Approach to Climate Change Research in the EU

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19 May 2006

EU Climate Change Research

- National Research Programmes

  Basic and applied both important

- Climate change related research under the EU's Framework Programme aims to understand, observe and predict climate change and its impacts
- Observational programmes
- Capacity building and international co-operation

Key EU research issues for policy

- **Investigating dangerous levels of greenhouse gases, long term stabilisation goals and pathways**
  - Global and regional risks associated with each stabilisation level
  - Economic, environmental and social costs and benefits associated with different pathways and levels
  - Technological options for different pathways and levels
- **Approaches to adaptation**
- Reducing uncertainty of prediction especially extremes (e.g. tropical storms)
- Non-climate impacts of CO2 e.g. in the ocean

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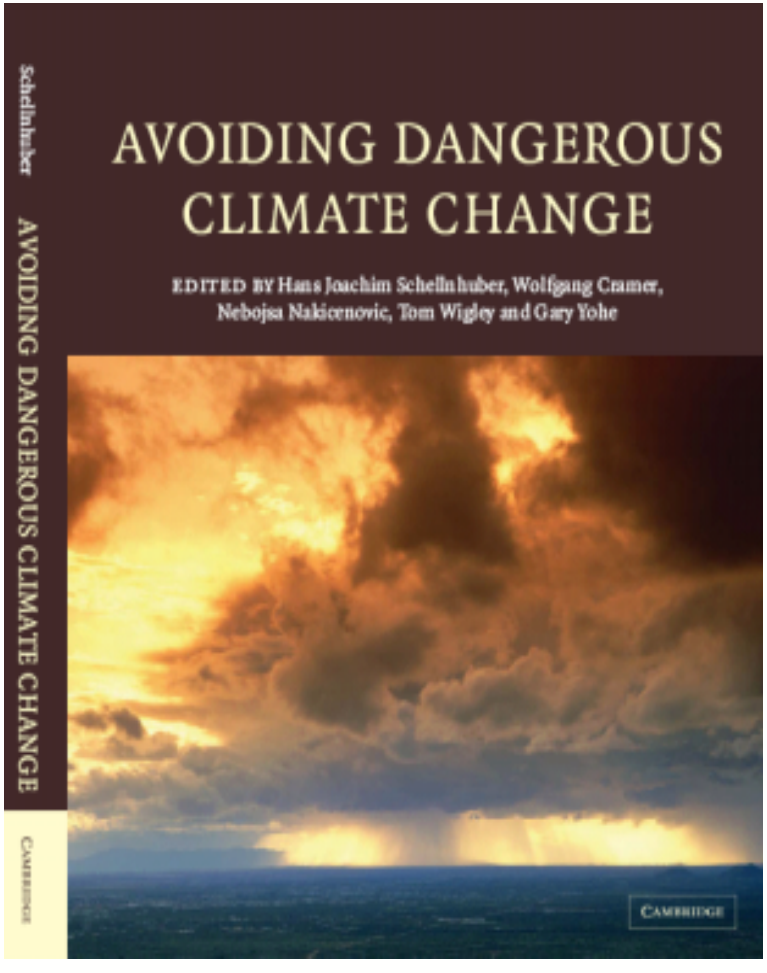
How to avoid dangerous climate change?



- For different levels of climate change what are the key impacts, for different regions and sectors and for the world as a whole?
- What would such levels of climate change imply in terms of greenhouse gas stabilisation concentrations and emission pathways required to achieve such levels?
- What technological options are there for achieving stabilisation of greenhouse gases at different stabilisation concentrations in the atmosphere, taking into account costs and uncertainties?

Papers at www.stabilisation2005.com

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How much is too much?

1-2 C Above pre-industrial	**Major impacts on ecosystems and species; wide ranging impacts on society**
1.5 C?	**Greenland ice-cap starts to melt (7 m)**
2-3 C	**Major loss of coral reef ecosystem; considerable species loss; large impacts on agriculture; water resources; health; economies.**
	General increase in droughts and extreme rainfalls as temperature increases. Up to 88cm sea level rise in next 100 years.
2-3 C	**Terrestrial carbon sink becomes a source.**
1-4 C ?	**North Atlantic circulation collapses**
2-4.5 C ?	**West Antarctic ice sheet collapses (5 m)**

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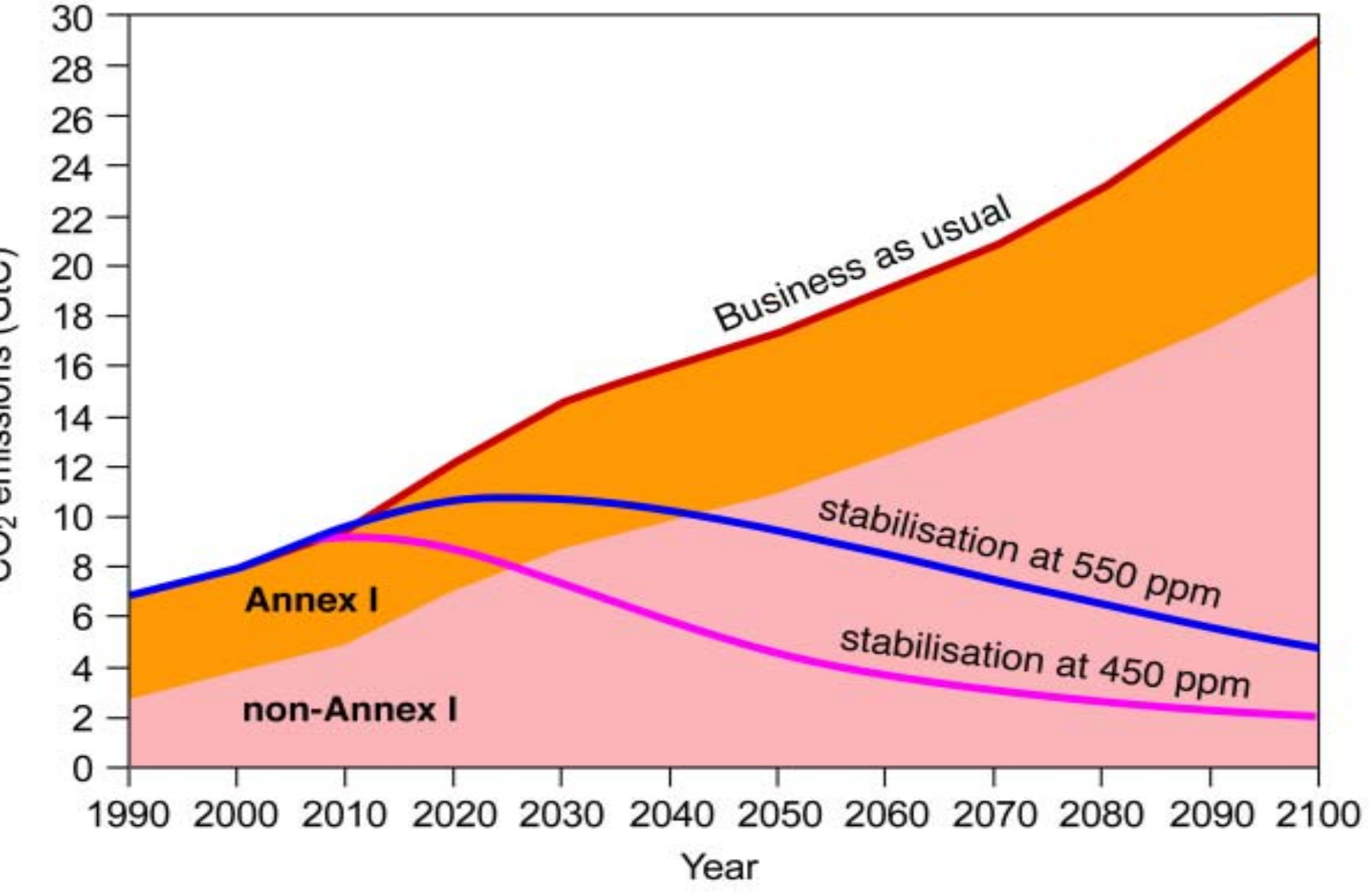
Understanding stabilisation pathways; mitigation and adaptation



Assessing the technological options for achieving stabilisation of greenhouse gases

- Technical capabilities, costs, societal acceptability and use, applicability, investment, market penetration etc
  - Energy efficiency
  - Renewable sources – wind, tidal, biomass, solar
  - Hydrogen
  - Nuclear
  - Carbon capture and storage

Adaptation Research Needs

- Climate and socio-economic scenarios
- Risk analysis frameworks
- Adaptation decision making frameworks
- Stakeholder engagement
- Impact model development
- Baseline data and analysis
- Indicators for adaptation
- Institutional capacity

EU Adaptation Research Projects

cCASH: Climate Change and Adaptation Strategies for Human Health

PRUDENCE/ENSEMBLES: Prediction of Regional scenarios and Uncertainties for Defining European Climate change risks and Effects

DINAS-COAST : Dynamic and Interactive Assessment of National, Regional and Global Vulnerability of Coastal Zones to Climate Change and Sea Level Rise

ATEAM : Advanced Terrestrial Ecosystem Analysis

ESPACE: European Spatial Planning, Adapting to Climate Change

CIRCLE : Climate Impact Research Coordination for a Larger Europe

ADAM : ADaptation And Mitigation Strategies,supporting European climate policy

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Institutional issues

- Two way communication between scientists and policy-makers
- International collaboration
- Capacity building
- Communication of climate science issues to society