

## **Climate Change 2.0?**

### **Normative and political issues of geoengineering the climate**

#### **Abstract**

In response to the global failure to mitigate greenhouse gas emissions, some scientists are proposing geoengineering as a solution to global climate change. Geoengineering can be regarded as a “technological solution”: the large-scale deliberate manipulation of the planetary environment to counteract climate change. The development of technology to intervene in the Earth’s climate systems invites many moral and political questions, which can be broadly divided into three categories: *Ethical questions* concern the appropriate relationship with/attitude towards the non-human “natural” world. An example is the question: is geoengineering hubristic? *Questions of distributive justice* concern the distribution of benefits and burdens of geoengineering. For example, is geoengineering justifiable as a means of providing ways for future generations to avoid dangerous climate change? What priority should it be given compared to mitigation and adaptation? How should foreseeable and any unforeseeable costs of a decision to deploy a geoengineering technology be distributed? *Questions of procedural justice* consider the national and international governance mechanisms that might be necessary to ensure that a decision to deploy geoengineering is legitimate. Could unilateral deployment of a geoengineering technique be permissible and if so in what circumstances?

Geoengineering research is in its infancy but development of technology powerful enough to affect the global climate is likely to invite political controversy. This workshop aims to start the rigorous investigation of the issues that might arise with the development of geoengineering technologies by inviting contributions on the ethics and politics of geoengineering.

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## Outline of the topic

The literature on climate justice and the politics of climate change has burgeoned but political progress remains painfully slow. Climate scientists have expressed increasing concern that time is running out; that global efforts at averting dangerous climate change by reducing greenhouse gas (GHG) emission have been too little and too late. Some sections of the scientific community have started to propose research into *geoengineering* (for the classic statement, (see Crutzen, 2006). Like adaptation and mitigation, geoengineering refers to a broad class of activities proposed as means of avoiding or ameliorating dangerous climate change. It can be broadly defined as the “deliberate large-scale manipulation of the planetary environment to counteract anthropogenic climate change” (The Royal Society, 2009). Examples of geoengineering proposals include atmospheric carbon dioxide removal (CDR) techniques, such as air capture, enhanced weathering and ocean fertilisation. Geoengineering also includes solar radiation management techniques (SRM) which aim to moderate the amount of solar energy received on the Earth. SRM techniques include surface albedo enhancement, cloud brightening, and the current poster-child: stratospheric sulphate aerosol particle injection. None of these techniques yet exist; they are simply the subjects of ongoing research. If any research yields a successful technology, the political and moral debate about its deployment will be intense – and global. Some controversies over ocean fertilisation have already arisen (ETC Group, 2010, for a journalistic account see Kintisch, 2010).

However, as will become apparent in the next section, there is little academic research into the potential benefits and challenges raised by the prospect of geoengineering. Given that geoengineering combines the problems of global climate change governance with those of the development of powerful and potentially extremely risky technology, such a gap in the literature is not only surprising, but in urgent need of rectification. The ECPR Joint Sessions are an excellent forum for initiating debate and building a network of interested researchers. This workshop will be the first Joint Sessions workshop on geoengineering and will kick-start the rigorous investigation of the normative and political issues associated with geoengineering across ECPR institutions. The directors also intend that the majority of the papers submitted will form the first special issue on geoengineering in a high-impact English language journal, and become the basis of an edited book about the ethics and politics of geoengineering, in conjunction with ECPR books.

## Relation to existing research

Climate change raises problems of *global distributive justice* (fair distribution of benefits and burdens) and also problems of *procedural justice* (legitimacy, fair decision-making and governance).

Geoengineering as a response to climate change must therefore deal with these issues also. Additionally, the introduction of powerful new technologies invariably highlights issues of distributive and procedural justice. Questions of fairness, control and participation in decision-making, rather than purely technical assessments of risk, are usually behind public resistance to genetically modified foods, biotechnology and nanotechnology (e.g. Jasanoff, 2007, Kearnes et al., 2005, Rayner and Cantor, 1987 and Wynne, 2007). Similar concerns have been expressed about technologies that could alter the global climate (ETC Group, 2010 and the National Environmental Research Council (NERC), 2010).

As well as questions of distributive and procedural justice, the prospect of geoengineering also raises distinctly *ethical* questions about the appropriate relationship between human beings and the environment. Whilst it was suggested that climate change will regard a shift in ethical attitudes (Jamieson, 1992, for the most part, philosophical scholarship on climate change has focused on questions of justice (e.g. Bell, 2008, Caney, 2005; 2008; 2010, Gardiner, 2001; 2011, Meyer 2004, Page, 2006, Shue, 1993, 1995, Vanderheiden, 2008). In the case of geoengineering, the distinctly ethical questions are not so easily ignored; indeed they are highlighted as a key concern in a study on public perceptions of geoengineering (NERC, 2010). In summary, the normative issues can be broadly divided into the following categories.

1. *Ethical*: What is the appropriate relationship with or attitude towards the non-human “natural” world? What does “natural” mean, given it still captures the public imagination but that ideas of pristine, untouched nature have been challenged by scientists? Is geoengineering hubristic?
2. *Distributive justice*: Is geoengineering justifiable as a means of providing ways for future generations to avoid dangerous climate change? What priority should it be given compared to mitigation and adaptation? How should foreseeable and any unforeseeable costs of a decision to deploy a geoengineering technology be distributed?
3. *Procedural justice*: What national and international governance mechanisms are necessary to ensure that a decision to deploy geoengineering is legitimate? Who should be asked for consent? Could unilateral deployment of a geoengineering technique be permissible and if so in what circumstances?

Such considerations have been noted by those involved in the technological development of geoengineering schemes (Keith, 2000, Robock, 2008, Schneider, 2008), in government- authored or commissioned reports into the potential of geoengineering (see The House of Commons, 2010, The US Government Accountability Office, 2010, and from Germany, Rickels et al., 2011) and in reports

from independent scientific bodies (e.g. the Royal Society 2009). In all of these, the political and normative issues are identified and the need for further research is acknowledged, but no substantive conclusions have been drawn.

Whilst the lack of engagement in the ethical and political debates of geoengineering might be expected from natural scientists, it is surprising that there is an even greater lack of discussion of geoengineering by social scientists and political theorists. With a couple of exceptions (Victor, 2008; 2009 and Virgoe, 2009) there has been virtually no consideration of the international politics of geoengineering or the governance mechanisms that need to be put in place for geoengineering research and deployment. Nor has there been much consideration of the problems of distributive and procedural justice (although see Burns, 2011, Svoboda et al., 2011, Ott, 2012, and, for a sustained analysis which also raises ethical questions, Gardiner, 2010).

However, as noted above, there is a much more extensive literature both in climate justice, governance and politics of climate change and also in the introduction of new technologies. All of these can provide analytical and critical tools and theoretical perspectives for investigation into the questions of ethics, justice, politics and governance of geoengineering. Research on issues such as transboundary pollution, nuclear power and weaponry could also provide useful insights for the nascent debates on geoengineering governance. Also relevant to the ethical concerns of hubris, and whether humanity has the right to intentionally intervene in the climate, is previous philosophical work on anthropocentrism, the value of the “natural”, and the appropriate attitude to the non-human world (e.g. Goodin, 1994 and Jamieson, 2002).

### **Likely participants**

This workshop thus invites contributions from European academics who have either written specifically on geoengineering, or who possess relevant expertise in ethics, environmental politics, global governance, global justice, (international) politics of climate change, and the politics of new technologies, which they wish to apply to the key questions associated with geoengineering. The directors hope for contributions from academics at any stage of their career and from PhD students.

### **Type of papers**

The workshop directors welcome papers from a variety of disciplinary perspectives, from political theory and philosophy to political science and international relations. They will aim for a balance of

papers devoted to normative and theoretical issues, empirically driven papers analysing the key actors and factors in the promotion of geoengineering, and papers on design of a suitable governance regime. A critical perspective is encouraged. The directors will also seek to have the majority of papers published both in special issue of a high-impact English language journal and in an edited collection with ECPR books. Accordingly, they ask for papers containing original research and at a reasonable stage of development.

### Biographical notes

*Dr Clare Heyward* is a James Martin Postdoctoral Research Fellow on the Oxford Geoengineering Programme, University of Oxford. Her current research focuses on the ethics and governance of geoengineering. More generally, Clare is interested in climate justice and intergenerational justice, (the latter was the subject of her paper which won the Dick Richardson Prize for best Green paper at the 2007 Joint Sessions).

*Christian Baatz* is a Ph.D. candidate at the University of Greifswald. His thesis deals with compensating victims of climate change in developing countries. Besides climate ethics, Christian's work centres on questions of global justice, environmental ethics and climate policy. His research is funded by the Scholarship Programme of the German Federal Environmental Foundation (DBU).

*Prof Konrad Ott* is Professor of Environmental Ethics at the University of Greifswald. He has worked on numerous topics, including ethics of technology assessment, environmental ethics, ethics of science and sustainable development. For eight years Konrad was a member of the German Advisory Council on the Environment. Together with Christian Baatz he recently prepared a report on risk assessment of and decision criteria for geoengineering measures on behalf of the Office of Technology Assessment at the German Bundestag (TAB).

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