

- Governing climate engineering: insights from a public “good or bad” experiment (with A.L. Abatayo, V. Bosetti, R. Ghidoni, and M. Tavoni)

Climate engineering—the deliberate large-scale manipulation of the Earth’s climate system—is a set of techniques for reducing climate change impacts. These strategies are controversial and raise major governance challenges. Here we study the strategic implications of solar geoengineering. If countries exert effort to engineer climate in a decentralized fashion, conflict can arise from differences in ideal temperatures because any upward and downward deviation generates losses. Global over-provision of effort is a likely scenario: the country with the highest preference for climate engineering cools the planet beyond the socially optimal level at the expense of others—a practice termed “free-driving”. In this paper, we explore this theoretical idea through an economic experiment in the lab to gain insights on the mechanisms and risks. In the Baseline treatment, we test a public “good or bad” game and find evidence of free-driving; that is, global production exceeds the socially efficient level. In another treatment, we evaluate a possible technological fix by which decision-makers can counteract the climate engineering efforts of others. Results show that counter-geoengineering generates high payoff inequality as well as heavy welfare losses stemming from instability in the global effort. Finally, we compare strategic behavior in bilateral and multilateral settings. We find that welfare deteriorates even more under multilateralism when counter-geoengineering is a possibility. These results have general implications for governing global good or bad commons.

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