

## *Governance of Climate Engineering*

### A PROPOSAL TO THE OPEN PHILANTHROPY FOUNDATION

**Edward A. Parson**

**EMMETT INSTITUTE FOR CLIMATE CHANGE AND THE ENVIRONMENT,  
UCLA SCHOOL OF LAW**

#### *Background, Need, and Opportunity:*

- It is possible to conduct engineered interventions in the global climate system, to offset some harms of elevated greenhouse gases and resultant climate change. Multiple ways to do climate engineering (CE) have been proposed, which modify the global carbon cycle or the Earth's radiation balance. Due to high leverage, some radiation approaches are fast, cheap, and imperfect: they appear able to cool the Earth rapidly (~ 1 year) and cheaply (~ \$ Billions per year), but cannot solve the whole problem. They thus present the prospect of both large reductions in climate-change risk, if competently and prudently used; and large increases in risk if used incompetently, recklessly, rivalrously, or too much. They can help, but cannot replace the first priorities of cutting emissions and adapting to unavoidable changes.
- Due to their global impact and sharp tension between potential large benefits and risks, these technologies pose novel and severe challenges to governance, particularly internationally.
- Most debate on these technologies has been scientific, focused on the need to begin research into methods, efficacy, and risks. Study and debate on governance challenges and potential responses are less developed and are urgently needed, in parallel with scientific research.
- The Emmett Institute can build a world-leading program in CE governance, building on the work and reputation of Prof. Ted Parson, who is one of the world leaders in the field.

#### *Examples of questions to be addressed:*

- What risks are posed by research programs including small field studies of CE methods? How can practical programs, policies, and oversight methods be designed to control these risks? What are the implications for US research program design and oversight?
- How can informal international cooperation best be developed in early research programs?
- What scale or other characteristics of CE research would make it a matter of international concern? What additional governance requirements would be warranted at that point?
- What are the potential linkages between CE and other elements of climate policy? What are the implications of alternative institutional settings for CE-related decisions? What forms of linkage hold most promise and most risk for effective climate governance? Can agendas be structured so the prospect of CE increases, rather than decreases, mitigation effort?
- What specific governance capabilities are likely to be required for peaceful, competent, prudent control over future proposals for operational climate-engineering interventions? What are plausible pathways toward the development of such capabilities?
- How, if at all, might an early moratorium contribute to development of such capabilities, and

11.

how should one be configured to best do so?

- What insights for CE governance can be drawn from prior experience in other areas, in control of technological risks or management of controversial research?
- What are the implications, for risks and governance requirements, of potential regional or seasonal variation in effects of CE interventions, of potential controllability of such variations, and of knowledge and expectations about these? Under what conditions would such regional differentiation raise security threats, and how could these best be mitigated?
- What are the governance implications of imperfect observation and attribution of CE interventions and effects, and of the overlap between research and operational interventions due to attribution and signal-noise issues? How might specific investments or advances in monitoring and attribution affect governance needs or help to address them?
- If governance cannot be developed in advance of potential CE-related challenges, what feasible early steps may best reduce risks in the event of such a challenge, e.g., by increasing awareness, developing common understanding and norms, or testing governance proposals? How can scenario exercises, simulation-gaming, or other exploratory methods help identify more promising and more risky responses to a potential future CE-related crisis?
- As a potential first step, how might a high-level consultative body like a World Commission on Climate Engineering contribute to such early development of understanding and norms, and how should its organization and mandate be configured to best contribute to this aim?

***Activities:***

- Scoping meetings to build collaboration with climate-model studies of CE scenarios, with particular emphasis on understanding regional and seasonal impacts, and associated uncertainties, of likely greatest interest to national and regional decision-makers;
- Further study of 1) governance needs reasonably inferable from characteristics of technologies and projected directions of advance; 2) potentially relevant analogies (consulting and partnering with experts in other relevant areas of international governance)
- Partner with other projects starting and underway: e.g., Harvard, IASS, CIGI, FCEA, SRMGI, Carnegie Council.
- Policy workshops in major world regions, to raise awareness and engage policy-makers on the risks, opportunities, and governance and legal needs posed by climate engineering
- Generate 2 – 3 briefing papers/ year, on topics such as those above: initially published with a practical focus for policy-makers, selected papers developed for academic publication
- Provide support for design of potential US climate engineering research program, and for international consultations on international governance problems and potential responses.

***Resources: See Attached Budget***

15.