



**Priorities for the IPCC Special Report on Renewable
Energy Sources & Climate Change
and the IPCC 5th Assessment Report (AR5):**
U.S. Department of Energy, February 3rd, 2010

Prof. Dr. Ottmar Edenhofer

Kristin Seyboth, Dr. Timm Zwickel



Table of Contents

- The IPCC
- IPCC SRREN
- IPCC 5th Assessment Report (AR5)
- IPCC Scenario Process
- Scenarios for WGIII: Living in 2nd-best Worlds

Table of Contents

- The IPCC
- IPCC SRREN
- IPCC 5th Assessment Report (AR5)
- IPCC Scenario Process
- Scenarios for WGIII: Living in 2nd-best Worlds

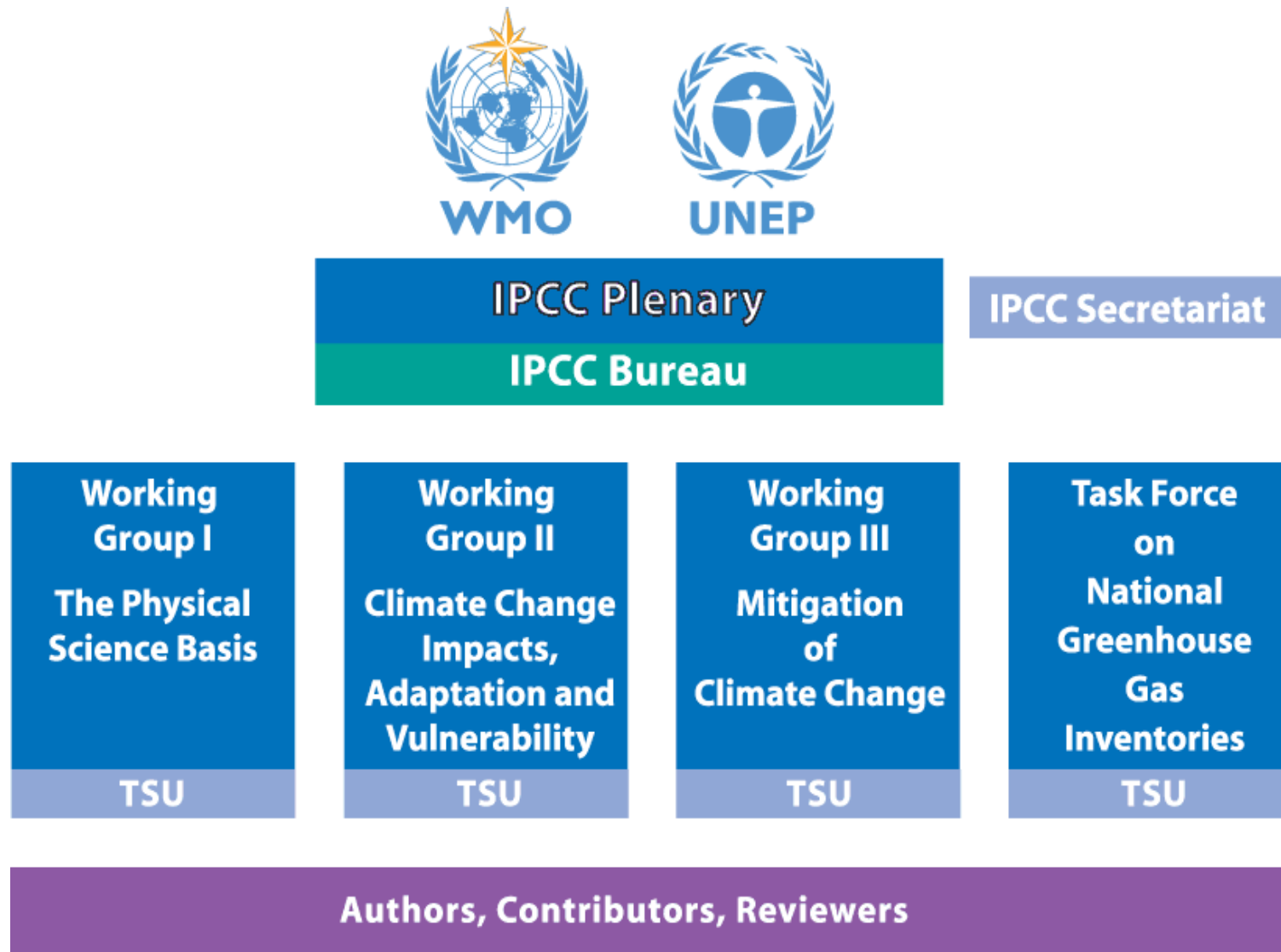
The Intergovernmental Panel on Climate Change (IPCC)

The IPCC is the leading body for the assessment of climate change, established by the [United Nations Environment Programme](#) (UNEP) and the [World Meteorological Organization](#) (WMO) to provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences.



In 2007 the IPCC together with Al Gore were awarded the Nobel Peace Prize.

The Structure of the IPCC

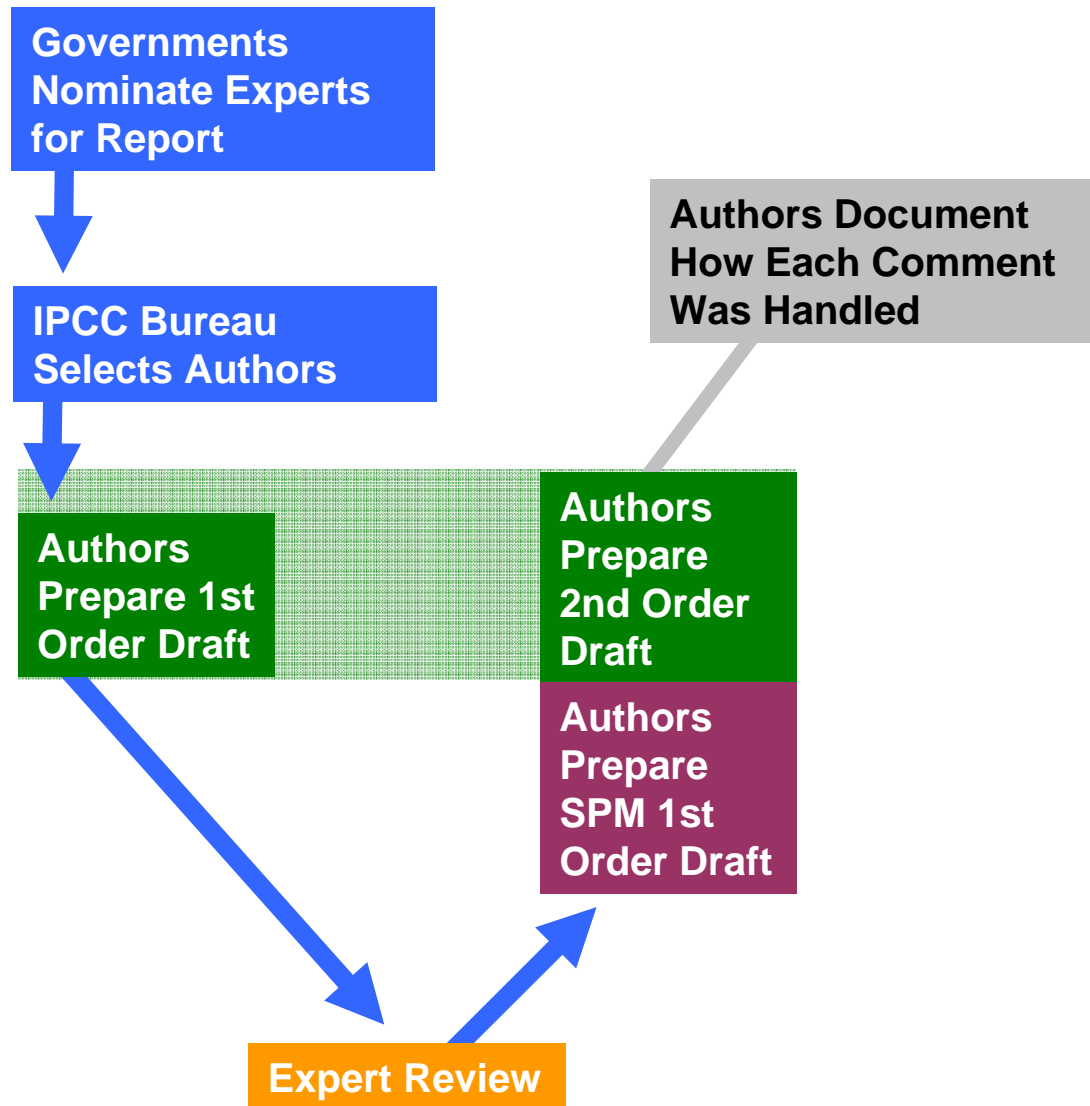


The Role of the IPCC

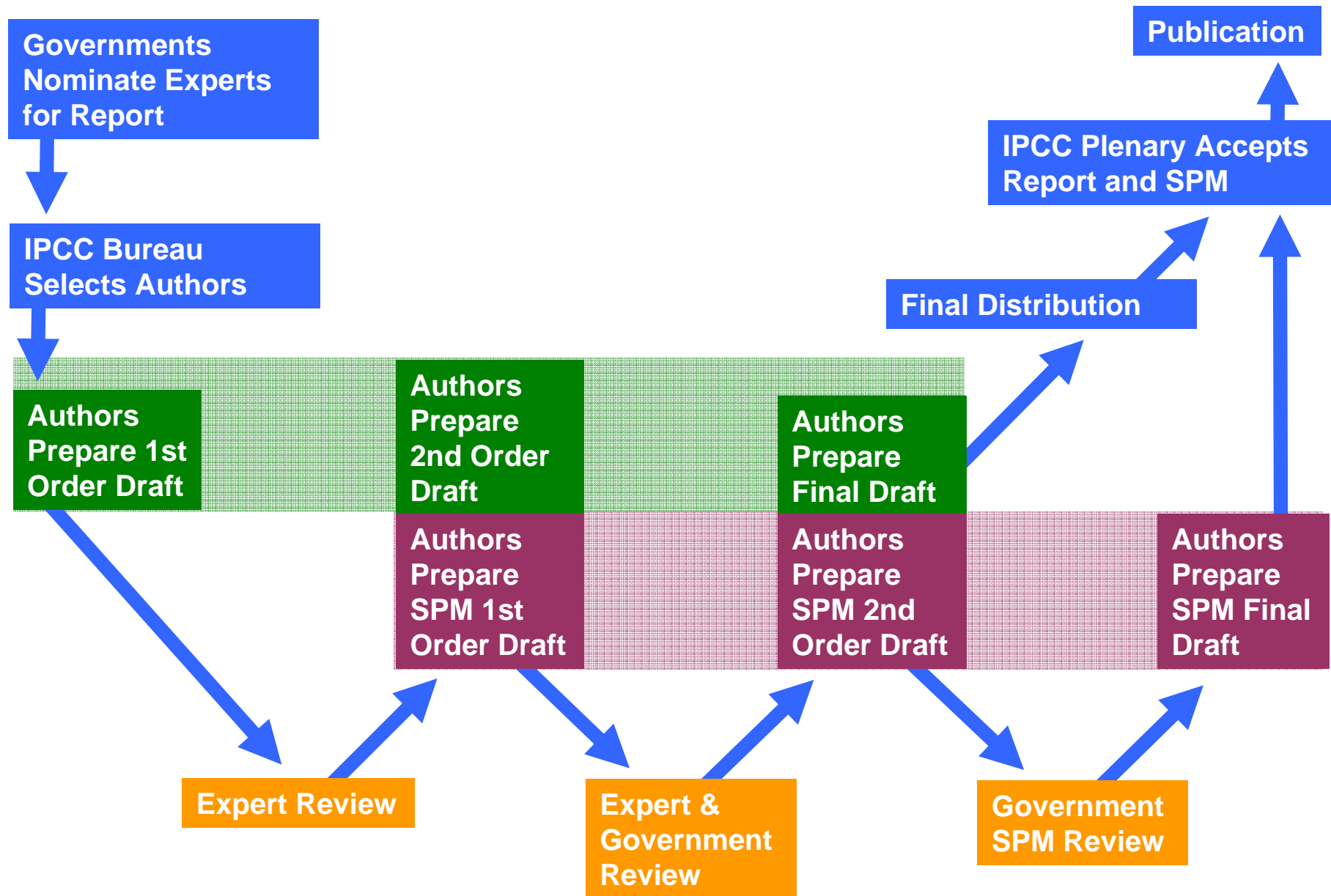
IPCC is an **honest broker** between experts and decision makers in business, politics and civil society.

- Exploring opportunities and synergies
- Making trade-offs explicit
- Identifying knowledge gaps
- Provide insights how policy instruments and incentives could be designed.

Procedure for Creating an IPCC Report



Procedure for Creating an IPCC Report

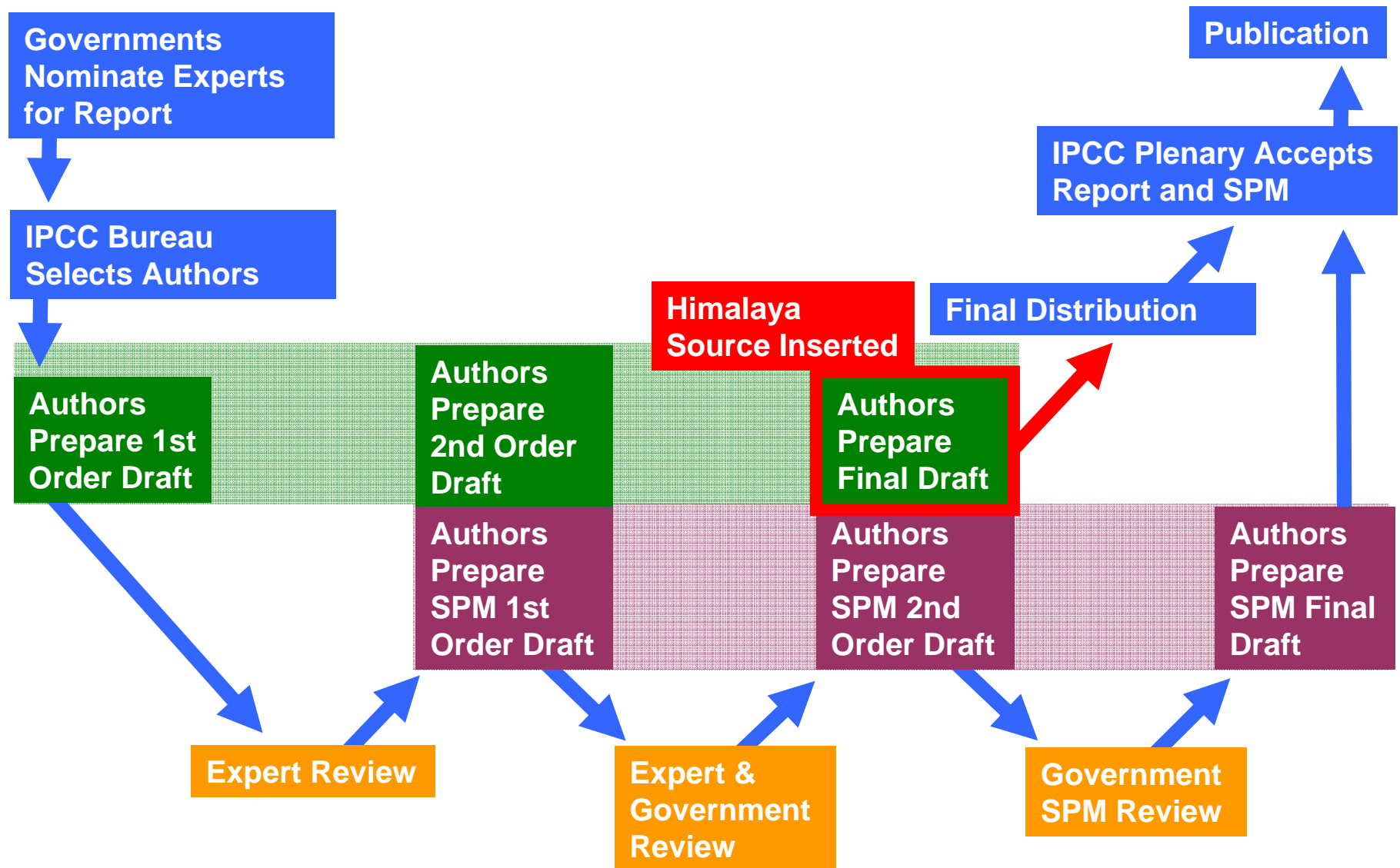


Himalaya Glacier Error

“Glaciers in the Himalaya are receding faster than in any other part of the world (see Table 10.9) and, if the present rate continues, the likelihood of them disappearing by the year 2035 and perhaps sooner is very high if the Earth keeps warming at the current rate. Its total area will likely shrink from the present 500,000 to 100,000 km² by the year 2035 (WWF, 2005).” (IPCC AR4 WG II, 10.6.2)

- WWF-reference itself was only inserted after SOD
- Authors did not work accurately (check source)
- Expert Reviewers did not comment on this paragraph (FOD, SOD)
- Government Review did comment on same issue in SPM
 - removed there – no feedback with Assessment Report 10.6.2

Procedure for Creating an IPCC Report



Error not part of SPM/TS & does not challenge core IPCC statements

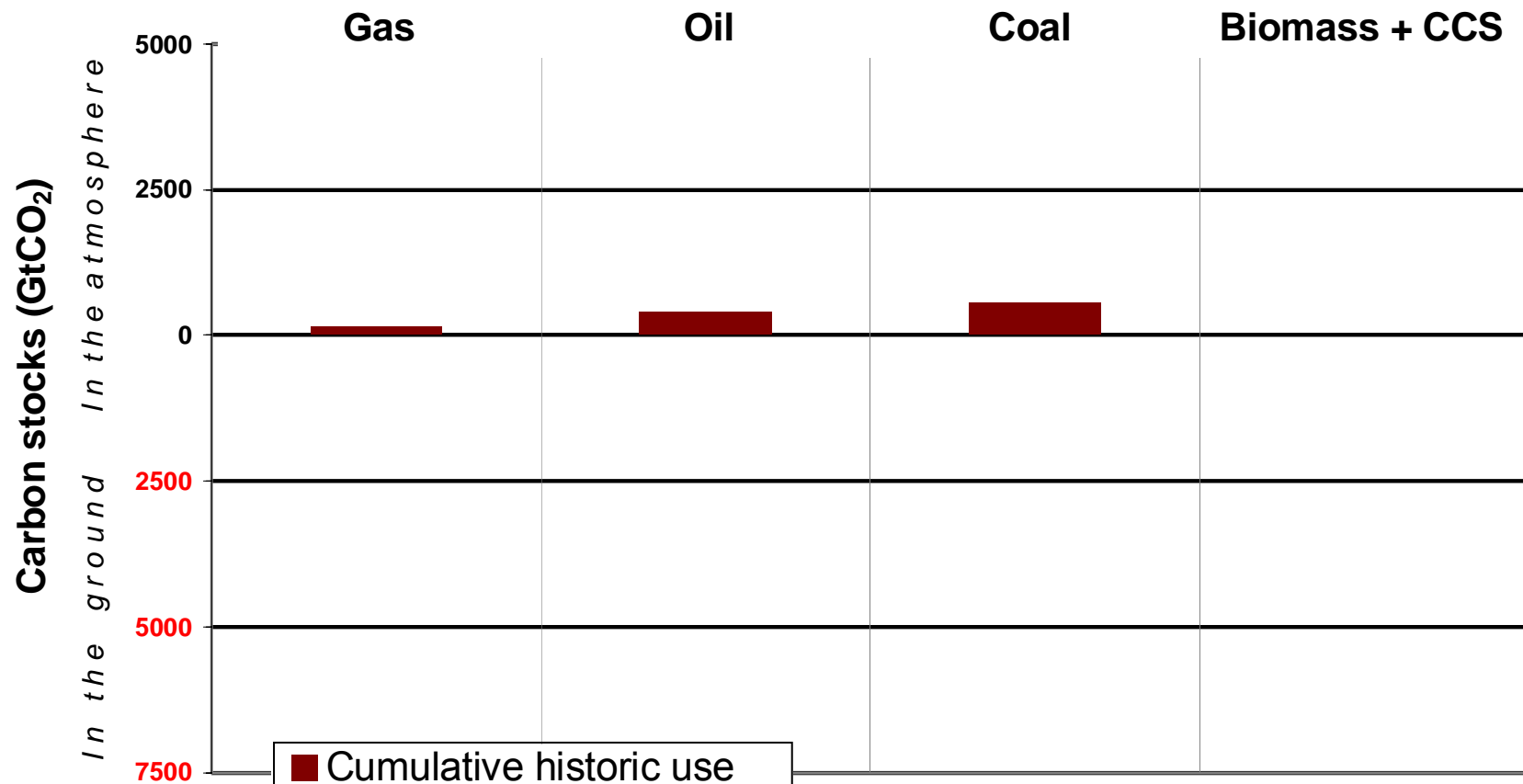
Steps the IPCC is Taking in Response

- Improving collaboration between IPCC Working Groups I, II and III.
- Improving the efficiency of the IPCC Review Process through more targeted expertise.
- Implementing higher standards for grey literature.
- Improving qualifications of invited experts.

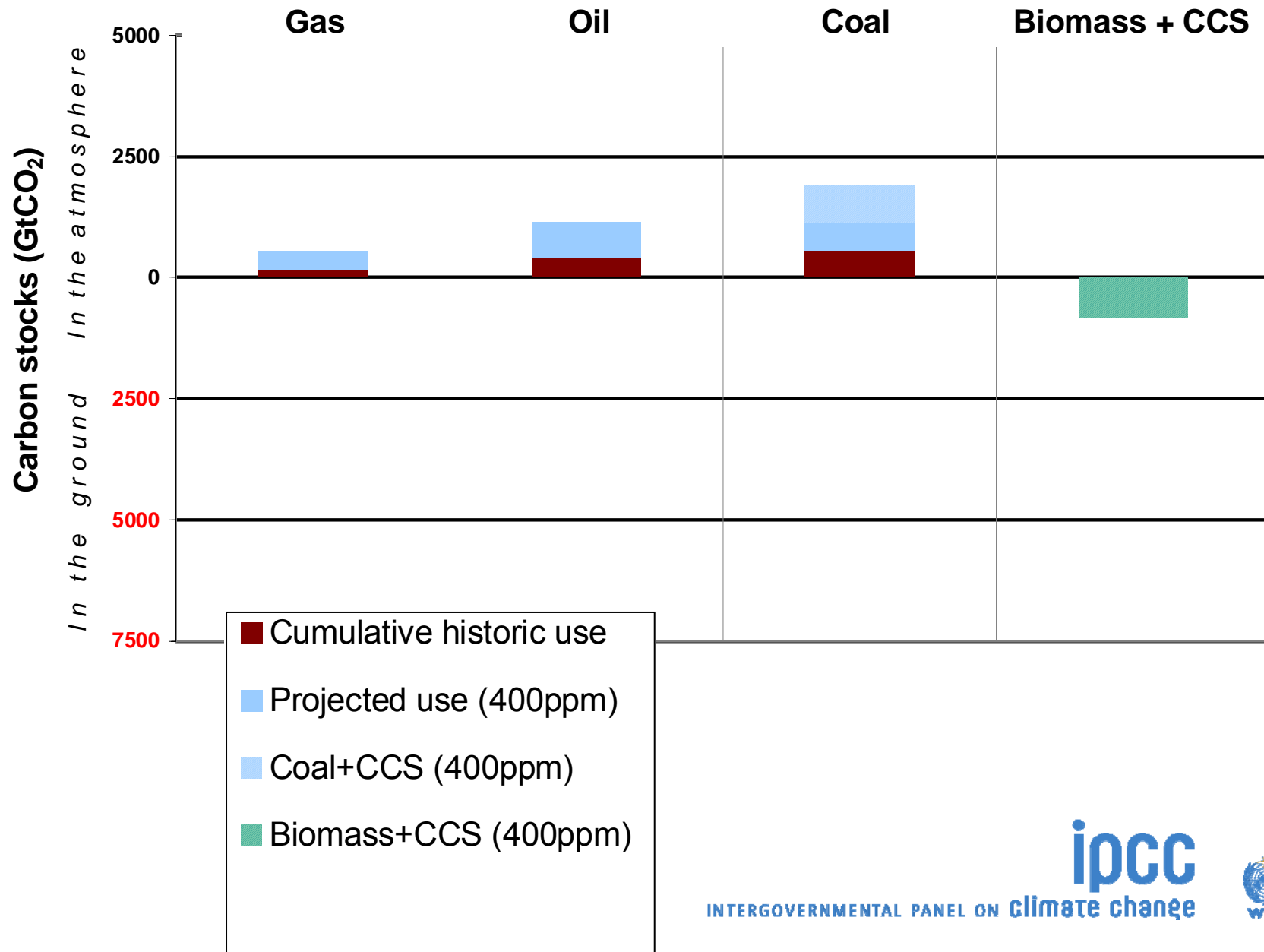
Table of Contents

- The IPCC
- **IPCC SRREN**
- IPCC 5th Assessment Report (AR5)
- IPCC Scenario Process
- Scenarios for WGIII: Living in 2nd-best Worlds

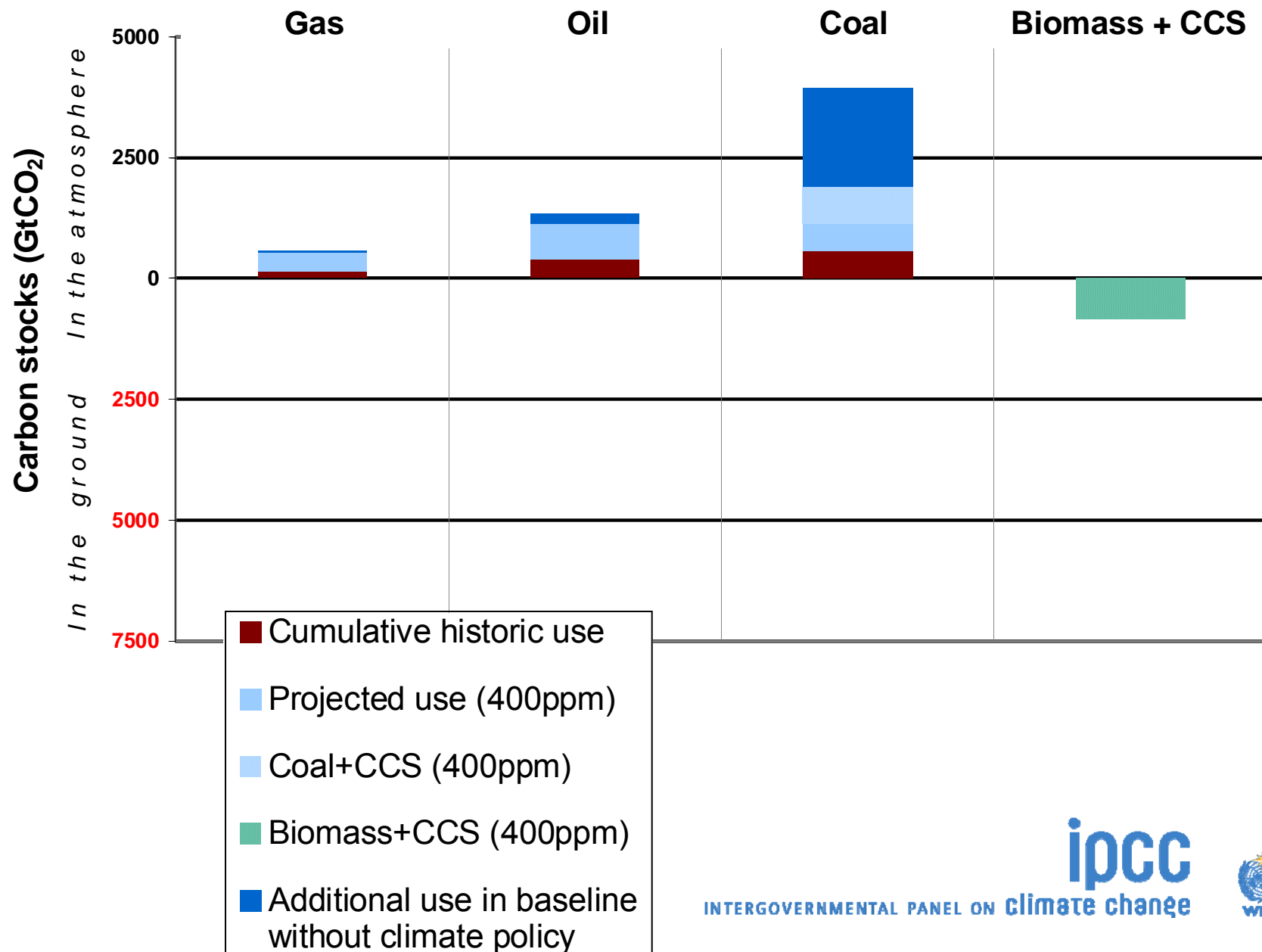
Limited Disposal Space of the Atmosphere...

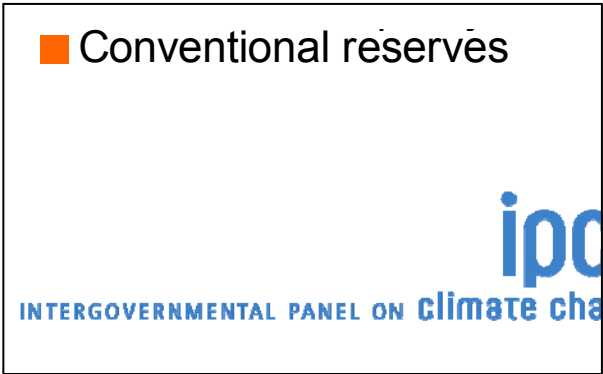


Limited Disposal Space of the Atmosphere...

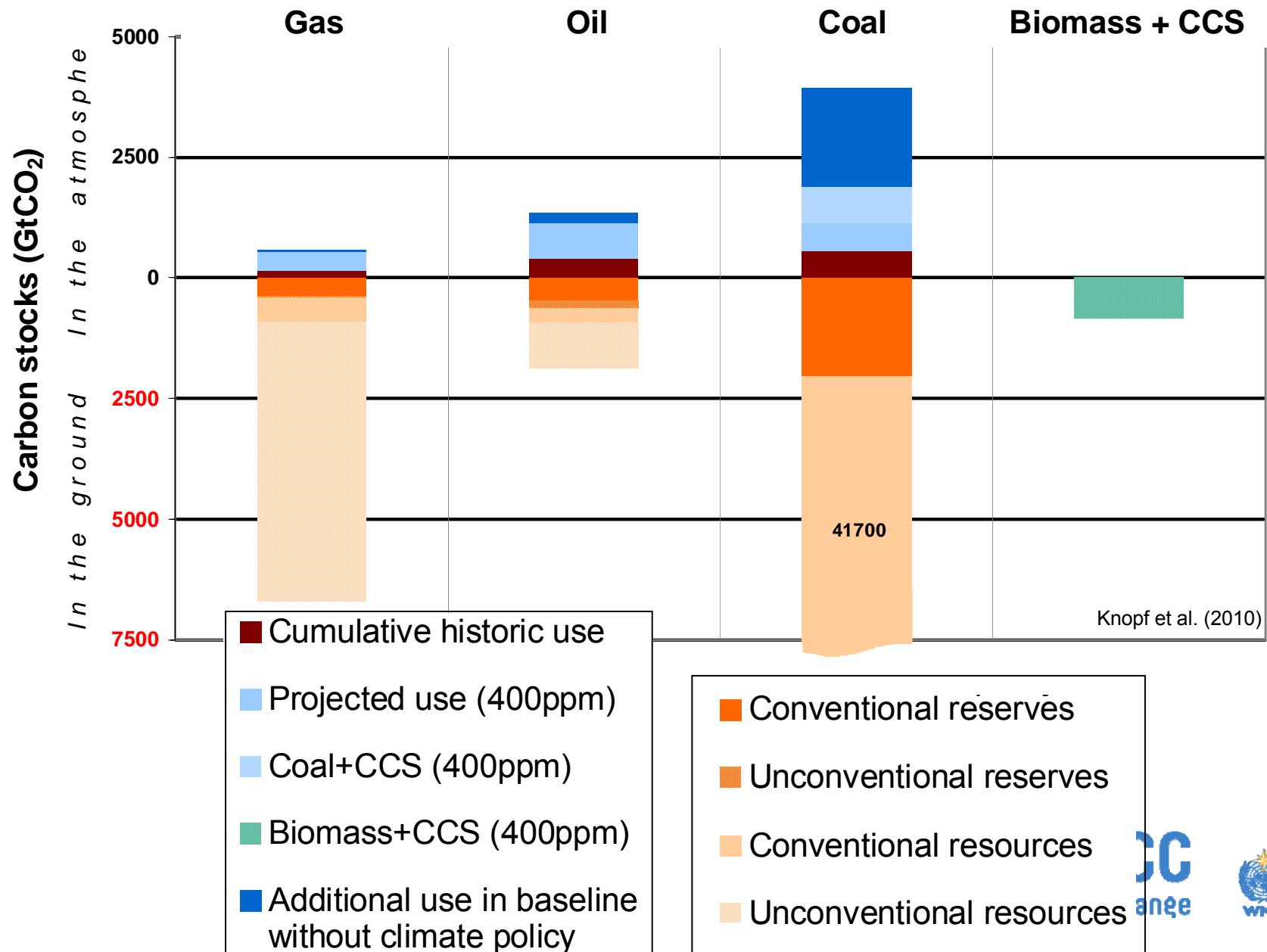


Limited Disposal Space of the Atmosphere...



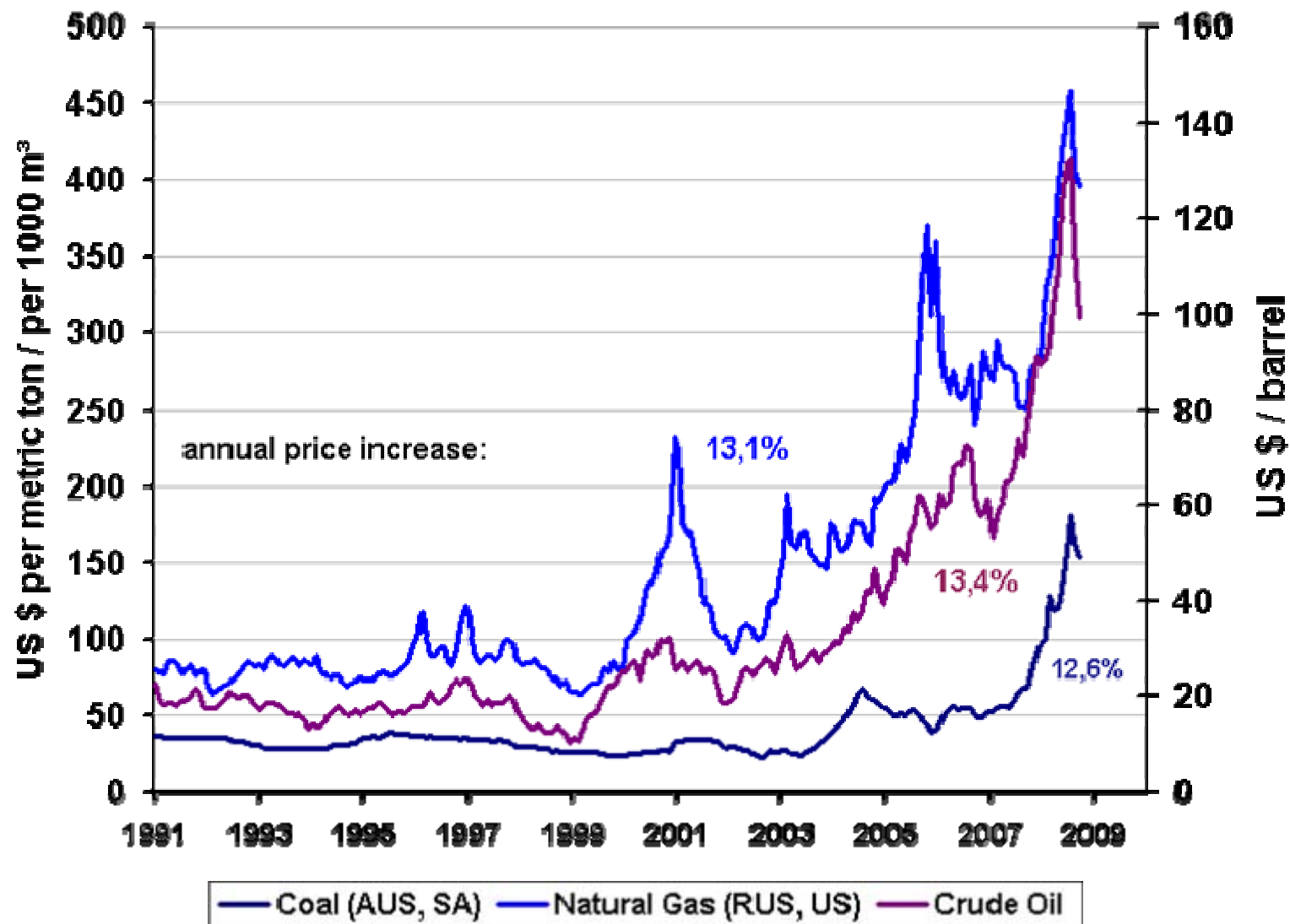


...Unlimited Fossil Resources

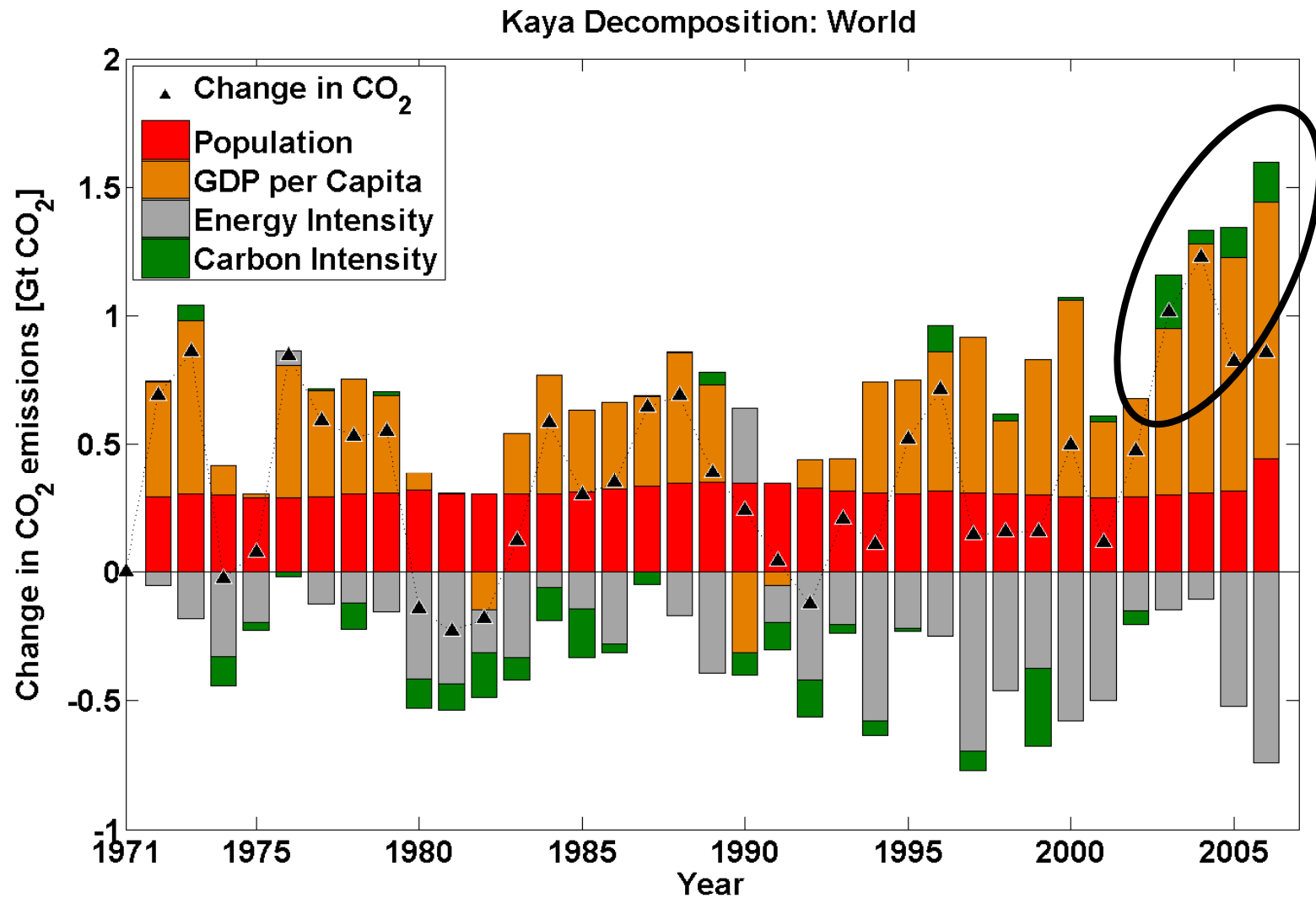


SRREN Context: Renaissance of Coal

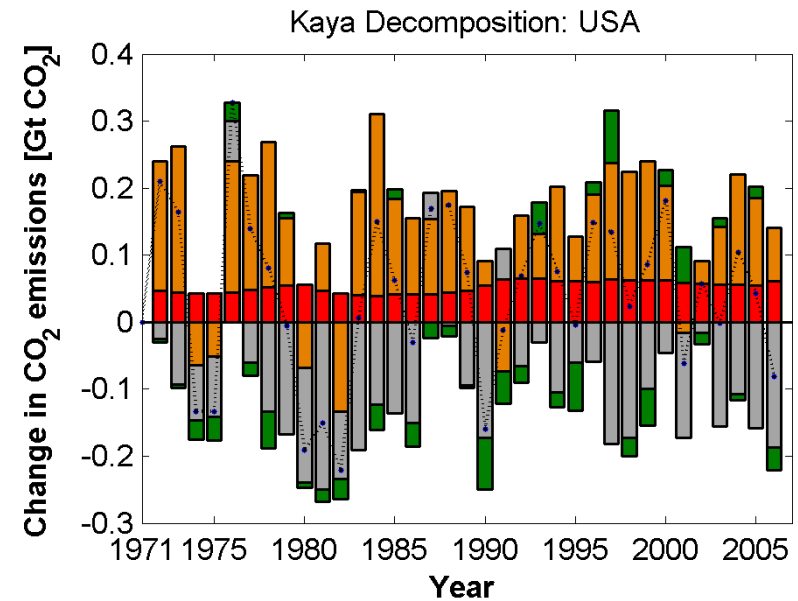
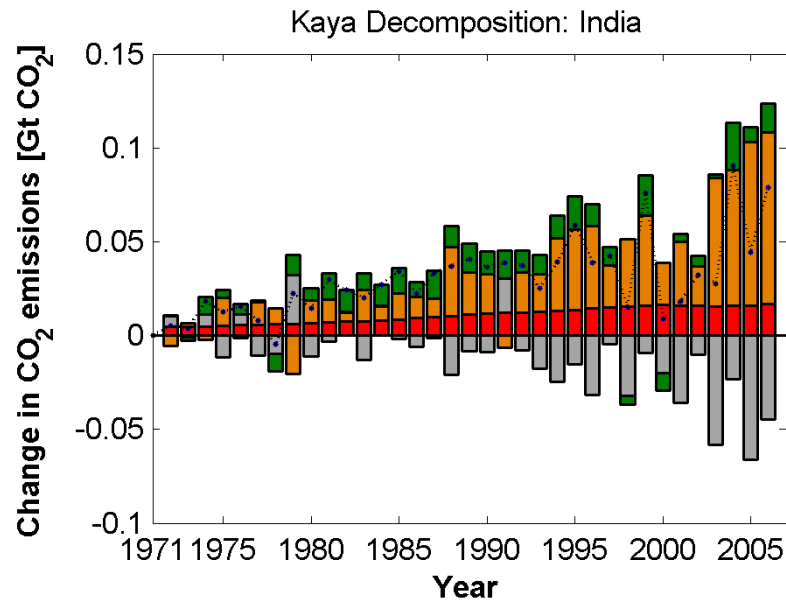
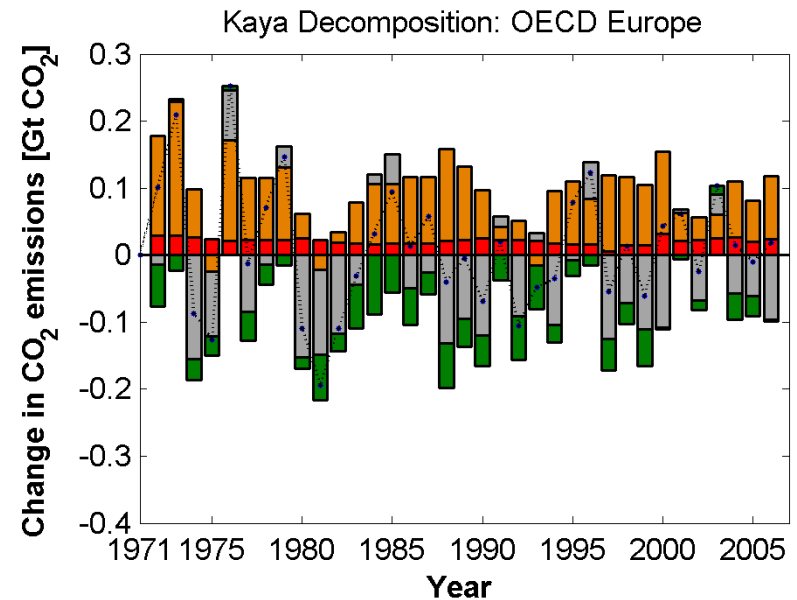
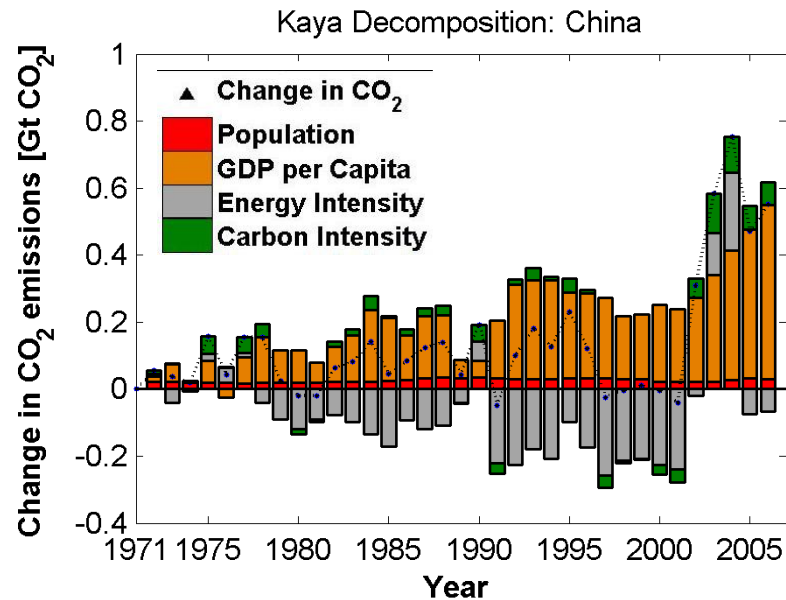
Global Fossil Fuel Prices 1991 - 2008



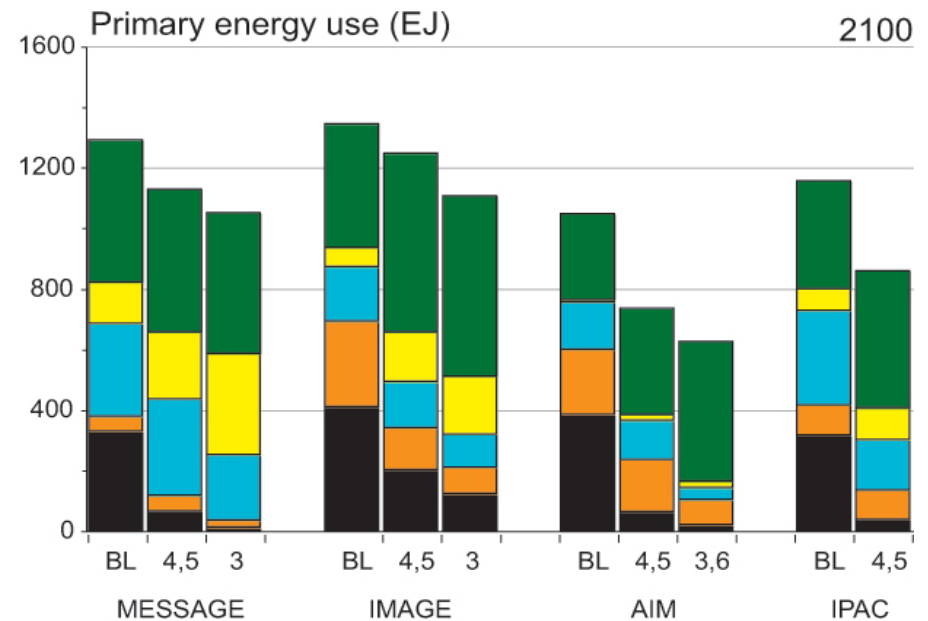
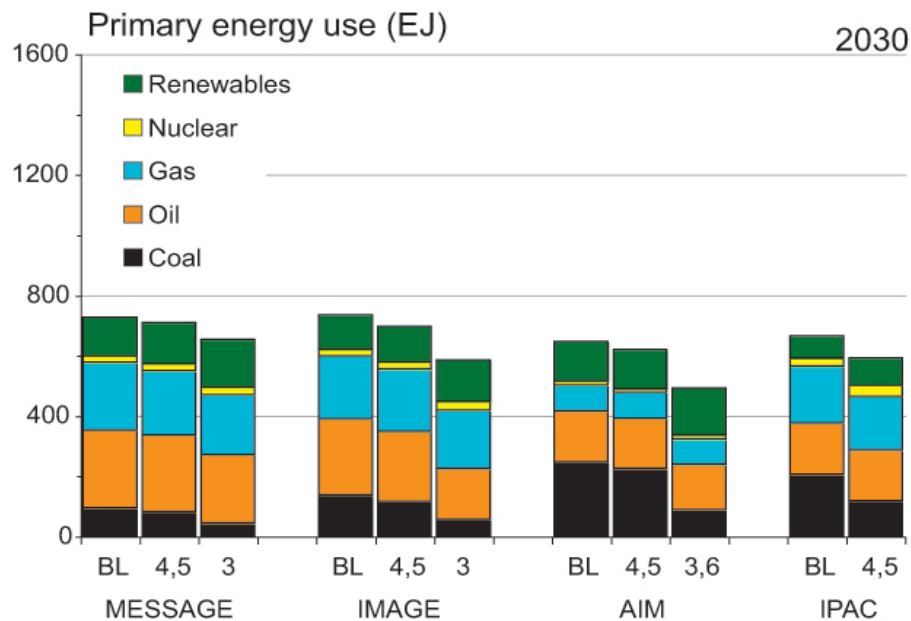
Renaissance of Coal



Carbonisation Pathways



AR4: Many Models Show An Increasing Share of Renewables



SRREN: Structure of the Report

1. Renewable Energy and Climate Change
 2. Bioenergy
 3. Direct Solar Energy
 4. Geothermal Energy
 5. Hydropower
 6. Ocean Energy
 7. Wind Energy
- Technology Chapters
8. Integration of Renewable Energy into Present and Future Energy Systems
 9. Renewable Energy in the Context of Sustainable Development
 10. Mitigation Potential and Costs
 11. Policy, Financing and Implementation

Task: Assessment of Renewables within the Context of Mitigation

... based on a review and synthesis of scientific literature:

- 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

Status of the SRREN

The First Order Draft (FOD) of the SRREN is currently in Expert Review. The expert review period will end **February 8th, 2010**.

Upcoming milestones:

3rd Lead Author Meeting: **March 2-5th, 2010**

Second Order Draft (SOD): **June 2010**

4th Lead Author Meeting: **September 20-24th, 2010**

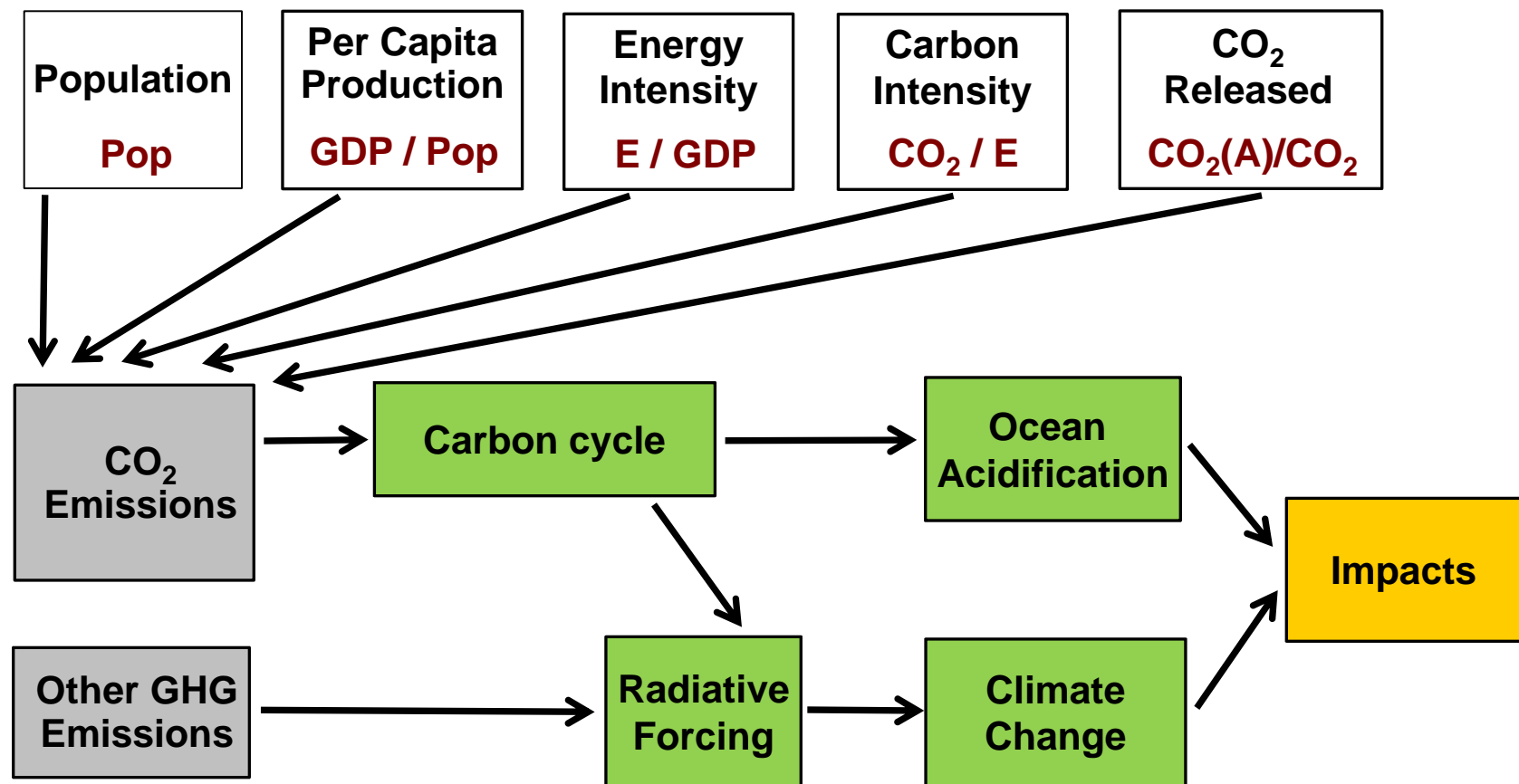
Final Draft: **November 2010**

The final approval of the SRREN is expected in **February 2011**.

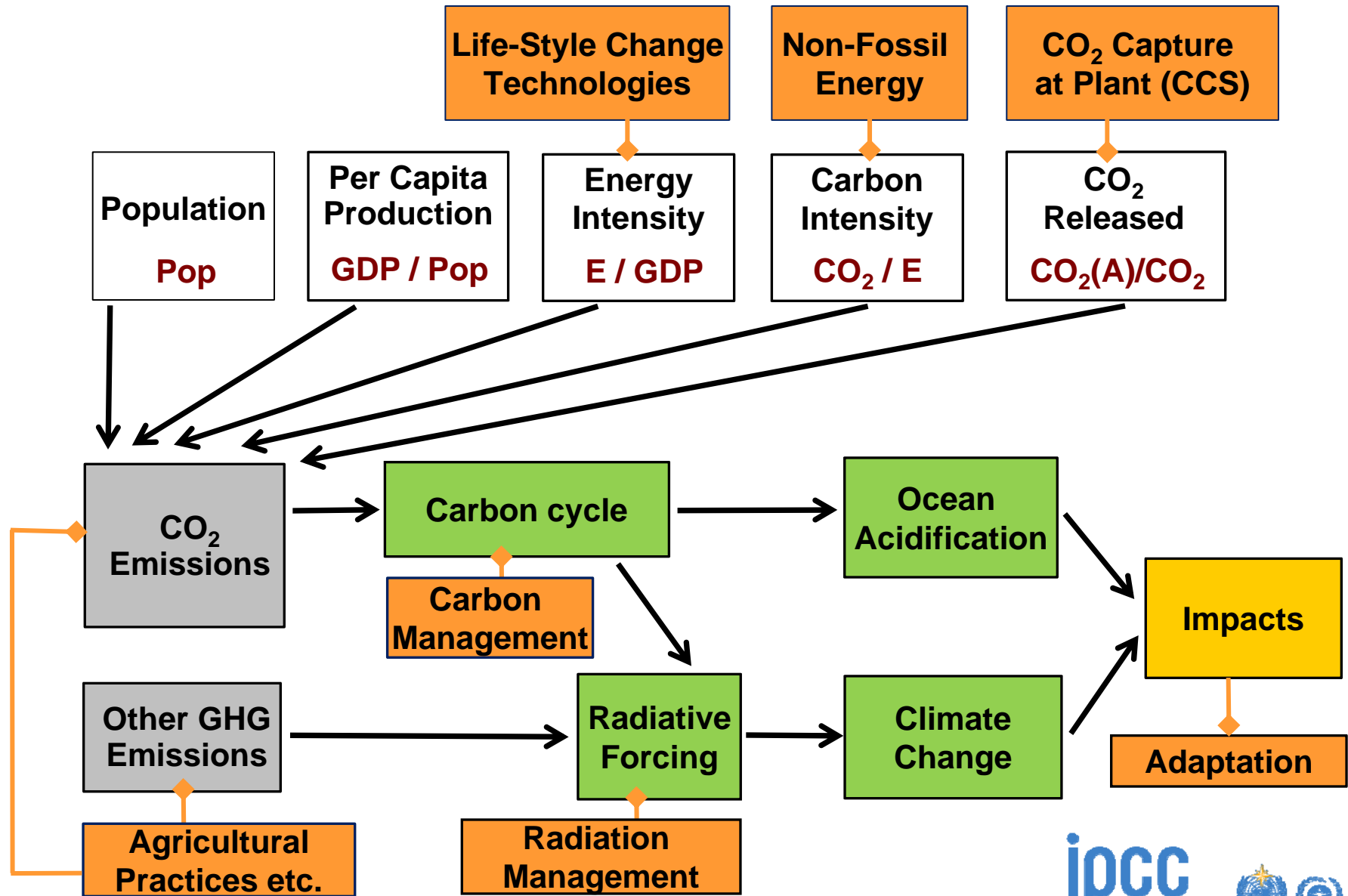
Table of Contents

- The IPCC
- IPCC SRREN
- IPCC 5th Assessment Report (AR5)
- IPCC Scenario Process
- Scenarios for WGIII: Living in 2nd-best Worlds

Comprehensive Understanding of Solution Space



Assessing the Solution Space



AR5 WG III Outline

I: Introduction

1. Introductory Chapter

II: Framing Issues

2. Integrated Risk and Uncertainty Assessment of Climate Change Response Policies

3. Social, Economic and Ethical Concepts and Methods

4. Sustainable Development and Equity

III: Pathways for Mitigating Climate Change

5. Drivers, Trends and Mitigation

6. Assessing Transformation Pathways

7. Energy Systems

8. Transport

9. Buildings

10. Industry

11. Agriculture, Forestry and Other Land Use (AFOLU)

12. Human Settlements, Infrastructure and Spatial Planning

IV: Assessment of Policies, Institutions and Finance

13. International Cooperation: Agreements and Instruments

14. Regional Development and Cooperation

15. National and Sub-national Policies and Institutions

16. Cross-cutting Investment and Finance Issues

Added Value of WG III Outline Compared to AR4

- Improved treatment of risk, economic and ethical issues, and a discussion on their application in the context of sustainable development.
- Iterative top-down and bottom-up approach.
- Integrated risk and uncertainty assessment of climate change response policies on the global, regional, national and sub-national level.
- Integrated assessment of investment and finance issues

The Research Challenge

- Low Stabilisation Scenarios which identify the technical and institutional requirements
- Exploring the costs, benefits and risks of different mitigation options
- Identifying differential impacts and develop a classification of risks comprising tipping points in the natural environment and also in society.

AR5 Innovation: Considering Risk/Uncertainty in all WGs

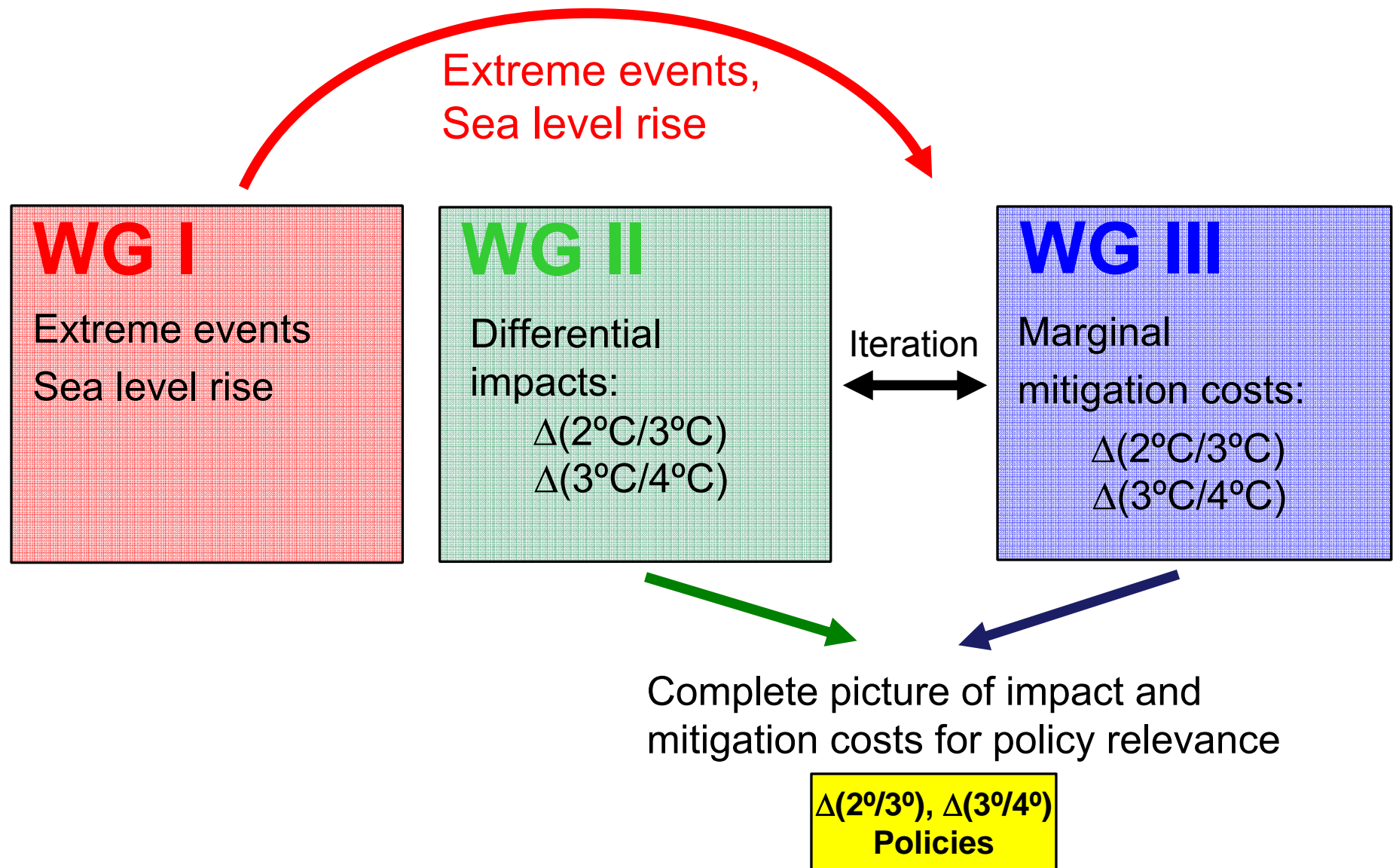
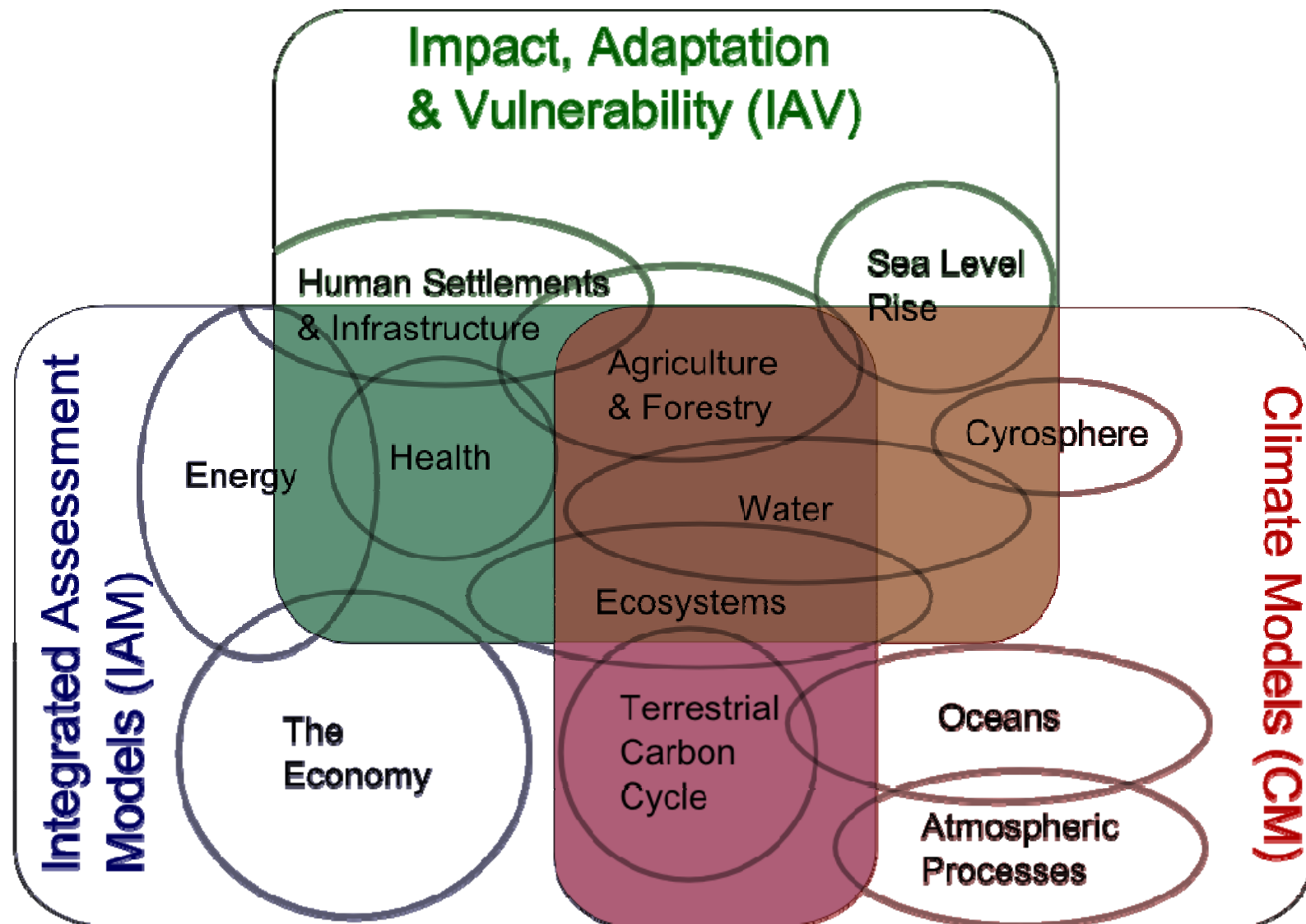


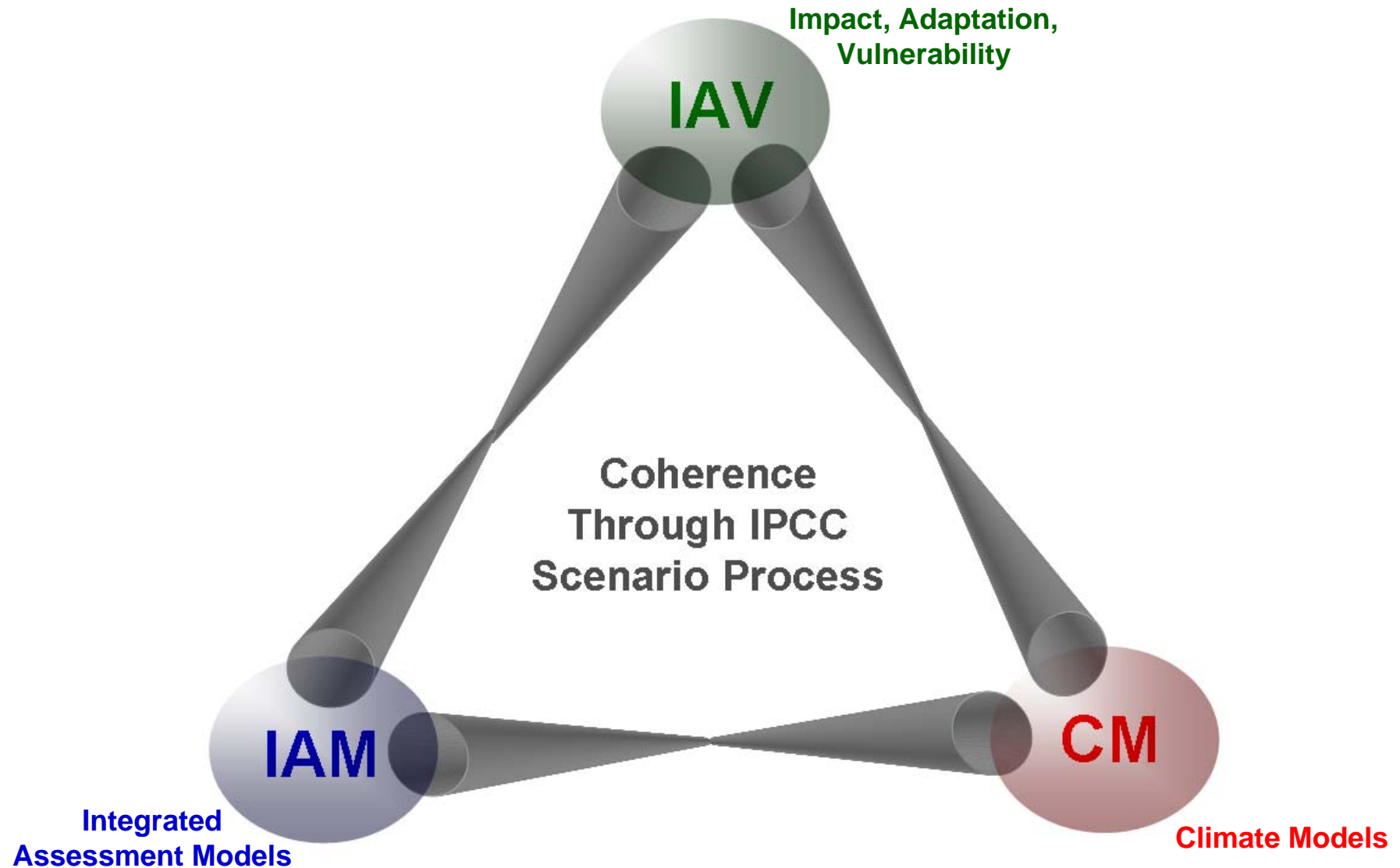
Table of Contents

- The IPCC
- IPCC SRREN
- IPCC 5th Assessment Report (AR5)
- **IPCC Scenario Process**
- Scenarios for WGIII: Living in 2nd-best Worlds

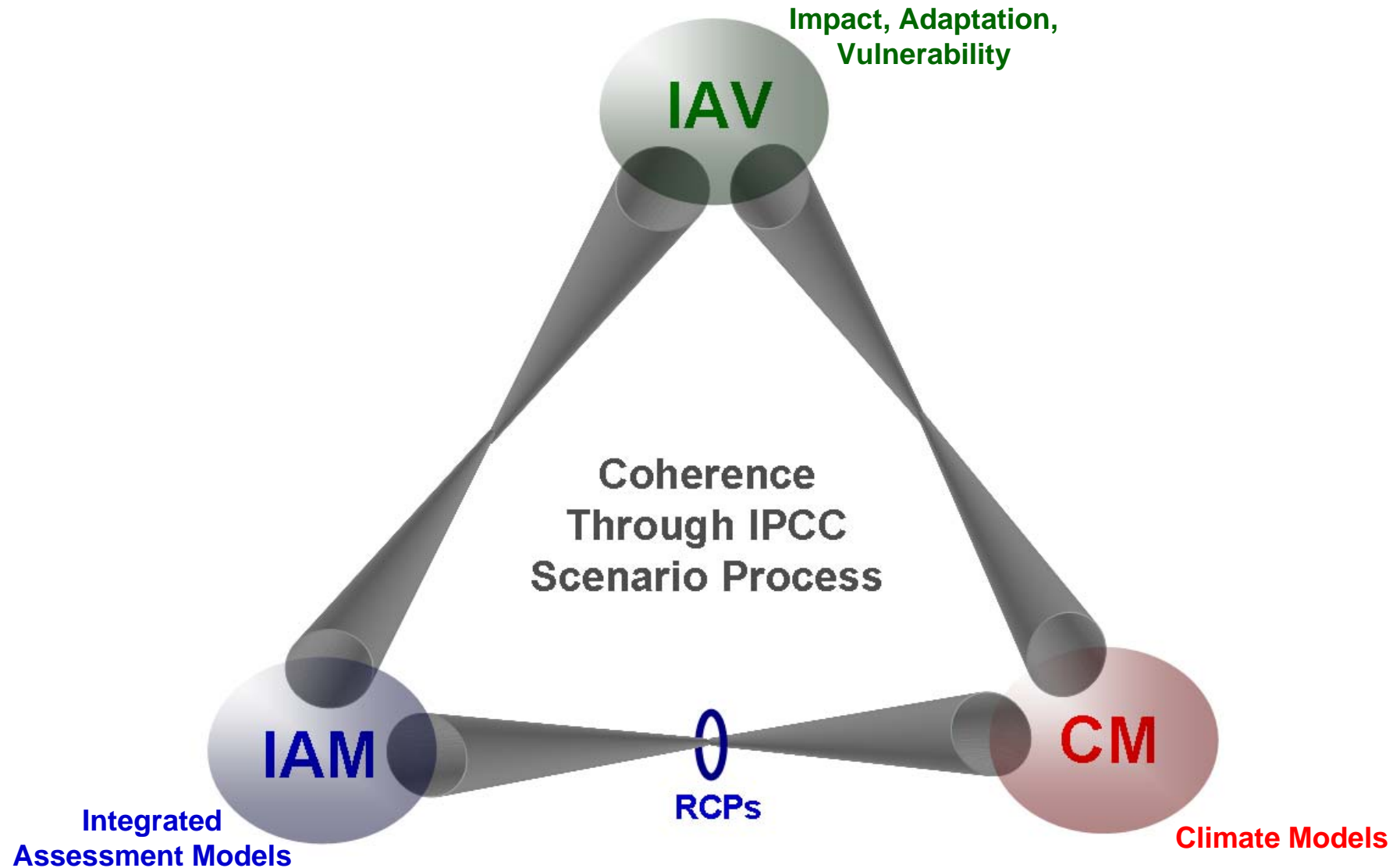
Assessment Communities



IPCC Scenario Process



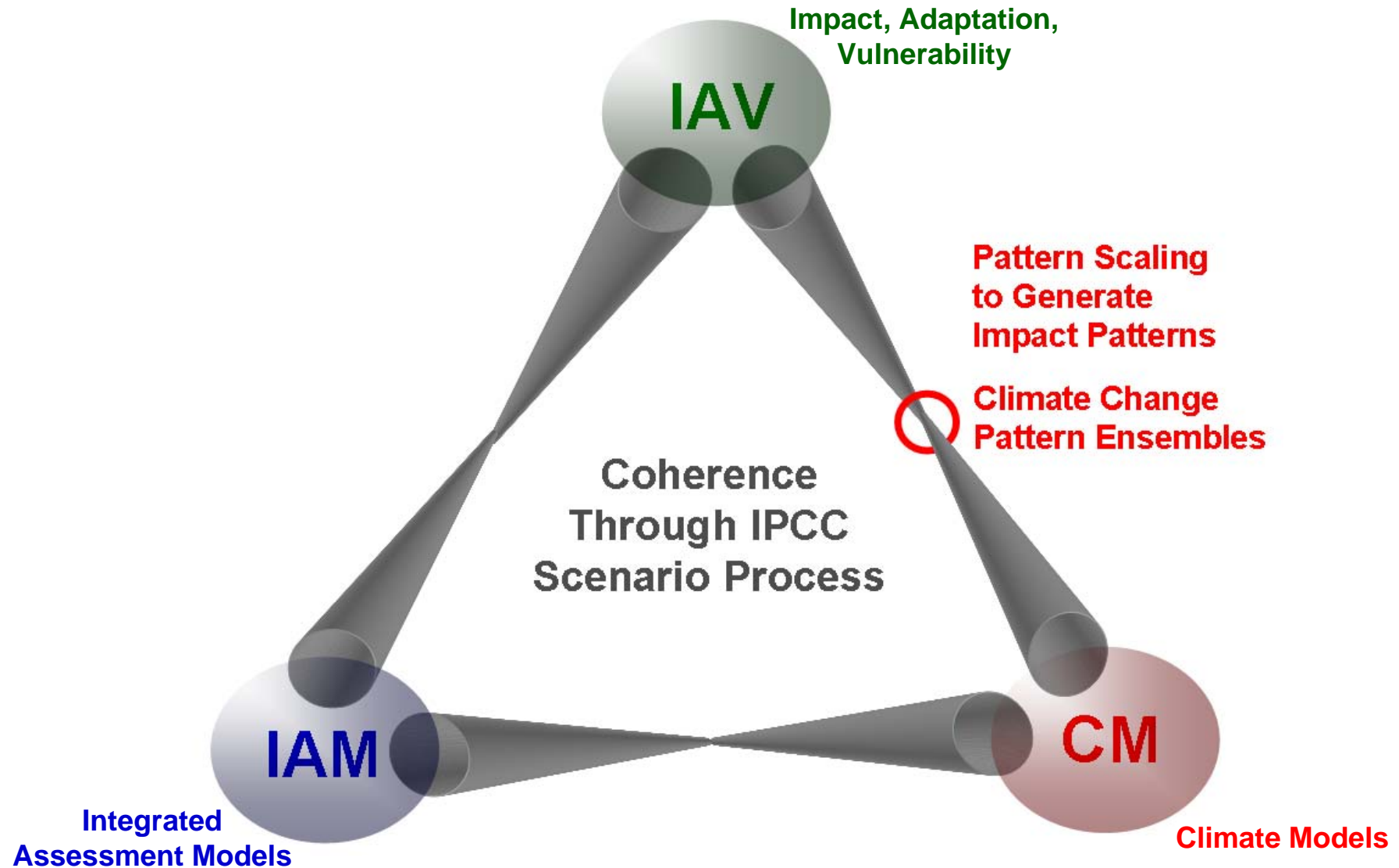
IPCC Scenario Process



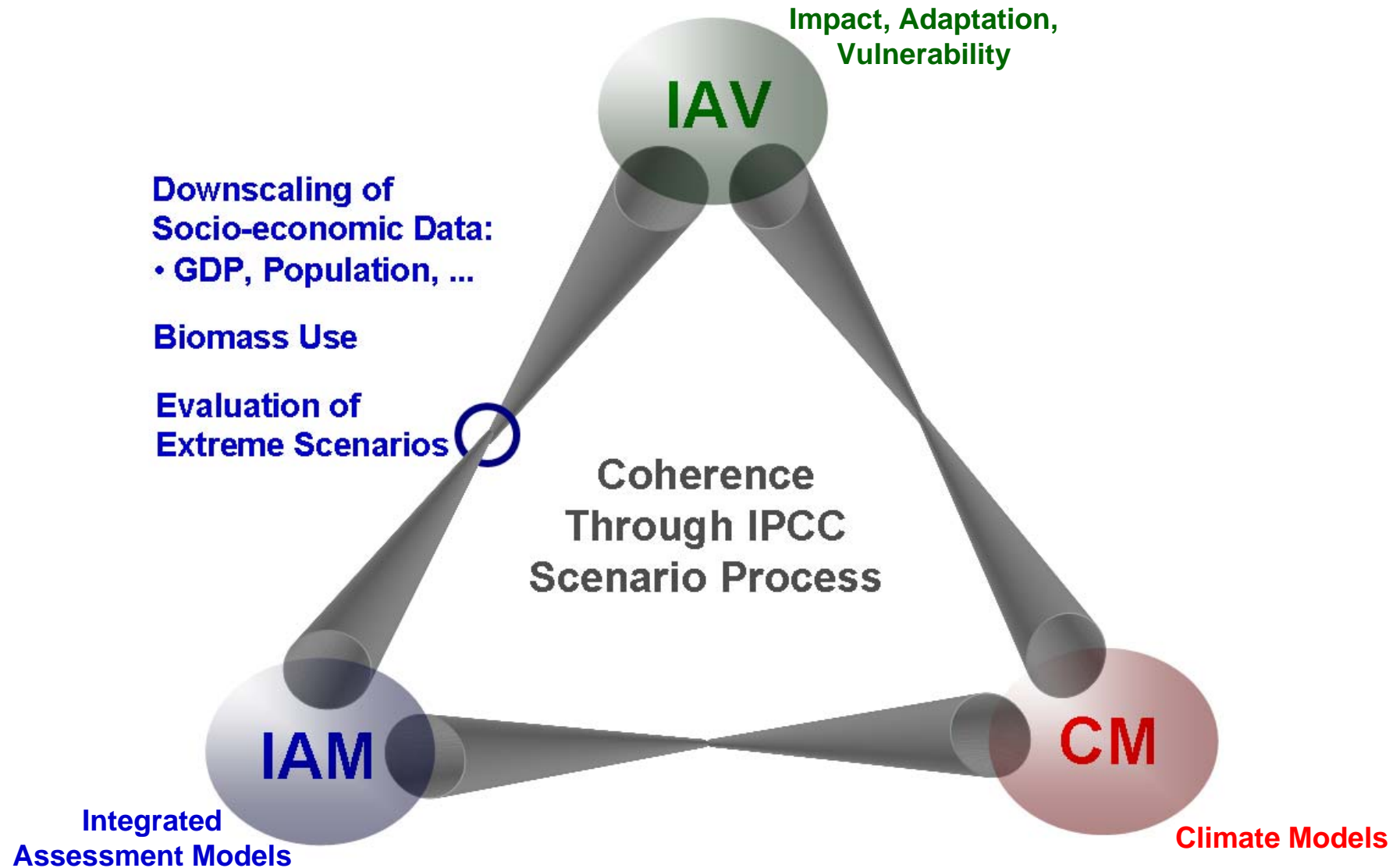


<http://www.pik-potsdam.de/~mmalte/rcps/>

IPCC Scenario Process



IPCC Scenario Process



IPCC Scenario Process

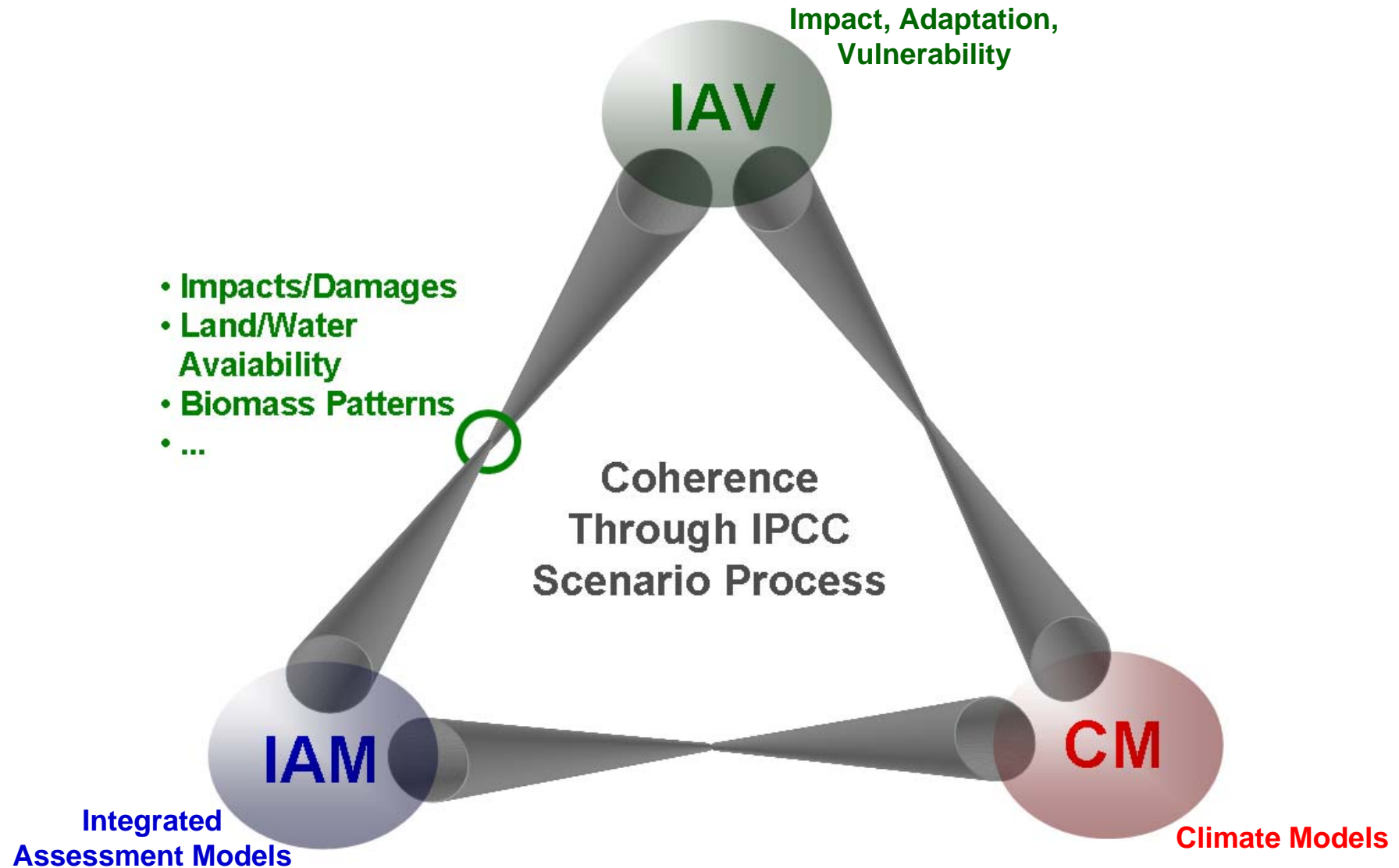
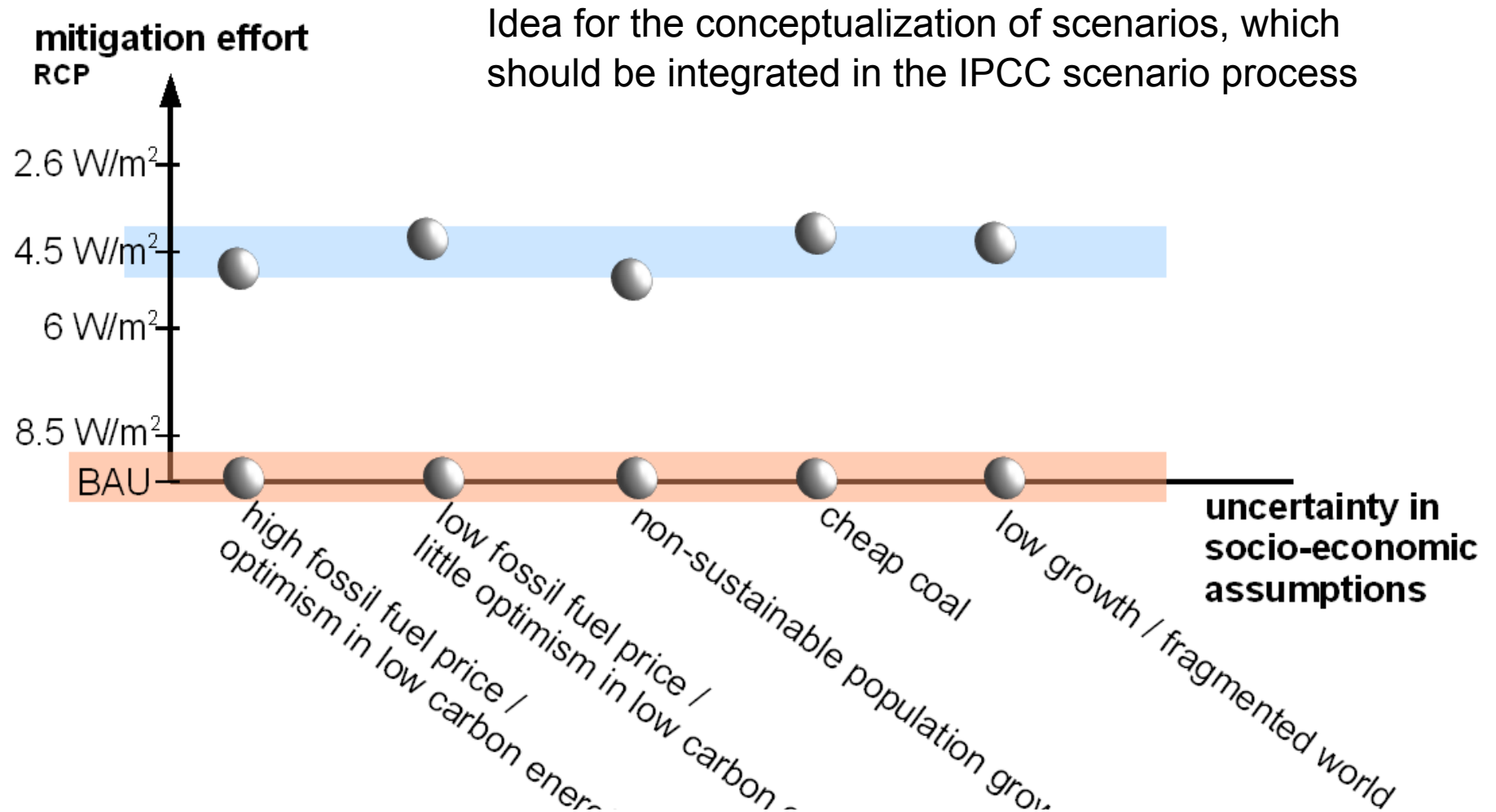


Table of Contents

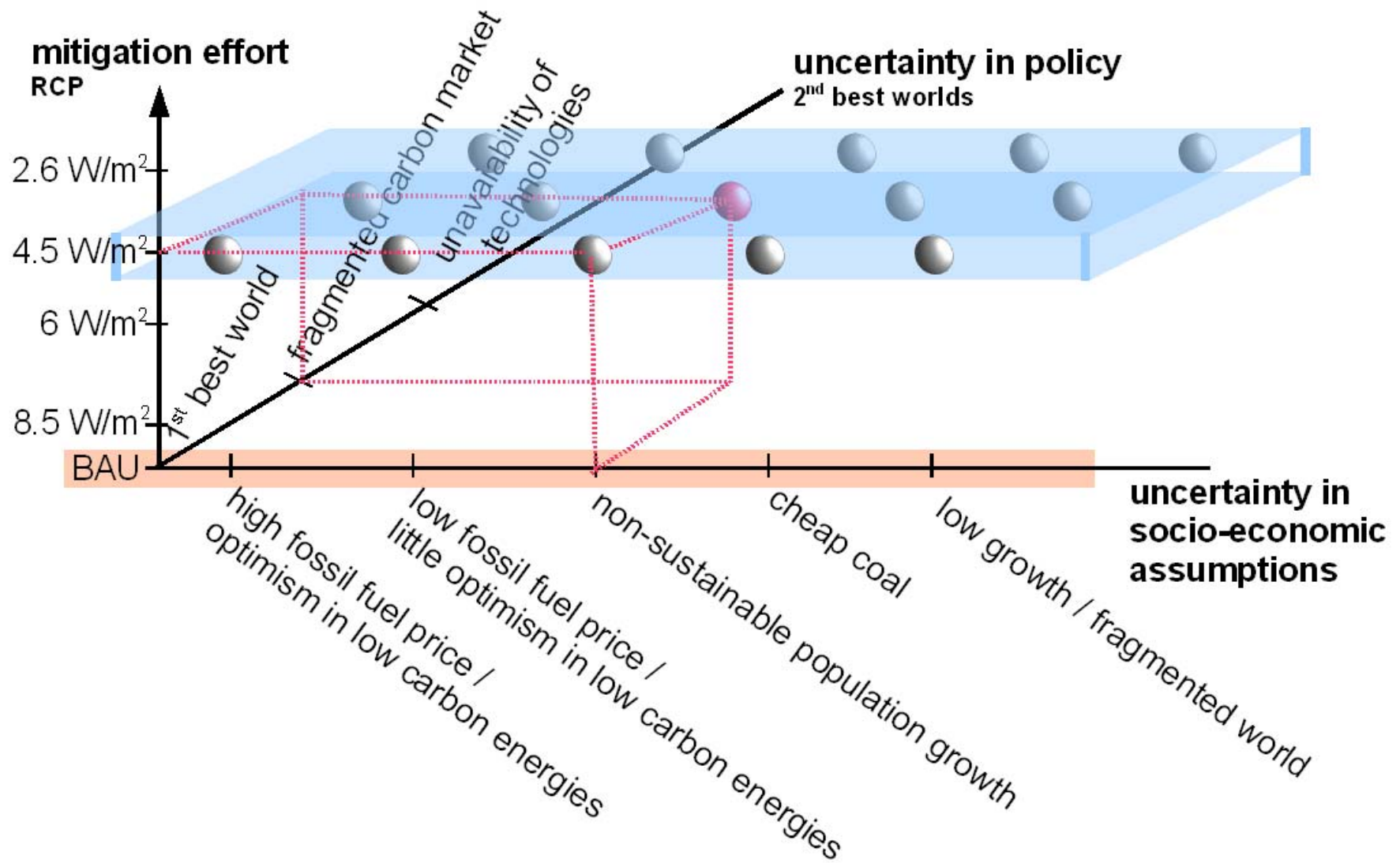
- The IPCC
- IPCC SRREN
- IPCC 5th Assessment Report (AR5)
- IPCC Scenario Process
- Scenarios for WGIII: Living in 2nd-best Worlds

AR5 Scenario Philosophy

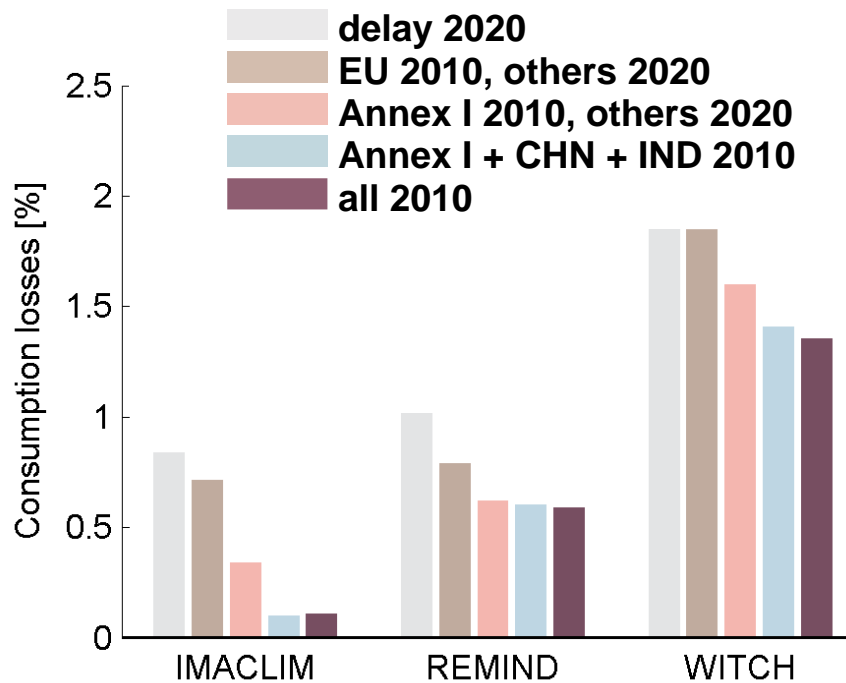


Baselines should be self-consistent

AR5 Scenario Philosophy

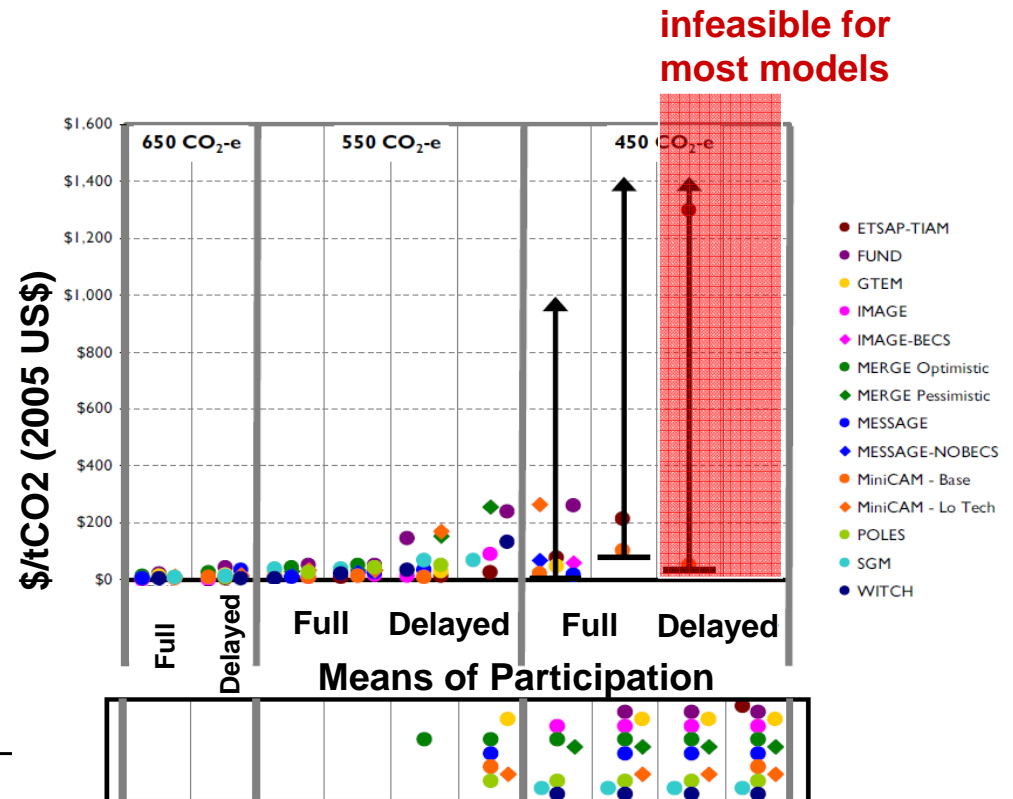


Costs & Other Problems of Delay



Luderer et al. 2009

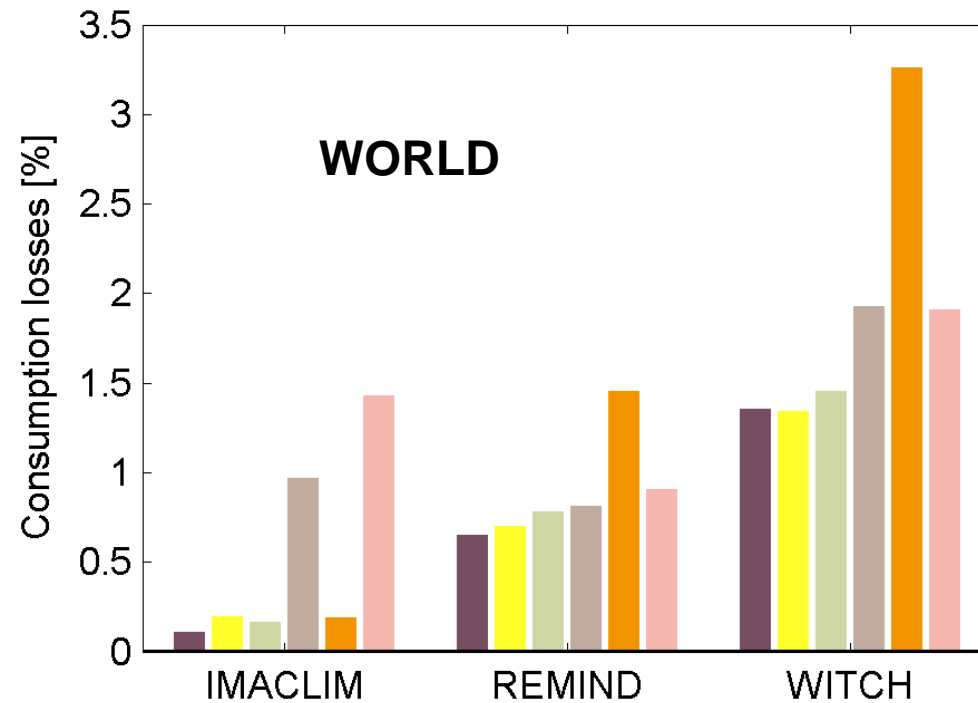
WORLD



Scenarios that could not be modelled under criteria of study

EMF (2009) Overview of EMF 22 International Scenarios

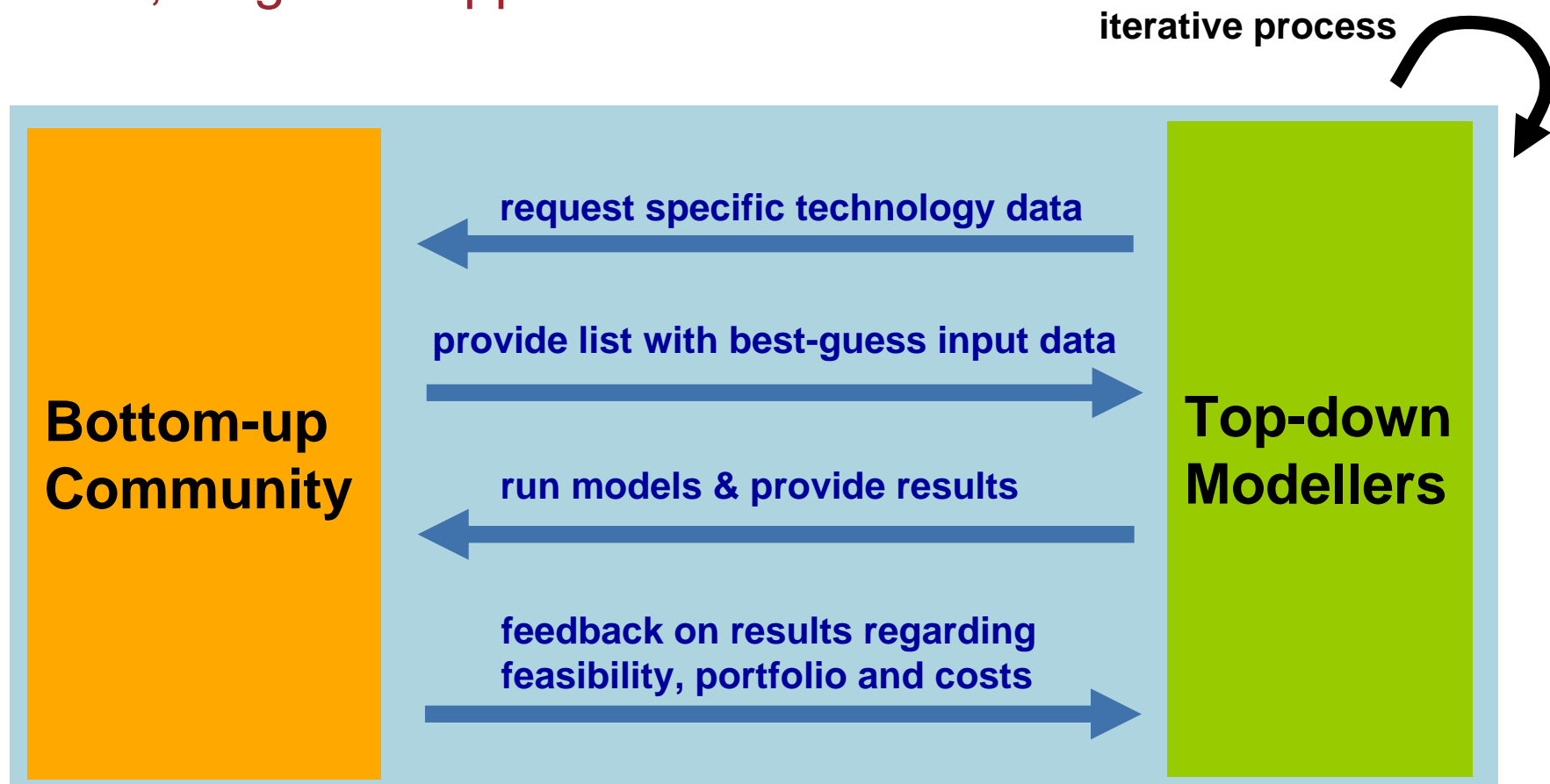
Limited Availability of Technologies



- All options for 450 ppm-only**
- No nuclear beyond its use in the baseline**
- No biomass beyond its use in the baseline**
- No CCS**
- No renewables beyond its use in the baseline**
- No CCS, no nuclear beyond their use in the baseline**

AR5 Run-up: Bottom-up – Top-down Interaction

Outcome of SRREN Scenario Expert Meeting
Ideal, long-term approach:



Goal: More realistic representation of policy space.

Modelling in a 2nd-best World

Emerged from SRREN Expert Meeting on Scenarios

Issues to be covered by modellers:

- Limited availability of technologies
- Uncertainty
- Delayed participation
- Bottom-up & top-down integration
- Hindcasting
- Timing of policy instruments
- Multiple policy instruments for multiple market failures (“price-only-crowd” vs. “technology policy is needed”)

Final Remark

The IPCC is the honest broker between experts and decision makers in business, politics and civil society.

The IPCC should be policy relevant without being policy prescriptive.