

Climate engineering: International meeting reveals tensions

October 28 2019, by Jennifer McNulty



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At this point, the greatest danger of climate engineering may be how little is known about where countries stand on these potentially planet-altering technologies. Who is moving forward? Who is funding

research? And who is being left out of the conversation?

The "hidden politics" of [climate](#) engineering were partially revealed earlier this year at the fourth United Nations Environment Assembly (UNEA-4), when Switzerland proposed a resolution on geoengineering governance. The ensuing debate offered a glimpse of the first discussion in a public forum of this "third rail" of climate change, according to Sikina Jinnah, an associate professor of environmental studies at the University of California, Santa Cruz, and an expert on climate engineering governance.

In a commentary that appears in the current issue of *Nature Geoscience*, Jinnah and coauthor Simon Nicholson of American University describe the politics and players who appear to be shaping the discussion. Their analysis, "The Hidden Politics of Climate Engineering," concludes with a call for transparency to help resolve questions of governance and "ensure that the world has the tools to manage these potent technologies and practices if and when decisions are ever taken to use them."

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The Swiss proposal generated debate that revealed troubling schisms between the United States and the European Union. It also underscored the challenge of trying to establish governance for the two dominant geoengineering strategies—solar radiation management (SRM) and [carbon dioxide removal](#) (CDR)—at the same time, because the technologies present very different potential risks.

Still a purely theoretical strategy, SRM would involve altering planetary

brightness to reflect a very small amount of sunlight away from the Earth to create a cooling effect. One well-known proposal is to inject tiny reflective particles into the upper atmosphere. "The idea is to mimic the effect of a volcanic eruption," said Jinnah. "Many people are scared of its planet-altering potential, and rightfully so." When a team at Harvard University announced its intention to do a small-scale outdoor experiment, the public backlash was swift; amid calls for a more inclusive process, the project timeline was pushed back to include input from a newly established advisory board.

By contrast, CDR has to this point been relatively less controversial. Carbon removal strategies include existing options like enhancing forest carbon sinks, and more technologically far-off options such as "direct air capture" strategies that would suck carbon from the atmosphere. CDR is baked into many climate-modeling scenarios, largely in the form of bio-energy with carbon capture and storage (BECCS). BECCS involves the burning of biomass for energy, followed by the capture and underground storage of emissions.

"Climate engineering experts are not talking about this as a substitute for greenhouse gas emission reductions," emphasized Jinnah. "The potential of climate engineering is to lessen the impacts of climate change that we're going to experience regardless of what we do now."

Debate reveals areas of concern

To piece together their account of what happened at the UNEA-4 meeting, Jinnah and Nicholson interviewed attendees, reviewed documents, and scoured online comments. Their analysis highlights several areas of concern, including:

- Disagreement among countries about the current state and strength of SRM governance

- The domination of research by North American and European scientists
- The need to "decouple" governance of SRM and CDR
- A significant split between the United States and the European Union over the "precautionary approach"

The key functions of governance include building transparency, fostering public participation, and shedding light on funding. Jinnah noted that governance can also provide what she called a "braking" mechanism to avoid what some call a "slippery slope" toward deployment.

Significantly, the Swiss proposal, which Jinnah and Nicholson describe as "modest," suggested a preliminary governance framework that drew strong opposition from the United States and Saudi Arabia. "The United States wants to keep its options open, and it certainly doesn't want the United Nations telling it what it can and cannot do," observed Jinnah.

The lack of transparency around climate engineering makes it difficult to get a comprehensive picture of who's doing what, and where, said Jinnah, but academic scientists in North America and Europe are leading the effort to explore SRM technology; CDR is already attracting private investment. Little is known about the extent of China's activity in climate engineering.

"Very little is happening in the developing world, which is problematic because they will experience the most dramatic impacts of [climate change](#) and have the least institutional capacity to cope with it," said Jinnah. "Some countries are facing an existential crisis and could potentially—potentially—want to see climate engineering. Or they could oppose it, because they want the focus to be on emissions reduction. But we don't know, because governments haven't articulated their positions."

Jinnah bemoaned the lack of collaboration with developing countries and expressed a desire to see them build their capacity to engage with the policy and politics of [climate engineering](#).

The debate also underscored some of the differences between SRM and CDR in terms of potential viability and deployment, prompting Jinnah to observe that "decoupling" them might break the logjam and foster greater progress on parallel tracks.

The United States favored a far less "precautionary" stance than the European Union, which has historically opted to protect the environment in the absence of scientific certainty, as it did on the issue of genetically modified foods. As one of the few countries with an active SRM research program, the United States appeared eager to preserve the status quo and "leave its decision space unchallenged," Jinnah and Nicholson wrote.

An important step forward

Despite the breadth and depth of disagreement that surfaced at the meeting, Jinnah sees the debate as a necessary first step. "As a researcher, I think this debate was an incredibly important step forward, because you can't study the politics of this issue without data, which in this case is countries articulating their positions on this controversial issue," she said.

"Research is needed so we can better understand our options," she emphasized, then added: "I'd rather not live in a world that thinks about solar radiation management, but unfortunately that's not our reality."

More information: Sikina Jinnah et al, The hidden politics of climate engineering, *Nature Geoscience* (2019). [DOI: 10.1038/s41561-019-0483-7](#)

Provided by University of California - Santa Cruz

Citation: Climate engineering: International meeting reveals tensions (2019, October 28)
retrieved 26 April 2024 from

<https://phys.org/news/2019-10-climate-international-reveals-tensions.html>

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