



Post-Kyoto Scenarios

International Symposium
Reduction of Emissions and Geological Storage of CO₂
Paris, 15 September 2005

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European Commission DG ENV



Content

- **Current situation?**
- **Beyond 2012?**
- **Geological Capture and Storage ?**



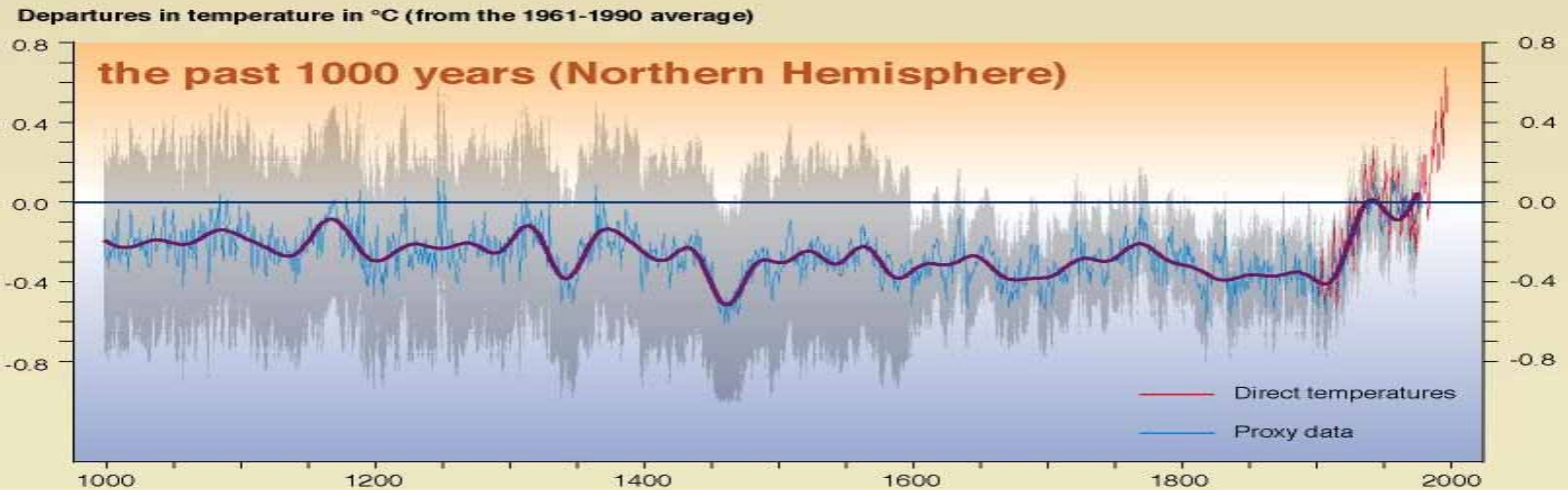
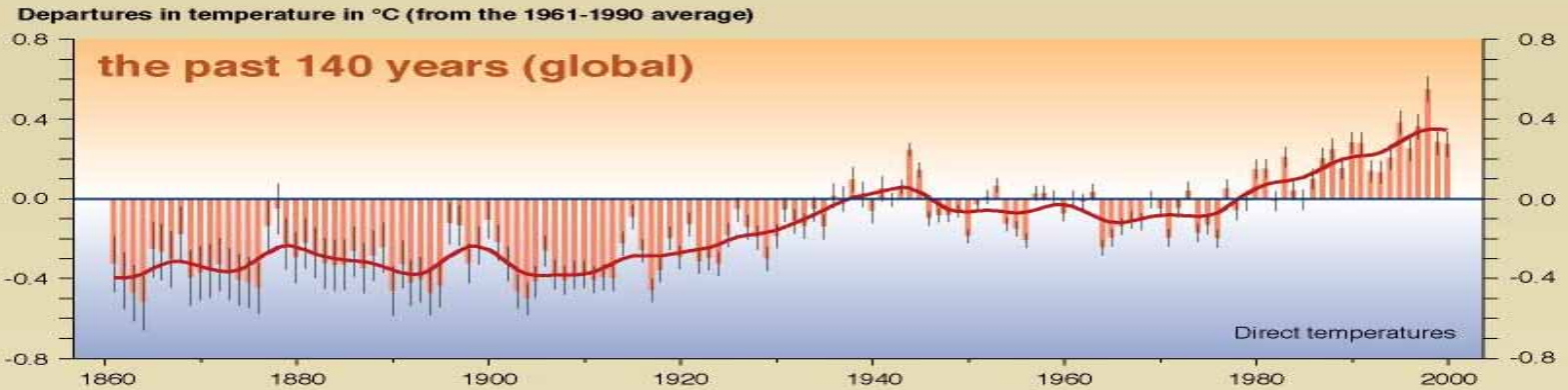
What is happening?

- **CO2 levels increasing by 2-3 ppm per year**
- **Since 1980 temperatures rising**
- **Polar ice is melting**
- **Rainfall patterns changing with droughts in some areas**
- **Storms increasing**



0.7° C global temperature increase and 0.95 ° C in Europe over the past 100 years (EEA, 2004)

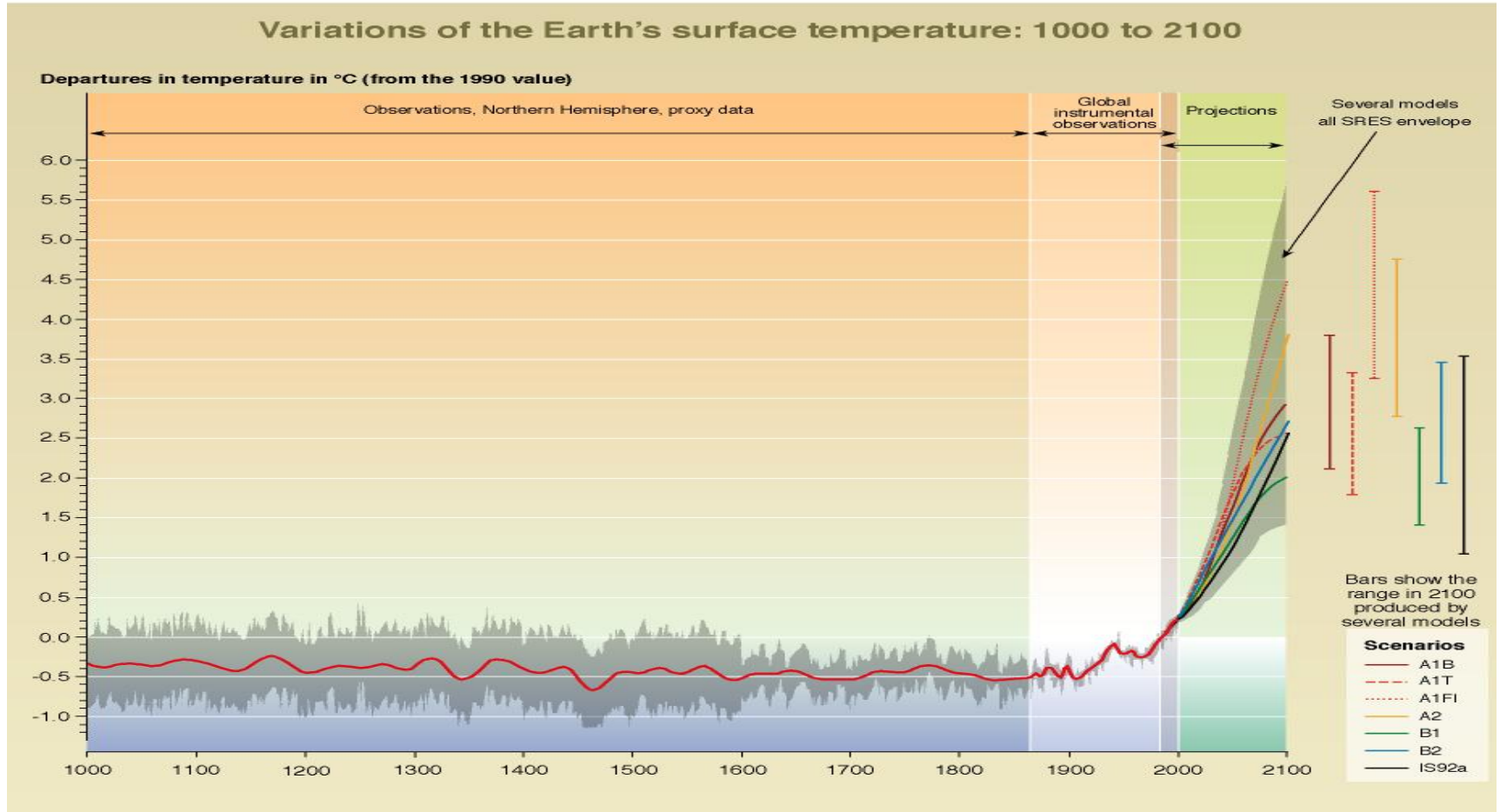
Variations of the Earth's surface temperature for...





Until 2100: global temperature estimated to rise by 1,4 – 5,8 ° C and 2 – 6,3 ° C in Europe (EEA, 2004)

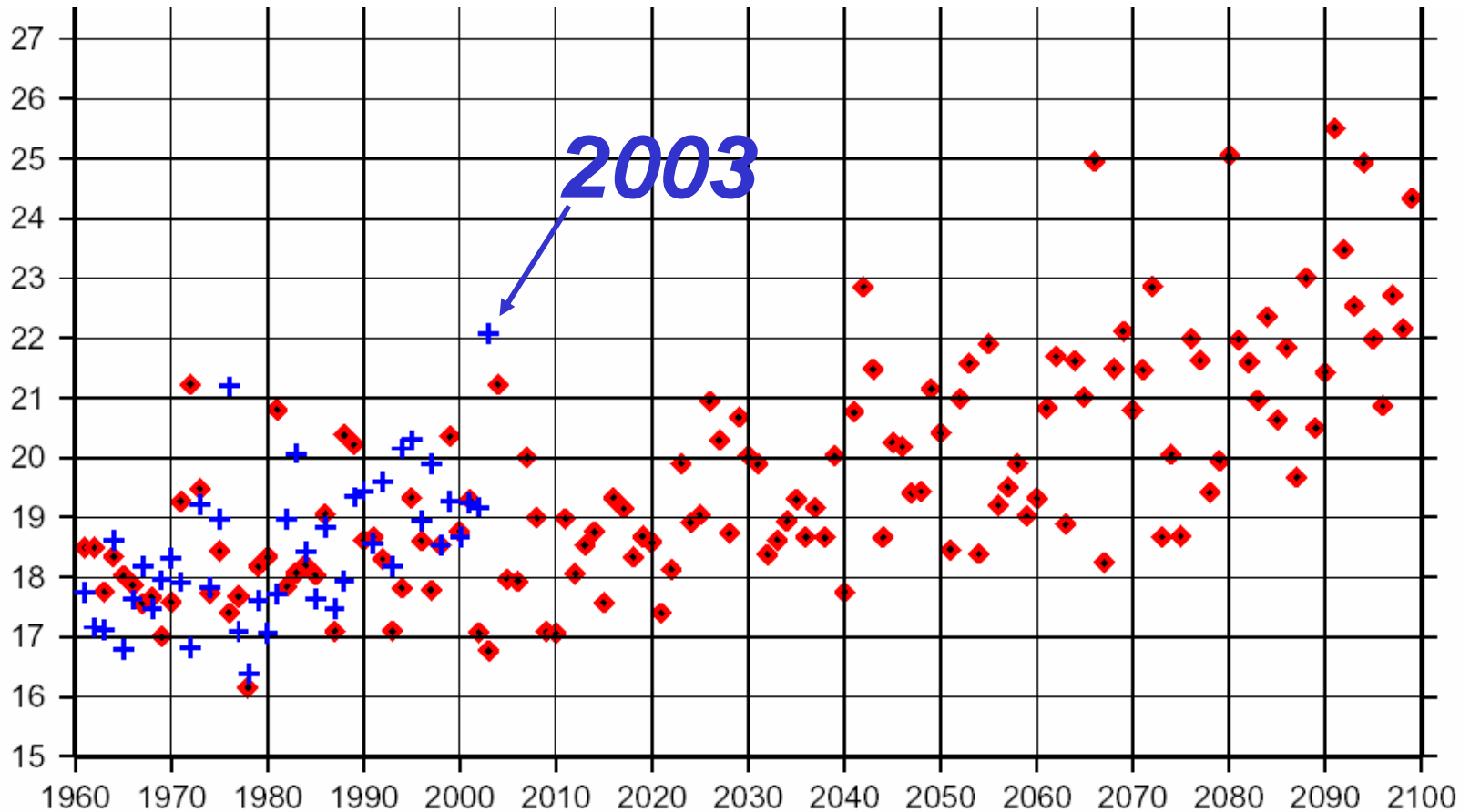
FIGURE 9.2
SPM - 10b





The extreme summer 2003 could become normal in a few decades only

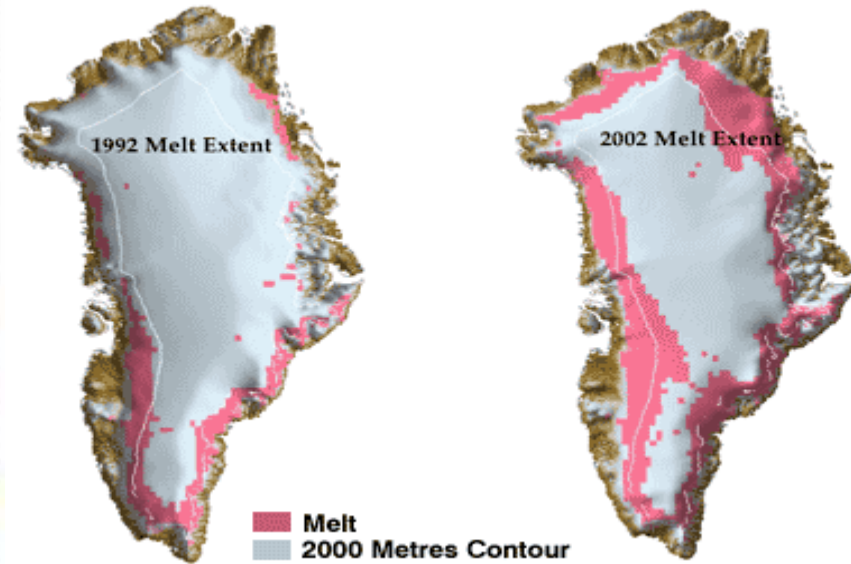
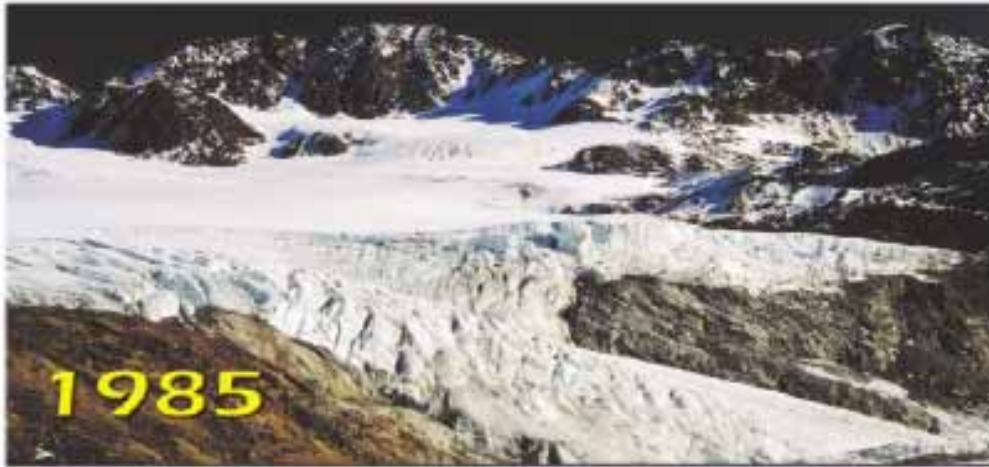
Average temperature for June July August 2003: Observations (+) simulation with scenario A2



Source: Météo France



Climate impacts: Glaciers are retreating quickly

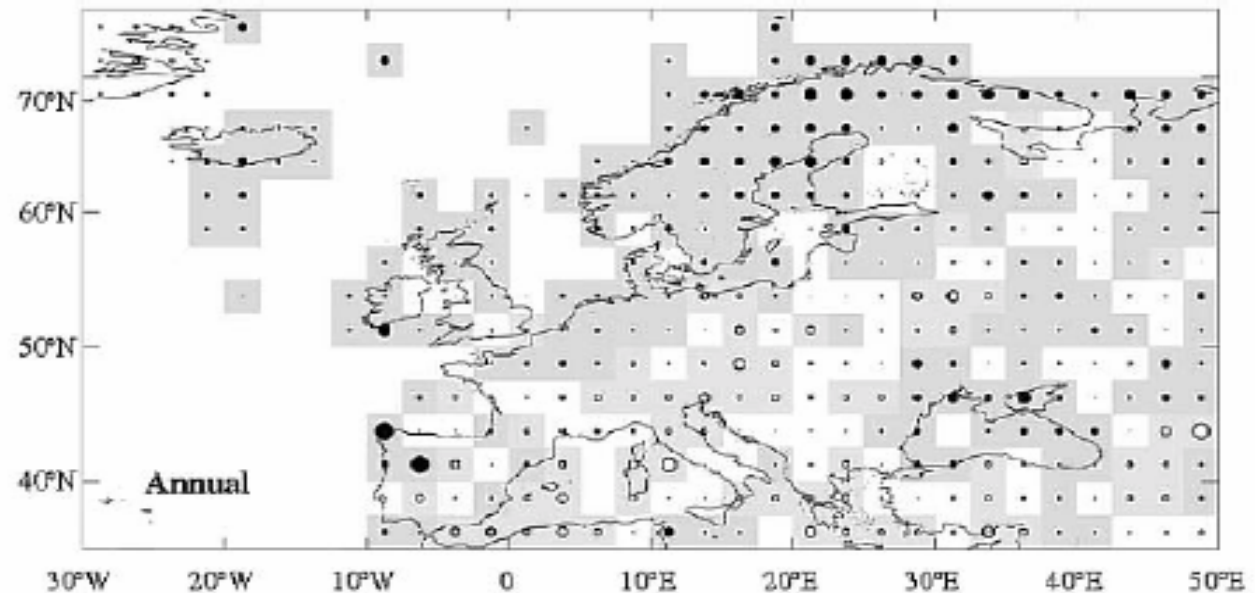
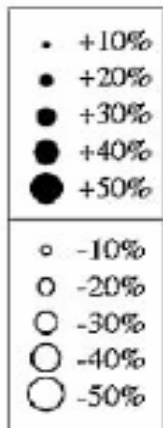




patterns are changing in Europe (Source: EEA, 2004)

- Heterogeneous trends (1900–2000):
 - northern Europe 10-40 % wetter
 - southern Europe up to 20 % drier

Precipitation trend
(1900–2000):



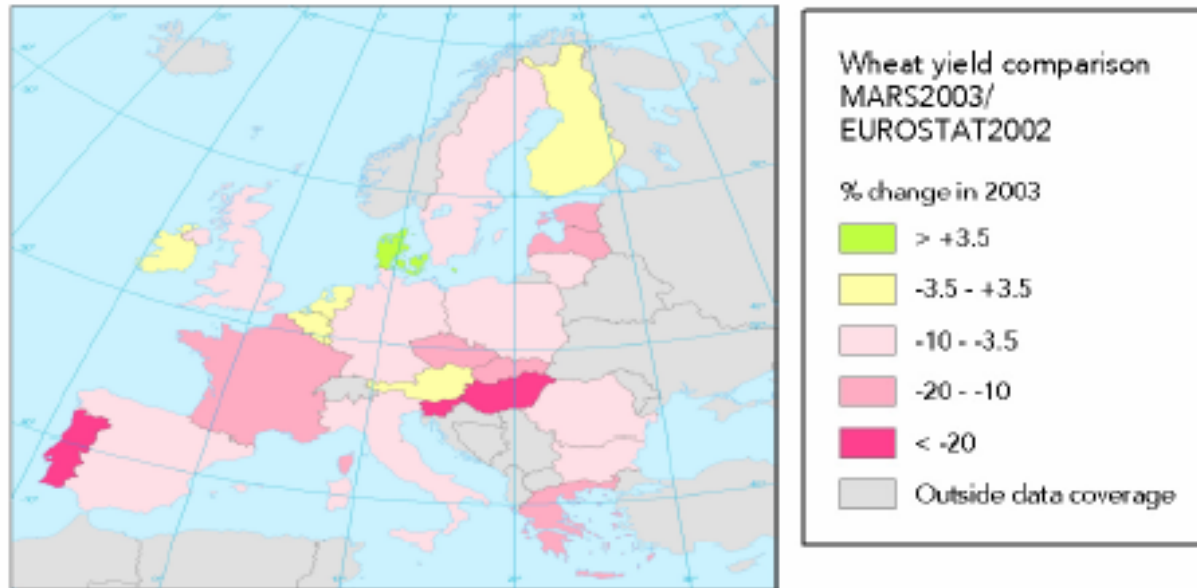
- Projection:
 - 1-2% increase per decade for northern Europe
 - up to 1 % per decade decrease in southern Europe

Data-sources: IPCC, WMO, CRU, NOAA ...



Agricultural yields will be affected

- Yields per hectare have increased in the last 40 years (tech. progress)



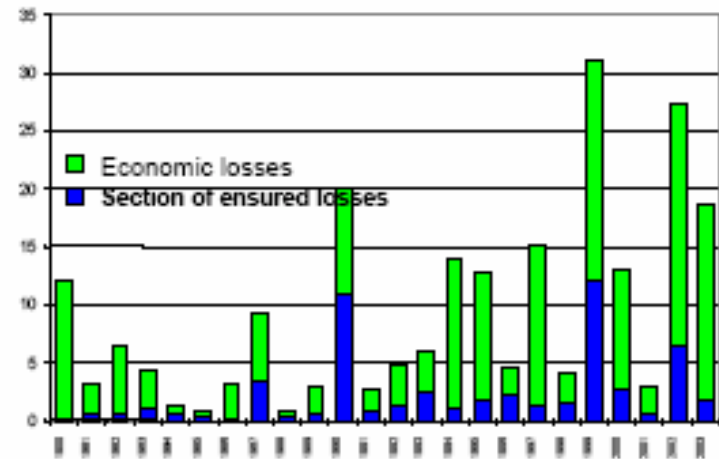
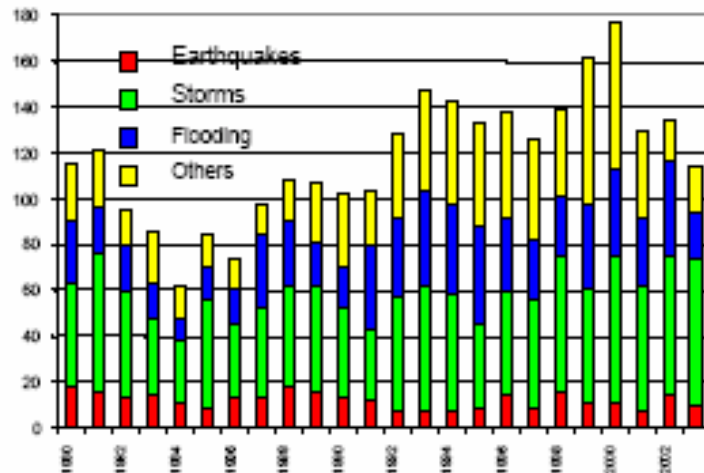
- Benefit from increasing CO₂ concentrations and rising temperatures
- Southern Europe: risk of more water stress
- More frequent bad harvests



Extreme climate events lead to economic losses

- 64% of all catastrophic events and 79 % of economic losses since 1980 attributable to weather and climate extremes
- Doubling of annual disastrous weather climate related events over 1990s
- Economic losses increased from decadal average less than 5 in the 1980s to about more than 11 billion US\$ in 1990s)

past trends



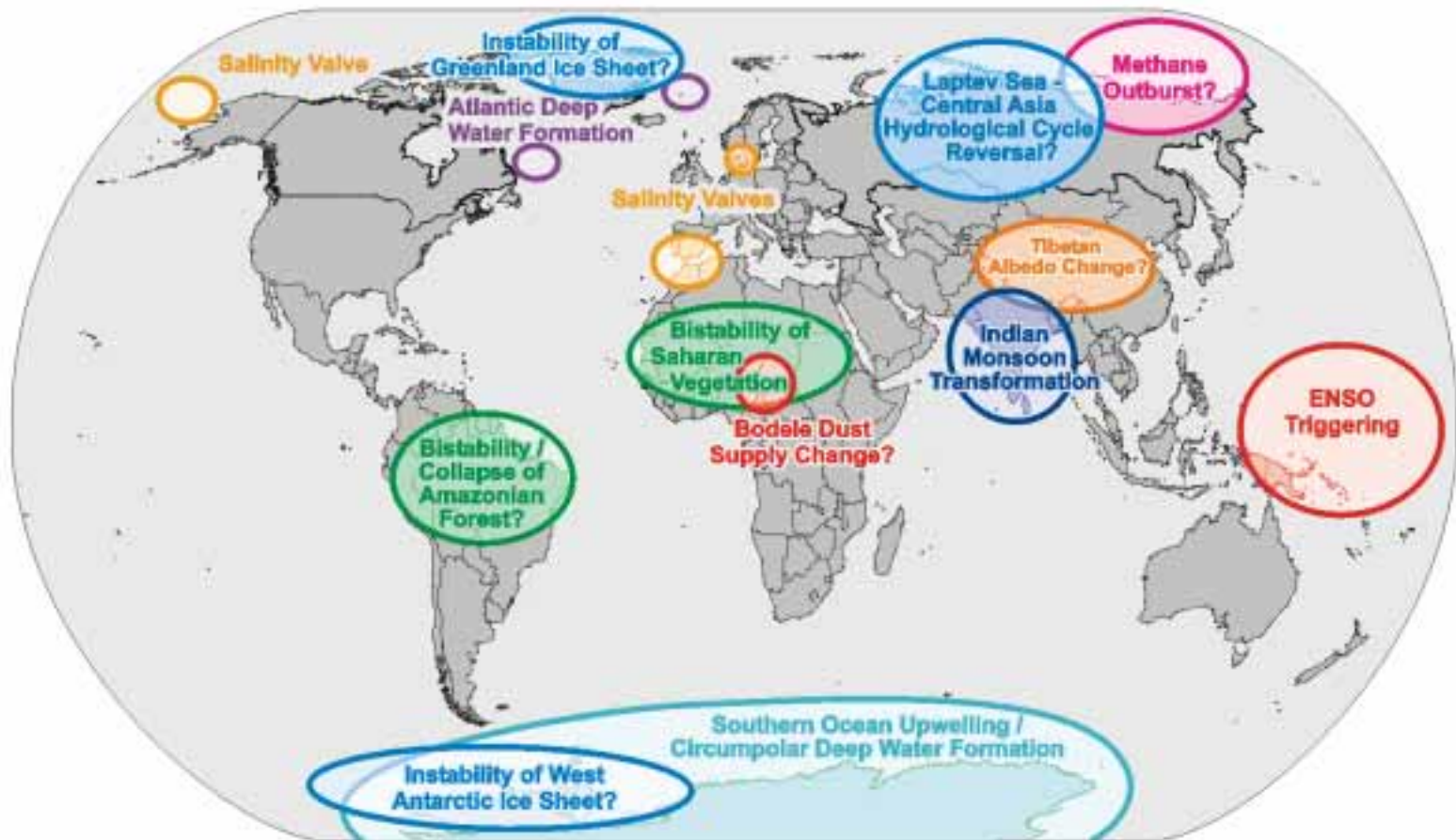
- Increasing likelihood of extreme events \Rightarrow higher losses

future projection



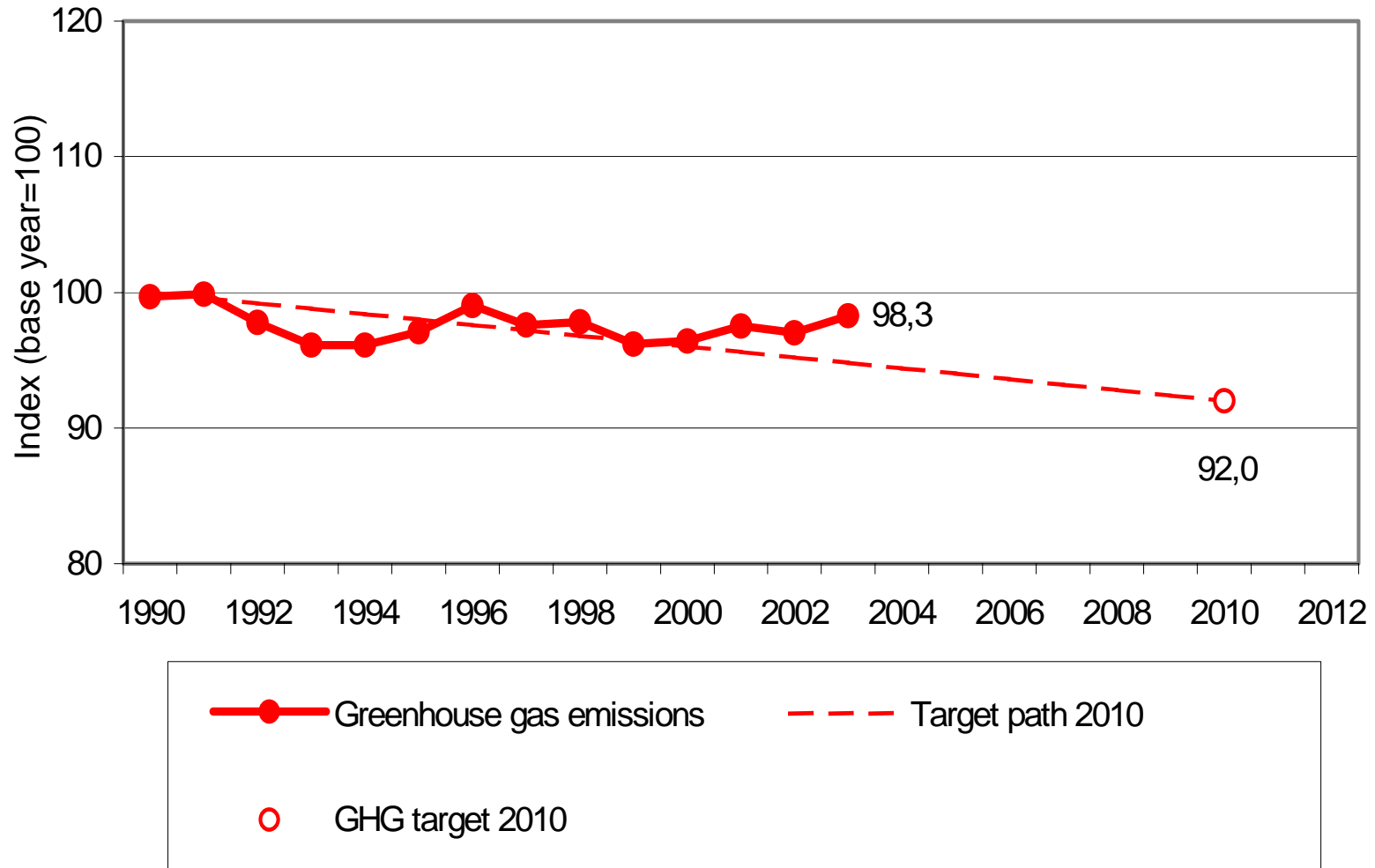
One great unknown: Impacts from abrupt climate change

Switch and Choke Elements in the Planetary Machinery





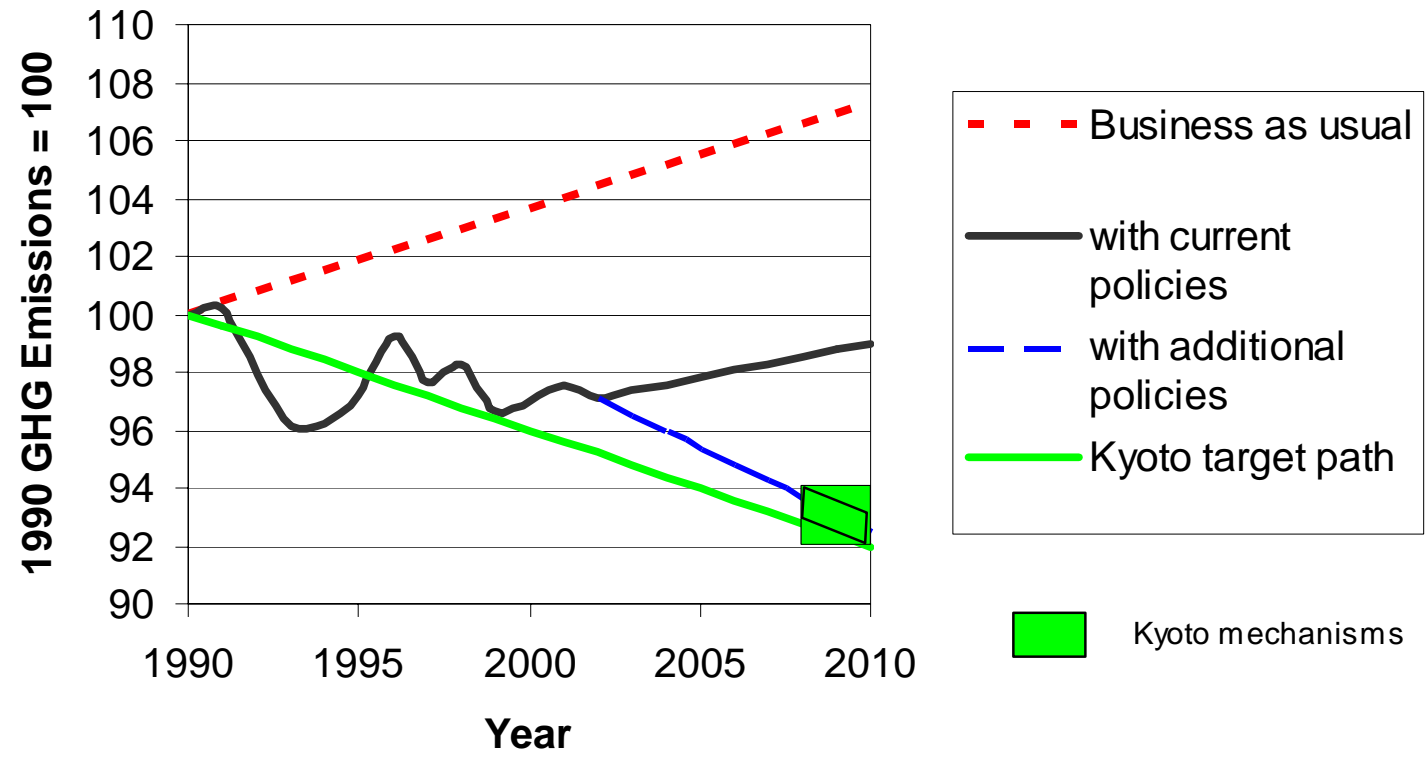
2003 compared with target for 2008–2012 (excl. LUCF)





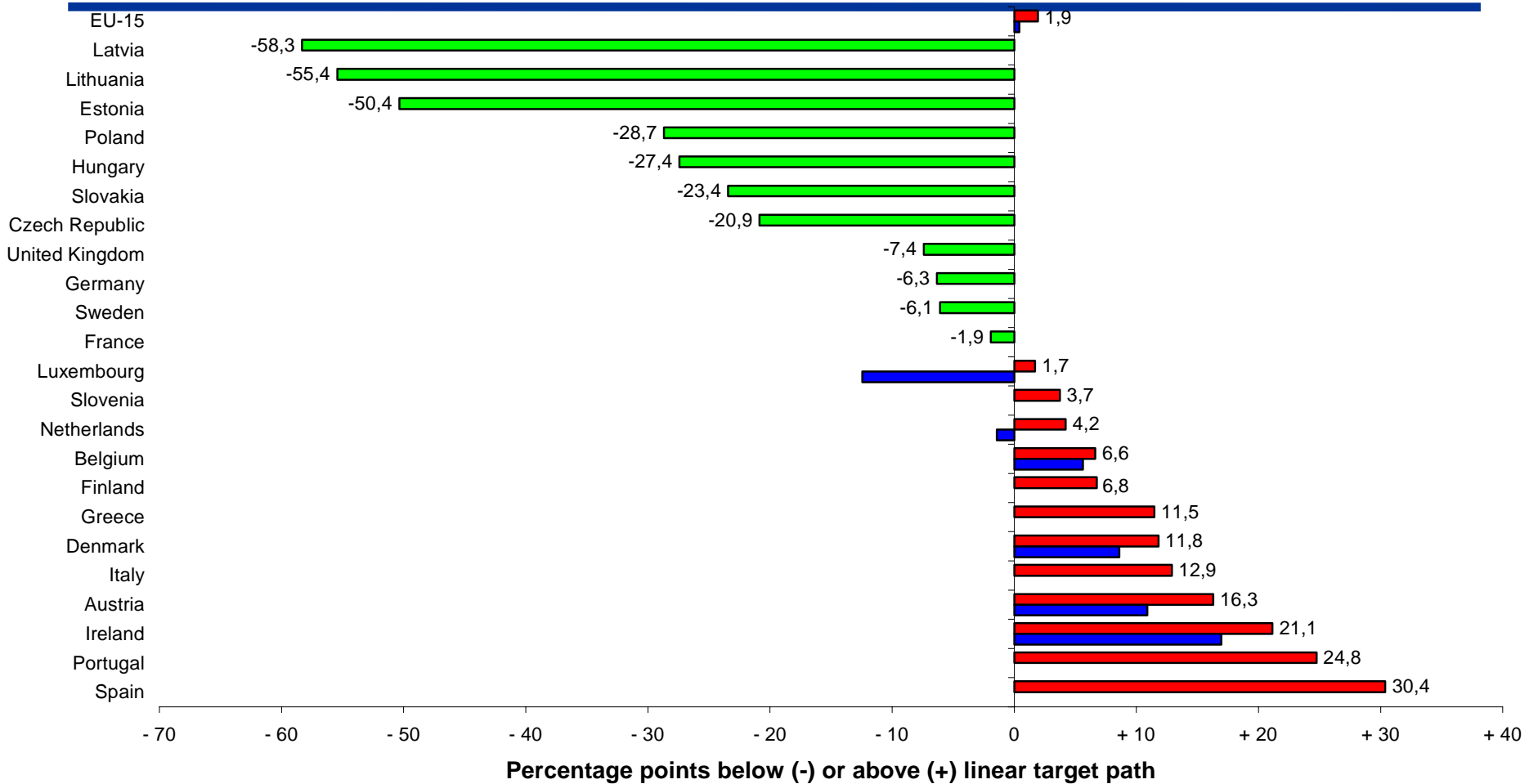
Progress of the “EU bubble” in 2002

Figure 1: EU-greenhouse gas emissions until 2002 and projections until 2010





Kyoto target were EU Member States in 2002?



■ DTI 2002

■ DTI 2002 with use of Kyoto mechanisms



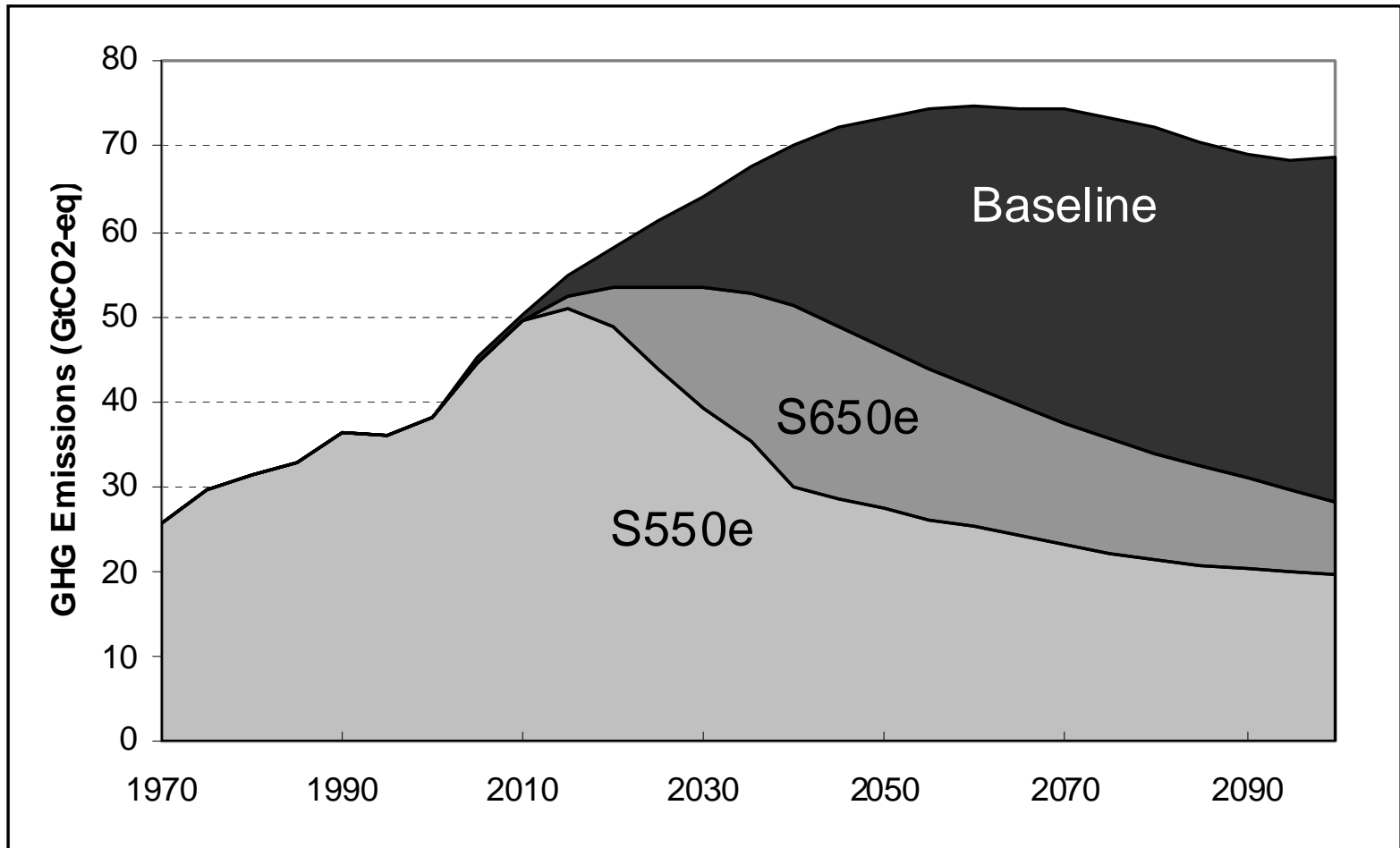
Why must the EU further develop its climate strategy?



- **Deep structural change requires secure planning horizon for public and private sector smoothening the transition process**
- **Entry into force of Kyoto Protocol on 16/2: Negotiations on future action should commence in 2005 (Art 3.9 KP)**



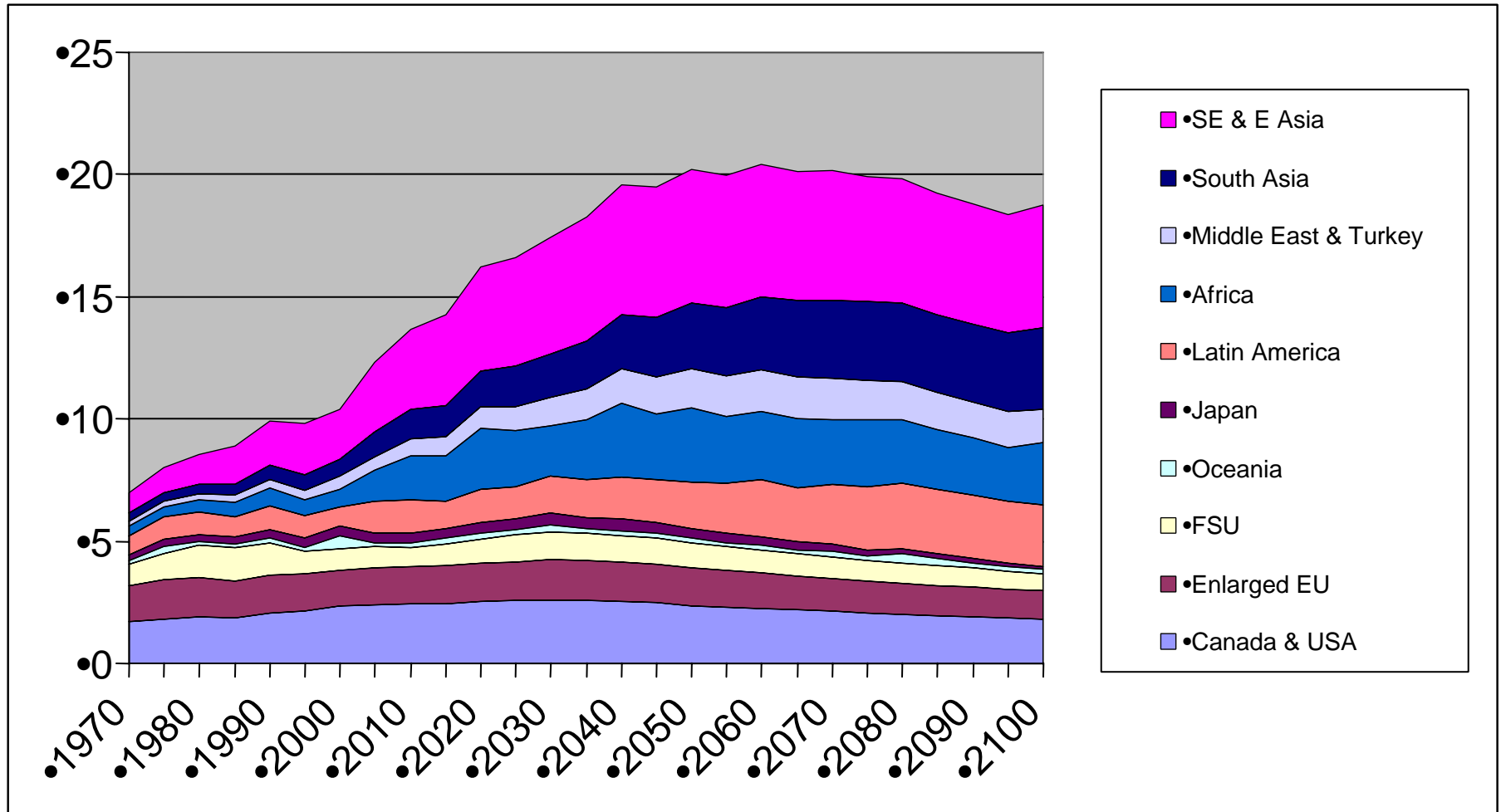
The 2 °C challenge: Cut global emission by 15-20% by 2050 as compared to 1990



Source: GCNRS/LEPII-EPE/RIVM/MNP/ICCS-NTUA/CES-KUL study

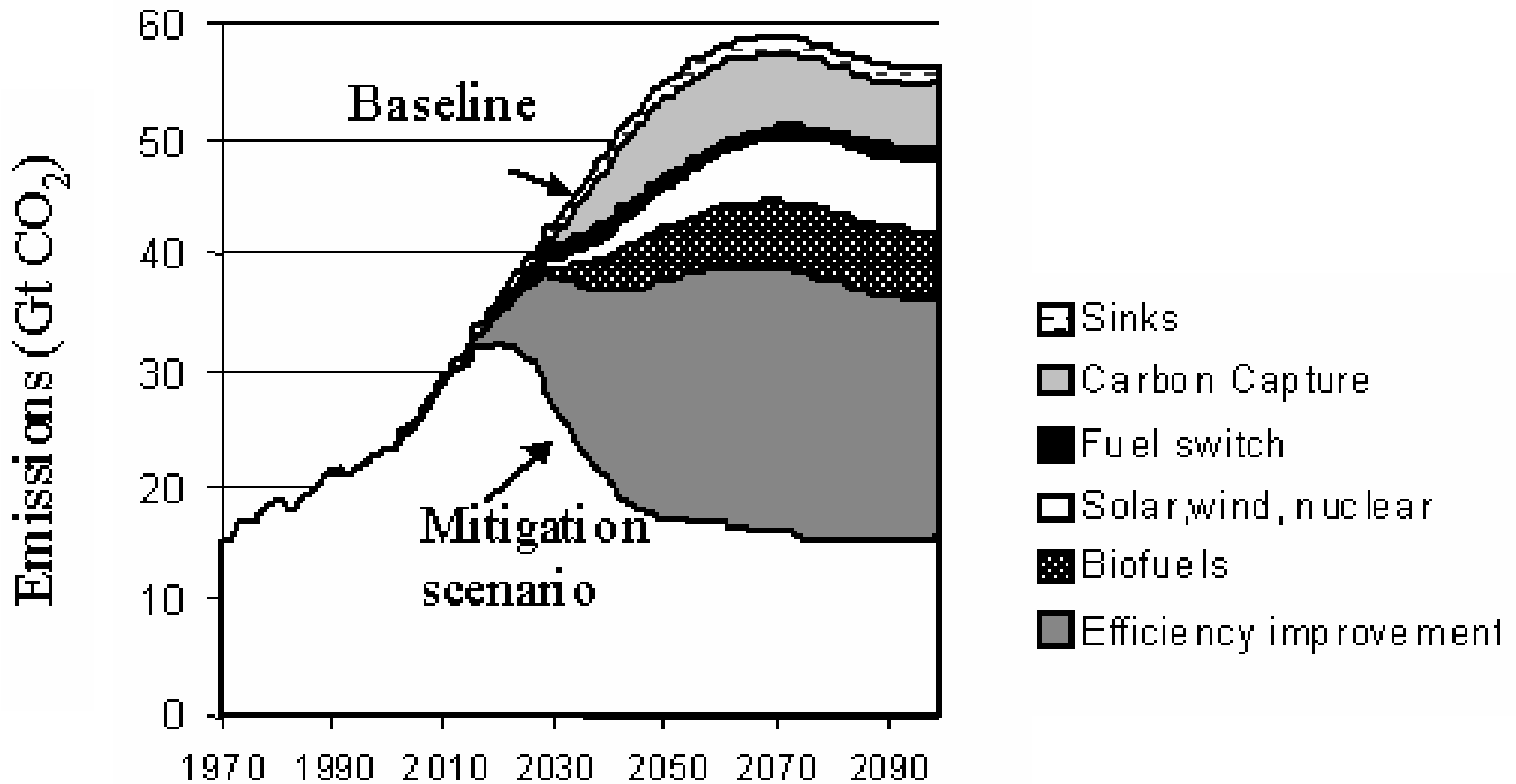


The participation challenge: Global emission trends





The technology challenge: How could the future look like?





Carbon Capture and Storage ?

- **Only one element in policy mix**
- **Other options significant**
- **CO₂ capture and storage transitional policy response**



Reduce by how much?

Aspirations in different Member States:

- **NL (- 30 % by 2020) for all industrialised countries**
- **D (- 40 % by 2020) when others -30%**
- **SWE (- 60 % by 2050) for the EU**
- **UK (- 60 % by 2050)**
- **F (-75 % by 2050)**



European Spring Council 2005

- European Spring Council 2005 considered mid and longer term strategies
- EU wishes to engage with other countries in an open dialogue
- Broader participation is paramount
- The conclusions do not fix unilateral targets. (open invitation to other countries to explore, together, possible strategies for achieving necessary emission reductions that are in line with limiting the average global temperature increase to 2 degrees Celsius above pre-industrial levels)



THANK YOU

For further information consult the web site

[http://europa.eu.int/comm/environment/climat/
home_en.htm](http://europa.eu.int/comm/environment/climat/home_en.htm)