

Climate engineering,¹ governance, and transaction costs

By

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The NAS geoengineering workshop is correct to highlight governance. Governance arrangements can heavily influence the costs of implementing a policy. Three principles seem likely to provide guidance that might improve the odds of making good choices about governance. They are:

1. The need for new international rules to restrain unilateral climate engineering is doubtful.
2. At present, the most important question about the governance of climate engineering is how to organize a cost-effective R&D effort.
3. A comparative study of the transaction costs of CE and those of other climate strategies would inform future policy choices.

Let me briefly address each of these points in turn.

The risks of unilateral CE: The apparently low costs of CE have sparked a fear in some of “lone ranger” global cooling schemes.² While containing a grain of truth, this fear seems exaggerated. Some powerful nations might be harmed by global cooling. Russia, a high-latitude great power, comes to mind. Other nations may fear global cooling’s unknown effects or its possible impacts on the distribution of power among states. Such motives seem likely to impel one or more powerful states to discourage other nations’ efforts to cool the planet. States favoring global cooling could have good reasons to wish to dampen these hostile responses, and they might well offer concessions in order to do so. To some people, this prospect may seem distressingly anarchic, but that, after all, is the basic nature of the global state system. No serious case has been made for believing that new international rules are needed to keep CE from being too easy. No third party exists to enforce such rules – were they somehow to appear – and the theory that such rules would have much impact on state behavior rests on shaky foundations.³

Organizing effective R&D: Currently, effective CE technology does not exist.⁴ R&D on that technology is the only option now at hand.⁵ The public sector has a mixed track record at developing new advanced technologies. It has scored some successes. In other instances, high discount rates driven by short election cycles, pork barrel politics, and agency problems have led to waste and inefficiency.⁶ CE presents a difficult set of R&D problems. It requires integrating very diverse science and engineering tasks. No existing research organization is an obvious candidate for performing this work, and the concept elicits strong condemnation from a small, but influential, constituency of organized advocacy groups.⁷ The most important single governance issue facing CE today is how to organize a public sector R&D effort equal to these challenges.

Compare CE and non-CE governance issues: All climate strategies involve important transaction costs. The free rider problem, for example, has largely stymied global greenhouse gas control.⁸ Within nations, transaction costs may lead to expensive mistakes in the selection of policy tools.⁹ It is important, therefore, to know how the transaction costs of CE compare with those of the other climate strategies. Transaction costs have often been neglected in conventional analyses; yet they appear to be quite significant. A comparative analysis of transaction costs would provide information that could usefully inform future policy choices.

¹ Climate engineering (CE) is a better term than geoengineering, and I will use it in these comments. (In these comments, by CE, I am referring to albedo management.)

² Victor, David G., M. Granger Morgan, Jay Apt, John Steinbruner, and Katharine Ricke (2009). "The Geoengineering Option: A Last Resort Against Global Warming?" *Foreign Affairs*, March/April 2009.

³ Mearsheimer, John J. (1994). "The False Promise of International Institutions." *International Security* 19(3): 5-49.

⁴ Robock, Alan, Allison Marquardt, Ben Kravitz, and George Stenchikov (2009). "The Benefits, Risks, and Costs of Stratospheric Geoengineering." Submitted for publication in *Geophysical Research Letters*.

⁵ Robock, Alan, Allison Marquardt, Ben Kravitz, and George Stenchikov (2009). "The Benefits, Risks, and Costs of Stratospheric Geoengineering." Submitted for publication in *Geophysical Research Letters*.

⁶ Cohen, Linda R. and Roger G. Noll (with Jeffrey S. Banks, Susan A. Edelman, and William M. Pegram). *The Technology Pork Barrel*. Washington, DC: The Brookings Institution Press, 1991.

⁷ Tetlock, Philip E. and Michael Oppenheimer (2008). "The Boundaries of the Thinkable." *Daedalus* 137(2): 59-70.

⁸ Barrett, Scott. *Environment & Statecraft: The Strategy of Environmental Treaty-Making*. New York: Oxford University Press, 2003.

⁹ Lane, Lee and David Montgomery (2008). "Political Institutions and Greenhouse Gas Controls." AEI Center for Regulatory and Market Studies, Related Publication 08-09.