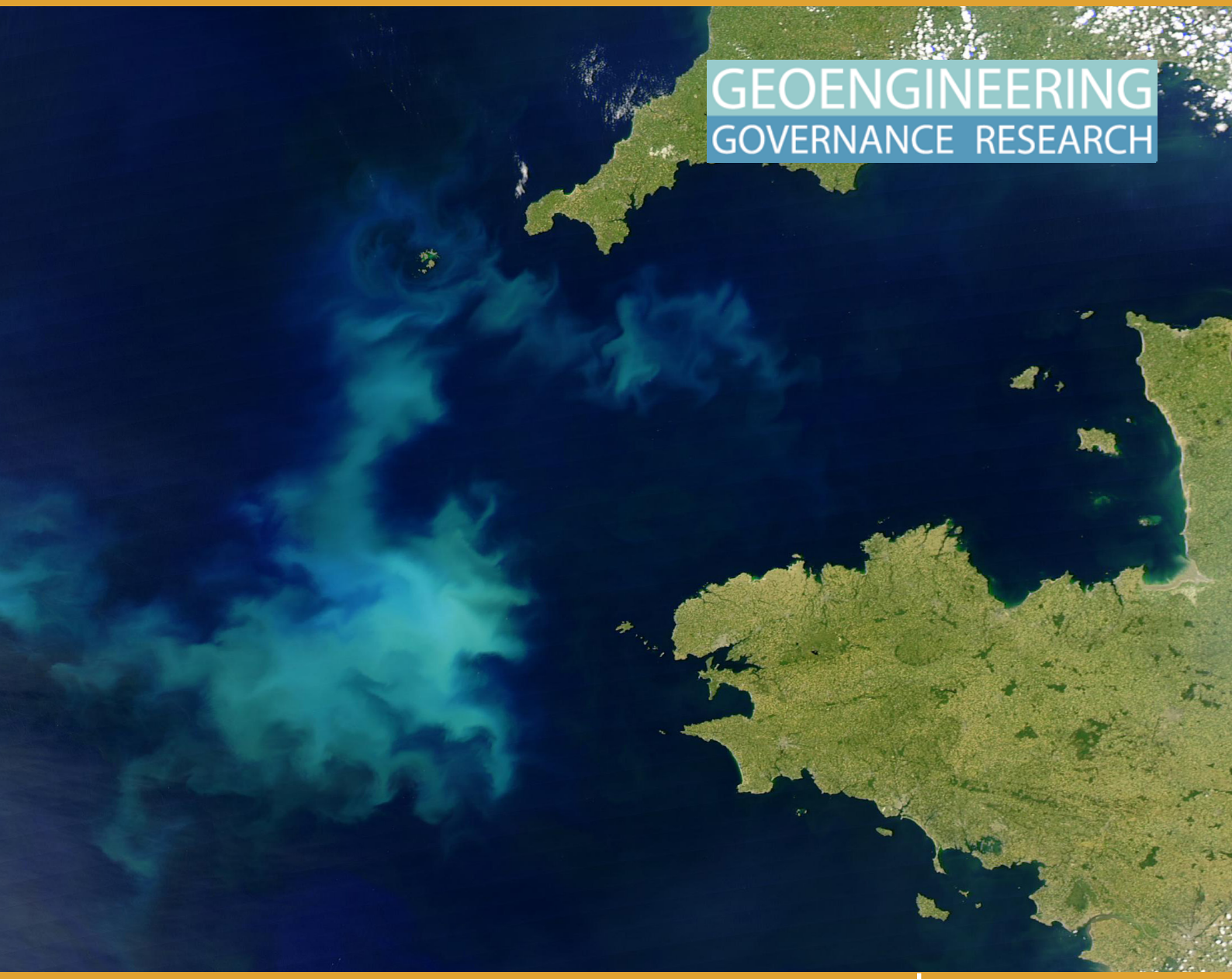
WHAT IS GEOENGINEERING?

The first of a set of seven briefing notes summarising the findings of the Climate Geoengineering Governance Project



The Climate Geoengineering Governance (CGG) project has brought together a broad range of expertise from the social sciences and humanities to examine the challenges of governance and regulation of climate geoengineering and to suggest ways forward

BRIEFING NOTE 1

Is geoengineering an inherently ambiguous term?

While technical definitions and lists of proposed technologies are useful starting points, it is important to remember that at present geoengineering is currently still just about ideas: it is what social scientists refer to as a 'socio-technical imaginary' associated with an ambiguous set of meanings. An exploration of how the term geoengineering is understood and used by different actors (See case study Box 1) reveals that the boundaries of the term itself are fluid, and the definition is not fixed. For example, some people suggest that we are already geoengineering the planet by continuing to emit greenhouse gases now that we know these cause climate change. Others argue that the issue of intent is key and that attempting to take more active control of the climate would represent a different kind of endeavour entirely. The usefulness or otherwise of the term 'geoengineering', and its precise definitional limits cannot be set in purely technical terms, but are matters of social and political contestation.

At present the idea of geoengineering takes its most concrete form in a diverse set of research practices (from fields such as climate science, soil science, physics and engineering). But the boundaries of the 'geoengineering field' depend to a large extent on the view that researchers and others take as to the financial or other resources geoengineering may bring, or the regulations it might face. Hence defining precisely what does and doesn't constitute geoengineering research can be seen to be subject to a form of definitional politics.

Is the definition of geoengineering too broad and ambiguous to be helpful in policy making and research governance?

Given the ambiguous and contested nature of the term, and the diversity of possible approaches that might be described in these terms, from the point of view of particular policy interventions and governance mechanisms, the term 'geoengineering' may be unhelpfully broad. It has been suggested that therefore that policy makers should consider particular technological approaches rather than attempting to construct governance mechanisms for 'geoengineering' as a category of interventions. However, others counter that while proposed geoengineering interventions are indeed very different, they all suffer from a similar flaw in that they are attempts to 'fix' a complex social problem with

Case Study Box 1 – Mapping the public debate on geoengineering

Using an approach called Q method, CGG researchers examined the way in which the public debate about geoengineering is currently being structured. Our results illustrated the variety of different views about geoengineering currently being expressed in the public domain, and explored the implications of privileging a particular perspective over another. Four distinctive perspectives towards geoengineering were revealed as being currently present within public debate. Views about geoengineering were highly polarised, with definable groups of proponents and opponents visible. However the picture was more nuanced, revealing a variety of positions with regard to the feasibility and desirability of manipulating the climate. These positions are not fixed, but provide signposts toward what are likely to be fault lines in the debate in the future.

These were:

1. We are the planetary maintenance engineers
2. At the very least we need more research
3. Let's focus on Carbon
4. Geoengineering is a political project

a technological solution, and as such, they argue, it is possible and necessary to consider the implications of the entire class of geoengineering technologies.

It may therefore be the case that broad public debate about geoengineering and its possible implications is still necessary, even while governance mechanisms may be most productively focused at the technology-specific level.

Does it matter how geoengineering is defined or framed?

Framings have material consequences for governance, and it is important that these are made explicit and hence open to public debate and scrutiny rather than implied in use of certain kinds of language and framing devices. Uncritical use and acceptance of particular framings may influence the development trajectory of particular approaches, or act to constrain public dialogue and engagement on the topic (contributing to a process of 'socio-technical lock-in' of particular technologies). For example:

- Framing geoengineering as a necessary response to a 'climatic emergency' may imply that the need for the suspension of normal democratic politics, and the extreme securitisation of the climate change issue. It is important to recognise that emergencies are 'declared' not 'discovered'.
- Referring to geoengineering approaches as a kind of 'Plan B' might contribute to the so-called 'moral hazard' effect, by giving the (perhaps false) impression that humanity has a back-up plan for dealing with climate change and therefore need not worry unduly about emissions reductions.
- Calling for more research into geoengineering technologies may imply that such research is neutral – but this may not be always be the case (for example, research may act to normalise the concept of geoengineering, or contribute to growing momentum in this area).
- Separating groups of technologies into, for example, Carbon Dioxide Removal methods and Solar Radiation Management methods, may make intuitive sense to some, but may have certain consequences, such as making Carbon Dioxide Removal methods appear less exotic or extreme in comparison with Solar Radiation Management methods.

What does the CGG project conclude and recommend?

- It is important to understand that the boundaries of what is or isn't considered 'geoengineering' is a social and political question rather than a technical one, and will likely shift in response to the wider governance context.

- Policy makers should be alert to different ways in which the topic of geoengineering is being talked about and framed, and consider the implications of different framings for governance decisions, and the openness of the policy debate.

- While the terminology of 'geoengineering' as a diverse category of interventions may be unhelpful for policy making, and policy makers may find it more productive to examine separately the implications and governance challenges related to particular proposals for interventions, in some cases, a consideration of the social and ethical implications of geoengineering in the abstract may be necessary and helpful.

Further Resources:

Bellamy, R., Chilvers, J., Vaughan, N. E., & Lenton, T. M. (2013). "Opening up" geoengineering appraisal: Multi-Criteria Mapping of options for tackling climate change. Global Environmental Change, 23, 926 – 937.

Bellamy, R. (2013). "Framing Geoengineering Assessment." Opinion Article, Geoengineering Our Climate Working Paper and Opinion Article Series. Available at: http://wp.me/p2zsRk-9H

Cairns, R. (2014). Climate geoengineering: issues of path-dependence and socio-technical lock-in. Wiley Interdisciplinary Reviews: Climate Change, 5 (5), 649 - 661.

Cairns, R., & Stirling, A. (2014). "Maintaining planetary systems" or "concentrating global power?" High stakes in contending framings of climate geoengineering. Global Environmental Change, 28, 25–38.

Heyward, C. (2013). Situating and Abandoning Geoengineering: A Typology of Five Responses to Dangerous Climate Change. PS: Political Science & Politics, 46(01), 23–27.

Markusson, N., Ginn, F., Ghaleigh, N. S., & Scott, V. (2013). "In case of emergency press here": framing geoengineering as a response to dangerous climate change. WIREs Climate Change, 5(2), 281 – 290.

http://geoengineering-governance-research.org/results-reports-and-publications.php

About us

The CGG project has been carried out by researchers at the University of Oxford, the University of Sussex, and University College London (UCL). It was funded by the Economic and Social Research Council (ESRC) with contributory funding from the Arts and Humanities Research Council (AHRC) (project ES/J007730/1).

Key Contact

Prof Steve Rayner

Email: steve.rayner@insis.ox.ac.uk

Postal enquiries to: CGG, Institute for Science, Innovation and Society, 64 Banbury Road, Oxford OX2 6PN, United Kingdom

Project Website

http://geoengineering-governance-research.org

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Arts & Humanities Research Council

UCL

UNIVERSITY OF OXFORD

University of Sussex