

Can cloud ships and space sun shades fix the planet?

By **Matt Ford**, for CNN

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STORY HIGHLIGHTS

- UK's scientific group, Royal Society, investigated geo-engineering ideas
- Cloud ships, artificial CO2 trees among the proposed methods
- Environmental groups against many projects: "There is no Plan B for the planet"
- Many worried that concepts could distract from cutting CO2 emissions

(CNN) -- In order to stop dangerous climate change we may be forced to construct giant solar shades and cover great swathes of land with artificial trees that suck up carbon dioxide.

These are the conclusions of a year-long scientific survey of "geo-engineering" technologies by the UK's Royal Academy published earlier this year. From fake trees to cloud making ships, the ideas are designed to provide planet-scale alterations to our climate if efforts to cut emissions fail.

But while the [Royal Society](#) believes some of the technologies show promise, such as firing tiny reflective particles into the atmosphere to reflect sunlight, the report sounds a strong note of caution about the potential unintended consequences of geo-engineering.

Its authors are concerned that excitement about new technology might distract from efforts to cut emissions.

"Geo-engineering is not a magic bullet and nothing we now know about any of these technologies suggests that they will be able to cancel out emissions in the near future," Professor John Shepherd, an oceanographer at Southampton University, and chair of the Royal Society working group, told CNN.

"We are not arguing for the development of these technologies, but for research that will enable us to make a sensible decision about them in the future.

"We were concerned that, particularly in the run up to [Copenhagen](#) in December, some of the hype about geo-engineering could have a negative effect on efforts to reduce emissions, which is still absolutely critical."

Bold solutions but with a high price?

But while the Royal Society argues for research rather than action, there is a growing interest in geo-engineering technology and others are much more forthright in their endorsement, even arguing that it offers an alternative to cutting emissions.

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--Bjorn Lomborg

"We need to end our fixation on cutting carbon through deals like Kyoto and Copenhagen, because experience shows us that those just aren't working," Bjorn Lomborg, director of the think-tank the Copenhagen Consensus Center and author of "Cool It" and "The Skeptical Environmentalist", told CNN.

Research by Lomborg's own [Copenhagen Consensus Center](#) has suggested that spending \$9 billion developing cloud whitening technology to reflect solar radiation might be able to cancel out this century's global warming in a relatively short timeframe, while in contrast, he argues, the shift to a low-carbon economy based on green energy could take much longer.

"Consider that electrification of the global economy is still incomplete after more than a century of effort," said Lomborg.

Any attempt at geo-engineering the Earth's climate would require massive industrial projects, and professional engineering institutions point to the potential economic, as well as environmental, benefits.

"We estimate that up to two million new jobs will be created in this sector by 2050," said Dr Tim Fox, Head of Environment and Climate Change at the UK's Institution of Mechanical Engineers, which recently issued a report arguing that geo-engineering technology could pave the way to a greener future.

"At the moment no-one is taking greenhouse gases out of the air and no-one is trying to reflect back solar radiation. If we were to do either of these they would develop into billions of tonnes of gases per year or thousands of square miles of reflective devices. That equates to probably millions not thousands of jobs worldwide."

The Institution is calling for the British Government funding of up to £20 million (\$33 million) to help establish a new research center for geo-engineering, and believes both the UK and USA would be well-placed to take advantage of the new industries.

"[Geo-engineering] could operate tomorrow, but it is a double question of scale and cost. We have not done this before, and whilst we don't need any technological inventions to help us succeed, we do need to go up a learning curve," said Fox.

Russian roulette with the future of the planet

But in sharp contrast to this enthusiasm many environmental groups are strongly opposed to geo-engineering. They argue that it is a dangerous distraction from what they see as the key issue: reducing greenhouse gas emissions.

"Geo-engineering is not a plan B for the climate," Greenpeace UK's chief scientist, Dr Doug Parr, said in a press statement.

Geo-engineering is not a plan B for the climate

--Doug Parr, Greenpeace

"It should be used only in desperation, [could have] widespread undesirable impacts, and raises major ethical and political issues of its own. It may be very expensive, and it may well never work.

"Many of these proposals still have risks - there is no simple global thermostat that can be turned up and down and proposals that reflect sunlight can still... have impacts on weather and

precipitation leading to exactly the sorts of problems we are trying to avoid by averting climate change.

"Geo-engineering is now being investigated because we have collectively, as a society, failed to take on the fossil fuel interests."

Mike Childs, Head of Climate at Friends of the Earth also remains wary of the impact of many geo-engineering concepts.

"The benefits of geo-engineering are unproven," he told CNN.

"We haven't got time to play Russian roulette with the future of the planet. Science tells us we need to make quick and substantial cuts in global carbon emissions if we have any hope of avoiding runaway climate change."

There is even the risk that even if some geo-engineering projects work, they may draw humanity into further difficulties that we will struggle to manage over the long-term.

"We are not sure that some of the solar technologies are at all sustainable," said Shepherd.

"They are based on balancing one human intervention against another, and we would have to keep maintaining that balance as long as the greenhouse gasses are in the atmosphere, and that could be hundreds of years.

"We shouldn't begin something like that without understanding our exit strategy."