Climate Intervention: Governance Issues and International Institutions

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August 26, 2020

“Moral Hazard” (SRM and CDR)

- Concern that talking about, researching, or doing CI will reduce incentives to cut emissions

Type	SRM	CDR
Behavioral - Can be empirically observed through experiments etc. - Will probably vary across scales, sectors, actors, interests	Limited evidence, mixed results (e.g., work by Merk et al.; Raimi et al. 2019)	Very little work (e.g., Campbell-Arvai et al. 2017)
Political - Allure of CI may be exploited by fossil-fuel interests and others to block mitigation	Little evidence so far	“Magical thinking” arguably manifesting in “overshoot” scenarios with reduced near-term mitigation

Unilateralism (SRM)

- Low direct costs and relative technical simplicity create potential for unilateral deployment ("free driver" effect—Weitzman 2015)
- Obvious concerns about stability, justice, fairness
- *But* opposing states would likely impose high costs, and multiple deployments would entail mutual interference

Benefits	Costs
Long-term Globally dispersed Uncertain	High, short-term • Direct via sanctioning • Indirect via scuppering

- Difficult to see how (boundedly) rational decision-makers would choose unilateral deployment in practice

Termination Shock (SRM)

- Short aerosol lifetime (1-2 yrs) means SRM may need to be maintained for a very long time
- Stopping prematurely may lead to catastrophe
  - Global warming would have been masked
  - Rate of change would be much higher
- But only under certain conditions
  - Large amount of SRM
  - No progress on mitigation
  - Abrupt stoppage
- Even then, other actors would likely have an interest in and ability to restart SRM (Parker and Irvine 2018)

Cost (CDR)

- Who should pay for CDR?
  - Historical responsibility?
  - Ability to pay?
  - Cost-effectiveness?
- How should CDR be paid for?
  - Compliance market carbon credits appear to be necessary incentives, but require
    1. Robust accounting rules across
    2. linked regional and sectoral carbon markets that
    3. allow for negative emissions

Managing Spillovers (CDR)

- Land use and agriculture
  - Terrestrial CDR (BECCS, A/R, biochar) would have negative effects on land use
  - Greater competition for land, increased water use, reduced food security, biodiversity loss
  - Safeguards required
- Reliable carbon sequestration
  - Underground storage for CDR (BECCS, DAC) must be permanent—use (in products) is largely temporary
  - Best practices make leakage risk minimal (Alcalde et al. 2018)
  - Long-term government liability?

UNFCCC (1992)

- Framework Convention calls for enhancing "sinks"—any process, activity, or mechanism that removes a GHG from the atmosphere
- Kyoto Protocol Clean Development Mechanism has promoted A/R offsets (and allows for CCS)
- Paris Agreement calls for "balance between anthropogenic emissions by sources and removals by sinks"
- 2 °C/1.5 °C assumes BECCS (IPCC, SR1.5)
- *But* Paris rulebook provisions on "cooperative mechanisms" (carbon trading) are unfinished, and if/when they are completed (Glasgow COP?) they will exclude CDR
- UNFCCC says nothing about SRM
  - Framed around GHGs, not RF

London Protocol (1996)

- Regulates ocean dumping
- Resolution LC/LP1 (2008) permitted only "legitimate scientific research" on ocean fertilization
  - Resolution LC/LP2 (2010) created Assessment Framework (~ EIA) to determine what is "legitimate"
- Resolution LP4(8) (2013) amended LP to cover all "marine geoengineering"
  - Permitted only "legitimate" research, currently restricted to ocean fertilization

Convention on Biological Diversity (1992)

- Decision IX/16 (2008) allowed only for “small scale scientific research studies” of ocean fertilization
- Decision X/33 (2010) expanded to include all geoengineering with negative impacts on biodiversity
  - Widely referred to as a “moratorium” (though not legally binding)
- Decision XIII/14 (2016) called for transdisciplinary research
- Minimal substantive impact but important framing effect

UN Environment Assembly

- UNEA is the governing body of UN Environment Programme (UNEP), highest international political body for the environment
- 2019 draft resolution “Geoengineering and Its Governance” called for technology assessment
- Deadlock between
  - EU, Bolivia—emphasized risks and need for precaution
  - US, Saudi Arabia, Brazil—opposed restrictions on research
- Draft ultimately withdrawn
- Points toward deepening political division