

ipcc

INTERGOVERNMENTAL PANEL ON climate change



The Mitigation of Climate Change New Challenges for AR 5

CCI/IA Workshop, Snowmass, July 31st, 2009

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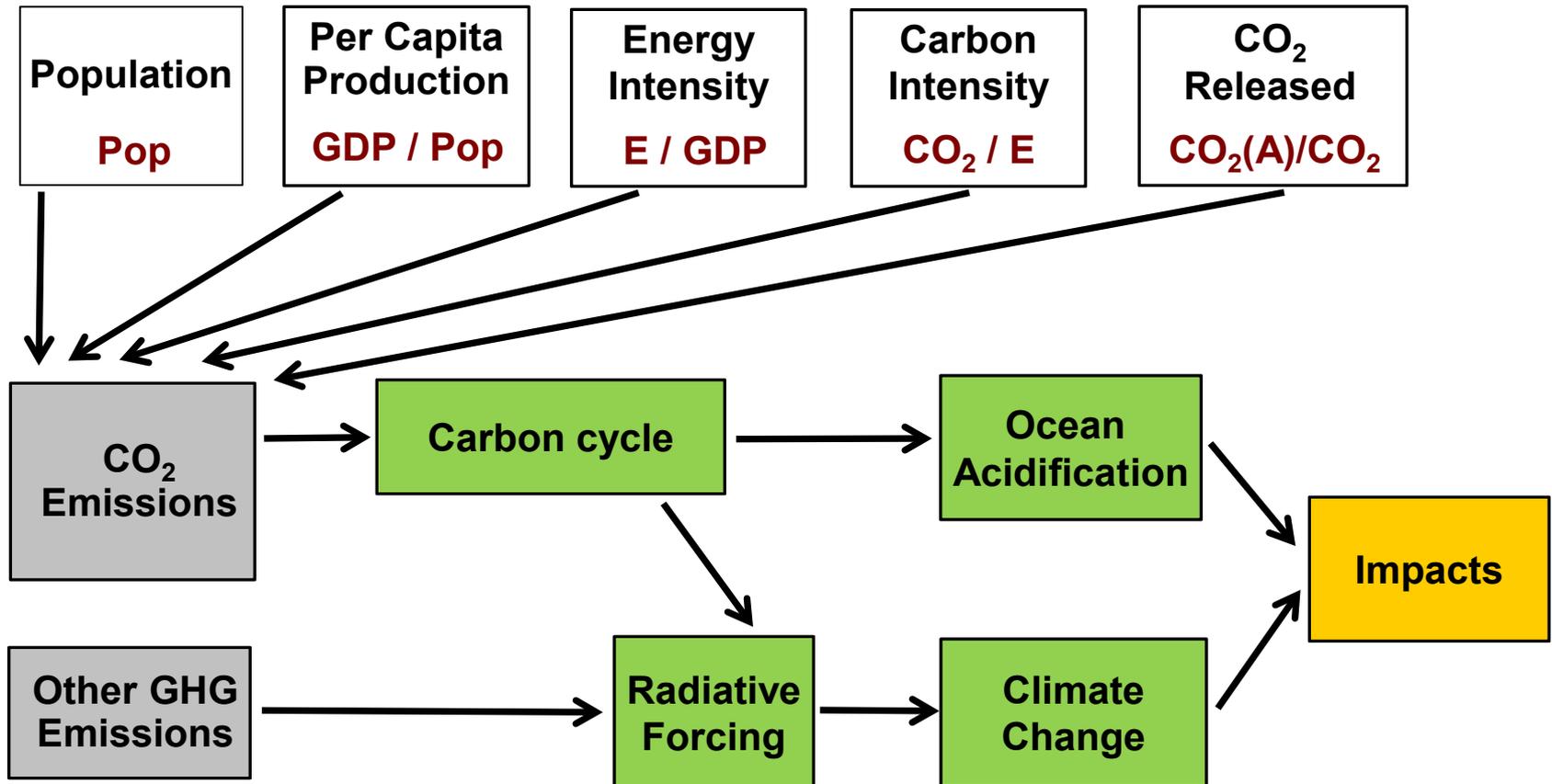
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- Proposed Structure of AR5

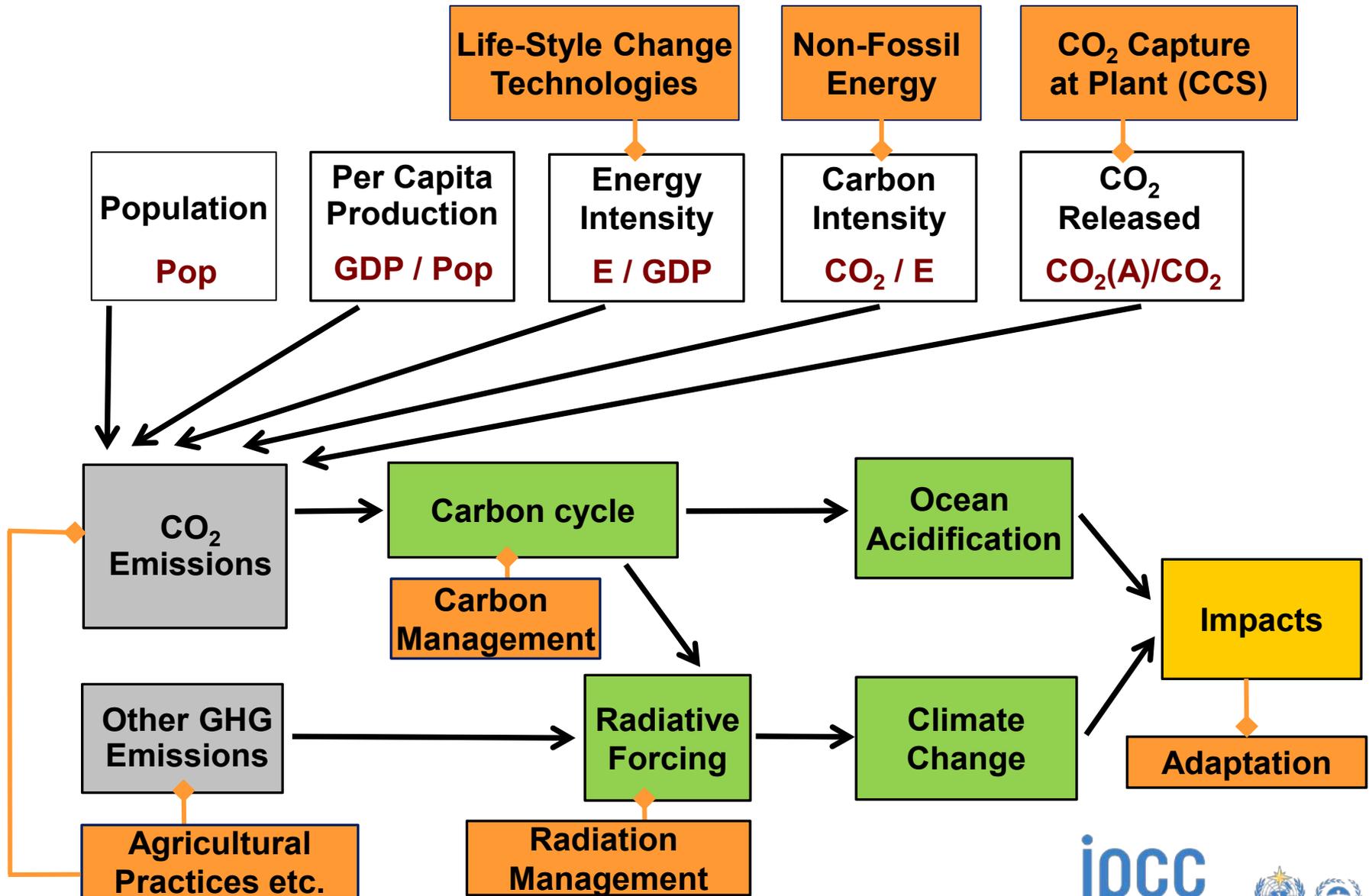
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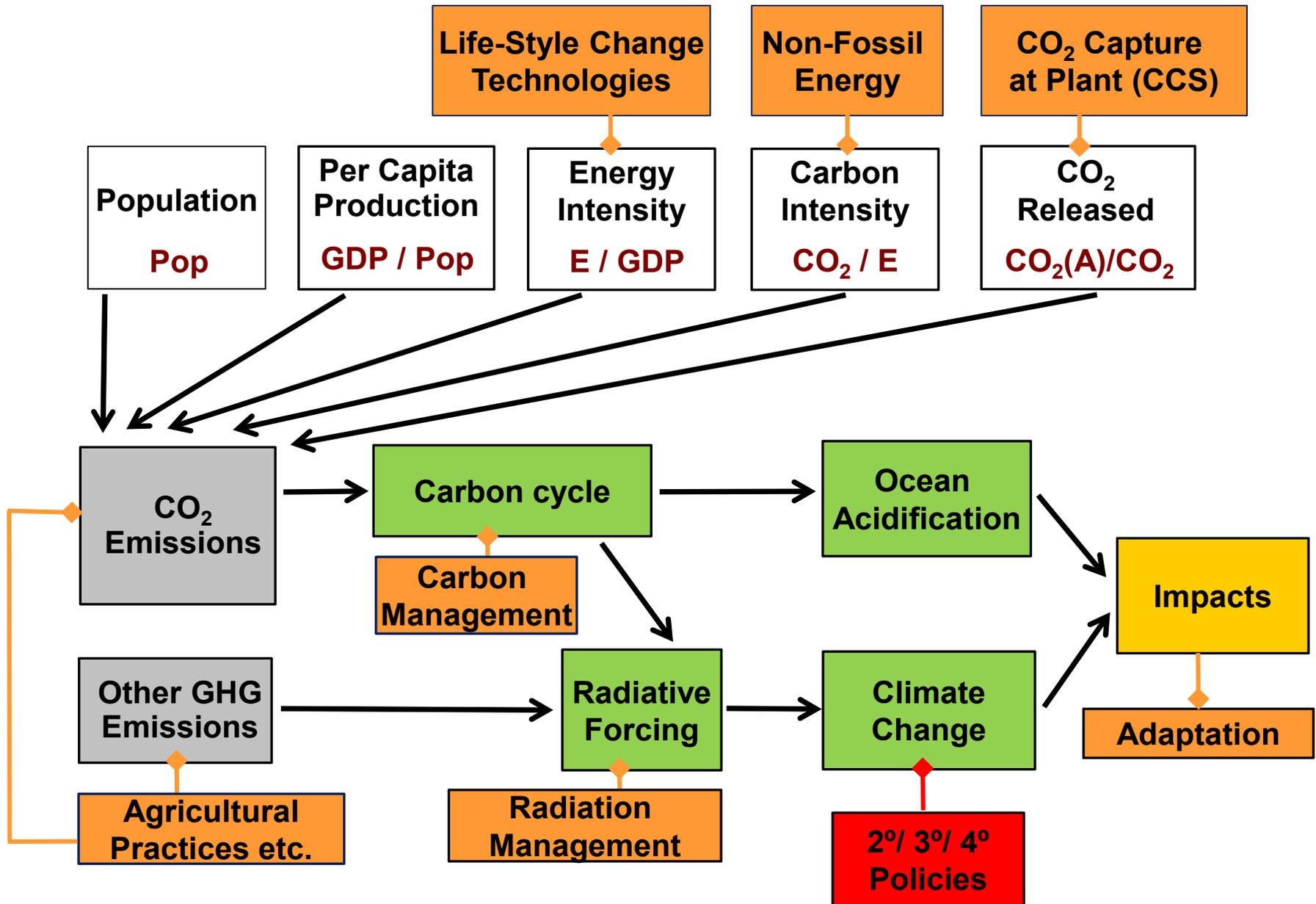
The Task of WG III



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
- Multiple fat tail distributions in the solution space
- Scenario Analysis

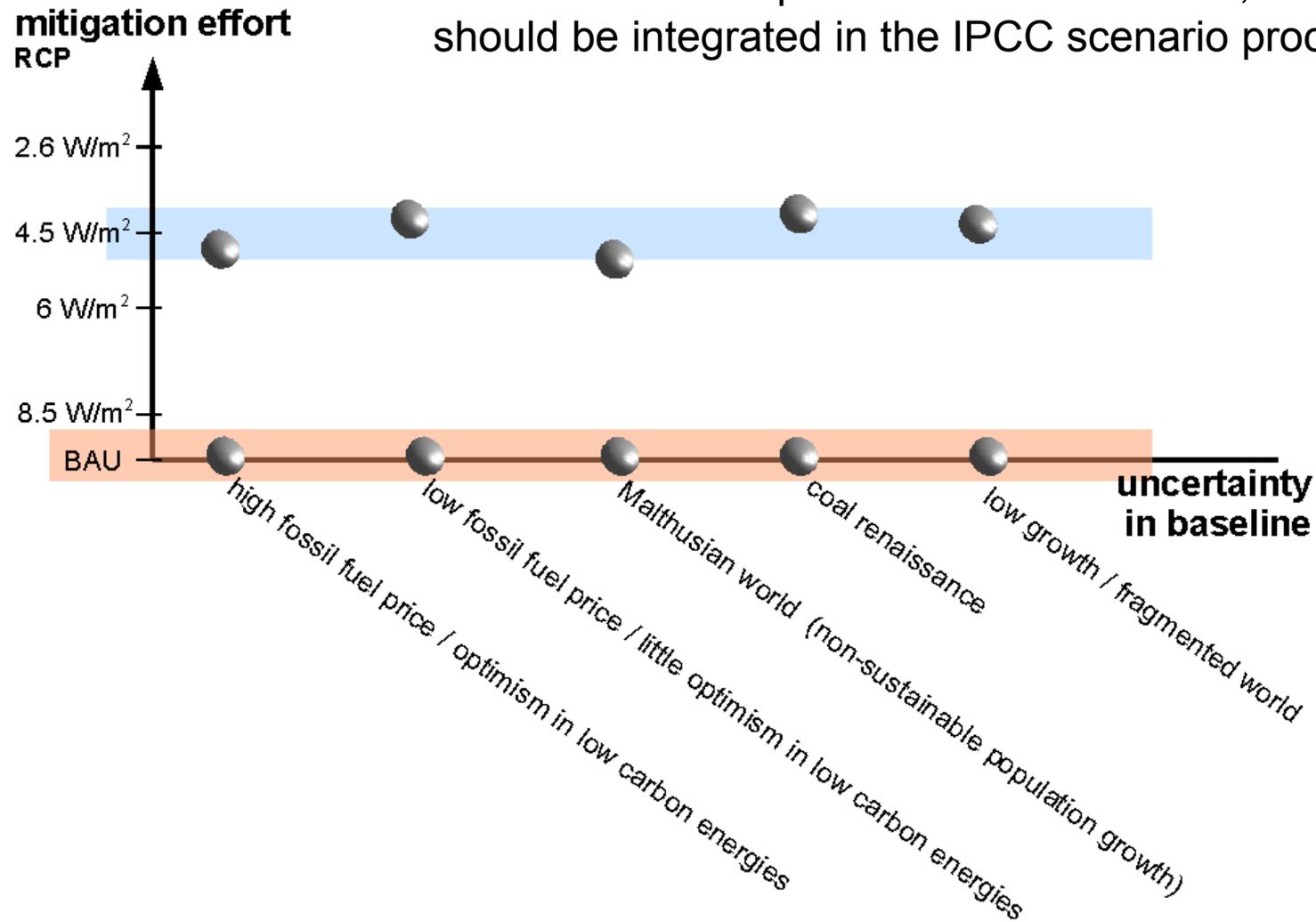
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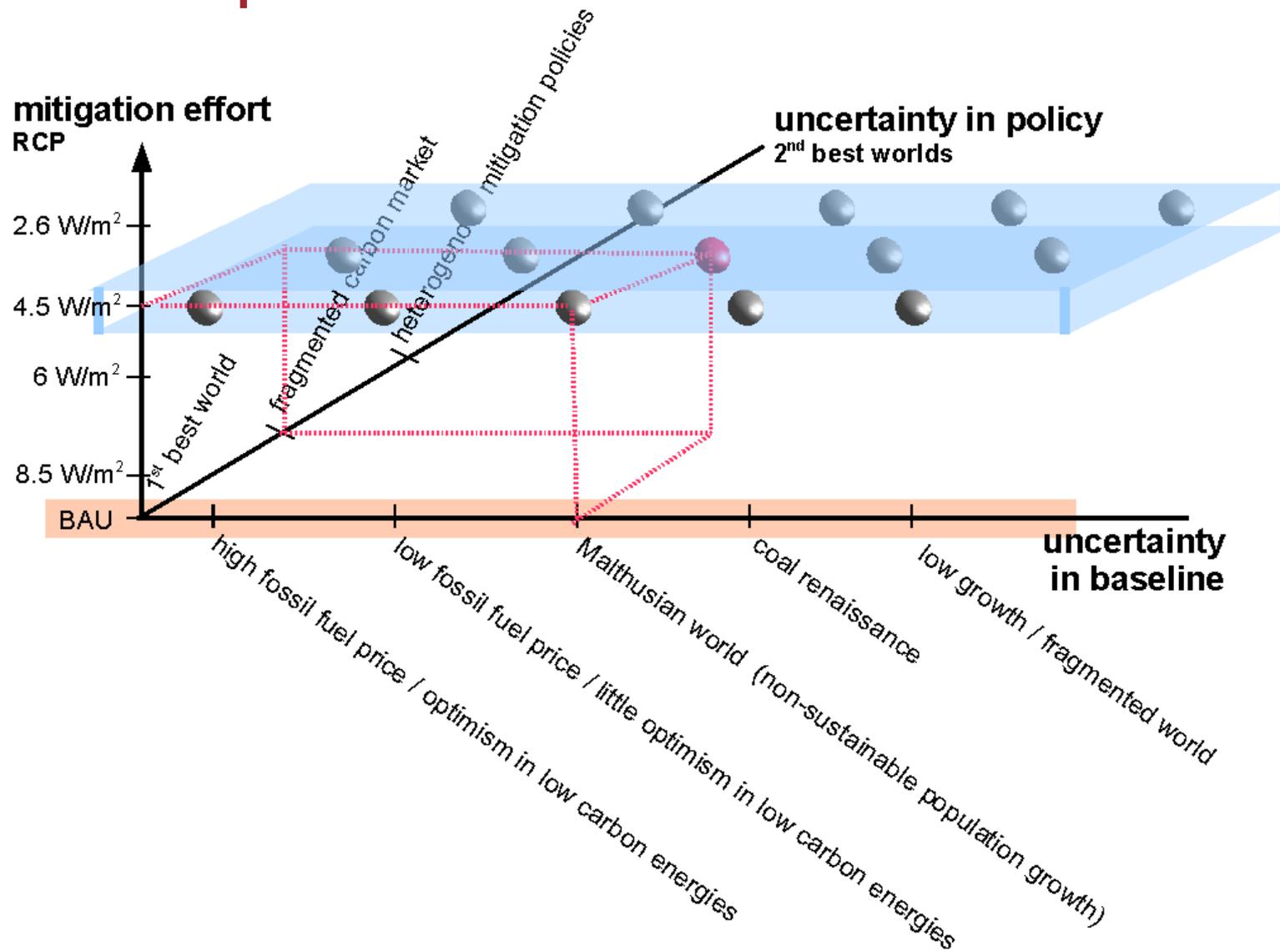
Comparison of Scenarios in AR5

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

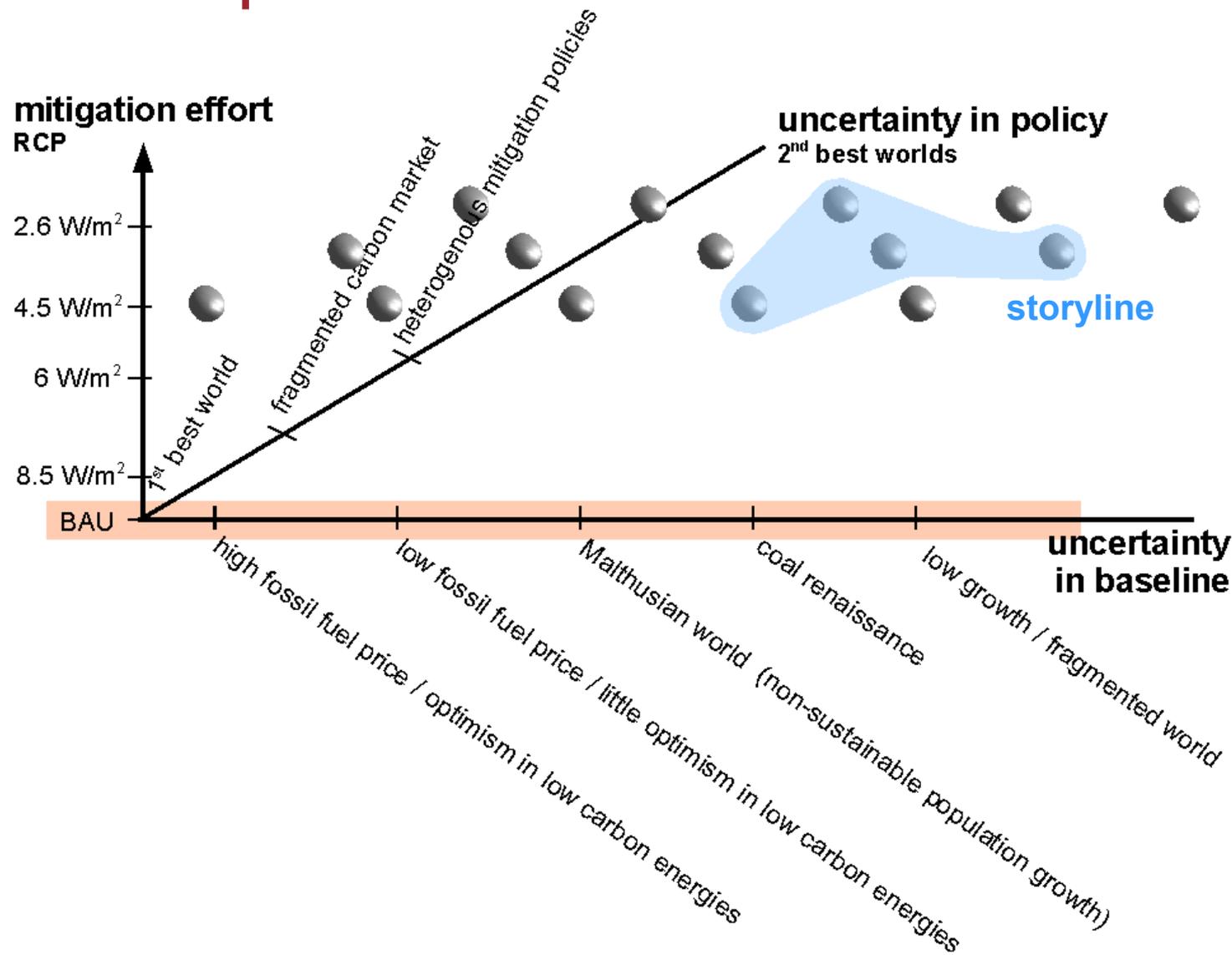


Baseline and Policy Scenario should be self-consistent

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.

Mitigation and Adaptation

- WG III intends to explore policy costs including the costs of action and non-action.
- Impacts have to be assessed and evaluated for different policy targets.
- Strong Interaction between WG II and WG III required.

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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.
- Better understanding of Coalition Formation with game-theoretic tools might be very helpful.
- Explicit understanding of expectation formation might have a strong impact on the results.

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Limited Availability of Technologies

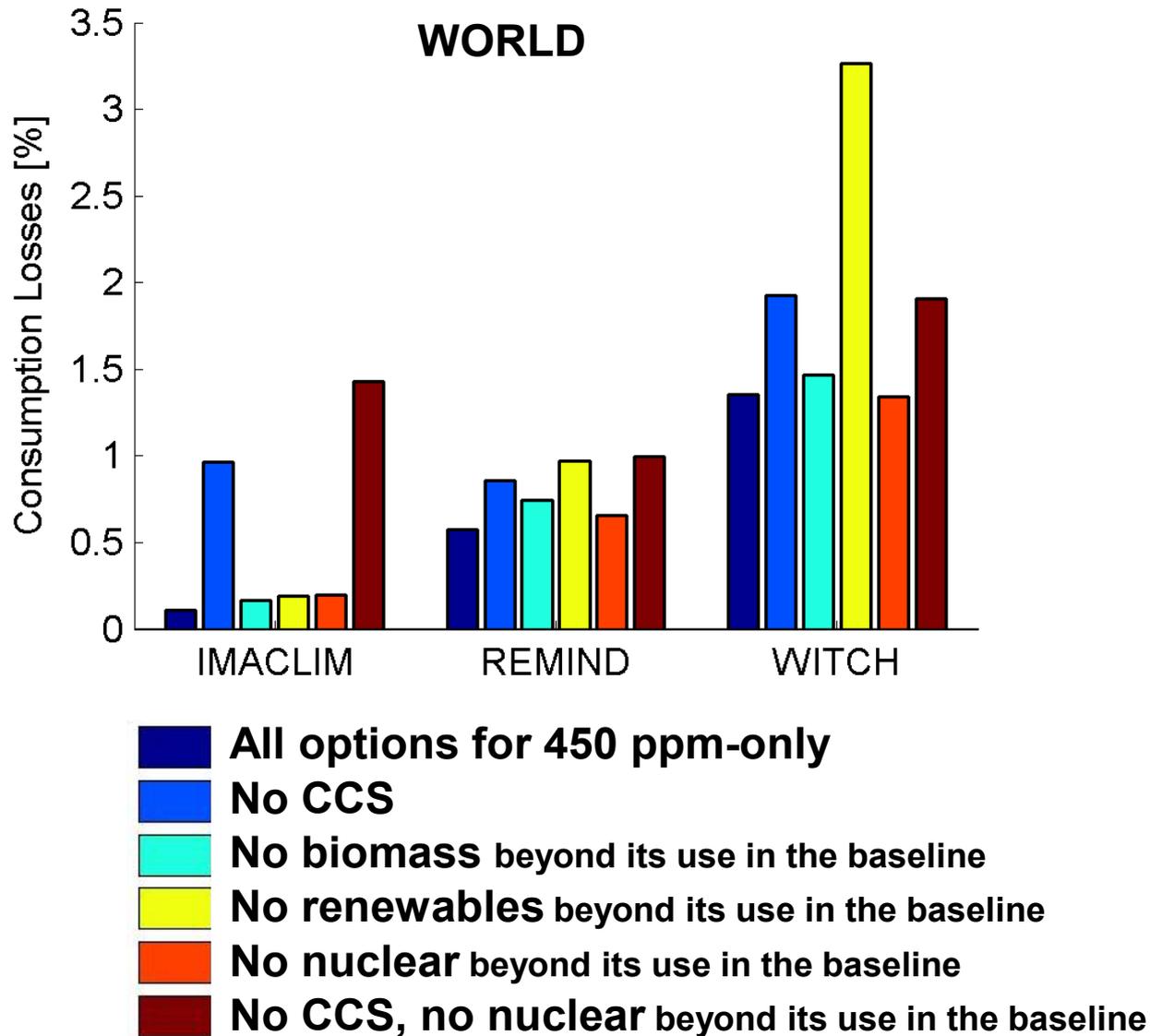
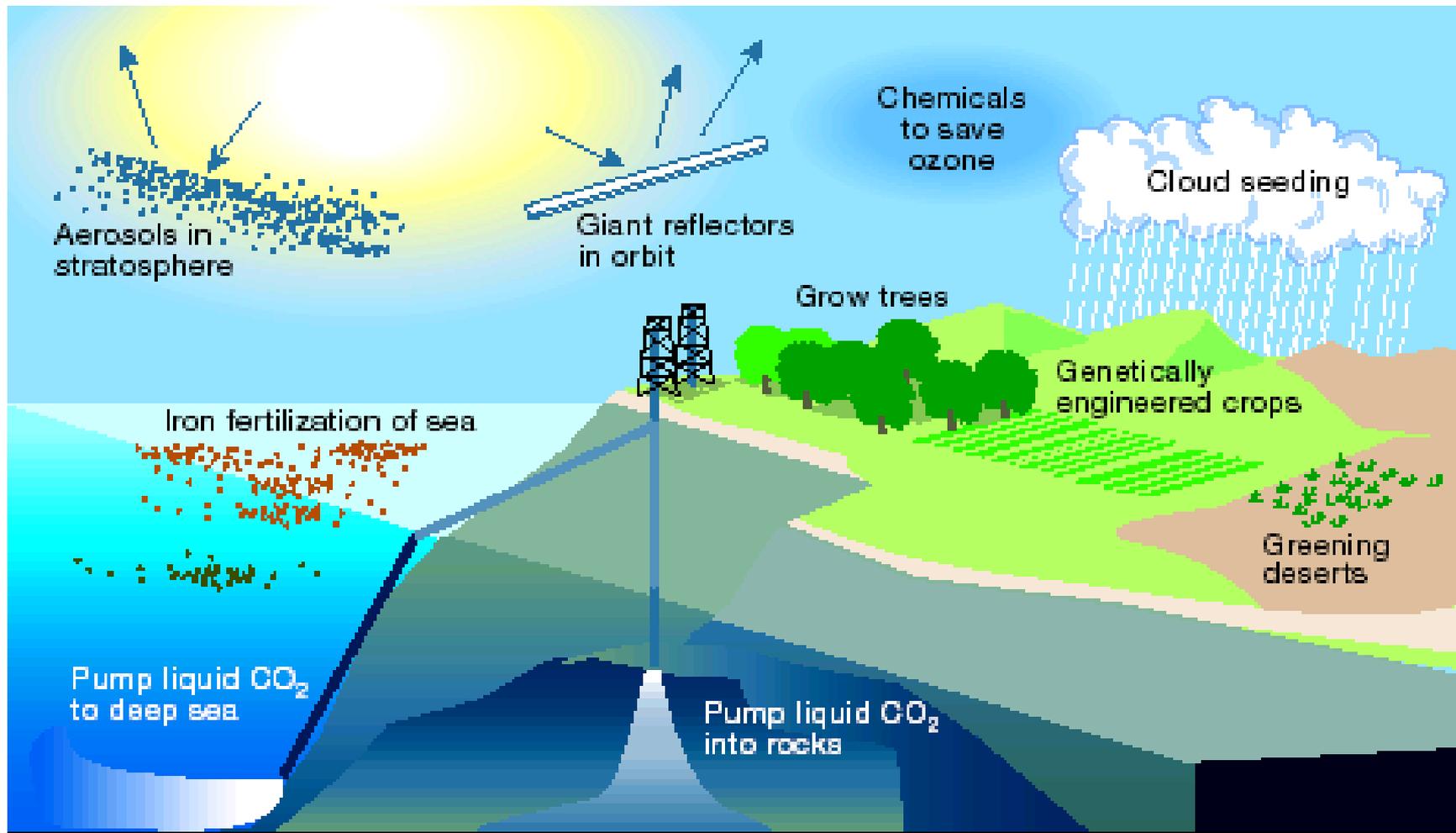


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Advanced Carbon Management & Direct Control of Radiative Balance

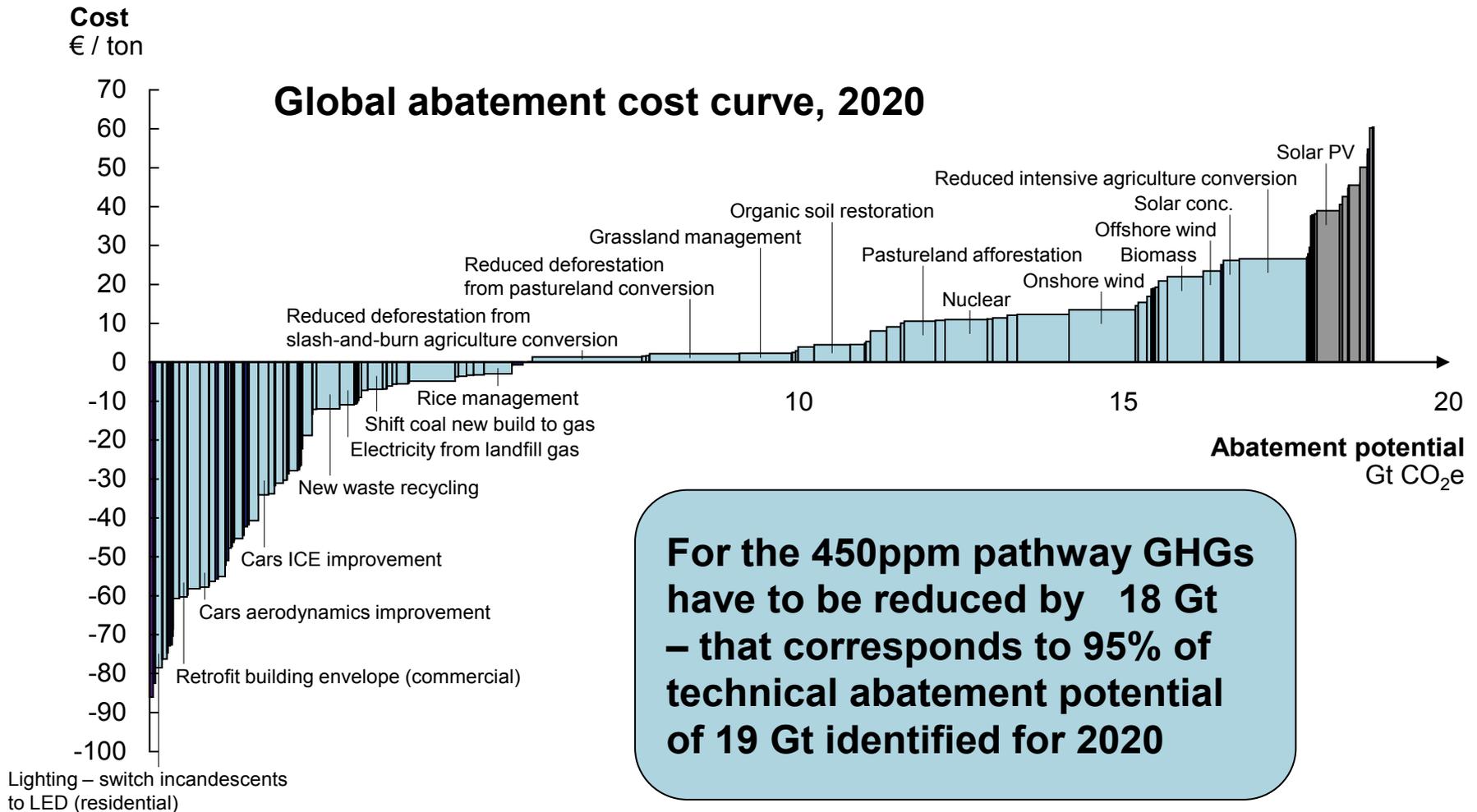


Schematic representation of various climate-engineering proposals (courtesy B. Matthews).

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Misleading Assessment of Technologies



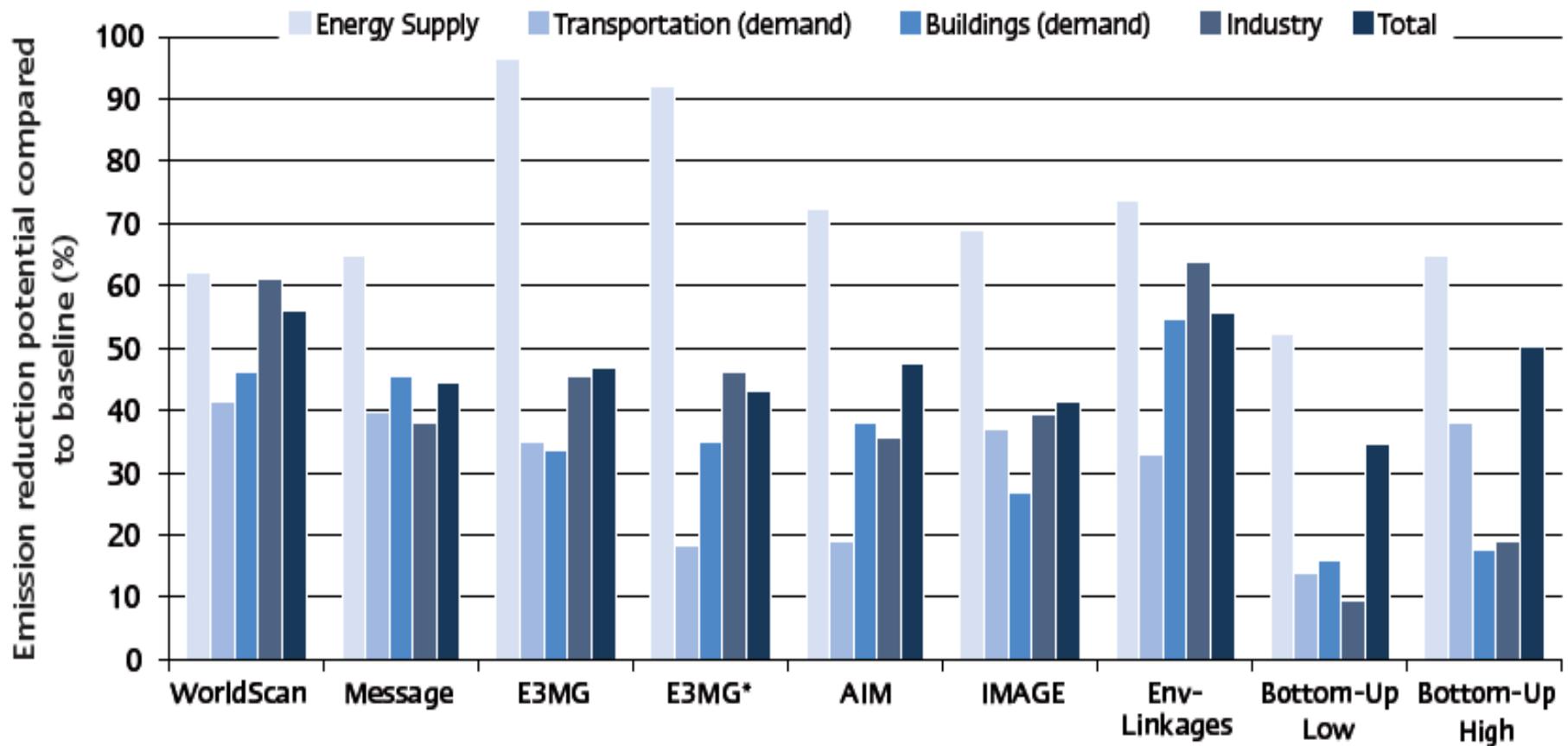
Special Report on Renewable Energy Sources (SRREN)

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

Comparing Bottom-up and Top-down Assessments

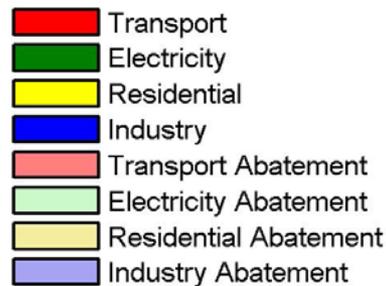
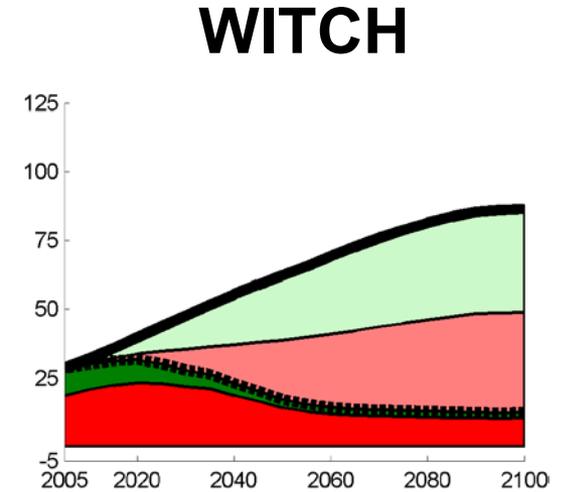
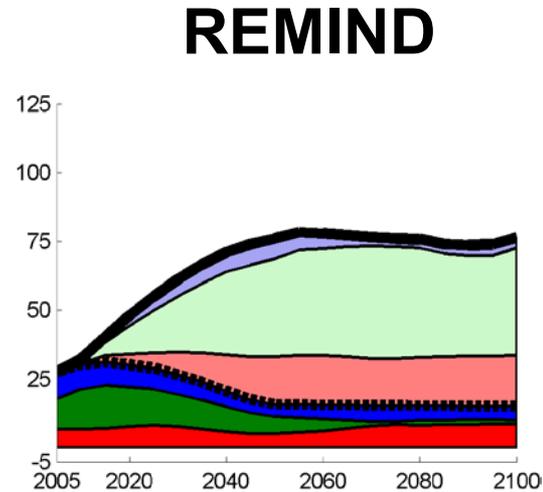
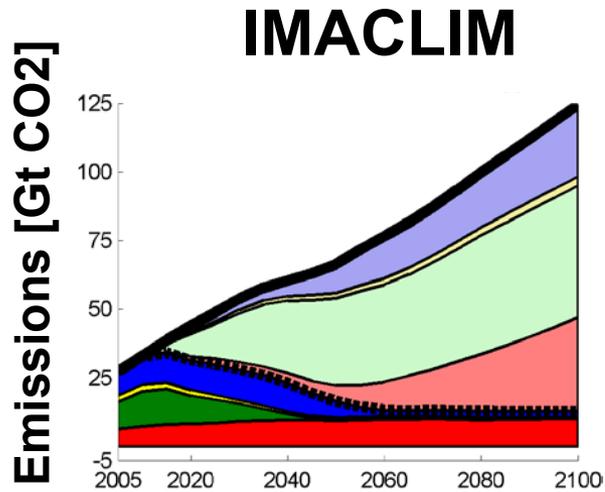
Relative emission mitigation potential per sector



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

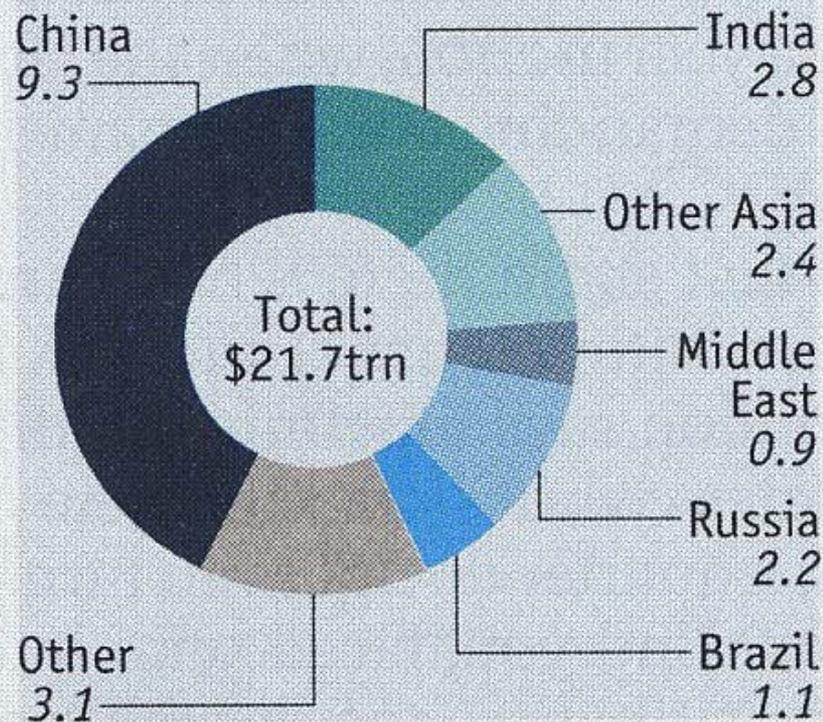
Dynamic Sectoral Wedges

450 ppm-CO₂



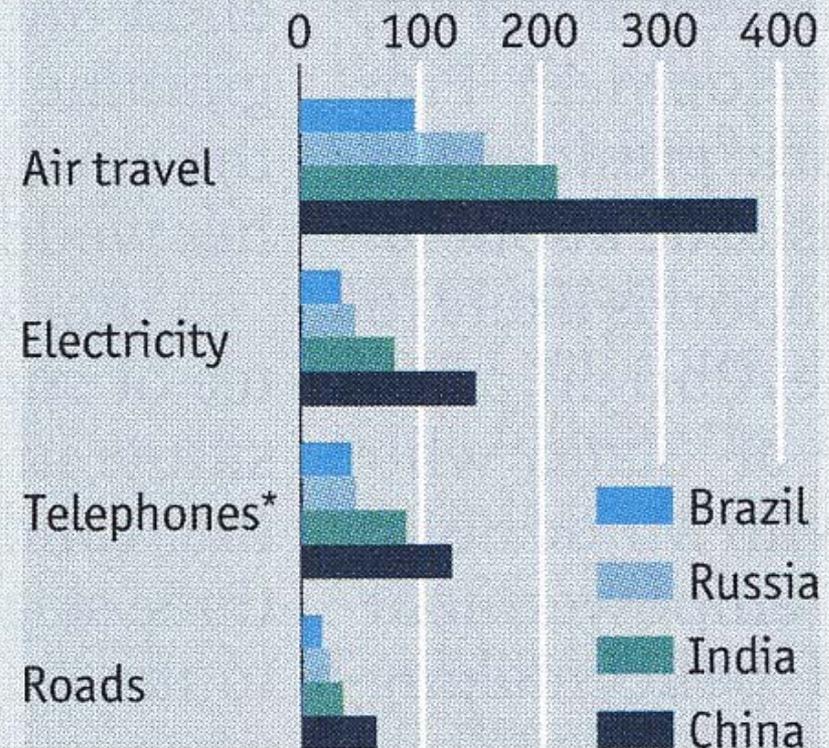
Infrastructure: a Bridge into the Future

Infrastructure investment in emerging markets
2008-17 forecast, \$trn



Sources: Morgan Stanley; Goldman Sachs; *The Economist*

Growth in infrastructure demand
2008-17 forecast, %



*Fixed and mobile

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.

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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 (e.g. multiple fat tail distributions)
 - Barriers
- 3) Attachment of likelihoods

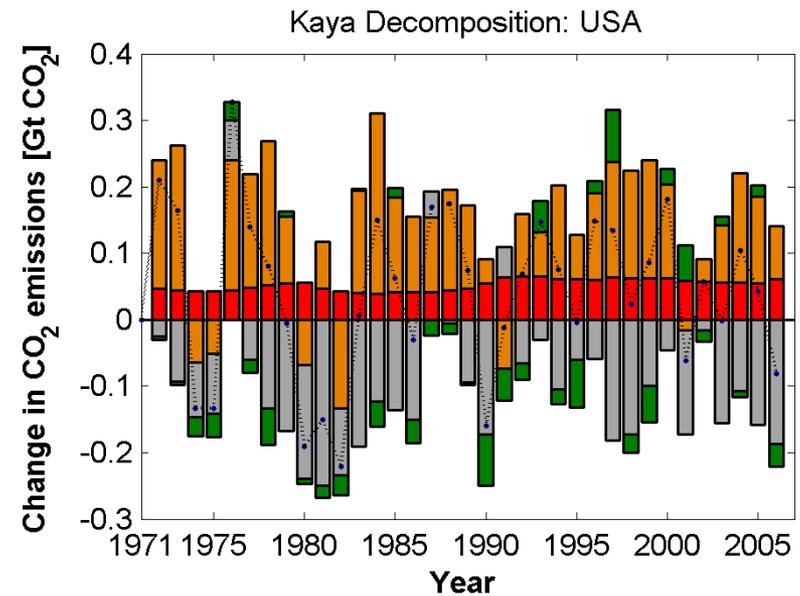
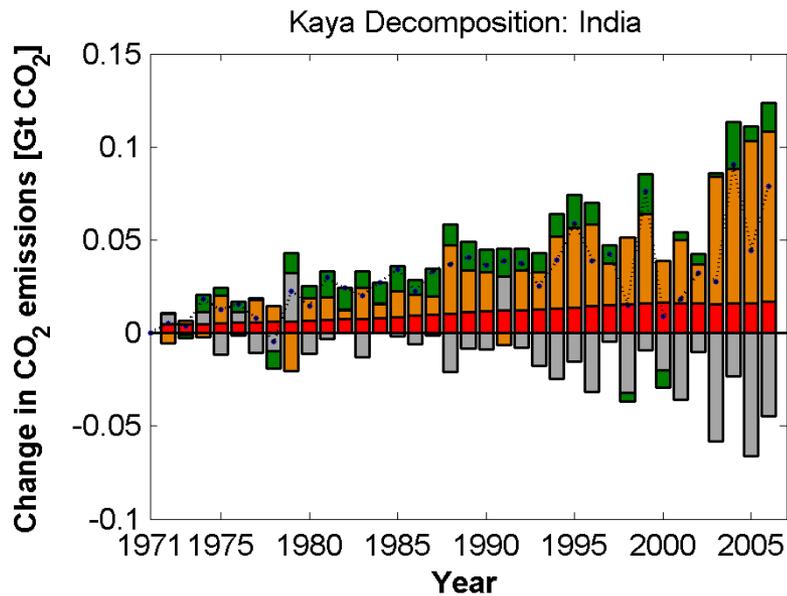
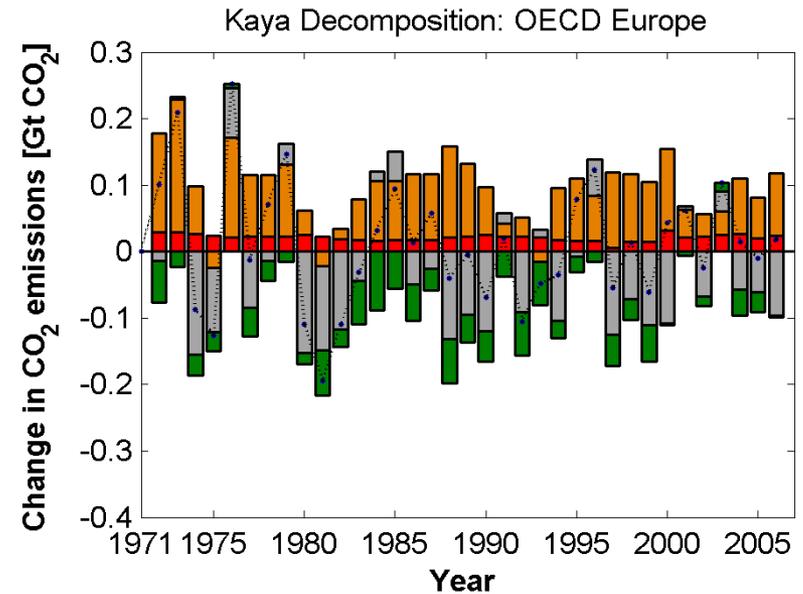
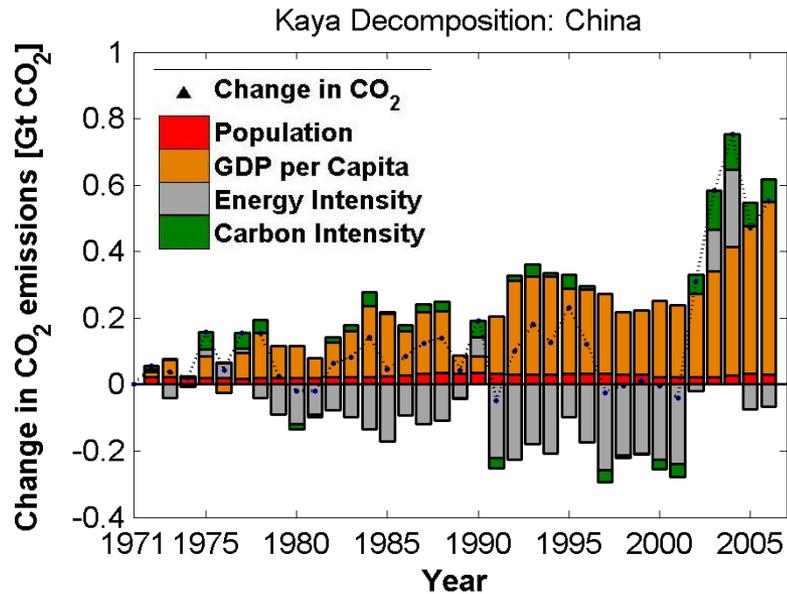
Integrated Risk and Uncertainty Assessment

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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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)

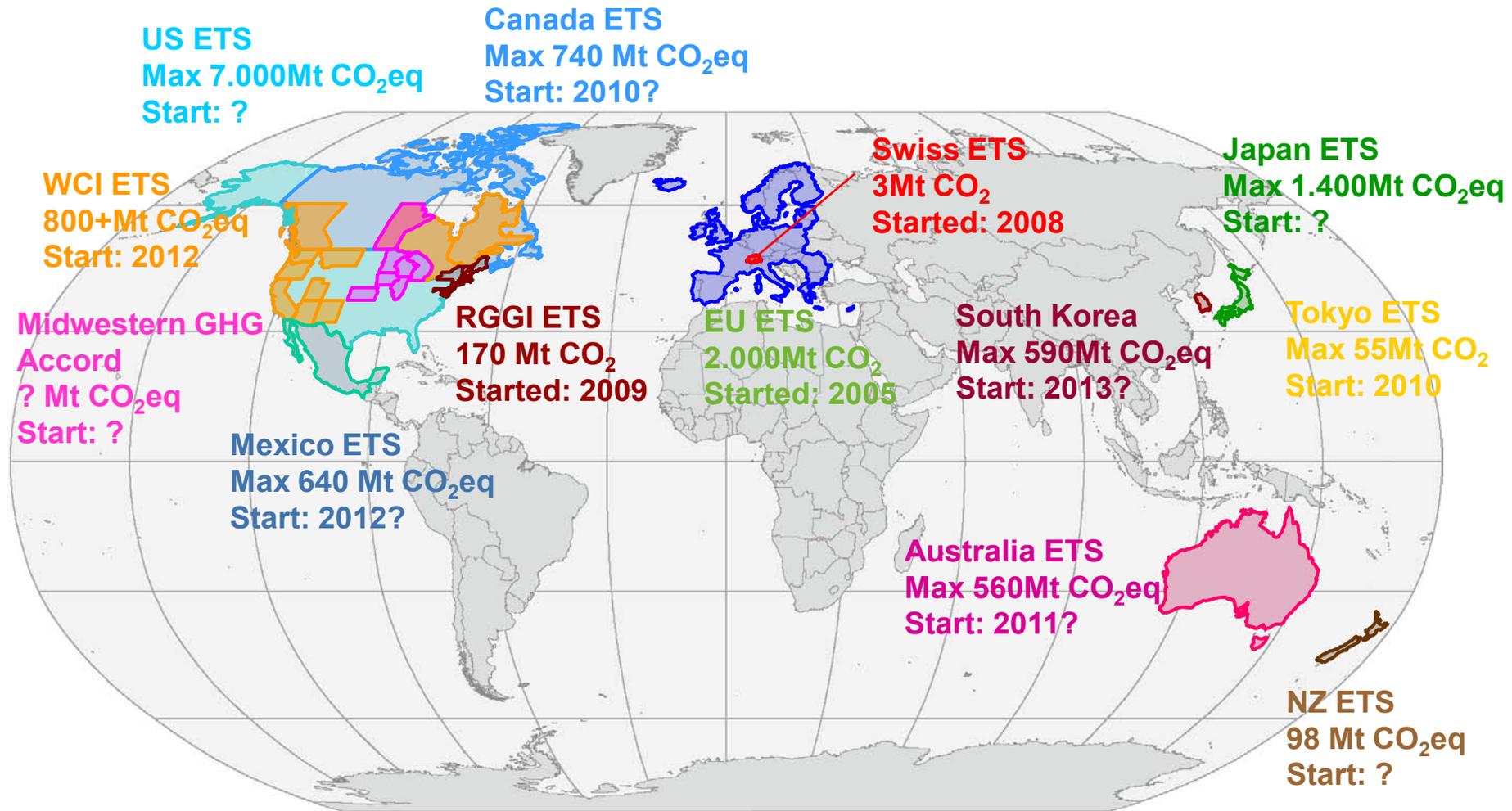
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Policies and Finance

- International Cooperation
- National Policies
- Sub-national Policies (e.g. Infrastructure Planning, Urban Design)
- Linkages between capital market, energy trade and permit markets
- Lessons from the current financial crisis for designing policy instruments

National Cap and Trade Systems and International Cooperation



Policies and Finance

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- **Proposed Structure of AR5 WGIII**

Outcome of AR5 Scoping Meeting

I. INTRODUCTION

1. Introductory Chapter

II. FRAMING ISSUES

2. Sustainable Development – Common and Specific Regional Aspects
3. Ethics & Equity & Climate Policy
4. Integrated Risk and Uncertainty Assessment of Climate Policy
5. Economic Analyses of Climate Policy

III. PATHWAYS FOR MITIGATING CLIMATE CHANGE

6. Mitigation Options and Pathways In Context
7. Energy Systems
8. Human Settlements - Transport and Buildings
9. Industry and Waste
10. Agriculture, Forestry and Other Land Use (AFOLU)
11. Transformation Pathways

IV. POLICIES AND INSTITUTIONS

12. International Cooperation, Agreements & Instruments
13. National Policies
14. Sub-national Policies

V. FINANCING TRANSFORMATIONS

15. Regional Development
16. Investment and Finance