



European Transdisciplinary Assessment of Climate Engineering

Documentation Report – Opening Debate: What is Climate Engineering?

21 November 2012

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MAIN FINDINGS

On 6 November 2012, the EuTRACE Opening Debate brought together a group of research, policy, and civil society representative, all of whom had previous knowledge around climate engineering (CE), to discuss **questions, concerns, and opportunities** regarding CE. The debate **strongly leaned towards open questions and concerns**, highlighting the focus of current debate taking place in the media and in the academic community on answering questions and establishing research and policy boundaries. Discussions addressed not only the relevance of CE but also the **potential research frameworks** (e.g. Oxford Principles) and implementation, and brought several **ethical implications** to the fore.

Reflecting the wider, existing debate, participants brought up questions around the **usefulness and legitimacy** of potential climate engineering experiments – and related **governance** aspects. There was a clear call for governance structures of climate engineering, encompassing both research and deployment. On the one hand concerns were expressed that too-strict regulation may hamper future innovation and applied research; on the other hand a clear agreement was reached that explicit and intentional solar radiation management (**SRM**) **experiments are premature**, at least for now.

The lack of sufficient information – still perceived for climate change and thus also for CE research – brought up questions around ways to effectively frame debates and to meaningfully engage the public. Comprehensive **stakeholder and citizen engagement**, as well as the need to provide **transparency on CE research and science** were repeatedly underlined as crucial. CE also presents the opportunity of **advancing the state of knowledge** about the climate system and engaging with the range of solutions available, including adaptation and mitigation.

For further details please see the table on page 4 below.

BACKGROUND – THE *WHY* OF THE EVENT

Climate engineering is an emerging part of the international and European climate change agenda, and refers to large scale deliberate interventions to the Earth system in order to moderate climate change, in addition to mitigation and adaptation.

The project European Trans-disciplinary Assessment of Climate Engineering (EuTRACE), implemented by a consortium of 14 partners from Germany, the UK, Austria, France and Norway, aims to provide a distinct European perspective on climate engineering. Funded by the European Commission's 7th Framework Research Programme, the project takes a **trans-disciplinary approach to assess** the potentials, uncertainties, risks and implications of climate engineering, also by engaging in a continuous dialogue with

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the public, policy, and civil society communities in order to understand relevant concerns from the different perspectives and to communicate project findings.

SETTING THE STAGE – COMMON GROUND

The EuTRACE Opening Debate, organised as a half-day event, was introduced by Andrea Tilche – Head of Unit for Climate Change and Natural Hazards at Directorate General Environment. Recognising that the debate around climate engineering (CE) is complex – **giving room for interpreting CE as both a controversial shortcut and a bold solution** – Mr Tilche placed EuTRACE in the context of Commission calls on CE and EC-funded projects around CE, such as IMPLICC.

Although there have been only a handful of CE proposals submitted to the Commission on this topic, and although EuTRACE is the only project currently funded on the topic, Mr Tilche highlighted the EU’s strong commitment to addressing climate change: even though climate engineering is not yet part of the solution spectrum, the Commission is highly interested in the potentials and risks of the techniques under discussion. In this context then, the EuTRACE project is expected to provide some answers to these open questions, **feed the complex debate with scientific analysis, and help steer the debate according to the perspectives of different disciplines and stakeholders**. Franz Immler, EuTRACE Project Officer and scientific Officer at the European Commission, also highlighted the role of the project in providing science-based guidance to the Commission regarding CE – a topic that is increasingly drawing questions from the public.

Following the Commission’s welcoming statements, Naomi Vaughan of the Tyndall Centre for Climate Change Research started all participants off on the same page with a visually engaging overview of climate engineering and its main techniques. Hauke Schmidt of the Max Planck Institute for Meteorology provided further details around Solar Radiation Management techniques, feasibility, and uncertainties. Mark Lawrence, EuTRACE coordinator at the Institute of Advanced Sustainability Studies, described the project approach, goals, and expected assessment outcomes, and underlined the broad mix of partners involved in the project. The three PowerPoint presentations are available online at www.eutrace.org.

GOALS OF THE OPENING DEBATE – WHAT ARE THE NEXT STEPS?

In the context of carrying out a trans-disciplinary project, our aim in organising this opening debate was to **share the scope and aims of EuTRACE** with the Brussels policy and civil society community; to **identify questions and concerns** regarding climate engineering; and to **engage in a continuing dialogue** to be taken up in the project assessment and results. To further engage with the policy and civil society community EuTRACE will:

- circulate the opening debate results among event participants, project partners, EuTRACE Project Advisory Board and Project Network Partners, and the wider participating community;
- steer the EuTRACE climate engineering assessment process to address questions, concerns, and themes identified in the opening debate; and
- continue the initiated dialogue with invited organisations and wider community through regular communication and meetings to take place in Brussels toward the mid-point and end of the project.



RESULTS OF WORKING GROUP DISCUSSIONS

In order to gather the desired inputs from the participants of the opening debate, two working groups were formed and a 45-minute discussion was facilitated around three topics:

- a) the questions participants had in response to the plenary presentations or the topic in general;
- b) opportunities presented by the climate engineering topic; and
- c) concerns perceived by the participants in response to the climate engineering discussion.

The following table provides an overview of the discussion points, which were recorded and presented by the two groups, and discussed in further detail in plenary.

Please note that the points highlighted in colour below reflect topics that were brought up most frequently in the two discussion groups.

QUESTIONS
<p>Climate Engineering Fundamentals</p> <ul style="list-style-type: none">• At what stage is it justified to talk about climate engineering, about deployment? Should we have a threshold based on the degrees of sea level rise? Of a certain conflict threshold?• Focus on the need for a global agreement and the possible time frame. How long should we wait for before considering climate engineering options?
<p>Governance</p> <ul style="list-style-type: none">• What are the existing global institutional and legal settings that could govern climate engineering? Are there any institutions dealing with actual interventions? What exactly would we regulate so that we do not create obstacles for legitimate research?• How can we most effectively feed in the public debate to inform policy and governance arrangements?• What would the governance and an agreement on climate engineering look like and how could it be linked to the debate and negotiations on climate change?• What would be the positions of different countries?• Who would intervene in case private actors unilaterally decide to act on climate engineering and what role should public actors have in development and application?• When we start building institutions for the governance of climate engineering, we should also keep in mind that interest groups may try to obtain more power and influence the new institutions, creating a kind of climate engineering lobby.• How would different levels of decision-making interact? How could local social and economic development be linked to the global level?• More generally, what role should technological progress have and how should we govern it?
<p>Transparency</p> <ul style="list-style-type: none">• How can we ensure the transparency of the research community?• How to go about providing transparency, even when the scientific community itself is lacking information and knowledge on so many fronts?
<p>Risks, Uncertainties and Potentials</p> <ul style="list-style-type: none">• What are the risks of possible experiments? Carry out an impact assessment of research initiatives.• Regionally, there is a high spread in estimated impacts and scenarios.• What would be the costs of different actions? And what are the costs and benefits of adaptation compared with mitigation and CE, and the different combinations of these strategies?• What are the fundamental questions that we still face, what is it that we still know little about?• What are the main knowledge gaps? First identify the questions from citizens and then the answers.

- What should be the role of climate engineering research?
- How do possible research principles—like the Oxford principles—work in practice?
- How should a regulatory framework for climate engineering research look like? Who should be involved in its negotiation and in what kind of forum?

EuTRACE approach

- How does EuTRACE envision the work on climate engineering from a transdisciplinary approach? In other fields, multi-disciplinarity is applied by questioning the knowledge through another discipline's critical angle.
- How do we ensure that the technology discussion happens in a meaningful way and in an interdisciplinary way?
- What is the most appropriate process to discuss with civil society?

CONCERNS

Citizen Involvement

- There was a wide agreement that the concerns of citizens should be addressed at very early stages.
- Given the extreme reactions to the topic of climate engineering (on the one hand dismissal of the idea because of the perception that they could resemble science fiction, on the other hand complete rejection of any consideration of climate engineering research because of feared impacts), it will be challenging to find an appropriate way to engage citizens in a way that allows us to stay away from gut reactions and find a moderate and rational line.
- Related to the previous idea, it is necessary to be in tune with existing and potential public perceptions, and think about the risk of becoming entrapped without leeway for climate engineering research in case such perceptions become extreme.
- Taxonomy matters and strict definitions are needed to regulate and to engage with the public (e.g. techniques may be categorised as CE and then taken out of that umbrella, as happened with Carbon Capture and Sequestration (CCS)).
- **In the process of citizen involvement, expectations regarding the level of information that the public has should be realistic, especially considering that even scientists researching climate and climate engineering for years do not yet have all the answers and necessary knowledge. Any question or concern by the public has to be respected and considered.**

Inequality

- How can we achieve democratic principles in a global-scale problem where those who are exposed to many risks can end up not being the ones receiving the benefits?

Risks, Uncertainties and Potentials

- How can society discuss climate engineering options at this stage, with so much existing uncertainties? Are they truly feasible options if indeed so much uncertainty still exists?
- Climate engineering techniques could be seen as a license for countries to continue emitting greenhouse gases and to deplete more (moral hazard).
- Once we know that controlling the climate is possible, how do we avoid calls to optimize the weather and the climate systems?
- Need not just to focus on risks and impacts but also on opportunities and potentials to which climate engineering technologies could open the doors.
- The concerns of the public are not just about risk, but about how risks are calculated; about why a certain technology could be chosen over other technologies and why would climate engineering be chosen over other solutions. We should broaden the scope, not only focusing on climate engineering technologies as a response to climate change.
- **At this stage, it is recognized that Solar Radiation Management (SRM) experiments would be premature. But this presents a conundrum: without experiments, it is hard to ever imagine any feasible and useful deployment.**
- Necessity to provide a picture of the existing and planned European climate engineering research landscape.
- What are and should be the roles played by public and private actors in climate engineering research?

OPPORTUNITIES

Global climate policy and debate

- This debate offers another forum to kick start the process of preventing dangerous climate change.
- Climate engineering research gives new insights into the climate system. The debate adds to the toolbox available to address climate change.
- How could the topic of climate engineering open the door for possibilities to improve ownership and understanding of climate change and acceptance of a possible technology?
- The climate engineering debate presents the opportunity to foster exchange within society at all levels and a possible role as driver to bring different governments together.

Climate research and science

- **The climate engineering topic offers the opportunity to further understand the climate system and to engage with research on the climate system.**
- Furthermore, research areas that are now classified as CE started out as basic research (e.g. ocean fertilisation).
- The current dichotomy of Solar Radiation Management (SRM) and Carbon Dioxide Removal (CDR) might not be the most appropriate form for debate. Here we have an opportunity to perhaps regroup climate engineering technologies in a different and less restrictive way, which would have implications for the governance and research of climate engineering.
- CE should be linked back to the larger climate change debate, including adaptation.

Multi-stakeholder engagement and economic aspects

- **The topic of climate engineering opens the way for a comprehensive three-step process: While the scientific debate needs to go hand in hand with governance, they both should be informed and guided by public debate.**
- Early public involvement has the potential to bring up new needs that the people may want to address. But various actors are already showing different levels of engagement and we should address this in a global way, in the EU institutions, and in the EuTRACE project.
- It also offers the opportunity to bring people together to push for multilateral solutions, since unilateral climate engineering action could be detrimental.
- We have some experience already in finding solutions and encompassing agreements on global problems, for example on nuclear power or on GMOs.
- We can continue to address the question of what creates acceptance: transparency, trust, confidence, knowledge, institutional frameworks, and benefits sharing that are expected from the technologies.
- Which is perceived as more risky in the case of CE: public acceptance or public outrage, and how can we harness these perceptions?
- Is there any job creation potential? Then again, you can fall into the trap of creating a climate engineering lobby.

For more information about EuTRACE (European Trans-disciplinary Assessment of Climate Engineering) please contact:

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Photos by Wanda Born, IASS. **Photo 1 and 3:** Stakeholder questions, opportunities and concerns, working group results. **Photo 2:** EuTRACE work package co-leaders discuss working group outputs. **Photo 4:** Mark Lawrence, EuTRACE principal investigator addressing event participants.