

GUEST ESSAY

My Continent Is Not Your Giant Climate Laboratory

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Several environmentalists last year presented Africa's leading climate negotiators with a bold idea: A technology called solar geoengineering could protect their countries from the worst effects of climate change, they said. While insisting they were impartial, representatives from the Carnegie Climate Governance Initiative said that these technologies, which claim to be able to re-engineer the climate itself, either by dimming the sun's rays or reflecting sunlight away from the earth, could quickly and cheaply turn the tide of dangerously rising temperatures — and that poor countries might have the most to gain.

It wasn't the first time Westerners have tried to persuade Africans that solar engineering projects may be in our best interest. And it won't be the last. In May, another international nonprofit, the Climate Overshoot Commission, headquartered in Paris, is hosting an event in Nairobi to help drum up support for research on solar geoengineering and other related technologies it says could be helpful in reducing risks when the world exceeds its global warming targets.

As a climate expert, I consider these environmental manipulation techniques extremely risky. And as an African climate expert, I strongly object to the idea that Africa should be turned into a testing ground for their use. Even if solar geoengineering can help deflect heat and improve weather conditions on the ground — a prospect that is unproven on any

relevant scale — it's not a long-term solution to climate change. It sends a message to the world that we can carry on over-consuming and polluting because we will be able to engineer our way out of the problem.

The solar engineering technology attracting the most attention would use balloons or aircraft to spray large quantities of aerosols — tiny particles of, for example, sulfur dioxide or engineered nanoparticles — into the stratosphere to dim the sunlight. It's called solar radiation management and it's highly speculative. Without using the whole earth as a laboratory, it's impossible to know whether it would dim anything, let alone how it would affect ecosystems, people and the global climate.

Other proposed techniques include covering deserts with plastic; genetically engineering plants to have brighter, more reflective leaves; creating or making clouds whiter; and deploying millions of mirrors in space. The point of all of them is to counter warming by reducing the amount of sunlight reaching the planet and reflecting it back to the stratosphere.

Africa is already suffering the effects of climate change, such as drought, floods and erratic weather. And while geoengineering advocates see these technologies as a solution to such problems, the technologies run the danger of upsetting local and regional weather patterns — intensifying drought or flooding, for example, or disrupting monsoon cycles. And the long-term impact on regional climate and seasons is still largely unknown. Millions, perhaps billions, of people's livelihoods could be undermined.

These technologies would also theoretically need to be deployed essentially forever to keep warming at bay. Stopping would unleash the suppressed warming of the carbon dioxide still accumulating in the atmosphere in a temperature spike known as "termination shock." One study found that the temperature change after ending solar radiation management could be up to four times as large as what's being caused by climate change itself.

The other risk is that geoengineering will divert attention and investments from building renewable energy and other climate solutions in Africa. The continent has received only 2 percent of global investments in renewable energy in the last two decades, and the lack of access to capital is perhaps the biggest obstacle for countries that would like to cut down on fossil fuels.

Funding does not seem to be a problem for geoengineering researchers, however, particularly those in the United States. The Harvard Solar Geoengineering Research Program has been expanding rapidly, supported by Bill Gates and philanthropists from Silicon Valley, while George Soros recently announced his intention to back solar

geoengineering projects in the Arctic. The University of Chicago has also this month announced the creation of the Climate Systems Engineering Initiative to partner with national labs to explore these and other strategies.

But should we even be studying geoengineering at all? More than 400 senior climate scientists and scholars from around the world have called for an International Non-Use Agreement on Solar Geoengineering. If it goes before the United Nations, it could result in a ban on real-world research on this technology.

Regardless, advocates have tried to entice African governments by offering to fund research projects, claiming that more research will shed more light on the dangers and benefits of the technology. One such organization, the Degrees Initiative, says its mission is to put “developing countries at the center” of the discussion around solar radiation management. But this just appears to be a way of trying to make Africa a test case for an unproven technology. Indeed more studies into this hypothetical solution look like steps toward development and a slippery slope to eventual deployment.

A striking example of rogue solar geoengineering is the case of the American start-up Make Sunsets, which recently launched balloons from Mexico to inject sulfur into the atmosphere with the claim this would offset carbon emissions. Data on the balloons’ final location, what happened with the released particles and any impact on warming were never made public.

The Mexican government was unaware of the exercise until after the fact, at which point officials swiftly announced a ban on solar geoengineering activities. The decision to test the technology without permission or notice was reckless, and the decision to do it in Latin America echoed some of the worst aspects of colonialism.

African nations should strongly resist letting their territories be used for experimental exercises like this. And they must join efforts to strengthen the de facto moratorium (under the United Nations Convention on Biological Diversity) on the development and deployment of these technologies. The technologies are potentially dangerous, and a major distraction from the real change that we all know wealthier nations need to make if we have a hope of outrunning climate devastation.

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