

Memorandum submitted by ETC Group

1 The Action Group on Erosion, Technology and Concentration (ETC Group) is an international civil society organization headquartered in Canada with offices in the United States, Mexico and the Philippines. ETC Group dedicated to the conservation and sustainable advancement of cultural and ecological diversity and human rights. To this end, ETC Group monitors the societal impacts of emerging technologies, supports socially responsible developments of technologies useful to the poor and marginalized and we address issues related to international governance and the concentration of corporate power.

2 ETC Group has been actively monitoring developments in geoengineering for several years, publishing reports, arranging seminars and undertaking international advocacy work regarding geoengineering technologies. All of our publications and news releases on geoengineering are available for download at <http://www.etcgroup.org/en/issues/geoengineering>. Our publications on this topic to date include:

§ Feb 1st 2007 - "Gambling With Gaia" - A civil society introduction to Geoengineering

§ January 2009 - "The better world we seek is not Geo-engineered! A Civil Society Statement against Ocean Fertilization"

§ April 2009 - "ETC Group Submission to Royal Society Working Group on Geo-Engineering"

§ Sept 2009 - "The Emperor's New Climate: Geoengineering as 21st century fairytale"

§ Dec 2009 - "Retooling the Planet? Climate Chaos and the Copenhagen Process in the Geoengineering Age"

3 ETC Group welcomes the news of the committee's inquiry into geoengineering governance. We hope that the inquiry will mark the beginning of a vigorous public and international policy debate on this important topic. **We would welcome the chance to provide an oral submission to the committee.**

4 ETC Group defines geoengineering to include not only solar radiation management and sequestration of atmospheric greenhouse gases (including methane, nitrous oxide and carbon dioxide) but also weather modification techniques such as hurricane suppression and cloud seeding. We encourage the committee to also consider weather modification in this inquiry.

5 At the time that we are submitting this evidence delegates at the UN Framework Convention on Climate Change are negotiating in Copenhagen in an effort to make progress on an agreement to bring about significant reductions in global greenhouse gas emissions. The world's leading climate scientists agree that a reduction in greenhouse gas emissions is the world's best hope for averting a climate catastrophe.^[1] Geoengineering must not distract from that goal.

6 Geoengineering could be seen by governments and industry as a "time-buying" strategy and as an alternative to reducing greenhouse gas emissions.^[2] We encourage the committee to reflect on the meaning of the strong advocacy for geoengineering now coming from think tanks and industry-funded groups who formerly denied the existence or significance of anthropogenic global warming. ETC believes the prospect of geoengineering is being deliberately used by some of these groups as an attempt at distraction from tough action on greenhouse gas emissions reductions.

7 ETC Group believes that geoengineering is the wrong response to climate change and that inadequate knowledge of the earth's systems makes geoengineering, or even real-world geoengineering experiments, too risky. We do not know if geoengineering is going to be inexpensive for society, as proponents insist - especially if geoengineering technologies don't work as intended, forestall constructive alternatives or cause adverse effects. We do not know how to recall a planet-altering technology once it has been released.

8 In addition to unintended consequences, geoengineering techniques could have unequal impacts around the world (sometimes referred to as "spatial heterogeneity").^[3] As much as the Industrial Revolution's "inadvertant geoengineering" (i.e., human-induced climate change) has disproportionately harmed people living in tropical and subtropical areas of the world, purposeful geoengineering experiments could well do the same. It is critical that those states and populations on the front lines in the fight against climate change, particularly the most vulnerable developing countries, be involved in a broad-based and international debate.

9 It should be recognized that states - or even corporations - with the technical and economic means to "adjust the global thermostat" may be tempted to do so. Geoengineering technologies warrant robust regulatory oversight. In the absence of a multilateral framework and a global consensus, any financial or political support for geoengineering technologies would be irresponsible and would reinforce the lack of accountability of industrialized countries for climate change and for the worsening negative consequences in the global South.

10 ETC Group draws a 'line in the sand' at the lab door. We do not believe that it is warranted to move geoengineering out of the laboratory and the most urgent questions of governance concern keeping that lab door closed against the pressures from industrial players to move to open air geoengineering research and deployment.

11 We are extremely concerned by recent proposals that a research programme on geoengineering be established which might include real world experimentation of geoengineering techniques. While modelling studies or other lab-based approaches may be carried out safely it is irresponsible to move geoengineering research out of doors - most especially before global agreements on governing such research have been agreed.

12 Committee members should distinguish between very small scale experimentation for other purposes (eg biochar for soil fertility research or ocean fertilisation to investigate ocean biological processes) and experiments designed to develop geoengineering technologies. We encourage the committee to consider for example the proposal by Strong et al. in the journal Nature that ocean fertilisation in particular should no longer be pursued as a subject of geoengineering research. ^[4]

13 Climate systems are already unpredictable and contain much 'noise'. For any research activities on geoengineering techniques to have a noticeable impact on the climate, they will have to be deployed on a massive scale, and thus any unintended consequences are also likely to be massive. We don't know how to recall a planetary-scale technology.

14 The experience of ocean fertilization shows that any acceptance of small scale experimentation will inevitably slide to pressure for larger-scale experiments even if the results are poor. Despite at least 13 smaller-scale ocean fertilization experiments which failed to demonstrate the efficacy or safety of the technique, there remains commercial and academic pressure for larger tests. This pressure should be resisted and the wider lesson applied to other geoengineering research.

15 OECD governments - which have historically denied climate change or prevaricated for decades (and are responsible for 90% of historic greenhouse gas emissions) - are the ones with the budgets and the capacity to execute geoengineering projects. Will they have the rights and well-being of more vulnerable states or peoples in mind?

16 It is possible - though far from certain - that some geoengineering techniques will be relatively inexpensive to deploy. The technical capacity to attempt large-scale climate interventions could be in some hands (of individuals, corporations, states) within the next ten years. It is urgent to develop a multilateral mechanism to govern geoengineering, including establishing a ban on unilateral attempts at climate modification.

17 Geoengineering interventions could lead to unintended consequences due to mechanical failure, human error, inadequate understanding of the earth's climate systems, effects from future natural phenomena (e.g., storms, volcanic eruptions), irreversibility or funding lapses.

18 Many geoengineering techniques are "dual use" (i.e., have military applications). Any deployment of geoengineering by a single state could be a threat to neighboring countries and, very likely, the entire international community. As such, deployment could violate the UN Environmental Modification Treaty - ratified by the United States - which prohibits the hostile use of environmental modification.

19 Patent offices are already being inundated with applications on geoengineering techniques. Monopoly control of any deployed global geoengineering scheme would be unacceptable. Nor do the issuance of patents make sense if indeed geoengineering is being developed as an emergency response measure.

20 Commercial interests should not be allowed to influence the research, development or deployment of geoengineering technologies. If, as advocates insist, geoengineering is actually a "Plan B" to be used only in a climate emergency, then it should not be a profit-making endeavor. Further, it should not be employed to meet emissions reduction targets.

21 The de-facto moratorium on ocean fertilization agreed by 191 governments at the Convention on Biological Diversity in May 2008 is the first truly global agreement on geoengineering governance and we encourage the committee to affirm the line agreed by the UK Government at the CBD that ocean fertilization is not scientifically justified and should not proceed to larger scale or commercial activities outside of national jurisdictions.

22 We would suggest that the Convention on Biological Diversity might be an appropriate body for convening global governance discussions on geoengineering under the auspices of the UN since that treaty integrates biodiversity concerns with impacts of such activities on livelihoods, justice and rights of marginalized groups. We would caution against global governance initiatives being handed to smaller bodies that are closed to southern, indigenous and civil society participation such as the OECD, G8, G22 or The London Convention and London Protocol on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

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[1] See for example, IPCC, 2007: Summary for Policymakers. In: *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the*

Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[2] See, for example, "Geo-Engineering: Giving us the Time to Act," Institute of Mechanical Engineers (UK), August 2009, available at <http://www.imeche.org/>

[3] UK Royal Society, *Geoengineering the climate: science, governance and uncertainty*, 1 September 2009, p. 62; available on the Internet:
<http://royalsociety.org/document.asp?tip=0&id=8729>

[4] See [Strong, Aaron](#); [Chisholm, Sallie](#); [Miller, Charles](#); [Cullen, John](#) "Ocean fertilization: time to move on" *Nature*, Volume 461, Issue 7262, pp. 347-348 (2009).