



## Soapbox Post

### International Review of Geoengineering

Clark A. Miller March 19, 2010 Filed under [Geoengineering](#)

David Morrow, Robert Kopp, and Michael Oppenheimer, in *Environmental Research Letters*, have called for establishing an International Climate Engineering Research Review Board – an IRB for efforts to engineer the planet. I concur. Geoengineering must be subject to global review and regulation. This entails two challenges: (1) what rules should the IRB enforce; and (2) how should it be organized. Here are eight thoughts:

1) The Geoengineering IRB must insist on sound research grounded in reliable scientific evidence and theories and also realistic scenarios of climate change. Geoengineering research cannot be justified by high climate impacts alone but only by identifying a realistic scenario of climate impacts coupled to realistic appraisal of the ability of geoengineering to reduce or prevent those impacts. Otherwise, we're just shooting in the dark and hoping not to hit anyone.

2) The IRB must operate in a precautionary mode. IRBs often work for institutions with a vested financial and reputational interest in the success of research, and their members are researchers who often want to avoid conflicts with their colleagues. Hence, IRBs approach their job as not to block research but to help researchers conduct their work in an ethically reasonable fashion. The joke about many IRBs is that they've never met a research project they didn't approve. That's not good enough in this case. A Geoengineering IRB must block unjustified and unethical research.

3) Clear rules for public consent must be developed and enforced. No matter how well constructed an IRB, its job is to supplement, not replace, the judgment of people being experimented upon. Since individual consent for the whole planet is unwieldy, group consent procedures will have to be developed. But what process of group consent? This is not an easy question. Getting the consent of governmental representatives is inadequate, and serious proposals must be made and debated by the global community regarding how the consent of global publics could be obtained.

4) The IRB should include a broad membership. Diversity should include geographic, ethnic, disciplinary, economic, cultural, and religious considerations. It should include geoengineering researchers, climate scientists, ecologists, economists, social scientists, and humanists. It should include experts, lay people, public officials, and representatives of the business sector and non-governmental organizations. We're talking about some of the most serious decisions the planet will make regarding its future. Such decisions must take into account a wide range of knowledges and perspectives.

5) Climate risks should not be taken out of their larger environmental and human contexts. Consider geoengineering experiments in the 1960s to alter the direction of hurricanes in the Caribbean to avoid hurricanes charging every fall at Miami, Tampa, and New Orleans. The experiments didn't work, but that wasn't why they were discontinued. Someone finally realized that roughly half of the annual rainfall in Southeastern states comes from hurricanes. Driving them out to sea would have caused protracted, long-term drought for the region. Climatic variables often exhibit complex and dynamic relationships with human systems, with both current and geoengineered climate trajectories exhibiting winners and losers, risks and benefits. Even diverting Katrina from New Orleans to the east would simply have displaced its destructiveness into Florida, Alabama and Georgia.

6) Geoengineering experiments must be evaluated case-by-case. Too frequently, the case for geoengineering research is made in the aggregate. Wouldn't it be prudent, advocates ask, to pursue geoengineering research to reduce uncertainties that surround it? Far from it. Prudence demands, at best, pursuing some geoengineering experiments, but certainly not others. As I suggested above, a key question for the IRB will be sorting out which research to pursue and which to avoid.

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7) Geoengineering should follow the European Union's approach to large, internationally diverse research teams. If researchers can't figure out how to convince colleagues and institutions from other countries to participate, then it needs better thinking. There are lots of ways geoengineering could go wrong. It could be done for financial gain rather than public good. It could be parochially oriented toward solving one country's perceived problems at the expense of another's. It could simply be too risky or too experimental or inadequately well thought through and designed. Ensuring broad, international teams of researchers, including especially researchers from countries that are likely to experience potential risks from the research, would go far toward generating global credibility for geoengineering research and ensuring that multiple scientific and socio-cultural perspectives were given due weight in its design.

8) Finally, the IRB should insist on recent precedent from the US National Science Foundation and include explicit evaluation of the social and ethical implications of large-scale research projects and the inclusion of social science and humanities researchers as partners in the research teams.

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