



Climate Policy: Out of time

POTSDAM INSTITUTE FOR CLIMATE IMPACT RESEARCH



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Five Key Messages

- *Climate risks are larger*
- *Emissions, temperature and sea level rise at top of IPCC range*
- *High oil prices and coal intensive development since 2000 point to risk of higher emissions unless urgent action taken*
- *Lowering emissions, lowers temperature and reduces risks and damages*
- *Limiting warming to 2°C and below critical to prevent dangerous climate changes*

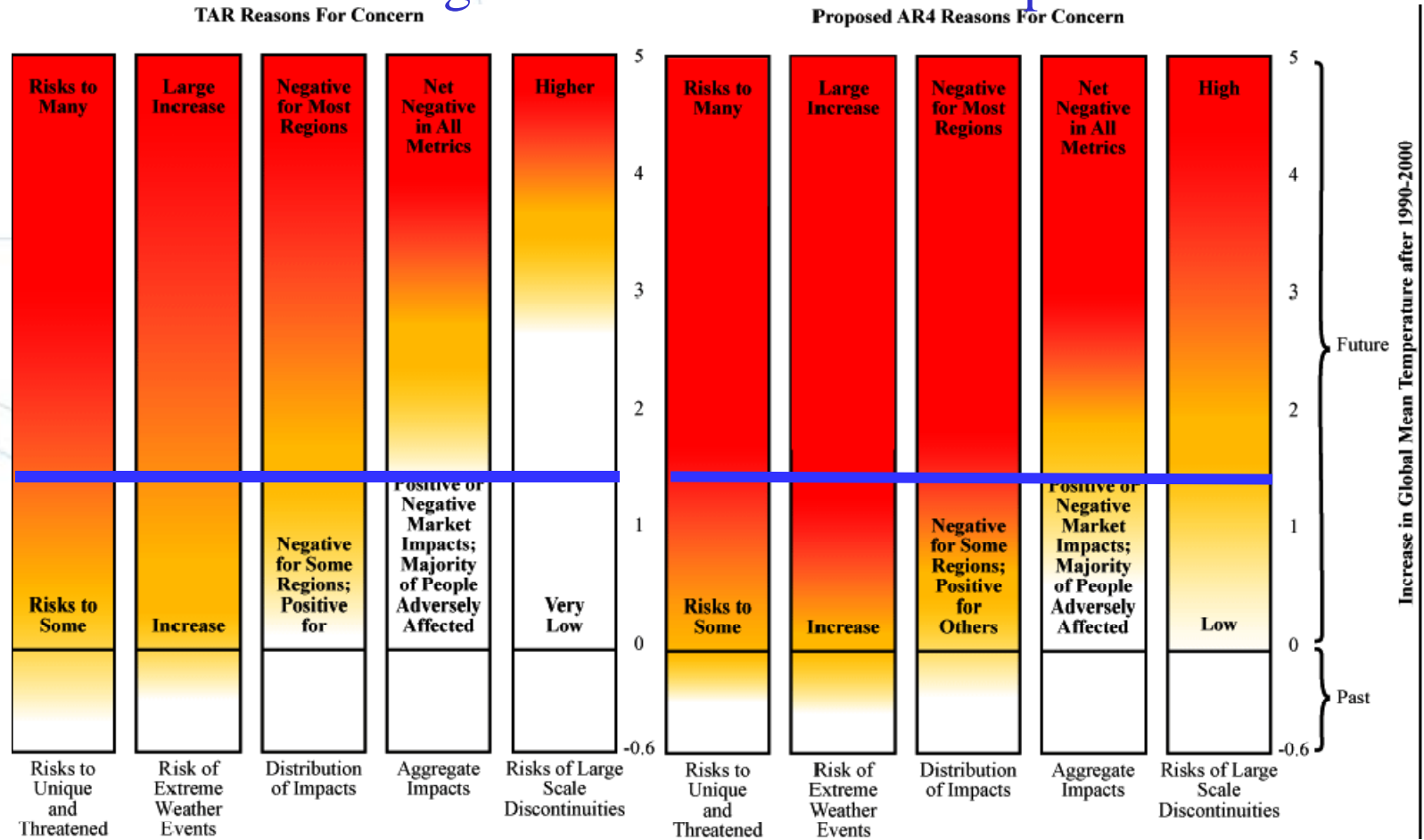


1. Climate risks are larger

IPCC AR4 finds greater risks at lower temperatures

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2°C
above
1860

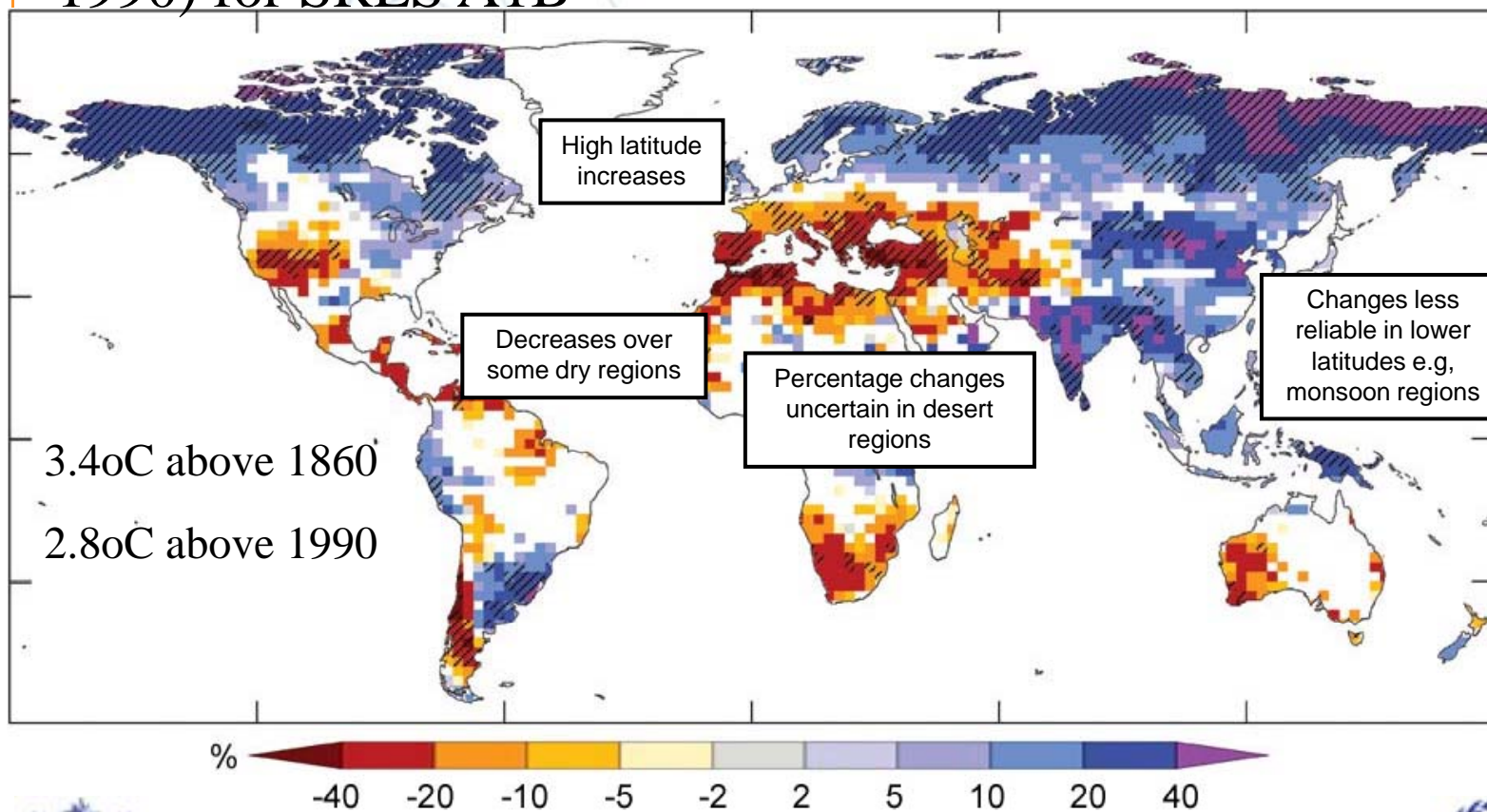


Source: Dangerous Climate Change: An Update of the IPCC Reasons for Concern, December 30, 2007: Smith, Schneider, Oppenheimer, Yohe, Hare, Patwardhan, Mastrandrea, Burton, Corfee-Morlot, Magadza, Fussler, Pittock, Rahman, Suarez, van Ypersele, in review PNAS



Large water supply risks projected

Changes in runoff by the end of the 21st century (% of 1990) for SRES A1B



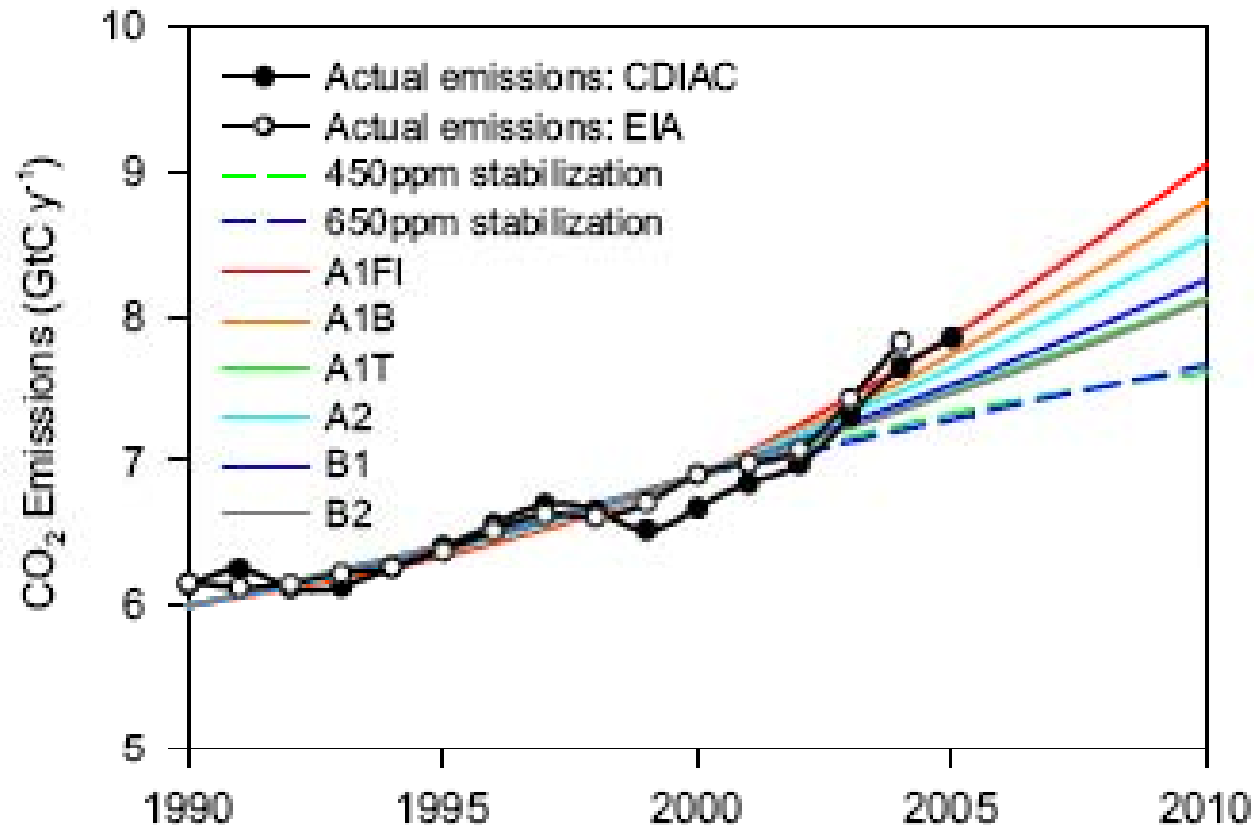


Climate change and risks to sustainable development

- *Very likely* that climate change can slow the pace of progress towards sustainable development.
- Climate change could impede achievement of the Millennium Development Goals over next half century



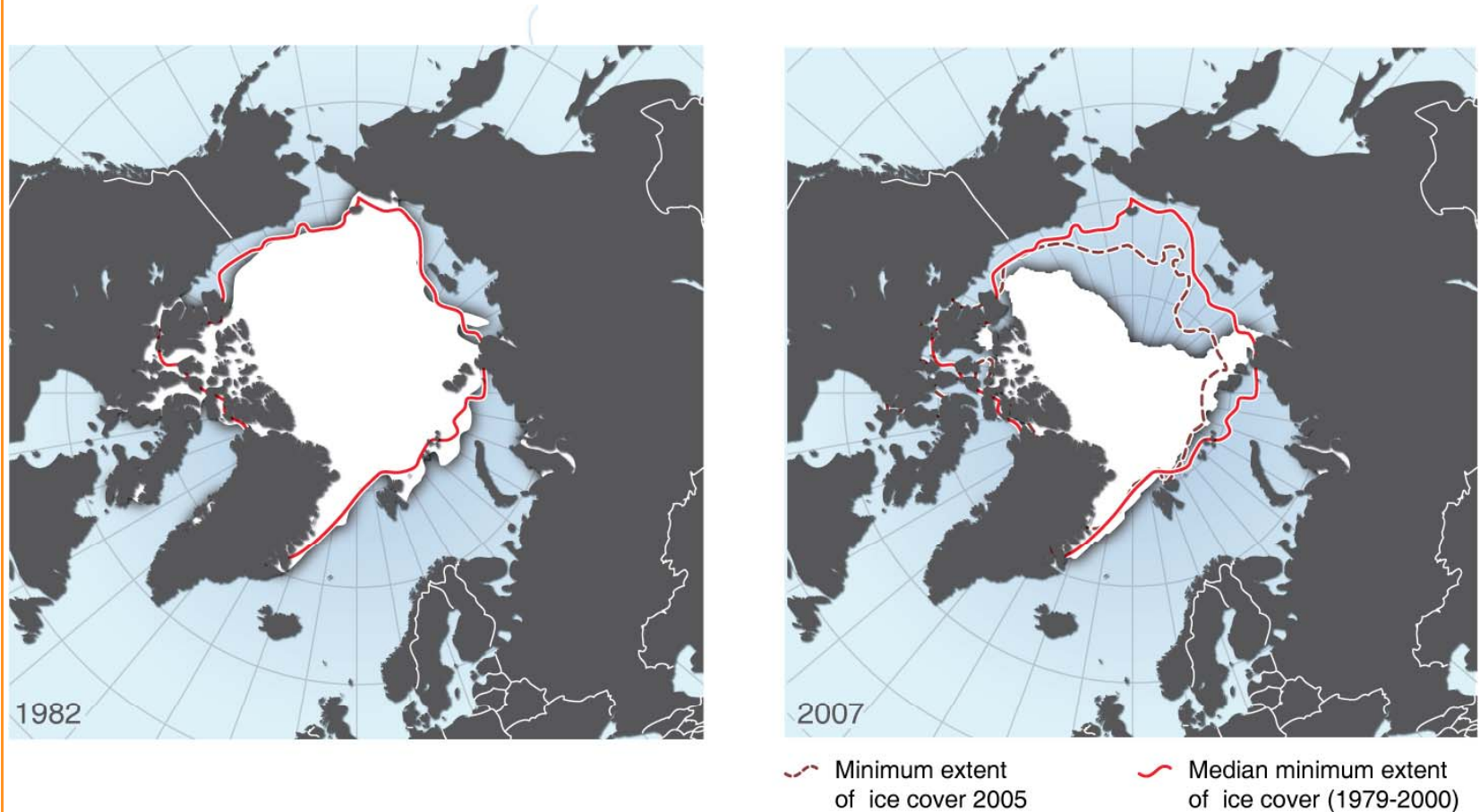
2. Emissions, temperature and sea level rise at top of IPCC range



Raupach, M. R., G. Marland, et al. (2007). "Global and regional drivers of accelerating CO₂ emissions." *PNAS*: 0700609104.



Arctic sea ice loss faster than expected



UNEP/GRID-Arendal, Arctic sea ice minimum extent in September 1982, 2005 and 2007, *UNEP/GRID-Arendal Maps and Graphics Library*, <http://maps.grida.no/go/graphic/arctic-sea-ice-minimum-extent-in-september-1982-2005-and-2007> (Accessed 24 April 2008)



Observed negative effect on crops

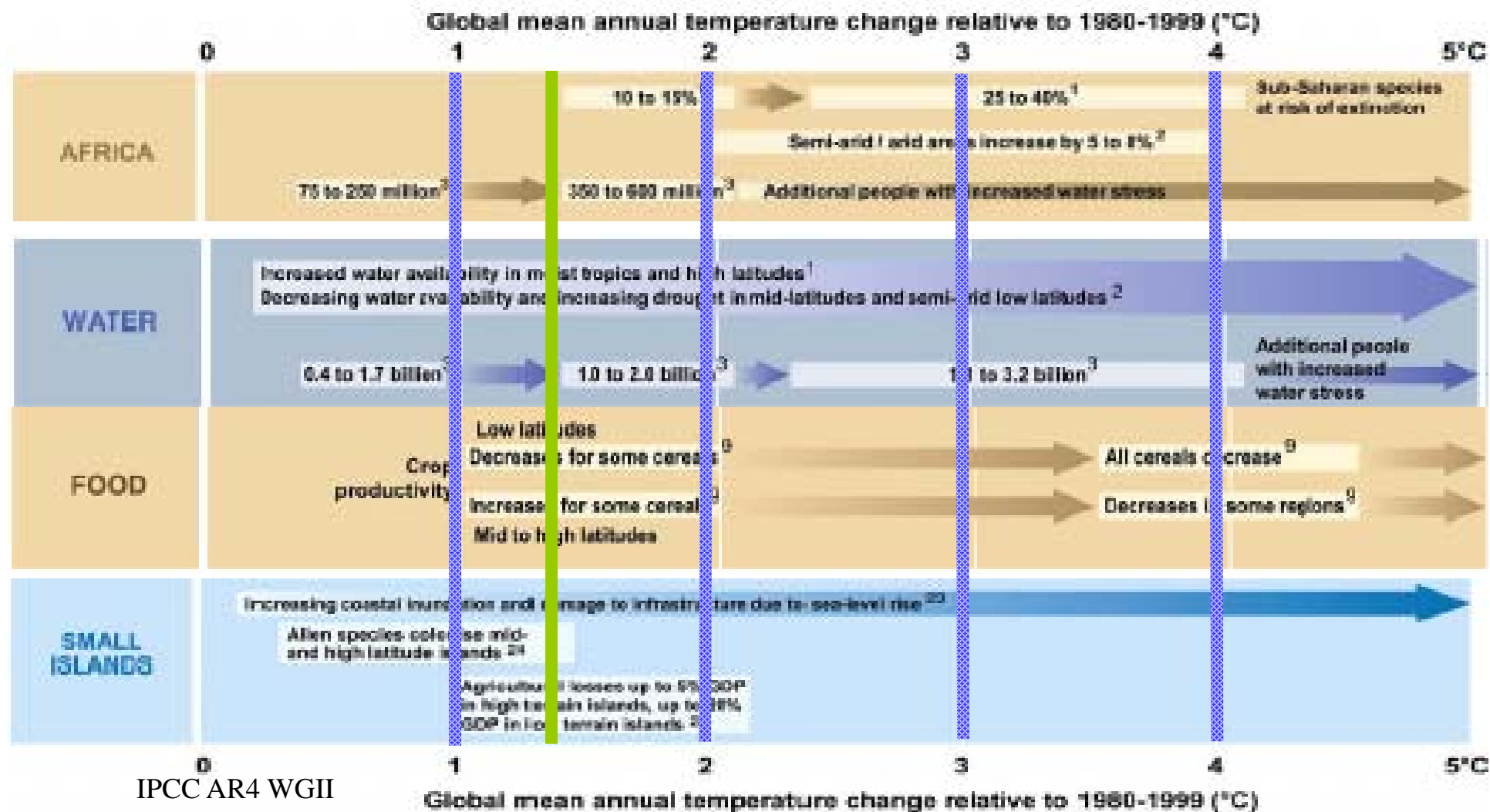
- “results suggest that recent climate trends, attributable to human activity... have had a discernible negative impact on global production of several major crops.”
 - Lobell, D. B. and C. B. Field (2008). "Estimation of the CO₂ fertilization effect using growth rate anomalies of CO₂ and crop yields since 1961." Global Change Biology 14(2): 451-451.



3. High oil prices and coal intensive development

- Oil price increases exacerbating trend towards increasing carbon intensity
- Price rises and energy security concerns driving investment in coal, coal/shale/tar to liquids, and carbon inefficient biofuels
- *High oil prices and coal intensive development since 2000 point to risk of higher emissions unless urgent action taken*

4. Lower emissions, lower temperature, reduced risks and damages



IPCC AR4 WGII

Table TS.4.



IPCC





5. Limiting warming to 2°C and below needs urgent global action

CO ₂ -equivalent Stabilization level (2005 = 375 ppm CO ₂ e)	Global Mean temperature increase at equilibrium (°C)	Global average sea level rise at equilibrium <u>from thermal expansion only</u>	Year global CO ₂ needs to peak	Reduction in 2050 global CO ₂ emissions compared to 2000
445 – 490	2.0 – 2.4	0.4 – 1.4	2000 – 2015	-85 to -50
Scenario category	Region	2020	2050	
A-450 ppm CO ₂ – eq ²⁾	Annex I	-25% to -40%	-80% to -95%	
	Non-Annex I	Substantial deviation from baseline in Latin America, Middle East, East Asia	Substantial deviation from baseline in all regions	

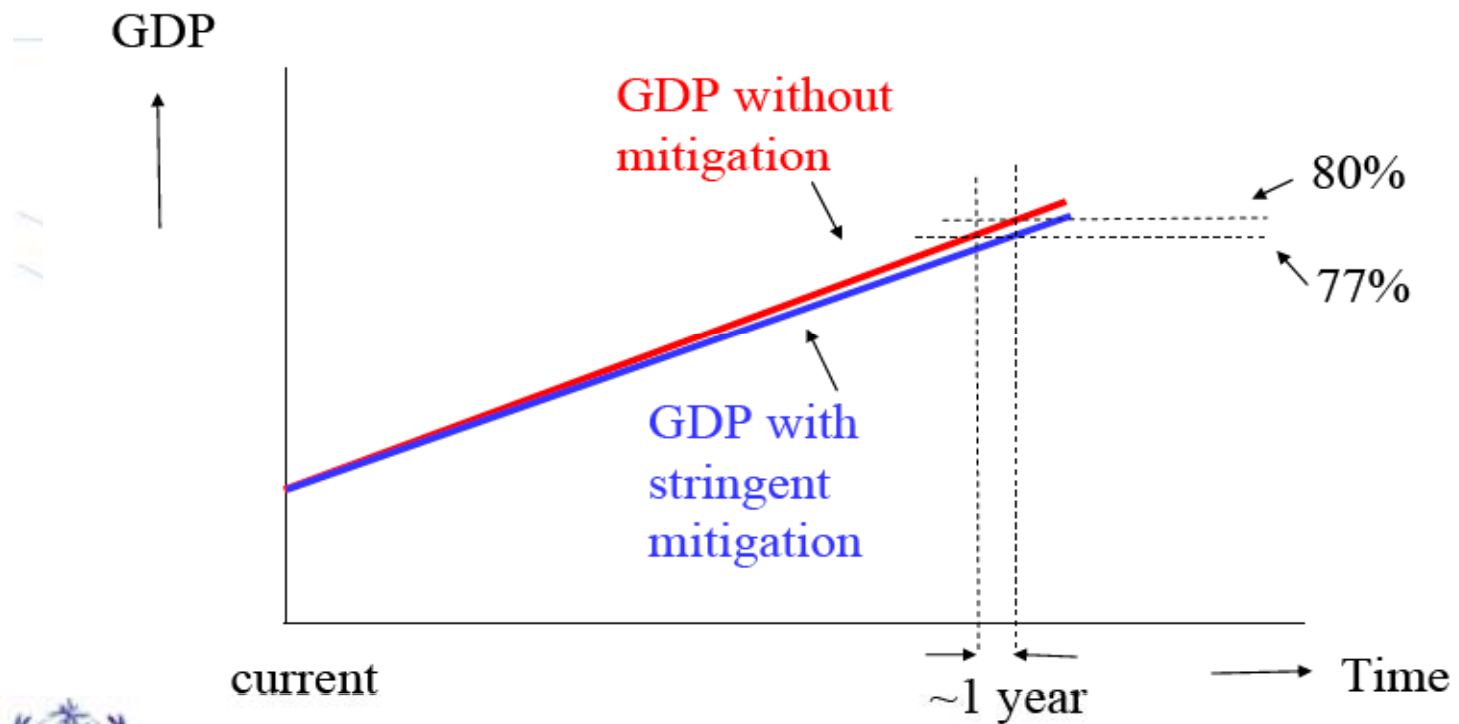
Source: IPCC AR4 Synthesis Report Table 5.1 and WGIII Chapter 13





Costs

Illustration of cost numbers





5. Limiting warming below 2oC

- *Limiting warming below 2oC critical to prevent dangerous climate changes*
- *Urgent global action in near term*
 - *Global peak in emissions before 2020 and be reduced at least 50-85% below 2000 by 2050*
 - *Annex I reductions at least 25-40% from 1990 levels by 2020 and 80-95% by 2050*
- *The 2020 reductions need to be agreed at Copenhagen in 2009*