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How not to save the world

Geoengineering technologies that fail to curb global warming are making a dangerous comeback in the climate debate

Read this article in German.

In 2007, US climate campaigner Al Gore and Sir Richard Branson, the British founder of Virgin Atlantic Airways, launched the 'Virgin Earth Challenge'. They offered a $25 million prize to anyone who came up with a 'commercially viable design' to permanently remove greenhouse gases from the earth's atmosphere.

Gore and Branson's contest seemed to mark the peak of the hype surrounding geoengineering, an umbrella term for techniques aimed at 'cooling' global warming. The winner of the Virgin competition was chosen by the Canadian tar sands industry in Alberta. It soon became clear that geoengineering was little more than a PR coup for Branson.

For the tar sand companies that funded the contest, geoengineering was a get-out-of-jail-free card. The tar sands industry, which is busily making Canada's virgin forests resemble JRR Tolkien's Mordor, is one of the world's biggest emitters of carbon dioxide and they may be the concept's most ardent fans.

For a long time, the geoengineering fan club was fairly exclusive. Other members included oil giants like Shell – which has called it 'a terrific debate' – and coal companies like RWE, who view it as 'pioneering' and 'progressive'.

That this swindle is now again being discussed is both absurd and worrying. We cannot protect the climate through geoengineering. Such an approach will only benefit the coal and oil industry.

We will only halt climate change if we stop spending a whopping 6.5 per cent of our global gross national product on direct and indirect subsidies for fossil fuels.

Nebulous ideas

German coal companies are especially excited about carbon capture and storage (CCS) – a process that separates carbon dioxide at combustion and stores it underground.

Unfortunately, when Cambridge University researcher David Reiner studied CCS projects around the world, he discovered that most of the projects were quickly ended – in one case after CCS had triggered earthquakes. The process is too expensive and hazardous, as there is a real risk of stored greenhouse gases leaking from the largest projects.

Existing geoengineering technologies more broadly either do not help protect the climate or pose catastrophic risks – or both.

CCS is just one of many rather surreal ideas about how to manipulate the world's climate. Scientists at the University of Edinburgh have come up with the idea of designing enormous ships to shoot teardrops of seawater into the air. The result, they say, would be brighter clouds and more rays of sunlight reflected into space. Such a project would cost hundreds of millions of euros, but how it would affect the weather and climate remains nebulous.

In the US state of Arizona, researchers have focused on reflecting solar radiation. Their idea was to use special guns to shoot 16 billion silicon particles into space. What that would do for the weather and climate – let alone how this plan would be executed – is still unclear.

Algae on the menu

Geoengineering is not new. Back in the 1980s, US climate science pioneer Wallace Broecker – the man who coined the term 'climate warming' – wanted to use airplanes to blow large amounts of sulphur dioxide into the atmosphere. Some 20 years later, Dutch Nobel Prize winner for chemistry Paul Crutzen refined Broecker's idea and proposed injecting 1.5 million tonnes of sulphur particles into the atmosphere.

The ensuing eruption – equivalent to a gigantic volcano – would likely cool the climate, but destroy the ozone layer in the process. It would have enormous consequences for regional climate zones, with possible catastrophic storms or droughts into the bargain.

Researchers at a polar and marine research institute in Bremerhaven, Germany, recently took six tonnes of iron to the Antarctic Ocean. They intended to fight climate change by extensively fertilising algae that

would then absorb carbon dioxide and sink to the sea floor.

That, unfortunately, is not what happened. Instead, a type of sea scavenger known as amphipods gobbled up all the algae, having their fill of the experiment but not appreciably impacting the climate.

Pressure to act

Bill Hare, founder and CEO of the Climate Analytics science and policy institute, has described the idea of manipulating solar radiation as 'deeply unwise and deeply unhelpful [...] We don't understand the effects. What we do understand tells us that we must be profoundly concerned [about] these technologies.'

Existing geoengineering technologies more broadly either do not help protect the climate or pose catastrophic risks – or both. Yet this ridiculous concept is making a comeback in the climate debate, and a recent landmark international deal to curb global warming may be partly to blame.

The Paris Agreement's goal of restricting global warming to 1.5 degrees, signed by 195 countries, has created enormous pressure to take action. Sometimes resulting in acting without thinking, it seems.

Talking about geoengineering is talking for talk's sake.

A forthcoming report by the Intergovernmental Panel on Climate Change (IPCC) on the 1.5-degree goal has also rekindled interest in geoengineering. Leaks of the draft indicate that the limit will be exceeded even if all the signatories stick to the made agreements. According to the draft report, only negative emissions can adjust the dangerous temperature curve downwards.

And while it may be easy to write the technology of negative emissions into future scenarios, that doesn't make these scenarios any more feasible.

A previous IPCC report for instance mentioned geoengineering scenarios such as bioenergy with carbon capture and storage (BECCS). This process absorbs greenhouse gases by cultivating vast amounts of fast-growing trees and other plants and then burning them. However, this process only works if carbon dioxide can be separated and stored underground using CCS, which remains a questionable technique in itself.

Talking for talk's sake

Has geoengineering become a last resort because time is pressing? In spite of all the uncertainties regarding these technologies, one thing is crystal-clear – not one of them is sufficiently advanced to make a real difference to the fight against global warming. False solutions could be fatal given the stakes and urgency of the problem.

Peter Riggs is a leading expert on 'natural climate solutions', or measures that generate negative emissions such as reforestation. For the IPCC report, he analysed the potential benefits of reforestation. Besides its many positive effects, reforestation has an obvious advantage over futuristic technologies like BECCS – natural climate solutions already exist.

Talking about geoengineering is talking for talk's sake. It is a distraction from the chief challenge ahead – that ending our direct and indirect subsidies of fossil fuel sources is the only step that will stop climate change. We don't need techniques like CCS to introduce 100 per cent renewable energies. Germany for instance already produces so much surplus electricity that it could decommission its coal-powered stations tomorrow.

Geoengineering will be a fig leaf for coal and oil companies for the foreseeable future. Anyone still in doubt need simply consider the think-tanks and lobby groups that never miss an opportunity to deny climate change. Both the ultra-conservative Cato Institute and the conservative billionaire Koch brothers support geoengineering efforts. And no-one would dare dream that they truly care about climate change.



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