Nach Paris – Herausforderungen für die Klimapolitik

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Die Grünen
Berlin
30. Juni 2016
GHG emissions growth between 2000 and 2010 has been larger than in the previous decades.

Based on Figure 1.3
A renaissance of coal drives the global carbonization.

Steckel, Edenhofer and Jakob, in press
Climate Projections and Associated Risks

Slide by H. J. Schellnhuber
Growth vs. temperature

USA

China

Brazil

Germany

LETTER

Global non-linear effect of temperature on economic production

Marshall Burke\textsuperscript{1,2}, Solomon M. Hsiang\textsuperscript{3,4} & Edward Miguel\textsuperscript{4,5}

Quelle: Nature, doi:10.1038/nature15725
Risks from climate change depend on cumulative CO₂ emissions...

Based on SYR Figure SPM.10
...which in turn depend on annual GHG emissions over the next decades.
The great transformation

CO₂ emissions from fossil fuels

Emissions w/o climate protection

mitigation contributions from different technologies

Luderer et al. (2012)
The climate problem at a glance

Resources and reserves to remain underground until 2100 (median values compared to BAU, AR5 Database)

<table>
<thead>
<tr>
<th></th>
<th>Until 2100</th>
<th>With CCS [%]</th>
<th>No CCS [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>70</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td>35</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>32</td>
<td>64</td>
<td></td>
</tr>
</tbody>
</table>

Source: Bauer et al. (2014); Jakob, Hilaire (2015)
The Paris Agreement: INDCs

- Intended Nationally Determined Contributions are inconsistent with the temperature target.

Data sources: Le Quere et al. (2015), Rogelj et al. (2015), Luderer et al. (2015); Fig. adapted from Jan Minx 2016
The Paris Agreement: INDCs

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The INDCs are inconsistent

Countries with highest ongoing and planned coal investment
Minimum Carbon Price and Transfers

- Emission reduction implying nationally implemented policy
- Recipient countries
  - Minimum carbon price for a coalition
  - Transfer
- Donor countries

Technische Universität Berlin
Global Minimum Carbon Price and Transfers

Ausweg aus der Klima-Sackgasse


26.10.2015, von OTTMAR EDENHOFER UND AXEL OCKENFELS

Source: Frankfurter Allgemeine Zeitung, online, 26.10.2015
Renaissance of Coal
Social Costs vs subsidies

“one ton of CO₂ receives, on average, more than 150 US$ in subsidies”

Source: Science, 18 September 2015, Vol 349, Issue 6254, 1286ff
Developing countries face fundamental infrastructure challenges

Water

Electricity

Transportation

Telecommunication
Carbon pricing revenues with redistribution are sufficient to finance universal access to infrastructure...

Except for roads where Africa’s & Latin America’s cost still partially exceed revenues.
ETS lack dynamical cost efficiency

- Falling CO$_2$ price
- No increase expected before 2020
- Market Stability Reserve will be implemented, but effect might be limited
Empirical evidence: demand shock

- Consensus that carbon prices are driven to *certain extent* by demand-side fundamentals related to abatement cost (Hintermann 2010)
- But: EUA price dynamics cannot be solely explained by demand-side fundamentals (Koch et al. 2014)
EU ETS betting shop for political decisions

Koch et al. (2016)
ETS lack dynamical cost efficiency

- The price expectations for 2020 can serve as a benchmark for the evaluation of the dynamical cost efficiency of the ETS
- There is a gap between expectations and models showing a cost-efficient price of more than 20 €/t CO₂ in 2020

EUA Nearest Contract and Futures

Cost-efficient CO₂ price from models

Knopf et al. (2013)
Introduction of a price corridor

- Reliable environment for investment decisions
- Instrument: Introduction of an auction reserve price

![Graph showing price corridor with P_min and P_max]