

**Forum:** COP-28

**Issue:** Should we pursue large-scale interventions in the Earth's climate system to combat climate change?

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## **Introduction:**

In the face of escalating climate change, the question of pursuing large-scale interventions in Earth's climate system emerges. Geoengineering, or deliberate interventions to counter climate change, involves diverse parties like governments, businesses, and environmental organizations, as well as major greenhouse gas-emitting countries and intergovernmental organizations like the United Nations and Intergovernmental Panel on Climate Change (IPCC) who play significant roles in this debate. The climate crisis was further brought into the spotlight when UN chief Antonio Guterres on July 27 pleaded for immediate radical action on climate change, saying that record-shattering July temperatures show Earth has passed from a warming phase into an “era of global boiling.” Ethical considerations, potential risks, and uncertainties surround geoengineering techniques, such as solar radiation management and carbon dioxide removal. The focus of this discussion is to evaluate the feasibility, effectiveness, and implications of these approaches on global climate policy. The pursuit of large-scale climate interventions remains a pivotal consideration for addressing the challenges of climate change.

## **Definition of Key Terms:**

1. **Geoengineering:** Deliberate, large-scale interventions in the Earth's climate system to mitigate climate change.
2. **Solar Radiation Management (SRM):** Geoengineering techniques that reflect sunlight away from the Earth's surface to reduce warming.
3. **Carbon Dioxide Removal (CDR):** Geoengineering methods aimed at removing excess carbon dioxide from the atmosphere.

4. **Ethical Considerations:** Moral implications and potential consequences of intervening in natural climate systems.
5. **Global Climate Policy:** International agreements, regulations, and initiatives to address climate change at a global level.

## Background Information

### Emergence of climate change interventions

The emergence of the issue of large-scale interventions in Earth's climate system can be attributed to the escalating threat of climate change. As human activities, particularly the burning of fossil fuels, released unprecedented amounts of greenhouse gases into the atmosphere, Earth's climate began to experience significant disruptions. The resulting global warming led to more frequent and severe extreme weather events, rising sea levels, disruptions to ecosystems, and threats to human livelihoods. In response to these mounting challenges, scientists, policymakers, and environmentalists started exploring potential solutions, including the possibility of geoengineering as a means to combat climate change.

### Timeline

- Pre-2000s: The concept of geoengineering was discussed among scientists and researchers in the late 20th century. Early proposals included ideas of seeding the atmosphere to reflect sunlight or capturing carbon dioxide from the atmosphere.
- 2006-2010: Geoengineering gained more attention in the scientific and policy communities. The Royal Society and other institutions published influential reports exploring the potential benefits and risks of various geoengineering techniques.
- 2010-2015: The focus shifted towards studying specific geoengineering methods, such as Solar Radiation Management (SRM) and Carbon Dioxide Removal (CDR). Research and modeling efforts increased to assess their potential impacts on the climate system

- 2015: On December 12, 2015, the Paris Agreement was signed by 196 parties at the UN Climate Change Conference. The Agreement includes commitments from all countries to reduce their emissions and work together to adapt to the impacts of climate change and calls on countries to strengthen their commitments over time. It also provides a pathway for developed nations to assist developing nations in their climate mitigation and adaptation efforts while creating a framework for the transparent monitoring and reporting of countries' climate goals.
- 2016-2019: The debate around geoengineering continued to intensify. Discussions at international forums like the United Nations Climate Change Conferences highlighted the ethical, social, and political dimensions of large-scale climate interventions. However, international consensus on the use of geoengineering remained elusive.
- 2020: The UN Secretary-General proposed six climate-positive actions for governments to take once they go about building back their economies and societies: Green Transitions, Green Jobs, Green Economy, Invest in sustainable solutions, Confronting all climate risks, and Cooperation. Countries have used the COVID-19 crisis as an opportunity for a profound, systemic shift to a more sustainable economy that works for both people and the planet.
- 2022: In January, the White House announced new steps to help curb emissions of methane, saying it would send \$1.15 billion to states to clean up thousands of orphaned oil and gas wells that leak the powerful planet-warming gas. In March, the Biden administration announced plans to spend roughly \$3.2 billion to retrofit hundreds of thousands of homes in low-income communities to slash Americans' energy bills and greenhouse gas emissions. In 2022, the world spent a total of \$31.7 billion on addressing climate change.

## **The impact caused by this issue**

The issue of large-scale interventions in Earth's climate system has sparked significant debates and discussions across the globe. The idea of deliberately engineering the climate to address climate change raises both hope and apprehension:

- **Unintended Consequences:** Critics raise concerns about potential unintended and irreversible consequences of geoengineering techniques. Altering Earth's climate system on a large scale could lead to unpredictable impacts on weather patterns, ecosystems, and agriculture. For example, The U.S. Gulf Coast and Southeast have seen an increase in the frequency and intensity of hurricanes and tropical storms in recent years; India facing severe heat waves since 2019, with temperatures exceeding 50°C in some regions; and Australia and Canada experiencing unprecedented wildfires during its bushfire seasons
- **Ethical Dilemmas:** The issue also raises ethical questions about human intervention in natural systems. Determining who controls the technology, potential conflicts of interest, and global governance of such interventions are complex issues.
- **Shift in Priorities:** The availability of geoengineering as a potential solution may divert attention and resources away from traditional mitigation measures, such as reducing greenhouse gas emissions. This would cause negative impacts because there could be unintended consequences or reduced effectiveness, especially if the newer and less-tested methods turn out to be ineffective

## **Current Situation**

In the current state of affairs, the topic of large-scale interventions in Earth's climate system stands at a critical juncture. The pressing need to address the impacts of climate change has led to increased interest in exploring innovative approaches to mitigate global warming and its consequences. Geoengineering offers potential

solutions to counteract climate change effects, but the complexities, uncertainties, and ethical dilemmas associated with these interventions continue to influence global discussions. Unfortunately, other issues such as COVID-19; the removal of a military presence from Afghanistan in 2021 and the subsequent return to power of the Taliban; several natural disasters (earthquakes, wildfires, hurricanes, etc.); as well as rising political tensions between the top nations in the world in part because of the Russian invasion of Ukraine have put this issue on the backburner.

Scientific advancements play a pivotal role in shaping the current understanding of geoengineering's potential benefits and risks. Climate models and simulations enable researchers to explore the climatic implications of various geoengineering techniques more comprehensively. Research findings inform policy debates and underscore the importance of multidisciplinary collaboration to make informed decisions on climate interventions.

Governmental positions and policies differ across countries, impacting the direction and pace of geoengineering discussions. While some nations, such as Sweden and the Netherlands, actively support research and exploration of geoengineering as a potential climate tool, others, like Germany, express reservations about the risks involved. As the issue unfolds, international agreements and forums, including the United Nations and IPCC, play a critical role in fostering international cooperation and dialogue on geoengineering governance and regulation.

Business and industry interests influence the narrative around geoengineering. Companies invested in climate technologies and research advocate for favorable policies and funding to advance their innovations. The engagement of industries, environmental organizations, and civil society groups in public debates can sway public perception and governmental decision-making on large-scale climate interventions, both negatively and positively.

## **Major Parties Involved and Their Views**

## **Specific Non-Affiliated Entities Involved**

**The Intergovernmental Panel on Climate Change (IPCC):** As a pivotal United Nations body, the IPCC undertakes a central role in the assessment of climate change science, its impacts, and prospective solutions. Although the IPCC has not taken a definitive stance on geoengineering, its specialized reports and evaluations offer invaluable insights into the scientific dimensions of climate interventions. These contributions, in turn, exert substantial influence over global policy dialogues.

**The Carnegie Climate Governance Initiative (C2G):** C2G dedicates its efforts to the realms of research and policy formulation within climate governance, encompassing the complex domain of geoengineering. Its primary objectives include fostering international collaboration, advocating for transparency, and ensuring ethical considerations are integrated into the application of geoengineering technologies.

**The Solar Radiation Management Governance Initiative (SRMGI) (Royal Society):** Operating as an international project, SRMGI facilitates open discussions on the governance of solar radiation management research. Its mission encompasses the promotion of inclusive research endeavors while addressing the multifaceted social and environmental consequences tied to solar radiation management.

**The Harvard Solar Geoengineering Research Program:** Situated within Harvard University, this program conducts in-depth research on solar geoengineering and its potential repercussions. Its emphasis lies on comprehensive governance structures and a meticulous appraisal of associated risks and uncertainties.

**The National Academies of Sciences, Engineering, and Medicine (NASEM):** NASEM carries out impartial, independent research and provides informed recommendations on scientific matters, including climate engineering. While their primary focus is not exclusively on climate change or geoengineering, their research publications have proven instrumental in shaping novel methodologies to assess and implement large-scale climate interventions.

**The Oxford Geoengineering Programme:** Based at the University of Oxford, this initiative centers on research, policy advocacy, and public outreach related to geoengineering. It actively encourages candid and transparent dialogues on the subject and nurtures interdisciplinary cooperation.

## **Relevant Countries Engaged**

**United States:** The United States occupies a central role in climate research and technological advancement, encompassing the sphere of geoengineering. Multiple research institutions, universities, and governmental bodies within the country play an active role in the exploration and funding of geoengineering research. Field experiments pertaining to Solar Radiation Management and Carbon Dioxide Removal techniques have been undertaken, and the U.S. contributes to global deliberations and forums focused on geoengineering governance and regulations.

**China:** China also assumes an active role in the realm of geoengineering research and development. The nation has committed substantial resources to the exploration of various climate intervention approaches, particularly in the realm of Solar Radiation Management. China's geoengineering research strategy primarily revolves around the pursuit of technological solutions to combat climate change. Given China's increasing global prominence, its engagement holds implications for the international landscape of geoengineering and cooperative efforts related to climate interventions.

**United Kingdom:** The United Kingdom stands as a leading participant in both geoengineering research and governance. The nation hosts several research programs and initiatives that direct their focus toward comprehending the potential impacts and risks associated with diverse geoengineering techniques. The UK's combination of scientific expertise and policy insight contributes significantly to global conversations pertaining to the ethical and governance facets of geoengineering.

**Germany:** Germany manifests a distinct interest in exploring geoengineering's potential as a climate solution, albeit adopting a more cautious stance compared to other nations. Renowned for its dedication to renewable energy and the reduction of greenhouse gas emissions, Germany's approach supports research endeavors while

placing substantial emphasis on comprehensive risk assessment and ethical contemplation before contemplating large-scale implementation.

**Netherlands**: The Netherlands feature prominently within the arena of geoengineering research and governance discussions. Dutch scientists and policymakers actively partake in research projects that seek to fathom the implications of assorted geoengineering techniques. The nation's geographical vulnerability to rising sea levels underlines its motivation to explore innovative climate intervention strategies.

**India**: India, as a nation with the threat of multiple climate vulnerabilities hanging over its head, have also engaged in dialogues concerning geoengineering research. While India's primary focus remains on climate adaptation and renewable energy pursuits, it acknowledges the significance of remaining informed about prospective geoengineering alternatives.

**Australia**: Australia, with its distinctive climate challenges and abundant natural resources, greatly supports geoengineering research and deliberations. The nation champions research related to carbon capture and storage technologies and actively contributes to international discourse concerning the ethical and governance considerations surrounding geoengineering.

## **UN Involvement, Relevant Resolutions, Treaties and Events**

As of July 2023, there are no specific UN resolutions that directly addressed geoengineering as a subject. The topic of geoengineering remained a sensitive and complex issue for international agreements, and the UN had not adopted any comprehensive resolutions on its use or regulation due to major players blocking resolutions from passing.



However, the UN's work on climate change and the Paris Agreement has indirectly impacted discussions related to geoengineering. While the Paris Agreement does not mention geoengineering explicitly, its emphasis on limiting global temperature rise and enhancing resilience indirectly underscores the importance of considering various climate intervention approaches responsibly.

The European Union has also waded into the debate on large scale climate interventions, and although they have not published any resolutions on this topic either, they have published resolutions covering their climate action policy. For example, the European Parliament resolution of 14 September 2022 talks deeply about the UN sustainable development goals, discusses the actions of the IPCC and their mitigation of climate change, the Paris Agreement as well as forming a new communication titled “New European Bauhaus: Beautiful, Sustainable, Together’

## **Possible Solutions**

When writing your resolution, it is crucial that you properly address the solution by first identifying the root cause, and then explaining the solution one at a time, clause by clause. Firstly, it's crucial for delegates to identify the root causes of the problem at hand. This involves delving deep into the underlying factors that contribute to the issue, enabling them to develop targeted and sustainable solutions. Alternatively, delegates can break down the main issue into several manageable sub-issues and tackle each one through separate clauses. This method allows for a more focused and detailed analysis of each facet, leading to well-rounded solutions that collectively address the larger problem.

When choosing lobbying and merging groups, delegates should seek out nations with similar views, interests, and policy preferences. This alignment can create a stronger collective voice, making it easier to collaborate, negotiate, and build consensus within the bloc. By working with like-minded countries, delegates can enhance their chances of effectively advocating for and implementing their proposed solutions. Some specific solutions delegates can research on that have been discussed in the report include:

## **Solar Radiation Management (SRM):**

SRM techniques aim to reflect a portion of incoming solar radiation away from the Earth's surface, reducing the amount of heat trapped in the atmosphere. One of the most discussed SRM methods involves injecting aerosols into the stratosphere, simulating the cooling effect of volcanic eruptions. This approach could potentially offset some of the warming caused by increased greenhouse gas concentrations. However, SRM raises concerns about unintended regional impacts, the potential for sudden cessation of deployment (leading to rapid warming), and the challenge of international governance.

## **Carbon Dioxide Removal (CDR)**

CDR methods focus on removing excess carbon dioxide from the atmosphere, effectively reducing the concentration of greenhouse gases. Different CDR techniques have been proposed, including direct air capture (DAC), where CO<sub>2</sub> is chemically absorbed from the air, and afforestation, which involves planting trees to sequester carbon. CDR offers long-term climate benefits and aligns with carbon neutrality goals. However, large-scale implementation would require significant land use, energy, and financial investments.

## **Ocean-based Interventions:**

Some proposals for geoengineering involve interventions in the oceans to enhance carbon sequestration or control the release of greenhouse gases. For example, ocean fertilization aims to stimulate phytoplankton growth, which could absorb more carbon dioxide. Another approach involves enhancing natural ocean alkalinity, which may facilitate CO<sub>2</sub> uptake. Ocean-based interventions have unique environmental and ecological implications, and their feasibility and safety require thorough research and assessment.

## **Countries advocating for Climate Engineering:**

- United States
- United Kingdom
- Canada
- Australia
- China
- Sweden/Scandinavia
- Netherlands

**Countries advocating against Climate Engineering:**

- Bolivia
- Nicaragua
- Venezuela
- Ecuador
- Madagascar
- Germany

**Bibliography**

**Works Cited (22)**

- [US blocks UN resolution on Geo Engineering](#)
- [IPCC](#)
- [C2G2](#)
- [Royal Society Solar Radiation Governance](#)
- [Harvard Solar Geoengineering Research Program](#)
- [National Academies Climate Change](#)
- [Oxford Geoengineering Programme](#)
- [Oxford Geoengineering Programme](#)
- [Union of Concerned Scientists - US Climate Engineering](#)
- [US Solar Engineering](#)
- [China Weather Modification Program](#)
- [UK Government Geo-Engineering](#)
- [UK Geo-Engineering Programs](#)
- [Climate engineering Netherlands](#)
- [European Commission Climate Action Plan](#)
- [Netherlands Climate Engineering Scope](#)
- [Netherlands Climate Policy](#)
- [Netherlands Climate Change](#)
- [Climate Change Programme India](#)
- [India Geoengineering Debate](#)
- [Climate Smart Engineering Australia](#)
- [Climate change action Australia](#)
- [The Paris Agreement \(UNFCCC\)](#)
- [The Paris Agreement \(UN\)](#)
- [Climate Finance](#)
- [Washington Post Climate Solutions](#)

**Useful Links:**

