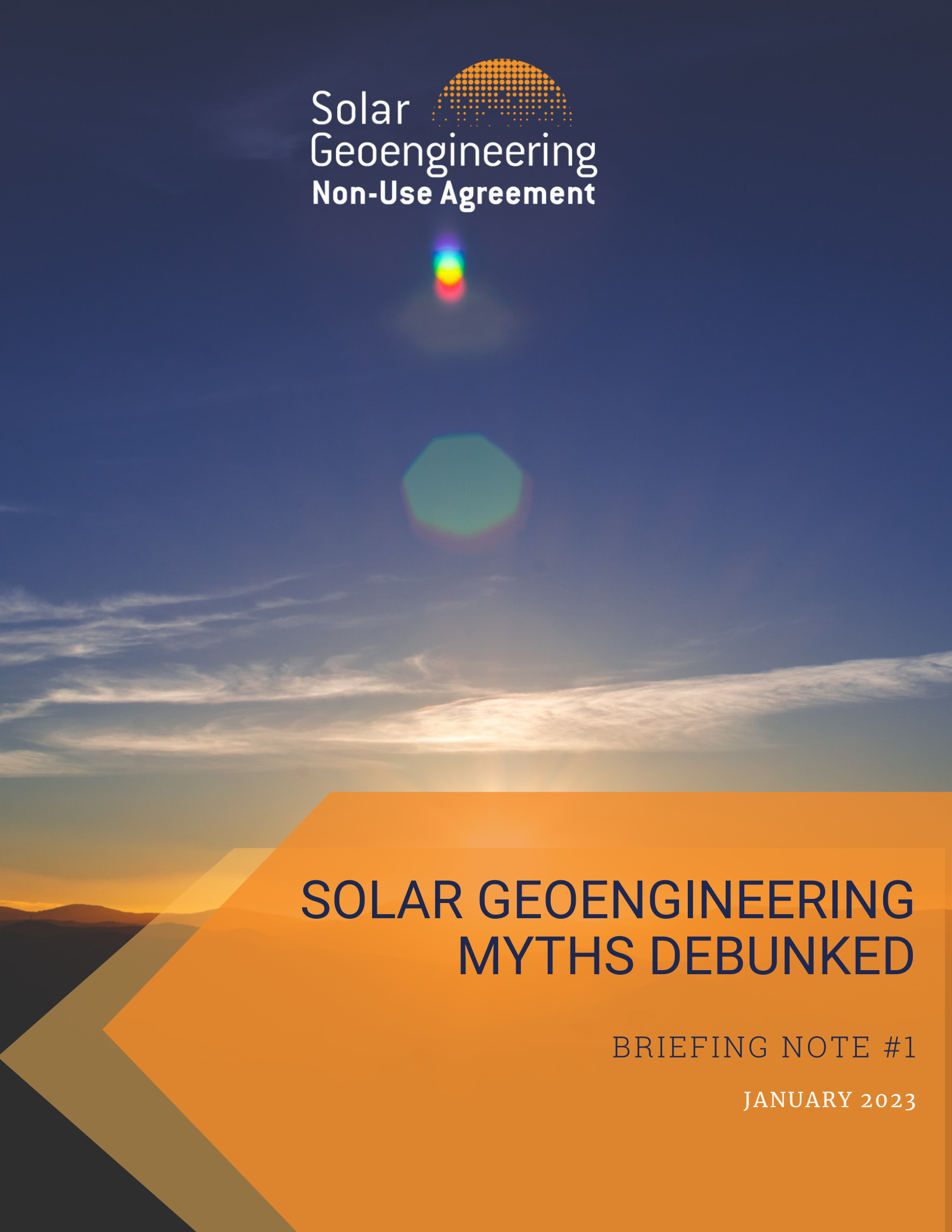

SOLAR GEOENGINEERING MYTHS DEBUNKED

BRIEFING NOTE #1

JANUARY 2023

SOLAR GEOENGINEERING MYTHS DEBUNKED

Solar geoengineering refers to a set of hypothetical technologies that some scientists and lobbyists propose to explore as a technological solution for the climate crisis. A dominant approach being considered is to block some incoming sunlight by spraying significant quantities of aerosols into the stratosphere, which would require flying hundreds of specialized, high-altitude airplanes continuously around the planet. This proposed approach comes with huge ecological threats for the planetary system, massive humanitarian risks for vulnerable people, and fundamental geopolitical challenges.

Global resistance to solar geoengineering is strong. In 2022, an open letter signed by over 390 academics from over 50 countries, supported by many civil society organizations, called for the immediate negotiation of an International Non-Use Agreement on Solar Geoengineering. Nevertheless, calls for expanding solar geoengineering research are growing louder from a small group of scientists, mostly from elite universities in the Global North. Many of these scientists are funded by technology and finance billionaires to try to mainstream the development of such technologies as part of future climate policy.

Advocates of research and development of solar geoengineering technologies advance several misleading claims, which increasingly find their way into media reports and the public discourse. This document identifies these claims and debunks the ten most prevalent myths advanced by solar geoengineering lobbyists.

Solar Geoengineering Non-Use Agreement

MYTH #1

"SOLAR GEOENGINEERING MAY BE NECESSARY TO HELP THOSE WHO ARE MOST VULNERABLE TO CLIMATE CHANGE IMPACTS."

This claim has been debunked by many people and organizations from around the world, including many from the Global South. First, this claim falsely presents solar geoengineering as a technology that would benefit the global poor, ignoring the tremendous risks that solar geoengineering poses for vulnerable communities. Because of the complexity of the earth's systems, solar geoengineering would not bring equal benefits to all; some regions might experience climatic benefits while others would face worse climatic conditions. Solar geoengineering would disrupt the earth's complex climate systems in unpredictable ways. It is conceivable, for example, that the monsoon season in south and south-east Asia would be disrupted, and solar geoengineering could cause agricultural losses, food crises and water insecurity in many parts of the world. Given the current international governance structures and unequal international power dynamics, it is likely that solar geoengineering would be designed in a way that benefits those who control and fund the deployment of the technology, that is, the rich and powerful countries in the Global North.

Second, the claim that solar geoengineering may be necessary "to help the most vulnerable" dismisses the fact that promoting solar geoengineering reduces the urgency for the socio-economic transformation in the Global North that is needed to reduce climate risks for the most vulnerable. Advancing solar geoengineering offers a cheaper alternative for those political and corporate actors who are strategically trying to delay transformative policies toward decarbonization and climate justice, and it empowers those who profit from continued fossil fuel extraction.

MYTH #1
CONTINUED

Third, this claim misrepresents the fact that solar geoengineering creates yet another mechanism to concentrate power among the already powerful. Advancing this technology provides a way for rich and powerful individuals and countries to influence the world and the lives of everyone. In this sense, some see solar geoengineering as a new form of climate colonialism: solar geoengineering allows countries with historical responsibility for the climate crisis to perpetuate their colonial values, power and politics by controlling access to yet another technology and extending extractivist economics and fossil fuels.

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Advancing solar geoengineering, therefore, is non-transformative and inequitable. It reinforces the status quo and worsens inequities of health and environmental harm for those who are most vulnerable. If helping those most vulnerable to climate impacts is the goal, there are many less risky ways to achieve this, including addressing the direct causes of the climate crisis by phasing out fossil fuels, investing in decarbonization in the Global North, and supporting a just transition in the Global South. Solar geoengineering is a dangerous distraction from these priorities in this critical decade.

MYTH #2

"MORE RESEARCH IS NEEDED TO UNDERSTAND THE RISKS OF SOLAR GEOENGINEERING TO DECIDE WHETHER TO ADVANCE THE TECHNOLOGY OR NOT. IGNORANCE IS NEVER THE ANSWER."

A fundamental problem with this claim is the assumption that more research will clarify the dangers of solar geoengineering and determine whether potential risks outweigh benefits. This assumption, however, is deeply flawed. More research cannot resolve the social and political risks that come with geoengineering, and more research will not reduce the risk of delaying urgently needed transformative policies. Conducting more research on this speculative future technological "solution" will not prevent powerful organizations or countries from deploying this technology unilaterally without global consent or oversight. New research cannot prevent the global impacts of solar geoengineering from being inequitably distributed. And new research will not help to alleviate the fundamental challenges of governing, in a fair and equitable manner, the potential future deployment of a speculative technology that carries such complex risks and unequal global impacts.

Those advocating for more research often argue that small-scale outdoor experiments are needed to show climate system dynamics and explore aerosol delivery mechanisms. Yet the results of this limited research cannot prove how solar geoengineering interventions would perform and with what adverse consequences if later deployed at planetary scale. Any research that stops short of planetary-scale experimentation will not truly reveal the nature and distribution of global risks for humankind.

MYTH #2
CONTINUED

Also, calls for more research assume that research would show whether the benefits outweigh the risks. But given the diversity of values, geographies and concerned communities, and the vested interests that support solar geoengineering, more research is likely to have a positive bias, to normalize this approach and dismiss broader concerns and risks especially for the poor and vulnerable.

"More research cannot resolve the social and political risks that come with geoengineering, and more research will not reduce the risk of delaying urgently needed transformative policies."

More research on solar geoengineering will thus increase rather than reduce risks posed by this speculative technology, by encouraging early deployment while delaying fossil fuel phase-out and distracting from global decarbonization. The idea of solar geoengineering may thus contribute to climate policy delay and obstruction.

MYTH #3

"INVESTING IN SOLAR GEOENGINEERING RESEARCH DOES NOT INCREASE THE LIKELIHOOD OF DEPLOYMENT."

Historical experience and research show that investing in technological development increases the likelihood that the technology will be deployed. Any investment in research and development tends to create a network of professionals and institutions interested in deploying that technology, and the risk of deployment increases as more people and institutions engage in research and development. There is a well-known "slippery slope" from the setting up of major research programmes toward full-scale deployment.

More research funding can also lead to militaries getting involved in research and development and can result in international competition to advance the technology toward deployment. This can lead to cascading security impacts including dangerous counter-measures that further multiply threats and insecurities. Even private organizations, including self-proclaimed research institutions, could draw on new research on solar geoengineering to unilaterally commercialize and deploy these technologies. Thus, more research does increase the likelihood of deployment.

MYTH #4

"A GLOBAL GOVERNANCE SYSTEM CAN BE DESIGNED TO EFFECTIVELY MANAGE SOLAR GEOENGINEERING DEPLOYMENT."

The world lacks a system of global governance that could equitably and democratically regulate and manage deployment of solar geoengineering at planetary scale. Long-term stable international governance would be needed given the time-frame of solar geoengineering deployment that would range from decades to many centuries. Yet recent geopolitical crises suggest growing instability, worsening ineffectiveness and expanding inequities in global governance. This has led hundreds of scholars of global governance and environmental policy to call for an International Non-Use Agreement on Solar Geoengineering.

Increasing superpower hostilities make future collaborative governance of solar geoengineering deployment unlikely. Given technological competition between larger economies, solar geoengineering development among powerful countries could lead to an arms race-like situation in which the enforcement of any rules on deployment of solar geoengineering would be impossible. History shows that nationalistic interests often prevent international governance, and it would likely be the powerful and privileged nations that would control and optimize deployment of solar geoengineering for their own interests – at the cost of small and less powerful nations.

MYTH #5

"EXPANDING SOLAR GEOENGINEERING RESEARCH IN THE GLOBAL SOUTH WILL EMPOWER THOSE MOST VULNERABLE TO CLIMATE DISRUPTIONS TO DECIDE ABOUT RISKS AND BENEFITS FOR THEMSELVES"

This myth ignores the uneven power dynamics of how decisions on global solar geoengineering research are made, and how deployment decisions are likely to be made in the future. At present, it is rich and powerful individuals and foundations and some elite scientists in the Global North, not those most vulnerable to climate impacts, who are advocating for more research on solar geo-engineering. It is also rich and powerful individuals and foundations who are investing in expanding geoengineering research in the Global South, by lobbying policy elites and by offering research funding to scholars and elite technology institutes.

Financing of solar geoengineering research in the Global South by powerful global philanthropists, who have positioned themselves in favour of such technologies, will not empower freely and fairly those who are most vulnerable to decide for themselves about the risks and benefits. These inequities in global research and governance frameworks, and the resulting global injustices, have been starkly revealed by the global deployment of the COVID-19 vaccination.

MYTH #6

"SOLAR GEOENGINEERING MUST BE EXPLORED BECAUSE OF A LIKELY CLIMATE 'OVERSHOOT', THAT IS, THAT THE WORLD IS LIKELY TO WARM WELL ABOVE THE GOALS OF THE 2015 PARIS AGREEMENT."

This claim assumes a dangerous and defeatist inevitability of "time is up" at this critical juncture. The temperature goals of the Paris Agreement are still within reach if transformative social and economic change is urgently prioritized and if those historically most responsible for the climate crisis take the lead. Promoting solar geoengineering – a narrow, quick-fix, technical approach that addresses the symptoms of climate change but not the cause – does not advance the larger, much-needed change.

The construction of a "climate overshoot" with the need for long-term solar geoengineering distracts from the urgent need for fossil fuel phaseout and other transformative policies. Any delay in decarbonization caused by debates on or deployment of solar geoengineering leads to additional build-up of greenhouse gases in the atmosphere, with long-term impacts for people and the planet. The speculative potential of a technical solution like solar geo-engineering reinforces the global status quo, diminishes climate urgency, and disregards the commitment that is desperately needed for transformative change. Collective action and solidarity are needed for global decarbonization and transformation. Claiming the inevitability of "overshoot" is a dangerous distraction.

MYTH #7

"BECAUSE THE SCIENTISTS ADVOCATING FOR SOLAR GEOENGINEERING CARE ABOUT CLIMATE JUSTICE AND CLIMATE MITIGATION, SOLAR GEOENGINEERING DEPLOYMENT WILL BE DEVELOPED IN A JUST AND EQUITABLE WAY AND NOT HARM MITIGATION EFFORTS."

This claims falsely assumes that the intentions and commitments of the scientists who develop a technology shape how the technology is deployed once it is developed. This claim also misrepresents and idealizes the power of climate scientists. The decision of whether, when and how to deploy solar geoengineering will not be made by the scientists who are advancing the technology. Authoritarian leaders like Donald Trump or Vladimir Putin, or powerful technology entrepreneurs like Elon Musk, are among those most likely to be attracted to this climate-manipulating technology. The speculative idea of future solar geoengineering – regardless of the intentions of scientists – is likely to continue to be appropriated by corporate and political actors who seek to delay the phase-out of fossil fuels.

Also, not all scientists are well-intentioned or concerned about the impact of their research. History shows many examples of rogue actors and scientists trying to work without government or regulatory oversight and without regard for social consequences. Unregulated, privately-funded start-ups have already emerged claiming to offset carbon emissions through radiation reflecting credits. The possibility of independent and secretive solar geoengineering research in countries with autocratic regimes that might consider unilateral deployment amplifies the geopolitical risks of advancing such technologies.

MYTH #8

"OPPOSITION TO SOLAR GEOENGINEERING IS SPECULATIVE, WHILE THOSE ADVOCATING FOR SOLAR GEOENGINEERING ARE EVIDENCE-BASED."

All claims about potential future risks and benefits of solar geoengineering are speculative, because the technology itself is speculative and no one knows how the future will unfold. The question is what counts as "evidence" and whose perspectives and values get more weight in decision-making. This myth tries to delegitimize the mainstream view that solar geoengineering is dangerous and falsely claims that the knowledge and perspectives of the small group of scientists advocating for solar geoengineering research is more legitimate than the knowledge of the thousands of diverse people and organizations around the world who are opposed.

The elite scientists who have been advancing solar geoengineering try to use their power as "researchers" to devalue indigenous, feminist and other types of knowledge. The promotion of solar geoengineering cannot be disentangled from a way of thinking that is based on patriarchal and colonial assumptions about what kind of knowledge and whose values are most relevant. Given the need for transformative, structural change to advance climate justice, the traditional hierarchy of knowledge needs to be disrupted to move beyond a technocratic focus on non-transformative responses.

MYTH #9

"THE CLIMATE OVERSHOOT COMMISSION IS A REPRESENTATIVE AND LEGITIMATE INTERGOVERNMENTAL ORGANIZATION EXPLORING DIFFERENT CLIMATE MITIGATION OPTIONS."

A new so-called "Climate Overshoot Commission" has recently received some media attention, particularly with regard to normalizing an assumed need of solar geoengineering as part of a climate policy portfolio. This "commission" is a privately funded initiative not accountable to any international organization or government. Commission members have been personally selected by a coordinating group that includes the most outspoken solar geoengineering advocates. The "commission" has no relationship with the Intergovernmental Panel on Climate Change and no formal links to any UN-based global governance system.

Any future reports, recommendations or conclusions produced by this commission should be recognized as the opinions of a private group of a dozen individuals (mostly retired politicians) who have been strategically brought together by a few well-funded advocates of solar geoengineering research who have been trying to legitimize and expand solar geoengineering research for decades.

MYTH #10

"SCIENTISTS IN THE GLOBAL NORTH HAVE A MORAL OBLIGATION TO STUDY SOLAR GEOENGINEERING."

This claim might reflect the personal conviction of some scientists studying solar geoengineering, but dismisses the many risks associated with conducting research on solar geoengineering. While some scientists from the Global North may feel a moral obligation to minimize the devastating damage of climate disruptions, focusing that obligation on solar geoengineering research is dangerous because of the geopolitical risks and social injustices of advancing solar geoengineering. Scientists might feel a moral obligation (in addition to scientific curiosity) but advancing research on solar geoengineering brings huge geopolitical, ecological and human risks.

Solar Geoengineering
Non-Use Agreement

This Briefing Note was compiled by a team of scholars supporting the call for an International Non-Use Agreement on Solar Geoengineering.

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For more information on the International Non-Use Agreement on Solar Geoengineering: www.solargeoeng.org