

Headline: Unspoken option if climate talks fail is geoengineering

Byline: Philippine Daily Inquirer

Published Date: 05:31 AM December 06, 2015

Section: globalnation

Word Count: 4753

Content:

PARIS—It's the option climate negotiators here are loath to talk about.

What if they fail to curb global warming and the environment gets so dangerous that someone decides to do something drastic and play mad scientist? Should nations purposely pollute the planet to try to counteract man-made warming and cool the world? Scientists are pretty sure they can do it, but should they?

The issue is called geoengineering—purposely tinkering with the planet as opposed to the unintentional warming that's happening now. The most talked about and advanced method involves putting heat-reflecting particles high in the air, but there also have been proposals to seed clouds other ways, put mirrors in space and seed the oceans with iron.

Scientists noticed a temporary but pronounced cooling after the 1991 eruption of Mt. Pinatubo in the Philippines. What's in mind would be, essentially, an artificial and constant man-made volcano with material released by aircraft or cannons.

No one is talking about doing it yet. But some scientists want to study it to find out about side effects and other issues. And earlier this year, the US National Academy of Sciences said small-scale and controlled experiments could be helpful to inform future decisions.

Drastic options

Even geoengineering's most ardent research supporters aren't proposing it instead of cutting back heat-trapping emissions from burning fossil fuels. But they say that someday it may be needed. However, it doesn't solve all climate change problems, just the temperature part.

Stanford University climate scientist Ken Caldeira isn't advocating seeding clouds with sulfur particles any time soon, but he does fear a failure in climate talks and believes that at some point in the future, drastic options will look more palatable. He thinks scientists need to prepare now.

"I think of it as kind of symptomatic relief," Caldeira said in an interview on the sidelines of the UN-led Paris talks. "I'm thinking like morphine for the cancer patient."

But others inside the negotiations shudder at even talking about the issue.

"The emissions and the climate change that we're causing with that is already a massive experiment on our world that we don't really know the outcome of," said UN Assistant Secretary General Janos Pasztor.

"So I don't think we should start another set of experiments and go into geoengineering. I think we should get our act together and reduce our emissions," he said.

Joe Ware, a spokesperson for the faith group Christian Aid, was even more blunt.

## Playing God

"It's probably playing God a bit too much for the faith community," Ware said on Friday. He said the world needs more wind farms and solar power instead.

Harvard scientist David Keith has been working on plans to test what he calls solar geoengineering in the atmosphere at a very small scale. Year one would involve balloons putting small amounts of sulfate in the air and tracking changes and side effects.

Although he has received interest from private individuals, he has been unable to get the federal government to pay attention, he said.

"You can't uninvent this technology," Keith said. "The next generation of our kids will make decisions about this as we deal with climate risk, whatever we do. If we decide not to have a research program, we give them the gift of ignorance."

One problem, Keith and others said, is that there are no rules, nationally or internationally, that tell people what they can or cannot do. Pasztor said there are no plans for any international bans of the idea.

Marcia McNutt, the former US Geological Survey chief who was tapped to be the next head of the National Academy of Sciences, led an academy panel that looked at the issue and recommended very cautious and small-scale research.

## Huge gamble

She said that someday a nation in crisis, such as in a long-term devastating drought, might feel the need to do something. But, she asked, what if it hurts other nations?

Jeffrey Sachs, director of the Earth Institute at Columbia University, said there's "just a plethora of dangerous and unsolved problems that makes (geoengineering) very, very unattractive."

Putting sulfates in the world is a "tremendously bad idea," and is a huge gamble for the world, Sachs said.

Dana Fisher, director of University of Maryland's Program for Society and the Environment, said "geoengineering seems very American to me." That's because it's an option that doesn't seem to involve sacrifice or change and takes advantage of technology.

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"Technology makes us happy and sets us free," Fisher said. "But there are unintended consequences."