 million fast-growing trees, including Australian eucalypt and wattle. Within two years, these can be cropped and sold both for building and firewood. But while the project has been welcomed by locals, the rate of deforestation in Virunga has barely changed.⁶

At the heart of it lies the problem of choice: there is none. Only one in five people in the DRC has the power on at home,⁷ and almost two-thirds live below the World Bank poverty line of \$2.15 per day.⁸ The long rainy season puts a question mark over solar power, which, in any case, does not produce enough current for a stove. There is room for more hydro turbines on the Congo River, but political instability has scared investors. The country has 97 million tons of coal,⁹ but uses almost none of it and, again, few are willing to risk the kind of money it would take to develop the mines and build the power plants.

And so more trees fall. Faced with buying logs from a plantation or cutting them for free in the wild, people who don't have enough money for food choose the latter. It's a pattern repeated from South Africa to Ethiopia and west to Nigeria, the world's second-largest maker of charcoal after Brazil.

Africa's population has grown four-fold since 1960 and now stands close to 1.4 billion, and an estimated 80% of households rely on wood or charcoal. There are alternatives, including gas, kerosene and, where it's available, electricity, but all come at a cost. Where trees are not replanted, the land degrades. Forest soil is loose and powdery, and blows in the wind; soon enough, there's a desert where the jungle once stood.

Africa produces 60% of the world's charcoal, around 25 million tons a year.¹⁰ Some is exported to Europe, but most is for local use. Yet it's largely excluded from academic texts, and ignored by those who call for an end to oil, coal or gas. This is one of our earliest fuels, but in the developed world, it's a footnote.

When Catherine Nabukalu of Uganda was taking her master's degree¹¹ in energy at the University of Pennsylvania, she saw the problem. 'In class, we would systematically go through coal, then nuclear, then hydropower, then solar,' she says, describing the curriculum. Something was missing.

'I'm African, and I've used charcoal. It's not fun to use; cooking is often not a healthy or enjoyable experience, but it's a big part of the energy mix.'

Her professor, Reto Gieré, who leads the department of environmental science at UPenn, helped Nabukalu to raise funds for a detailed study of cooking-fuel in Uganda. Her report paints a picture of a country in crisis:

- People move when trees have been depleted. This can lead to conflict when they arrive in an area already settled by others.
- Felled trees are unlikely to be replaced.
- Much of the supply chain is informal, with no oversight.
- Traders sell charcoal far from where it is sourced, making it hard to track how much is actually being produced.
- It's one of the few sources of income for those who don't own land.

Nabukalu examined a ban introduced (and quickly reversed) in neighbouring Tanzania and found it had little effect other than to drive up the selling price and create a black market, which, in turn, led people to cut their own wood instead of buying from others.

'I think a lot of reports grossly underestimate how much charcoal is being produced and used,' she says.

Women told her they found it easier to budget with a product bought in advance. 'When cooking, either you're going to use charcoal which you've already paid for, or you're going to turn on the gas or the electricity, but you don't know how high the bill will be.'

In November 2022, world leaders met at Sharm El Sheik in Egypt to discuss climate change and efforts to limit a global

temperature hike to no more than 1.5°C above preindustrial levels. Poor countries, notably in Africa but also some in Asia and Latin America, have long tabled a demand for \$100 billion a year to be paid by wealthy nations, not just in compensation for climate change but to allow a 'just transition' from fossil fuel.

India, China, Colombia, South Africa are among the many who rely on coal to generate electricity. With the war in Ukraine, and Russian gas cut off by sanctions, Poland and Germany have ramped up their use of other fossil fuels, including coal.

But rarely at climate summits is there mention of charcoal and the loss of trees, or how poor families in Africa would pay for electricity, even if the \$100 billion was used to build solar or wind-powered generators at scale.

The magic number is dwarfed by the estimated \$140 billion lost every year to corruption.¹² This is not a figure drawn up by some think-tank with a bone to pick: it's from research done by the African Union at its headquarters in Addis Ababa. That's money enough to provide free electricity to everyone in Africa for three years, and raises the question whispered by donors in private: if the COP target of \$100 billion was granted, who's to say at least some of it wouldn't end up in the pockets of ministers, presidents and their associates?

In South Africa alone, more than \$3.5 billion is alleged to have gone missing during the tenure of Jacob Zuma,¹³ who led the government from 2009 until the ruling African National Congress removed him from office in 2018. Now 81, he faces multiple charges linked to his time in power.

If there's a cost beyond the environment, it's in human life. According to the World Health Organization (WHO), around 10,000 people die every day from respiratory illness linked to the use of cooking with solid fuel. A global study carried out under former president Barack Obama put the mortality rate as higher than AIDS, malaria and TB combined.¹⁴

The countries worst affected by respiratory illness are India and China, but Ethiopia and Cameroon are also high risk. Stroke, heart attack and cancer of the throat and lungs show up in WHO findings.¹⁵ Children are especially vulnerable, and while women may be more exposed because traditionally they prepare food over the flames, entire families will sleep in a single windowless hut. With no ventilation and a fire left alight to warm the home (and deter mosquitoes), it is an area where expansion of the grid would be a lifesaver.

Is there hope? Not much, until the population enjoys a reliable supply of gas or electricity, at a price they can afford, and with power enough to generate heat both for cooking and to warm the home. With such an enormous deficit of energy – and monsoons that sweep across much of Africa – solar would be hard-pressed to fill the gap. Wind is also a problem. In the days of

sail, ships were 'becalmed' in the tropics, stuck for days without a breeze. Air moves rapidly around the north and south of the Earth, but not in the middle, so turbines would need back up.

Nuclear is an attractive, if pricey, option for poor economies. Natural gas is abundant, with new discoveries coming online in Mozambique. Angola and Nigeria are two of the world's largest oil producers, and fresh finds have been made in East Africa and off the coast of Namibia.

The University of Witwatersrand in Johannesburg has a clean-coal laboratory that draws scholars from around the globe, and strides have been made in reducing emissions. Africa has rich seams of coal, but lenders, including the World Bank, are coy about fossil fuel. China is less sniffy, although critics say loans carry a tacit obligation for political alignment with Beijing.

If we want to stop the biocide against the forest in Africa, tough decisions will be needed. And soon. At the current rate, there will be little left a decade from now

Dr Jane Goodall, the pioneering primatologist who changed our understanding of chimpanzees, is part of a UN campaign to plant a trillion new trees across the planet by 2030. In an essay for *Time* magazine in 2021,¹⁶ Dr Goodall wrote:

Trees, forests and all plant life have a crucial role in balancing and maintaining the cycles of life on our planet. They provide food, water, shelter and medical cures. They create the oxygen we breathe and absorb the carbon dioxide that threatens our climate.'

Island of despair

Madagascar has become the poster-child for victims of climate change. A former French colony, and roughly the size of metropolitan France, it lies off the east coast of Africa. At 28 million, it has a population slightly larger than Australia, with the economy of Milton Keynes¹⁷ (\$15 billion per year), and one of the worst levels of deforestation on the planet. Estimates range as high as 90%, but this is disputed by some researchers. What they agree on is that more than 11,000 species of plants are found nowhere else,¹⁸ and that most of the animal life is also unique to the island.

The average family uses around 100 kg of firewood a month for cooking and heating,¹⁹ much of it in the form of charcoal. According to the World Bank, only a third of the population has access to electricity, and this drops to 15% in rural areas.²⁰ The problem is that generations of people have viewed the forest as a free resource. If they had cheap, reliable electricity, there would at least be an option.

Since 2018, there has been an especially persistent dry spell, and aid groups have installed irrigation pipes to bring water from the north to croplands further south.



More than half a million children are at risk of malnutrition according to David Beasley of the UN's World Food Program,²¹ who described it as, 'an area of the world that has contributed nothing to climate change.' Now, he says, 'they're the ones paying the highest price.'

Dust storms blow soil from areas once protected by forest or grassland. Slash-and-burn agriculture, although illegal, remains common, and trees continue to fall, even in the national parks. After a few crops, the soil loses fertility. The south of the island is also prone to drought.

Since independence in 1960, the population has grown five-fold.²² Madagascar is the world's largest source of vanilla, but there is little else to reduce the widespread poverty, except tourism. Ironically, what visitors come to see is the unusual forest wildlife, including lemurs, the long-tailed woolly primate made famous by Dreamworks in a series of hit movies named for the island. Like many of the trees, lemurs are in trouble: seven species are listed by the International Union for Conservation of Nature as 'vulnerable',²³ five are endangered and four are critically at risk of extinction.

Agnès Callamard, secretary general at Amnesty International, says Madagascar, 'is on the frontline of the climate crisis,' with 'drought of catastrophic proportion, and violations of their rights to life, health, food and water'.²⁴

Not everyone agrees. World Weather Attribution (WWA) is an initiative between climate scientists from a number of universities, including Princeton and Imperial College London. They have raised concern over climate change and the effect it could have around the world, but in the case of Madagascar they say that droughts of this nature, while not common, have occurred in the past and that, this time around, high levels of poverty have made the effects more severe.²⁵

Journalist Jacob Zocherman has covered famine and other crises in Africa. In *The New Humanitarian* magazine,²⁶ he described drought and hunger as, 'nothing new to the people of southern Madagascar,' adding that, 'historically there have been many episodes'. The older people on the island told him the unpredictable rainy seasons had been a problem all their lives.

It's not just the droughts that are driving food insecurity...As a result of widespread deforestation, poor rains have combined with desertification to create an additional threat known as *tio mena* or red wind, the sandstorms that bury crops in the fields.

There was a drought worse than this in the early 1980s,²⁷ affecting all of east and southern Africa, when Madagascar's population was only one-third the size. Even so, food had to be imported, but there was enough tree cover to hold down the soil.

If one takes the historic view, our activity has influenced the global climate for millennia, especially in Africa, where humans first evolved and have therefore had the longest impact (though not the

most severe). Farming, bushfires, the domestication of cattle and our use of wood for fuel is a story stretching back before the written word. Fossils from Wyoming show how, even without us, there were drastic changes in the weather more than 50-million years ago.²⁸

A UN paper published in August 2022 calls for more solar lights in homes.²⁹ As an aid program, this would certainly improve life for Madagascans. Even those on the grid suffer outages when the power company shuts its generators because demand is so high it could damage the network. But light in the home is not driving the charcoal sellers.

Biofuel made from waste, pellets from crops like sugar, even woodchip from plantation timber, would help. But all these cost money. Those who make charcoal are often poor. After decades of cutting trees for free, it's hard to imagine a change. Timber has always come at zero cost to the seller.

In a region typically ruled by old men, President Andry Rajoelina is unusual. Born in 1974, he has made a commitment to reforest the country and conserve its wildlife. At celebrations to mark the 60th anniversary of independence in 2020, he announced the planting of 60 million trees.³⁰ His problem is that 100,000 hectares are still being cleared every year,³¹ some for agriculture, but also for charcoal. His people simply have no other fuel.

Climate patterns are better understood in retrospect, and it will be another 50 years before we can look back with certainty at how the weather has changed. The question is whether it changes the outcome in a country such as Madagascar. The forest has been lost, not to some meteorological effect, but to charcoal. More people, more need for fuel, and nothing to fill the gap. If the drought hadn't come this time, history shows us it would still have turned up: next year, a decade from now; it makes no difference. The trees are gone, the soil is loose, wind and rain take it away and there's an environmental disaster.

What else could there be?

Malawi: the warm heart of Africa

If Madagascar is a tragedy, Malawi is a crime site. Though logging without a permit is illegal, most of this central African country has been cleared of trees. Indeed, more than 90% of its energy comes from wood and charcoal.³²

In the capital, Lilongwe, and the business hub of Blantyre, named for the birthplace (in Scotland) of David Livingstone, sellers have long wheeled their wares on bicycles, with no place for the rider but piled high with bags of burned wood cut months ago to let it dry, and then heated in a kiln to remove the remaining moisture.

A third of the country is taken up by a lake, and 21 million people are squashed into an area smaller than Cuba (whose population is half the size). This is tropical Africa at its best, lush and well-watered with fertile soil, and at an altitude high enough to escape the heat

and humidity of neighbouring Mozambique. On the highest peak, Mount Mulanje, there's the occasional fall of snow.

A staggering 85% of the population is not on the grid,³³ and Malawi has no oil or natural gas. Three quarters get by on \$2 per day or less³⁴. Tea is grown in the highlands, but total GDP of \$11 billion is only slightly larger than Kosovo's.

Under British rule, until independence in 1964, Malawi was known as Nyasaland, now a slang term for the millions who work in South Africa and Zimbabwe and come home only at Christmas.

Once covered in forest, mountains like Ndirande, close to Blantyre, are bare. And where the trees have gone, roots long since dead are dug up and used as firewood.

The law has been changed to make the charcoal trade illegal, and there are road blocks at which trucks are searched by police. But loads come in donkey carts, on bicycles, or even carried by foot through the bush. A government plan to license dealers and promote alternatives has fallen flat. Prosecutions for illegal possession have risen five-fold since 2017,³⁵ but with the courts already full, the accused are often granted bail only to skip trial.

Feston Mwale (34), who sells charcoal in Blantyre, said things have changed with the new law. 'People with big trucks who carry charcoal can get stopped but a lot depends on how you deal with the police,' he said:

If you are a frequent traveller on the road and you know the police, they can let you go. Or you can just pay some money and there's no more problem...[but] It can be difficult because many in the police and in government have family who sell charcoal and they will arrest those who compete with them.

Mr Mwale said he bought his stock from dealers:

I don't cut trees. I buy from people who have already come to town with charcoal. They used to come with it in the morning, but now I pick it up at night. Everyone uses it. They can't put the whole of Malawi in jail.

He said the Covid lockdowns had been 'a blessing' because when the markets were closed, people learned how to trade in secret. For his best customers, he delivers.

When they stop production here, it comes across the border from Mozambique. Even on a day when the police are out in force and we can't sell, go that night through the town and see how people are cooking. It's with charcoal or firewood because there is nothing else. They have bought it somewhere and tomorrow they will do the same.

Since 2015, successive governments have tried to move all vendors off the street, and some say the laws on charcoal are just another way of closing the outdoor markets. Blantyre started as a Christian mission post in the late 1800s, and now has a popula-

tion of close to a million. More come every year when they finish school in rural areas and, with few jobs available, they make a living by selling their wares by the roadside. Unlike formal retailers, they pay no tax, and it's hard to know whether goods have been smuggled into the country. As one area is cleared by police, vendors turn up on another street.

In a 2020 advisory opinion, the African Court on Human and Peoples' Rights said governments, 'should not criminalise poor and vulnerable individuals who use public spaces to earn a living'.

'Charcoal has a good mark-up so you can find a way of getting it to clients,' Mr Mwale said.

Think about a woman selling a few tomatoes on the pavement. Her choice is to do that, or stay home and starve. Even on her best day, she makes almost nothing and goes back to a shack with a few sticks of charcoal to make a fire. Now they want to clear all the vendors. There have been riots and it's the people here who take part. I think the government believes if they went home to the rural areas the problem would go away. But there's nothing in the countryside and more are coming to town all the time. If they close the markets, there will be a war.

Power outages plague the cities and towns. There's a shortfall in supply from hydroelectric plants dotted along the Shire (pronounced 'sherry') River, which runs south from Lake Malawi to the Zambezi.

The new hope is coal. Malawi has proven reserves of more than two million tons, with several mines in operation. A thermal power station is being built at Zalewa, a small town north of Blantyre, and the projected output of 300 MW will almost double the existing supply. Whether any of the cleaner technologies now available in South Africa will be used to limit emissions is not clear.³⁶

Tanzania to the north and Zimbabwe in the south have a growing dependence on coal, and the trend looks set to continue, even while Europe and the US seek to scale down their use of fossil fuels. In Malawi, all electricity is controlled by the state, and there have been several price hikes in recent years. Two solar plants produce just 80 MW, with another two on the drawing board, but there is a problem: Malawi has cloud cover an average of 38% of the year,³⁷ peaking at close on seven days out of ten in January and February.

In March 2019, Cyclone Idai hit central Mozambique, pushing west and damaging hydro plants on the Shire. It also destroyed some 1400 homes in Blantyre. Freak weather is nothing new in this part of the world. In 1872, a cyclone on the island of Zanzibar overturned ships in the harbour and ripped roofs from buildings.³⁸ As a naval superpower, the Portuguese, who first settled Mozambique in the late 1400s, regularly lost ships along the south-east coast of Africa.

The frequency of cyclones has increased in recent years, and the scientists at World Weather Attribution believe that 'greenhouse gas and aerosol emissions are in part responsible'.³⁹ Others say it's a change that has happened over and over again since prehistoric times.

Even in the best scenario, in which patterns are consistent with a hundred years ago, this is no place for the faint-hearted. Storms and the damage they do can't be ignored when making plans to save the forest by giving people access to energy that doesn't grow on trees. A thermal or nuclear power plant can be fortified against high winds; small hydro weirs and individual solar panels attached to shacks may be more vulnerable.

Tourism is not developed in Malawi as it is in Kenya or Botswana, but that is changing, with new resorts and better access to the national parks. People are friendly, crime is low, and travel is cheap. Little wonder it is dubbed, 'the warm heart of Africa.'

Malawi is ranked among the poorest countries in the world.⁴⁰ Many people have relatives working in South Africa, who send money home, but firms such as Western Union are regarded as expensive, and there's an industry of money changers in Johannesburg who will take rands – the local currency – then call an associate in Blantyre or Lilongwe. Within minutes, the recipient is paid in Malawi kwacha.

These transfers don't show up on statistics, and the system continued for years, until the Covid lockdown. Then, unable to work, and often living illegally in South Africa, the expatriates had nothing to send. At home, even the few who had been able to afford electricity, gas or paraffin now had to cut trees.

President Lazarus Chakwera was elected in 2020 on a pledge to clean up decades of corruption. In November 2022, he allowed police to arrest his own vice president, Saulos Chilima, who was alleged to have had a \$280,000 bribe from a British businessman in exchange for government contracts.⁴¹ Chakwera has made clear that no-one is above the law, and has vowed to reform the police and the justice system. Mr Chilima has denied the charge.

There is also good news on the environment. In 2015, the non-profit African Parks organisation, based in Johannesburg, was granted the right to manage five of Malawi's largest game reserves. Fences have been erected and lost species reintroduced, including cheetah at Liwonde, near the southern-most reach of the lake, where they had not been seen in a century. Britain's Prince Harry serves as president of African Parks and has been a regular visitor.

Forest areas now have rangers to protect them, and tourism is on the rise, bringing money to areas with few resources. Lake Malawi is among the world's top dive destinations, with over a thousand species of fish, more than all the rivers and lakes of Europe combined.

Tourist dollars give hope that more locals will be able to pay for electricity and other forms of energy. And the patrols and fences make it easier to protect the trees from being cut down. There are plans to expand the protected areas and, with the Big Five – lion, leopard, buffalo, rhino and elephant – once again roaming in safety, there is hope for a greener future.

Power to the people

The International Olympic Committee has partnered with Senegal and Mali and the charity Tree Aid to plant 590,000 saplings by 2026.⁴² It's part of what's being called Africa's new 'Green Wall', an attempt to regrow forest in 22 countries.

From Somaliland on the Horn to South Africa, trees are in vogue. Just north of Durban lies the last major remnant of the jungle that once ran for hundreds of kilometres in a narrow band along the coast. Then in the late 1800s came sugar, and a need for land, and within a generation the trees were gone. By the 1950s, there were patches holding here and there, and Durban harbour had one of the biggest sugar terminals in the world.

One block, known as the Hawaan,⁴³ remained, an area along the Ohlanga (or Umhlanga) River. Plans for a golf course came and went, a highway was pushed through the eastern edge, and poaching of bushbuck and duiker antelope remains a problem. But a posh set of homes along the western edge brought many eyes to watch over the forest, and the local wildlife society conducts tours and reports any breach of security.

For density of vegetation, the Hawaan compares with Congo or Cameroon, and on the ground it can be difficult to see more than a few metres ahead. Lianas, reminiscent of those made famous by Tarzan and Jane as they swung through the canopy, hang like ropes from the trees. Vervet monkeys chatter in the branches, crested guinea fowl scratch the forest floor, and visitors have reported pythons more than four metres long – rare these days because big snakes are old and slow and, if not killed on purpose, end up squashed on a highway.

A pair of fish eagles – cousin to the US national bird, the bald eagle,⁴⁴ and of similar appearance – nest along the Ohlanga River, and their call can be heard from the other side of the forest. Fish eagles are loud, but 'the other side' is little more than a kilometre away. Tragically, the Hawaan is the largest remnant of what used to be.

Bernard Chatikobo guides visitors through the forest, and says he enjoys seeing their reaction. 'It is very green once you're inside. The trees and plants are packed close together and sunlight bouncing off the leaves makes it feel as if the air itself is green.'

He said people have told him it's like walking through a haunted place. 'I think it's just a new experience, being so



hemmed in by vegetation. But soon they relax and we have many who come back again and again.'

Mr Chatikobo said, for him, the Hawaan is an escape. 'I'm so at peace as when I'm there. We need areas like this. It's not haunted, but it does feel untouched and ancient.'

Most of the countries of sub-Saharan Africa have at least one forest reserve, and some have a number of them sprinkled in patches. However, there is often no way for animals to move from one to another, the land in between gone to agriculture. According to the European Space Agency, between 25 and 35% of all greenhouse gas comes from burning vegetation.⁴⁵ This includes land set ablaze to clear it for crops.

In August 2022, William Ruto was elected president of Kenya. He holds a PhD in plant biology, and has pledged to green the nation. Kenya has lost most of its forest since 1960 and Ruto wants it back.

But people must have an option for heating and cooking. This was a problem recognised by Charlot Magayi, who grew up in Mukuru, one of the largest slums in Nairobi. 'My first job was selling charcoal,' she says. 'It was the only fuel I could afford. My daughter and I kept suffering from respiratory tract infections, and when she turned two she suffered a severe burn injury from a traditional stove.'

Charlot enrolled in an adult science class, and developed a stove that uses only a small amount of charcoal along with leaf-waste from sugar cane. There was less smoke and it was cheaper to run. In November 2022, after selling more than 200,000 units, Charlot and her 'Mukuru Stove' won the million-pound Earthshot Prize, awarded by Prince William.

In Britain, where energy costs have soared, the headlines are always the same. Come winter, people will have to make a choice between buying food and turning on the heater, even a stove. Why not a choice of turning on the TV, radio, blender or vacuum cleaner? Because heat consumes more energy than anything else in the home.

Britain and much of Europe are staggering under the rising price of power. It's also in short supply, but nothing like the problem in Africa. Alpha Mweme, a young woman in the Congolese village of Nioki, north-east of the capital Kinshasa, summed it up when she spoke to researchers for the World Bank who were looking at the dearth of electricity.⁴⁶

'My first choice is charcoal,' she said, adding that a single bag lasted her family a month. 'If I can't afford charcoal, I look for firewood. And if I don't have wood, I can't cook!'

According to the World Bank, there are 25 countries that have less than half their people on the grid,⁴⁷ and all but one (Haiti) are in Africa.

At a speech in September 2022, the president of Senegal,

Macky Sall, said the decision on how to close that gap had to be taken locally. Mr Sall, who was at the time also chair of the African Union, was opening an oil, gas and power conference in the capital, Dakar.⁴⁸

‘While remaining committed to the implementation of the Paris Climate Agreement, we must continue to defend the interests of our countries,’ he said.

Senegal has recently commissioned a 300-MW gas-fired power station.⁴⁹ For this he made no apology: ‘We will not accept that polluting countries, responsible for the situation of the planet, tell us they are no longer going to finance fossil fuels.’

It’s a hard point to argue. Even more difficult is telling those without any power at all that they should not cut trees. Edwin Muhumuza is an environmental activist in Kampala, the capital of Uganda. Charcoal, he said, has become a valuable commodity for sellers and buyers. ‘They cut down the trees but they don’t replace them.’ Uganda has lost more than 80% of its forest.⁵⁰ Aside from ending the state tax on fuels such as gas and paraffin, Muhumuza says the only long-term answer is cheap electricity.

What can you do to help?

Giant bureaucracies are slow and expensive. Waiting for the United Nations or the Commonwealth to save the forest will take too long. In the time you’ve taken to read this essay, trees have fallen...and they’re coming down 365 days a year. This loss of forest has done enormous damage to the global ecosystem. But there are things you can do.

- Check that bag of charcoal next time you have a barbeque and make sure it comes from a sustainable source.
- When buying anything made of wood, demand to know where it came from. Avoid rainforest trees such as teak and mahogany.
- Write to your MP or member of Congress and ask what is being done through your country’s aid budget to electrify Africa. A lack of power is the number one cause of deforestation.
- When you see a newspaper article claiming that sandstorms and creeping desert are solely down to climate change, write a letter to the editor – even just a few lines – explaining that a loss of vegetation is what allows the sand to blow and the desert to grow. This is not a denial of climate change, but a call for action. We must make sure Africans have the same access to electricity as in developed countries, then there will be no need for charcoal.
- Ask your local school or college to include access to energy in the curriculum, with a focus on Africa and Asia. Not the power system we might like to see but what really is there,

warts and all: gas, coal, wood, charcoal and, for now, a very small share of renewables.

- Read up on clean technology. Wind and solar are growing quickly and can be part of the solution. But India, China, Pakistan, Bangladesh, Botswana, South Africa and many other countries will depend on fossil fuels for years, even decades. We have the science to burn these much more cleanly. Aid and trade should be focussed on doing this *now*. Nuclear energy, green hydrogen and eventually nuclear fusion have the potential to change our world for the better, but poor countries aren't in the market.
- And, saving the best for last, go on safari! Tourism is a major earner for Africa and has more trickle-down than almost any other sector. Putting money in the pockets of people on the ground allows them to invest in a gas stove or a heater that doesn't use firewood. Travel to a destination that works for you and your family but, if possible, try to include one of the less-known countries in your trip. Malawi and Madagascar are good, Uganda and Rwanda are best for gorilla sightings. In southern Mozambique you might be the only person on a 10-mile beach! If you go for one of the big safari stops, such as Kenya or South Africa, take in a forest lodge or a place beyond the crowds. Your experience will be rewarding and you'll bring an income to those who need it most. On return, share your experience with others and, if you can, give a talk at your school, club or place of worship. Let people know why the forest is disappearing so quickly, and what they can do to help.

Notes

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