



The Governance of Geoengineering Research

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Outline

What is the current legal landscape with respect to geoengineering?

Why govern geoengineering research? What are the different functions of research governance?

What elements should be included in a research governance framework?

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Survey of the current legal landscape

- Customary international law: principles of prevention and precaution, environmental impact assessment, duty to consult and notify, public participation in environmental decision-making
- Treaty law
 - Directly addressed by the CBD through a series of COP decision and in an amendment to London Protocol on marine geoengineering (not yet in force)
 - Potentially falls within the geographic and regulatory scope of several other international and regional agreements
- Domestic law
- Soft law: public and private forms, Oxford Principles

Fragmentation

- Large-scale interventions in natural systems touch upon many subject areas of international law
- Potentially falls within the geographical and regulatory scope of different treaties
- Likely no 'one-size fits all' approach
- New vs modification of an existing instrument
- Problem of treaty congestion

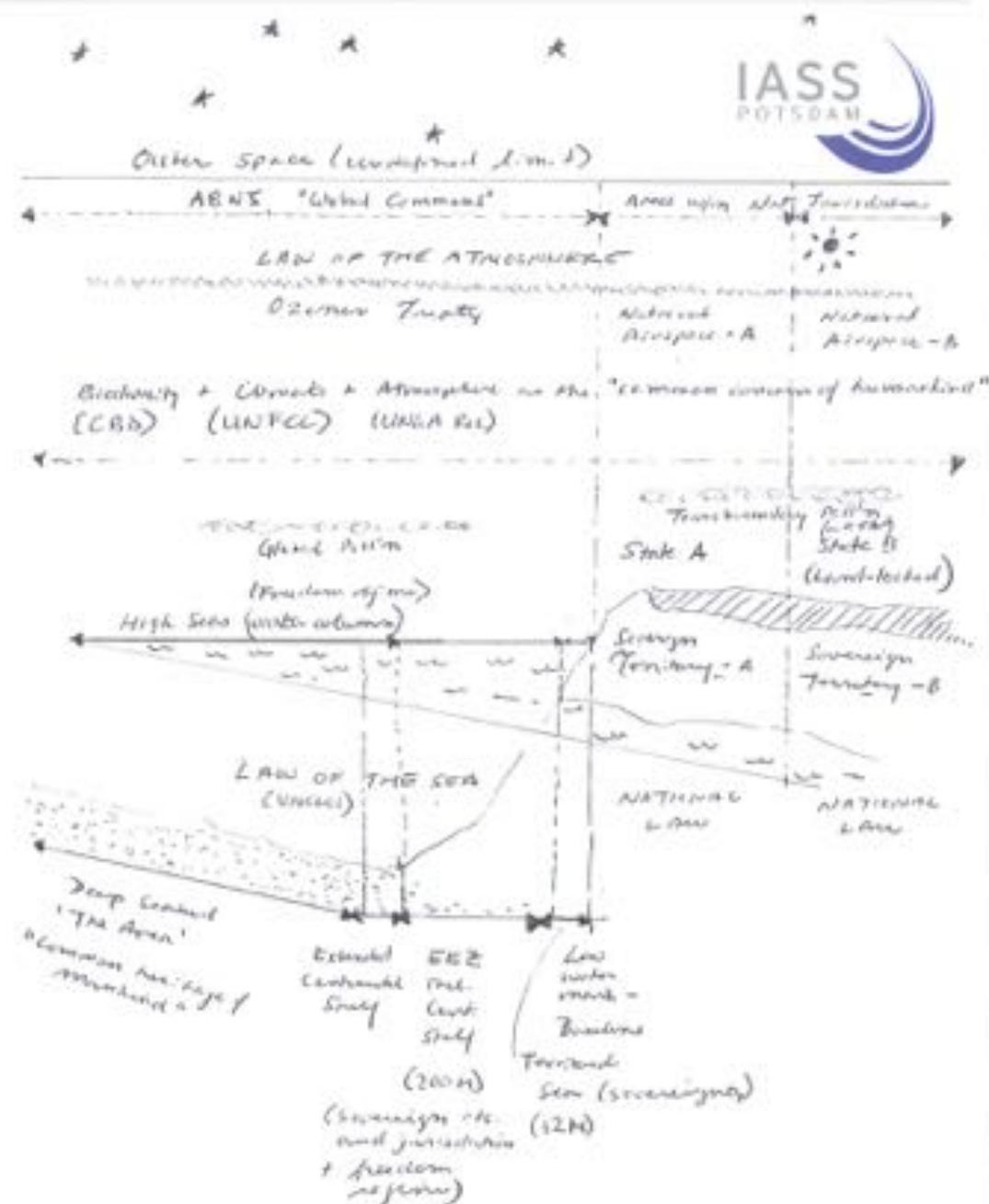


Fig 1. Concepts of Space in International Environmental Law

‘The significance of these international environmental norms, then, is not in imposing specific constraints on what countries may do. Instead, they are significant in providing a general frame of reference. If [geoengineering] were to become a concert proposal, the norms would need to set the terms of the international debate about whether to proceed.’

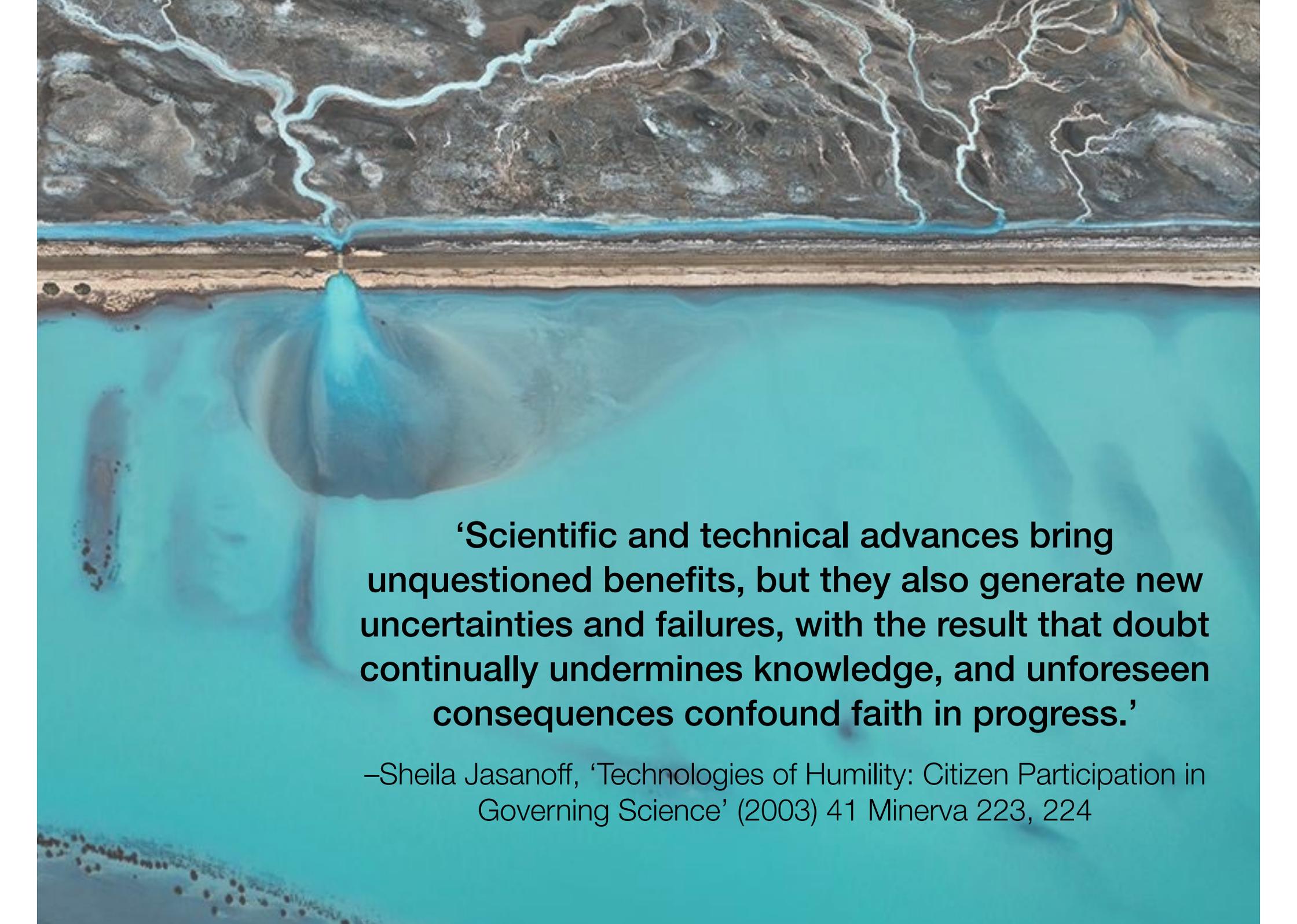
–Daniel Bodansky, ‘May We Engineer the Climate’ (1996) 33 *Climatic Change* 309.

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An aerial photograph of a river delta. The top half of the image shows a network of brown, winding channels (distributaries) branching out from a main river. The bottom half shows a large, bright blue plume of water flowing from the river into a larger body of water, likely the ocean. The plume has a distinct, rounded shape and is surrounded by a lighter blue, turbid area. The overall scene is a mix of natural and human-made waterways.

‘Scientific and technical advances bring unquestioned benefits, but they also generate new uncertainties and failures, with the result that doubt continually undermines knowledge, and unforeseen consequences confound faith in progress.’

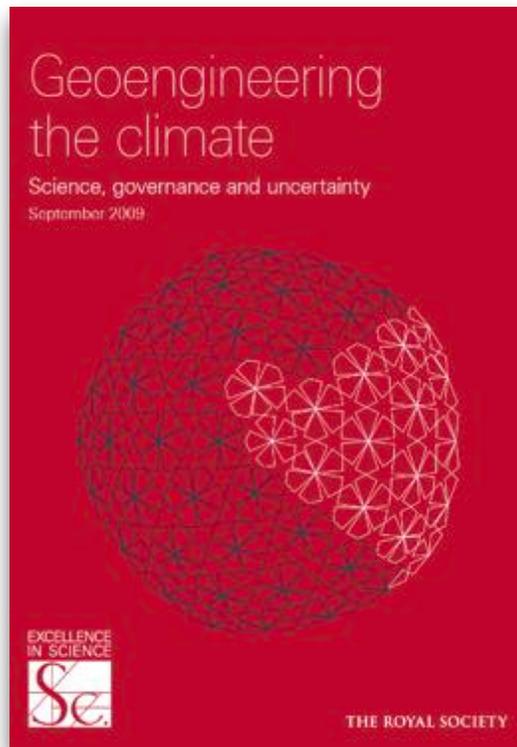
–Sheila Jasanoff, ‘Technologies of Humility: Citizen Participation in Governing Science’ (2003) 41 *Minerva* 223, 224

A scenic landscape featuring a dirt road that winds through rolling hills. The foreground is dominated by dry, scrubby vegetation. In the distance, a valley opens up, showing a small town and a body of water under a vast, blue sky with scattered white clouds. The overall atmosphere is bright and clear.

What is the rationale for the need to regulate and govern geoengineering research?

Functions of governance of geoengineering research

1. Prevention and minimisation of harm
2. Promotion of responsible research practices in order to inform decision-making
3. Ensure legitimacy



The acceptability of geoengineering will be determined as much by social, legal and political issues as by scientific and technical factors. There are serious and complex governance issues which need to be resolved if geoengineering is ever to become an acceptable method for moderating climate change.

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Key issues for designing research governance

- Legal form (legally binding agreement vs. soft law)
- Level of governance
- Defining the object of governance
- Content
 - General principles
 - Relationship to deployment
 - International cooperation and coordination
 - Environmental assessment and monitoring
 - Guidance on decision-making
 - Public participation in decision-making
 - Transparency and the availability of information: reporting on research plans, data and results
- Role for scientific advice in decision-making about geoengineering research and its governance
- Private actors, commercial interests and intellectual property

Direct Air Capture & Storage



Afforestation



Carbon Dioxide Removal

Ocean Fertilisation



Ocean Upwelling



Ocean Alkalinity Addition

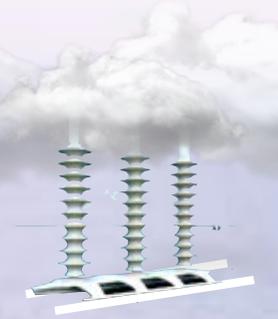


Stratospheric Aerosol Injection



Cirrus Cloud Removal

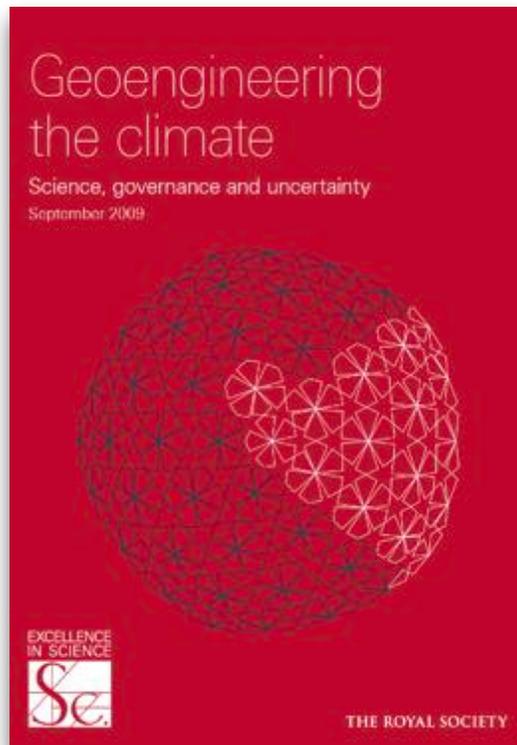
Solar Geoengineering



Marine Cloud
Brightening



Ocean Albedo
Enhancement



Key recommendations:

- The Royal Society in collaboration with international science partners should develop a code of practice for geoengineering research and provide recommendations to the international scientific community for a voluntary research governance framework. This should provide guidance and transparency for geoengineering research, and apply to researchers working in the public, private and commercial sectors. It should include:
 - a. Consideration of what types and scales of research require regulation including validation and monitoring;
 - b. The establishment of a *de minimis* standard for regulation of research;
 - c. Guidance on the evaluation of methods including relevant criteria, and life cycle analysis and carbon/climate accounting.
- Relevant international scientific organisations should coordinate an international programme of research on geoengineering methods with the aim of providing an adequate evidence base with which to assess their technical feasibility and risks, and reducing uncertainties within ten years.
- Relevant UK government departments (DECC¹ & DEFRA²) in association with the UK Research Councils (BBSRC³, ESRC⁴, EPSRC⁵, and NERC⁶) should together fund a 10 year geoengineering research programme at a level of the order of £10M per annum. This should actively contribute to the international programme referred to above and be closely linked to climate research programmes.

Code of Conduct

- Advantages:
 - Flexible and adaptive
 - Compatible with a pluralistic system: can be adopted by, and guide decision-making at, different levels and for different actors
 - Greater ambition of commitments if in the form of soft-law
- Disadvantages: need for institutional structures and problems of enforcement and compliance



CODE OF CONDUCT FOR RESPONSIBLE GEOENGINEERING RESEARCH

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Code of Conduct

- General principles
- Moratorium on deployment
- Includes best practices and procedures for the conduct of outdoor experiments
- Adaptive management and learning by establishing procedures on researching planning, assessment and monitoring
- Transparency requirements
- Role for public participation in decision-making



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A photograph taken from the perspective of someone looking out of an airplane window. The left side of the frame shows the white wing and blue tail of the aircraft. The sky is filled with soft, golden light from a setting or rising sun, with wispy clouds scattered throughout. The overall mood is peaceful and serene.

**Thank you for your
time and attention.**