Through the IPCC lens – what we need for a reasonable assessment

ISI-MIP Kick-off workshop, 6-7 February 2012, Potsdam

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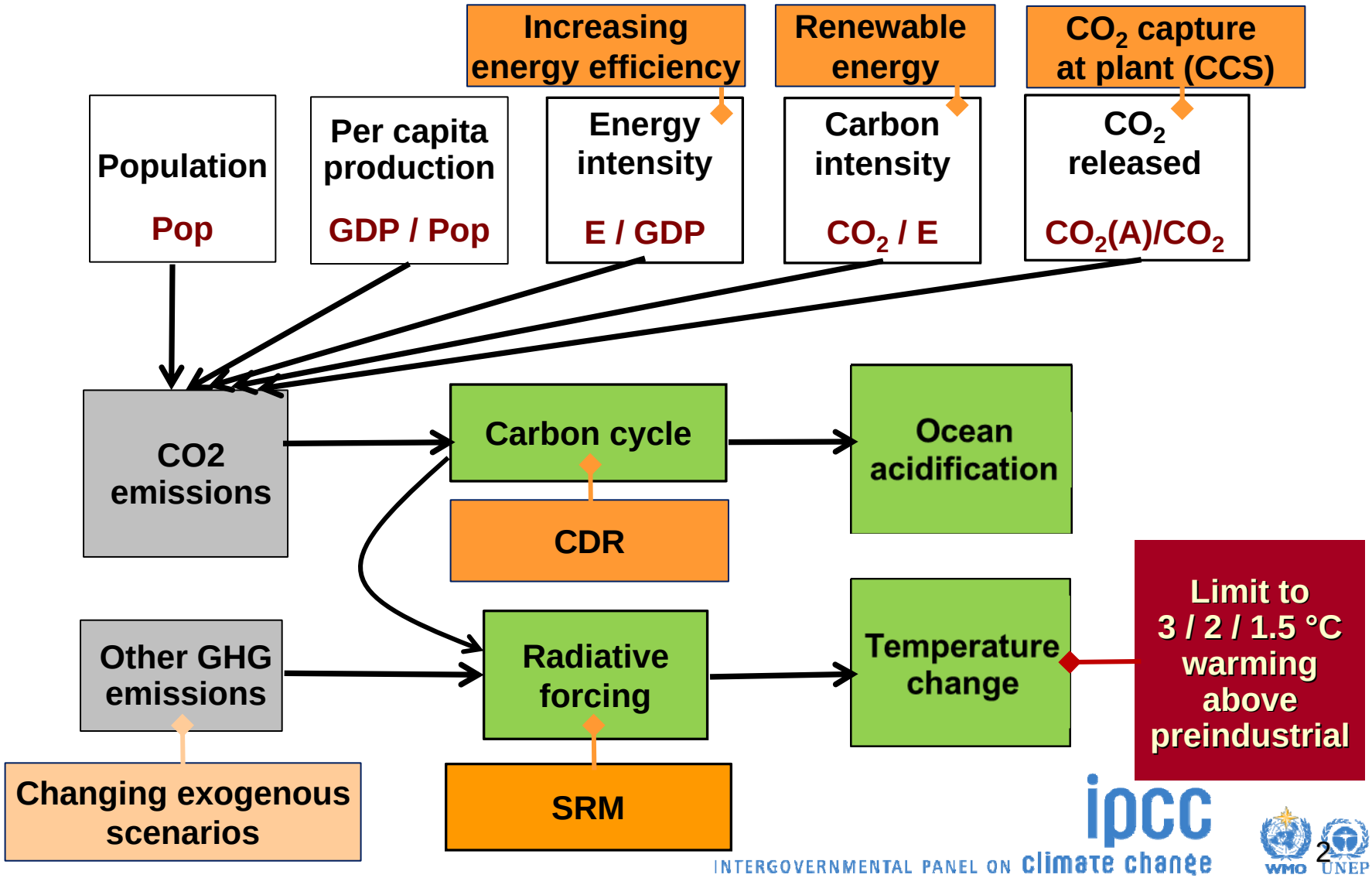
WMO UNEP

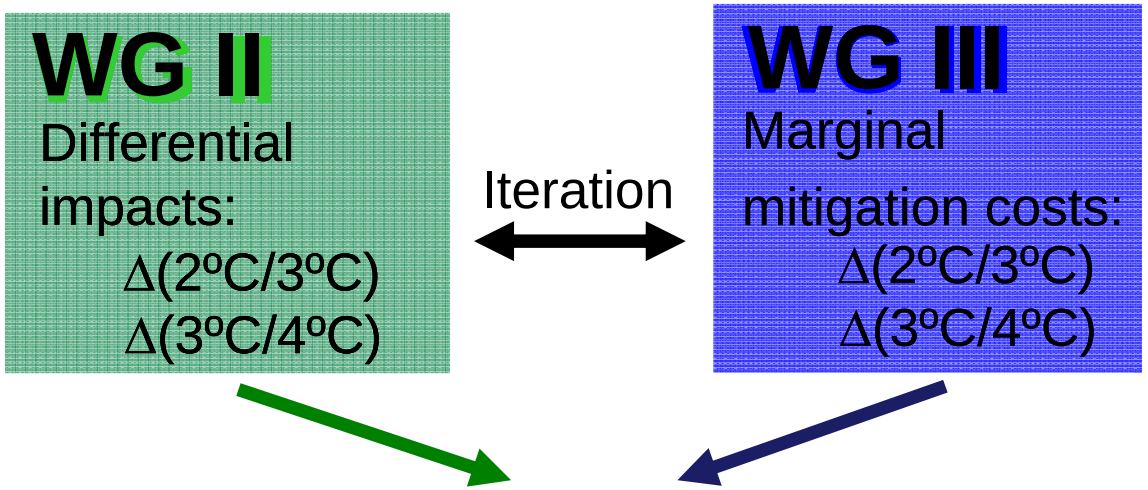
Exploring the solution space



Objectives of AR5 Scenario Process

Explore adaptation and mitigation options

Explore benefits, costs, and risks of adaptation and mitigation



Δ(2º/3º), Δ(3º/4º) policies:
Consistent understanding of costs of impacts and of mitigating impacts

Establish smallest common denominator between both communities

The Scientific Arena

Table 3.10: *Properties of emissions pathways for alternative ranges of CO_2 and CO_2-eq stabilization targets. Post-TAR stabilization scenarios in the scenario database (see also Sections 3.2 and 3.3); data source: after Nakicenovic et al., 2006 and Hanaoka et al., 2006)*

Class	Anthropogenic addition to radiative forcing at stabilization (W/m^2)	Multi-gas concentration level (ppmv CO_2-eq)	Stabilization level for CO_2 only, consistent with multi-gas level (ppmv CO_2)	Number of scenario studies	Global mean temperature C increase above pre-industrial at equilibrium, using best estimate of climate sensitivity[c]	Likely range of global mean temperature C increase above pre-industrial at equilibrium[a]	Peaking year for CO_2 emissions[b]	Change in global emissions in 2050 (% of 2000 emissions)[b]
I	2.5-3.0	445-490	350-400	6	2.0-2.4	1.4-3.6	2000-2015	-85 to -50
II	3.0-3.5	490-535	400-440	18	2.4-2.8	1.6-4.2	2000-2020	-60 to -30
III	3.5-4.0	535-590	440-485	21	2.8-3.2	1.9-4.9	2010-2030	-30 to +5
IV	4.0-5.0	590-710	485-570	118	3.2-4.0	2.2-6.1	2020-2060	+10 to +60
V	5.0-6.0	710-855	570-660	9	4.0-4.9	2.7-7.3	2050-2080	+25 to +85
VI	6.0-7.5	855-1130	660-790	5	4.9-6.1	3.2-8.5	2060-2090	+90 to +140

Notes:

a. Warming for each stabilization class is calculated based on the variation of climate sensitivity between 2°C –4.5°C, which corresponds to the likely range of climate sensitivity as defined by Meehl *et al.* (2007,Chapter 10).

b. Ranges correspond to the 70% percentile of the post-TAR scenario distribution.

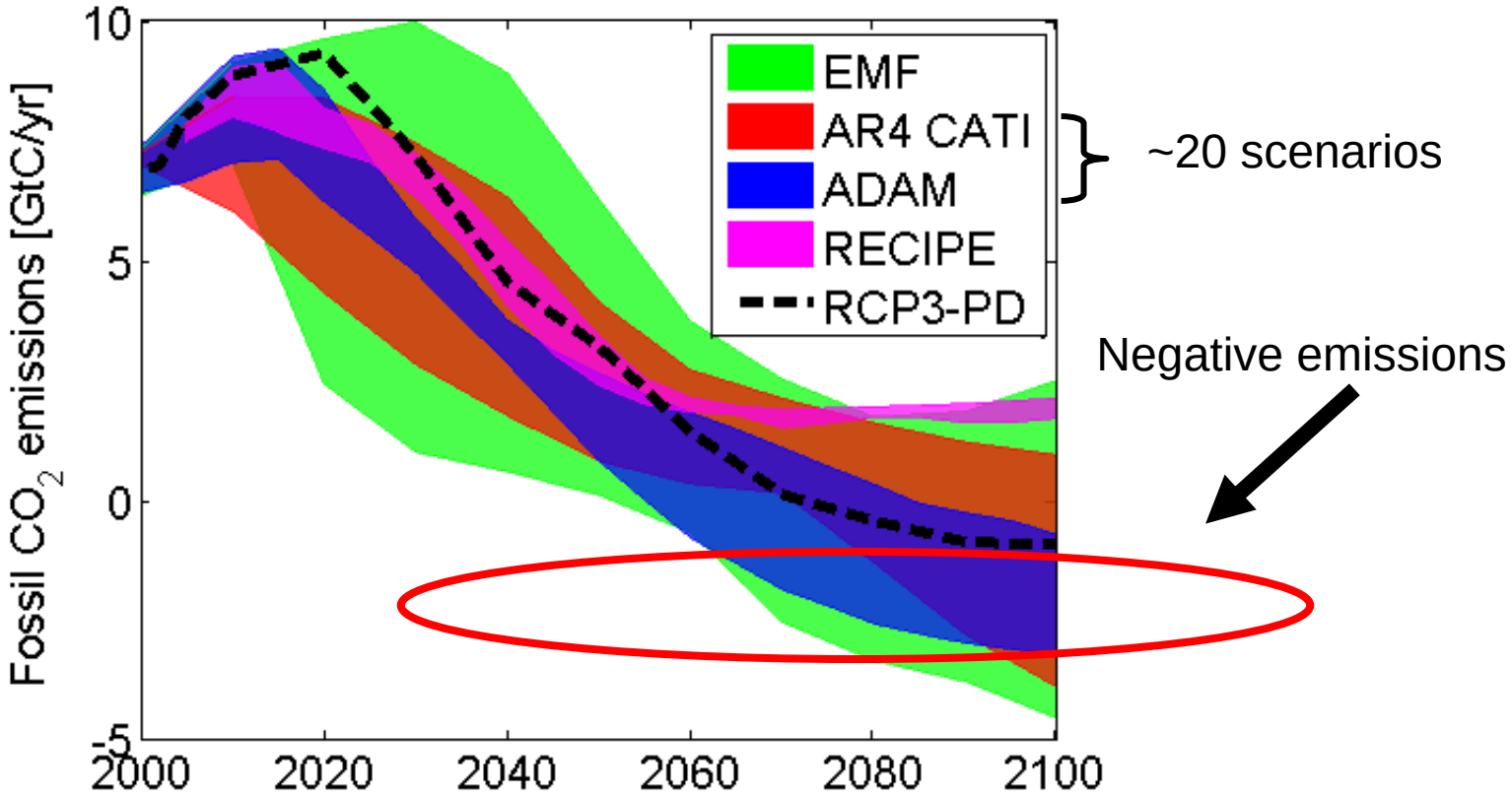
c. 'Best estimate' refers to the most likely value of climate sensitivity, i.e. the mode (see Meehl *et al.* (2007,Chapter 10) and Table 3.9

Fisher et al. (2007), AR4

Only 6 scenarios from 3 models in the lowest category…

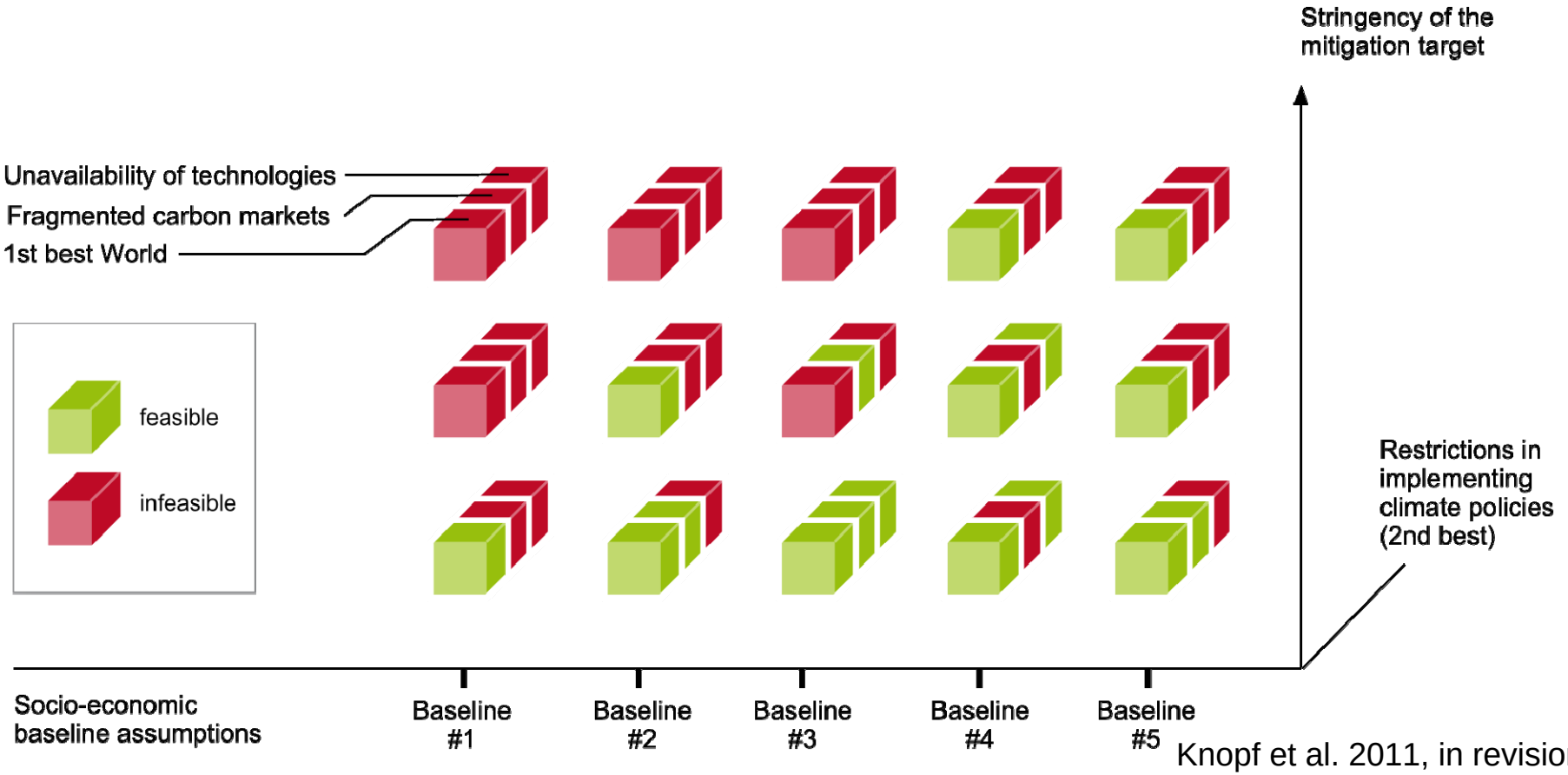
Low Stabilization Scenarios Beyond AR4

- …but already many more available for AR5
- Exploration of RCP3-PD within the scenario process



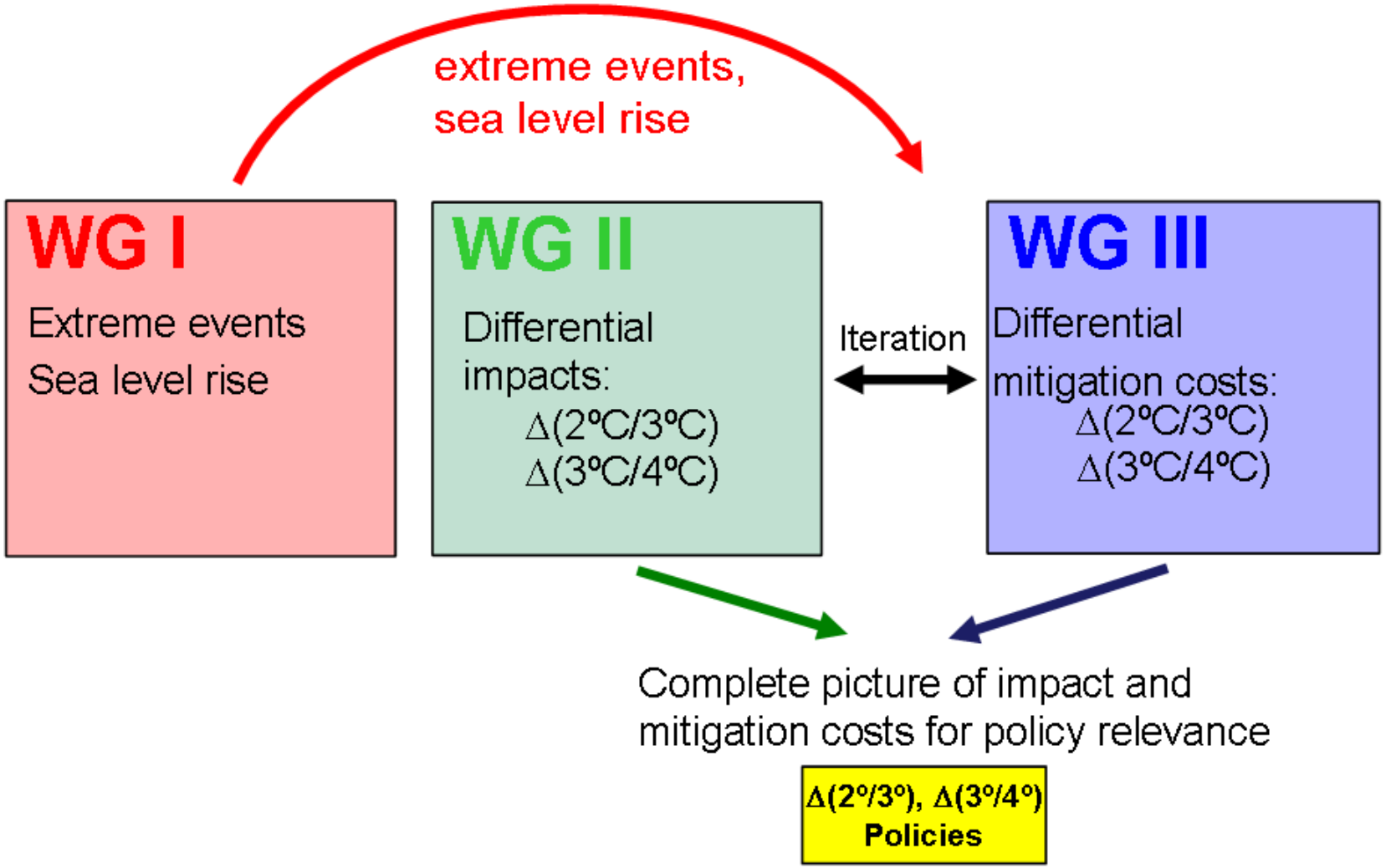
Knopf/Luderer/Edenhofer (2011).

Exploring the feasibility frontier in „2nd best Worlds”



Knopf et al. 2011, in revision

Implications for the Scenario Process



Scenario Process

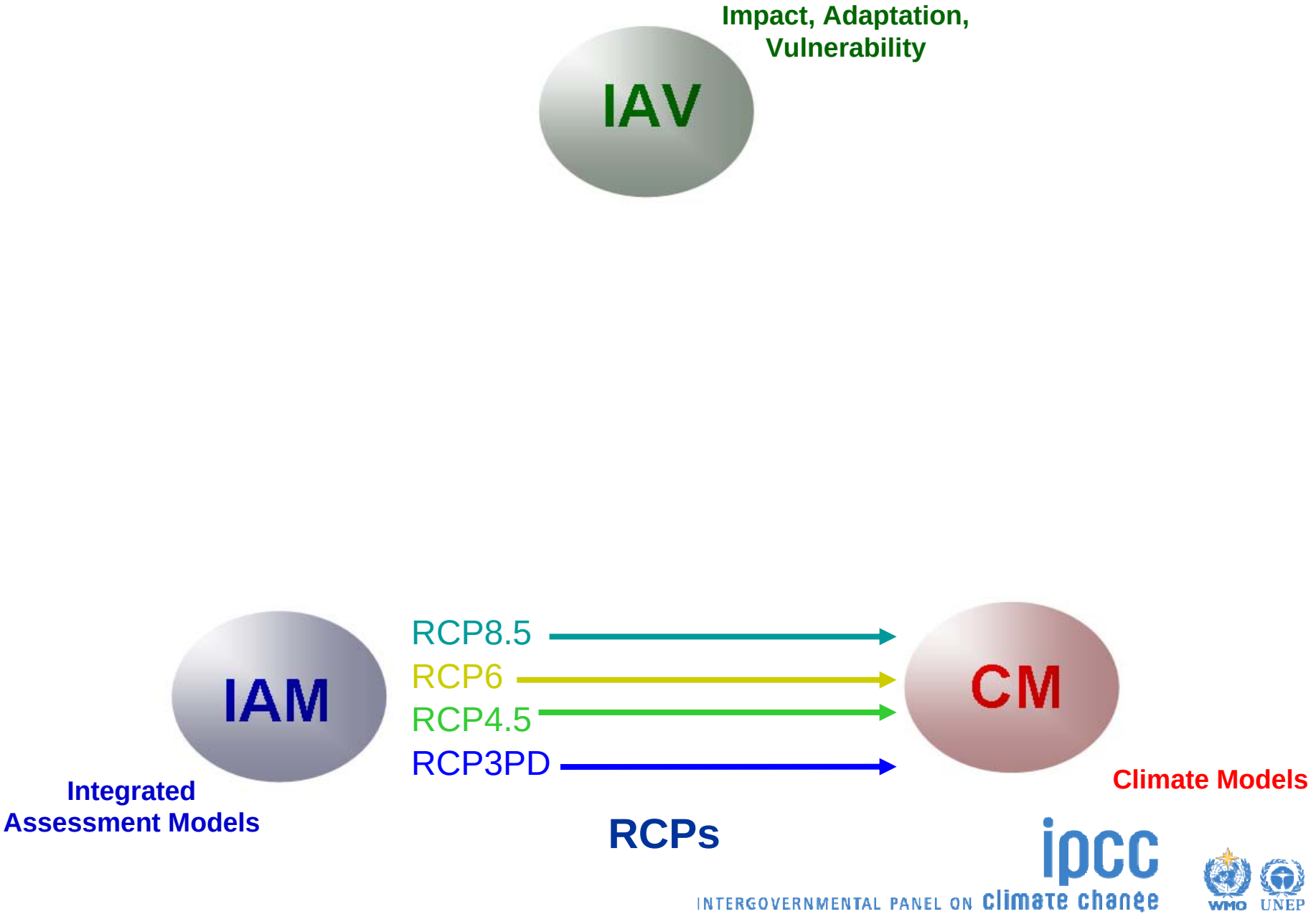
Impact, Adaptation, Vulnerability

Establish coherent scenario process

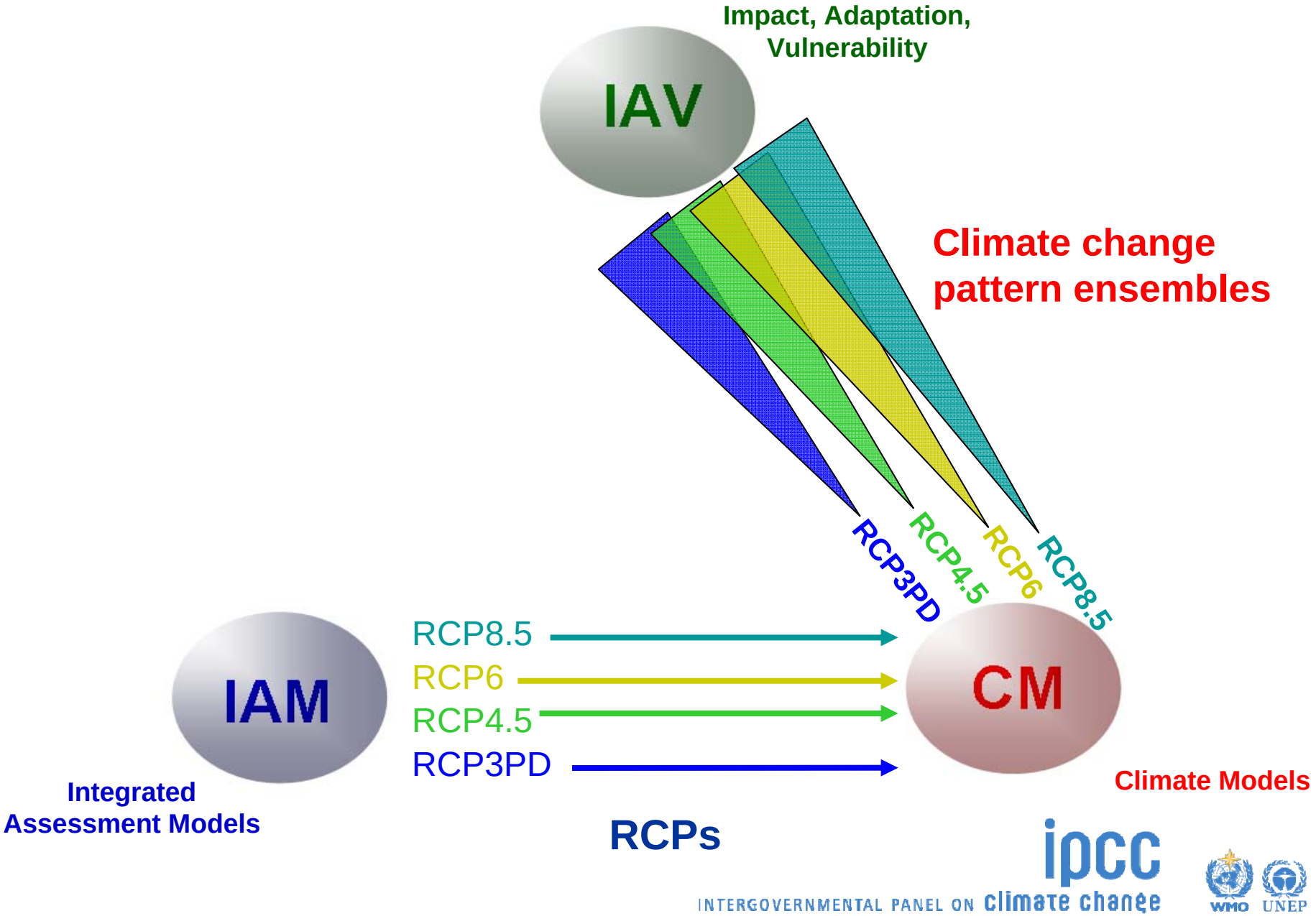
Integrated Assessment Models

Climate Models

Scenario Process



Scenario Process



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INTERGOVERNMENTAL PANEL ON climate change

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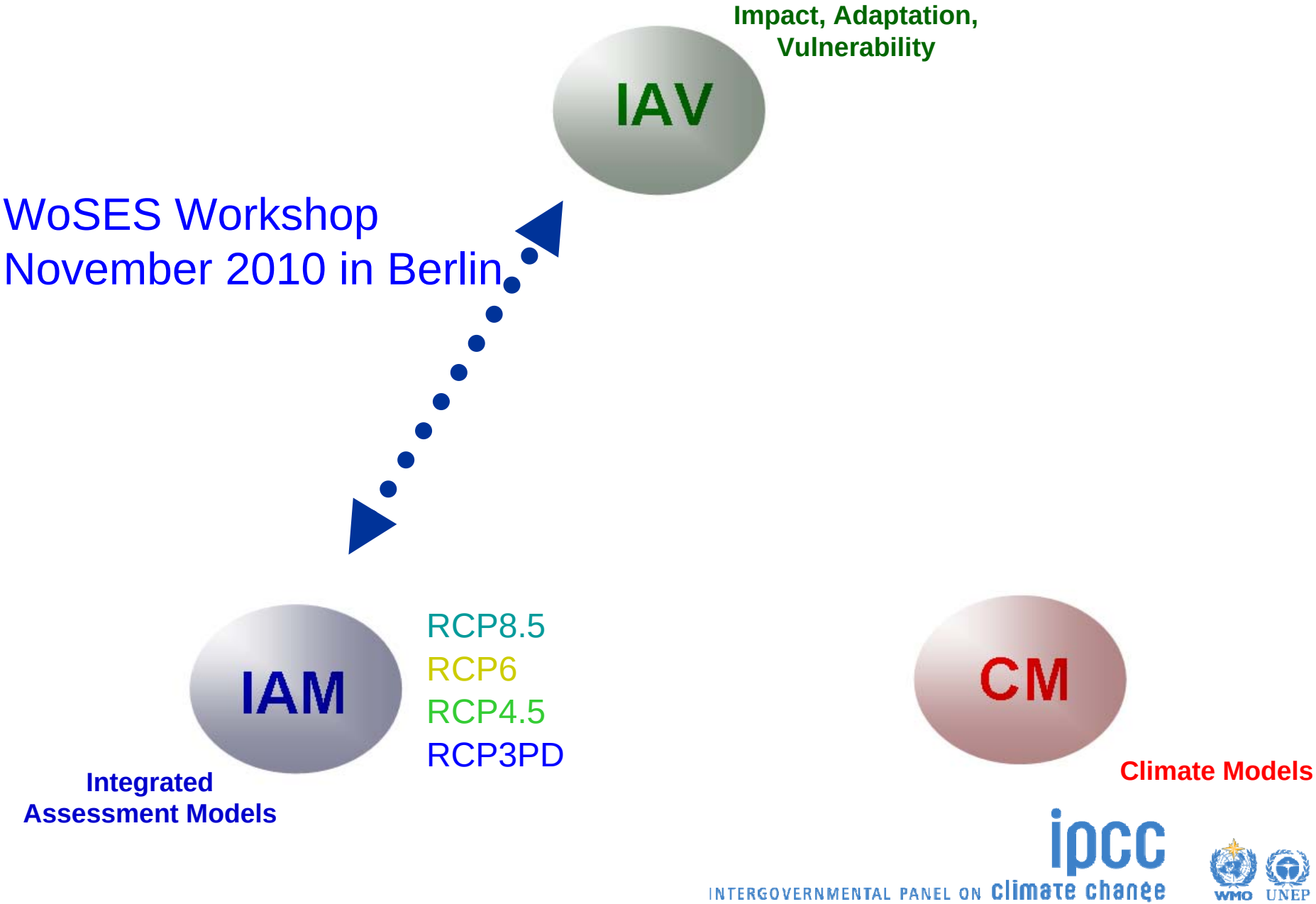
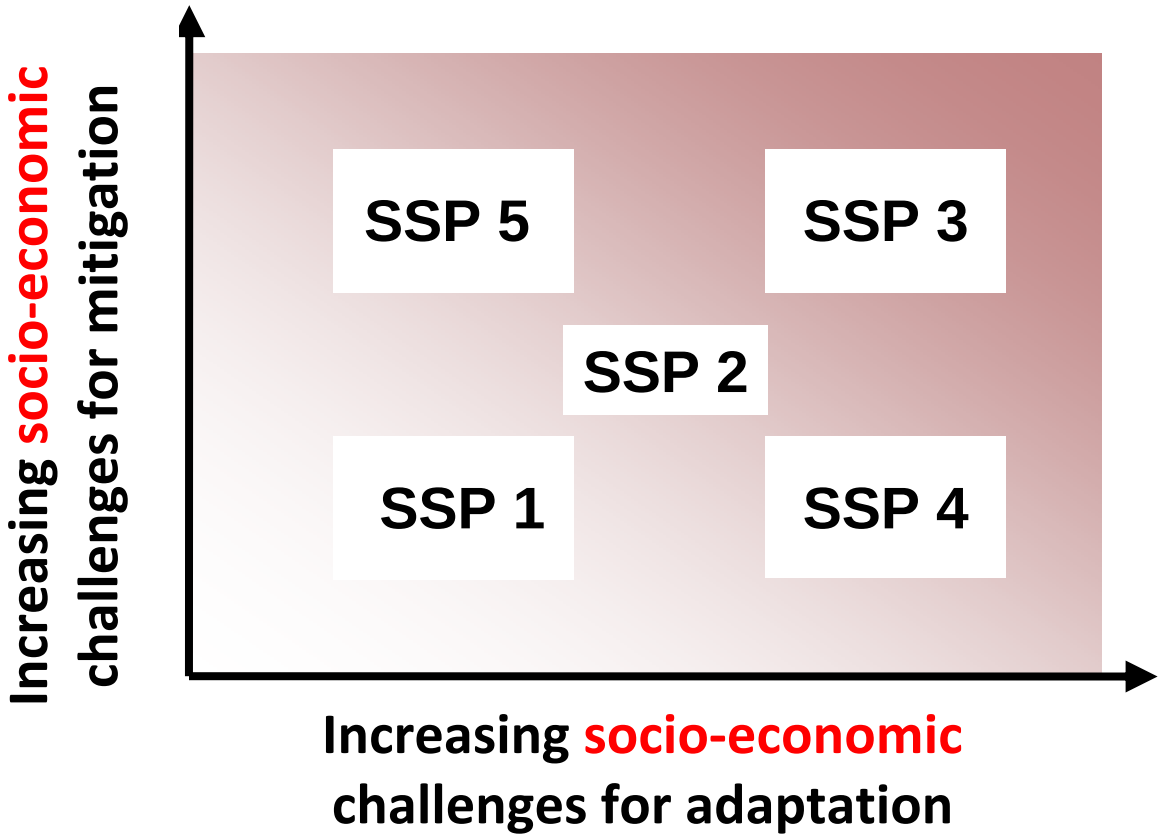
Scenario Process

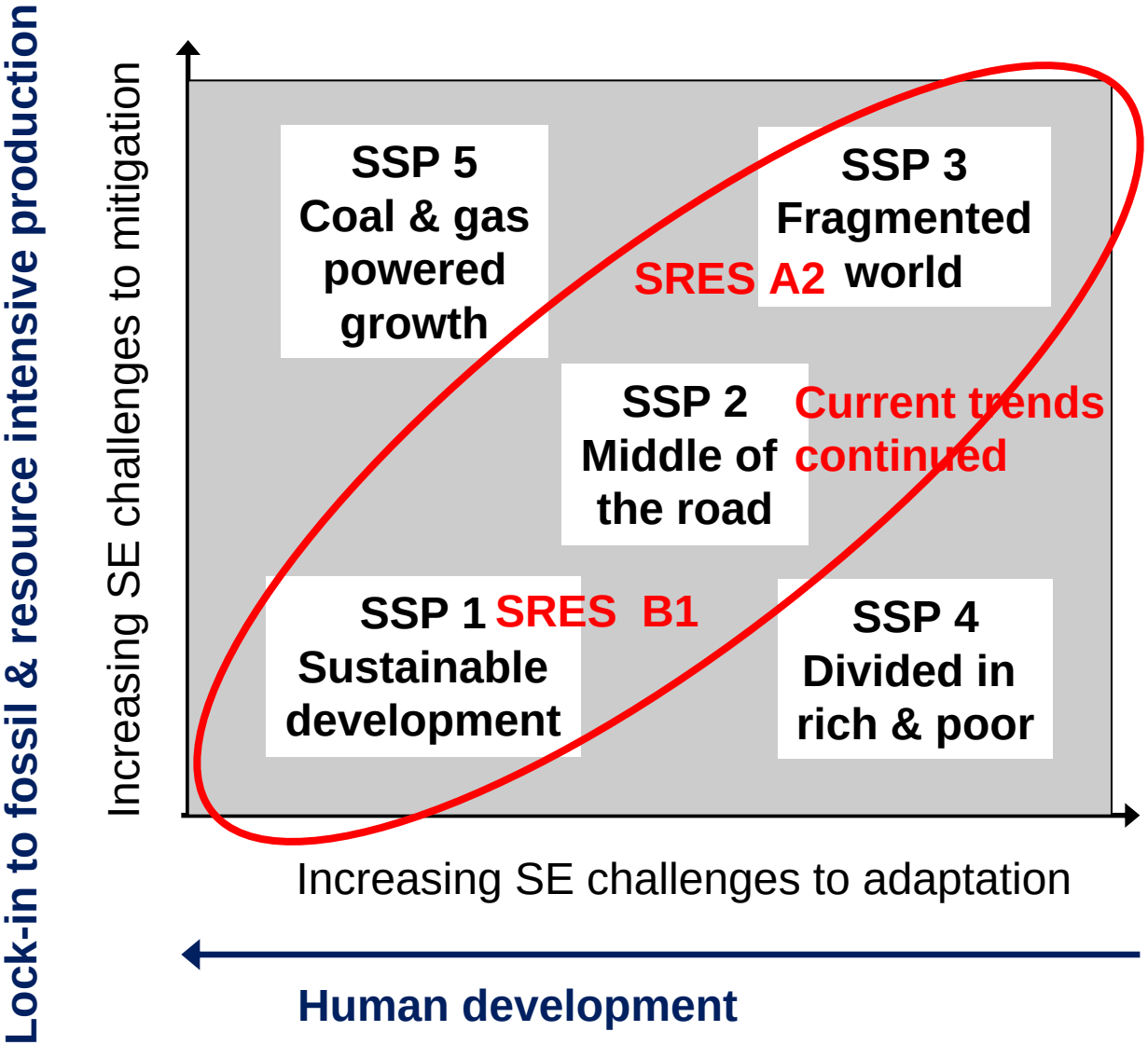


SSP „space“ relevant for climate change

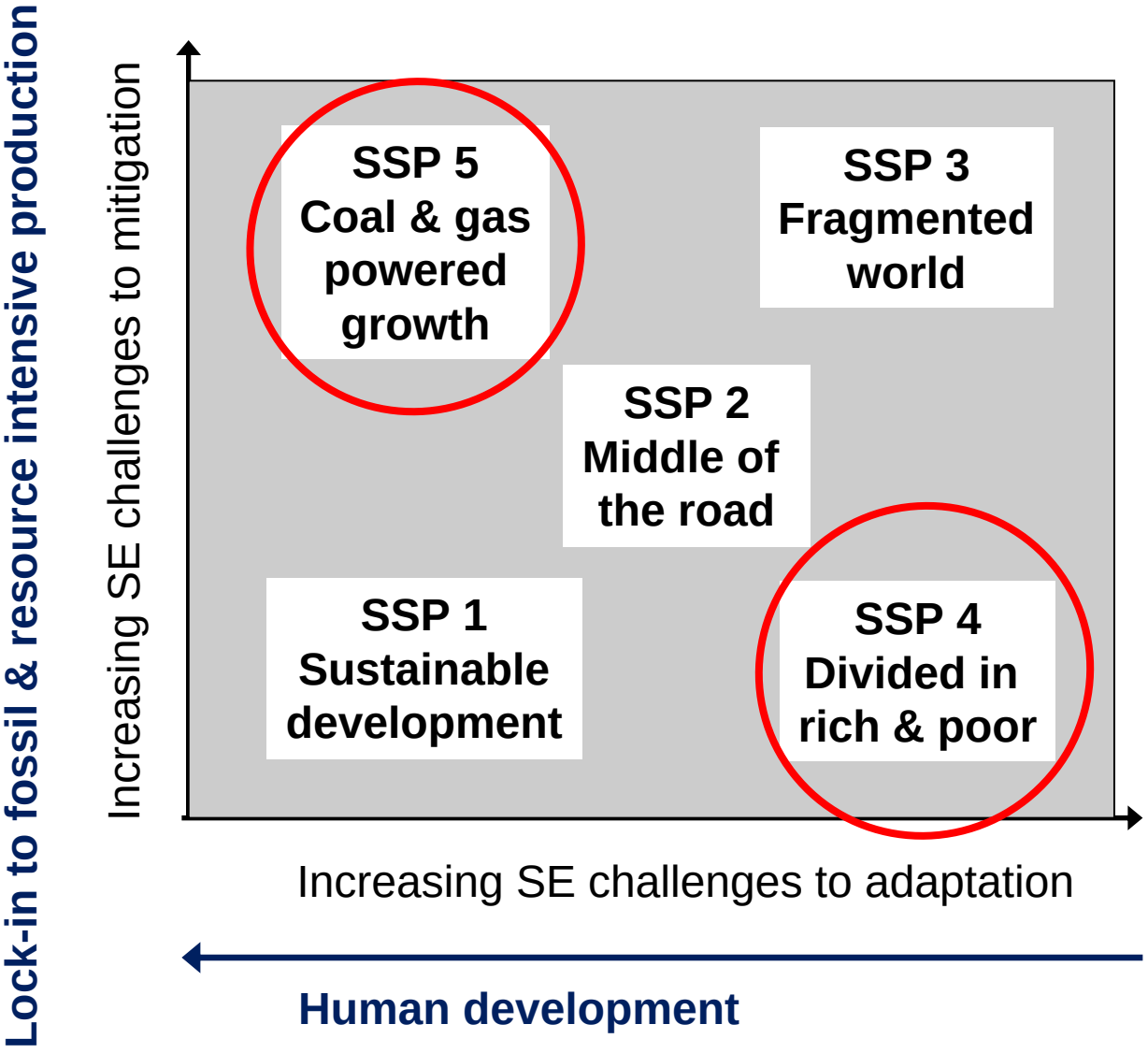
Inverse approach: Cover the range of socio-economic challenges for mitigation & adaptation



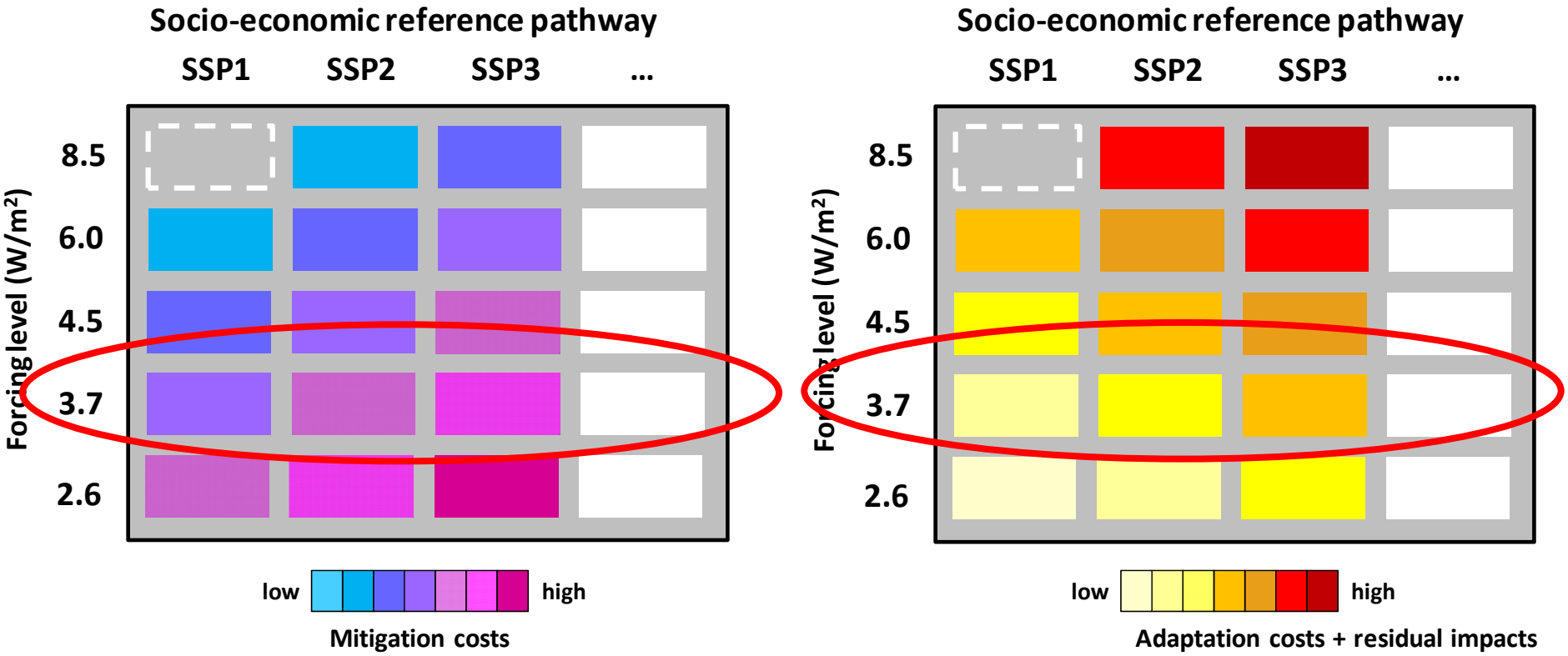
SSP narratives



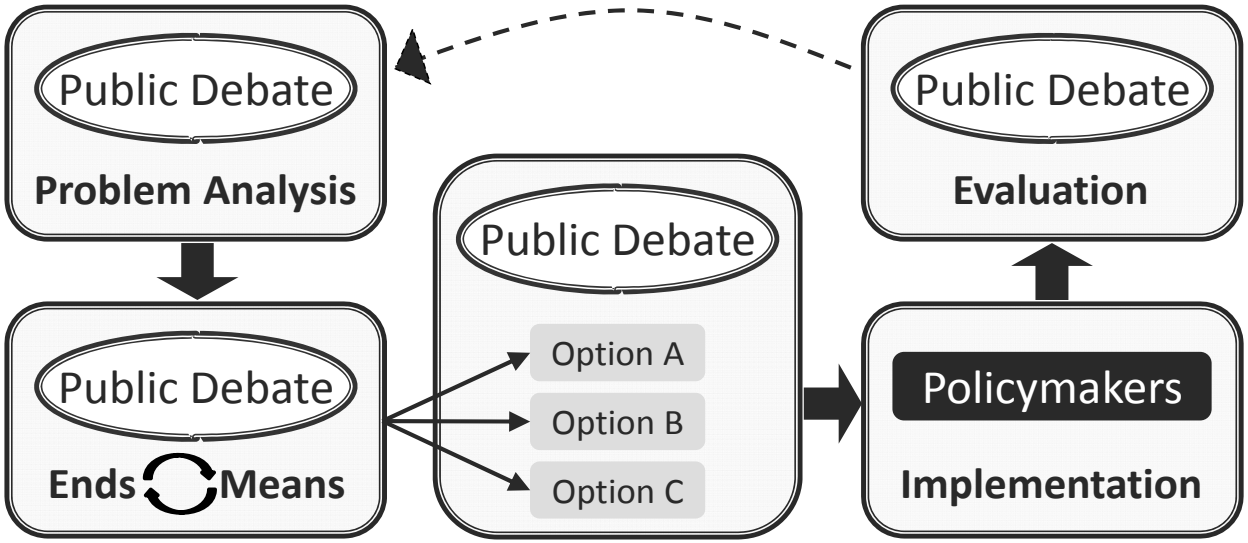
SSP narratives



New scenario architecture



The Pragmatic Science/Policy Interface



- While pursuing certain ends, unintended side-effects may require the reevaluation of means and ends
- Relies on continuous iteration between policy and science

There is always more than one way…

http://www.trail.ch/gallery/albums/trail/graubunden/fuorcla-surlej/corvatsch-fuorcla-surlej-val-roseg-09_09_2006-img_2598.jpg