

Geoengineering and the ‘net-zero’ con at COP26

In brief:

- 1. Risky geoengineering schemes are being promoted at UNFCCC COP 26 to justify the flawed concept of ‘net zero’, which is a diversion from making the changes we need to reach *real zero*.**
- 2. These largely non-existent technologies are based on biased scientific theories that provide an alibi for the fossil fuel industry to continue extracting and polluting.**
- 3. Countering government and corporate narratives promoting ‘net zero’ and geoengineering technologies is a vital task at COP26, to avoid wasting the little time we have to really change course.**

What is geoengineering?

Geoengineering approaches – referring to large-scale technological schemes to intervene in the planet’s climate system – figure prominently in plans to implement a concept called ‘[net zero](#)’. Governments and corporations, in particular, are betting on massive **carbon dioxide removal** [CDR] to remove CO₂ from the atmosphere in the future. Many countries have included support for building **carbon capture and storage** [[CCS](#)] infrastructure in recent spending plans. CDR technologies like **direct air capture** [[DAC](#)] and **bioenergy with carbon capture and storage** [[BECCS](#)] have also been included in countries’ **nationally determined contributions** [NDCs] to climate change action. Yet the feasibility of these technologies has not been demonstrated, they are prohibitively costly, and they come with serious risks and side-effects for humans and ecosystems.

Meanwhile, corporate ‘net zero’ commitments assume that either through subsidies or new carbon markets, they may obtain significant investment in CDR technology development.

This all contributes to an environment in which very necessary and urgent choices about the deep decarbonization of industry, transport and power production are being postponed, while the wrong technologies are being supported.

Furthermore, relying on speculative, high-risk technologies to remove CO₂ from the atmosphere and solve the problem in the future locks in another few decades of continued fossil fuel production. This is extremely problematic as we must get out of fossil fuels and stop polluting before we hit 1.5°C global warming and reach critical tipping points in the climate system.

High energy demands

All geoengineering technologies—in particular, those to remove CO₂ from the atmosphere – (CDR) technologies – require vast amounts of resources: energy, land, water, biomass and minerals. To be relevant to ‘net zero’ and emissions removals, the technologies must be deployed on a very large scale. The development of CDR technologies therefore implies the establishment of new transnational extractive industries, creating new emissions along the entire industrial chain, as yet more infrastructure is built.

Also likely is that this infrastructure will simply reproduce, or even deepen, unjust patterns of extraction and exploitation of land and resources both in the Global South and in communities impacted by extractive industries in the Global North. Large-scale CDR would have devastating impacts on local communities and natural ecosystems, such as land grabs, human rights violations and sharp increases in food prices.

The prospect of a big expansion of BECCS – the geoengineering approach most favoured by climate models – would also lead to large-scale destruction of biodiversity and natural ecosystems and their replacement with monoculture biomass as feedstock for energy production.

Overall, implementing geoengineering on such a large scale would come with devastating risks and unjustifiable ecological and societal impacts. Its ability to effectively remove large quantities of CO₂ from the atmosphere is also in doubt and has not been demonstrated anywhere. Even if it did work as planned, relying on geoengineering is still poised to lock in several degrees of warming, with catastrophic impact.

False assertions made about geoengineering in the context of ‘net zero’

1. **‘Removals’** This is the awkward term used in the Paris Agreement to refer to the ‘removal’ of carbon dioxide and other greenhouse gases from the atmosphere. While the Paris Agreement by no means legitimises the deployment of geoengineering technologies like BECCS and DAC, the term ‘removals’ has been exploited by geoengineering proponents to obscure the difference between unproven technological storage (geoengineering) and natural biological carbon storage in ecosystems.

A deeply worrying example of the consequences of this approach is the Task Force on Scaling Voluntary Carbon Markets’s proposal for a unified market for credits – with no difference made between carbon credits based on forest restoration (which should be undertaken together with the communities that manage the forests in question and respecting their rights) and carbon credits generated by large companies based on BECCS or DAC.

- 2. Massive CDR ‘removals’? – a very uncertain future.** Climate modellers have developed a bad habit of just assuming that the use of massive amounts of geoengineered CDR will limit warming. This is also a result of the [models’ devotion to endless economic growth across all world regions](#), and their focus on technological change rather than political and societal change. In fact, it is now generally acknowledged that the volumes of BECCS or DAC proposed in earlier IPCC models was unrealistic. Recent IPCC publications have caveated the use of BECCS and DAC, but proposed mitigation pathways still rely on these CDR technologies to reach ‘under 2°C’ scenarios.

Meanwhile governments and companies have tried to shift the conversation away from the need for rapid and deep decarbonization of industry, transport, and power generation; it’s much easier to talk about future CDR actions and project the image of taking ‘serious’ climate action. Long-term ‘net zero’ goals indicating hypothetical CDR levels in 2050 are almost meaningless in current planning and investment contexts. ‘Net zero’ will remain a speculative moving target with ever-increasing amounts of CDR required to reach ‘net zero’ – at some point in the future – while maintaining an appearance of acting on the climate crisis.

- 3. Corporations bet on ‘net zero’ and geoengineering to keep on profiting from dirty industries.** Recent investment moves in geoengineering, by both Big Tech and by oil and gas companies, are accompanied by new rhetoric about how these corporations are in the best position to solve the ‘mitigation ambition gap’ through new technologies. [Oil and gas firms are amongst the biggest proponents of geoengineering](#), and they are currently making investments in CO₂ pipelines for CCS, while at the same time renewing plans for further exploiting fossil fuels. In addition to this [many of the largest corporations](#) in agriculture, retail, aviation and finance have announced bold ‘net zero’ plans that, in many cases, include technological CDR – but that also envision *increasing* current CO₂ emissions.
- 4. The climate system is not a machine that can simply be turned up or down.** Many climate modelling pathways ‘allow’ for overshoot of the 1.5°C (or even 2°C) temperature limit goal, because CDR technologies are supposed to help bring down temperatures later in this century. Such temperature overshoot, however, can lead to irreversible societal damage and loss of ecosystems, and to crucial and irreversible tipping points being triggered during the overshoot period. Betting on a trajectory of temperature overshoot and recovery is therefore extraordinarily dangerous. Also, there is increasing scientific evidence that the biophysical shifts caused by temperature rise occur much more abruptly than previously anticipated – partly explaining the huge spike in extreme weather events around the globe in the last few years.

This briefing draws on earlier material written by HBF and ETC for the CLARA alliance 'Net Zero Campaign' (<https://www.clara.earth/netzero>)

Further resources on geoengineering:

- Hoodwinked in the hothouse: Resist false solutions to climate change (Third edition, 2021) <https://climatefalsesolutions.org/>
- A primer on the supposed methods of geoengineering and their dangers: geoengineeringmonitor.org/technologies/#ggr
- Reasons to oppose geoengineering: geoengineeringmonitor.org/reasons-to-oppose/#impacts
- Webinar taking on the arguments for solar geoengineering (featuring Dr Vandana Shiva, Prof. Michael Mann, Åsa Larsson Blind and Greta Thunberg) - stopsolargeo.org.
- A 2-minute video about why we need to oppose solar geoengineering: <https://www.geoengineeringmonitor.org/2021/07/new-video-sayno2solargeo/>
- A 5-minute video of Prof. Raymond Pierrehumbert on solar geoengineering youtu.be/QS9O9LywcFQ
- Several short videos on solar, marine and terrestrial geoengineering <https://www.boell.de/en/geoengineering>
- The Big Bad Fix: the case against geoengineering (book) <https://www.etcgroup.org/content/big-bad-fix>
- Hands Off Mother Earth Campaign against geoengineering <https://www.handsoffmotherearth.org/>