

The IPCC and its role in the Science and Policy of Climate Change

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Credits: many slides borrowed with gratitude from IPCC colleagues:

RK Pachauri, S. Solomon, J. Palutikof, J. Stone...

“Reporting the results of the IPCC Fourth Assessment”, Moscow, 10 July 2008



The IPCC (Intergovernmental Panel on Climate Change)

The work of the IPCC is guided by the mandate given to it in 1988 by its parent organisations: the World Meteorological Organisation (**WMO**) and the United Nations Environment Programme (**UNEP**)

Its role is to assess on a comprehensive, objective, open and transparent basis the **scientific, technical and socio-economic** information relevant to understanding the scientific basis of climate change, its potential impacts and options for adaptation and mitigation

Role of IPCC

"The IPCC does not carry out research nor does it monitor climate related data or other relevant parameters. It bases its assessment mainly on peer reviewed and published scientific/technical literature."

(source: www.ipcc.ch)

IPCC Working Groups & Task Force

Working Group I :- "The Physical Science Basis"

Working Group II :- "Impacts, Adaptation and Vulnerability"

Working Group III :- "Mitigation of Climate Change"

Task Force on National Greenhouse Gas Inventories

(source: www.ipcc.ch)

The IPCC WG1 Sequence.....

IPCC (1990) Broad overview of climate change! science, discussion of uncertainties and! evidence for warming.

IPCC (1995)! “The balance of evidence suggests! a discernible human influence on global climate.”

IPCC (2001)! “Most of the warming of the past 50! years is likely (>66%) to be attributable to human! activities.”

IPCC (2007)! “Warming is unequivocal, and most! of the warming of the past 50 years is very likely! (90%) due to increases in greenhouse gases.”

The evolving perspective - IPCC Assessments

FAR

Climate impacts
Efficiency

SAR

Climate impacts
Efficiency
Equity

TAR

Climate impacts
Efficiency
Equity
*Sustainable
Development*

AR4

Climate impacts
Efficiency
Equity
Sustainable development
Regional focus
Socio economic impacts

IPCC writing cycle (4 years, 2500 scientists)

- ⌘ **Plenary decides table of content of reports**
- ⌘ **Bureau appoints world-class scientists as authors, based on publication record**
- ⌘ **Authors assess all scientific literature**
- ⌘ ***Draft* – Expert **review** (+ Review editors)!**
- ⌘ ***Draft 2* (+ *Draft 1 Summary for Policy Makers (SPM)*) – Combined expert/government **review****
- ⌘ ***Draft 3* (+ *Draft 2 SPM*) – Government **review** of SPM**
- ⌘ **Approval Plenary (interaction authors – governments) – *SPM and full report***

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2500+ SCIENTIFIC EXPERT REVIEWERS
800+ CONTRIBUTING AUTHORS AND
450+ LEAD AUTHORS FROM
130+ COUNTRIES
6 YEARS WORK
1 REPORT

2007



“Reporting the results of the IPCC Fourth Assessment”, Moscow, 10 July 2008



The US view: « Climate Change Science »



⌘ Published as an US National Academy Report

⌘ June 2001

⌘ At the request of the White House

☒ to identify greatest certainties & uncertainties in the science of CC

☒ to check if the IPCC SPMs reflect correctly the IPCC reports

⌘ (See www.nas.edu)

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The US view: « Climate Change Science »



⌘ The committee finds that the full IPCC WGI report is an « admirable summary of research activities in climate science ».

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The US view: « Climate Change Science »

⌘ **The IPCC 's conclusion that « *most of the observed warming of the last 50 years is likely to have been due to the increase in GHG concentrations* » accurately reflects the current thinking of the scientific community.**

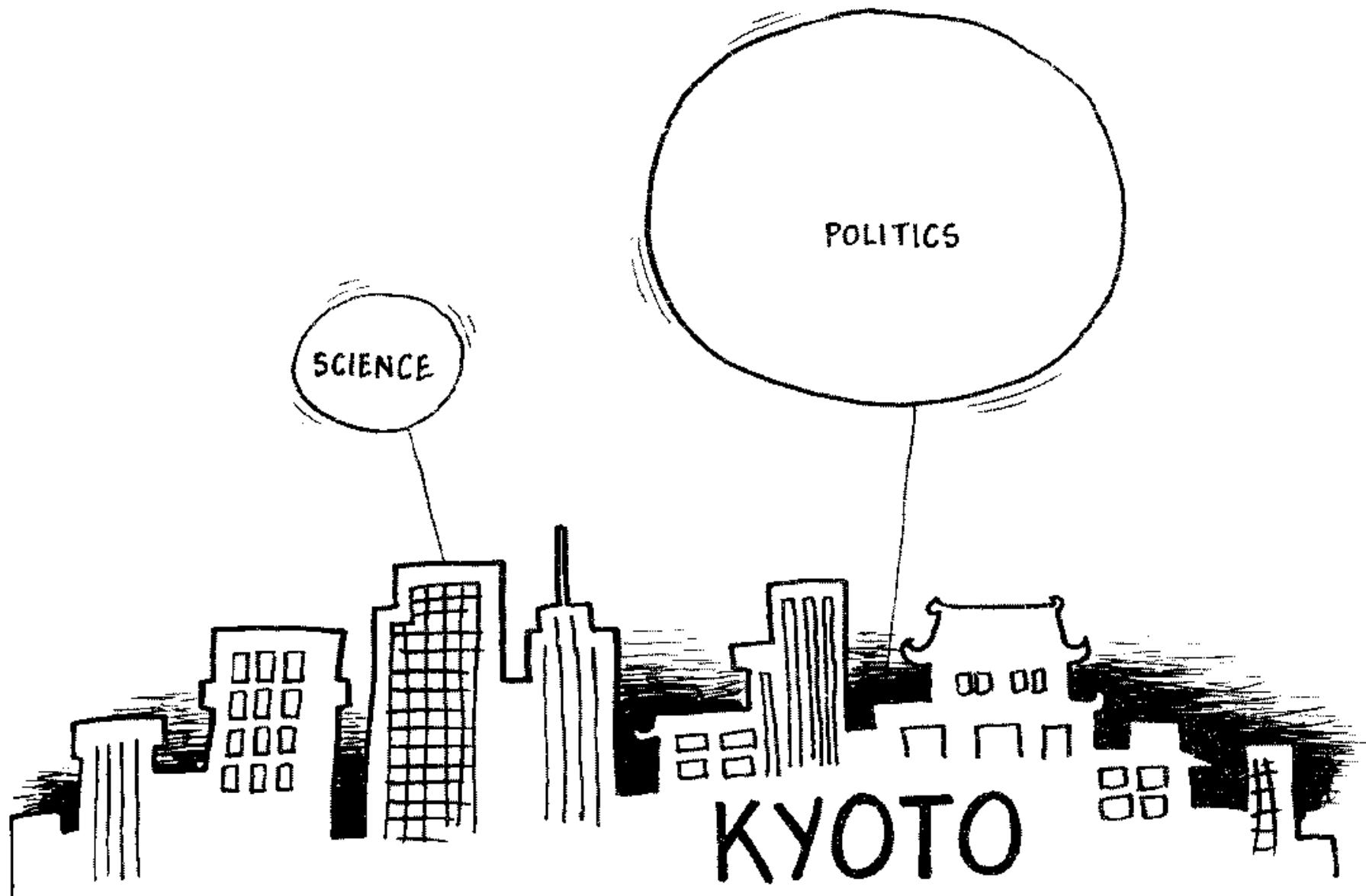
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Strengths of the IPCC

- ✓ **Mobilisation of thousands of multi-disciplinary experts worldwide**
- ✓ **Policy-relevant findings**
- ✓ **Widely used methodological reports**
- ✓ **Assessments relying on peer reviewed literature**
- ✓ **Review process involving experts and Governments**
- ✓ **Media attention and outreach activities**

Nobel Peace Prize for 2007

- ☒ **Shared, in two equal parts, between the Intergovernmental Panel on Climate Change (IPCC) and Albert Arnold (Al) Gore Jr. for « *their efforts to build up and disseminate greater knowledge about manmade climate change, and to lay the foundations for the measures that are needed to counteract such change.* »**



Agarwal et al., 1999

UN Framework Convention on Climate Change

Ultimate objective (Article 2):

'...stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

Such a level should be achieved within a time frame sufficient

- to allow ecosystems to adapt naturally to climate change,
- to ensure that food production is not threatened and
- to enable economic development to proceed in a sustainable manner.'

↑
inverse calculation

(technologies, lifestyles, policy instruments)

Emissions pathways

(biogeochemical cycles)

Critical Levels

(global temperature / radiative forcing)

Critical Limits

(regional climate changes)

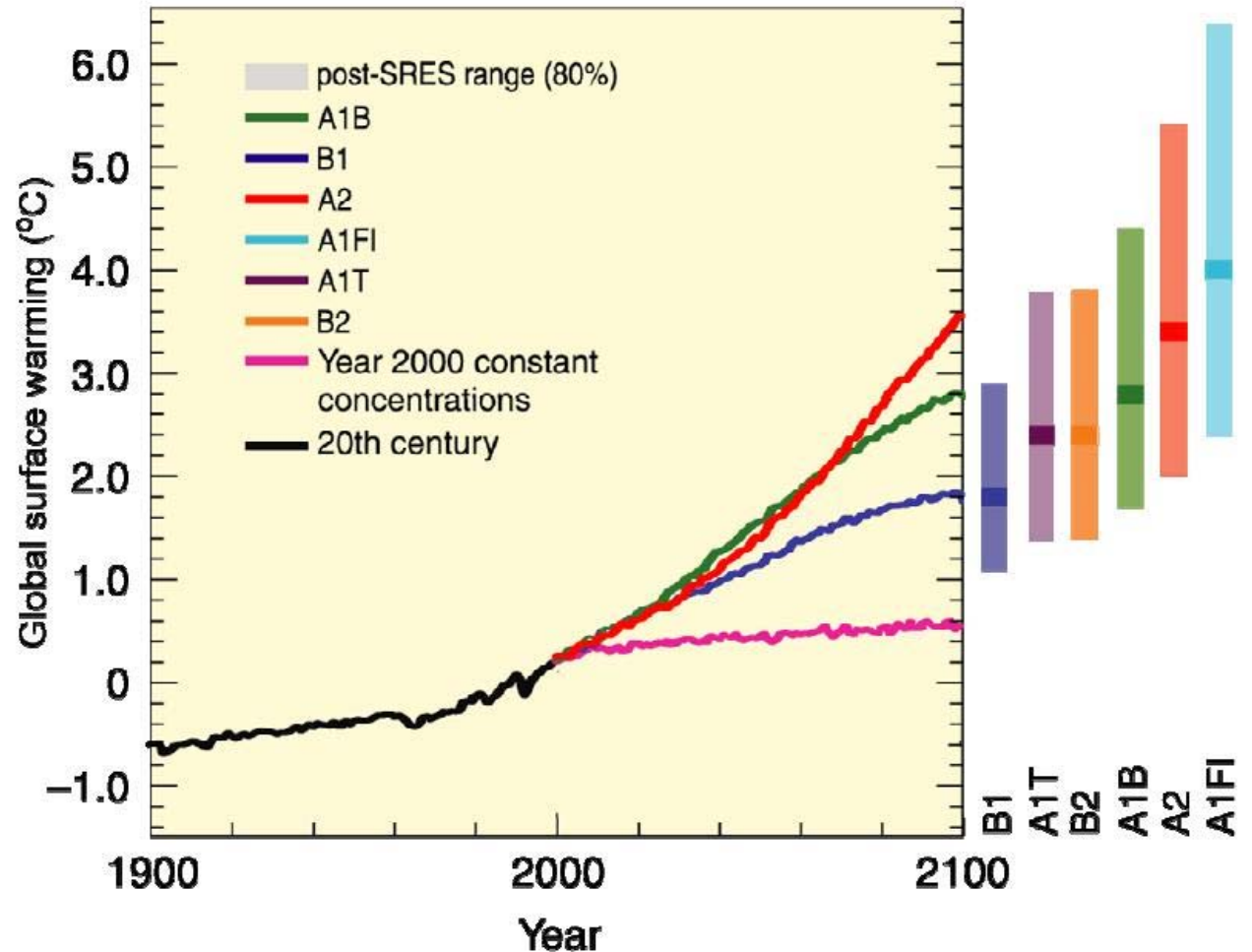
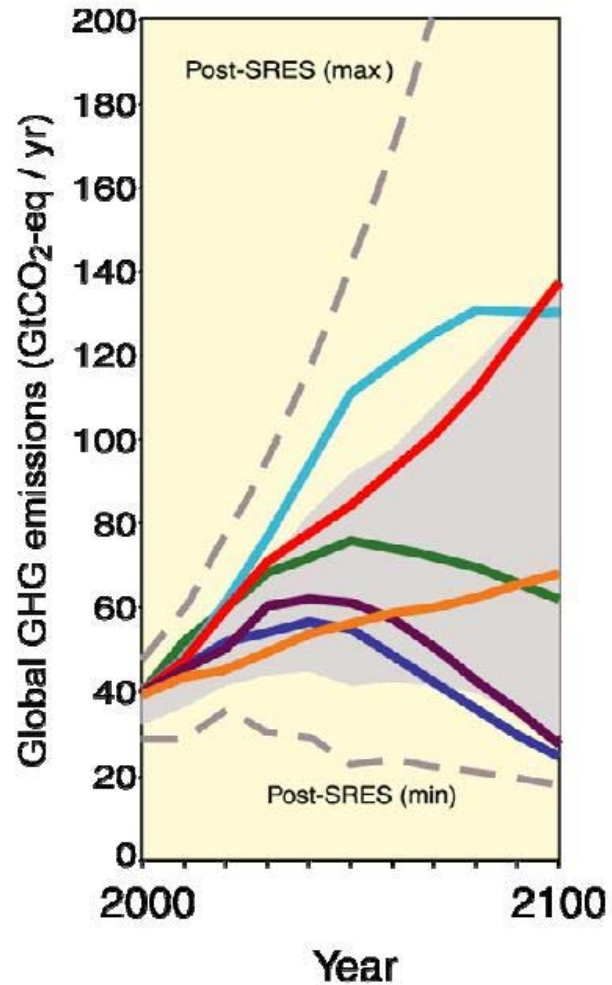
Key Vulnerabilities

(socioeconomic factors)

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

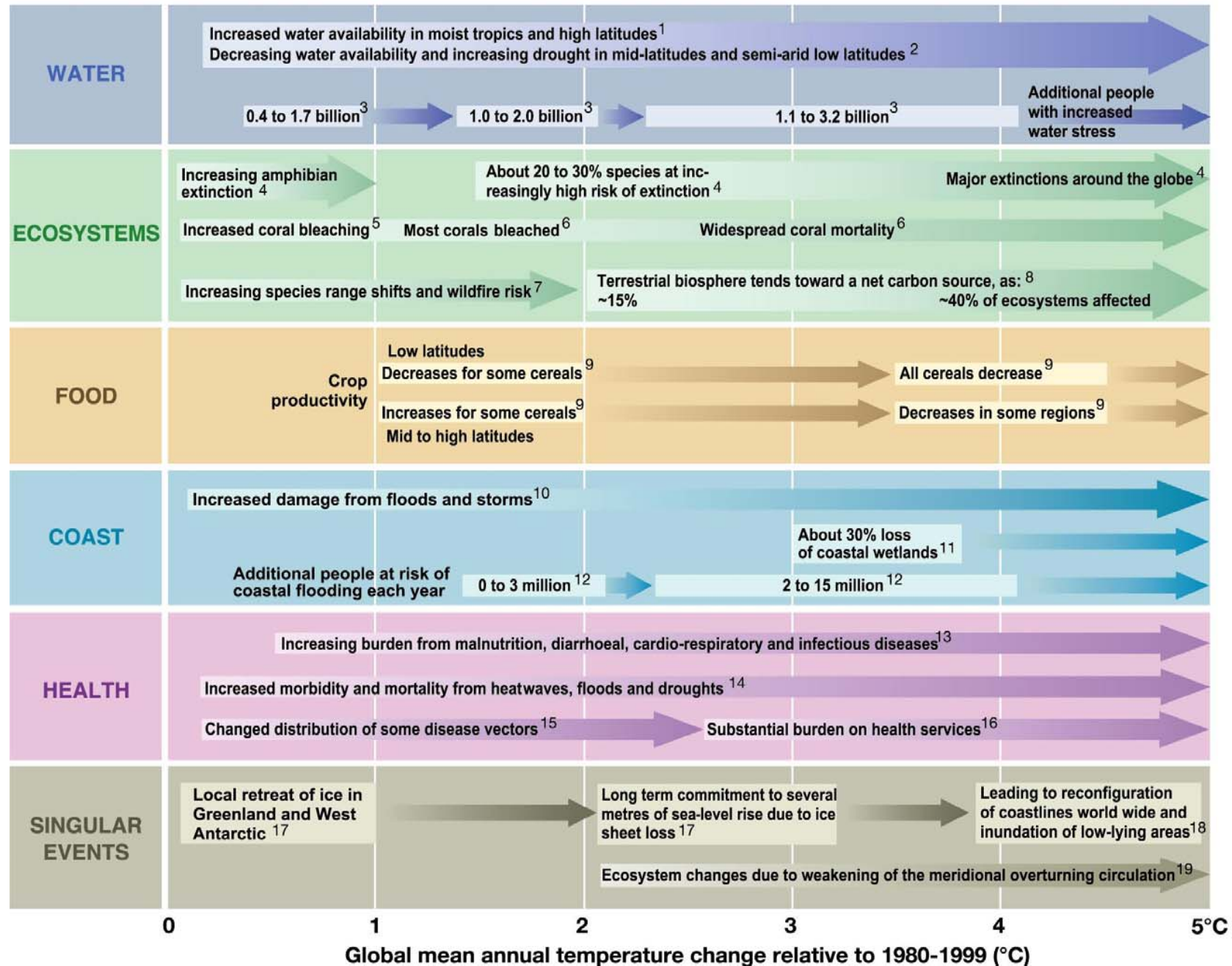
1. First Assessment Report (1990) had a major impact in defining the content of the **UNFCCC**
2. The Second Assessment Report (1996) was largely influential in defining the provisions of the **Kyoto Protocol**
3. The Third Assessment Report (2001) focused attention on the **impacts** of climate change and the need for **adaptation**
4. The Fourth Assessment Report (2007) is creating a strong basis for a **post Kyoto Protocol** agreement

Climate projections without mitigation



NB: écart par rapport à la moyenne 1980-1999

Table TS.3. (lower) Examples of global impacts projected for changes in climate (and sea level and atmospheric CO₂ where relevant)



Source: IPCC WGII AR4

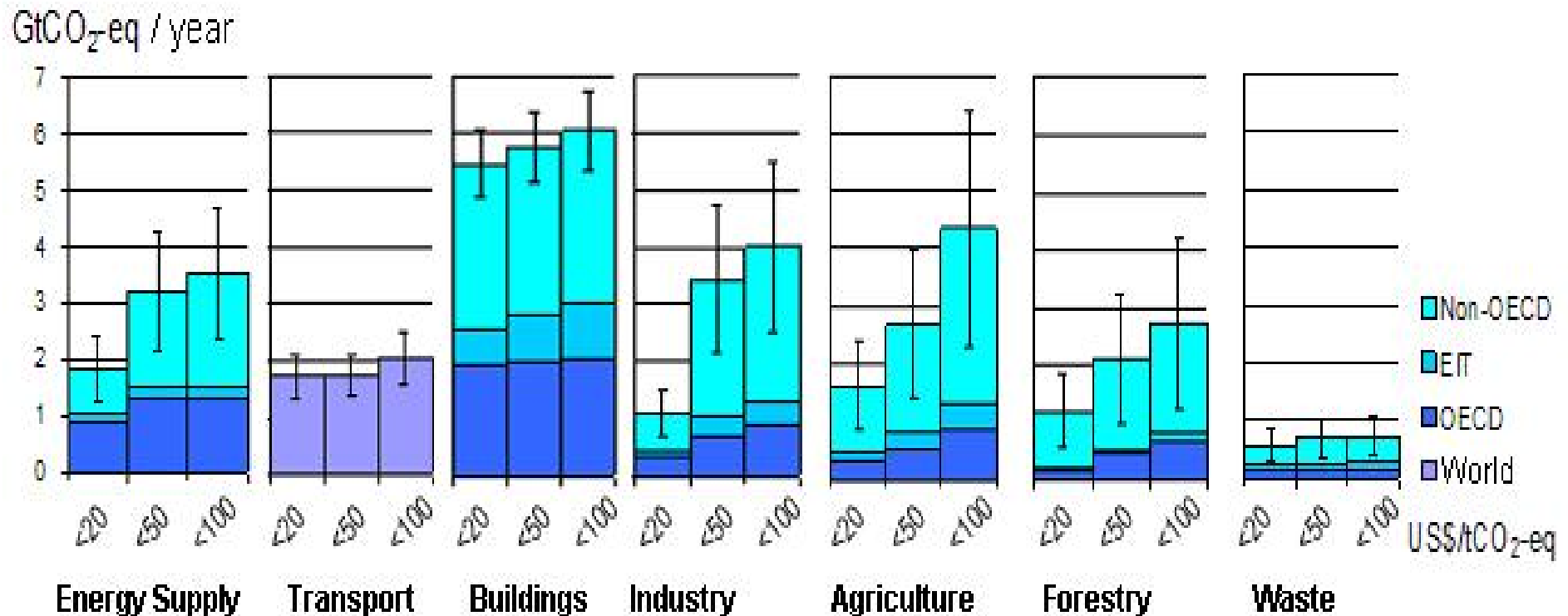
Long term mitigation (after 2030)

Source: IPCC WGIII AR4

- The lower the stabilization level, the more quickly emissions would need to peak and to decline thereafter
- Mitigation efforts over the next two to three decades will have a large impact on opportunities to achieve lower stabilization levels

Stab level (ppm CO ₂ -eq)	Global Mean temp. increase at equilibrium (°C)	Year CO ₂ needs to peak	Reduction in 2050 compared to 2000
445 – 490	2.0 – 2.4	2000 - 2015	-85 to -50
490 – 535	2.4 – 2.8	2000 - 2020	-60 to -30
535 – 590	2.8 – 3.2	2010 - 2030	-30 to +5
590 – 710	3.2 – 4.0	2020 - 2060	+10 to +60
710 – 855	4.0 – 4.9	2050 - 2080	+25 to +85
855 – 1130	4.9 – 6.1	2060 - 2090	+90 to +140

All sectors and regions have the potential to contribute by 2030



Source: IPCC WGIII AR4

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

Bali: COP Decision about IPCC AR4 (Decision 5/CP.13)

- ✘ **The Conference of the Parties,**
- ✘ **1. Welcomes the Fourth Assessment Report of the Intergovernmental Panel on Climate Change;**
- ✘ **2. Expresses its appreciation and gratitude to all those involved in the preparation of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change for their excellent work;**
- ✘ **3. Recognizes that the Fourth Assessment Report represents the most comprehensive and authoritative assessment of climate change to date, providing an integrated scientific, technical and socio-economic perspective on relevant issues;**

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Bali: COP Decision about IPCC AR4 (Decision 5/CP.13)

- ☒ The Conference of the Parties,**
- ☒ 4. Urges Parties to the Convention and invites Parties to the Kyoto Protocol to make use of the information contained in the Fourth Assessment Report in their discussions under all relevant agenda items, including those pertaining to the negotiations on future action on climate change;**
- ☒ 5. Further encourages Parties to draw, as appropriate, on the information contained in the Fourth Assessment Report in the development of their national policies on climate change; (...)**

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References to the IPCC in the Bali Action Plan (December 2007)

“Responding to the findings of the Fourth Assessment Report of the [Intergovernmental Panel on Climate Change](#) that warming of the climate system is **unequivocal**, and that **delay** in reducing emissions significantly constrains opportunities to achieve lower stabilization levels and increases the risk of more severe climate change impacts”

“[...] emphasizing the **urgency** to address climate change as indicated in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change”

“[...] urgent and immediate needs of developing countries that are particularly **vulnerable** to the adverse effects of climate change, especially the least developed countries and small island developing States, and further taking into account the needs of countries in Africa affected by drought, desertification and floods”

Contribution of Working Group III to the Fourth Assessment Report of the IPCC,!

⌘ WGIII Chapter 13, page 776, referred to by Bali action plan

Box 13.7 The range of the difference between emissions in 1990 and emission allowances in 2020/2050 for various GHG concentration levels for Annex I and non-Annex I countries as a group^a

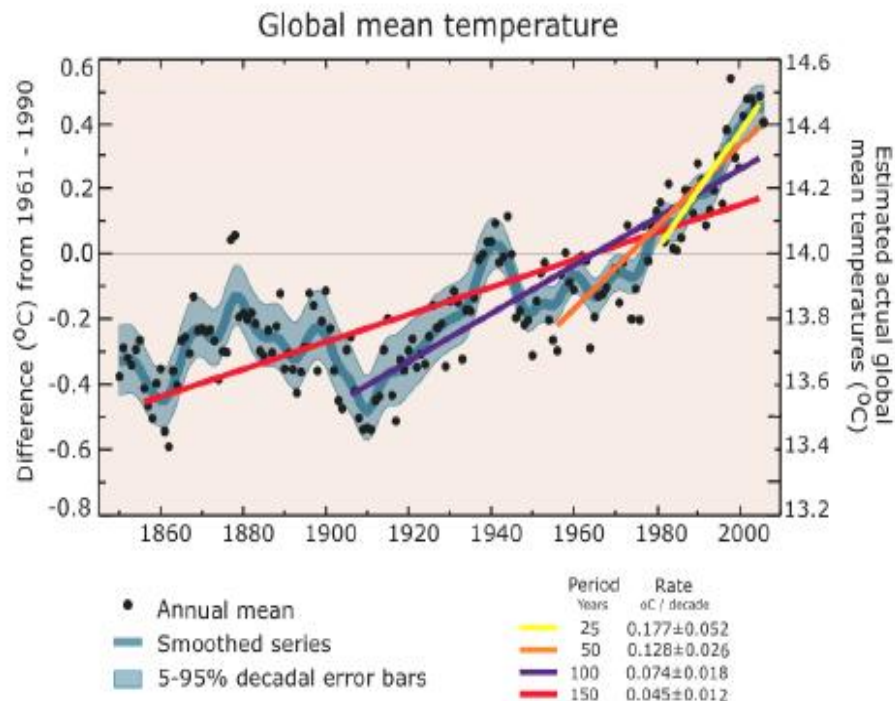
Scenario category	Region	2020	2050
<i>A-450 ppm CO₂-eq^b</i>	Annex I	-25% to -40%	-80% to -95%
	Non-Annex I	Substantial deviation from baseline in Latin America, Middle East, East Asia and Centrally-Planned Asia	Substantial deviation from baseline in all regions
<i>B-550 ppm CO₂-eq</i>	Annex I	-10% to -30%	-40% to -90%
	Non-Annex I	Deviation from baseline in Latin America and Middle East, East Asia	Deviation from baseline in most regions, especially in Latin America and Middle East
<i>C-650 ppm CO₂-eq</i>	Annex I	0% to -25%	-30% to -80%
	Non-Annex I	Baseline	Deviation from baseline in Latin America and Middle East, East Asia

Notes:

- ^a The aggregate range is based on multiple approaches to apportion emissions between regions (contraction and convergence, multistage, Triptych and intensity targets, among others). Each approach makes different assumptions about the pathway, specific national efforts and other variables. Additional extreme cases – in which Annex I undertakes all reductions, or non-Annex I undertakes all reductions – are not included. The ranges presented here do not imply political feasibility, nor do the results reflect cost variances.
- ^b Only the studies aiming at stabilization at 450 ppm CO₂-eq assume a (temporary) overshoot of about 50 ppm (See Den Elzen and Meinshausen, 2006).

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Twenty Years after the birth of IPCC:



Source: IPCC WGI AR4

- The science is now well established.
- The political engagement is stronger.
- Climate change is more than an environmental issue
- The IPCC no longer has the stage to itself.

What is the future of IPCC?



“Reporting the results of the IPCC Fourth Assessment”, Moscow, 10 July 2008



Timing of AR5

- Working Group I to report in early 2013
- Working Group II and III, and Synthesis! Report, to appear as early as possible in! 2014
- Taking into account the timings of the! UNFCCC negotiations (COP 2014)



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First steps

29th Plenary in September 2008 will:

- Elect the IPCC Chair
- Elect new Chairs for the Working Groups
- Elect new Bureaux for the Working Groups
- And will decide the next actions (e.g., scoping ! meetings to discuss report content)



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**« We are united
by responsibility
for the future of
our common
home,
whose peace
and well-being
we are obliged
to preserve »**

**President
Medvedev
at the Toyako
G8 summit
(2008)**

Picture: UNICEF

Useful links:



⌘ www.ipcc.ch : IPCC!

⌘ www.climate.be/vanyp: my slides

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