



The Mitigation of Climate Change New Challenges for AR 5

AR5 Scoping Meeting, Venice, July 13th, 2009

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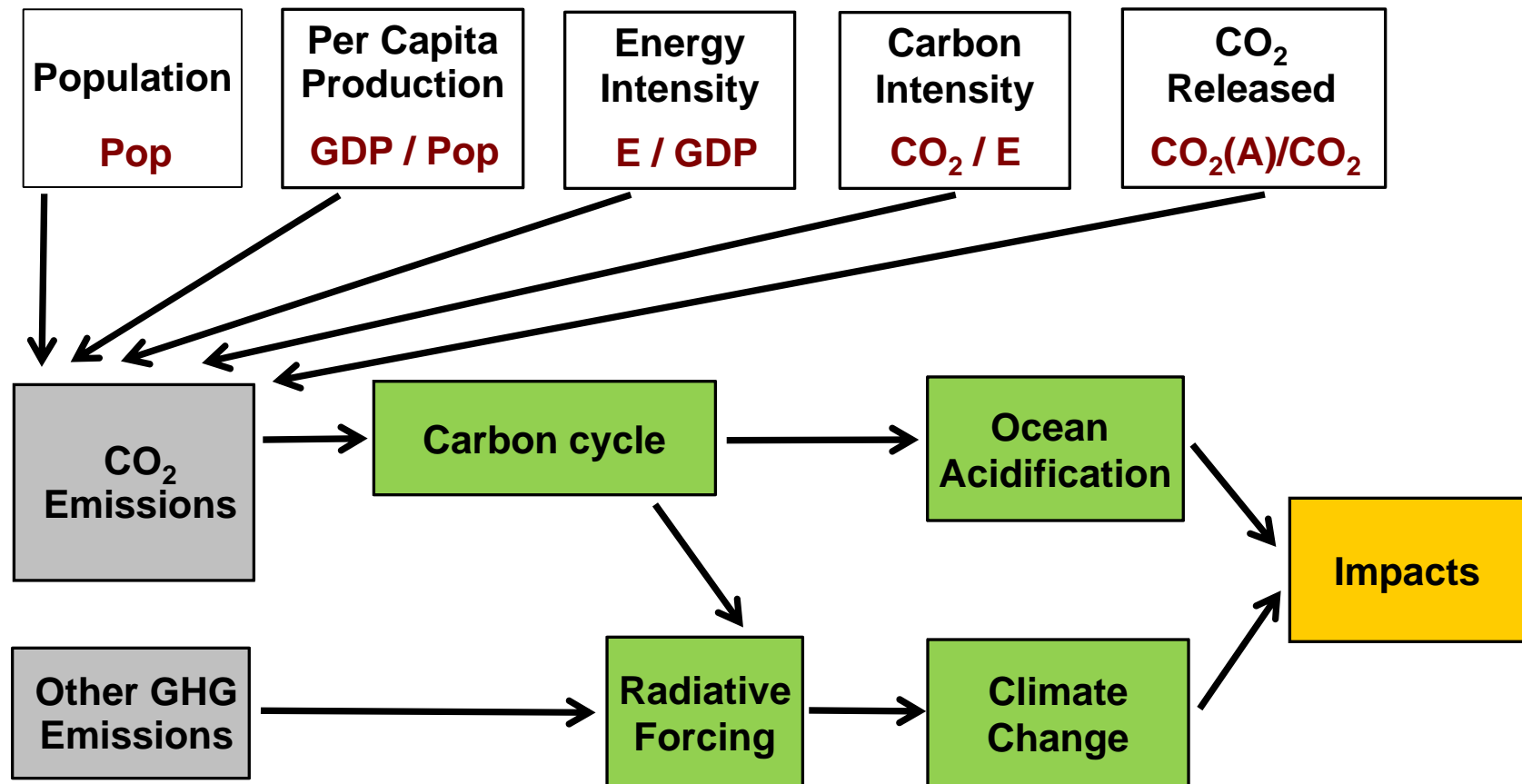
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- Portfolio of Solutions
- Stabilization Targets, Impacts and Costs
- Technology, Sectors and Infrastructure
- Integrated Risk and Uncertainty Assessment
- Regional Sustainable Development
- Equity and Fairness
- International Cooperation and Global Finance
- Possible Structure of AR5

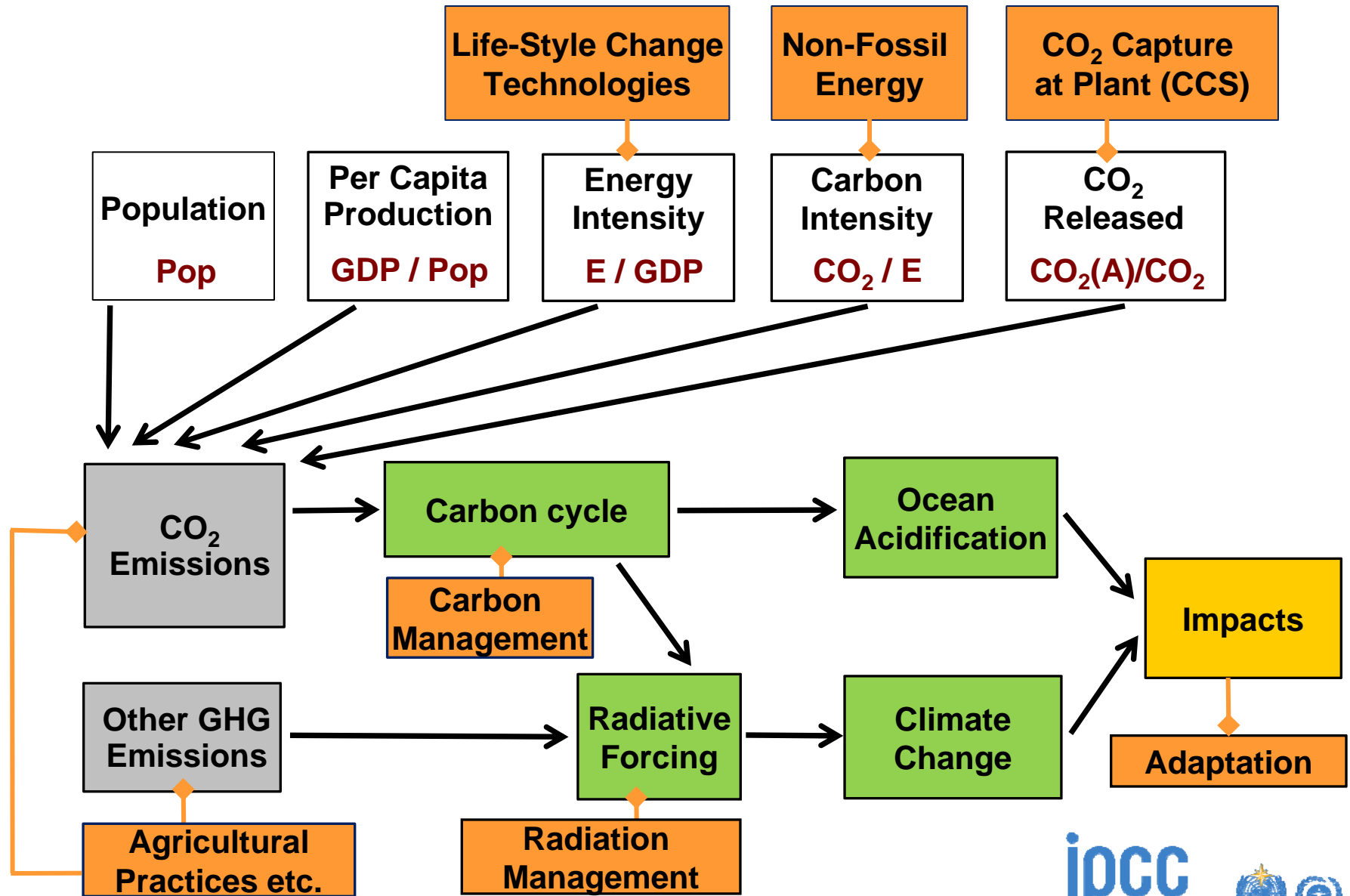
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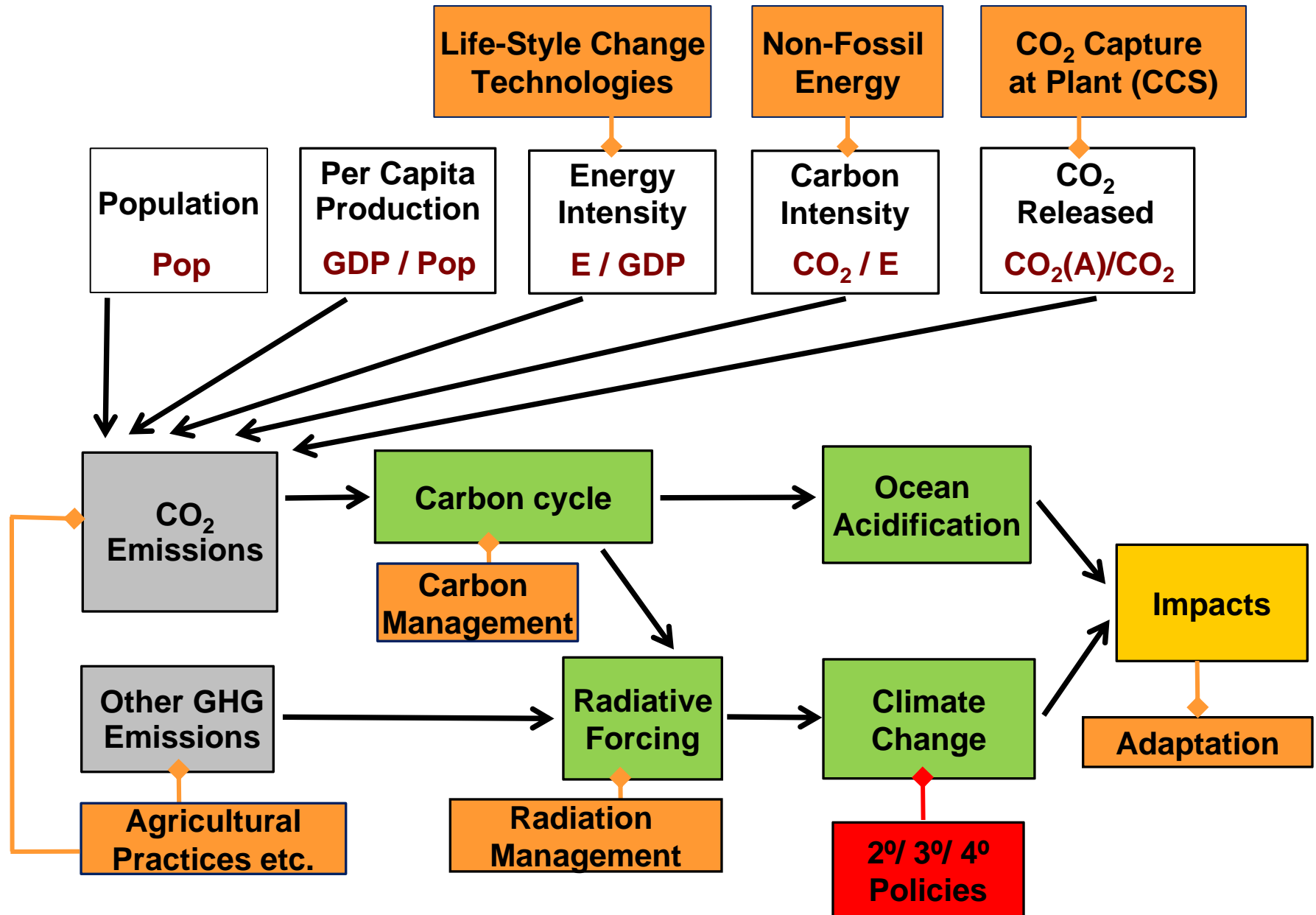
The Task of WG III



Assessing the Solution Space



Interaction between WG II and III



How to Assess the Solution Space

Identifying Acceptable Portfolios of Options:

- Cost-Benefit Analysis
- Cost-Effectiveness Analysis
- Multi-Criteria Analysis and Sustainability

Exploring Robust Portfolios of Options

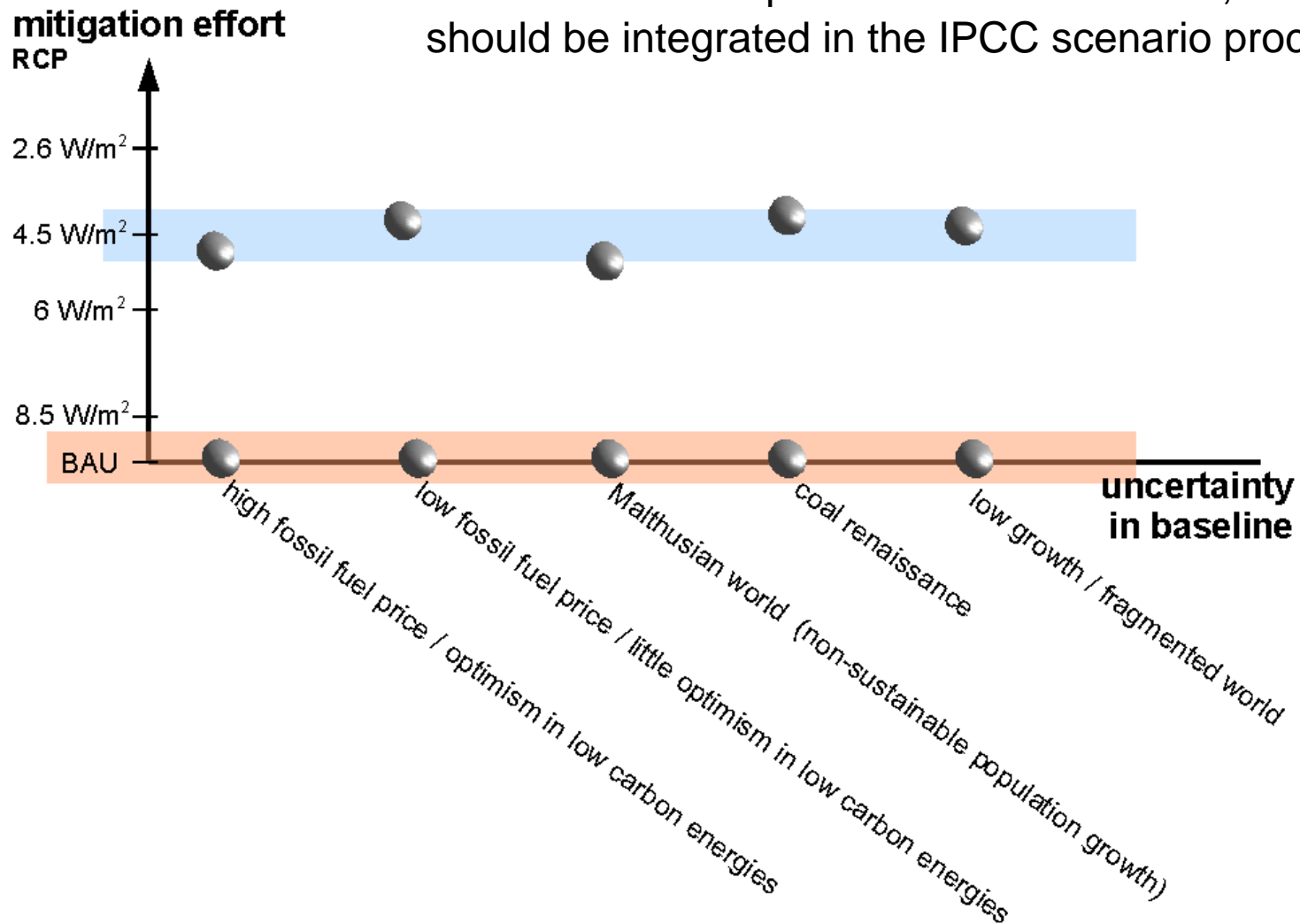
- Integrated Risk and Uncertainty Assessment
- Scenario Analysis

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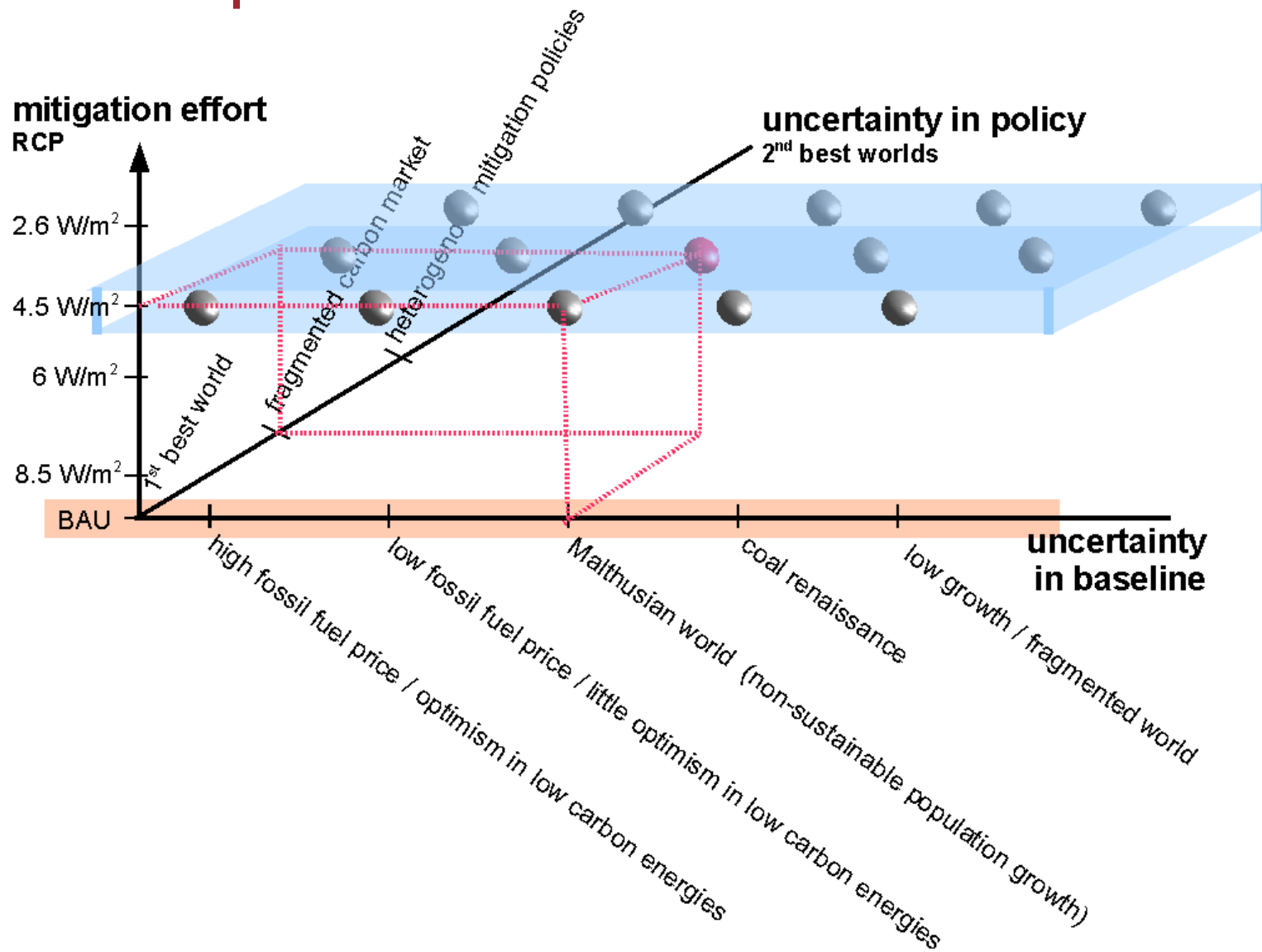
Comparison of Scenarios in AR5

Idea for the conceptualization of scenarios, which should be integrated in the IPCC scenario process

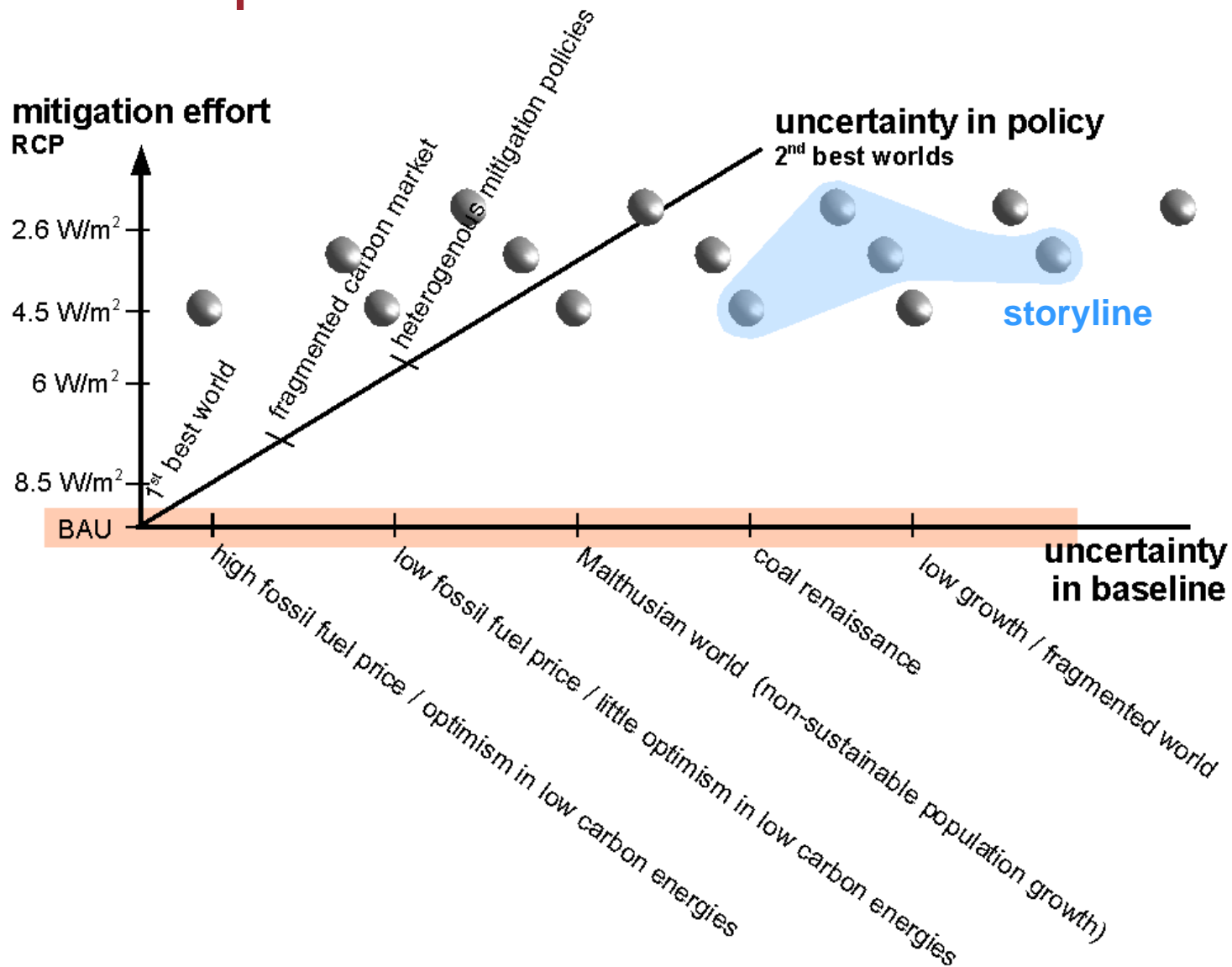


Baselines should be self-consistent

Comparison of Scenarios in AR5



Comparison of Scenarios in AR5

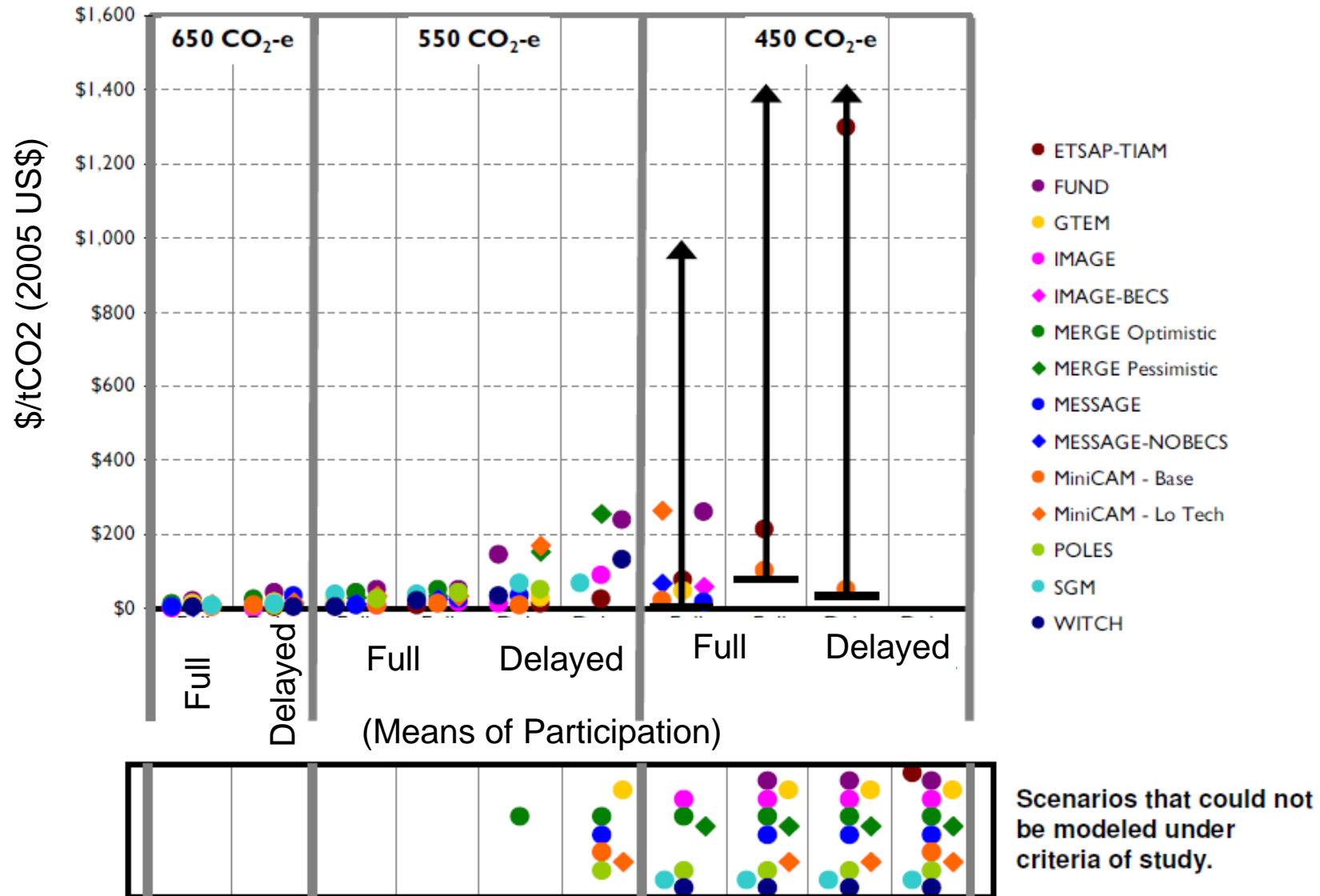


Ex-post clustering of scenarios defines a **storyline** for each **cluster**. Clustering is essential to derive policy relevant messages.

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Annex I 2020 Carbon Prices



Delay of Participation

- Incomplete participation increases the global costs of mitigation.
- Incomplete participation can increase the long-term costs not just for early entrants, but also for late entrants.
- Mechanisms to bring international action closer to full participation can decrease costs for all involved.
- Clear expectation about future targets lead to near-term reductions in preparation, and lower costs for the first mover.

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Limited Availability of Technologies

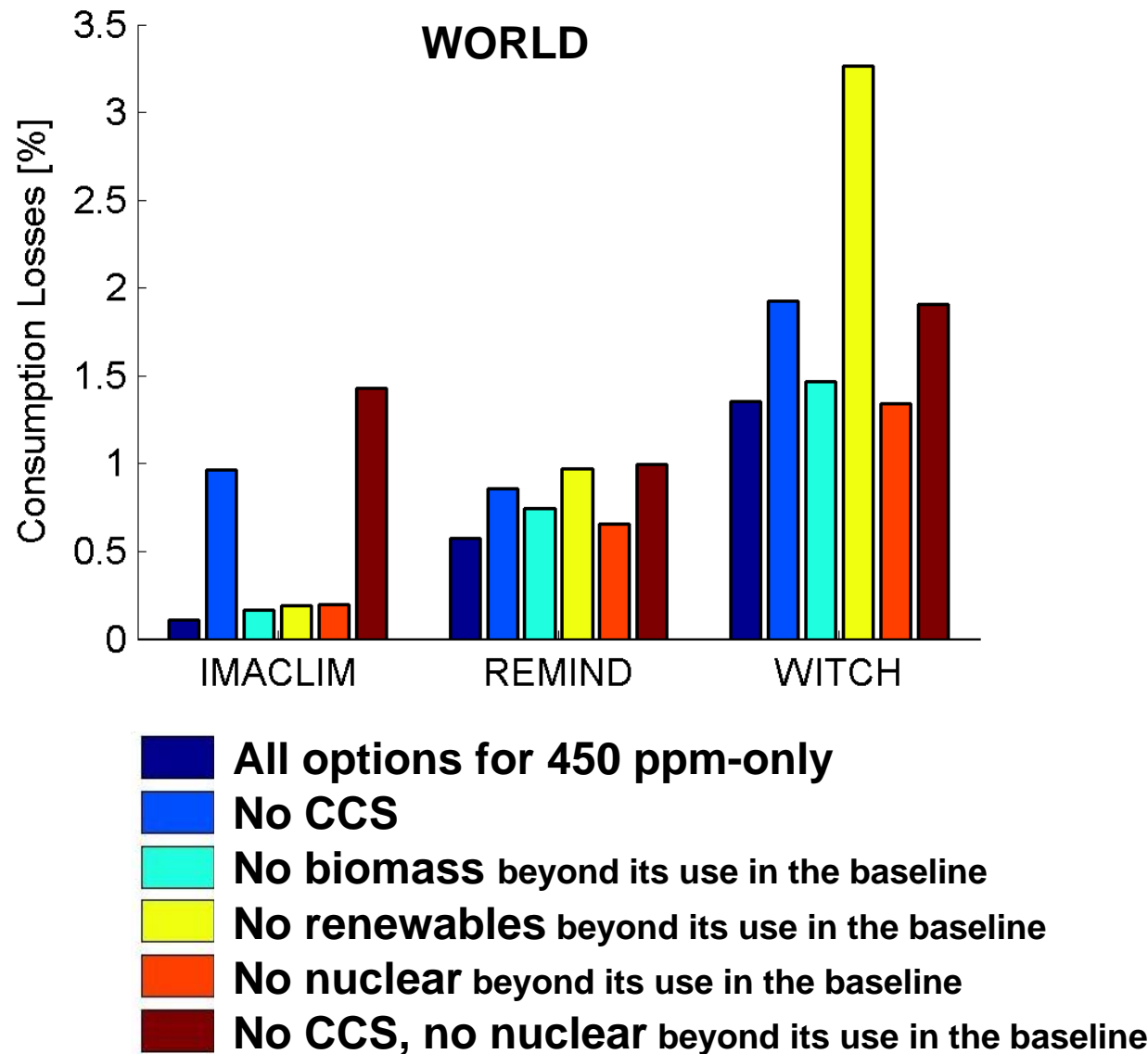


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Advanced Carbon Management & Direct Control of Radiative Balance

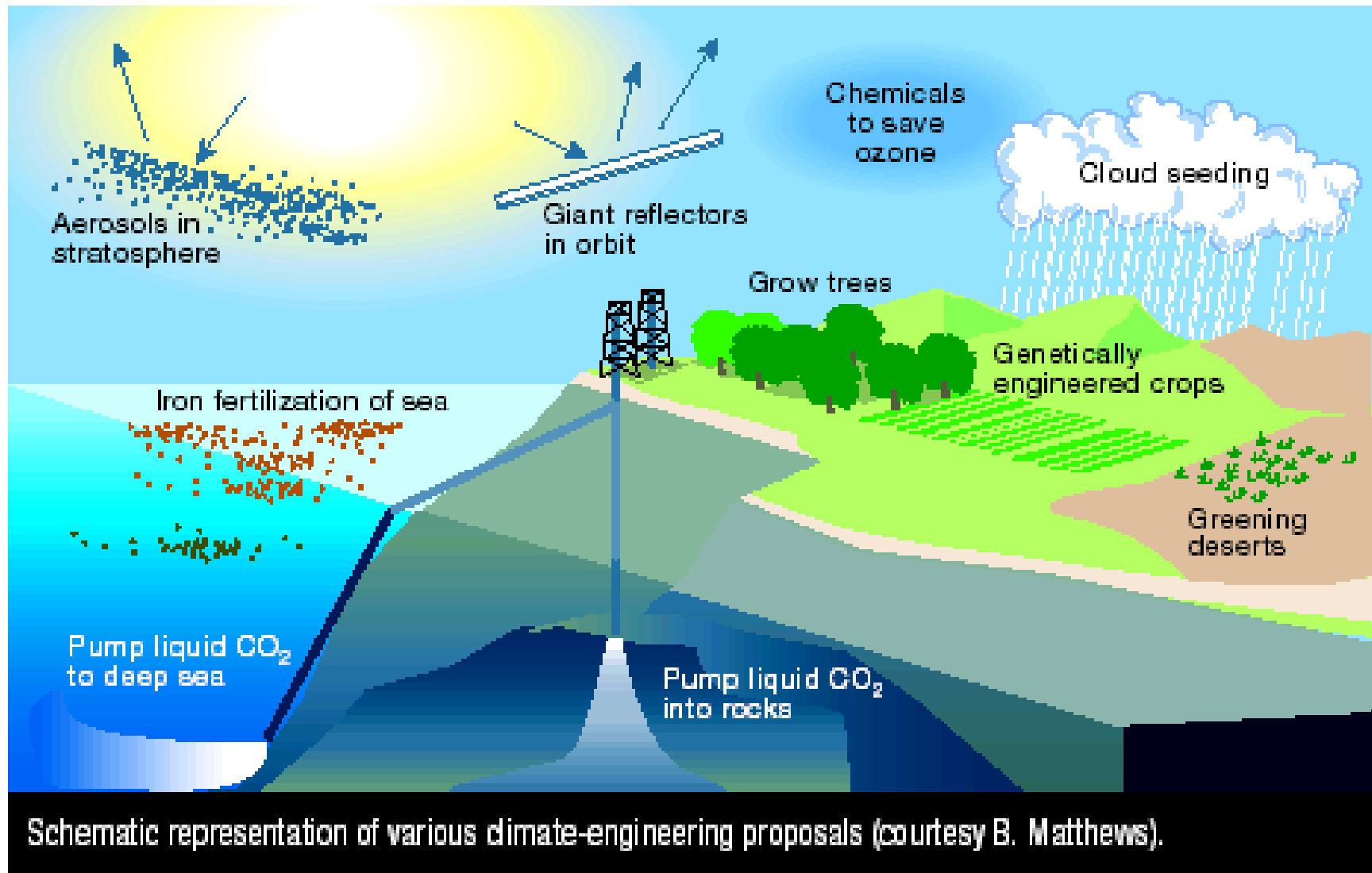
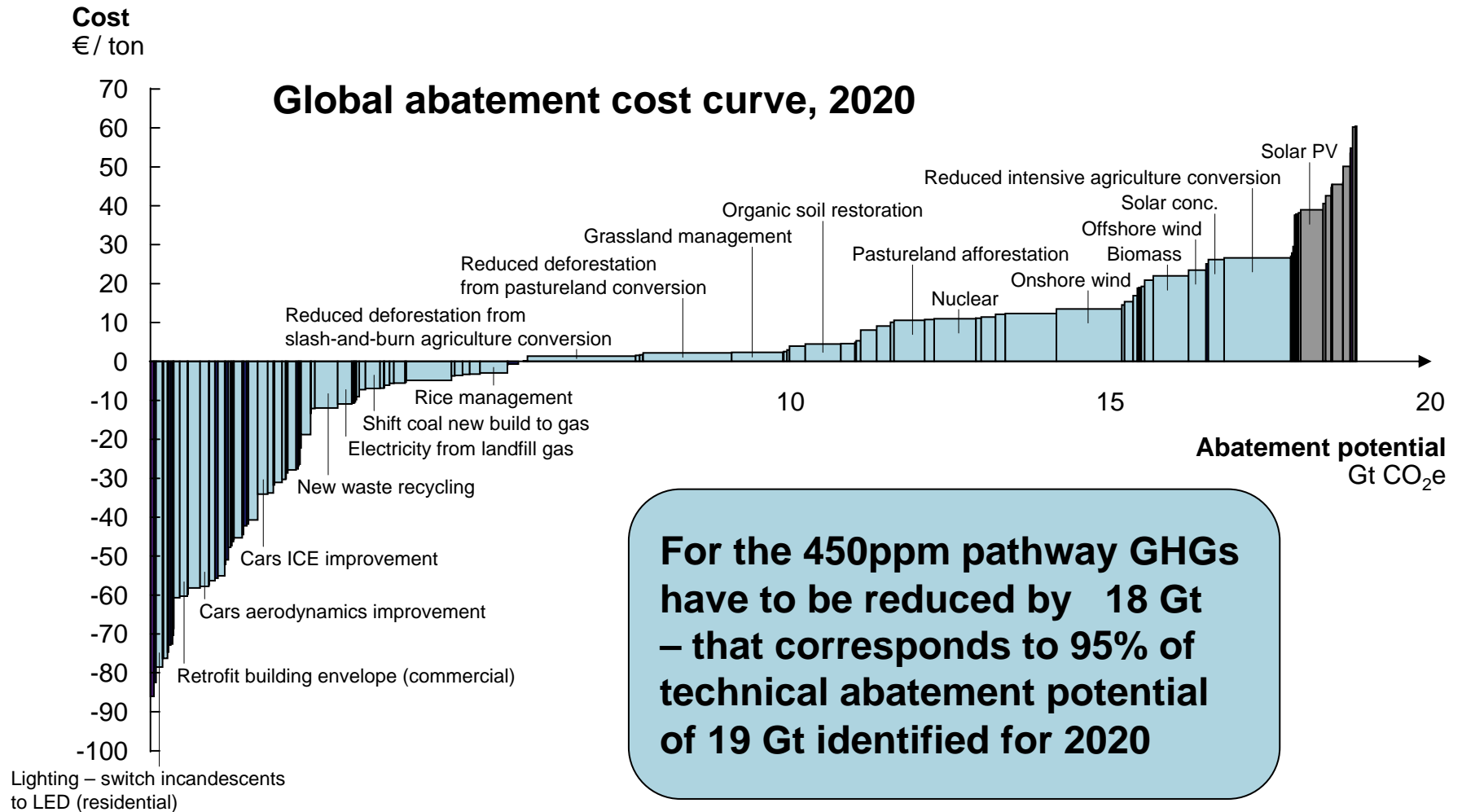


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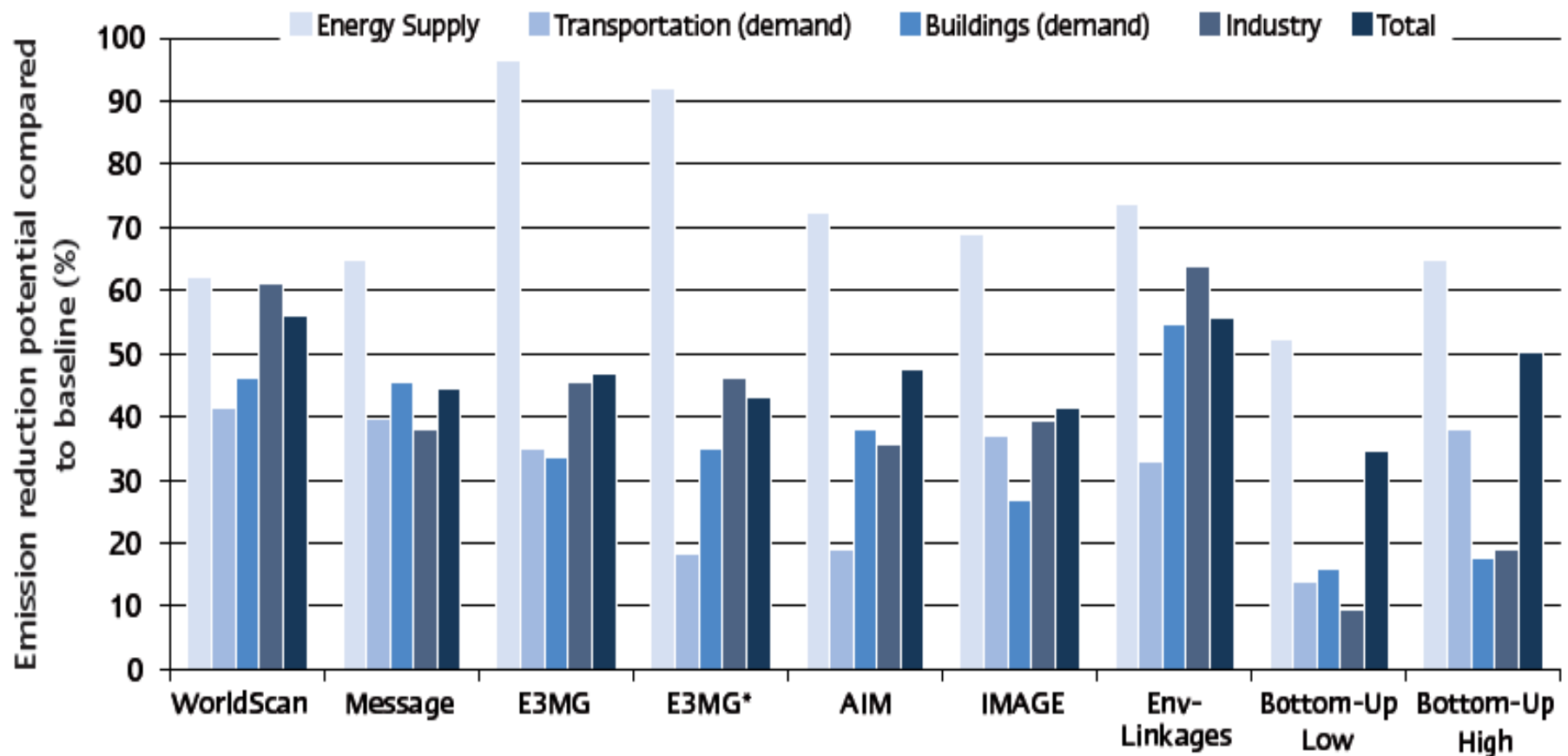
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Assessment of Technologies



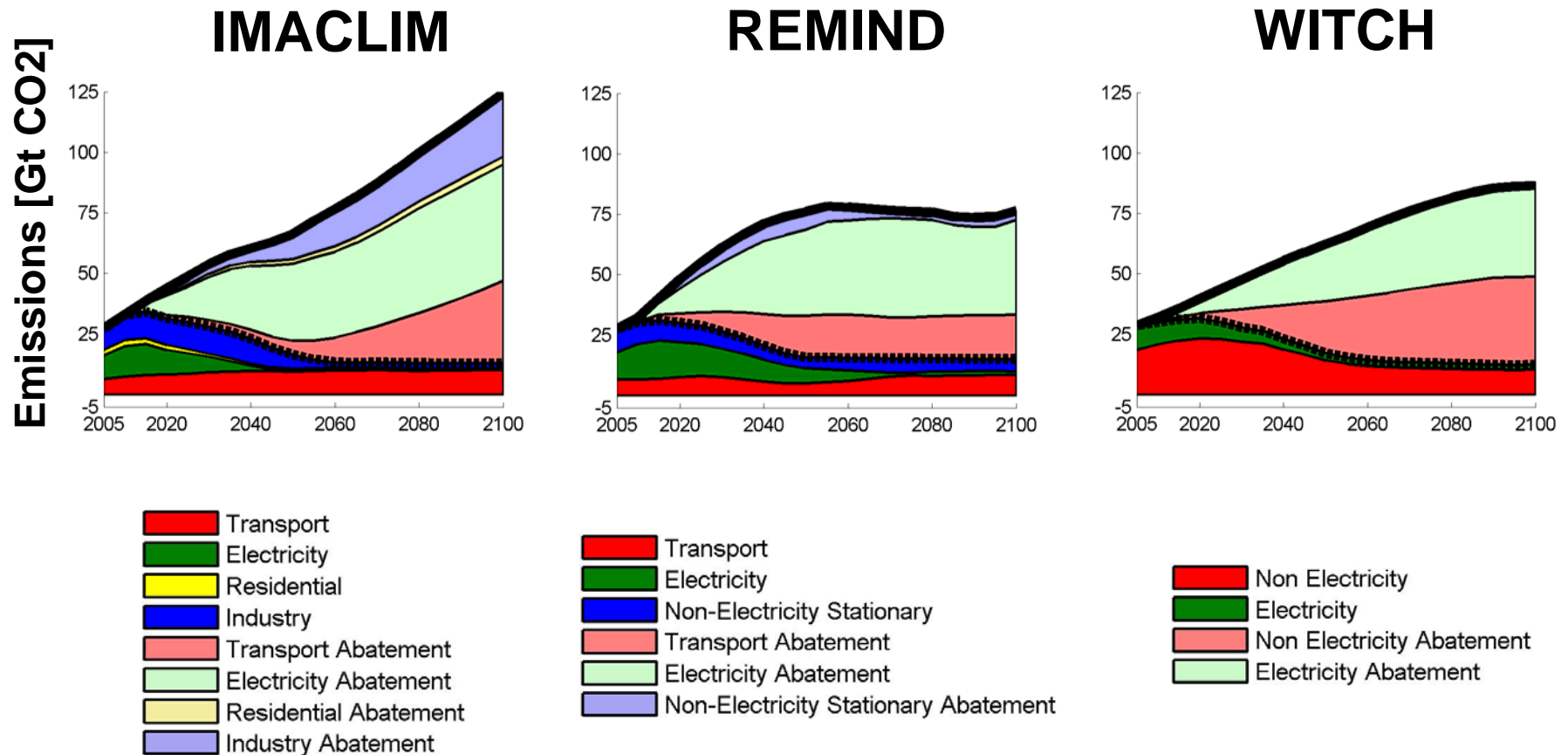
Comparing Bottom-up and Top-down Assessments

Relative emission mitigation potential per sector

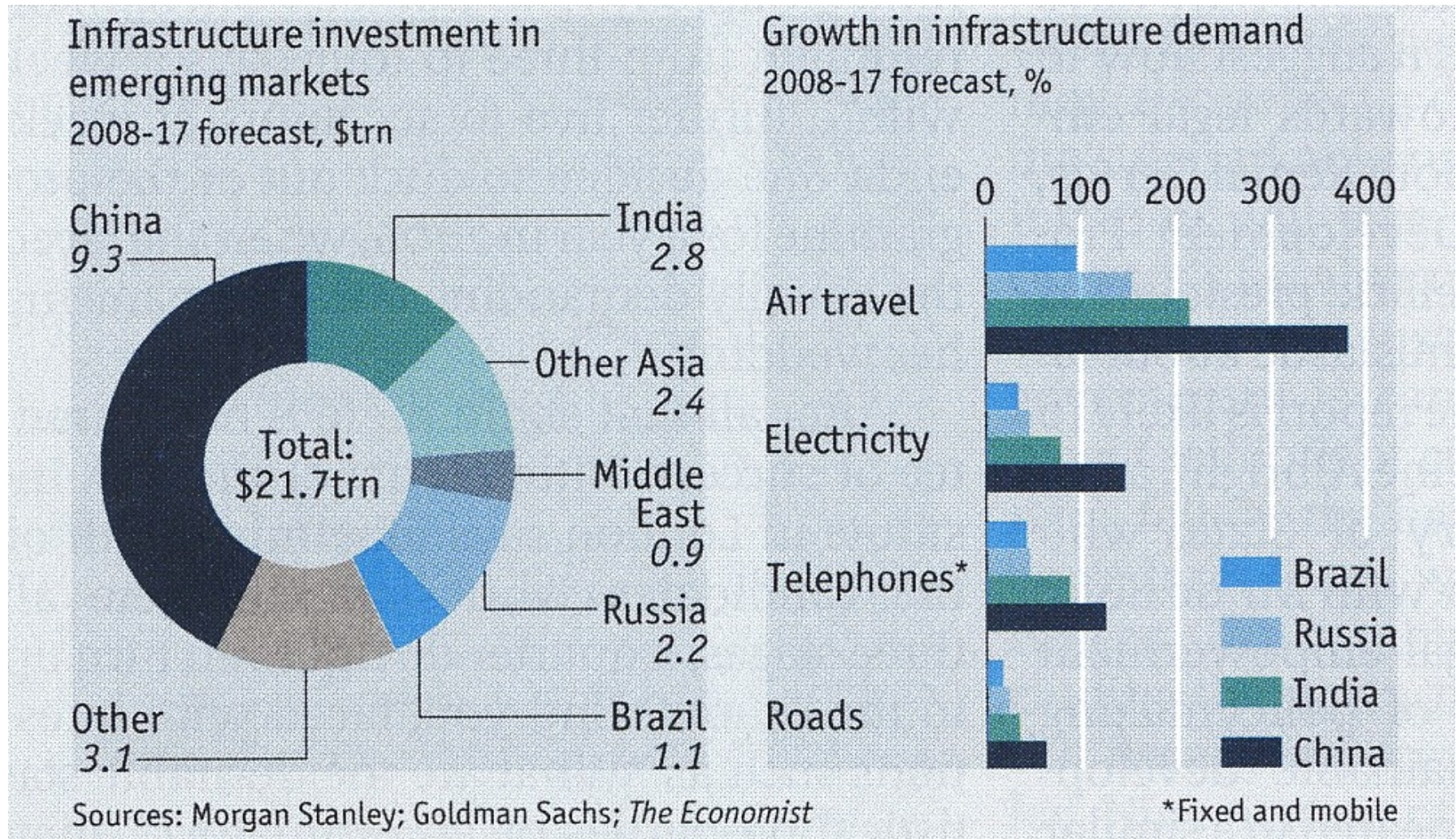


Hoogwijk (2008) Sectoral Emission Mitigation Potentials:
Comparing Bottom-up and Top-down Approaches

Dynamic Sectoral Wedges



Infrastructure: a Bridge into the Future



Expert Meeting on Human Settlements and Infrastructure

- Infrastructure investments (e.g. BRIC countries have planned \$22 Trillion in long-term investments for the next decade) will determine future emission pathways, vulnerability of cities and adaptive capacities.
- There has not yet been a comprehensive assessment on the role that urban planning and infrastructure investments can play in adaptation and mitigation.
- An expert workshop - possibly feeding into a Special Report on Human Settlements and Infrastructure - will be held in March/April 2010 with cooperation from WGII and WGIII.

Special Report on Renewable Energy Sources (SRREN)

As called for in the AR4, the SRREN is an assessment of renewables within the context of mitigation, based on a review and synthesis of scientific literature including:

- Technological feasibility: Reliability and integration
- Economic potential: Competitiveness, costs
- Potential of renewables to reach climate targets
- Social acceptability
- Risks and Uncertainty: e.g. unintended side effects
- Financial and policy instruments

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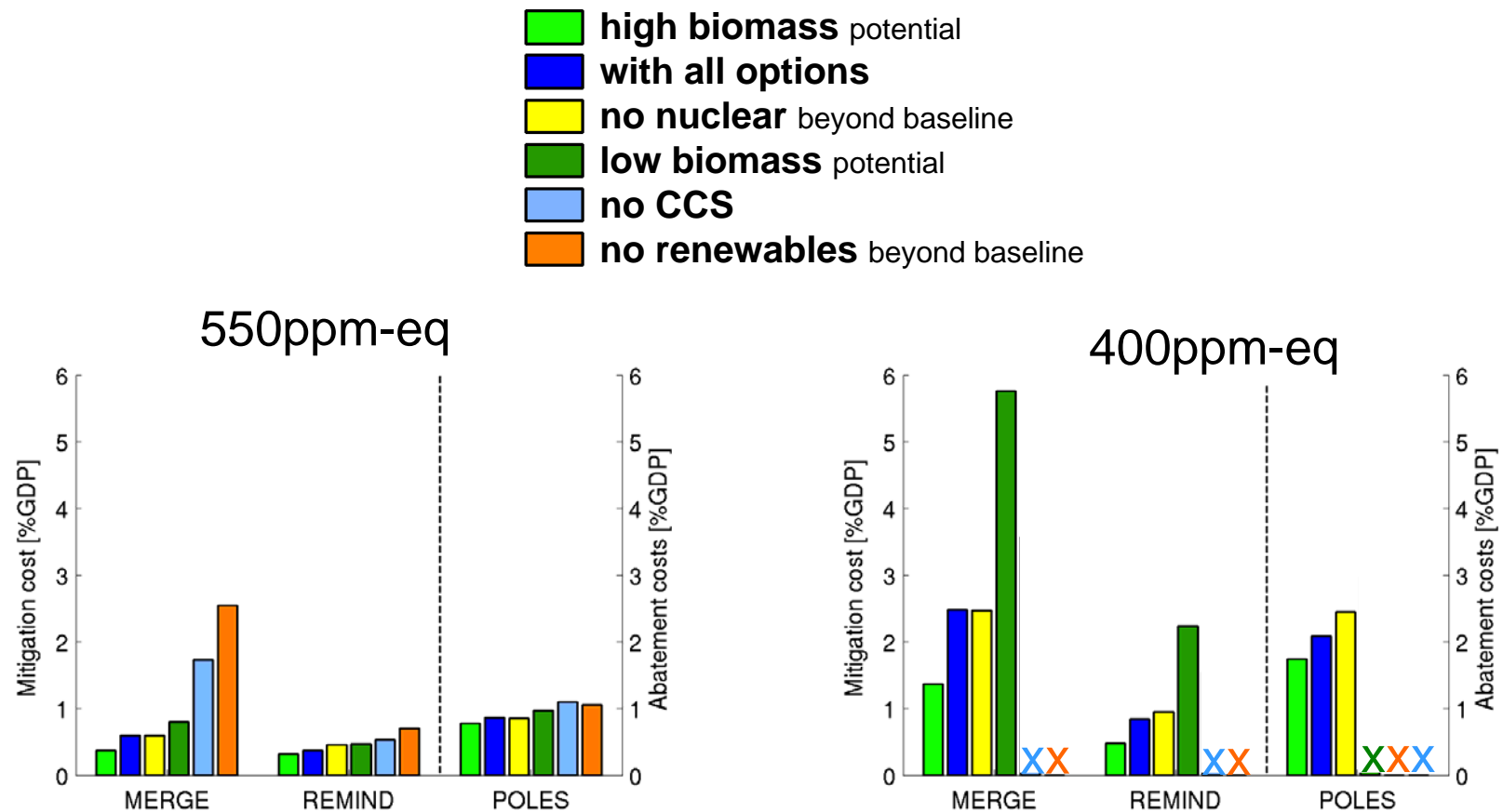
Integrated Risk and Uncertainty Assessment

Stakeholders want the *whole range* of scenarios to be assessed.

Risk and Uncertainty need to be broadly characterized, and must comprise the following elements:

- 1) Description of the space of possible outcomes
- 2) Assessment and characterization of outcomes in terms of:
 - Cost
 - Risk profile
 - Barriers
- 3) Attachment of likelihoods

Risk of Low Stabilization Scenarios



- ➔ 400 ppm not achievable without CCS nor without extension of renewables
- ➔ Biomass potential determines the mitigation costs of low stabilization
- ➔ nuclear is not important beyond its (high) use in the baseline

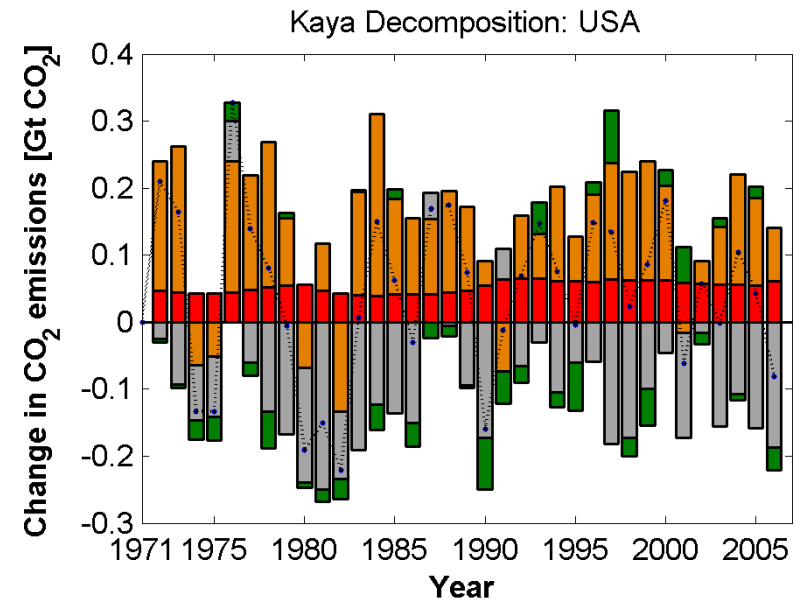
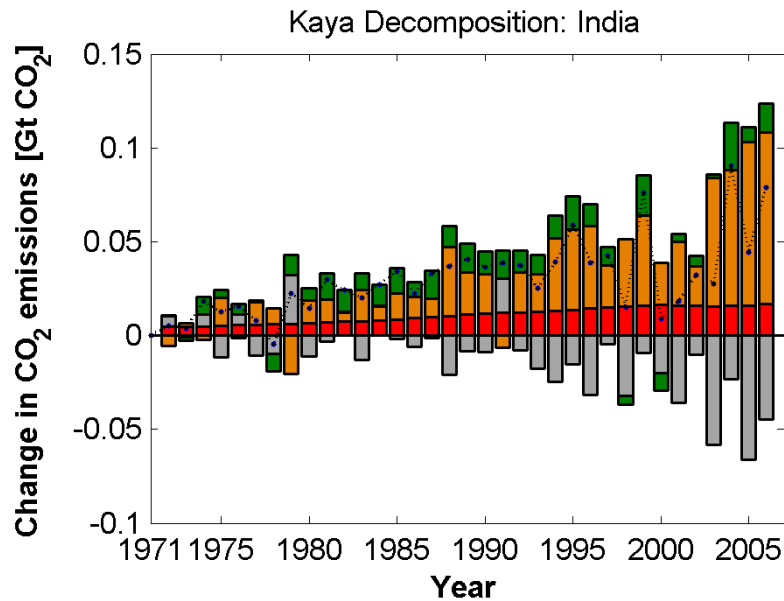
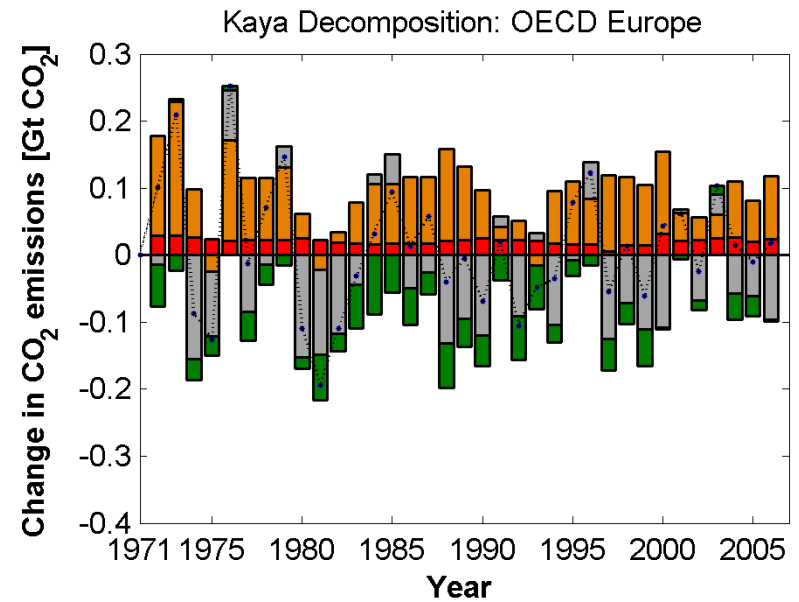
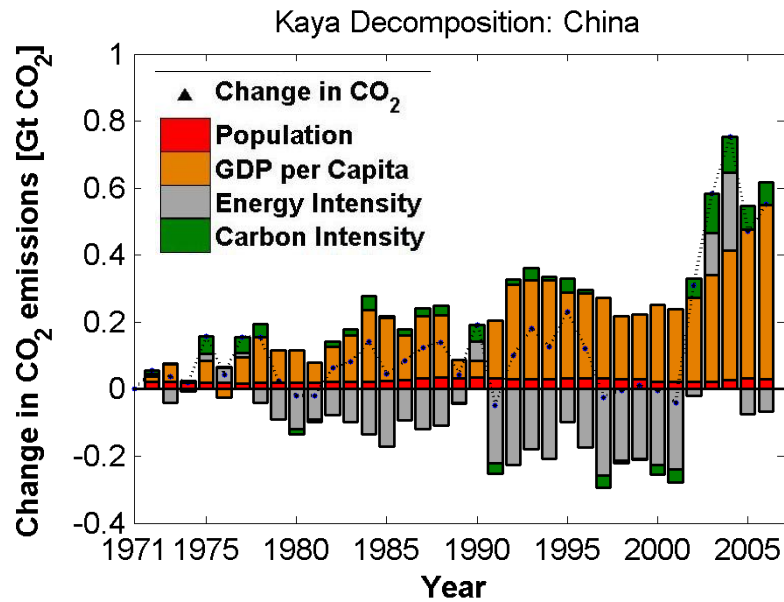
Integrated Risk and Uncertainty Assessment

Can a framework be developed for integrating risk and uncertainty assessments, that is flexible and qualitative enough to be adopted by all IPCC Working Groups?

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Carbonisation Pathways



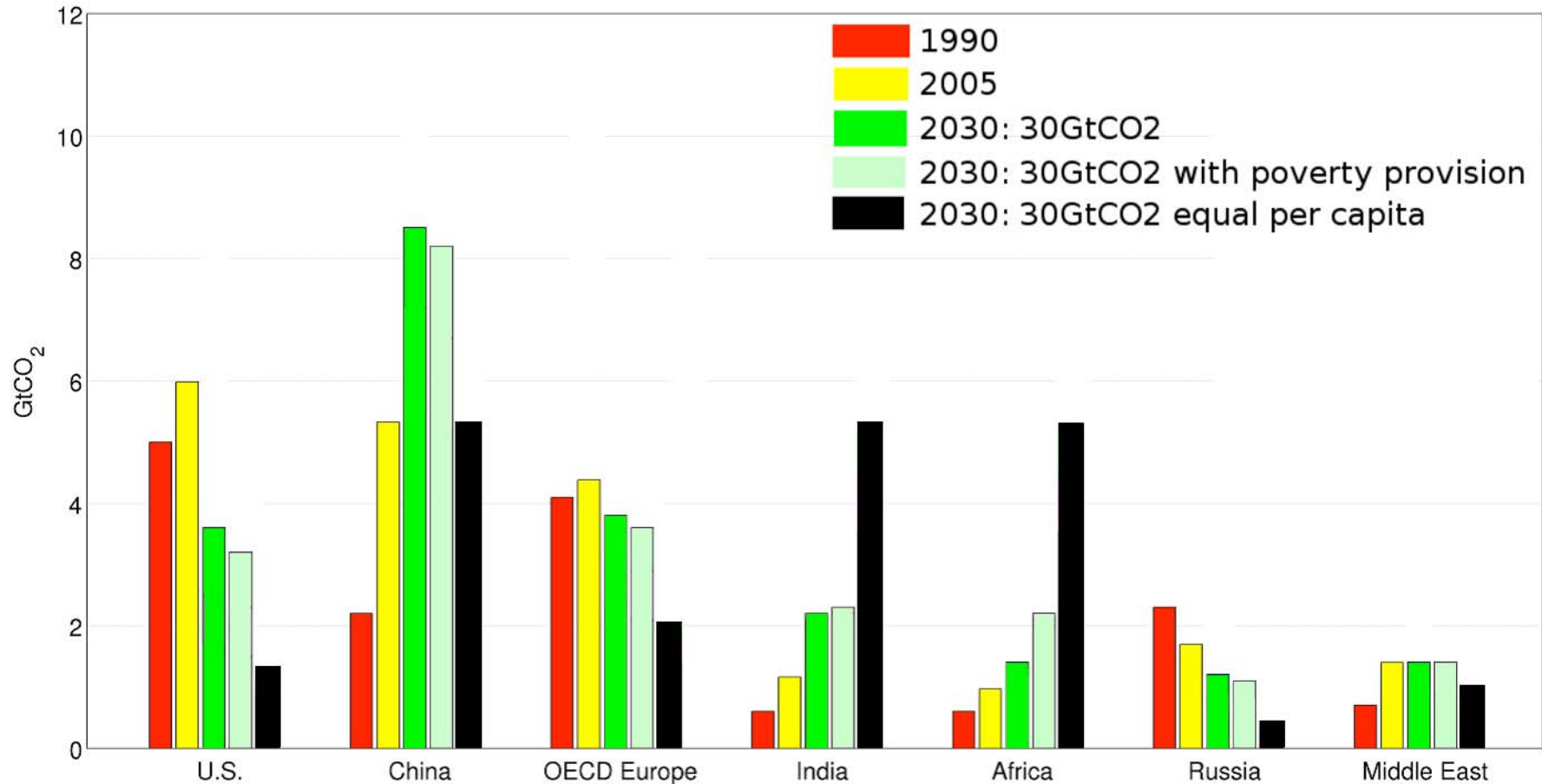
Crucial Aspects for AR5

- Integrating Adaptation and Mitigation as response strategies to climate change
- Identifying adaptive and mitigative capacities at the regional level
- Exploring synergies and trade-offs between M&A and the Millennium Development goals
- Embedding M&A in Sustainable Development

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Allocation of Emission Rights



When emission rights are allocated according to individuals rather than nations, countries with a larger proportion of high emitters do more, and those with similar emission profiles have similar commitments.

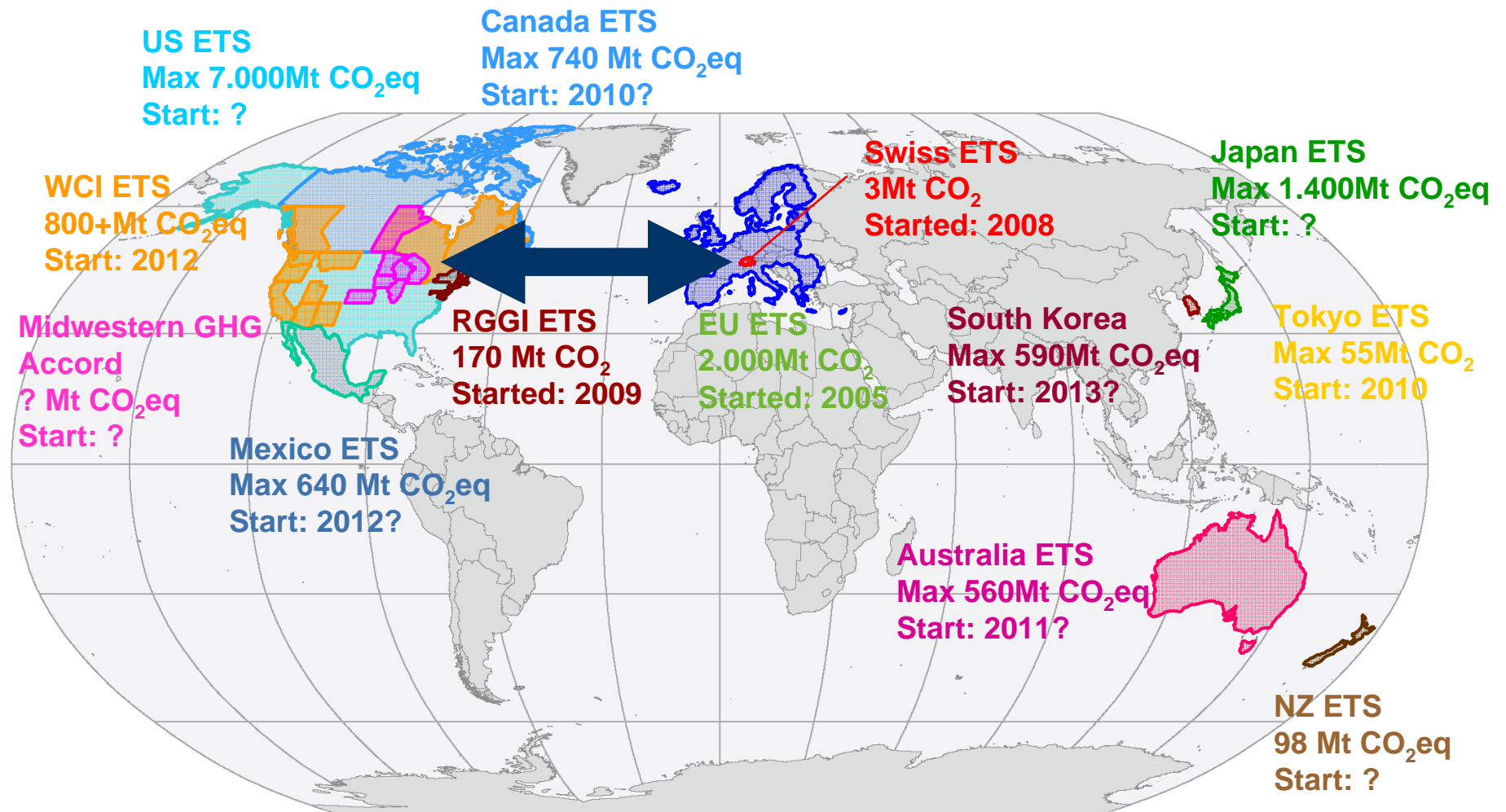
Further Aspects that Need to be Addressed

- Life Style Changes
- Impacts of CC response strategies on income groups, countries, regions
- Inter- and intragenerational justice of mitigation and adaptation measures (e.g. distribution of mitigation and adaptation costs)

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Domestic Cap and Trade: Linking Emerging CO₂-Markets



“The European Commission is preparing to call on the United States to create a trans-Atlantic system of carbon trading”

Complements to the Carbon Market

- Standards, Global Funds
- Taxes
- Lessons from the current financial crisis for designing policy instruments
- Assessment of new knowledge on the implementation of other multilateral environmental agreements, as far as it is relevant for mitigation and adaptation
- Impact of One-Sided Trade (CDM, JI) on Carbon Markets

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- **Possible Structure of AR5 WGIII**

Cross-Cutting Issues and Their Relevance for WG III

Cross-Cutting Issues	Relevance for WG 3
Hydrological Cycle	+
Carbon cycle/ocean.acid.	++
Regional Aspects	+++
Risk/Uncertainty	+++
M&A&SD	+++
Costing	+++
Ice Sheet	-

A Possible Structure of AR5 WGIII

1) Stabilization Targets, Impacts and Costs

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2) Technology, Sectors and Infrastructure

3) Integrated Risk and Uncertainty Assessment

4) Regional Sustainable Development

5) Equity and Fairness

6) International Cooperation and Global Finance