

What does “public engagement” mean for climate geoengineering governance?

Lessons from experiences on carbon capture and storage (CCS)

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Public engagement in everywhere

- Big chorus of calling for “public engagement”
 - “citizen participation”,
 - “public participation”,
 - “public involvement”, ...etc.
- For what purpose?
 - Engagement for **behavior change** (*Whitmarsh et al. 2011*)
 - Engagement for **deliberation** (*Rask et al. 2012*)
- What *role* the public is expected to have?



Public engagement in science and technology governance

- The “deficit model” of scientific communication
 - Public ignorance as the root of opposition to science/technology
 - Engagement for **education** and **persuasion**
- Criticisms and reflections on the “deficit model”
 - Engagement as **alibi** or **manipulation** for technocracy (*Wynne 2006*)
 - Engagement for **public trust** and **legitimacy** (*Irwin 1995; Fisher 2005; Leach et al. 2005*)
 - Engagement for **democratizing the expertise** (*Kleinman 2001; Stirling 2008*)

“Upstream engagement” in climate engineering governance

- **The ‘Oxford Principles’** (*Rayner et al. 2009; Rayner et al. 2013*)
 - Public participation as principle governing the *research* of climate engineering
 - The SPICE project (UK) was cancelled due to high public concern (*Pidgeon et al. 2013*)
- Royal Society (2009)
 - “Public dialogue, engagement and research to explore public and civil society attitudes, concerns and uncertainties should therefore be a central part of any future programmes of work on geoengineering.”
- The call for **“upstream engagement”** (*Corner et al. 2012*)
 - Ensuring the public dialogue at an early stage

Why is public engagement necessary?

Three Rationales for public engagement on SRM *(Wylie et al. 2013)*

- **Normative** motivation

- Moral requirement that all affected people should have a say on the decision.

- **Instrumental** motivation

- Better understanding of what the public concern and how to facilitate the dialogue.

- **Substantial** motivation

- Incorporation of diverse perspectives and improvement of the quality of decision.

Challenges of upstream engagement on SRM

(Corner et al. 2012; Wylie et al. 2013)

- **Who** should participate?
 - How to ensure that *diverse and marginalized* voices are included
- **How** the outcome feed into policy-making processes?
 - How to integrate public engagement into decision-making by the government, experts and industries
- **Unavoidable “framing effect”** by researchers into deliberation process
 - How to minimize the impact of the way information is presented
 - Researchers should be reflective on their *unintended* framing effects on people’s responses

Comparative view – Climate Engineering, CCS, Nuclear Power

As a means to responding to climate change...

- **Nuclear power** as low-carbon energy technology
- **CCS** as technology enabling continued reliance of fossil fuel
- **Climate engineering** as “plan B” or “climate emergency”?

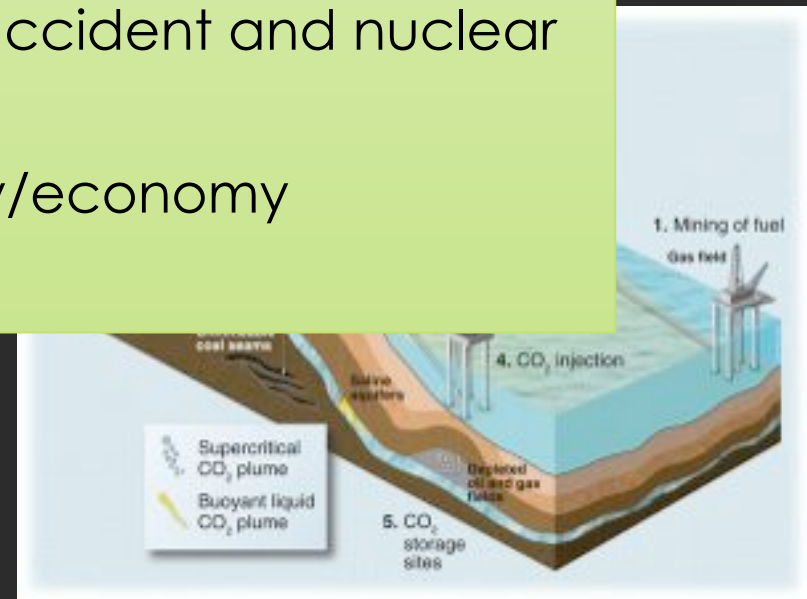
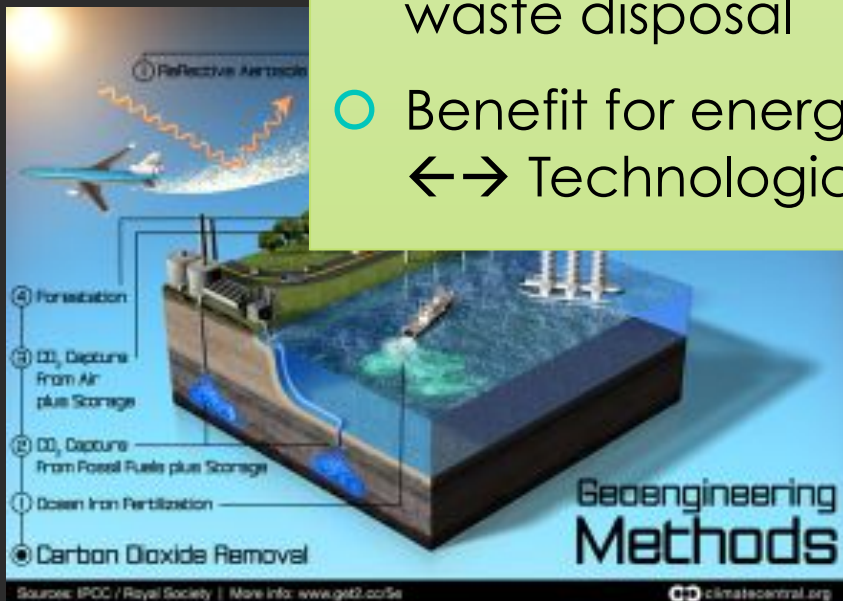


Nuclear power

- Established and implemented (Deployment)
- Political divide on “pro and con”
- Controversy over risks of accident and nuclear waste disposal
- Benefit for energy security/economy
↔ Technological lock-in

CCS

Climate



(source: Haszeldine, *Science*, 2009)

(source: Climate Central)

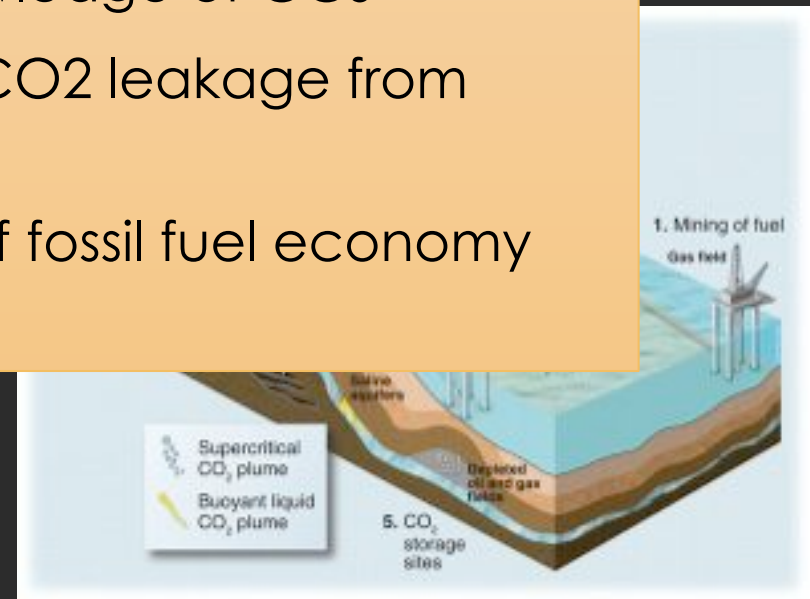
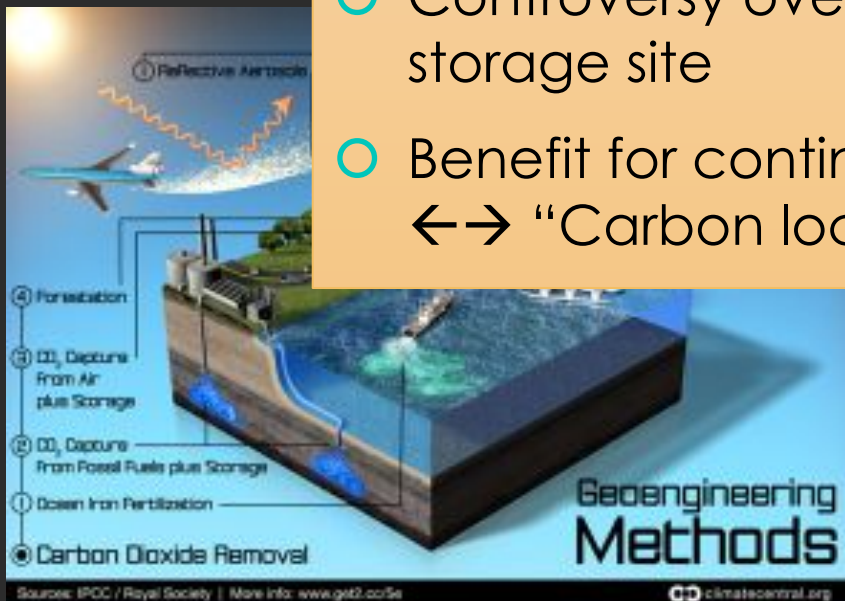


CCS

- Under development/demonstration (Before deployment)
- Public ignorance on knowledge of CCS
- Controversy over risks of CO₂ leakage from storage site
- Benefit for continuation of fossil fuel economy
↔ “Carbon lock-in”

CCS

Climate e



(source: Haszeldine, *Science*, 2009)

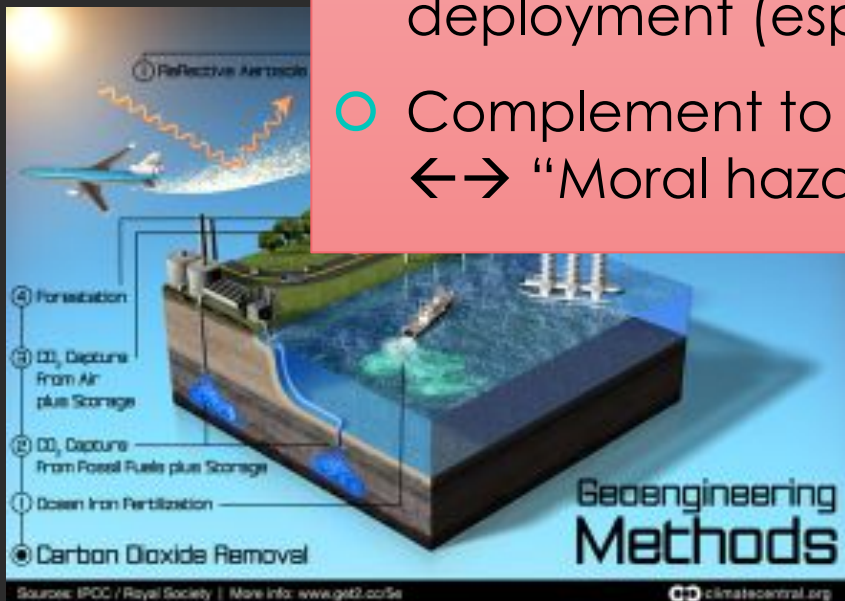
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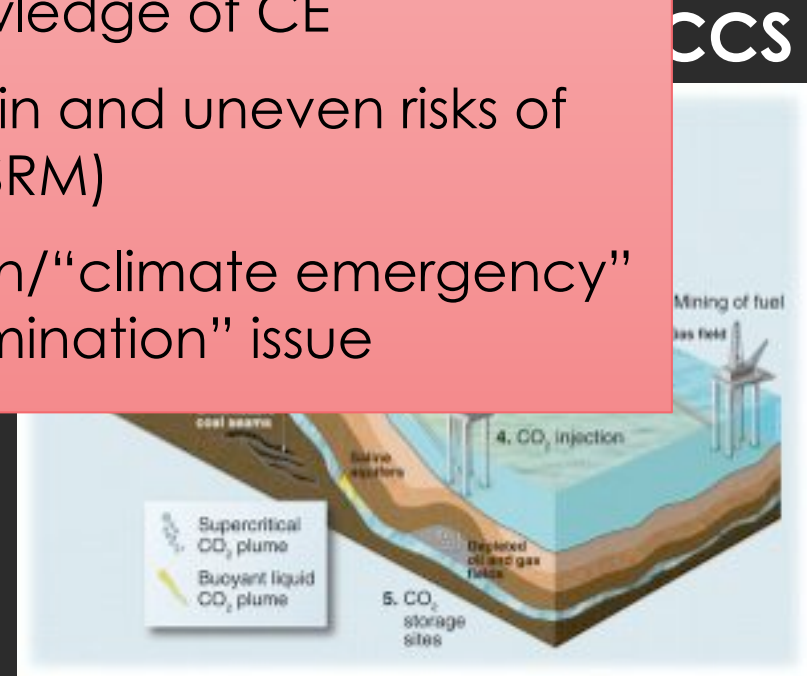
Climate Engineering

- Before research
- Public ignorance on knowledge of CE
- Controversy over uncertain and uneven risks of deployment (especially, SRM)
- Complement to mitigation/“climate emergency”
 ↔ “Moral hazard”/“Termination” issue

Climate e



(source: Climate Central)



(source: Haszeldine, *Science*, 2009)

Public perceptions – Nuclear Power and CCS

Nuclear Power *(Bickentstaff et al. 2008; Poumadère et al. 2011; Poortinga et al. 2013)*

- Perception/Attitude is dependent on **ideologies** rather than *knowledge*
- “**Reluctance acceptance**” and/or “**Conditional support**”
 - Not favored, but consider if it helps for climate change
- **Trust** on the Gov./expert is critical

CCS *(Hammond & Shackley 2010; Malone et al. 2010; Poumadère et al. 2011)*

- Large ignorance or lack of knowledge on what is CCS
- Perception/Attitude is less solidified and fluid
- Strong **NIMBYism**
 - Generally support at global deployment, but oppose at local deployment

Comparative view – CCS and Climate Engineering (SRM) (1)

- Low public awareness and knowledge on CCS and SRM
- Main rationale is based on response to “abrupt” climate change
 - CCS is NOT the energy producing technology
 - SRM can only be legitimated so as to avoid “tipping point”
- Controversy over uncertainty and risk
 - Uncertain consequences of deployment and long-term regulation
 - Unequal distribution of risks

Comparative view – CCS and Climate Engineering (SRM) (2)

- **Hype and hope** of technology development
 - CCS as “inevitable” for large CO2 emissions cut (*Hansson 2012*)
 - SRM as “cheap”, “quick” and “effective” (*Barrett 2008*)
- **“Interpretive flexibility”** (*Pinch and Bijker 1987*)
 - CCS as “political glue” of climate and energy communities (*Tjernshaugen and Langhelle 2009*)
 - SRM as lure of techno-fix for alarmists and skeptics (e.g. Lomborg, the Heartland Institute) (*Hamilton 2013*)
- **Path dependency** and **Technology lock-in**
 - CCS: “Carbon lock-in” (*Unruh 2000*)
 - SRM: “Moral hazard/corruption” and “termination problem” (*Preston 2013*)

Comparative view – CCS and Climate Engineering (SRM) (3)

- Different **scale** of development/deployment
 - CCS is largely on **national** level
 - SRM is inherently on **global/transnational** level
- Higher **ethical** concerns over SRM
 - SRM raises the questions on deliberately intervening the earth
 - “Playing God” or “Messing with nature” (*Corner et al. 2013*)
- SRM only as **“plan B”** or **“climate emergency”**
 - “Lesser of two evils” (*Gardiner 2010*)
 - “Lose-Lose situation” (*Poumadère et al. 2011*)

Critiques on public perception research of CCS

(Malone et al. 2010)

- Survey as a tool for measuring “**pseudo opinion**”
 - Total lack of knowledge about CCS (e.g. Itaoka et al. 2009)
 - Response of “Don’t know at all”: **69%** (2003) and **81%** (2007)
- Biased “**framing effects**” on survey result
 - Difficulty of the *unbiased* information (e.g. the influence of choices of wording)
 - Unrealistic assumption of future ccs development/deployment
- Construct of technology (CCS) “**in isolation**” or “**out of context**”
 - Remove CCS from the public’s day-to-day living contexts
 - Exclude the *social/cultural/ethical* dimensions of public discourses

Critiques on public engagement research of CCS

- Public engagement as **“add-on”** or **“end-of-pipe” activity** to manage (or “manipulate”) the public reaction (*Markusson et al. 2012*)
- What is **“effective”** public engagement approach? (*Bradbury 2012*)
 - Engagement for *increasing public acceptability* of CCS
 - “[I]f the reasons for a CCS project are sound, the plans carefully laid, and social conditions favourable, a good engagement strategy should greatly increase the chances of acceptance” (*Hammond and Shackley 2010*)
 - For that, early (“upstream”) engagement and transparency preferred (*Ashworth et al. 2010*)
- But, it's mere reinvention of the “deficit model” of science communication (*Wynne 2006*)

Lessons for public engagement on SRM? (1)

- It's non-sense to ask if 'pro or con' in survey (*Malone et al. 2010*)
 - "Acceptance" can be anything more than "not opposing"
 - "Opposition" can be anything from "simply be silent" to "actively against"
- Explore "what people are endorsing or opposing in their judgments of acceptability" (*Corner et al. 2012*)
 - **Social, ethical and political dimensions** matter more than scientific and technological (*Royal Society 2009*)
 - Values, Norms, Worldviews, Trust,...etc.
- Design public deliberation **under the "real-world contexts"**
 - Let people imagine *the kinds of world* that SRM might bring into being (*Macnaghten and Szerszynski 2013*)

Lessons for public engagement on SRM? (2)

Toward more *democratic* public engagement of SRM

- “Upstream” engagement is necessary, **but not enough!**
 - Public engagement might – intentionally or unintentionally – function as *alibi* only to legitimize the experts’ decisions
- Abandon **instrumentalism** to “educate/persuade” the public
 - Clear provision of equity and justice is required
- Engagement in the heart of **“responsible innovation”** (*Stilgoe et al. 2013*)

Concluding remarks

- An *idea* of climate engineering (or SRM) is distinctive
 - Not same as CCS or Nuclear Power as mitigation options
- But, public perception is *dynamic, relative* and *contingent*
 - Perception of CCS or Nuclear Power can be a *reference point* for that of SRM
 - **“Trade-off”** of public perceptions among SRM/CCS/Nuclear Power
 - **“Linkage”** or **“transfer”** of how the public understand science/technology
- *Reflective* and *comparative* research on public engagement of SRM is necessary
 - Among different technologies or policy scenarios
 - Among different social and political contexts (e.g. cross-country comparison)

Thank you for your patience...

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