NEWSLETTER 02/2013

LIMITS

LOW
CLIMATE
IMPACT
SCENARIOS
AND THE
IMPLICATIONS
OF REQUIRED
TIGHT
EMISSION
CONTROL
STRATEGIES

LIMITS special issue on Durban Platform scenarios

The Durban platform for enhanced action provides the most important opportunity for a post 2020 international climate agreement. It contains several innovative elements, most notably a focus on the major economies which goes beyond the traditional divide between developed and developing countries. The LIMITS project has **completed the most comprehensive and up to date model inter-comparison** on the relation between the short term policy outcome **of the Durban negotiation process and the long term climate objective of 2°C**.

A suite of seven leading integrated assessment models has assessed 12 scenarios which span combinations of **short term action, long term climate objective, degree of cooperation and of effort sharing**. The special issue – forthcoming in the journal *Climate Change Economics*- is composed of 12 original papers (see the table of contents) which covers a broad range of topics related to model evaluation of Durban scenarios.

Here we briefly report on the main insights of the study. All papers are accessible from the LIMITS website www.feem-project.net/limits. All the data underlying the scenarios will be available for download and for web visualization at the time of publishing of publication the special issue, expected for early 2014.

The relevance of the Durban platform negotiation outcome

The LIMITS study finds robust evidence that the outcome of the **Durban Platform negotiations plays a crucial role in keeping the option to limit global mean warming to 2°C open**. Weak action in 2020 or fragmentation to 2030 raises the rates of decarbonization and policy costs significantly, making subsequent policy implementation less likely. This is supported by a **strong correlation between the short term gap in emissions and the increase in the rate of emission reductions and economic costs** at the time of the adoption of the climate treaty.

Making it more likely than not to maintain global mean temperature below 2°C would require **a peak in global emissions between 2020 and 2030, a carbon budget to mid-century of 1400 to 1700 GtCO2-eq**, and eventually a complete phase out of global emissions. Emissions intensity would need to **decline by 4 to 5% per year, three times** greater than the long term global average rate, and above the decarbonization rates of leading countries like Sweden.

Investing and financing the transformation

Achieving these rates of emissions reduction will require a **major restructuring of the energy system**. The power sector will need to undergo the largest transformation over the next decades, with **capacity additions for key low carbon technologies** such as wind, solar, fossil fuels with CCS **exceeding 50GW/yr**, above the massive capacity growth of conventional coal power of recent years. Bioenergy is shown to be a key contributor to the decarbonisation strategy, due to its versatility and the potential for generating negative emissions.

This would require a significant **upscaling of investments** into low-carbon energy and energy efficiency, reaching approximately $1.1 trillion annually. It represents a **"clean-energy investment gap" of $800 billion/yr**– in the same order of magnitude **as present-day subsidies for fossil** energy and electricity worldwide. A **clean-energy R&D** gap has been also quantified to about **$50 billion/yr**. These rates of investments could be **fully covered by the fiscal revenues of carbon pricing**.

Implementing Durban policies in the major economies

The special issue has also quantified the implication of Durban policy architectures for the major economies, highlighting **significant regional heterogeneity**. Achieving **2°C with likely chances** will require **emissions** to be **always below today's values for OECD regions**, and to **return to today's levels by 2040 in China and India**. Absent financial transfers- the costs of mitigation will be distributed differently across regions, with **lower costs for advanced economies, higher for fast-growing economies and significantly higher for energy-exporters**. The asymmetric distribution of costs could be alleviated by **endowing** regions with **emission permits** and allowing free **trade** of such entitlements, but it would require establishing a global **carbon market of several GtCO2 and up to $100 Billion in 2030**.

Climate policies are likely to lead to significantly **lower global energy trade** and reduce **energy imports** of major economies, **decrease** the rate of **resource depletion**, and **increase the diversity** of energy options, particularly in the transportation sector. **China, India and the E.U.** will derive particularly **strong benefits** from climate policies, whereas the **U.S. may forego some opportunities** to export fossil fuels in the second half of the century.

Meetings and Events

4th Project Meeting
26-27 September 2013
Austria

COP 19 - Side Event EU Pavillon - Durban Action Global Scenarios for 2C: feasibility, implications and impacts
11 November 2013
Poland

5th Project Meeting, Stakeholder Meeting, and hosted event at the International Energy Workshop (IEW)
June 2014
China

Table of Contents of the special issue

LIMITS Consortium

Partners

Fondazione Eni Enrico Mattei (FEEM), Italy
www.feem.it
Internationales Institut für Angewandte Systemanalyse (IIASA), Austria
www.iiasa.ac.at
Potsdam-Institut für Klimafolgenforschung (PIK), Germany
www.pik-potsdam.de
Universiteit Utrecht (UU), Netherlands
www.uu.nl
London School of Economics and Political Science (LSE), United Kingdom
www.lse.ac.uk
Energy Research Centre of the Netherlands (ECN), Netherlands
www.ecn.nl
Joint Research Centre, Institute for Environment and Sustainability, European Commission (JRC-IES), Italy
ies.jrc.ec.europa.eu
Central European University (CEU), Hungary
www.ceu.hu
Energy Research Institute of the National Development and Reform Commission (NDRC-ERI), China
www.eri.org.cn
Indian Institute of Management (IIM), India
www.iimahd.ernet.in

Associated Research Organisations

Pacific Northwest National Laboratory, Joint Global Change Research Institute at the University of Maryland (PNNL), USA
www.pnnl.gov
National Institute for Environmental Studies (NIES), Japan
www.nies.go.jp

LIMITS

Contacts

Project Co-ordinator
Massimo Tavoni, Scientific Co-ordinator
Mariaester Cassinelli, Project Manager

Fondazione Eni Enrico Mattei
Corso Magenta 63
20123 Milano, Italy

Phone: +39 02 520 369 36/89
limits@feem.it
www.feem-project.net/limits

The research leading to these results has received funding from the European Union Seventh Framework Programme FP7/2007-2013 under grant agreement n° 282846 (LIMITS).