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The Royal Society's Report on Geoengineering the Climate: Geoengineering or Geopiracy?

With the Royal Society's President, Lord Martin Rees, presiding and James Lovelock, the father of the Gaia Hypothesis, commenting, the release of the Society's report[1] outlining the possibilities for geoengineering the world out of the climate crisis could seem the very embodiment of the precautionary principle. In his 2004 book, *Our Final Century*, it was Lord Rees after all who warned us that technological hubris could obliterate a million lives through "bio error or bioterror" before 2020. He is a cautious man not disposed to put faith in technological silver bullets. Likewise, Dr. Lovelock has been outspoken in his alarm over the impending climate chaos – edging toward geoengineering, but equally perturbed by the "Kafkaesque" prospects of scientists and governments trying to rejig the planetary thermostat.

Media coverage of the report has been confused.[2] Not surprising since the venerable Society, at times contradicting itself, bent over backwards to appear balanced – an acrobatic feat beyond most academics! Still, there are two unequivocal messages: (1) Climate mitigation and adaptation are urgent and the first task is to reduce GHG emissions, and (2) Geoengineering is a credible, if unproven, Plan B should mitigation fail. While the Royal Society can be applauded for its first message, it is also an obligatory mantra *en route* to its second – geoengineering must be funded and tested. After all, most of the report's authors have less precautionary credentials than Rees and Lovelock. Many are actively engaged in geoengineering research and development, seeking financial support, and pushing specific earth techno-fixes.

From some perspectives, geoengineering as "an insurance policy" may seem prudent, practical and even precautionary. But, like it or not, the authors' and readers' perspectives are at least geographical if not geopolitical. Seen in the light of *Realpolitik*, the report's explicit endorsement of geoengineering research and real-life experimentation – and its unwillingness to reject even the most outlandish schemes[3]– is deeply troubling.

The report can only plausibly seem precautionary when read from the perspective of OECD states. Techno-fixes have become the opiate of the politician – the best way to avoid the heavy

[1] *Geoengineering the climate: science, governance and uncertainty*, 1st September 2009, available on the Internet: http://royalsociety.org/document.asp?tip=0&id=8729

[2] See Geoff Brumfiel, "Geoengineering report baffles reporters," *Nature* Blog, 2 September 2009, http://blogs.nature.com/news/thegreatbeyond/2009/09/geoengineering_does_the_rounds.html

[3] Even technologies such as covering deserts in reflective polyethylene-aluminum or putting mirrors in space, for example, are not dismissed from future consideration and therefore could be eligible for research funding.

lifting of actual decision-making and letting real problems fade (at least until after the next election) into the placid blue haze of Bunsen burners.

Geoengineering, the authors opine, is an unsatisfactory and hopefully distant Plan B that should only be considered if one or more climatic "tipping" events swing humanity close to catastrophe: the rapid release of methane gases from Arctic tundra; a sudden collapse of Greenland's icefields; or, perhaps even the failure of governments at the critical climate change conference in Copenhagen this December to set a credible course that will pull the planet back from chaos. The report acknowledges that there are many ways to geoengineer the planet and admits we know little about social and environmental impacts. The authors modestly propose that the UK government invest £10 million per year over 10 years for geoengineering research. Most of this research, readers are assured, would be in the form of monitoring and computer simulations – but the report also recommends field trials for several technologies. In communications with the Royal Society, they argue that, as a scientific body, it would be irresponsible for them not to study geoengineering and to equip governments and society with their best analysis of the risks and benefits involved. Officials point to the escalating media interest in geoengineering over the last several months and insist that they have felt obliged to take on the thankless task of bringing "scientific rigor" to an increasingly polemical debate.

But, again, it depends on where you are standing. If you are a member of the G-8 – and especially if you are the G-8 member who launched the Industrial Revolution that is causing climate change – you could have some confidence that geoengineering is your kind of fix. Only the world's richest countries can really muster the hardware and software necessary to rearrange the climate and reset the thermostat. You can also have some hope that the cost of geoengineering will be much less than the 2% of global GDP per year that reducing greenhouse gas emissions around the world is conservatively expected to cost.[4] Since it will be your money, your scientists and your companies that will undertake experiments and deploy geoengineering, you can feel relatively confident that you can control the process and protect your population. Because you know that the Copenhagen process is in trouble and the climate is in peril, it is politically reassuring to have Plan B in your hip pocket.

However, if your perspective is a little to port or starboard of the equator – in the tropics or subtropics – geoengineering looks a lot different...

First, the OECD governments that have either denied or ignored climate change for decades and that are responsible for almost all historic GHG emissions, are the ones that will have *de facto* control over the deployment of geoengineering experiments. Indeed, although the Royal Society concedes that UN bodies will have to step in and regulate geoengineering at some point, they propose going ahead with research and experiments (possibly involving public-private partnerships and proprietary technologies) right now using a "voluntary code of practice" that

[4] *The Stern Review of the Economics of Climate Change*, available at http://www.hm-treasury.gov.uk/sternreview_index.htm in 2006 estimated the cost at 1% of global GDP, but the lead author Nicolas Stern doubled that estimate a mere two years later. See Juliette Jowit and Patrick Wintour, "Cost of tackling global climate change has doubled, warns Stern," *The Guardian*, June 26, 2008. This higher estimate has been recently questioned as being too conservative. See for example http://www.iied.org/pubs/display.php?o=11501IIED

public and corporate scientists themselves will write! It doesn't help that the major private sector players in geoengineering will inevitably be the energy and chemical companies that are responsible for climate chaos.

Secondly, the governments that are talking about geoengineering experimentation are the ones that have failed to pony up even the most minimal funds for mitigation or adaptation. It defies reason to suggest that these governments will not divert climate change funding away from mitigation and adaptation toward geoengineering if given the opportunity. After all, they can spend the money on their own scientists and corporations to launch initiatives that are more likely to be beneficial to their part of the world.

Thirdly, to have an impact on the earth's climate, geoengineering projects will have to be on a masive scale. Projects that alter the stratosphere or the oceans will not only have unknown implications but also unequal impacts, referred to in the report as "spatial heterogeneity."[5] As much as the geoengineering of the Industrial Revolution disproportionately harms tropical and subtropical parts of the planet, geoengineering experiments could well do the same.

Put bluntly, there is no trust. There is no sane reason why the governments or peoples of most of Africa, Asia and Latin America should trust the governments, industries or scientists of OECD states to protect their interests in any Plan B. After all, these are the governments that recently spent trillions to protect their industries while allowing more than a billion people to go hungry, including an additional 150 million during the current food crisis – sparked itself, in part, by agrofuels and climate change.[6] In the absence of demonstrable goodwill from the states likely to conduct geoengineering, the governments of the global South should be more than suspicious.

There are at least two other broad reasons to be concerned depending upon your geographics and geopolitics:

There is no doubt that science has an important role to play in climate mitigation and adaptation. It is urgent and important that the scientific community work with national and even local governments to monitor and address the climate threats ahead. This collaborative effort will require a lot of money and a lot of focused energy. But, we need a thousand candles of brilliant research not a new Manhattan Project. By definition, the practical responses to climate change must change with the latitudes and the altitudes and the ecosystems. While it may satisfy the Nobel interests of scientists to wave magic wands around the globe, it simply takes money away from real solutions on the ground. Big Science is going to have to learn to become Diverse Science and to work with Southern governments, local communities, indigenous peoples and peasant farmers that are already trying to respond to this crisis.

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[5] *Geoengineering the climate: science, governance and uncertainty*, p. 62.

[6] The World Bank estimates that 75% of the 140% rise in world food prices between 2002 and 2008 was due to agrofuel production. See Asbjorn Eide, "The Right to Food and the Impact of Liquid Agrofuels (Biofuels)," FAO, Rome, 2008, available at http://www.fao.org/righttofood/publi08/Right_to_Food_and_Biofuels.pdf and Olivier de Schutter, *Background Note: Analysis of the World Food Crisis by the UN Special Rapporteur on the Right to Food,* available at http://www.srfood.org/images/stories/pdf/otherdocuments/1-srrtfnoteglobalfoodcrisis-2-5-08.pdf

Finally, despite the dulcet and precautionary tones in the Royal Society's report, James Lovelock is right. Geoengineering is a Kafkaesque solution – we are simply renting a line to catch the cat to catch the mouse instead of aggressively cutting back emissions and changing our lifestyles. We do not know enough about the earth's systems to risk real-life geoengineering experiments. We do not know if these experiments are going to be cheap, as many geoengineers insist – especially if they don't work, forestall more constructive alternatives, or cause adverse effects. We don't know how to recall a technology once it's released.

The only parties happy with the Royal Society's report are the scientists undertaking geoengineering research already, the industries that can profit from experimentation and deployment, and the governments and corporations that hope this silver bullet will let them dodge the bullet of public criticism in Copenhagen in December. These groups only needed the Royal Society to flash governments a "yellow light" favouring more research and experimentation. They know that geoengineering is going to be a very tough sell with the public who already distrust science and industry and their governments on climate change. They are convinced that a failure in Copenhagen will lead the world to their doorstep. Perhaps quite unintentionally, the Royal Society has played into their hands. Ultimately, the Royal Society recommendations are built on the sand of ignorance and hubris. Without recognizing the geopolitical distance between the rich countries and the poor countries, geoengineering is geopiracy.

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