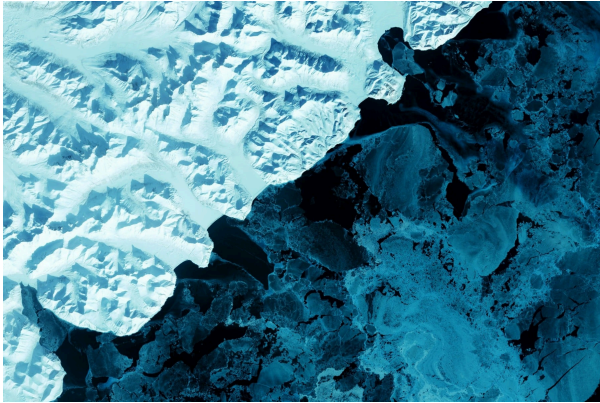


# Reasons to Oppose Geoengineering

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## Key reasons to oppose geoengineering



Here are some of the key reasons to oppose geoengineering, which are discussed in more depth below:

- **It doesn't work:** None of the technologies have a track record, all of them come with major risks and unknowns, and in some cases the effects would be obviously catastrophic.
- **Detracts from real solutions:** By promising a quick fix, geoengineering threatens to delay the implementation of a transition away from fossil fuels, and could redirect funding and investments away from real climate solutions. Some geoengineering proposals require vast amounts of energy, which means less climate-friendly energy for everyone else.
- **Human rights and biodiversity:** Many geoengineering proposals require the intensive exploitation of vast amounts of land (in the case of BECCS, twice the size of India!) and increasingly the oceans too. Those projects would inevitably displace millions of people and potentially wipe out entire ecosystems.
- **Weaponization:** Computer models show that geoengineering interventions can have regional winners and losers; should governments and corporations decide that geoengineering can successfully change climate patterns, it will inevitably be weaponized.

**The bottom line:** geoengineering techniques do nothing to address the root causes of climate change, and evidence points to a high likelihood that rather than improving the climate, they would make things worse—potentially in catastrophic fashion.

## Negative Impacts & Magical Claims

There haven't been many real-world solar geoengineering experiments to date, because of the problem of scale (and effective opposition, particularly from civil society and Indigenous Peoples' Organisations). Testing on a small scale does not necessarily reflect what will happen if done on a much larger scale, and testing on a large scale is *de facto* geoengineering.

However, many researchers have attempted to model the potential effects these proposed measures could have on the weather, biodiversity, agricultural yields and ecosystems. There are also a rapidly growing number of open-air and open-ocean experiments and demonstration projects taking place for technologies linked to geoengineering, particularly Carbon Dioxide Removal schemes, all of which are described in detail in the [Geoengineering Map](#).

In some cases, Solar Radiation Management (SRM) schemes involving blocking sunlight by spraying chemicals like sulphur dioxide into the upper atmosphere or making the surface of the Earth more reflective could have a cooling effect. However, models show that manipulating incoming solar radiation in this way would come with high-stakes risks: entire regions could face drought and, if SRM was started and then abandoned, global temperatures could rise very rapidly.

Marine carbon removal schemes like ocean alkalinity enhancement, ocean fertilisation and biomass sinking aim to increase the amount of carbon that is absorbed by the oceans through a range of methods, such as discharging alkaline substances into wastewater treatment outflows and dumping tonnes of iron-rich dust into the ocean. Such schemes are likely to have significant impacts on marine ecosystems and biodiversity if deployed at scale, and many studies cast serious doubts over claims that carbon can be removed safely over significant timescales.

Carbon Capture and Storage (CCS) is also considered to be a geoengineering technology in some cases. Its proponents claim that we can continue to burn fossil fuels if we just suck the carbon out of smokestacks. CCS is extremely expensive and energy-intensive, requiring huge sums of public finance and additional energy inputs. If CCS becomes implemented at a large scale, where will the billions of tonnes of carbon be stored? Which communities and ecosystems will be put at risk of being poisoned when and if carbon dioxide, which can be lethal in high concentrations, leaks? Furthermore, much of the current push to develop CCS is based on a desire to use captured carbon dioxide for “enhanced oil recovery”, which usually increases the amount of carbon in the atmosphere overall.

So-called Negative Emissions Technologies (NETs) are based on the wishful thinking that we can increase energy production while decreasing emissions. A wide range of technologies are being touted using this “win-win” rhetoric, including biofuels that result in biochar byproducts, using carbon dioxide emissions to grow industrial quantities of seaweed and Bioenergy with Carbon Capture and Storage (BECCS). Some of these technologies have garnered much hype, but they are still virtually nonexistent in reality. These plans are based on growing and burning massive quantities of biomass, usually through the expansion of industrial tree plantations, and they ignore the carbon emissions and ecological impacts caused by tearing up millions of hectares of land over and over again to produce enough of it.

BECCS is based on the false claim that burning biomass is “carbon neutral”. Proponents claim that capturing and burying carbon from such a “neutral” process will make it carbon “negative”. This faulty logic ignores a growing body of scientific literature showing that the immediate carbon dioxide emissions from most bioenergy processes are usually even larger than for their fossil fuel equivalents, and that’s without taking impacts on ecosystems and soils into account. Millions of hectares of land would have to be converted to growing trees and crops for bioenergy to implement large-scale BECCS, which would also have serious climate and social impacts.

## **The Technofix Approach vs. Addressing Root Causes**

The mindset that embraces technofixes assumes that solutions are somehow possible without addressing root causes. Each time we are threatened by a disaster that is caused by structural inequalities and abuse of concentrated power, those who are invested in and profit from those same structures say “we can fix it!” If we believe them, we can be temporarily fooled into taking a path that doesn’t address root causes and therefore only delays real solutions. Most of the time, technofixes don’t actually work; their real role is to be an effective, temporary distraction.

Geoengineering presents politicians and leaders with vested interests with an option to avoid making difficult choices. Rather than putting an end to the combustion of fossil fuels, destructive industrial agriculture, and the pursuit of endless economic growth, they can take the less politically contentious path of offering support for a technofix.

But it is clear that the climate crisis stems from multiple causes that are embedded in an economic system based on constant growth and ever-increasing consumption; it cannot be addressed by a “magic bullet” technofix.

Trillions of dollars in profit and infrastructure investments by oil companies could be devalued if emissions are regulated. Because of the vast profits and investments that could be lost if we truly address the root causes of

climate change, geoengineering represents a dangerous moral hazard. If oil companies see geoengineering as a viable option, they can back a technofix and present it as a solution instead of powering down their operations.

That's precisely what the fossil fuel industry is doing - quietly and behind the scenes, but with a lot of money and political power behind it.

## The Geoengineering Clique

A number of commentators have pointed to the existence of a "geoengineering clique" (the GeoClique) that is promoting the technofix approach. The prominent voices on geoengineering that reappear again and again are actually a very small group of people. Most of them appear to be white men from rich countries, especially Europe and North America. Some of them have direct connections to the fossil fuel industry and many appear to have military connections. For example David Keith, one of the most prominent geoengineering proponents, founded Carbon Engineering, a private Direct Air Capture company that was partly funded by the largest individual investor in the tar sands. Carbon Engineering was later sold for over one billion dollars to US oil company Occidental Petroleum, a move undoubtedly motivated by the need for captured carbon dioxide for enhanced oil recovery.

While the GeoClique projects the image of reluctant advocates exploring geoengineering only as a "plan B" to reducing emissions, there are a range of motivations driving interest in geoengineering, including commercial and military interests. In fact, some of the heavyweight backers of geoengineering were climate deniers or downplayers not so long ago. Some call this odd switch the "Lomborg Maneuver," after the pro-corporate environmentalist Bjorn Lomborg, who poo-pooed the effects of climate change until he became a geoengineering proponent. Right-wing groups like the Heartland Institute and the American Enterprise Institute and politicians like Newt Gingrich have joined the geoengineering bandwagon as well.

Part of the threat of commercialization of geoengineering techniques is that it could create a much larger group of people with a vested interest in pursuing a technofix approach. If the geoengineering clique becomes several times larger, it will become even harder to make rational decisions about the climate.

## Governance and Weaponization

One of the major problems with geoengineering is that large-scale projects can create winners and losers. If geoengineering schemes were implemented, some regions of the globe might see improved conditions, while other regions would see disastrous changes in rainfall or see their rivers dry up. Who decides what scheme is used and how it is implemented?

Certain geoengineering enthusiasts have hinted that geoengineering schemes could move forward with only a few superpowers on board, and that a global consensus would not be necessary. Will powerful countries attempt to ensure that the ill effects of geoengineering fall overseas? Anticipating the difficulty of a global decision on geoengineering governance, geoengineers have already said they do not need the consent of every country that will be affected.

Concern about unequal impacts raises a larger question: what's to stop those who control geoengineering schemes from using them as a means of geopolitical manipulation and control-in other words, climate warfare? This is not without precedent: The United States has used cloud seeding as a weapon. Its government tried to extend the monsoon season in North Vietnam from 1967-72, and attempted to dry up Cuba's sugar crop in 1969. What would stop this from happening again, on a much larger scale?

## Solutions to Climate Change Already Exist

Real, fundamental, low- to no-risk, beneficial, long-term solutions to climate change are already available. They

include agroecology, reducing emissions and resource consumption, implementing hard emissions limits, investing in public transportation and liveable and workable communities, and stopping deforestation, among many many others. The problem is not that these solutions don't work, it's that they are incompatible with any goal or mandate for an ever-expanding economy based on the exploitation of finite natural resources. Reducing emissions provokes opposition from big oil; public transportation is curbed by car manufacturers; large-scale expansion of agroecology raises the ire of industrial agribusiness conglomerates.

For real solutions to work, the power of small farmers, communities and workers must increase in relation to that of investors and industry. The main barriers to their implementation are the polluting industries and their investors. A quick way to check the credibility and goodwill of any geoengineering proponent is to examine how much real effort they have put into advocating for real solutions to climate change – and to look at where their money is coming from.

But what, you may be asking, about chemtrails? [Read our take here.](#)