IPCC policy-relevant information for supporting the UNFCCC process

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Key points

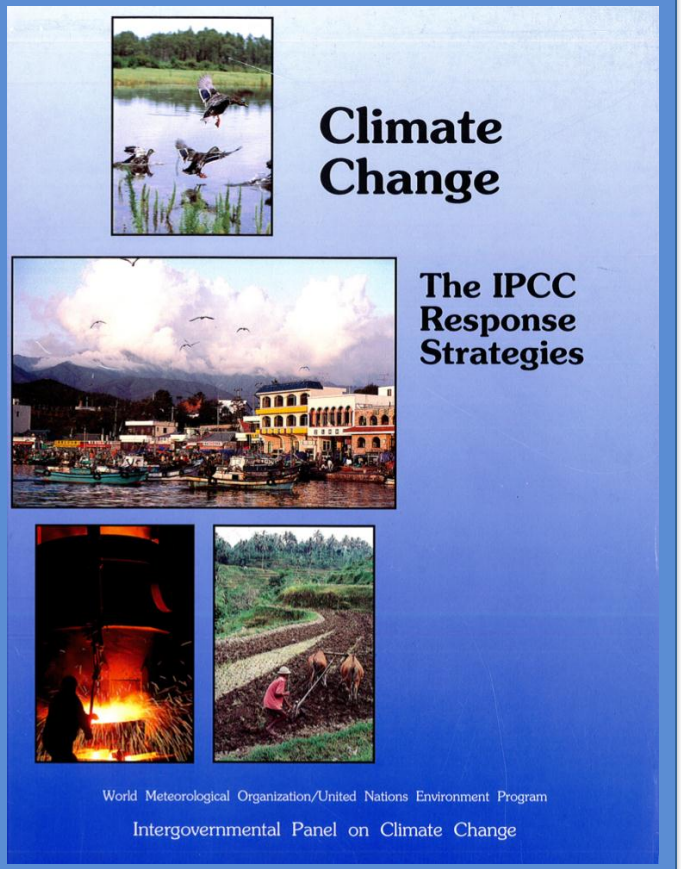
- **IPCC – UNFCCC relationship: long and productive**
- **IPCC reports up to AR4 & SRREN distilled very policy-relevant information**
- **AR5: we cannot speculate on content, but…**
- **The post-IAC IPCC is stronger than ever**
- **How policy-relevance can still be improved: invest in research and observation, improve participation in IPCC process (across disciplines & countries), improve diffusion & usage of IPCC products…**

IPCC – UNFCCC relationship: long and productive

The IPCC is older than the UNFCCC!

First Assessment Report (FAR, 1990)

The IPCC Response Strategies



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IPCC FAR (1990): Need for a framework Convention on Climate Change

The international negotiation on a framework convention should start as quickly as possible after the completion of the IPCC First Assessment Report.
This, together with any additional protocols that might be agreed upon, would provide a firm basis for effective cooperation to act on greenhouse gas emissions and adapt to any adverse effects of climate change

IPCC, FAR, 1990, p. xxviii

IPCC FAR (1990): Need for a Framework Convention on Climate Change

Key issues for negotiation will include the criteria, timing, legal form and incidence of any obligations to control the net emissions of greenhouse gases, how to address equitably the consequences for all, …, the need for research and monitoring, and in particular, the request of the developing countries for additional financial resources and for the transfer of technology on a preferential basis

IPCC, FAR, 1990, p. xxviii

IPCC FAR (1990): Options and Strategies

Countries are encouraged to evaluate the social, economic, and environmental consequences of (…) taking steps now **to attempt to limit, stabilize, or reduce the emission of energy-related green-house gases** and prevent the destruction and improve the effectiveness of sinks (one option that governments may wish to consider is the setting of targets for CO2 and other greenhouse gases)

IPCC, FAR, 1990, p. xxxix

IPCC FAR (1990): Possible elements for inclusion in a Framework Convention on Climate Change (1)

An article would set out the general obligations agreed to by the parties to the Convention, for example:

- The adoption of appropriate measures to protect against the adverse effects of climate change, to limit, reduce, adapt to, and, as far as possible, prevent climate change in accordance with the means at the disposal of individual countries and their scientific and technical capabilities; and to avoid creating other environmental problems in taking such measures

IPCC, FAR, 1990, p. 264

IPCC FAR (1990): Possible elements for inclusion in a framework Convention on Climate Change (2)

- The protection, stabilization, and improvement of the composition of the atmosphere in order to conserve climate for the benefit of present and future generations;

- Taking steps having the effect of limiting climate change but that are already justified on other grounds

IPCC, FAR, 1990, p. 264

The assessments carried out by the IPCC have influenced global action on an unprecedented scale

1. First Assessment Report (1990) had a major impact in defining the content of the **UNFCCC**

2. The Second Assessment Report (1996) was largely influential in defining the provisions of the **Kyoto Protocol**

3. The Third Assessment Report (2001) focused attention on the **impacts** of climate change and the need for **adaptation**

4. The Fourth Assessment Report (2007) is creating a strong basis for a **post-2012** agreement

IPCC reports up to AR4 & SRREN distilled very policy-relevant information

Completed IPCC Reports

4 Assessment Reports *(1990,1995, 2001, 2007)*

1992 Supplementary Report and 1994 Special Report

8 Special Reports *(1997,1999, 2000, 2005, 2011)*

Guidelines for National GHG Inventories, Good Practice Guidance *(1995-2006)*

6 Technical Papers *(1996-2008)*

The IPCC Fourth Assessment Report (2007)

+130 countries

around 450 lead authors

around 800 contributing authors

+2500 scientific expert reviewers

+18000 peer-reviewed publications cited

+90000 comments from experts and Governments

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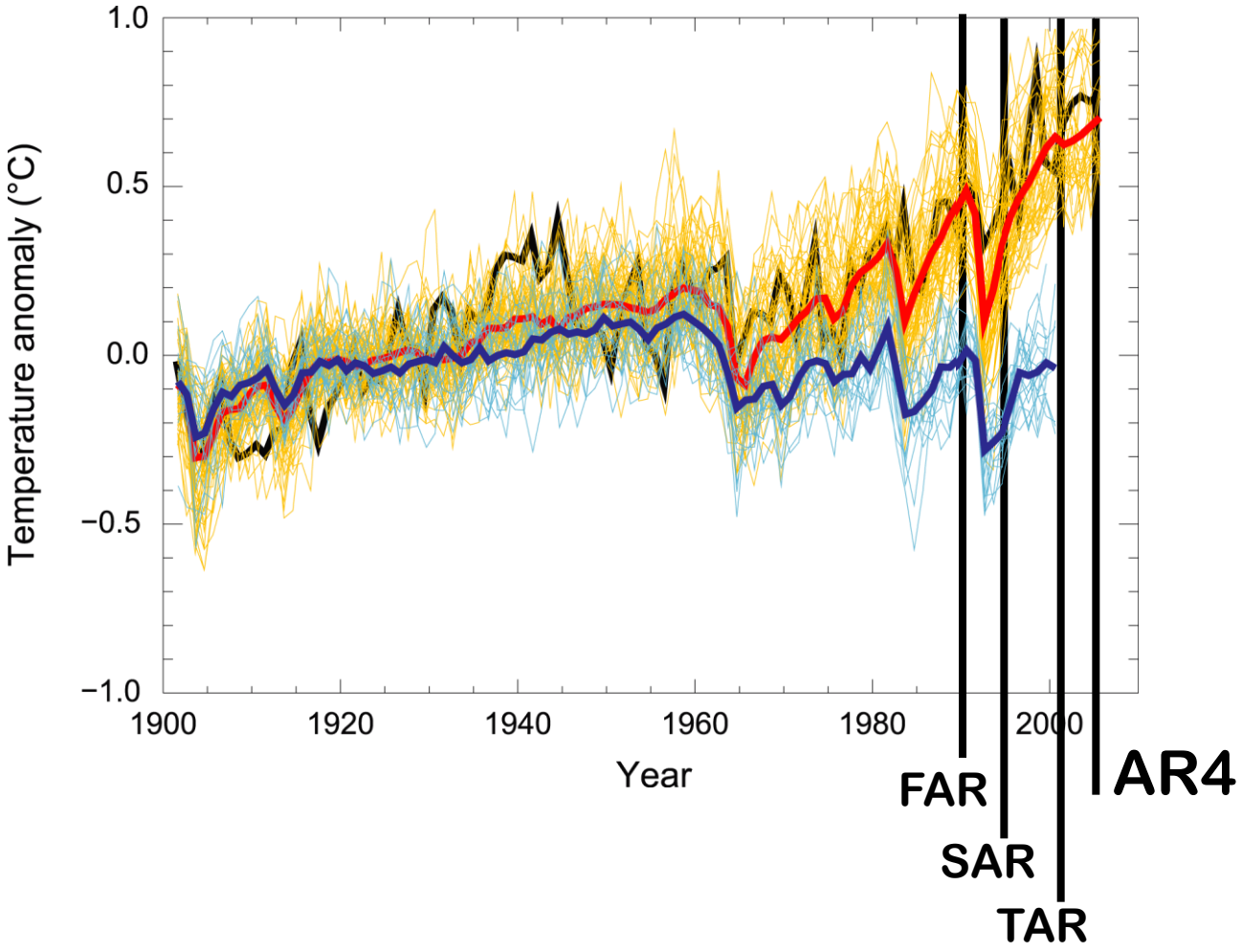
A Progression of Understanding: Greater and Greater Certainty in Attribution

FAR (1990): "unequivocal detection not likely for a decade"

SAR (1995): "balance of evidence suggests discernible human influence"

TAR (2001): "most of the warming of the past 50 years is likely (odds 2 out of 3) due to human activities"

AR4 (2007): "most of the warming is very likely (odds 9 out of 10) due to greenhouse gases"



(Slide from Sir John Houghton, based on AR4)

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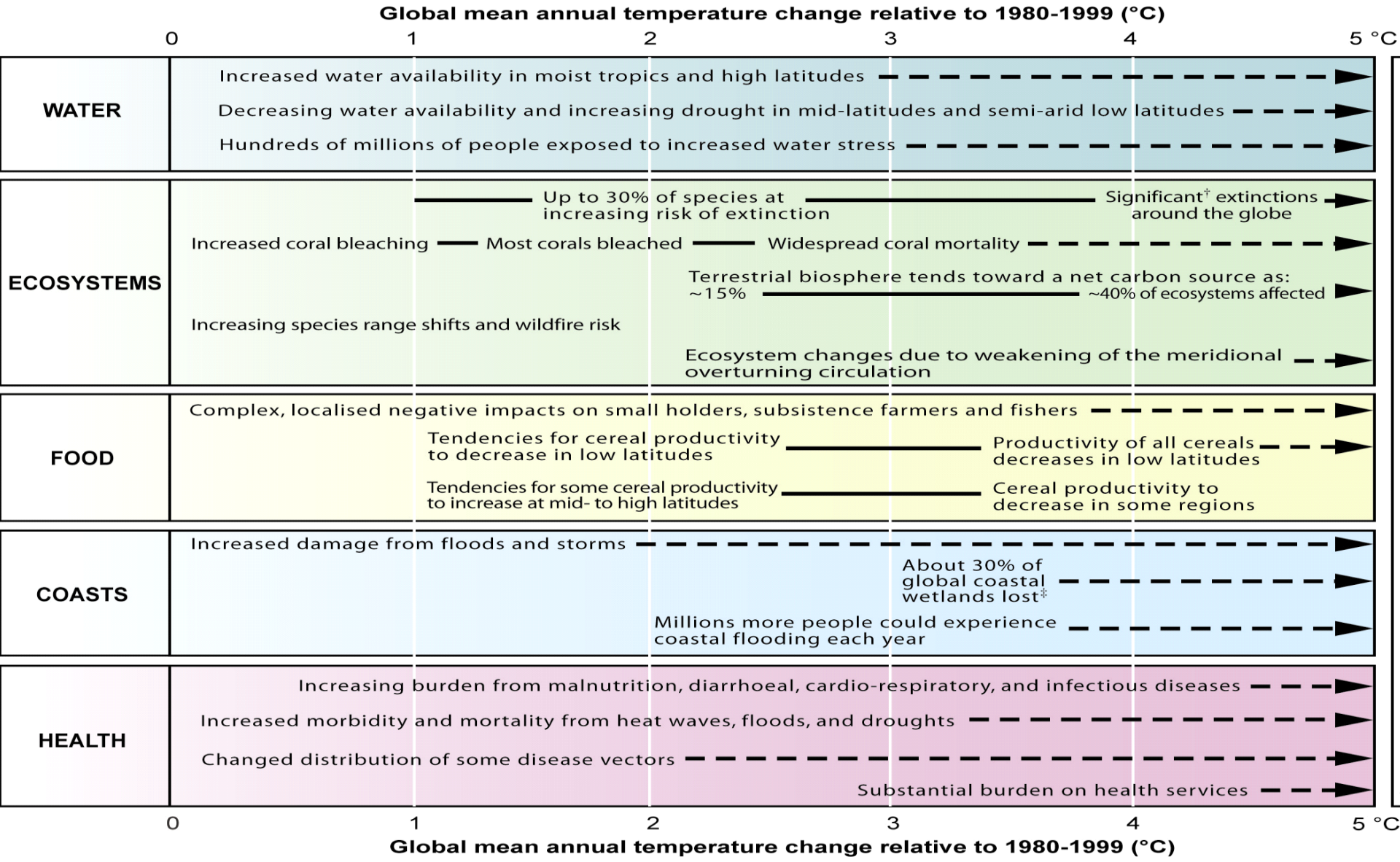
AR4 WGII, Figure SPM.2. Key impacts as a function of increasing global average temperature change

(Impacts will vary by extent of adaptation, rate of temperature change, and socio-economic pathway)



† Significant is defined here as more than 40%.

‡ Based on average rate of sea level rise of 4.2 mm/year fro

Mitigation & adaptation

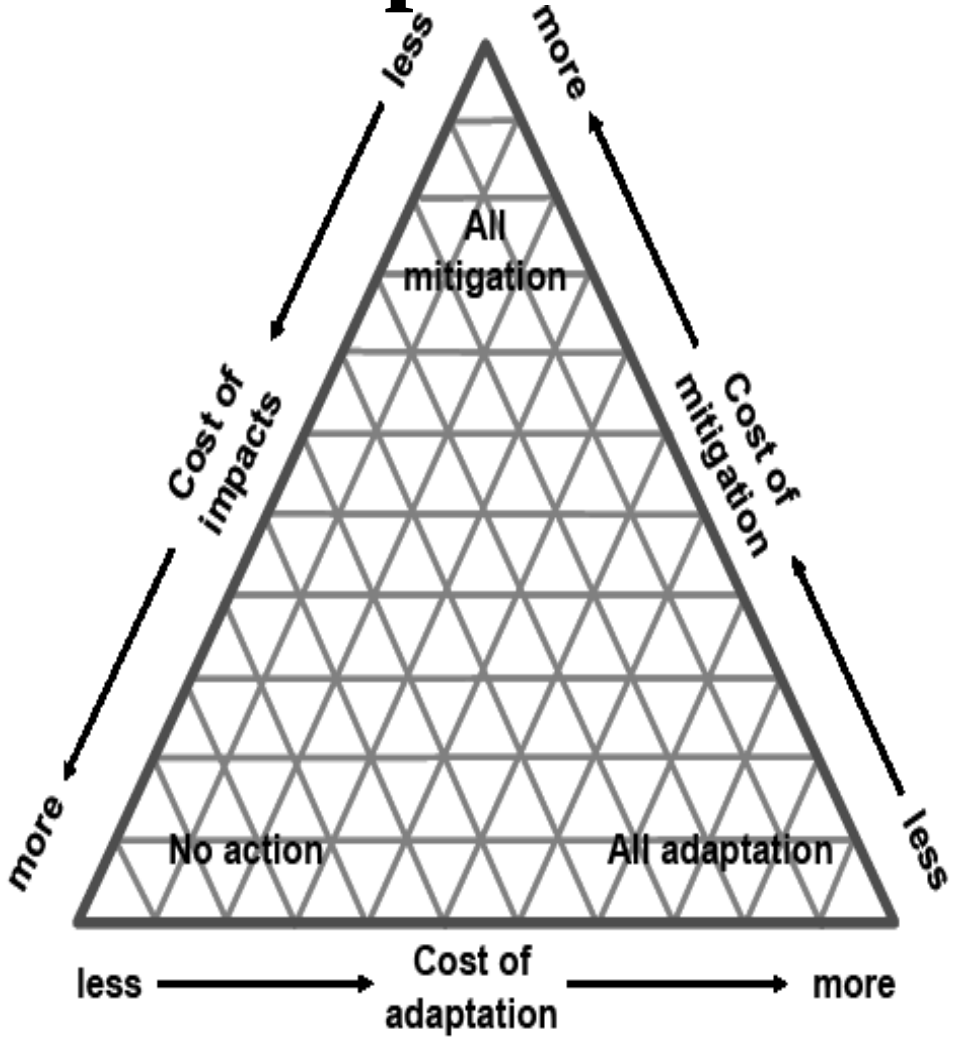
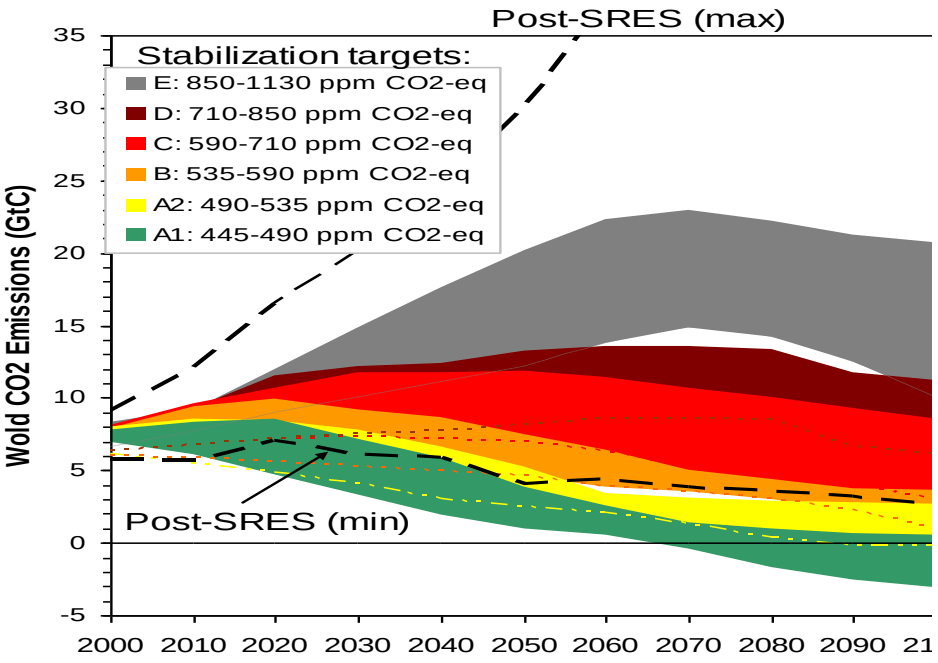
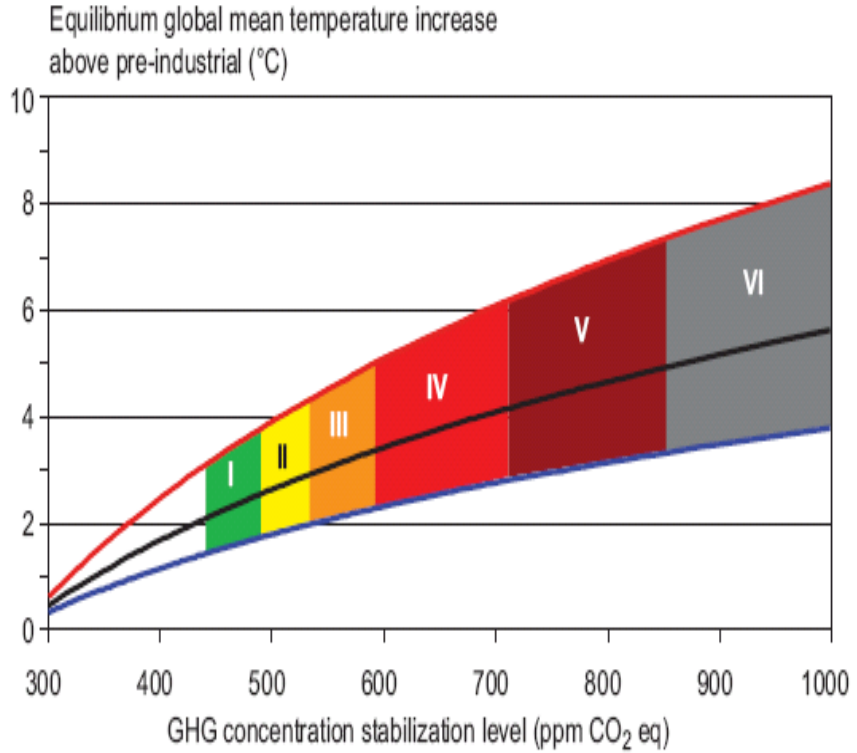


Figure 18.1: A schematic overview of inter-relationships between adaptation, mitigation and impacts, based on Holdridge's life-zone classification scheme (Holdridge, 1947, 1967).

Source: IPCC AR4 WG2 Chap 18

Stabilization in AR4: From equilibrium global temperature to concentrations to emissions





Multigas and CO2 only studies combined

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Classification of «stabilisation» scenarios in AR4

Long-term CO_2 and GHG concentrations and equilibrium temperature:

category	CO2 concentration (ppm)	CO2eq concentration (ppm, all gases + aerosols)	Peaking year for emissions (range contains 70% of scenarios)	Changes in global emissions in 2050 (% 2000 emissions)	Global average temperature increase/pre-ind, best estimate
I	350-400	445-490	2000-2015	-85 to -50	2.0 - 2.4
II	400-440	490-535	2000-2020	-60 to -30	2.4 - 2.8
III	...				

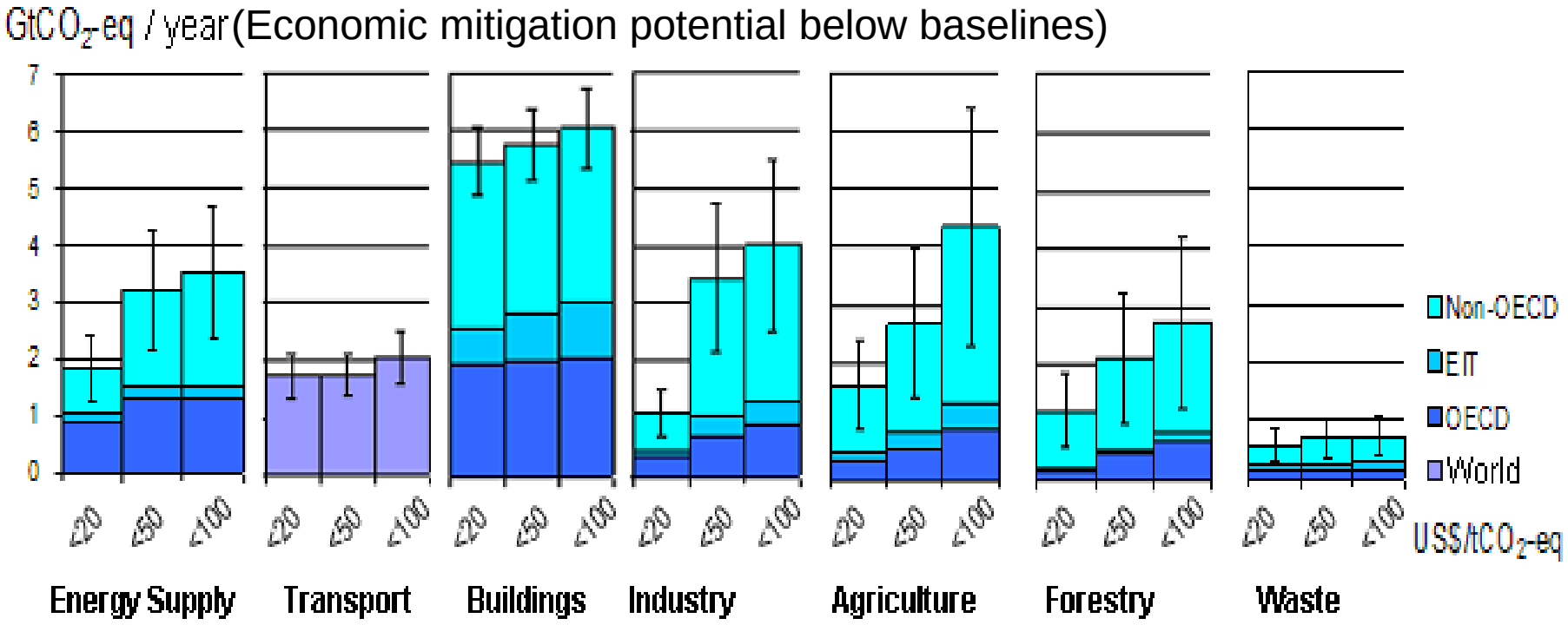
Source : AR4 table 3.5

- Limitations:
  - only best estimate climate sensitivity is shown here
  - equilibrium temperature may be approached or not, depending on evolution beyond 2100

Scenarios : from AR4 to AR5

- Before AR4:
  - Few “low emission” scenarios potentially compatible with a limitation of global warming to 2°C or less were published
  - The analysis of their consequences on climate was limited: no in-depth analysis with 3D (general circulation) climate models was performed
- For the AR5:
  - Many climate simulations are conducted in the framework of new «representative concentration pathways» (RCPs) selected to allow investigating a wide range of possible futures
  - In parallel, studies on the associated socio-economic conditions are encouraged, and will be linked to the RCPs within AR5

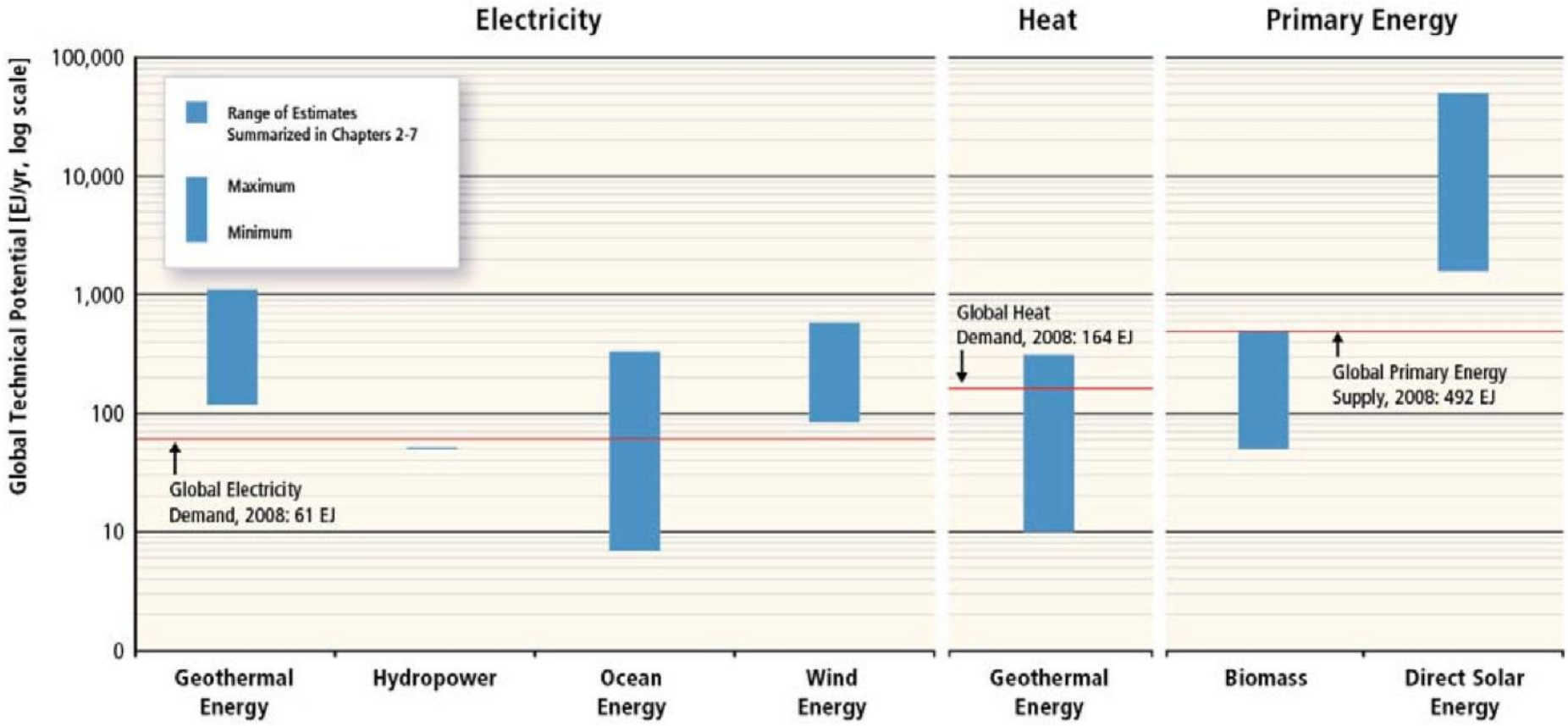
All sectors and regions have the potential to contribute by 2030



Note: estimates do not include non-technical options, such as lifestyle changes.

Source: AR4 SYR Figure 4.2

The potential fo renewable energy technologies to supply energy services exceeds current demand



Range of Estimates of Global Technical Potentials

Max (in EJ/yr)	1109	52	331	580	312	500	49837
Min (in EJ/yr)	118	50	7	85	10	50	1575

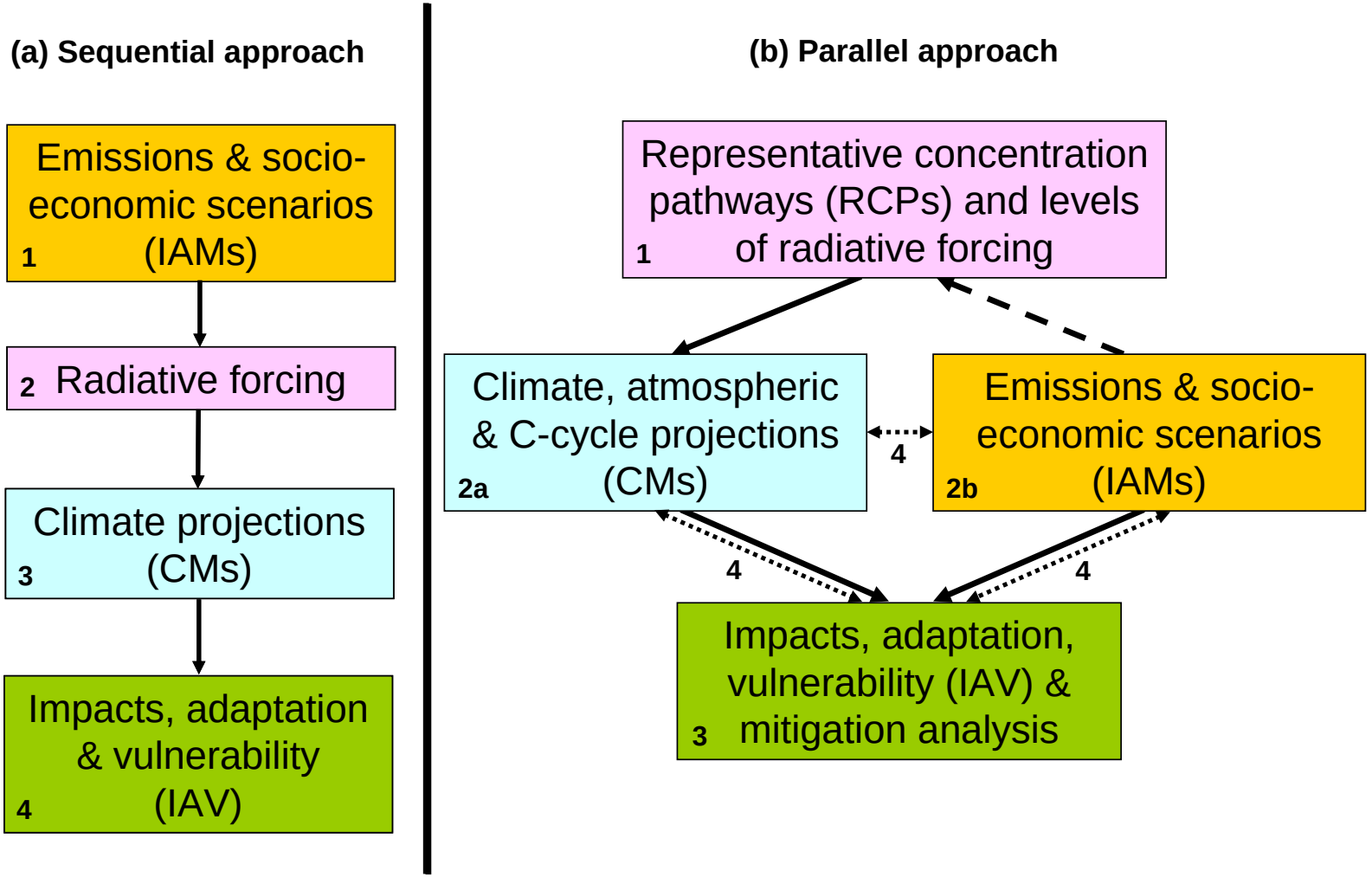
IPCC, 2011, SRREN, SPM, Fig. SPM. 4, p. 8

AR5: we cannot speculate on content, but…

AR5 will be the best ever

- **Better integration of Mitigation and Adaptation**
- **Improved risk-management approach**
- **Evolving away from the non-mitigation SRES scenarios (SRES= Special Report on Emission Scenarios, 2000)**
- **Special effort to provide regional information when available**
- **Sustainable development & equity aspects**
- **More comprehensive treatment of economic aspects, and of cross-cutting issues**
- **Emerging issues handled (geo-engineering, …)**
- **Better handling & communication of uncertainties**

Scenarios: A new "Parallel Approach" Implies Much More Interaction Between the IAV, IAM and CM communities



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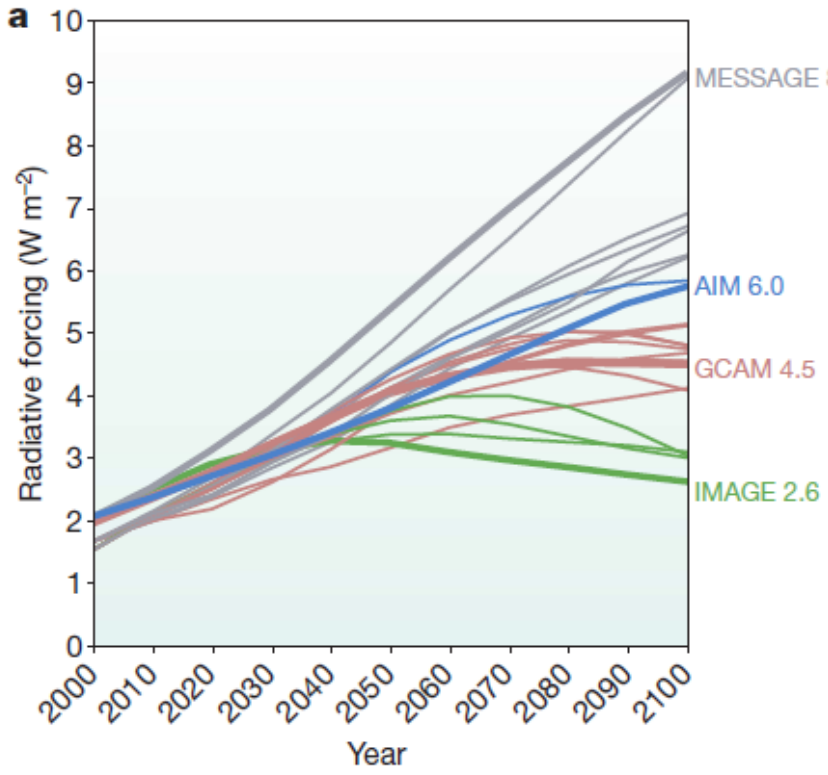
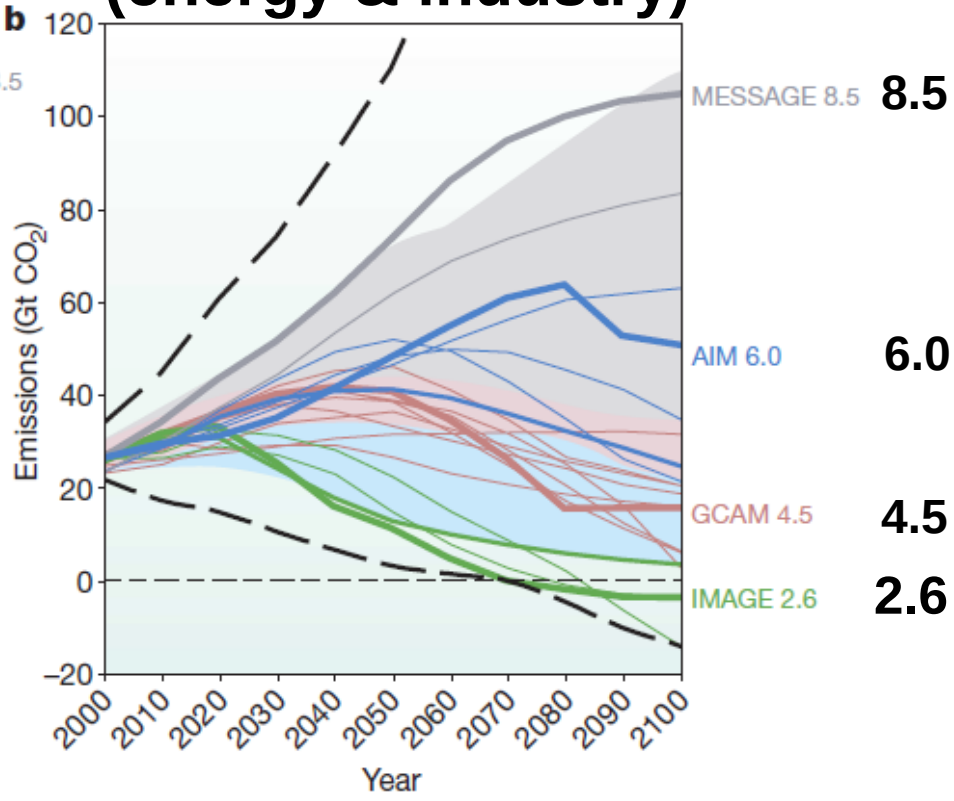
RCP: Radiative forcing and emissions

Radiative Forcing



CO_2 emissions (energy & industry)



Moss et al, 2010, Nature

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What the RCPs (Representative Concentration Pathways) are:

- **Consistent sets of projections** of only the components of radiative forcing that are meant **to serve as input for** climate **modelling**, pattern scaling, and atmospheric chemistry modelling.
- **Named according** to their 2100 **radiative forcing** level (based on the forcing of greenhouse gases and other forcing agents)**.**
- Chosen for scientific purposes to represent the **span of the radiative forcing literature at the time** of their selection and thus facilitate the mapping of a broad climate space.

Adapted from the RCP database on www.IIASA.ac.at
JPvY

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Uncertainty: Development of AR5 Guidance

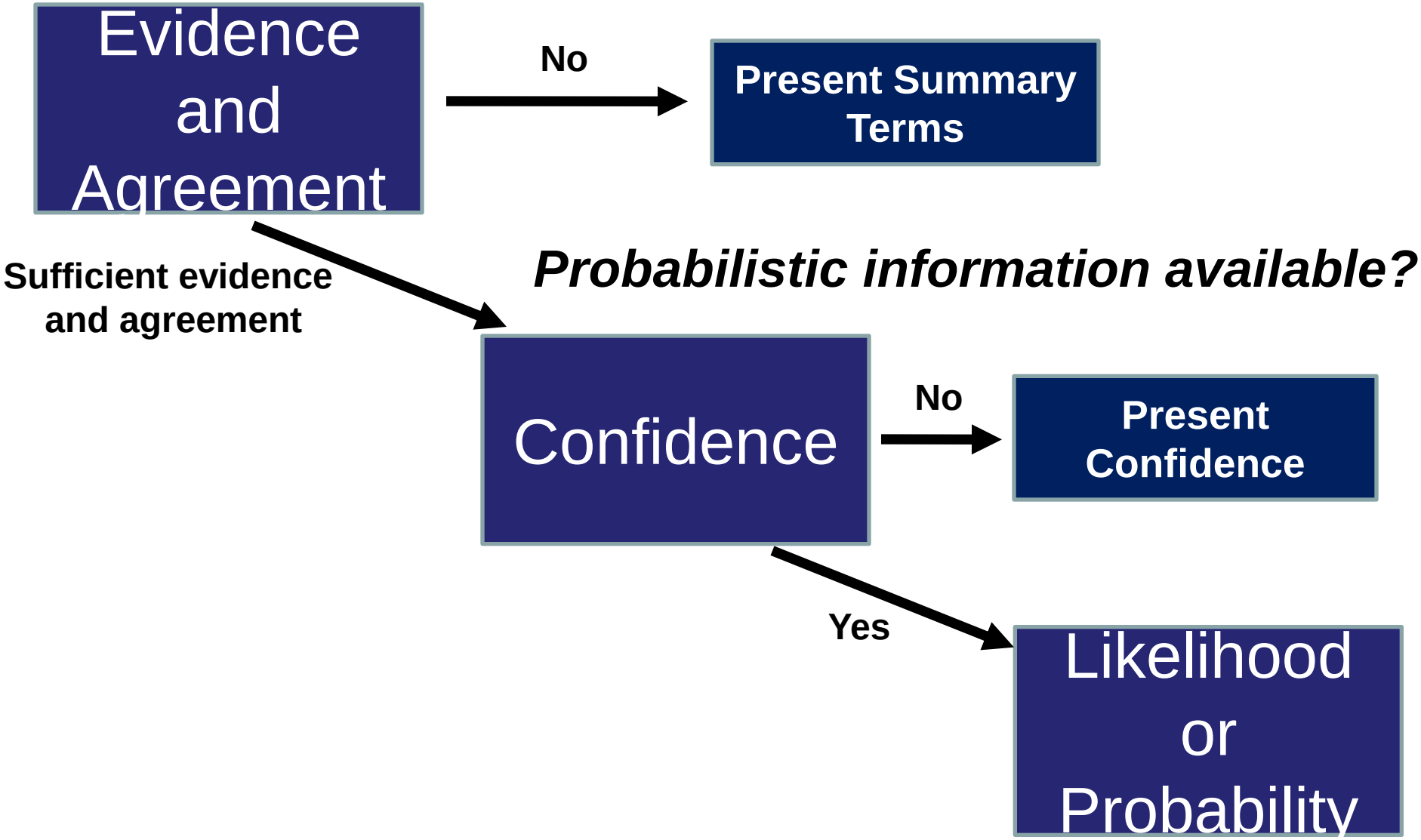
Decision:

- Update AR4 Guidance to improve distinction and transition between different metrics and consistent application across WGs

Result:

- Guidance Notes for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties

Degree of Certainty for Findings: Process



Slide from IPCC WGII TSU

The post-IAC IPCC is stronger than ever

Key decisions after the IAC report (requested by IPCC & UN Sec. Gen.):

1. Governance improved
2. Procedures improved
3. Conflict of interest policy: principles agreed
4. Communication strategy: principles agreed

Work remains, but big steps were made

How policy-relevance can still be improved:

1. Invest in research and observation
2. Improve participation in IPCC process (across disciplines & countries)
3. Improve diffusion & usage of IPCC products

Coming IPCC Products

- ***2011: Special report on Renewable Energy Sources and Climate Change Mitigation (SPM approved May 9!)***
- ***2011(November): Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation***
- ***2013: AR5 WGI report (physical science)***
- ***2014: AR5 WGII (Impacts & Adaptation); WGIII (Mitigation), Synthesis Report***
- ***All available on www.ipcc.ch***

Conclusion:

IPCC is eager to continue serving the UNFCCC process…

… with your help and collaboration

Thank you!

Useful links:

- www.ipcc.ch : IPCC
- www.climate.be/vanyp : my slides and other documents