FONDAZIONE ENI ENRICO MATTEI

Modeling Climate Engineering

3-4 November 2016
Fondazione Eni Enrico Mattei
Corso Magenta 63, Milan

Motivation
Climate engineering–both via CO2 removal (CDR) and solar radiation management (SRM)-offers an opportunity to complement traditional mitigation strategies in the strive to limit climate change at low levels.
So far, modeling the economics of climate engineering has proved challenging. For example, climate engineering often appears 'too good to be true' when featured in Integrated Assessment Models (IAMs). Ad hoc modeling choices are then required to generate plausible outcome, resulting in a polarized debate which reflects more the modelers' a priori than science. There is also a significant difference among and within the two main climate engineering options of CDR and SRM. CDR has been studied quite in depth by a large suite of energy-land-economy-climate models, but mostly of biological nature (e.g. BECCS). Few studies have looked into alternative CDR technologies. As for SRM, it has been mostly featured in highly simplified models such as DICE.

Objectives
The main aim of this workshop is to brainstorm about how can climate engineering be properly modeled in the economic assessment of climate strategies. Key issues around CE regard costs and benefits, risks and uncertainties, distributional and fairness impacts, strategic and institutional implications. Our aim is to produce a position paper which describes the present and the future of economic modeling of CE, to be submitted to as a commentary or review article. We also plan to elicit the opinions of experts (us..) about the critical features of CE. Last not least, we aim at exploring ways to get sensible research on economic modeling of CE funded, both in the EU and elsewhere.

Format
The two days meeting is organized around 6 thematic sessions. Sessions are supposed to cover either CDR and SRM. For each session, we will have two/three speakers starting off the discussion with a short presentation (10/15 minutes each, 30 in total) about research gap and how these can be filled in. A moderator will lead the ensuing discussion. This is supposed to be a small workshop with a lot of interaction. A final session will discuss the main insights and the overall structure of the position paper.

Social events
Besides great catering service, we have arranged for a group visit to Leonardo da Vinci 'Last Supper' (held in front of FEEM) as well as social dinner the same evening.

Agenda

Thursday, November 3, 2016

09.00 Registration

09.00 — 09.30 Setting the stage: getting to know each other and meeting objectives
Massimo **Tavoni**, Fondazione Eni Enrico Mattei and Polytechnic University of Milan

09.30 — 11.00 Topic 1. Effectiveness and costs
Key questions: How to model CE impact on the climate (global and regional)? What are CE costs? How costs decline via exogenous and endogenous technological innovation? What pace and scale of deployment of CE can we expect? What are the infrastructure requirements?
Chair: Timo **Goeschl**, Heidelberg University
Presenters:
· Sabine **Fuss**, Mercator Research Institute on Global Commons and Climate Change
· Wilfried **Rickels**, Institute for the World Economy

11.00 — 11.30 Coffee break

11.30 — 13.00 Topic 2. Impacts
Key questions: What are the regional and global damages of CE? What are the resource requirements? What are the side effects?
Chair: Juan Moreno **Cruz**, Georgia Tech School of Economics
Presenters:
· Fabien **Ramos**, European Commission
· Soheil **Shayegh**, Fondazione Eni Enrico Mattei

13.00 — 14.00 Lunch

14.00 — 15.30 Topic 3. Equity and acceptability
Key questions: What are the distributional impacts of CE? How about inter-generational equity? Is public acceptance going to affect CE feasibility?
Chair: Celine **Guivarch**, Centre International de Recherche sur l'Environnement et le Développement
Presenters:
· Timo **Goeschl**, Heidelberg University
· Christine **Gutekunst**, Polytechnic University of Milan
· Massimo **Tavoni**, Fondazione Eni Enrico Mattei and Polytechnic University of Milan

15.30 — 16.00 Coffee Break

16.00 — 17.30 Topic 4. Strategic incentives and governance
Key questions: What is the impact of CE on international climate policy? Who is most likely to do it? What is the best response?
Chair: Wilfried **Rickels**, Institute for the World Economy
Presenters:
· Johannes **Emmerling**, Fondazione Eni Enrico Mattei
· Juan Moreno **Cruz**, Georgia Tech School of Economics

18.00 Visit to Leonardo da Vinci 'Last Supper'

20.00 Social dinner

Friday, November 4, 2016

09.30 — 11.00 Topic 5. Risks and uncertainty
Key questions: How can we parametrize and model CE uncertainty? Is it risk or deep uncertainty? Which decision making criteria to use? Which numerical techniques?
Chair: Laurent **Drouet**, Fondazione Eni Enrico Mattei
Presenters:
· Vassiliki **Manoussi**, Fondazione Eni Enrico Mattei
· Tom **Lontzek**, University of Zurich

11.00 — 11.30 Coffee break

11.30 — 13.00 Topic 6. Relation with mitigation, adaptation and sustainable development
Key questions: What is the linkages and trade-offs with mitigation technologies, e.g. CCS? Relation with adaptation? Ecosystems impacts?
Chair: Joahnnes **Emmerling**, Fondazione Eni Enrico Mattei
Presenters:
· Celine **Guivarch**, Centre International de Recherche sur l'Environnement et le Développement;
· Martin **Quaas**, Christian Albrechts University of Kiel;
· David **Keith**, Harvard University

13.00 — 14.00 Lunch

14.00 — 14.30 Expert elicitation
Chair: Valentina **Bosetti**, Fondazione Eni Enrico Mattei and Bocconi University

14.30 – 15.30 Position paper: draft outline and main insights
Chair: Massimo **Tavoni**, Fondazione Eni Enrico Mattei and Polytechnic University of Milan

15.30 – 16.00 Funding opportunities
Chair: Massimo **Tavoni**, Fondazione Eni Enrico Mattei and Polytechnic University of Milan

Participants

Valentina	Bosetti	Fondazione Eni Enrico Mattei and Bocconi University
Mariaester	Cassinelli	Fondazione Eni Enrico Mattei
Laurent	Drouet	Fondazione Eni Enrico Mattei
Johannes	Emmerling	Fondazione Eni Enrico Mattei
Sabine	Fuss	Mercator Research Institute on Global Commons and Climate Change
Timo	Goeschl	Heidelberg University
Celine	Guivarch	Centre International de Recherche sur l'Environnement et le Développement
Christine	Gutekunst	Polytechnic University of Milan
David	Keith (remote)	Harvard University
Mark	Lawrence (remote)	Institute For Advanced Sustainability Studies
Thomas	Lontzek	University of Zurich
Vassiliki	Manoussi	Fondazione Eni Enrico Mattei
Giacomo	Marangoni	Fondazione Eni Enrico Mattei
Juan	Moreno-Cruz	Georgia Tech School of Economics
Helene	Muri	University of Oslo
Martin	Quaas	Christian Albrechts University of Kiel
Fabien	Ramos	European Commission
Wilfried	Rickels	Institute for the World Economy
Soheil	Shayegh	Fondazione Eni Enrico Mattei
Massimo	Tavoni	Fondazione Eni Enrico Mattei and Polytechnic University of Milan
Marco	Vitali	Polytechnic University of Milan