

Ethics, Justice, and Solar Geoengineering:

The Critical Role for Inclusive Research

MARION HOURDEQUIN
COLORADO COLLEGE



Ethics, Justice, and Solar Geoengineering: Key Issues for Research

- Ethics, justice, and solar geoengineering – some general issues
- Ethical issues for solar geoengineering research
- A call for robustly inclusive research

Some initial observations...

Some decisions may be binary, but the ethics of geoengineering is not.

Ethical questions are embedded at every stage of research.

Ethical issues associated with SG depend on how SG is researched, developed, discussed, and governed.

Ethics research can identify and clarify key issues...but can't settle the value questions.

Some general ethical and justice issues for SG

- **Fundamental ethical permissibility:** Would it ever be justifiable to use SG, and if so, under what conditions?
- **Comparative ethical assessment:** How should SG be evaluated in relation to or as a component of various climate response alternatives?
- **Goal setting:** What goals would be ethically justifiable for SG, and how should goals be set?
- **Managing uncertainty:** What considerations should inform SG decision-making in light of persistent uncertainties associated with SG and other climate responses?
- **Justice and equity:** What might constitute just approaches to researching SG, developing SG governance, and making decisions about whether and how to further pursue SG?
- **Risks, harms, and benefits:** What are the risks/harms/benefits associated with research, development, and any future use of SG, and how should these be evaluated?

The many dimensions of justice

- **Distributive:** Who benefits, who is harmed, in what ways, and how much?
- **Procedural/participatory:** Who decides, and how?
- **Recognitional:** Whose perspectives are heard and considered?
- **Epistemic:** Who has access to knowledge, who has the capacity to develop knowledge, and whose knowledge counts?
- **Intergenerational:** How will future generations be affected? How will decisions today shape the conditions and options available to future people?

Ethical issues in solar geoengineering research...

arise in relation to...

- Research program design
 - Modeling
 - Small-scale experiments
 - Public and stakeholder engagement
 - Framing and communication
 - Capacity for research and technical development
-
- Law, institutions, and governance
 - Politics

What might help to address these issues?

- Research that is **interdisciplinary**, **integrative**, and **inclusive**

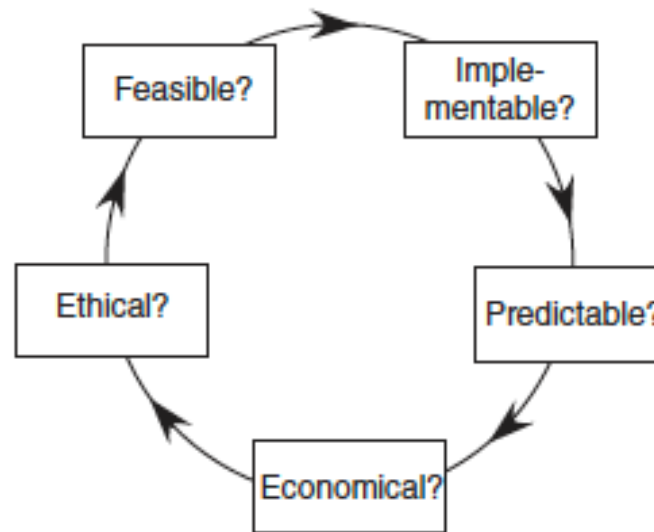


Figure 2. Conceptual map of the interdisciplinary nature of geoengineering research.

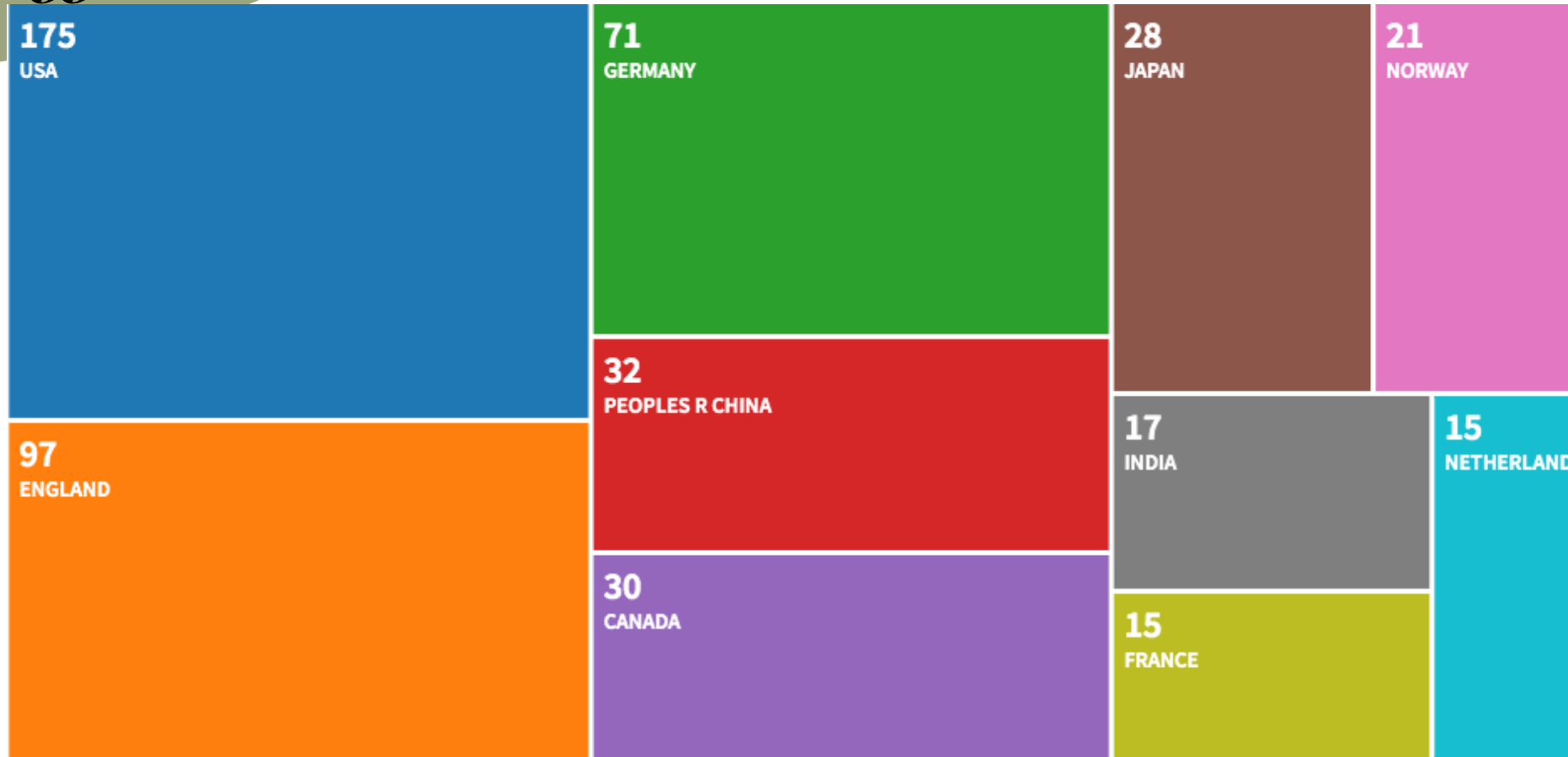
An argument for an inclusive SG research program

- SG involves important scientific and technical questions.
- But the ethical and governance issues with any future use of SG are significant and difficult, and the science, ethics, and governance are intertwined.
- **Any ethically acceptable use of SG at the global scale would require not only technical capabilities, but unprecedented international engagement and cooperation over time.**

An argument for an inclusive SG research program

1. **Any ethically acceptable use of SG at the global scale would require unprecedented international engagement and cooperation over time.**
2. Research provides opportunities to build international engagement and cooperation, to identify obstacles to further cooperation, and to anticipate climatic, ecological, social, ethical and political opportunities and challenges for SG.
3. **A robustly inclusive research program is key to developing this kind of engagement and cooperation.**
4. Although it may turn out that the conditions for the ethical use of SG are never met, the likelihood of their being met in the absence of a robustly inclusive SG research program is extremely low.
5. **So anyone who is concerned to preserve the possibility of an ethically acceptable future use of SG should prioritize not just the development of an SG research program, but the development of a robustly inclusive one.**

International distribution of research effort



Web of Science 6 September 2019

Showing 375 records for TS=("solar geoengineering" OR "solar radiation management") OR TI=("solar geoengineering" OR "solar radiation management")

Credit: Sikina Jinnah, NAS Reflecting Sunlight Committee Workshop Presentation, Oct. 2019

An inclusive approach to SG research: some starting points

- **Assess SRM research & discourse today:** How well do current research and discussions surrounding SG reflect the diverse perspectives, values, and circumstances of those who would be affected by further development of these technologies?
- What **assumptions** are built into the existing frames and models through which SG is being developed and discussed? How might SG governance and research program design critically examine these assumptions and broaden the perspectives represented?
- What would an **inclusive approach** to SG research & governance look like? What resources would it require? How might perspectives currently on the margins of these discussions be incorporated into the development of research guidelines, research models, & the research process itself?

An inclusive approach to SG research: some starting points

- **Incorporate front-end engagement** in development of research questions, approaches, and models
- **Involve researchers from across the world**, and diverse perspectives, both disciplinary and sociocultural
- **Engage diverse publics and stakeholders**, including Indigenous peoples, people from climate-vulnerable regions, and countries of the global south
- **Build capacity for SG research** internationally
- **Check power dynamics** and economic vested interests
- Develop **research processes, priorities, and governance principles recursively**, through ongoing engagement



Thanks for your attention!

Questions?

Feel free to follow up by email:
mhourdequin@coloradocollege.edu