WOMEN*GENDER CONSTITUENCY



© Dennis Wong, Storm clouds over Bangkok

False Solutions and Feminist Climate Justice

WHY GEOENGINEERING IS NO SOLUTION FOR THE CLIMATE EMERGENCY

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WHAT IS GEOENGINEERING?

Geoengineering refers to the large-scale, deliberate technological manipulation of the Earth's atmospheric, terrestrial, and marine systems to mask some of the symptoms of climate change. Geoengineering is another false solution and dangerous distraction that does not address the root causes of climate change and diverts attention from the urgently needed emissions reductions and real gender-just rights-based solutions.

Geoengineering proposes using highly speculative technologies. This idea has now entered the mainstream climate discourse and actions under the rationale of emergency necessity. Yet this framing hides a political choice, that it is preferable to risk unprecedented harm to planetary systems than to confront the fossil fuel industry and the corporate power that sustains it.

Geoengineering technologies can be divided into:

Land-based geoengineering technologies largely aim to offset emissions from fossil fuels and land use change, and to compensate for exceeding global carbon budgets through so-called "removals" (also known as carbon dioxide removal (CDR)), now embedded in international mitigation strategies. These technologies are often proposed alongside Carbon Capture and Storage (CCS), which carries risks such as leakage, contamination, and accidents, and requires enormous amounts of energy and toxic chemicals to operate.

Marine geoengineering refers to efforts to manipulate the chemistry and/or biology of the world's oceans on a vast scale. Most of the technologies aim to increase the amount of CO_2 stored in the oceans (also known as CDR). Other technologies aim to thicken sea ice or erect vast underwater barriers to prevent glaciers from sliding into the sea. All these approaches would involve massive-scale interventions in delicate ocean ecosystems that are already severely stressed.

Solar geoengineering (also known as Solar Radiation Modification (SRM)) refers to attempts to dim the warming radiation from the sun by deliberately polluting the stratosphere with reflective particles, deploying mirrors in space, or artificially manipulating clouds, ice, land, and plants. For example, some technologies aim to make the Earth's surface more reflective to send solar radiation back into space, and others would carry out solar geoengineering from the marine environment by brightening ocean surfaces and marine clouds. These planetary-scale and intergenerational technological interventions are inherently unpredictable and risk further destabilising an already destabilised climate, leading to new and more extreme consequences.

1. Why is it a false solution and a dangerous distraction?

Geoengineering technologies are unproven or early-stage techno-fixes that are risky and provide no guarantee they will permanently reduce greenhouse gas emissions. They also enable other false solutions, such as carbon markets, which are driving the proliferation of marine and land-based geoengineering experiments and start-ups. For the fossil fuel industry and other big polluters, geoengineering technologies provide the opportunity to make additional profits from

highly speculative carbon offsetting and even "cooling credit" schemes. Speculative hopes about these technologies could prevent governments and businesses from doing their utmost to achieve decarbonisation as soon as possible.

Geoengineering technologies are mostly untested, and determining whether a given technology has intended and unintended negative impacts would require testing at a large spatial and temporal scale, particularly for solar and marine geoengineering technologies. When piloted, this would turn the Earth into a laboratory and could lock in harmful, irreversible impacts. For instance, marine CDR methods, like ocean alkalinity enhancement (OAE), would require deploying the technologies over vast areas–potentially up to 10 percent of the ocean's surface over many decades–to achieve any significant impact on the climate. Studies also suggest that large-scale bioenergy with carbon capture and storage (BECCS) deployment would require monoculture tree plantations in an area three times the size of India. This would exacerbate territory grabs and human rights abuses, with the most vulnerable and marginalised groups most severely impacted. Stratospheric Aerosol Injection (SAI)—a form of SRM—would need to be deployed continuously at a planetary scale for hundreds of years. If deployment is suddenly stopped, temperatures would quickly spike—this is known as the termination shock.

Geoengineering exacerbates colonialism, inequality and injustice, as all forms of geoengineering are likely to favour those in power and are usually male-dominated. Technologies are generally incubated and often patented in the Global North (e.g. Stardust Solutions, Make Sunsets, Seafields, Reflect Orbital, Oceans Visions), creating business opportunities for a small elite and providing excuses for maintaining the current, profoundly unjust economic model. The risks, impacts, and burden of using geoengineering to address the climate crisis are unevenly distributed across the globe, raising serious equity concerns and exacerbating sacrifice zones —regions that will bear the most harm.

2. Geoengineering as a Driver of Militarism and Conflict

Technologies that seek to manipulate the atmosphere, land, or ocean on a massive scale would place enormous power in the hands of wealthy, militarily powerful states, corporations, and institutions that can develop and control them. Geoengineering, particularly SRM, is linked with militarism. The military use of environmental modification is not new. During the Viet Nam War (1955 to 1975), the United States used cloud seeding in an attempt to extend the rainy season and disrupt supply routes. This led to the adoption of the 1976 Environmental Modification Convention (ENMOD), which prohibits the hostile use of environmental modification. However, the Convention does not adequately address the wider risks of geoengineering presented as a response to climate change.

SRM would rely on aircraft, satellites, atmospheric monitoring, and other infrastructure, and would continue fossil fuel extraction; these could involve military and security institutions. Its negative impacts are transboundary, and an intervention that appeared to benefit one region/country could disrupt rainfall, water supplies, or food production in other regions/countries, thus creating new sacrifice zones and vulnerable populations.

Disputes over who controls deployment, whose interests are prioritised, and who bears responsibility for losses and damages caused could deepen geopolitical tensions and conflicts. Even the perception that a particular state is manipulating the climate could provoke retaliation or military escalation from another state/s.

The involvement of private companies raises further concerns about profit, accountability, and control. For instance, Stardust Solutions—a for-profit US-Israeli company developing solar geoengineering technology—is led by former scientists from Israel's nuclear establishment and aims ultimately to secure government contracts. This illustrates how technologies with potentially global consequences are being developed through connections between private investment, security-related expertise, and powerful states without accountability, transparency, meaningful international oversight, or democratic participation.

Militarisation would also affect the communities. Geoengineering projects requiring vast areas of land, forests, coastlines or oceans could drive dispossession and restrict access to customary territories and livelihoods. Indigenous Peoples (IPs), women environmental and human rights defenders (WEHRDs), peasants and fisherfolks already face criminalisation, intimidation and violence, including gender-based violence (GBV), when resisting extractive projects. Geoengineering would deepen these patterns, with involvement of the police, armed forces or private security protecting these projects.

3. Geoengineering and existing restrictive governance frameworks

Proponents often portray geoengineering as an arena lacking governance and public international cooperation; however, this is not true. Several restrictive international governance frameworks are grounded in the principles of do no harm and precaution. Here are some examples:

- The Advisory Opinion from the International Court of Justice (ICJ)
- The precautionary principle, enshrined in the Rio Declaration on Environment and Development
- The Convention on Biological Diversity (CBD) established a longstanding moratorium on geoengineering deployment, which has been repeatedly reaffirmed
- The London Convention and London Protocol (LC/LP)
- The United Nations Convention on the Law of the Sea (UNCLOS)
- The International Tribunal for the Law of the Sea (ITLOS)
- On SRM, the decision taken at the African Ministerial Conference on the Environment (AMCEN-20) reaffirmed and elaborated on the region's opposition to solar geoengineering techniques and its common position calling for a global governance mechanism for the non-use of SRM.

Geoengineering contradicts a wide range of international human rights obligations, including but not limited to the collective Rights of Indigenous Peoples, the Right to Life, and the Right to a Clean, Healthy and Sustainable Environment
Ensuring policy coherence and alignment across the United Nations system, its conventions, and its agencies on restrictive, precaution-based frameworks and decisions on geoengineering

is essential to ensure that responses to the climate crisis are just, equitable, uphold human rights, and are grounded in precaution rather than speculation.

4. Geoengineering in the UNFCCC

Following years of negotiations, Article 6.4 of the Paris Agreement, which deals with carbon markets, was operationalised at COP29. As it allows carbon removals, among other things, this provides a potential entry point for geoengineering schemes under the CDR banner. In the near future, the 6.4 Mechanism will consider CDR methods with technology readiness level 6 or higher (e.g., biochar, direct air capture with geological storage (DACCS), and BECCS), leaving the door wide open to dangerous and speculative large-scale geoengineering technologies.

CDR technologies are also increasingly referenced in countries' Nationally Determined Contributions (NDCs) and the Global Stocktake. In 2025, 531 Carbon Capture and Storage lobbyists were granted access to the UNFCCC COP30 in Belém. About 20 events in pavilions and side events promoted different types of geoengineering, including a pavilion dedicated to CDR. In view of this, civil society continues to resist carbon markets as false solutions, highlighting the risks of relying on speculative CDR and the evident negative impacts on the environment and vulnerable populations, including IPs and WEHRDs.

5. Potential gender impacts

Geoengineering technologies are deeply embedded in patriarchal systems of knowledge and power, and concentrated in the hands of mostly men with the technology and finance. It reflects a masculinist logic of controlling and managing nature rather than transforming the social and economic systems that drive climate change, and embodies a political vision centered in male domination, control, and technological mastery that fails to address the root causes of the climate emergency.

The Human Rights Council's Advisory Committee (HRC-AC) has warned that geoengineering "could seriously interfere with the enjoyment of human rights for millions and perhaps billions of people" and heighten exposure of women and girls and gender-diverse people, IPs, children and persons with disabilities to the negative impacts of geoengineering. Geoengineering would disrupt ecosystems, harm biodiversity, and impact food systems, lands, and waters, thus affecting women and girls in all their diversity and gender-diverse people, IPs and local communities (e.g., fisherfolks, peasants, and small-scale food producers) who are mostly dependent on climate-sensitive livelihoods and carry greater responsibilities for food production, water collection, and unpaid care work, while having least influence over political decision-making.

Recent studies show that grassroots women, including Indigenous women and girls in all their diversity and gender-diverse people are generally adversely impacted by land geoengineering-related mitigation projects such as afforestation/reforestation initiatives linked to CDR and BECCS. This can also result in land grabs, displacement, and/or forced resettlement. For women and gender-diverse people, losing sovereignty over their customary

land means they are no longer able to apply their traditional/Indigenous knowledge and practices for farming, fishing, and forest management. Very often when women and gender-diverse people voiced out against these climate and social injustices, they experienced militarism in the form of political suppression, harassment, intimidation, and GBV.

WGC asks:

- The **UNFCCC and other UN bodies must recognise that geoengineering poses unprecedented risks** and therefore uphold the precautionary principle and the CBD moratorium on geoengineering.
- **For SRM, we strongly ask for the establishment and support of an international solar geoengineering non-use agreement.**
- **The rights of women and girls in all their diversity—-particularly Indigenous women, Afrodescendant, peasants, migrants, women with disabilities, and those from vulnerable populations—and gender-diverse people must take precedence over mitigation actions**, particularly their right to health, right to food, right to clean water, right to land, right to self-determination, and right to enjoy a safe, clean, healthy and sustainable environment as well as their aspiration for gender equality and empowerment. These rights will be violated if geoengineering technologies are tested, developed, and deployed.
- **For any climate solution and/or technologies deployed, States must promote and ensure the rights of women in all their diversity and gender-diverse people to meaningful, effective, and active participation**; decision-making; access to information; and access to justice and grievance. For Indigenous Peoples, the principle of FPIC must be carried out with due diligence.
- **Prioritise funding rights-based real solutions,** particularly community-led, gender-responsive solutions on mitigation (with adaptation co-benefits) and addressing loss and damage. Halt institutional and public funding, subsidies, and other incentives to all forms of geoengineering.
- Due to the proposed scale of geoengineering technologies, their inherent risks—-particularly of SRM—and the lack of evidence in human history to suggest that their experimentation, development, and deployment could ever be fairly or safely governed, we strongly ask for a **ban on all outdoor deployments and experiments involving marine and solar geoengineering technologies**.
- **Halt the development and deployment of all land-based geoengineering schemes**.