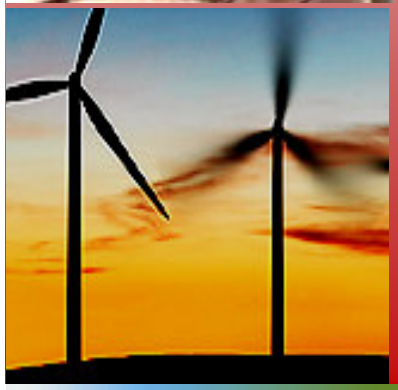
THE SCIENTIFIC AND ETHICAL DIMENSIONS OF CLIMATE CHANGE



R.K. Pachauri

Chairman,
Intergovernmental Panel on Climate Change

Director-General,
The Energy and Resources Institute

Director,
Yale Climate & Energy Institute

Khoshoo Memorial Lecture

New Delhi

11th May 2010

WMO UNEP

IPCC

THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

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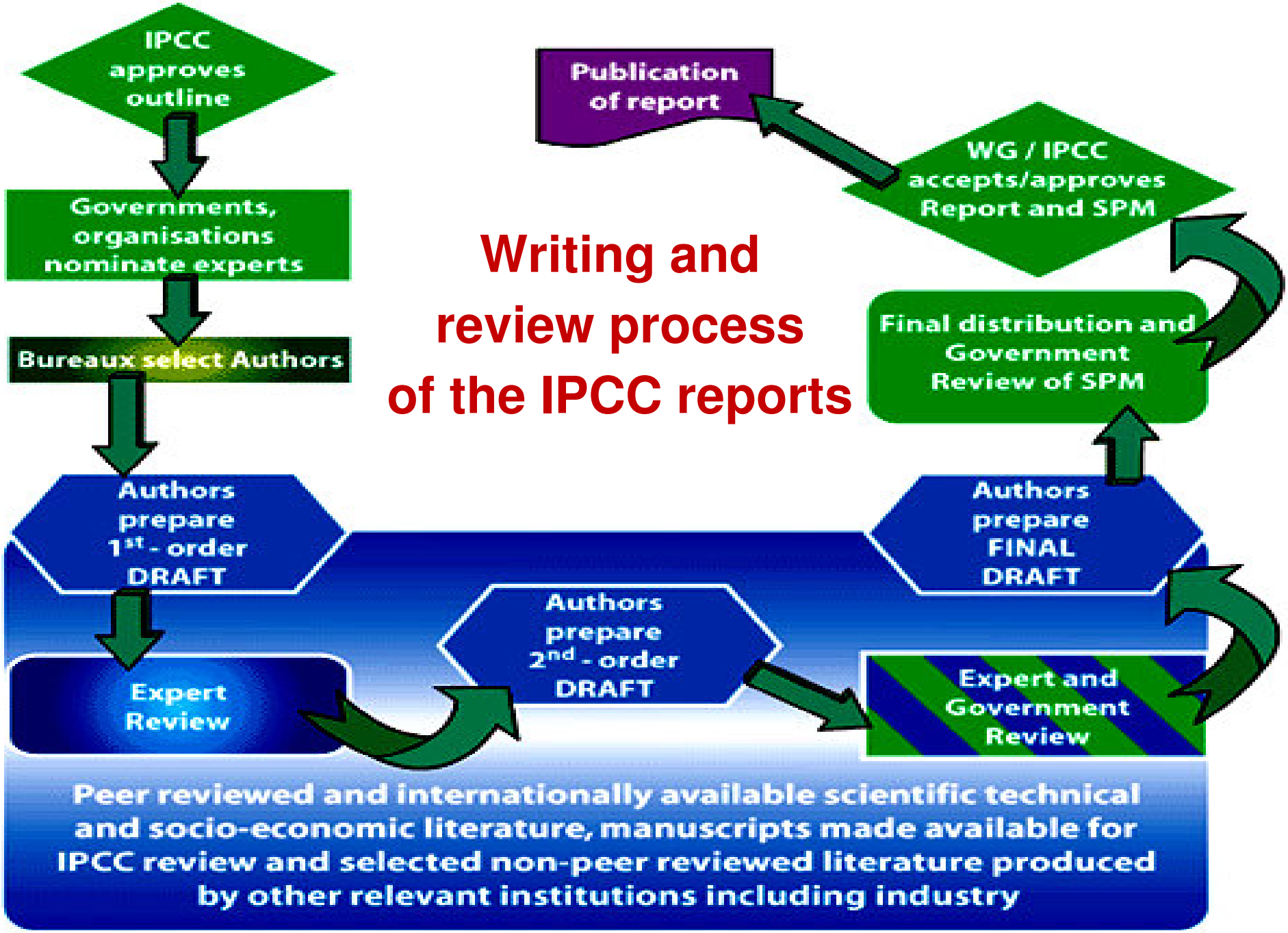
Mandate of the IPCC

"The General Assembly […] endorses action of the World Meteorological Organisation and the United Nations Environment Programme in jointly establishing an Intergovernmental Panel on Climate Change to provide **international coordinated scientific assessments** of the magnitude, timing and potential environmental and socio-economic impact of climate change and realistic response strategies […]."

United Nations General Assembly
43rd session resolution, 6th December 1988

Writing and review process of the IPCC reports



The IPCC Fourth Assessment Report (2007)

+130 countries

450 lead authors

800 contributing authors

+2,500 scientific expert reviewers

+18,000 peer-reviewed publications cited

+90,000 comments from experts and Governments

OBSERVED AND EXPECTED CLIMATE CHANGES

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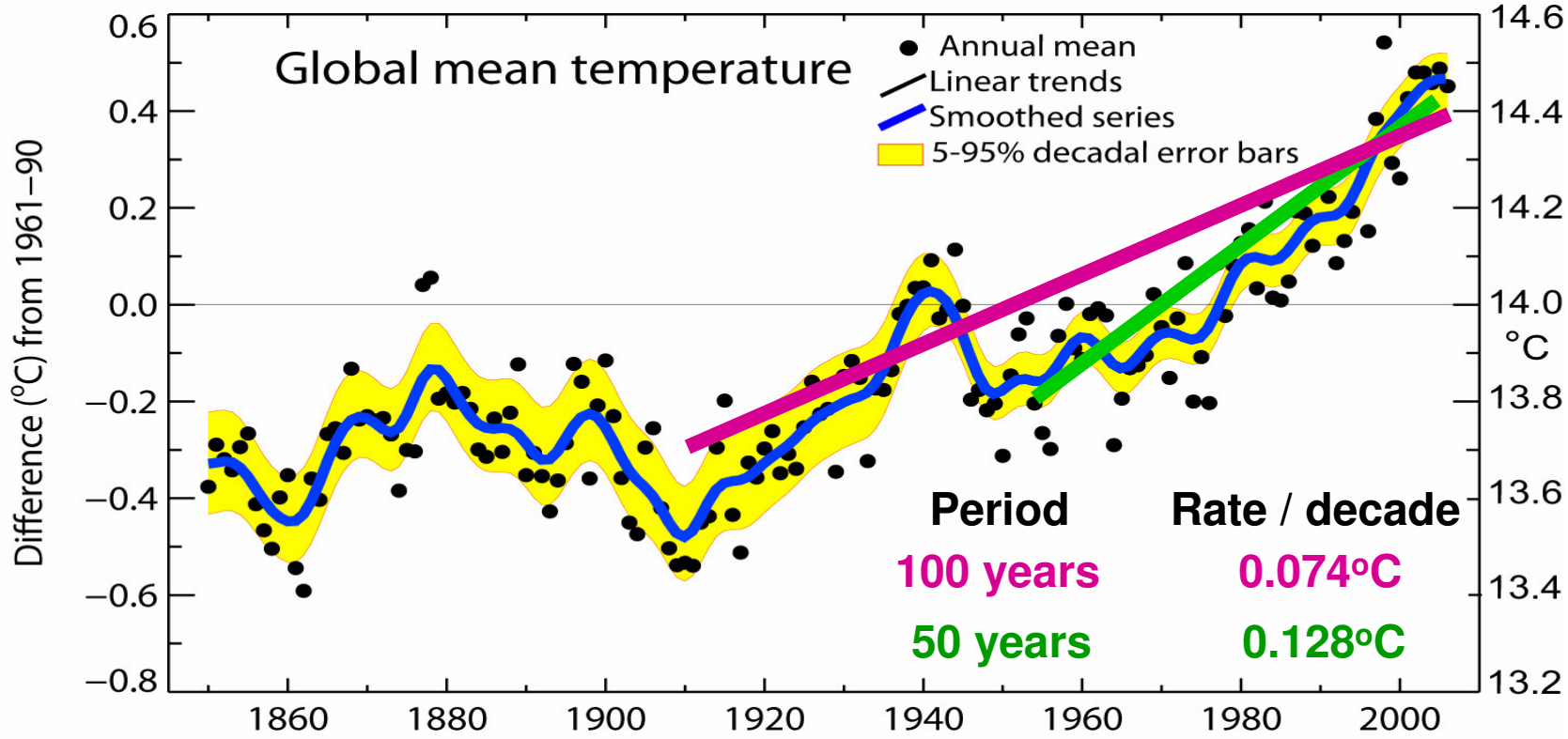
Changes in global average surface temperature

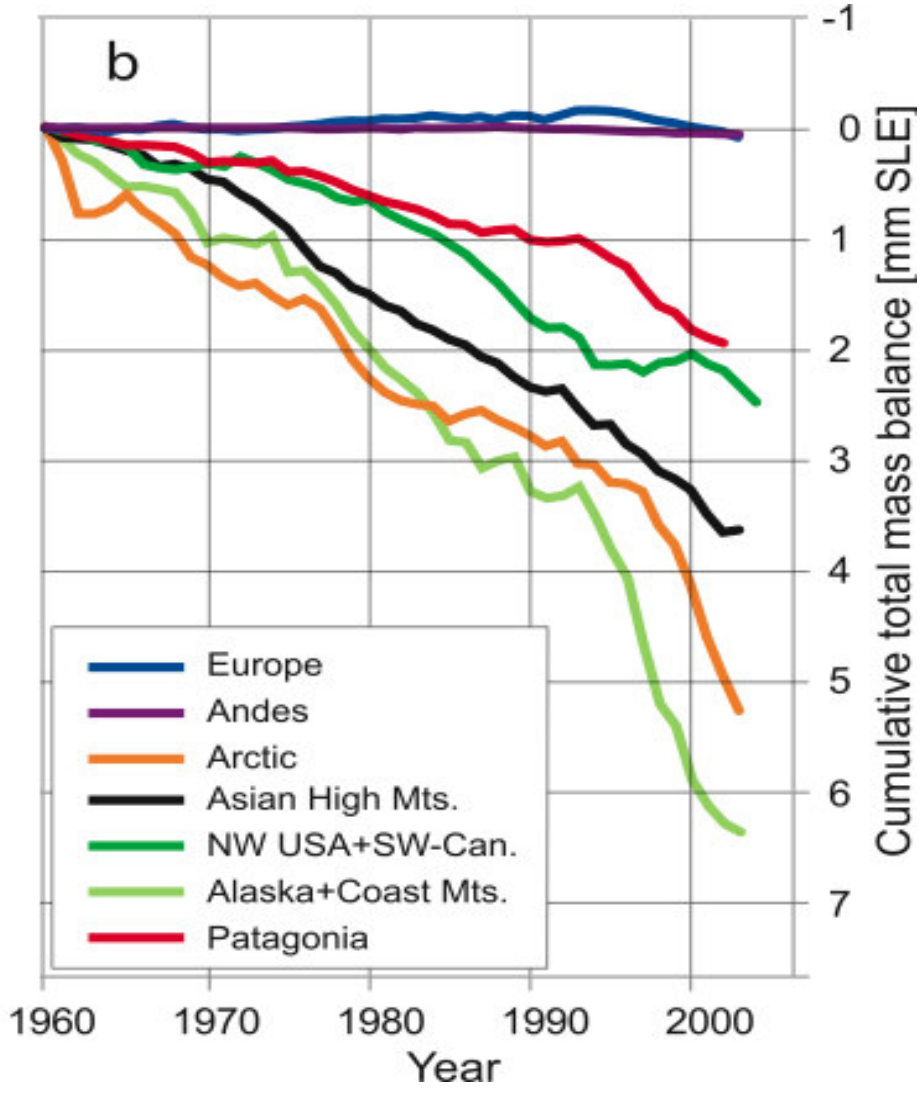


Eleven of the last twelve years rank among the twelve warmest years in the instrumental record of global surface temperature

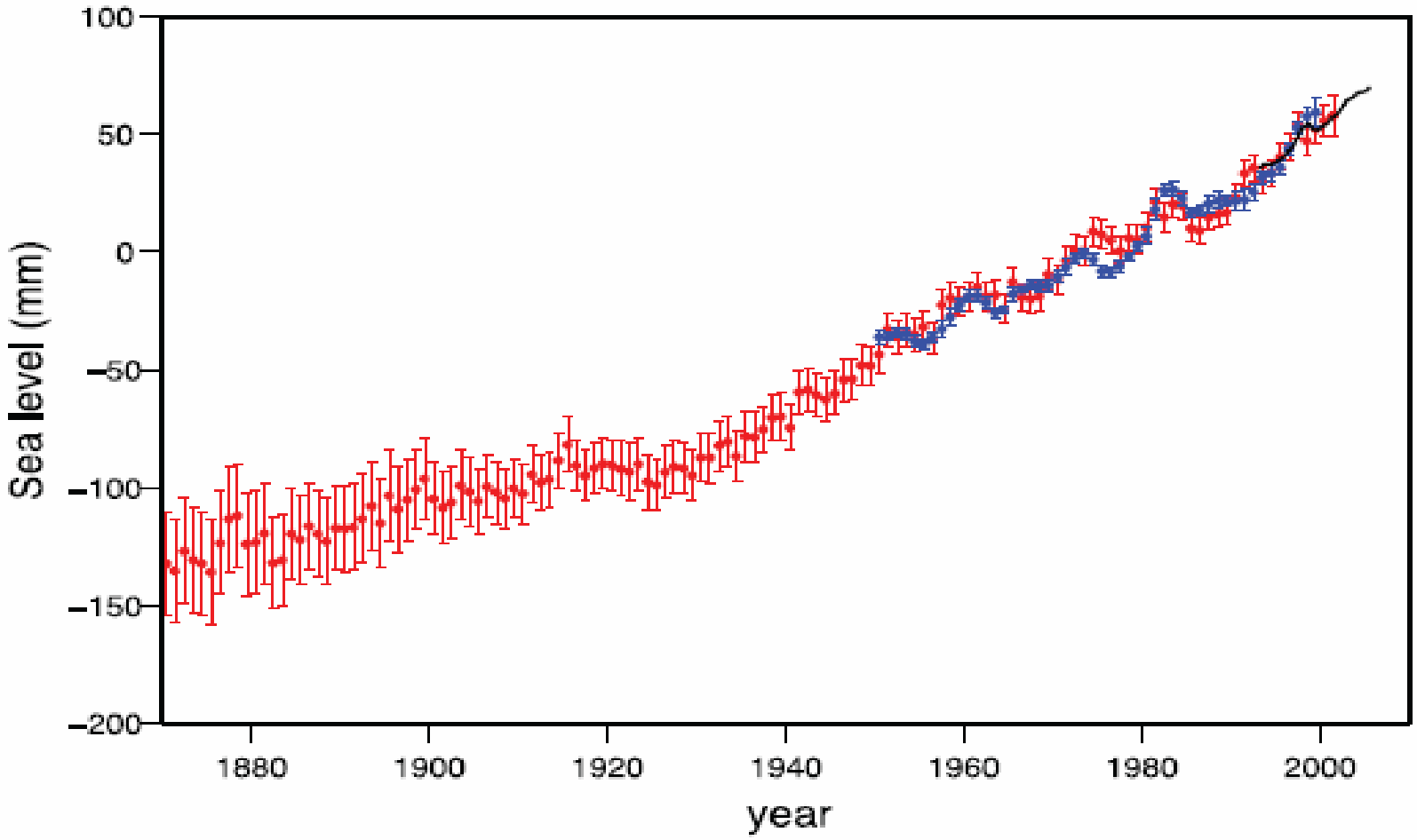
Cumulative balance of glacier mass

Water supplies stored in glaciers are projected to decline in the course of the century

Decreases in glaciers have contributed about 28% of sea level rise since 1993

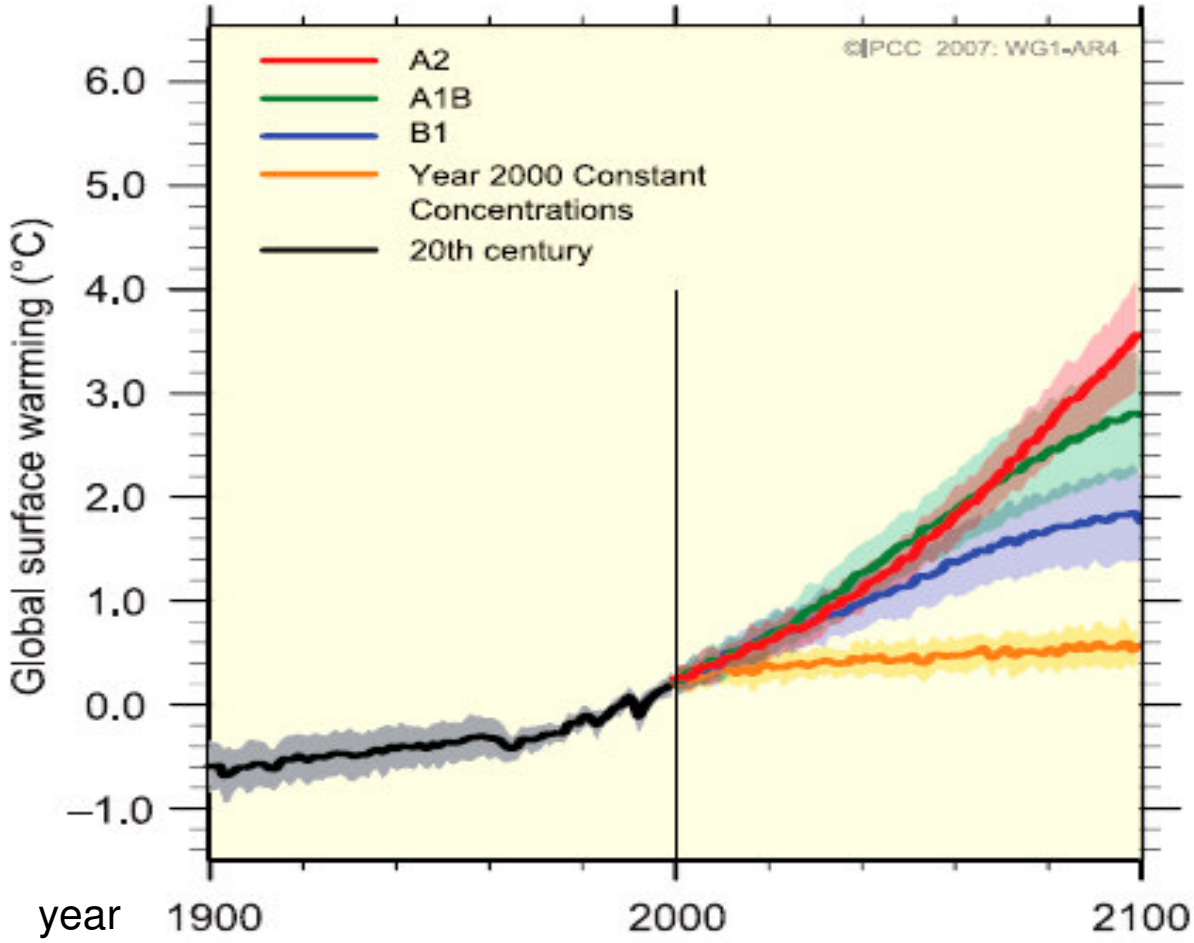


Changes in global average sea level



Global average sea level has risen since 1961 at an average rate of 1.8mm/yr and since 1993 at 3.1mm/yr

Ranges for predicted surface warming



Continued emissions would lead to further warming of **1.1ºC to 6.4ºC** over the 21st century (best estimates: **1.8ºC - 4ºC**)

ETHICAL IMPLICATIONS OF CLIMATE CHANGE

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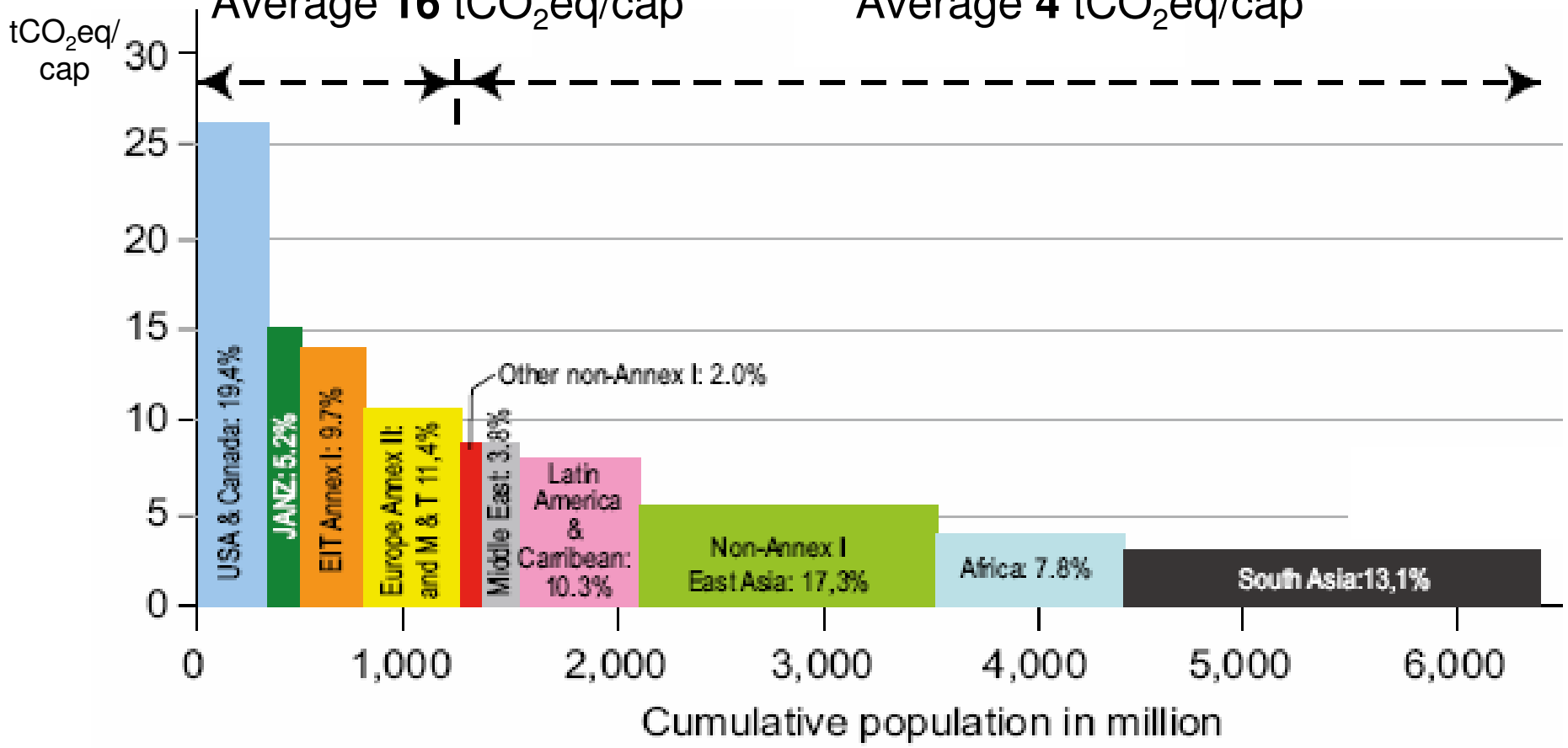
Distribution of regional per capita GHG emissions (2004)

Annex I:
Population **20%**
GHGs **46%**
Average **16** tCO_2eq/cap

Non Annex I:
Population **80%**
GHGs **54%**
Average **4** tCO_2eq/cap



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Vulnerable populations

A disproportionate share of the climate-change burden will fall on poor regions and populations of the world, in contrast with their low contribution to climate change

- **Low-latitude, less-developed areas** are generally at greatest risk due to both higher sensitivity and lower adaptive capacity
- Within other areas, the **poor and marginalised communities** can be particularly at risk

Some observed extreme events

Hurricane Katrina, New Orleans (USA), 2005:
100 000 people - mainly poor and elderly - trapped in the drowning city

Droughts, Mongolia, 1999 to 2002:
70% of grassland affected;
12 million livestock killed

Rainfall, Mumbai (India), 2005:
1 million people lost their homes

Cyclone Nargis, Myanmar, 2008:
100 000 estimated deaths

More than 90% of the deaths related to natural disasters occur in developing countries

Impacts on poor regions due to climate variability and change

People exposed to increased **water stress** by 2020:

- 120 million to 1.2 billion in Asia
- 75 to 250 million in Africa
- 12 to 81 million in Latin America

Possible **yield reduction** in agriculture:

- 50% by 2020 in some African countries
- 30% by 2050 in Central and South Asia
- 30% by 2080 in Latin America

Crop revenues could fall by 90% by 2100 in Africa

Impacts of climate change on development

Climate change will adversely impact **basic needs**:

- Access to food and resources
- Stable health conditions
- Security of settlements

Without appropriate measures, climate change will likely **exacerbate poverty** and slow down economic growth in developing countries

➢ Climate change will act as a 'threat multiplier', especially in developing countries

Possible impacts of climate change on migration and conflicts

Rising ethnic conflicts can be linked to competition over increasingly **scarce natural resources**

Numbers of environmental refugees could increase as **extreme events, floods and famines** become more frequent

Climate change could force **hundreds of millions of people** from their native lands by the end of the century

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THE NEED FOR ADAPTATION AND MITIGATION

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Key strategies to adapt to climate change

Developing **knowledge** on impacts and vulnerabilities

Integrating adaptation in wider policies

Improving **disaster preparedness** and management

Improving **health care** systems

Promoting **good governance** including responsible decision making and communities empowerment

- **Poverty is the largest barrier to developing the capacity to cope and adapt**

Key mitigation policies

Promoting research & development, technology transfer and international cooperation

Informing and educating

Mainstreaming environmental policies in decision making

Internalising the environmental costs of economic activity

- E.g. effective carbon-price signal

Effective policies are those that provide **long-term signals and incentives on a predictable basis**

Stabilisation scenarios

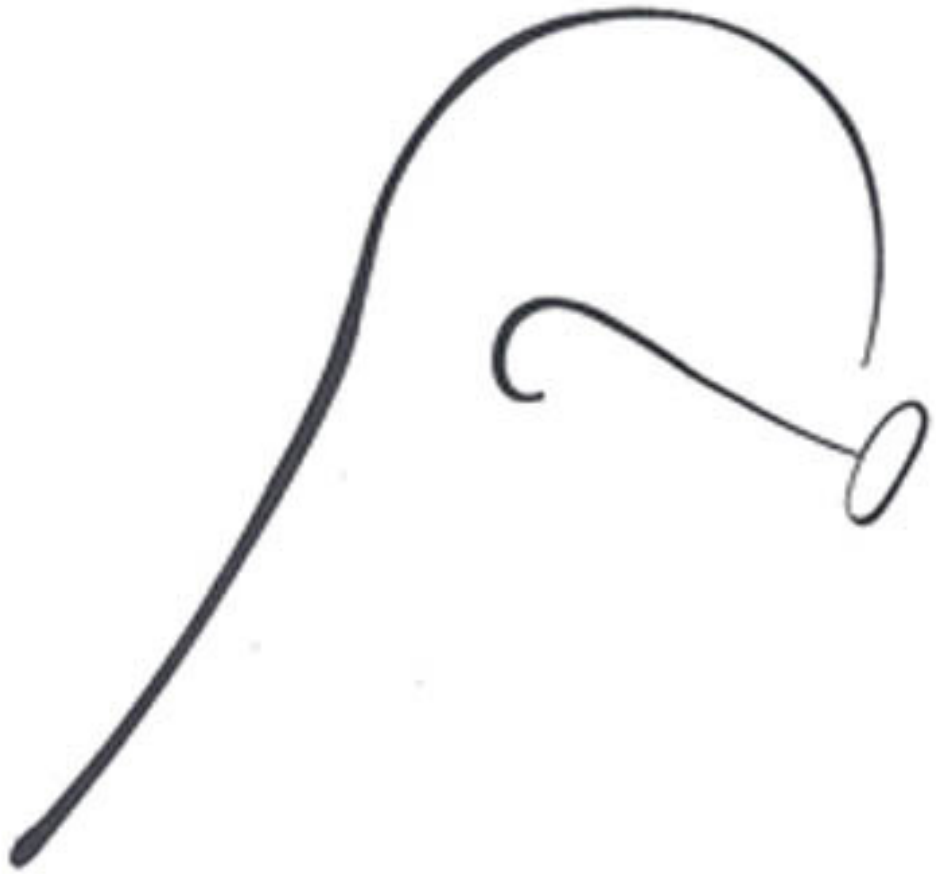
Stabilization level (ppm CO_2-eq)	Global mean temp. increase (ºC)	Year CO_2 needs to peak	Change in global CO_2 emissions in 2050 (% of 2000 emissions)
445 – 490	2.0 – 2.4	2000 – 2015	-85 to -50
490 – 535	2.4 – 2.8	2000 – 2020	-60 to -30
535 – 590	2.8 – 3.2	2010 – 2030	-30 to +5
590 – 710	3.2 – 4.0	2020 – 2060	+10 to +60

Towards a new development path

The **dominant path to industrialisation** has been characterised by high concurrent GHG emissions

The world cannot afford the current emulation by **developing countries** of the model that has been provided by industrialised countries

➢Both developed and developing countries have to create a more **sober, efficient society**



Live simply so that others may simply live