

# Temperature rising: Climate crises in Africa

by [Eileen Flanagan](#) in the [August 21, 2013](#) issue



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Climate change is with us. We felt it long ago,” observed Makoma Lekalakala, a program officer with Earthlife Africa who got her start in grassroots activism during the years of apartheid. These days she visits poor and rural areas of South Africa where people are complaining about rising food prices and water shortages. Her focus is on climate change. “Food is expensive because the weather patterns are not like before,” she explained. “The youngsters think that this is how things are, but the older people will tell you: ‘There’s something wrong, but we don’t know what to call this something. We think God is angry.’”

People across the continent are trying to understand and adapt to the changing weather. During a two-week visit to southern Africa last year, I heard the same story over and over again, from activists like Lekalakala to Botswana meteorologist Dorcas Masisi, who confirmed that climate change had decreased food production and

increased water scarcity.

“It’s not just that the average temperature has risen,” Masisi said from her office in Gaborone. “There are fewer days with the minimum temperature. The maximum temperature is rising. The extreme high used to be 42 degrees Celsius [107.6 degrees Fahrenheit] and now that’s not an extreme.”

Increasing temperatures produce other changes that can have dire consequences for farmers. Warmer winters mean that pests may not die off between growing seasons; scorching heat in the spring and summer means that rain may evaporate before it’s absorbed into the ground. Warmer air also holds moisture longer, so rain becomes less frequent but heavier when it finally does come. Masisi told me that the weather in Botswana has become so unpredictable that many subsistence farmers didn’t bother to plant when the rains failed to come last October, the beginning of the traditional rainy period. When the rain did come, it was not enough, and farmers did not see much yield.

Others echoed Masisi’s account, including farmers I picked up hitchhiking and a village agriculture officer who was advising people to abandon maize, the staple crop, and grow the more drought-resistant but less popular sorghum. At one sleepy restaurant bar in Francistown my young waiter started telling me how “weird” and “unpredictable” the weather had become and added, “It’s that global warming thing.”

Meanwhile, scientists have been studying the changes that Africans are experiencing. Brown University geologists examined sediments on the floor of Lake Victoria and concluded that the lake has been rapidly warming over the past century. This trend—along with overfishing—may explain its decreasing fish stocks. The loss affects 30 million people who live in the Lake Victoria Basin, which straddles Kenya, Uganda and Tanzania. Lake Tanganyika, home to 10 million people, is believed to be warmer than it’s been in 1,500 years, and its temperature rise corresponds to increases in greenhouse gases. Again, geologists link rising surface temperatures to the decreasing number of fish, which is an important protein source for people in the region.

Many African lakes are also shrinking. From 1963 to 2011, Lake Chad—which once had a surface area comparable to Lake Erie—shriveled from 9,600 to 505 square miles. Scientists blame rising temperatures, an increasingly dry climate and overuse

of water for irrigation. These factors contribute to the drastic decrease in fish at a time when food is already scarce in the Sahel. A similar situation occurred during a 2011 famine in the Horn of Africa, when UNICEF estimated that more than 37 percent of the people living in the Lake Turkana area were suffering from acute malnutrition. The lake, which used to cross the border between Kenya and Ethiopia, had shrunk so much that its shores no longer reached Ethiopia. This reality also exacerbates the resource competition between countries.

When global organizations compile data and analyze trends, the picture is even more grim. A 2010 report from the World Meteorological Organization predicted a laundry list of biblical-scale catastrophes for Africa if greenhouse gases continue to rise: drought, flood, famine, increasing number of pests, shrinking lakes, deforestation, and temperature increases. Whether it is the rural poor, who rely on increasingly unpredictable rain to feed their crops, or the urban poor who live near shrinking coasts, everyone agrees that those who have the least to begin with, and who have contributed the least to the increased in greenhouse gases, will bear the highest cost. Already the rise in global maize prices has increased food insecurity in many countries, with the resulting malnutrition exacerbating people's vulnerability to disease.

Measuring exactly how much of this can be blamed on climate change is tricky, and most scientists use phrases like "contributed to" rather than "caused." Researchers at Britain's meteorology office are running models that calculate how likely it is that a particular weather event could occur without the influence of anthropogenic (human-caused) greenhouse gases. Using this method, they estimated that between 24 percent and 99 percent of the lack of rain in Somalia in early 2011 could be attributed to anthropogenic climate change. They also estimated that between 50,000 and 100,000 people died from the famine that ensued, although famine is always caused by a combination of food shortage and political dysfunction.

It's also complicated to link climate change and human conflict, although an increasing number of people are making that connection, including the U.S. Department of Defense, which gave a \$7.6 million grant to a University of Texas program called Climate Change and African Political Stability. The project tracks and compiles data on violent conflict in Africa and on climate change vulnerability, so that policy makers can better decide where to put their resources. A map of Africa plotting the two factors shows a striking amount of overlap, though a 2012 research brief from the project argues that there is not a simple cause and effect between the

two.

“There is evidence and data that something about climate contributes to conflict,” stated Mark Cane, a professor at Columbia University’s Earth Institute. “It doesn’t mean that climate change is going to make people start fighting in a well-off place like the United States.” But, he added, it does increase the risk for countries that already have high rates of poverty and unstable governments.

That’s not everyone. Botswana, for example, has invested much of its mineral wealth in public resources like schools, roads and hospitals. During my visit in August, several people told me about President Ian Khama’s initiative to increase food security by providing the resources for backyard vegetable gardens, which are much more common now than when I lived there more than 25 years ago. Likewise, subsistence farmers who had a disastrous yield the previous season received food aid directly from the government, which buffered the effects of the poor growing season. Indeed, the Climate Change and African Political Stability map identifies Botswana as devoid of violent conflict and low in climate vulnerability—despite the problems farmers are facing—because it has a good government and a relatively small population (2 million).

Asked how climate change will affect specific regions of Africa, Cane explained, “There are intrinsic uncertainties in weather, but there are other things that as we learn more we’ll get better. In the next generation of climate models, there is more of a convergence of predictions.” The uncertainties in the science are not a reason to be sanguine, however. “We’re doing a dangerous experiment. If you like the planet the way it is, we have to stop putting greenhouse gases into the air.”

Analyzing how greenhouse gases have affected climate trends is particularly challenging in Africa. Natural resources like sediment show a warming trend in Lake Victoria; tree rings in North Africa indicate that some of the worst droughts occurred during the late 20th century. But a dearth of precise human records in many parts of Africa restricts scientists in their study of patterns and variability. Weather stations that record temperature and rainfall are few and far between in parts of Africa’s interior. A friend from Botswana wrote, “We had lots of rains of late which were mostly floods. At some places we had rains as heavy as 200 mm.” That’s almost eight inches, which is nearly as much as some parts of Botswana get in a year. It was a perfect example of one symptom of climate change, but unfortunately I couldn’t verify my friend’s report because the diamond-mining town where she

works doesn't have an official weather station.

George Philander, professor of geosciences at Princeton University, has been a pioneer in studying the complex relationship between oceans and the atmosphere. A South African by birth, he hopes that climate change will foster a science renaissance in Africa.

"Instead of telling stories of doom and gloom, we should tell people what an amazing planet we live on," Philander said, "because it is so amazing."

Philander acknowledged that there are many aspects of global warming that are still only dimly understood by scientists. "We're disturbing the cycles even though we don't understand them very well," he said. "We're in a ship in the fog in treacherous water. . . . We are doing something very dangerous. We should be doing something, not because we know what's going to happen, but because we don't know what's going to happen."

Many people in Africa are "doing something," often through small, local adaptation measures. Jitokeze Wamama Wafrika is a community-based organization that works with women in northwestern Kenya to increase their food security and resilience to climate change. Aware that violent conflict over resources is an issue, the group brought in an international peace trainer to address the issue. The group's primary focus, however, is on helping women see the advantages of traditional African crops such as sorghum and millet.

Founder Pini Chepkoech Kidulah pointed out that indigenous crops are generally more drought resistant than maize, which became a staple both because of its sweeter taste and its international popularity. Maize needs more water and more time to grow, and the money from the cash crop doesn't always trickle down to the women who do most of the hard labor, Kidulah explained. Her group teaches women to combine the traditional crops with new techniques like companion planting sorghum and mung beans, which increases soil fertility. She noted that women are quicker than men to adopt a new practice.

Farmers in other parts of Africa are also changing their agricultural techniques. Farmers in Mali discovered that allowing trees to grow among rows of millet and sorghum helps to keep moisture in the soil and shades the crops from the scorching sun. The practice has spread to neighboring countries, greening significant parts of the western Sahel. On the other side of the continent, in Ethiopia, some deforested

areas are turning green again because of a program that stimulates growth of new trees out of tree stumps. The new trees help keep topsoil from running off when it rains, and they also absorb greenhouse gases.

Tackling the issue of greenhouse gases on a larger scale is trickier politically. Most African countries produce relatively little CO<sub>2</sub> and don't have the power to force the world's biggest emitters to limit their fossil fuel consumption. It's tempting for developing countries to pursue the money to be made from their coal, oil and natural gas, as least as long as they don't count the cost of emitting the carbon. Botswana commissioned its first photovoltaic solar power plant last August and has geography perfect for large-scale solar, but it still produces and burns coal—though the process contributes to the weather woes of Botswana's farmers.

Neighboring South Africa, already the biggest CO<sub>2</sub> emitter on the continent, is building two of the largest coal burning plants in the world and has lifted a moratorium on hydraulic fracking. Both of these energy sources will emit carbon and increase the strain on water resources, particularly for the mostly rural women Lekalakala visits.

Lekalakala said that part of her work is to demystify the idea that climate change is caused by an angry God. She says people understand once she links climate to the people's own observations. The South African government sometimes accuses activists like her of being "antidevelopment," but she responds by claiming that South Africa's abundant sun and wind could give many more people access to electricity without contributing to greenhouse gases. She encourages the people to raise these issues with their local political representatives, who are influenced by the powerful fossil fuel industry.

Lekalakala was arrested last October with 13 other activists who were protesting the reliance of South Africa's main electricity supplier on coal. "For the sake of future generations, we need to do something," she said.

Her plea is especially apt for those of us in the industrialized world, where consumption and energy policies are impacting people most of us will never see. Yes, climate change will affect our children, but our continued reliance on fuels like coal will have a disproportionate effect on fishermen around Lake Chad and women farmers of northwestern Kenya—people who have the fewest resources to buffer them from the effects of climate change.

The vulnerability of poor people is the key issue, said Kidulah. “As Christians we need to approach it as a justice issue because we have a history of working for social justice, but it’s weird that we cannot make the connection on ecological justice, climate change justice and the issue of poverty.”