INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

27th Session of the Intergovernmental Panel on Climate Change

Valencia, 12-17 November 2007

27ª Sesión Plenaria del Grupo Intergubernamental de Expertos sobre el Cambio Climático

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IPCC Fourth Assessment Report

Synthesis Report

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Chairman
Intergovernmental Panel on Climate Change

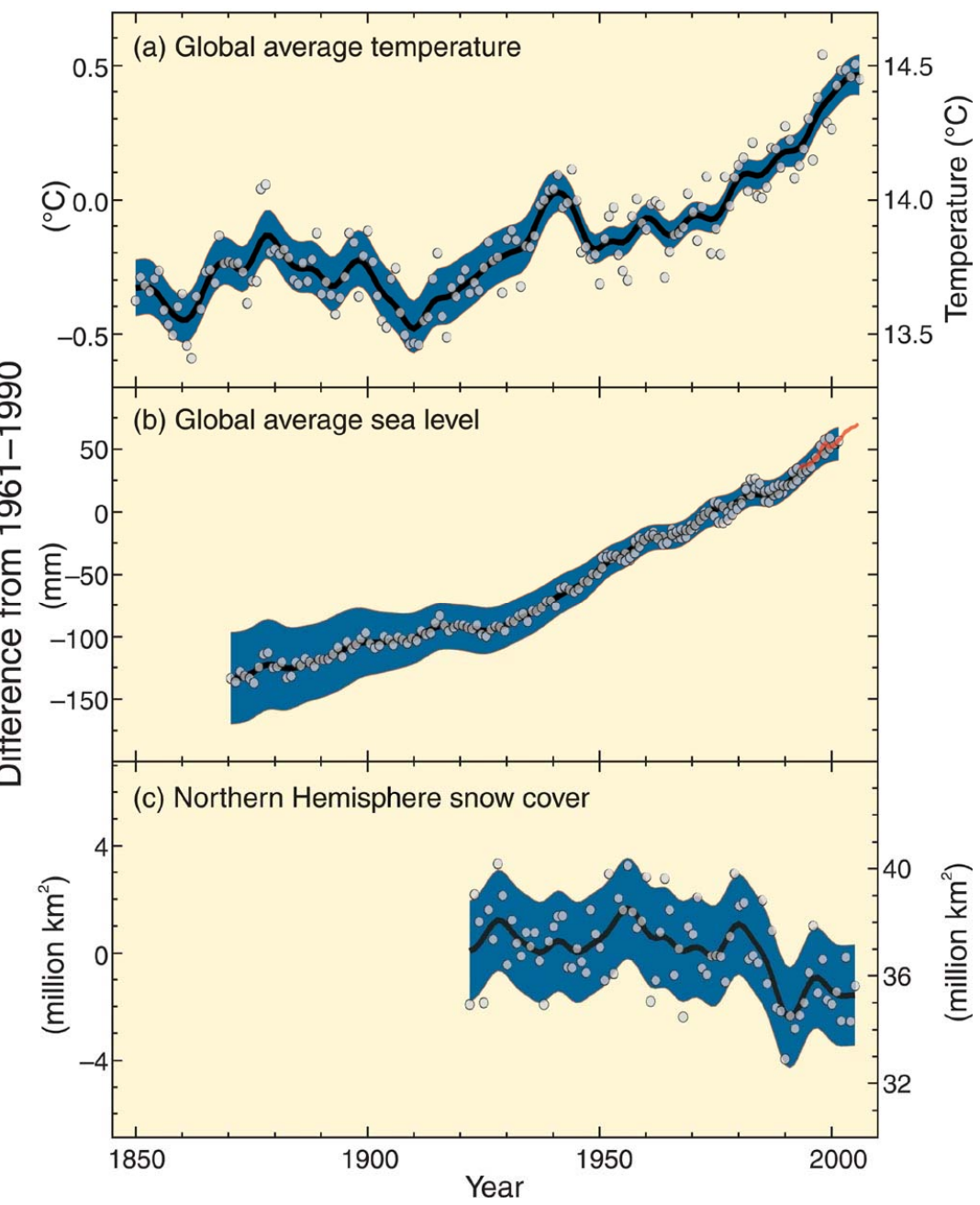
Press Presentation
Saturday, 17 November 2007
Valencia, Spain

Vision of UN Secretary-General on Climate Change

- "Climate change is a serious threat to development everywhere"
- "Today, the time for doubt has passed. The IPCC has unequivocally affirmed the warming of our climate system, and linked it directly to human activity"
- "Slowing or even reversing the existing trends of global warming is the defining challenge of our ages"
- "Galvanising international action on global warming as one of main priorities as Secretary General"

Fourth Assessment Report (AR4) Process

- +2500 scientific expert reviewers
- 800 contributing authors
- 450 lead authors from
- +130 countries



Warming of the climate system is unequivocal

- **Increasing global air and ocean temperatures**
- **Rising global average sea level**
- **Reductions of snow and ice**

Extreme Events

- The frequency of heavy precipitation events has increased over most areas
- From 1900 to 2005, precipitation increased significantly in eastern parts of North and South America, northern Europe and northern and central Asia but declined in the Sahel, the Mediterranean, southern Africa and parts of southern Asia
- Globally, the area affected by drought has *likely* increased since the 1970s
- There is now higher confidence than in the TAR in projected patterns of warming and other regional-scale features, including changes in wind patterns, precipitation, and some aspects of extremes and sea ice

Increasing Sea Level Rise

- Rate of global average sea level rise has risen from 1.8mm/yr to 3.1mm/yr from 1961 to 1993

- The reasons for sea level rise has been due to thermal expansion, melting glaciers & ice caps and the polar ice sheets

- Projected sea level rise at the end of the 21st Century will be 18-59 cm

Anthropogenic warming would lead to some impacts that are abrupt or irreversible

- Partial loss of ice sheets on ice polar land could imply:
  - metres of sea level rise
  - Major changes in coastlines and inundation of low-lying areas
  - Great effects in river deltas and low-lying islands
- Approximately 20-30% of species assessed so far are likely to be at increased risk of extinction
- Large scale and persistent changes in Meridional Overturning Circulation (MOC) will have impacts on marine ecosystem productively, fisheries, ocean CO_2 uptake and terrestrial vegetation

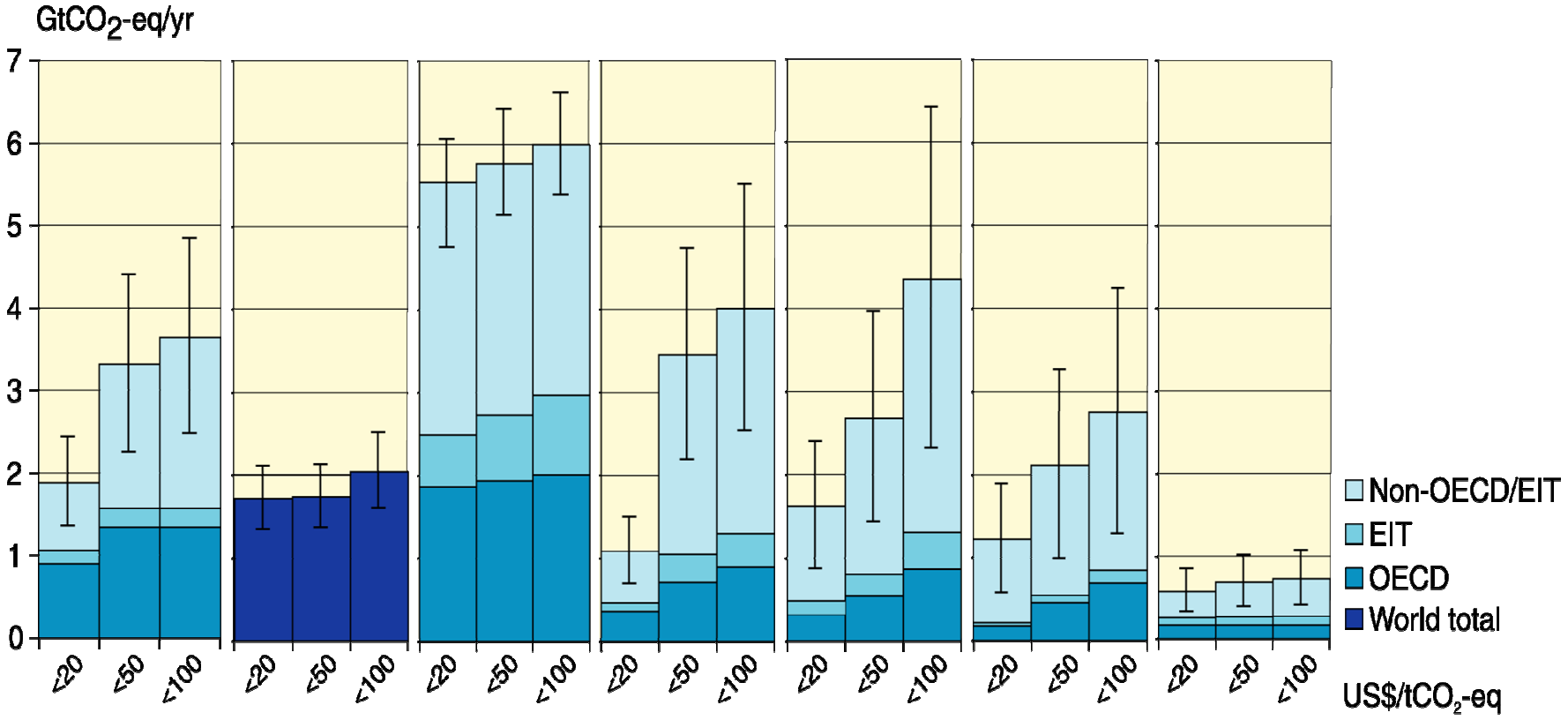
Solutions

- A wide variety of policies and instruments are available to governments to create the incentives for mitigation action.

- Stabilisation levels assessed can be achieved by deployment of a portfolio of technologies that are either currently available or expected to be commercialised in coming decades

- An effective carbon-price signal could realise significant mitigation potential in all sectors

Economic mitigation potential by sector in 2030



Energy supply	Transport	Buildings	Industry	Agriculture	Forestry	Waste
total sectoral potential at <US$100/$CO_2$-eq in $GtCO_2$-eq/yr:						
2.4-4.7	1.6-2.5	5.3-6.7	2.5-5.5	2.3-6.4	1.3-4.2	0.4-1

Mitigation Costs

- The macro-economic costs of mitigation generally rise with the stringency of the stabilisation target

- In 2050, global average macro-economic costs for mitigation towards stabilisation between 710 and 445ppm CO_2-eq are between a 1% gain and 5.5% decrease of global GDP

- Slowing average annual global GDP growth by less than 0.12 percentage points

Relation to Article 2- UNFCCC

Determining what constitutes "dangerous anthropogenic interference with the climate system" in relation to Article 2 of the UNFCCC involves value judgements. Science can support informed decisions on this issue, including by providing criteria for judging which vulnerabilities might be labelled "key"

Category	CO_2 concentration at stabilization (2005 = 379 ppm) [(b)]	CO_2-equivalent Concentration at stabilization including GHGs and aerosols (2005 = 375 ppm) [(b)]	Peaking year for CO_2 emissions [(a, c)]	Change in global CO_2 emissions in 2050 (% of 2000 emissions) [(a, c)]	Global average temperature increase above pre-industrial at equilibrium, using "best estimate" climate sensitivity [(d), (e)]	**Global average sea level rise above pre-industrial at equilibrium from thermal expansion only [(f)]**	Number of assessed scenarios
	ppm	ppm	Year	Percent	°C	**metres**	
I	350 – 400	445 – 490	2000 – 2015	-85 to -50	2.0 – 2.4	**0.4 – 1.4**	6
II	400 – 440	490 – 535	2000 – 2020	-60 to -30	2.4 – 2.8	**0.5 – 1.7**	18
III	440 – 485	535 – 590	2010 – 2030	-30 to +5	2.8 – 3.2	**0.6 – 1.9**	21
IV	485 – 570	590 – 710	2020 – 2060	+10 to +60	3.2 – 4.0	**0.6 – 2.4**	118
V	570 – 660	710 – 855	2050 – 2080	+25 to +85	4.0 – 4.9	**0.8 – 2.9**	9
VI	660 – 790	855 – 1130	2060 – 2090	+90 to +140	4.9 – 6.1	**1.0 – 3.7**	5

- Sea level rise under warming is inevitable
- Long time scales of thermal expansion & ice sheet response to warming imply that stabilisation of GHG concentrations at or above present levels will not stabilise sea level for many centuries

Equity Issues

- **Africa by 2020:**
  - Between 75 & 250 million people projected to be exposed increased water stress
  - In some countries, yields from rain-fed agriculture would be reduced by 50%
- **Asia by 2050s:**
  - Freshwater availability is projected to decrease
  - Coastal areas, especially heavily-populated mega delta regions will be greatest risk from sea flooding
- **Small Island States:**
  - Sea Level rise is expected to exacerbate inundation, storm surge, erosion and other coastal hazards threatening vital infrastructure
  - By mid-century reduced water resources in many small island states

SCIENCE AND SOME LEADING QUESTIONS

- How do we define what constitutes "dangerous anthropogenic"?
- How do we prepare the human race to face sea level rise & a world with new geographical features?
- Is the current pace and pattern of development sustainable?
- What changes in lifestyles, behaviour patterns and management practices are needed, and by when?

In Mahatma Gandhi's words:

"Be the change you want to see in the world"

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UNEP

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GENERALITAT VALENCIANA

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