IPCC WG III Perspectives On Needs For Socio-economic Scenarios

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WMO UNEP

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- Scenario Process
- WG III Needs & the Scenario Process: Possible Links & Steps

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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

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I: Introduction

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2. Integrated Risk and Uncertainty Assessment of Climate Change Response Policies
3. Social, Economic and Ethical Concepts and Methods
4. Sustainable Development and Equity

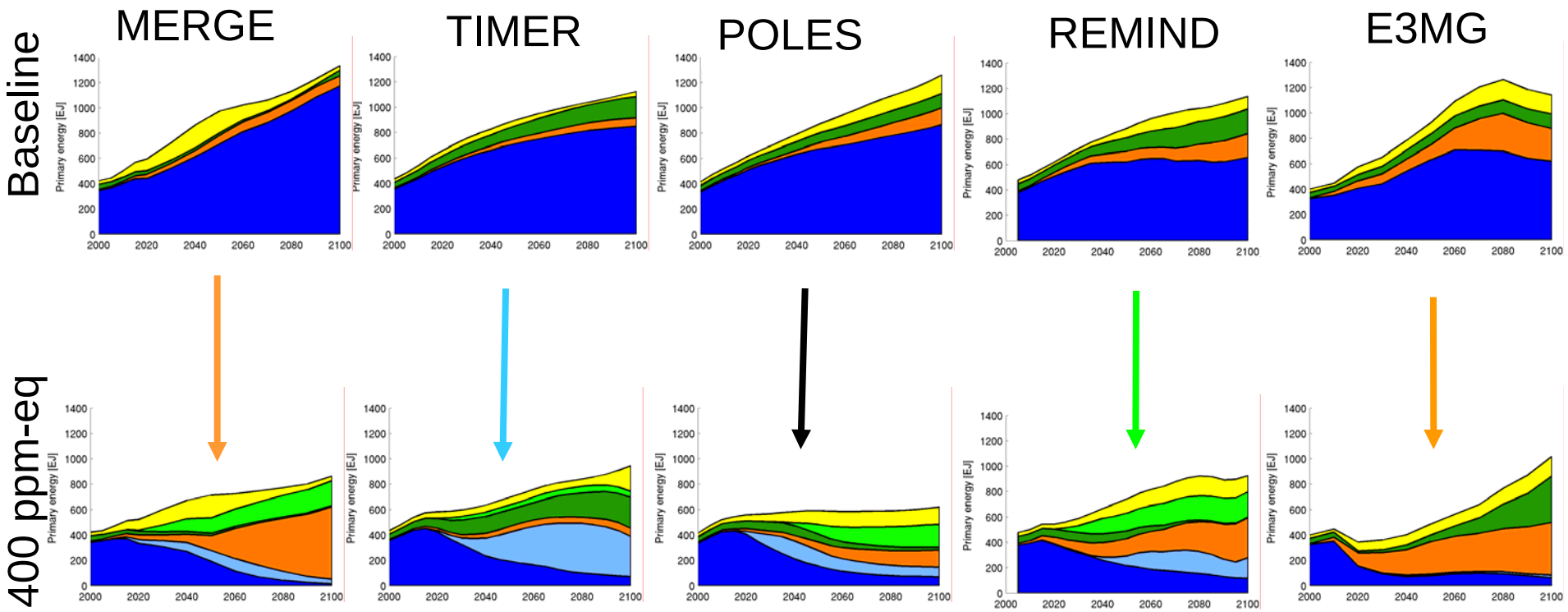
Chp 6: Assessing Transformation Pathways

Scenarios are the backbone of consistency between WG II and WG III.

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

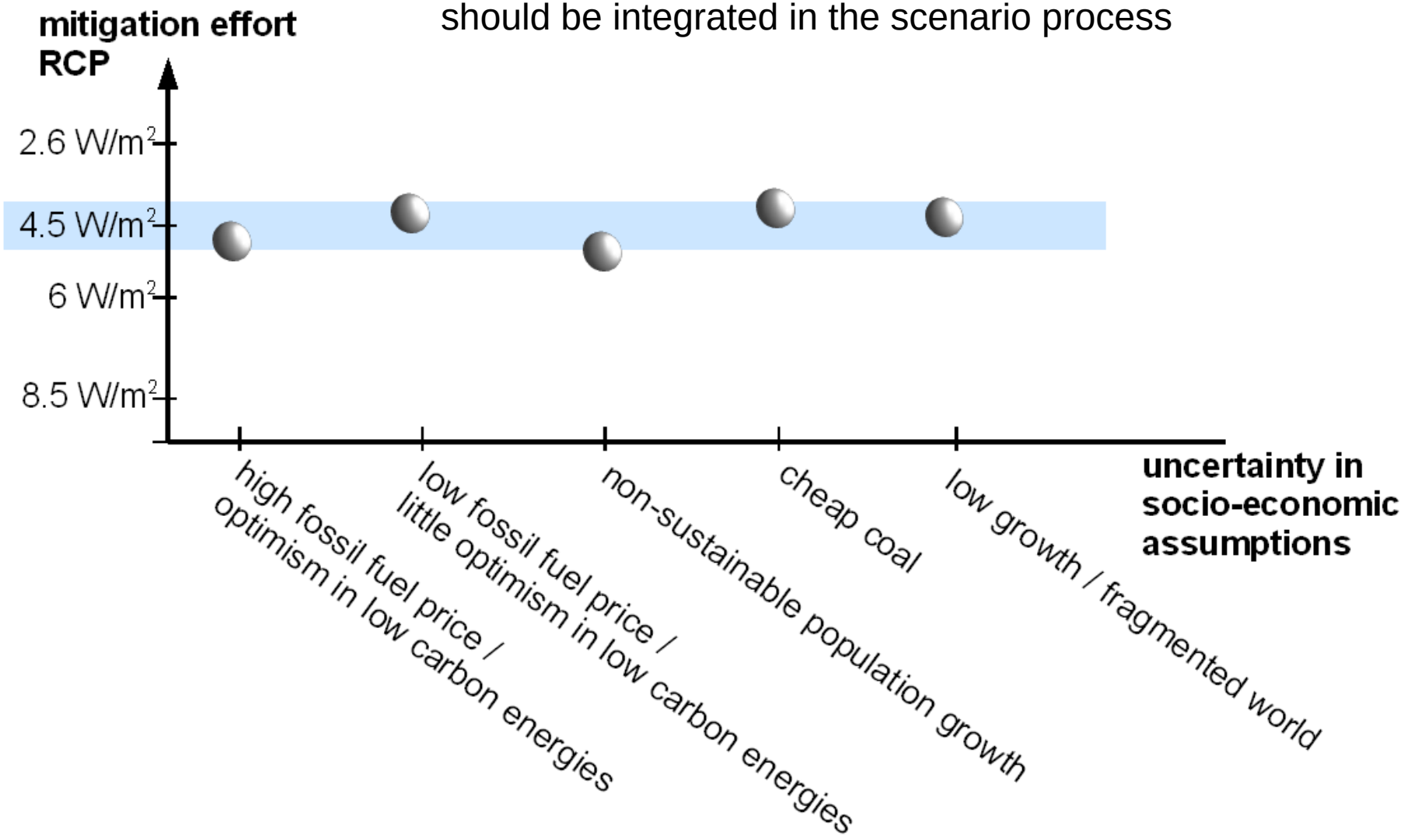
Example: Assessing Transformation Pathways



- Transformation Pathway **=** Baseline **+** Mitigation Scenario Edenhofer et al. (2010)
- Several ways achieve the transformation
- Make unintended side effects explicit:
  - CCS leakage
  - Food crisis due to large-scale biomass use
  - Nuclear waste
  - …

WG III Scenario Philosophy

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



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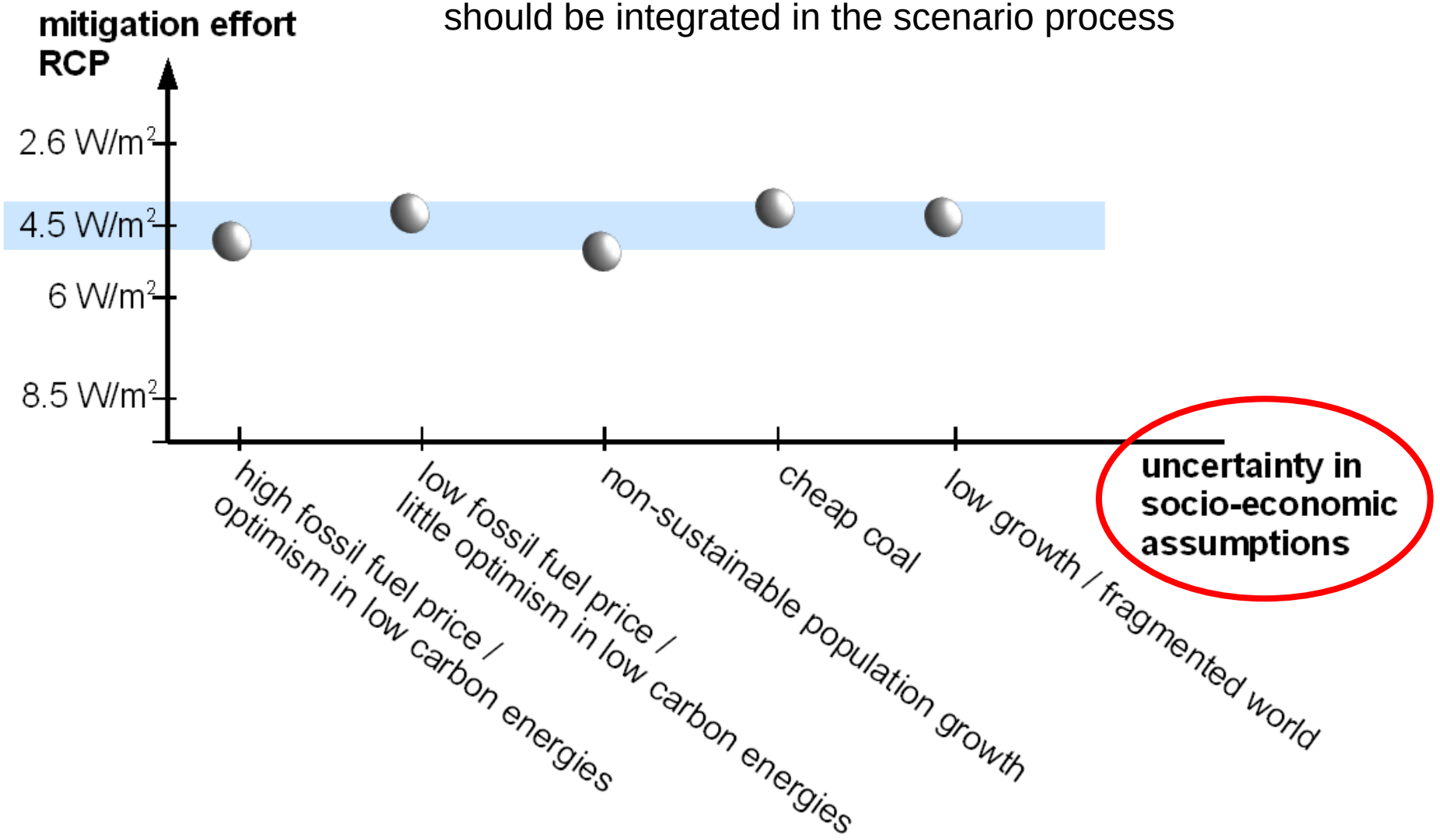
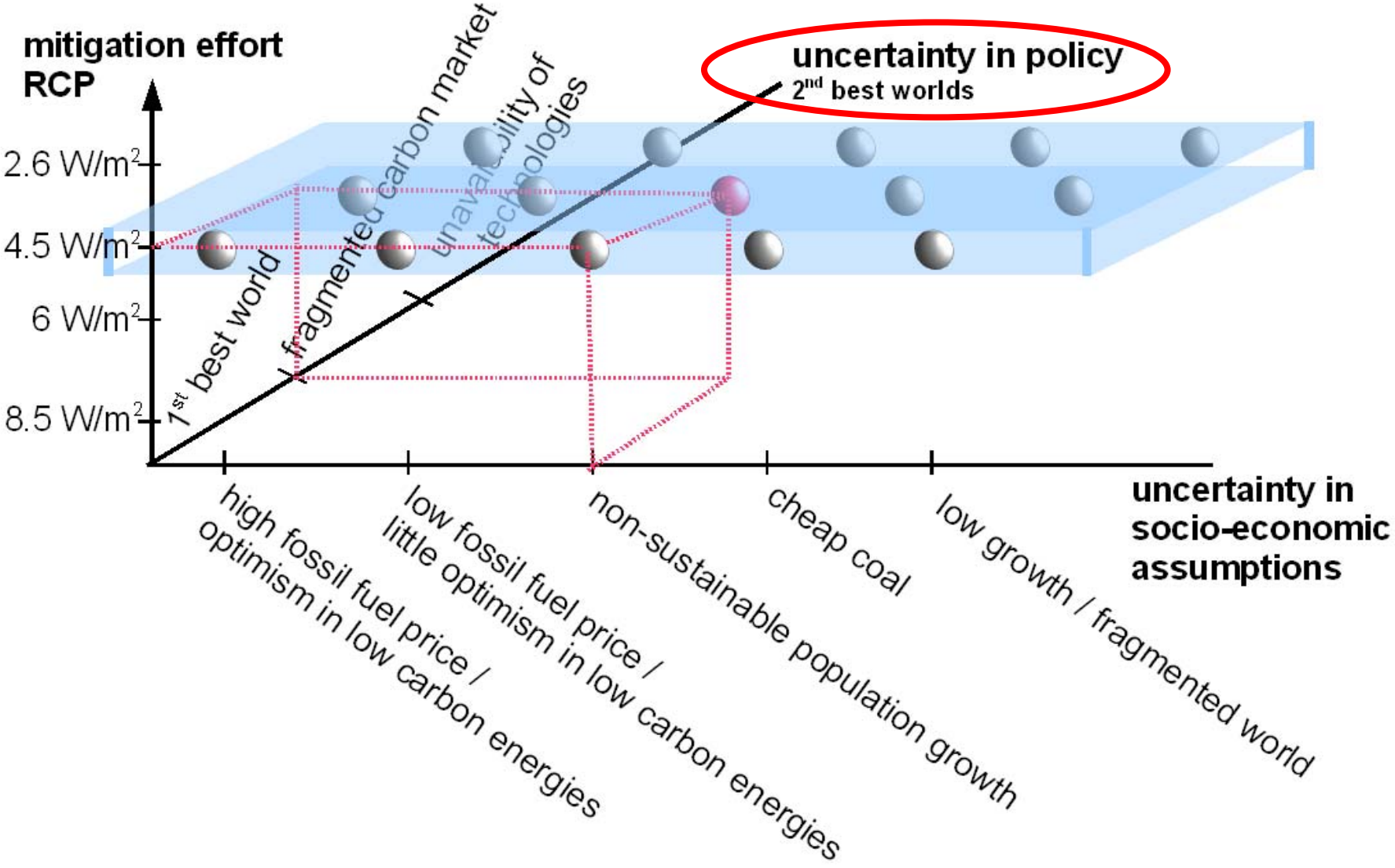


Socio-economic assumptions should be self-consistent

WG III Scenario Philosophy



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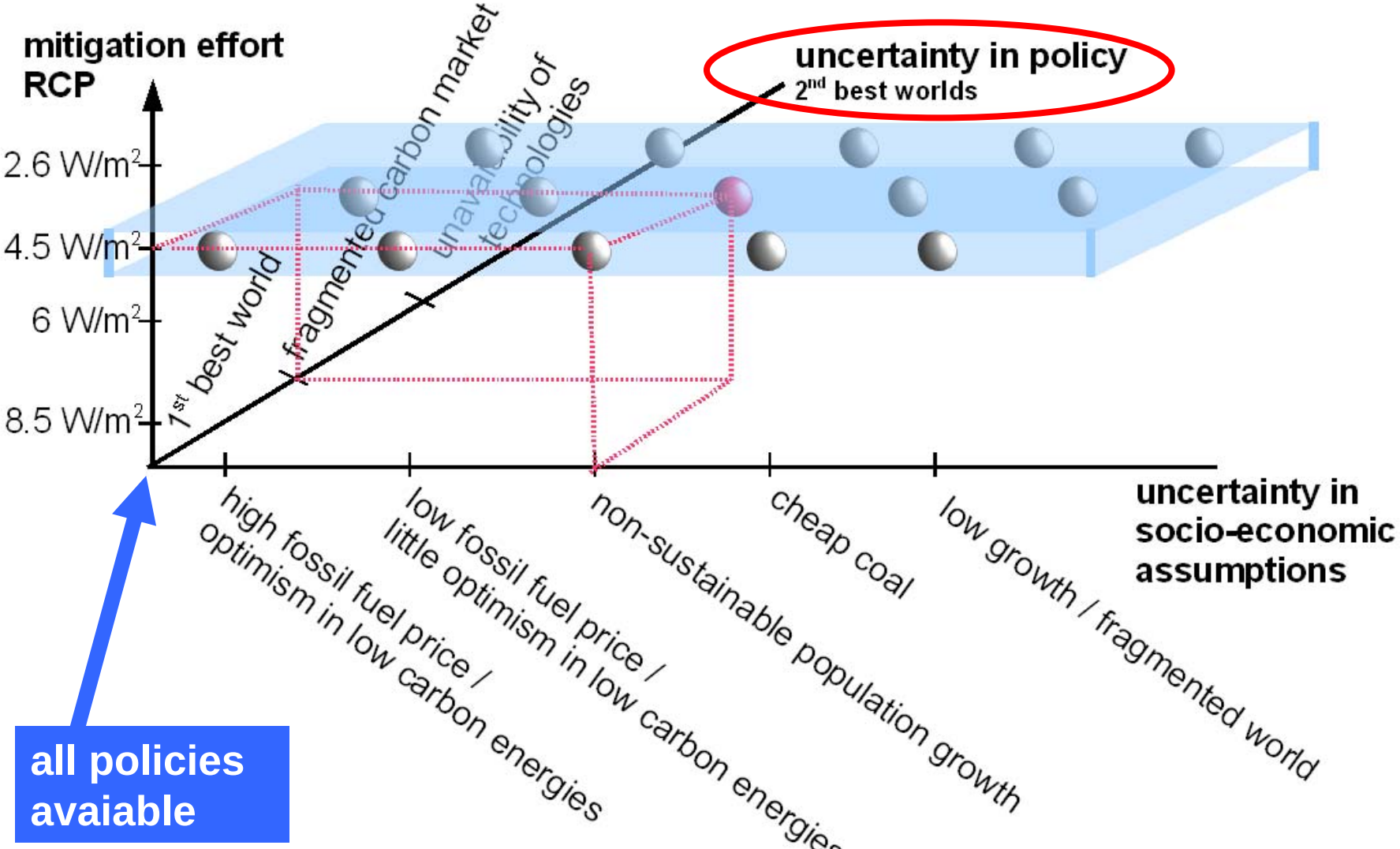

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Scenario Process

Impact, Adaptation, Vulnerability

Establish coherence through scenario process

Integrated Assessment Models

Climate Models

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INTERGOVERNMENTAL PANEL ON climate change

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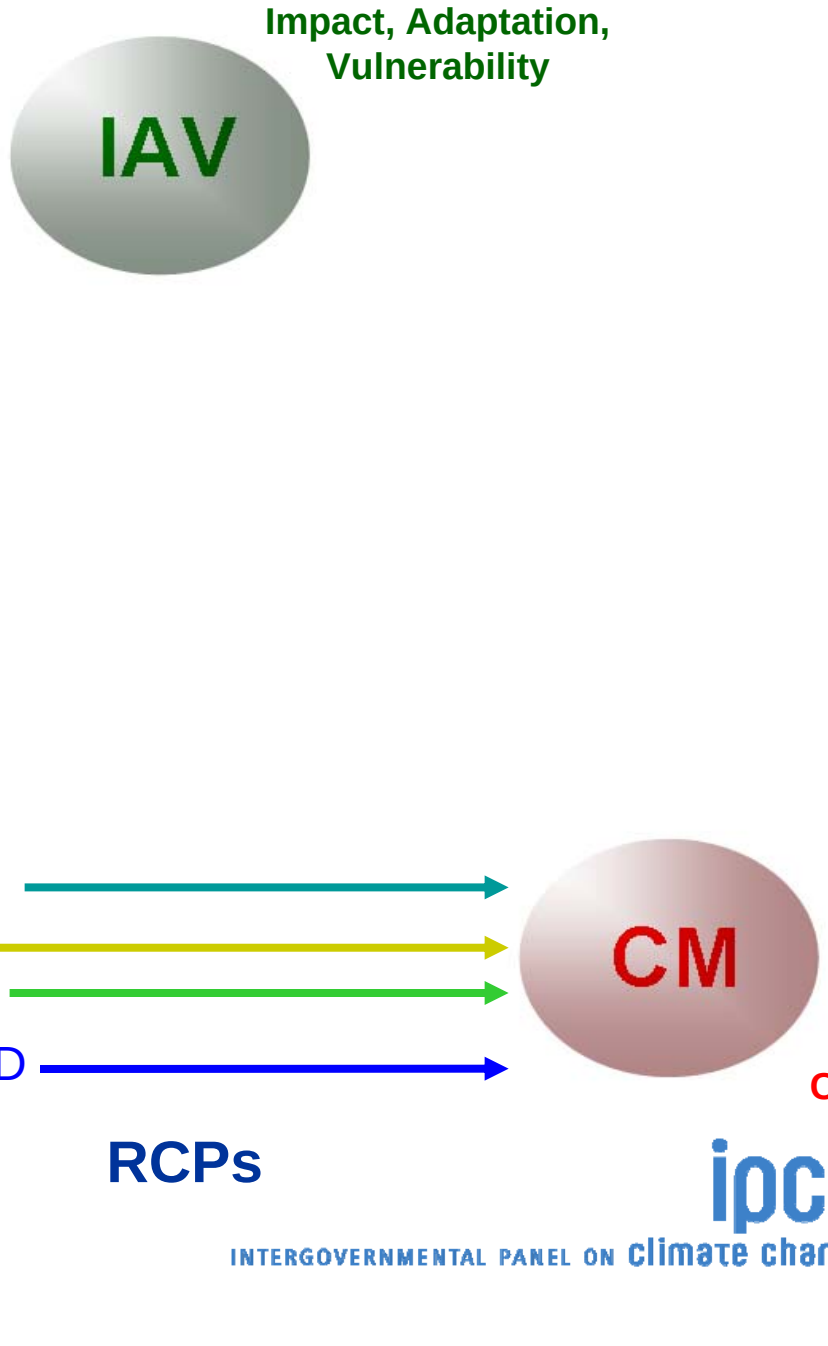
Scenario Process



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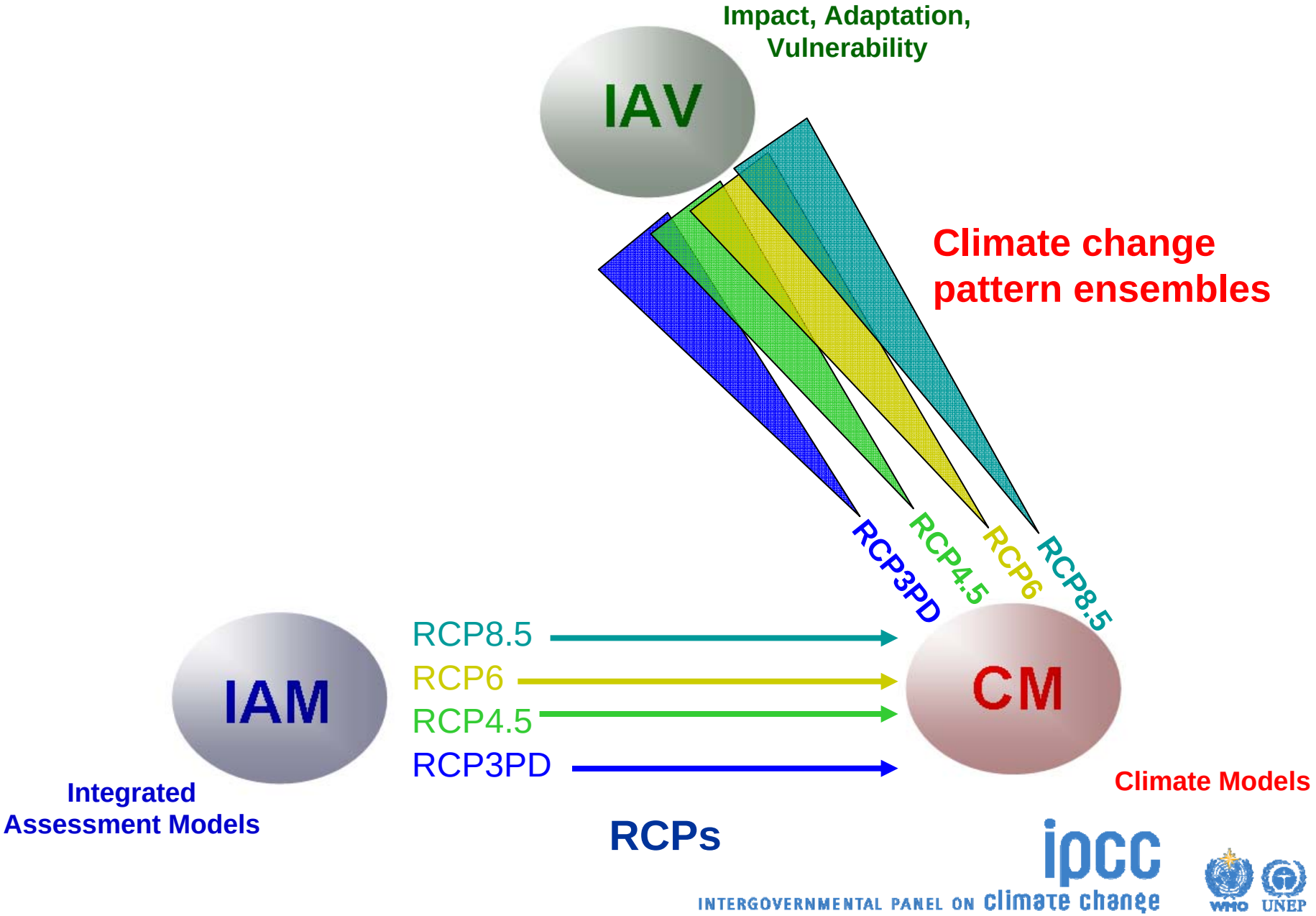

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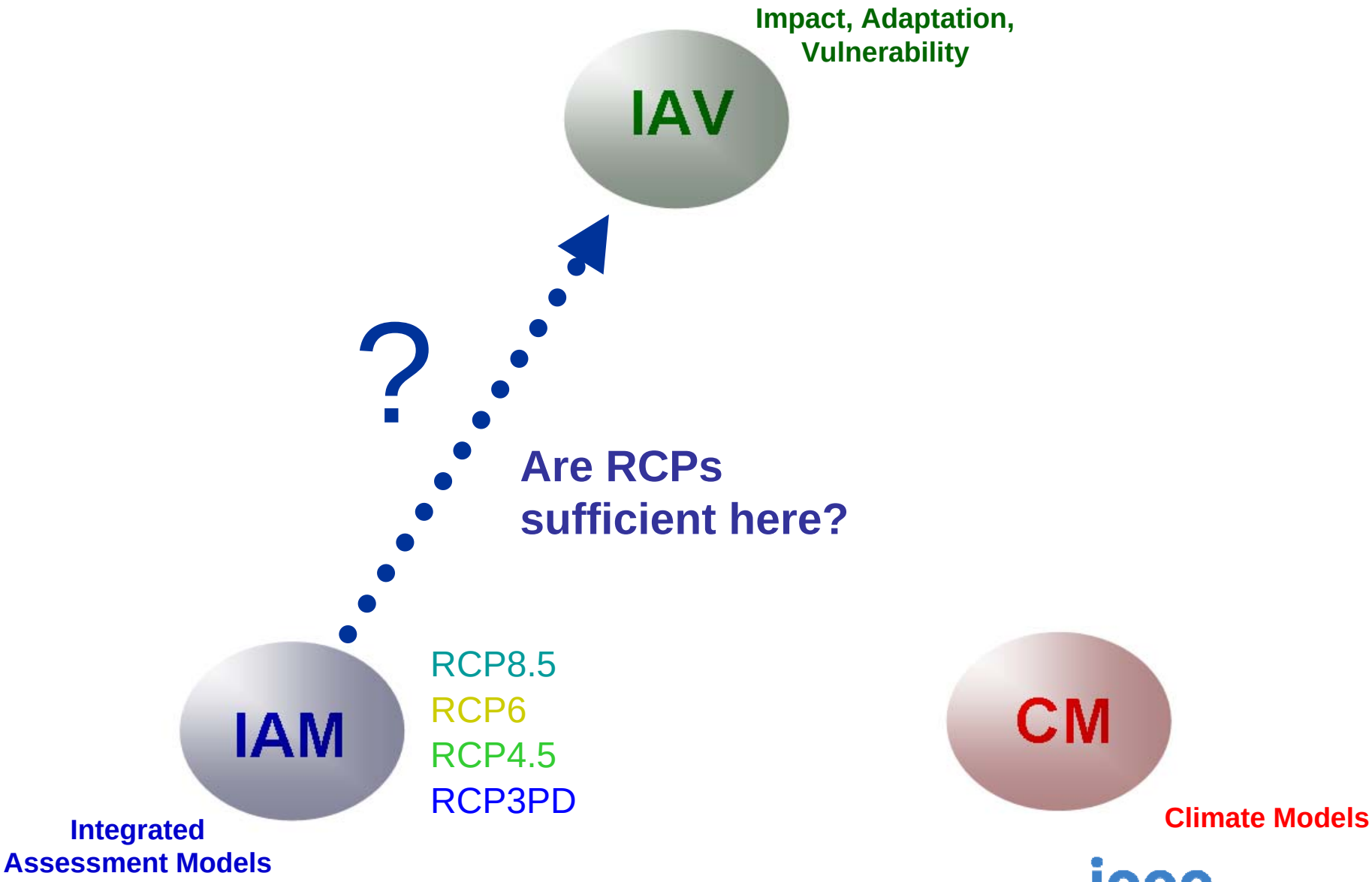

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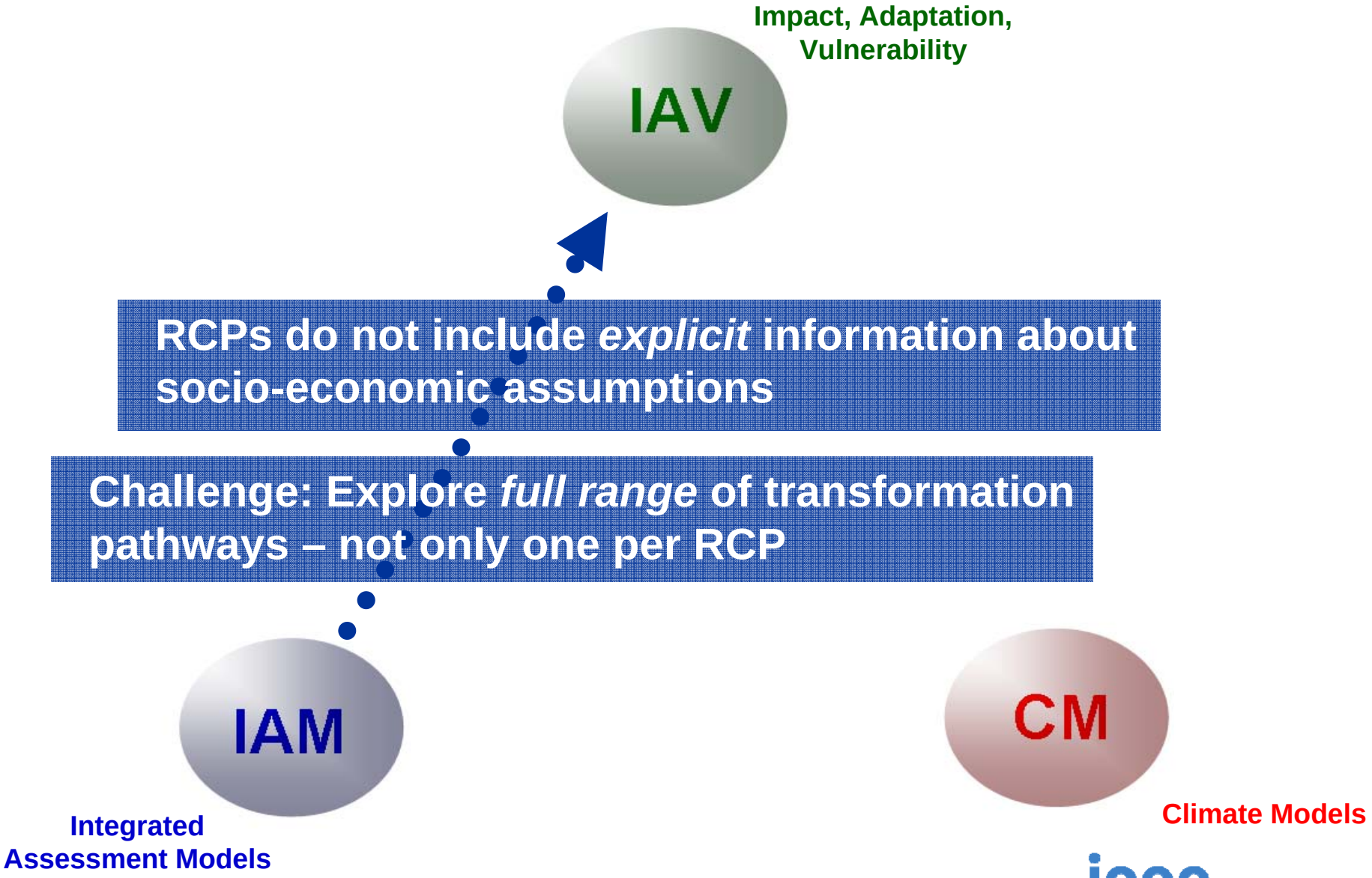

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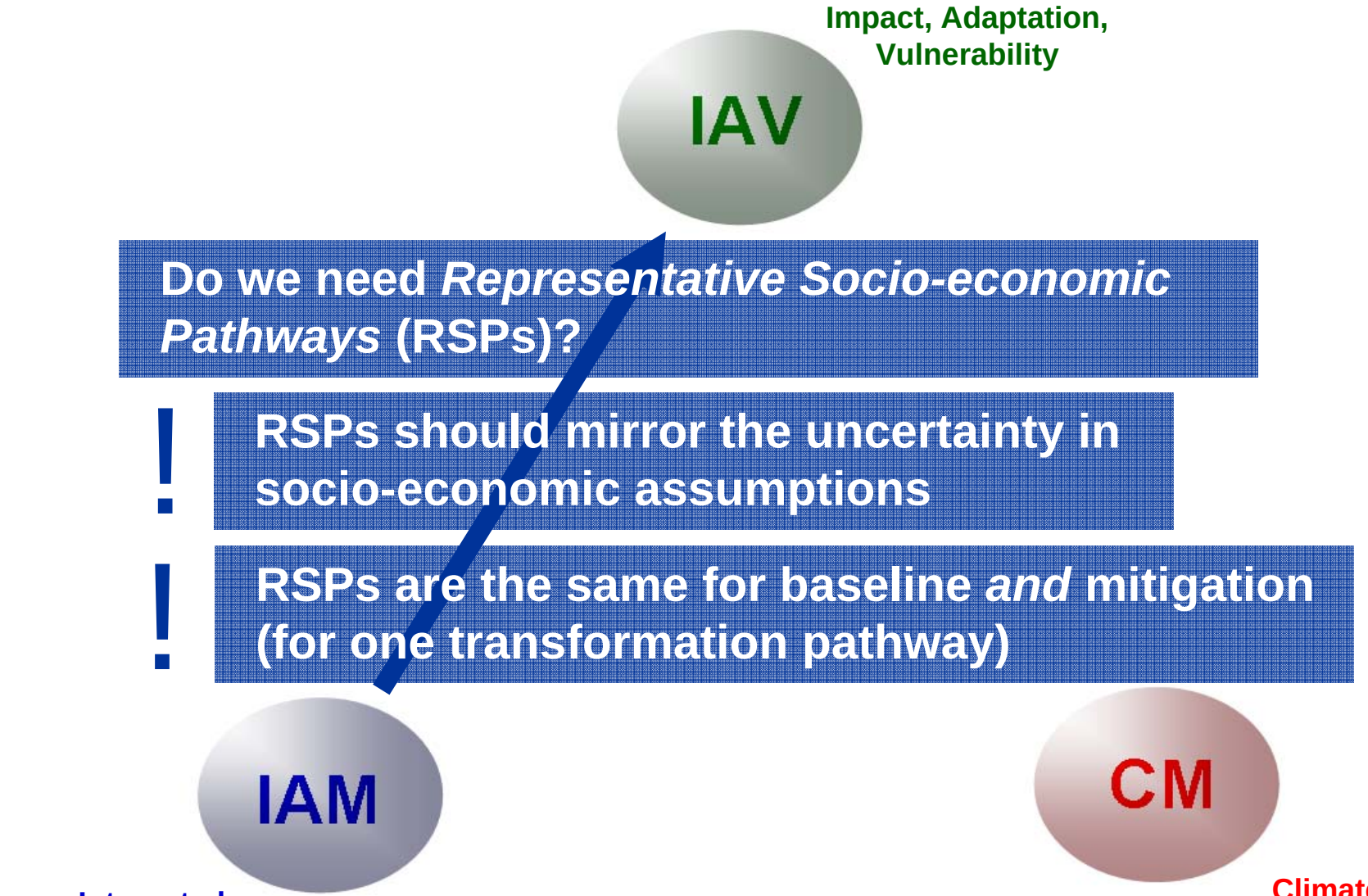

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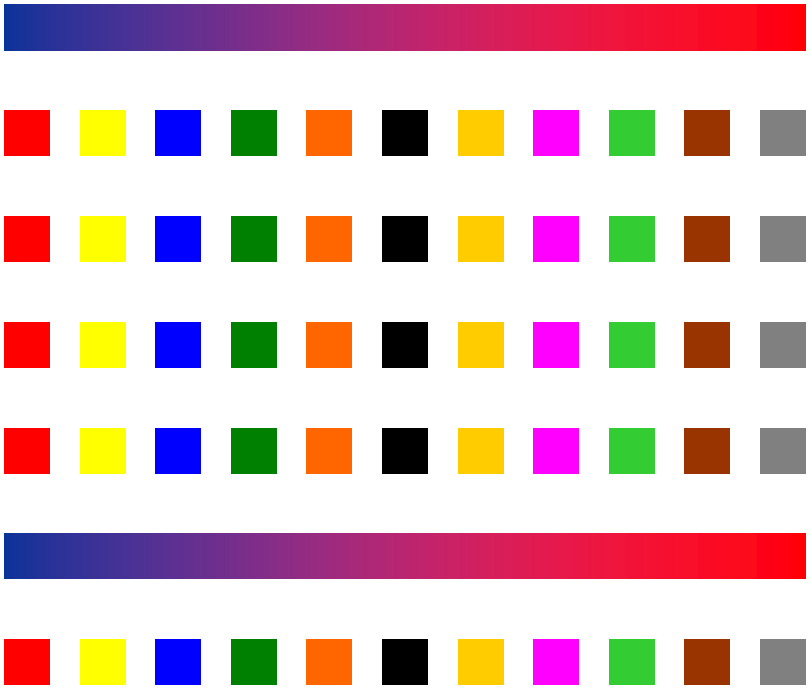
8 Steps to Enlightenment

Step 1: Identify Drivers



demographic development

social trends

economic trends

technological trends

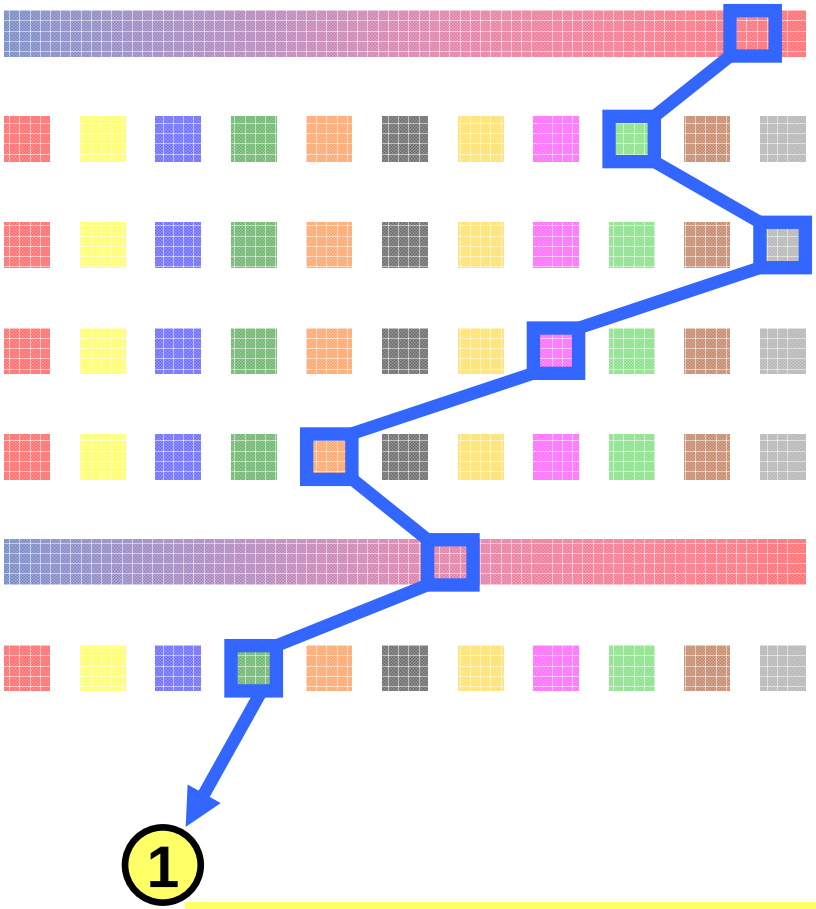
regional heterogeneous trends

fossil fuel prices / coal availability

Institutions

…

Step 2: Driver Parameterization Defines RSPs



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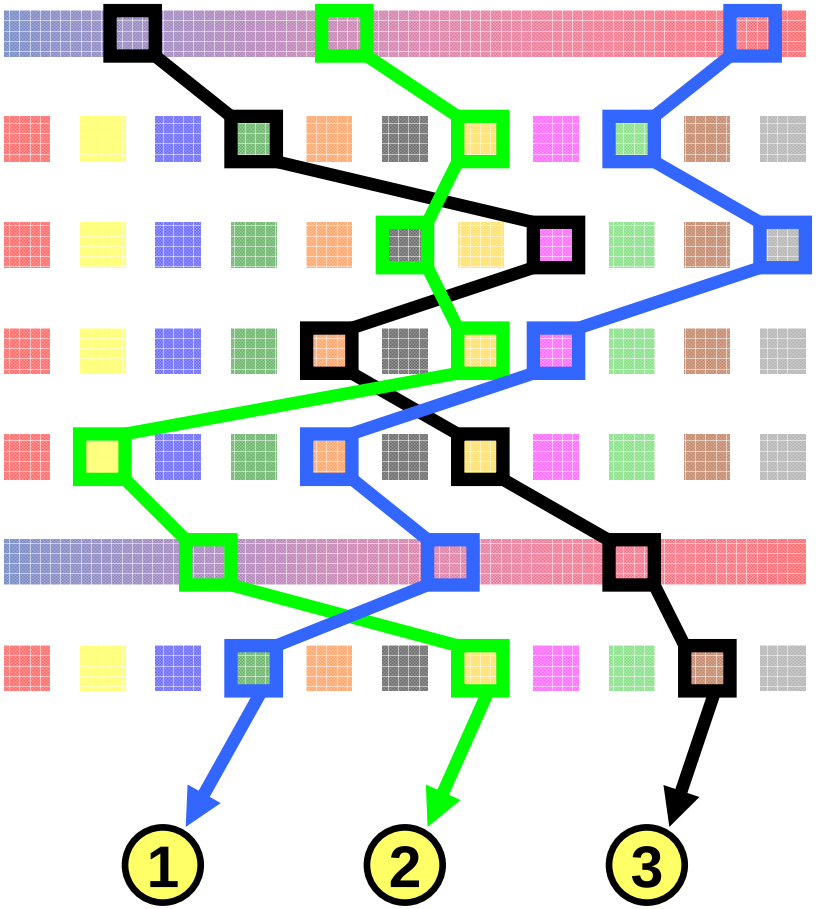
Representative Socio-economic Pathway (RSP)

Step 2: Driver Parameterization Defines RSPs



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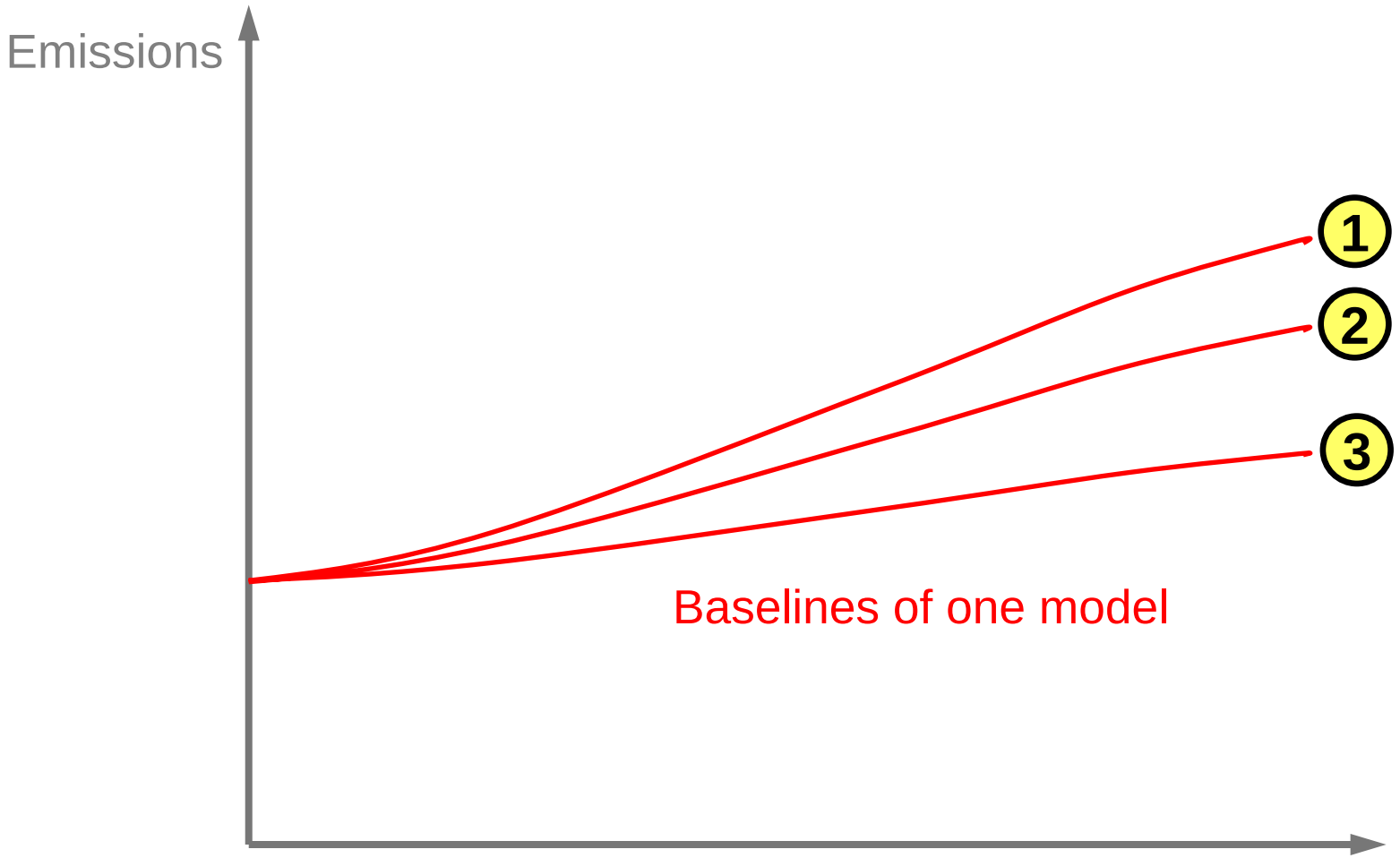
…

RSPs do not include an assumption about the future emission trends - this is a model outcome.

Step 3: Baseline Runs for Each of the 3 R**S**Ps



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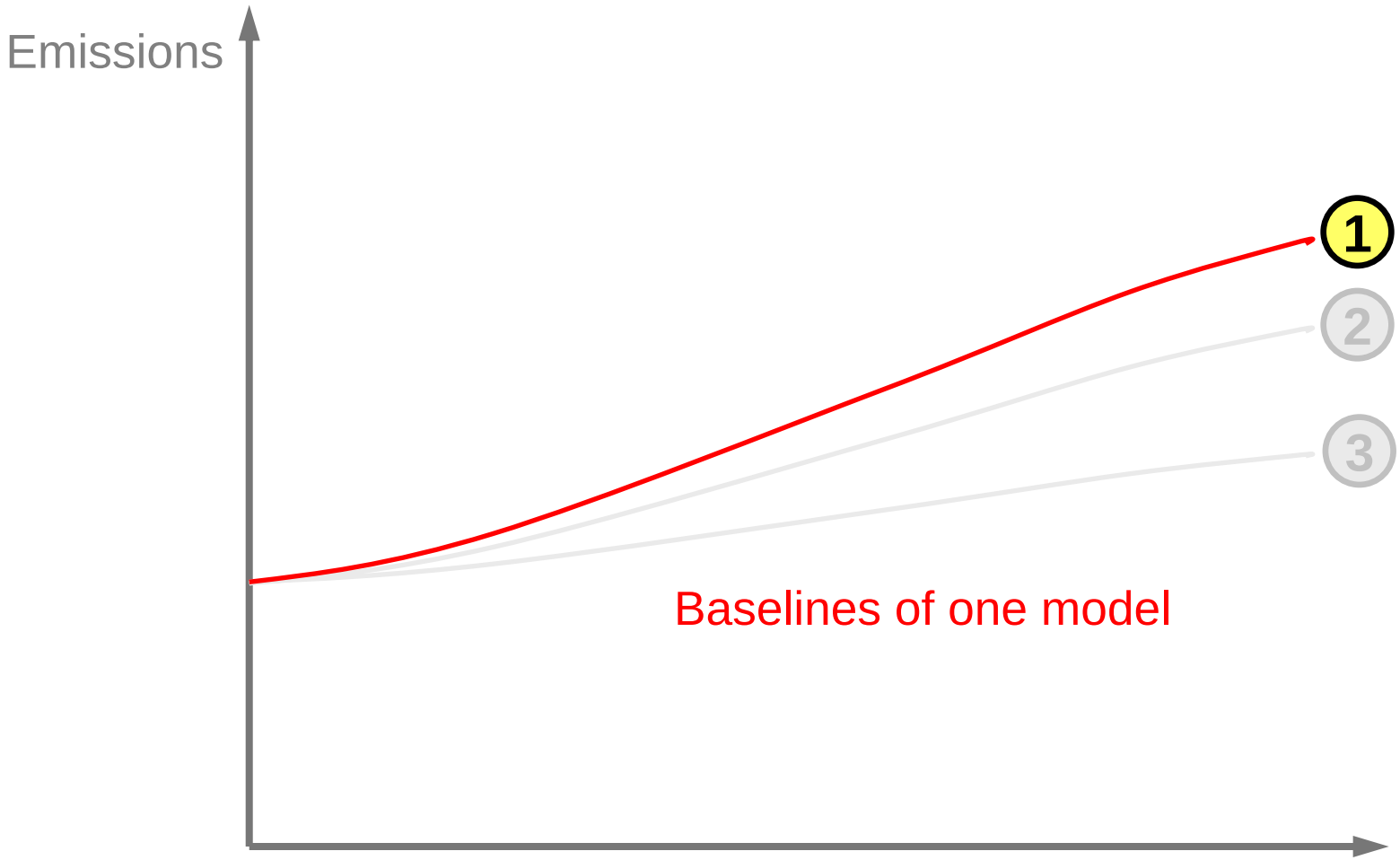
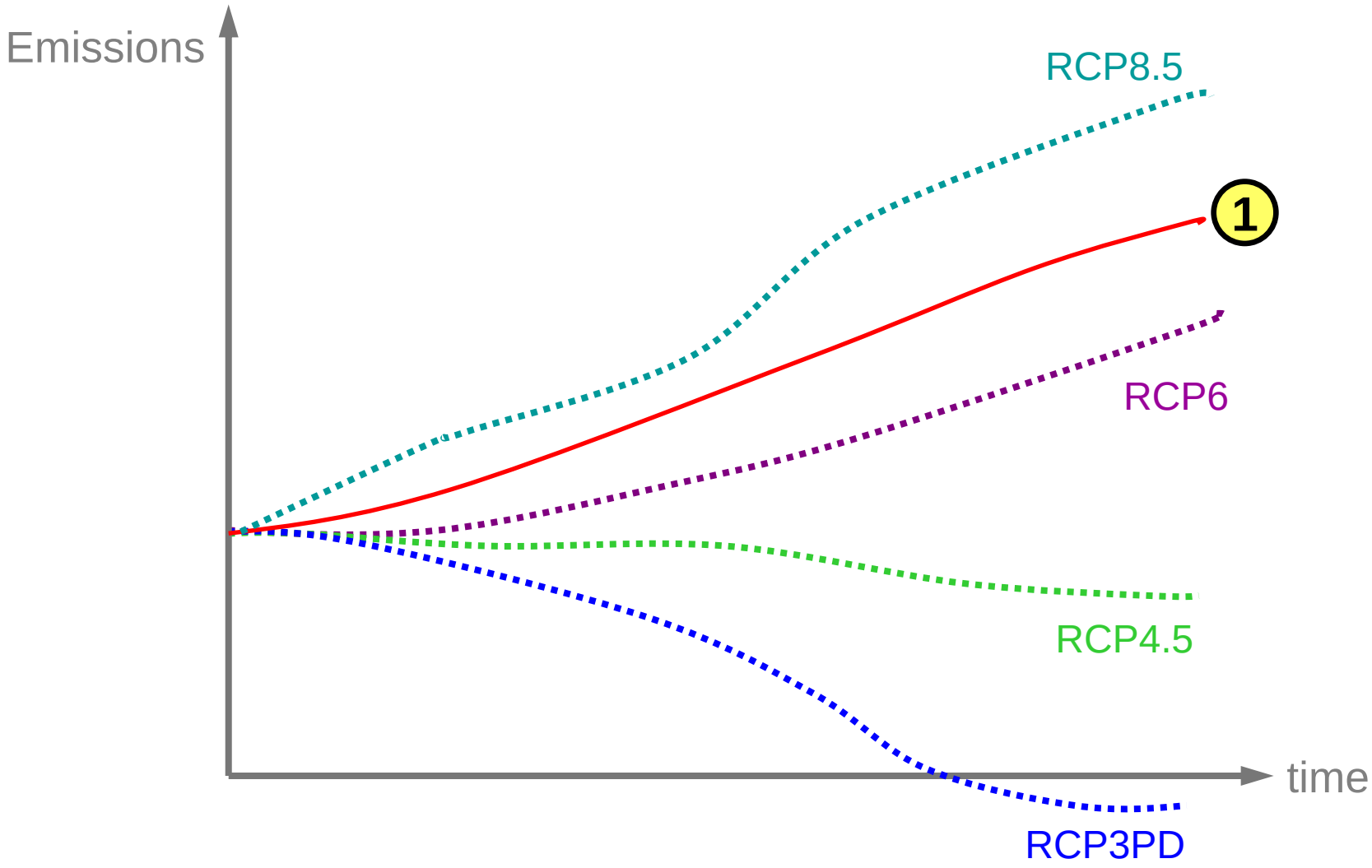
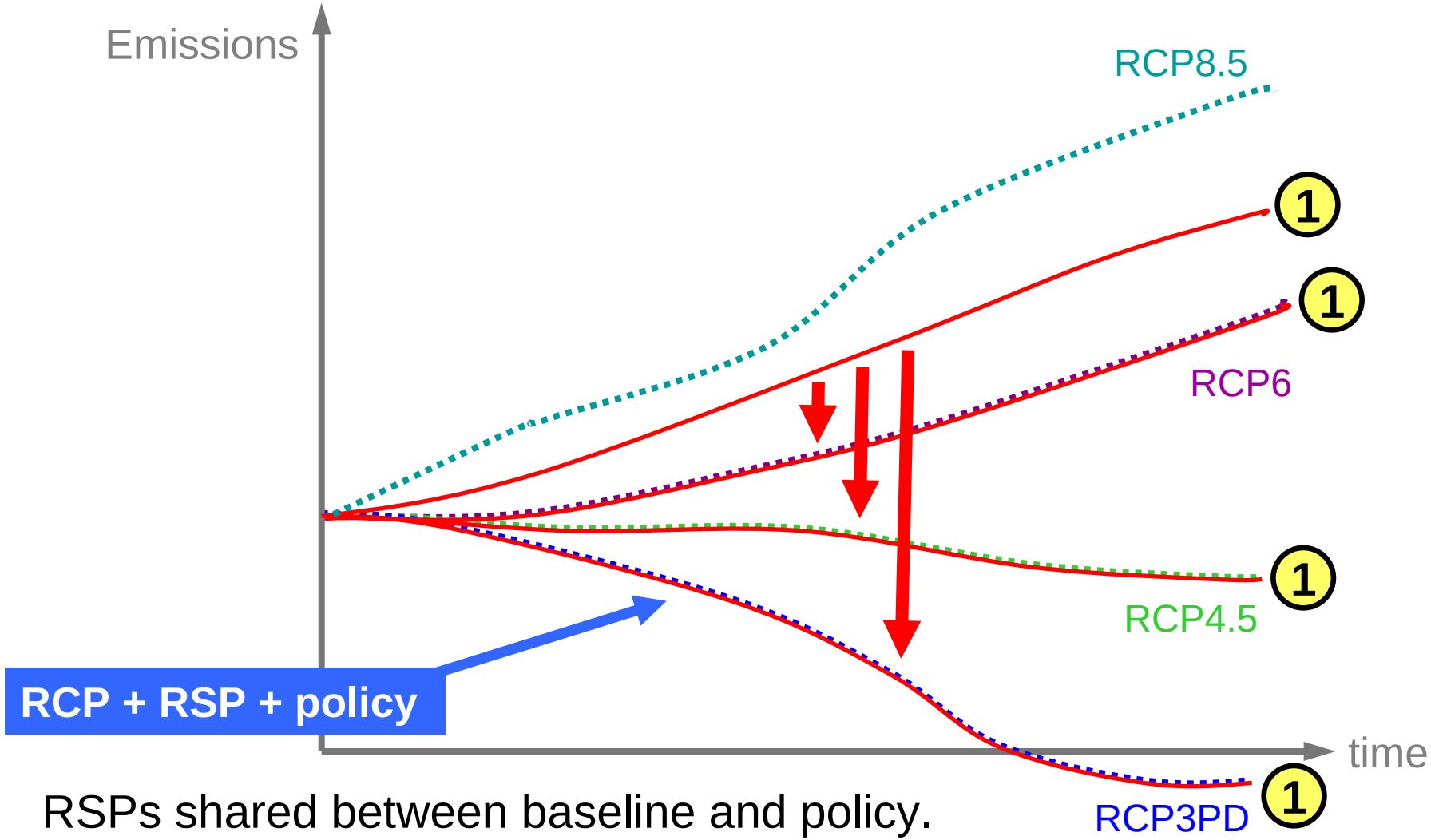


Step 4: Model Runs R**C**Ps for R**S**P ①



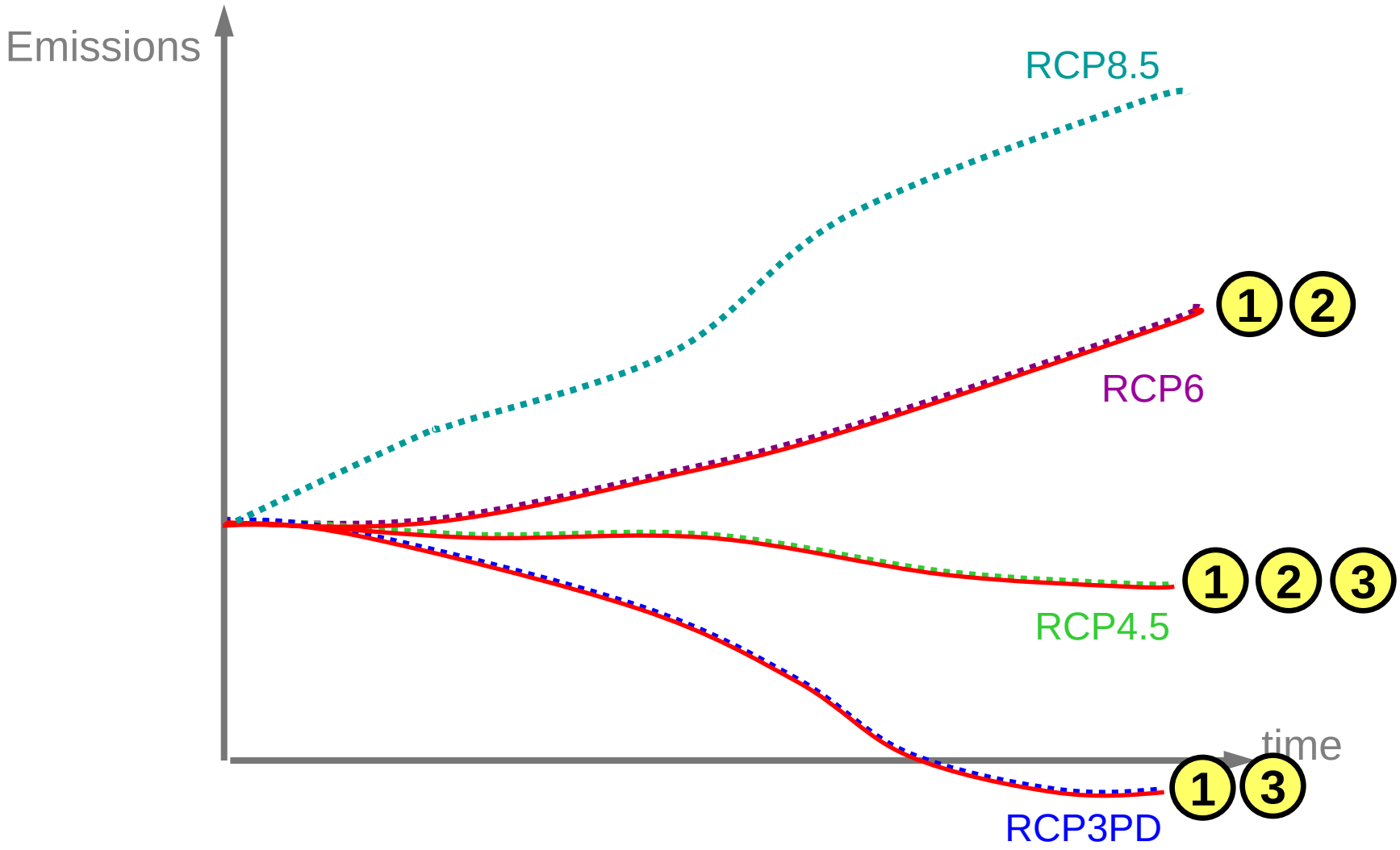
Step 5: Model Runs 4 RCPs for RSP 1



RSPs shared between baseline and policy.

RSPs not compatible to all RCPs.

Step 6: Each Model Runs 4 R**C**Ps with all R**S**Ps



Research Question: Which RSP is compatible with which RCP? Which policies must be applied to reach a particular RCP? Which technologies are needed?

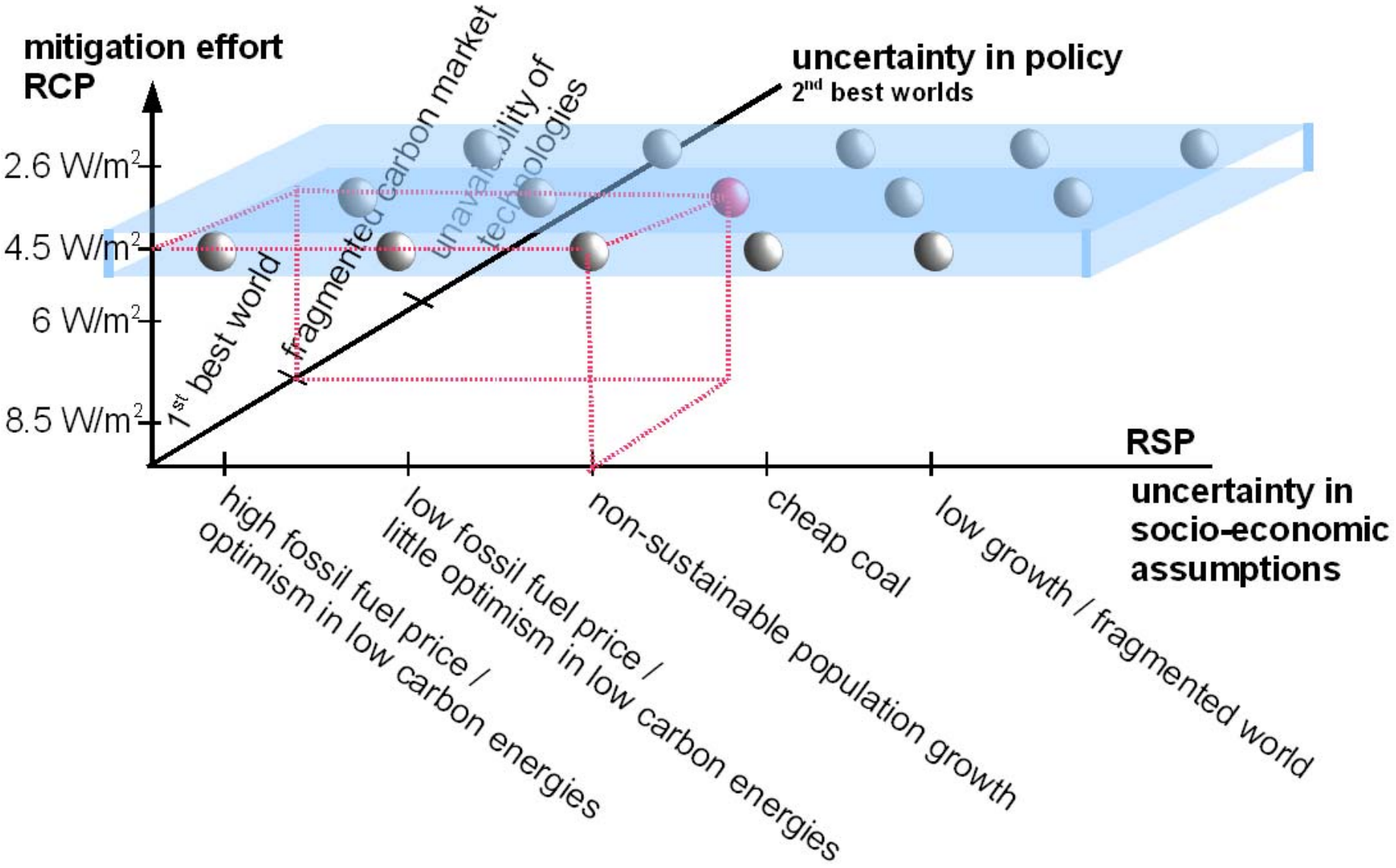
Step 7: Run Second Best Scenarios

Second best scenarios

for baseline **&** mitigation scenario:

- Limited availability of technologies
  (e.g. without CCS)
- Run extreme scenarios
  (e.g. very high nuclear, high use of bio-energy)
- Heterogeneous mitigation policies
- …

Step 8: Tell Policy Relevant Stories in 3D



8 Steps to Enlightenment

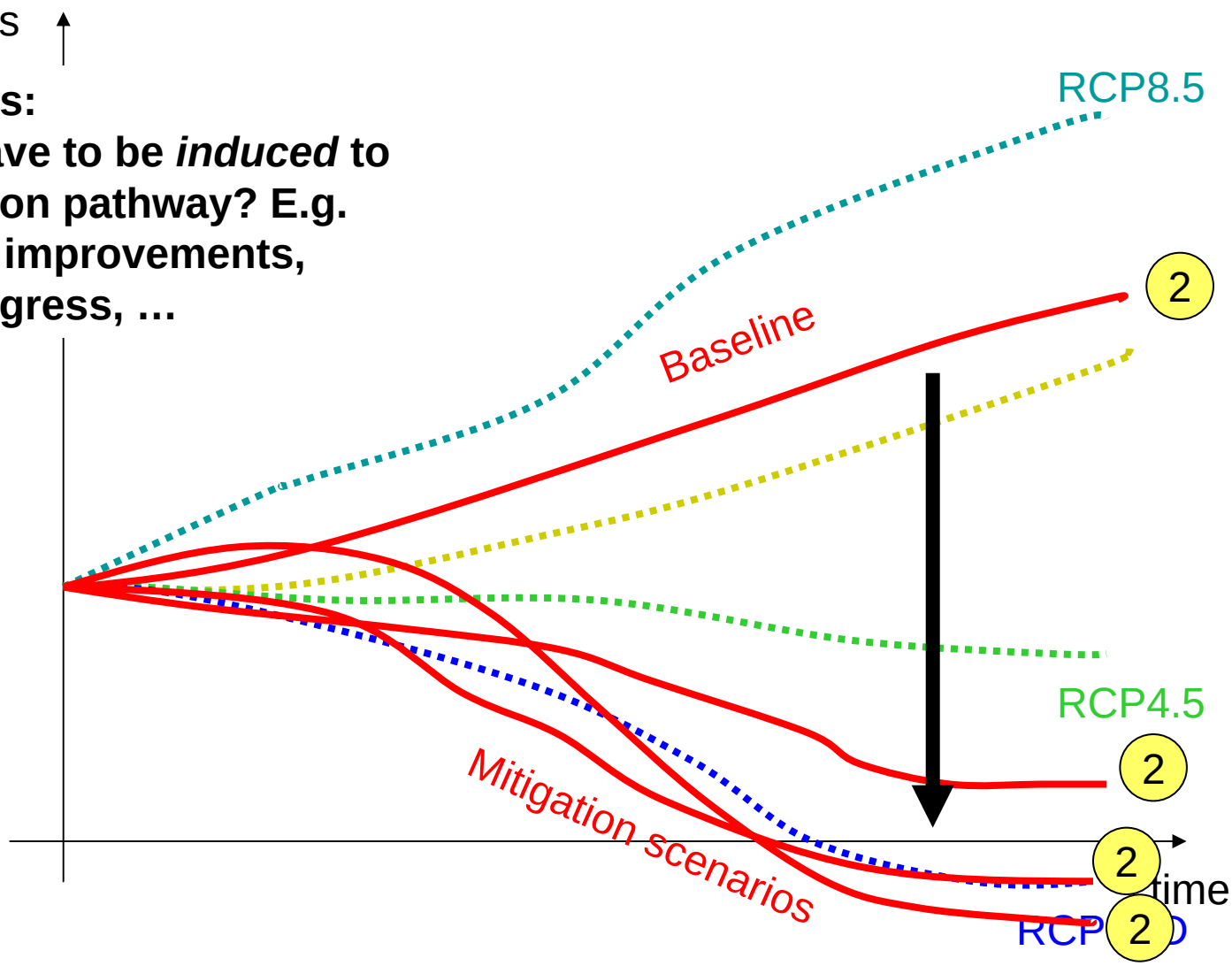
… will help developing consistent scenarios for all IPCC Working Groups

Supplementary Slides

Step 6: Assessing Further Transformation Pathways

Research Questions:

- **Which policies have to be *induced* to achieve a mitigation pathway? E.g. energy efficiency improvements, technological progress, …**



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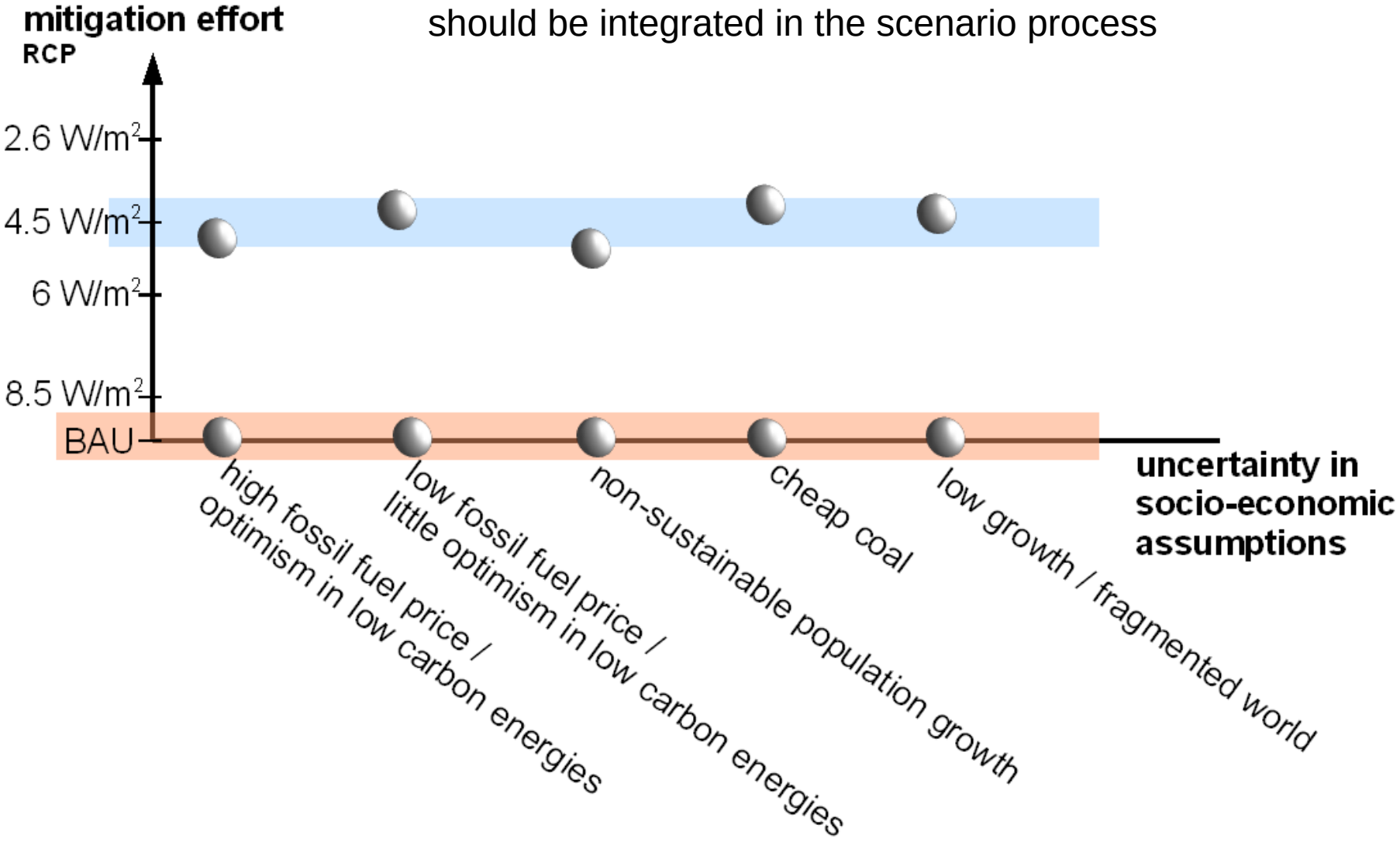

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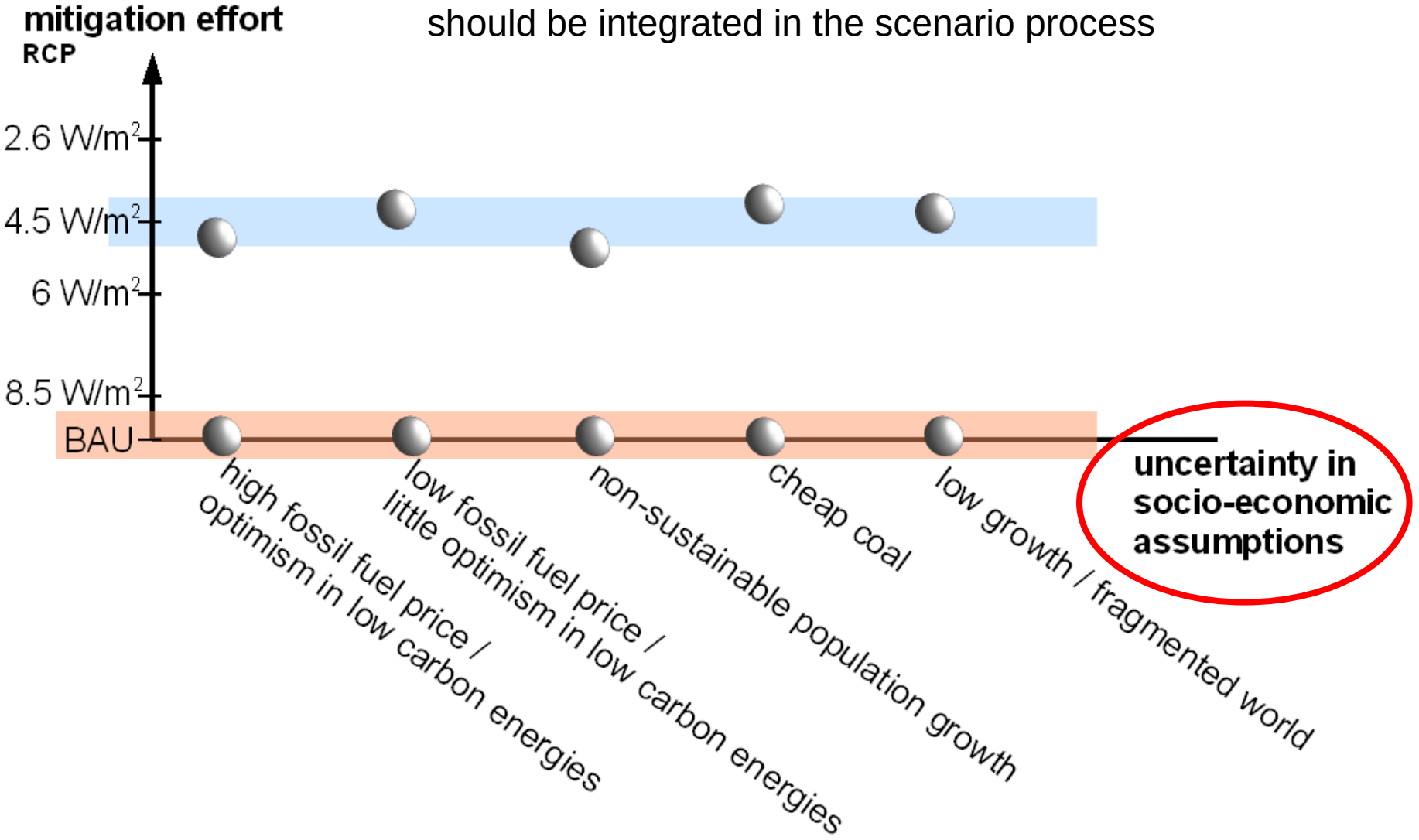

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