AMPERE from an IPCC AR5 perspective
AMPERE Stakeholders’ Meeting, FEEM, Island of San Giorgio Maggiore, Venice, Italy, 22 May 2012

Prof. Dr. Ottmar Edenhofer

Jan Minx, Christoph von Stechow
Five forms of climate scepticism

“The collapse of the fact/value dichotomy“
Challenges for assessment making in the IPCC AR5

- WG II & III are under growing public scrutiny
- Challenges for assessment making in the AR5:
  - Values and facts cannot be neatly separated
  - Long-term policy choices are associated with fundamental uncertainties that will not necessarily be reduced by science
- WG III needs to deal with irreducible uncertainties as well as with the “collapse of the fact/value dichotomy”
Exploring and assessing the solution space

Reduction of CO₂ emissions

Increasing energy efficiency
Non-fossil Energy
CO₂ capture at Plant (CCS)

Population
Per Capita Production
Energy Intensity
Carbon Intensity
CO₂ Released

CO₂ Emissions
Carbon cycle
CDR
Non-CO₂ mitigation.

Other GHG Emissions
Radiative Forcing
Temperate Change

Ecosystem impacts, incl. ocean acidification
Impacts
Adaptation

SRM
AMPERE: Describing different consistent transformation pathways
WG III AR5 assessment philosophy based on comprehensive public debate

- The pragmatic-enlightened model (PEM) of scientific policy advice

Source: Edenhofer/Kowarsch, forthcoming
WG III AR5 assessment philosophy based on comprehensive public debate

- **Public debate** about problem analysis & framing
- Sciences evaluate ends in interrelation with means-consequences helped by **public debate** & scrutinize carefully chosen, viable ends-means-combinations
- Role of sciences as policy-relevant, but not policy-prescriptive “honest broker” helps to structure an extensive **public debate** about policy options
- Policymakers choose and implement an option
- **Public debate** evaluates the actual consequences of the policy in order to learn for future policy problems

Source: Edenhofer/Kowarsch, forthcoming
Exploring and assessing the solution space: 'seven virtues' of assessment making

1. Reviewing comprehensively the relevant scientific, technical and socio-economic literature
2. Describing consistent transformation pathways
3. Evaluating costs, risks and opportunities of different pathways in a consistent way within and across Chapters and WGs
4. Specifying underlying value judgements and worldviews
5. Communicating quantitative and qualitative uncertainties
6. Using neutral language along good scientific practice
7. Making text, figures and tables accessible
The policy arena: the COP16 outcome

Advance unedited version

Draft decision -/CP.16

Outcome of the work of the Ad Hoc Working Group on long-term Cooperative Action under the Convention

The Conference of the Parties

Recalling its decision 1/CP.13 (the Bali Action Plan), and decision 1/CP.15,

Seeking to secure progress in a balanced manner, in the understanding that, through this decision, not all aspects of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention are concluded, and that nothing in this decision shall prejudice prospects for, or the

The Conference of the Parties…

[…] recognizes that deep cuts in global greenhouse gas emissions are required […] to hold the increase in global average temperature below 2°C …

[…] also recognizes the need to consider, […] strengthening the long-term global goal […], including in relation to a global average temperature rise of 1.5°C.
Need for broadly comparable scenario information

Extreme events, Sea level rise

WGI
Extreme events
Sea level rise

WGII
Differential impacts:
Δ(1.5°C/2°C)
Δ(2°C/3°C)
Δ(3°C/4°C)

Iteration

WGIII
Marginal mitigation costs:
Δ(1.5°C/2°C)
Δ(2°C/3°C)
Δ(3°C/4°C)

Complete picture of impact and mitigation costs for policy relevance

Δ(1.5°C/2°C), Δ(2°C/3°C), Δ(3°C/4°C)
Policies
Assess human response options

- Explore adaptation and mitigation options
- Explore benefits, costs, and risks of adaptation and mitigation

**WGII**

**Differential impacts:**
- $\Delta (1.5^\circC/2^\circC)$
- $\Delta (2^\circC/3^\circC)$
- $\Delta (3^\circC/4^\circC)$

**WGIII**

**Marginal mitigation costs:**
- $\Delta (1.5^\circC/2^\circC)$
- $\Delta (2^\circC/3^\circC)$
- $\Delta (3^\circC/4^\circC)$

$\Delta (1.5^\circC/2^\circC), \Delta (2^\circC/3^\circC), \Delta (3^\circC/4^\circC)$ policies:
Consistent understanding of costs of impacts and of mitigating impacts

Establish smallest common denominator between both communities
Application of the scenario architecture

Matrix cells can be filled with IAM & IAV results that
- are based on RCPs / CMIP5 projections / new SSP scenarios OR
- use existing assumptions that can be mapped to those (heuristic tool)

<table>
<thead>
<tr>
<th>Socio-economic reference pathway</th>
<th>SSP1</th>
<th>SSP2</th>
<th>SSP3</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forcing level (W/m²)</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>8.5</td>
<td>6.0</td>
<td>4.5</td>
<td>3.7</td>
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<tr>
<td></td>
<td>5.0</td>
<td>3.7</td>
<td>2.6</td>
<td></td>
</tr>
</tbody>
</table>

- Mitigation costs
- Adaptation costs + residual impacts
Post-AR4 scenarios in WGIII (SRREN)

- Describe consistent transformation pathways
- Explore the costs, risks and opportunities of different long-term stabilization targets…
- …in perfect and imperfect worlds
The feasibility frontier in „2nd best worlds”

Knopf et al. 2011

Unavailability of technologies
Fragmented carbon markets
1st best World

Stringency of the mitigation target

Restrictions in implementing climate policies (2nd best)

Socio-economic baseline assumptions

Baseline #1
Baseline #2
Baseline #3
Baseline #4
Baseline #5

Knopf et al. 2011
Example from the SRREN: mitigation in a technologically constrained world
Exploring and assessing the solution space in the AR5 requires timely delivery of scenarios from IAM community

- AR5 literature cut-off date Working Group I:
  - 15 March 2013
- AR5 literature cut-off date Working Group II:
  - 31 August 2013
- AR5 literature cut-off date Working Group III:
  - 3 October 2013
Final Remark

- Policy relevant but not policy prescriptive!