



Project No 282846 LIMITS Low climate IMpact scenarios and the Implications of required Tight emission control Strategies

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DELIVERABLE No 5.2 Report on the 2nd Stakeholder Workshop meant for policy outreach with stakeholders

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Report on the 2nd Stakeholder Workshop meant for policy outreach with stakeholders

Energy Research Centre of the Netherlands (ECN)

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1. Introduction

The LIMITS projects aims at assessing climate policies that offer an effective response to mitigate climate response, namely that restrict global warming to 2 degree Centigrade.

Against the little progress in international climate policymaking, the Durban Platform for Enhanced Action has opened up the possibility for formulating new climate policy frameworks. The Durban process emphasises the role of the major economies in contrast to the traditional divide between developing and developed countries. However, aligning the incentives of different regions in pursuing climate policies remains a challenge and requires new thinking about the global and regional implications of innovative architectures.

The first phase of the LIMITS project has addressed these questions by focusing on the impacts of implementing 2C compatible climate policies with specific reference to the major economies, looking at the role of 2020-2030 emission reduction pledges and national technology targets like renewable energy capacity targets. In this second stakeholder meeting the results were presented and the subject of the meeting was therefore "Implementing climate policies in the major economies: challenges and opportunities". The meeting took place on the 13th of February 2013 in Amsterdam and was hosted by the Energy research Centre of the Netherlands (ECN).

2. Implementation of low carbon policies in the major economies: can we still meet 2C?

The morning session was dedicated to the results of the first phase of the project. In the first two presentations the Elmar Kriegler and Massimo Tavoni presented the project result so far. Reactions on the previous presentations were given by Ottmar Edenhofer (IPCC and PIK) and Ji Zou (NCSC-NDRC). The session was chaired by David McCollum. Afterwards there was a round table discussion which was moderated by Kate Calvin.

2.1 Can we still meet 2°C with global climate action?

In the presentation the scenarios assessed in the first part of this project were introduced with special attention for the four Durban actions scenarios (two 450 ppm and two 500 ppm scenarios). In the Durban actions scenarios global cooperative action only takes place from 2020 onwards after a period of fragmented action. The four scenarios distinguish in likelihood to reach target (>30% or > 70%) and stringencies of fragmented policies (unconditional and conditional of Copenhagen pledges). Results of a cross model comparison were shown.



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Reaching the 2°C target requires a near phase out of the emissions by the end of the century. The delay of starting global cooperative action only after 2020 leads to an emissions gap with respect to immediate action, but is relatively small compared to the emission reduction necessary in the long term. The main significance of short term action in the period 2010[2030 lies in preparing the ground for steep emissions reductions thereafter. This includes in particular the peaking of global emissions during this period while buffering the economic impact of the trend break.



Negative emissions technologies are a key element of implementing the emissions pathways in the Durban Action scenarios. Afforestation and biomass can potentially play a large role by compensating fossil fuel emissions, however, both have rather uncertain potentials.

Moreover, the resulting mitigation costs, the implications for consumption growth and the necessary carbon intensity improvement rates were shown.

Concluding: The Durban Platform negotiations can still deliver an outcome that would be broadly consistent with a 2°C target – under optimistic assumptions (efficient and global carbon pricing after 2020). But the probability of achieving 2°C would be considerably lower in the 500 ppm policies. The institutional challenges of implementing 2°C pathways are large and increase with the delay in adopting a long term target.

2.2 Climate change efforts and challenges in the major economies

In the second presentation the model results show that there is an uneven cost distribution between regions. In a perfect global cooperating world with a global carbon price, the Middle East and REF regions will carry the largest burden. The major challenge for climate policy will be



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therefore to manage the distribution of costs and benefits (shown in the next figure as global GDP losses actualized at an interest rate of 5% per year). The results of two burden sharing scenarios, the first with harmonization of emissions per capita and the second scenario with equal effort for all regions, show that both lead to big carbon markets.



The presentation also included the investment needs in order to allow for the transition to a low carbon economy. Major part of the investments in low-carbon technologies such as renewables, nuclear and energy efficiency will occur in developing countries. Finally the consequences of the scenarios on the of energy security for different regions were shown.

2.3 Reaction: Science based assessment of international climate policies

Ottmar Edenhofer gave his personal view how assessments such as done in the LIMITS project should be communicated and seen as part of the public debate.

He gave a preview in the philosophy of next IPCC AR5 report. The philosophy is based on the comprehensive public debate in which the role of scientist is to present the whole solution space and be explicit about implications adverse and side effects. What are the co-benefits and what are the trade off and risks. These latter two become crucial in a multi objective world that also includes other sustainable objectives such as food security, energy access and energy security, and public health.

Therefore IPCC should produce a comprehensive assessment framework that includes technological requirements, mitigations costs, institutional requirements, co-benefits and adverse side effects, and the risks of low carbon stabilization scenarios.



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The scientist can be can be part of the public debate and the social learning process, but he shouldn't determine the debate. Scientist should find an appropriate way to deal with value judgment. By providing possible goals and different pathways to the goals, science can create a map that could be used by policy makers as guidance.

2.4 Reaction: China in the international climate context

Ji Zou didn't have a power point presentation but listed the importance of a couple of things. First of all, it is a challenge of communicating the message. Secondly, he stressed out that in all different pathways, he sees uppermost potential in energy efficiency and influencing demand for the short to medium term.

He also had some points related to costs. The relation between social security costs and abatement costs is important. Guiding the financial flows will be challenging in large emerging economies. Moreover, one should try to give a complete social economical assessment in which damage cost raised by for example lock-in effects are included. Lock-in effects could be reduced by technology transfer from developed countries to developing countries.

When communicating one should be clear about the distributional effects of burden sharing and try to influence the involved stakeholders. Think how to allocate the consumer and producers surplus. For advising policy makers, there should be a good link between the outcome of the scenarios and the policy making process.

2.5 Discussion and questions

After the presentations a couple of questions and discussion points were raised. Once again the importance of communicating the right message was stressed. Which could differ between regions since it was the experience of one of the discussant that there are regional differences in policy advice and policy making. In Western countries decisions are often more based on external experts input and policy makers cannot so well coop with big solution space. While in Asian countries decision making is done using governmental planning commissions which are more closely involved in scenario studies. According to Ji Zou this is also partly the case since fewer think tanks exist.

2.6 Roundtable discussion: future scenarios for the major economies in the context of the Durban Platform negotiation.

Alex Bowen (London School of Economics and Political Science): LIMITS results phrase common but differentiated responsibilities in climate mitigation. The study gives negotiators a lot of background, however, also a lot of uncertainty since large solution space. So far to less discussion about policy framework landscape, this will need a learning process of scientists, economist civil society. Burden sharing scenarios provide useful information for negotiators but



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questionable if it sustainable that poor countries need to buy credits form richer countries in future. Need to find good parameter to express the big gains of avoiding climate change.

Heleen de Coninck (Radboud University Nijmegen): LIMITS optimizes on general costs, but what is relevant is whether important countries perceive reciprocity out of a climate agreement. Could the LIMITS project shed some light on this important issue? Moreover she raised the point that especially in emerging economies it is not so illustrative to focus on national averages. A simple distinction within emerging economies and developing countries is between the poor or the base of the pyramid, the rising middle class of consumers, and the industrializing part of the economy: the manufacturing and energy industries that are emerging. Appropriate policies can be distinguished for different classes; for instance, on the poor one would not impose low-carbon policies but for the middle class or industry, such policies could even lead to economic and social benefits.

Raymond Kopp (Resources for the Future): Importance of the right ways to communicate to government and policy makers and stakeholders. For him the most important take home messages were that a fundamental transformation in which zero emissions are not enough, others are paying and the investment flows need to be redirected from fossil fuels to non-fossil fuels.

Niklas Höhne (Ecofys): Which national policy frameworks are necessary to create conditions for long term emission reductions? Instead of expecting global cooperation will work well, it is more realistic to assume that small groups of regions will continue to take the lead and influence the rest and lead to spill-over of technologies.

Bert Metz (European Climate Foundation): Bringing the right message is important: reaching 2°C target is not easy; it requires that all countries cooperate, we have to do everything and still see a trend break 2020-2030 with drastic consequences for costs and carbon prices.

Michel den Elzen (PBL Netherlands Environmental Assessment Agency): Make clear that scenarios include high risk of failure, since it is likely that costs increase due to lock-in effects, largely relying on BECCS which is still not a proven option and the necessary trend break will need social political change. Moreover, he was sceptical about the equal effort burden sharing, as the outcomes is highly model-dependent, leading to a wide range of reduction targets, and the approach only accounts for capability principle.

Tom van Ierland (European Commission): Historical changes and increase of technologies deployment of renewable technologies and shale gas prove that rapid changes are possible. But in the future negotiation cycle it is necessary that parties are willing to bring to the table, as some did before. Moreover, it is important how commitments are phrased and in case of future pledges that realistic baselines are used.



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3. Co-linkages of climate policies with other national priorities: identifying synergies and trade-offs.

In the afternoon session of the stakeholder meeting the second phase of the project was presented. In the presentation of Keywan Riahi and Detlef van Vuuren thoughts on future work were shown, followed by some reactions and views of Alex Roehrl (UNDESA) and Johannes Bollen (CPB). Jessica Jewel chaired the session and the roundtable discussion was moderated by Bob van der Zwaan.

3.1 Co- linkages of climate, air pollution and energy security

The second half of the project allows for a more comprehensive assessment of the interplay of climate mitigation strategies in the larger context of sustainable development. So far most progress is made on reducing air pollution and improving energy security, while only few progress in climate change mitigation. This due to the fact that energy security and air pollution are short term local/national issues with relatively easy add-on solutions, while climate change is a long term global problem in which the polluter and the one striking the consequences of climate change often not coincide, and climate change asks for structural changes.

So far synergies between different sustainable objectives are not properly identified. The LIMITS project can help to understand the implications of multiple policy objectives and their implications. Climate mitigation will have co-benefits for air pollution, human health and ecosystem on one hand and on the other hand stimulate diversified energy portfolios and so improving the energy security of regions. These co-benefits lead to cost spill-overs and will give more representative cost of climate mitigation.



More Representative Cost of Climate Mitigation





3.2 Feasibility of transition pathways: energy and land-use consequences

The first part of the project showed that it is possible to reach 2°C target, but what are the consequences? How feasible are these trajectories taking into account technical, economic al, political and social factors limiting the solution space? In the next phase of the project we will further asses the feasibility of technological change and consequences for land-use.

That the technological changes are challenging was Detlef van Vuuren showed in his presentation. The necessary decarbonisation speed exceeds the historical rates, penetration of technologies are comparable to historical transition but need to take place in much larger energy system which means much higher annual capacity additions.

Land-use based mitigation such as biomass use in combination with CO2 capture and storage as well as afforestation options can play a potential large role in reaching the 2°C target. However, there are high uncertainties in land-use projections as well as uncertainties for CO2 storage potentials. Moreover, land-use has also consequences. Therefore, we need to further asses land-use in terms of consequences, limitations and opportunities.

3.3 Reaction: Climate change in the context of sustainable development

In a reaction to the previews project presentation Richard Alexander Roehrl spoke about the background of climate negotiations. He showed the differences between public and academic interest in sustainable development, the influence of media and the change of the meaning of sustainable development over the years. Moreover he spoke about different priorities of sustainable development goals, solutions to overcome differences in global winners and loser and how these are addresses in the Global Sustainable Development Report.

3.4 Reaction: Co-benefits of climate change policies

In scope of the co-linkage of climate change policy with other sustainable objectives Johannes Bollen showed some results from a study he carried out with the MERGE model. He showed that the benefits from air pollution control policies have large implications for climate change. Up to 2030 air pollution policy alone may yield to CO2 eq emission reductions in order of 50-100% of the global climate policies targets and for Europe to reductions of 85-100% of EU's energy Roadmap. Moreover, air pollution agreements face less free-rider incentives and focus on small point sources instead of low carbon opportunities in electricity sector. Air pollution policies have higher benefits.

3.5 Roundtable Discussion: Climate change policies interactions with multiple sustainability objectives

Some quick replies by panel members were given.



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Geoffrey Blandford (Electric Power Research Institute): Touches the issue that to answer questions of inter linkage of air pollution, land-use and energy security models nee most likely be enhanced. Moreover if you have right instruments the next step is how to communicate and convert this in policies. Energy security is interpreted in several ways. May be reconsidering the baseline is necessary to answer questions on implications of land-use and for energy security.

Aleh Cherp (Central European University): Difficulties talking about energy security is that it differs between actors, for one it is maximizing export for the other minimizing import, it is something national. LIMITS provide beautiful map, one assumes that people will use map, but we should be more prepared that nothing will happen in 2015. Improving the map also by including all new kind of tools will not work. Therefor better to contact other people and get insides about their intension and which routes for them are likely to follow.

Amit Garg (Indian Institute of Management): mentions that model community is distinct from people that actually undergoing the changes and people that are making policies. Moreover, he sees a lot of low carbon technologies that have high future potentials. History has shown that dynamics changes sometimes very fast and immediate transitions are possible. However, technology is limited how can our scenario studies encourage these transfers?

Hans-Holger Rogner (International Atomic Energy Agency): raises once again the importance of communication of the results. The level of aggregation of our models goes beyond the view of policy makers. Moreover he raised the issue of water shortage that came very clear in a multi-objective study on Mauritius. He also pointed out that each technology has risks and leaves waste and that energy security for one country means insecurity for neighbor, for example nuclear energy.

Tom van lerland (European Commission): articulates that the European Commission already considers multi-objectives policies to cover climate change as well air pollution. Air pollution policies are looking at climate policies. However, also the other way around: projection of coal increase in coming years asks for also air pollutions policies.

Ji Zou (National Development and Reform Commission): Says that considering multiple objectives such as food, climate, energy, etc etc is the right way to go, since especially in developing countries the priorities are ranked different. Combining objectives will convince and motivate local stakeholders for the "green" or "low carbon" development. In China for example the trade conflict between China and US leads to question why not buy technology instead of buying fuels, this implicates that barriers technology transfer need to be solved. Concluding multiple objectives brings climate concerns into mainstream agenda.

After the remarks of the panellists there was a lively discussion, first quite technical about how to change the models to address better multi sustainable objectives. Later the discussion changed to the interaction between local and global policies and the communication with both levels. For the European Commission studies including both global and more local (national) models are most valuable.



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4. List of participants

List of Participants					
Participant	Affiliation	Country			
Tino Aboumahboub	Potsdam Institute for Climate Impact Research (PIK)	Germany			
Shuichi Ashina	National Institute for Environmental Studies (NIES)	Japan			
Geoffrey Blandford	Electric Power Research Institute (EPRI)	Germany			
Johannes Bollen	Netherlands Bureay for Economic Policy Analysis (CPB)	Netherlands			
Alex Bowen	London School of Economics and Political Science (LSE)	United Kingdom			
Katherine Calvin	Pacific Northwest National Laboratory (PNNL)	USA			
Emanuele Campiglio	London School of Economics and Political Science (LSE)	United Kingdom			
Mariaester Cassinelli	Fondazione Eni Enrico Mattei (FEEM)	Italy			
Aleh Cherp	Central European University (CEU)	Hungary			
Heleen de Coninck	Radboud University Nijmegen	Netherlands			
Jacopo Crimi	Fondazione Eni Enrico Mattei (FEEM)	Italy			
Michel den Elzen	PBL Netherlands Environmental Assessment Agency	Netherlands			
Laurent Drouet	Fondazione Eni Enrico Mattei (FEEM)	Italy			
Ottmar Edenhofer	Potsdam Institute for Climate Impact Research (PIK)	Germany			
Henk Eggink	Ministry of Economic Affairs	Netherlands			
Amit Garg	Indian Institute of Management (IIM)	India			
David Gernaat	Utrecht University (UU)	Netherlands			
René Goverde	Dutch Ministry Infrastructure & the Environment	Netherlands			
Niklas Höhne	Ecofys	Germany			

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Florian Humpenöder	Potsdam Institute for Climate Impact Research (PIK)	Germany
Jessica Jewell	International Institute for Applied Systems Analysis (IIASA)	Austria
Tom Kober	Energy Research Centre of the Netherlands (ECN)	Netherlands
Raymond Kopp	Resources for the Future (RFF)	United States
Elmar Kriegler	Potsdam Institute for Climate Impact Research (PIK)	Germany
Sergio La Motta	ENEA	Italy
Joana Leitao Alexandre	Joint Research Centre, Institute for Environment and Sustainability, European Commission (JRC-IES)	Italy
Kai Lessmann	Potsdam Institute for Climate Impact Research (PIK)	Germany
Giacomo Marangoni	Fondazione Eni Enrico Mattei (FEEM)	Italy
David McCollum	International Institute for Applied Systems Analysis (IIASA)	Austria
Bert Metz	European Climate Foundation (ECF)	Netherlands
Shilpa Rao	International Institute for Applied Systems Analysis (IIASA)	Austria
Keywan Riahi	International Institute for Applied Systems Analysis (IIASA)	Austria
Richard Alexander Roehrl	United Nations (UN)	United States
Mark Roelfsema	PBL Netherlands Environmental Assessment Agency	Netherlands
Hans-Holger Rogner	International Atomic Energy Agency (IAEA)	Austria
Martijn Root	Ministry of Economic Affairs	Netherlands
Hilke Rosler	Energy Research Centre of the Netherlands (ECN)	Netherlands
Otto Sander	Utrecht University (UU)	Netherlands
Pal Saptarshi	Global Emissions Broker - STX Services B.V.	Netherlands
Fu Sha	National Development and Reform Commission (NDRC)	China
Priyadarshi Shukla	Indian Institute of Management (IIM)	India
Iris Staub-Kaminski	Potsdam Institute for Climate Impact Research (PIK)	Germany

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Massimo Tavoni	Fondazione Eni Enrico Mattei (FEEM)	Italy
Bob Van der Zwaan	Energy Research Centre of the Netherlands (ECN)	Netherlands
Rita Van Dingenen	Joint Research Centre, Institute for Environment and Sustainability, European Commission (JRC-IES)	Italy
Ton van Dril	Energy Research Centre of the Netherlands (ECN)	Netherlands
Willem van Ierland	European Commission	Belgium
Mariësse van Sluisveld	Utrecht University (UU)	Netherlands
Detlef van Vuuren	Utrecht University (UU)	Netherlands
Ji Zou	National Development and Reform Commission (NDRC)	China