Scientific policy advice on 1.5°C and climate engineering: Needs, opportunities, and conflicting values

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Structure

1) The need for scientific assessments
2) How to deal with value conflicts?
3) New model: the cartography of policy pathways
4) Conclusion
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Large-scale collective decision-making requires integrated scientific assessments

The sciences must help decision-makers understand available policy options. But, climate change as “problem from hell”:

- disputed normative implications;
- large-scale, long-term, non-linear risks: new research fields, high uncertainty;
- complex interdependencies between different policy fields (synergies and tradeoffs), across disciplines.

*Standard* disciplinary research & policy advice do not deliver the knowledge needed to assess policy options!
Assessments at the science-policy interface

(Kowarsch 2016, *Nature Climate Change*)
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Key challenge: value judgments and value conflicts

• Assessments need to be:
  • Relevant (salient, well-communicated) to public policy processes
  • Reliable (sound, credible, transparent)
  • Unbiased (i.e., not policy-prescriptive): disputed values/interests

➢ An issue of legitimacy – particularly in the solution-oriented policy assessments...

IPCC Official: “Climate Policy Is Redistributing The World’s Wealth”
Posted on November 15, 2010 by Anthony Watts

The great socialist plot is revealed! Hold on to your wallets!

Neue Zürcher Zeitung, 14 November 2010

Climate policy has almost nothing to do anymore with environmental economist and IPCC official Ottmar Edlenhofer. The next world economy summit during which the distribution of the wealth will be decided has been abandoned by the Vienna team led by Ottmar Edlenhofer.

For those who may not know, Ottmar Edlenhofer is the co-chair of the IPCC.
How to deal with different value systems?

Humans are organized in moral tribes

In addition: different possible time/space extensions for each standpoint!
How to deal with different value systems?

**Landscape of societal values: hypothesis**

- Material welfare
- Liberty
- Perfection/purity/sanctity
- Equality
- Natural capital
- Social order
The search for the “common good”: your favorite group?

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- Education & self-realization
- Balance, opportunities
Technocratic model: neglecting value conflicts

**DOWNSIDE:**
- Mistakenly presupposes value-free science or value consensus, and a linear transfer of “speaking truth to power”
- Whom to blame for actual consequences after policy implementation?
  → “Iron cage of bondage” for society (M. Weber’s dystopia)?
The decisionist model is not value-neutral either

DOWNSIDE:

- No possibility at all of rationally discussing disputed objectives
- Unclear how science can appropriately judge policy means, and who is responsible for side effects etc. in the end
- Disputed value judgments even regarding policy means!
Normative judgments are inevitable in scientific research

No facts without values.

- Evaluation criteria, risk/welfare concepts, etc.
- Epistemic (cognitive) value judgments always implied: Coherence, consistency, simplicity, objectivity; there is no fundamental difference to ethical value judgments
- Evaluating consequences of decisions can have considerable societal consequences
- ‘Thick ethical concepts’ (e.g., development, growth, efficiency, etc.)

Modern philosophy of science: facts and values cannot be neatly separated, they are inextricably intertwined
Democratic model(s): rarely implemented in practice

Objectives -> Means -> Implementation

Public debate -> Public debate -> Policymakers

DOWNSIDE:
- Much remains unclear: how can policy objectives and means be determined?
- Again: who is responsible for the actual consequences?
- Sometimes even radical constructivism (epistemological pessimism)
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Dewey’s pragmatist social learning in a nutshell

• Key idea: evaluating practical implications of hypotheses (as means of achieving a goal)
  • Science is inherently “applied” and value-laden: hypotheses as tools to overcome a practical problem

• Interdependency of goals and means via their consequences
  • Critical comparison with other possible policy means and objectives

• Objectivity possible (despite value dimension)
  • We can rationally discuss value-laden issues – in terms of direct effects, unintended side effects, and co-benefits.
  • Yet, knowledge is always fallible
  • Co-production of knowledge required (deliberative democracy)

John Dewey (1859–1952)

(Kowarsch 2016, Springer)
Evaluate the diverse (co-)effects!

Example: 1.5°C goal and need for biomass

1. Identify best means (here: “means 2”)
   - Direct effects
   - Unwanted side-effects
   - Synergies
   - Uninteresting consequences

2. Re-think objectives in light of co-effects of the best means

goals & means are interdependent via their consequences

(Biewald et al. 2015, Glob. Env. Change)
How to provide sufficient warrant for costs and benefits?

- Reversibility/irreversibility
- Incremental/breakthroughs
- Lock-in effects and path-dependencies
- Possibility of social learning:
  - Costs are also an issue of legitimacy: they can be perceived as prohibitively high when fundamental rights or procedures are violated.
  - To make estimates more evidence-based, policy decisions are to be evaluated *ex post* to facilitate learning.
  - Incremental steps can avoid irreversible lock-in effects.
  - Overlap: policy instruments addressing different values/objectives simultaneously?

→ Solution-oriented, deliberative policy assessments needed.
Pragmatic-enlightened model (PEM) of science in policy

(Edenhofer & Kowarsch 2015, *EnvSci&Pol*)
Decision theory and deliberation: explore alternative views

Growth proponents

Greens

Perfection/purity

Libertarians
Mapping pathways to allow for iterative learning process

Experts as “cartographers” of viable policy alternatives & their implications – jointly with stakeholders

The pragmatic-enlightened model (PEM)

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Facilitate an open learning process about policies

- Experts and scientists should provide maps instead of unconditional recommendations.
  - Value conflicts should be made explicit
- Policy-makers have to learn how to use and appreciate maps of knowledge on policy pathways.
  - Including the acceptance of painful ex-post policy evaluation and iterative learning processes
  - Should be in their best self-interest...
- Moreover, increased funding for policy-relevant research and methodology development needed.
  - Provide incentives for systematic, applied transdisciplinary (ex-post and ex-ante) research, including social science meta-analysis
Application to CE and 1.5°C

- Value systems determine the framing of the decision problem: exploring multiple framings is essential for a fruitful debate.

- The social learning process helps to understand under what conditions specific means like SRM, CDR are acceptable – subject to the underlying value systems and the evaluation of facts.

- Social learning can lead to convergence of perspectives.

- There is no guarantee for convergence. However, the reasons for divergence can be better understood.
Can societies learn when confronted with large-scale risks?

(Source: Washington Post)