

Climate change: international solutions to a global problem

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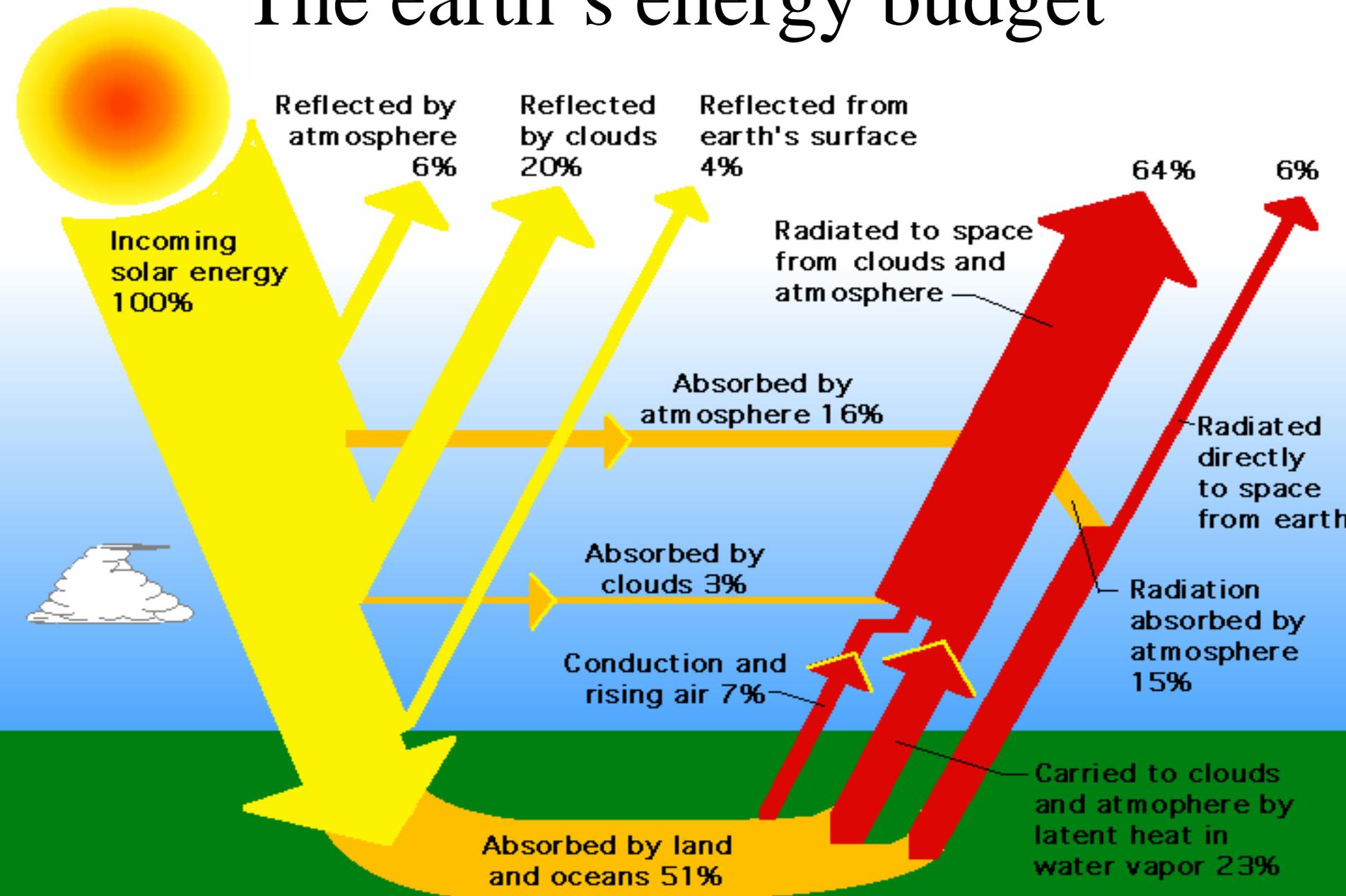
28 March 2007

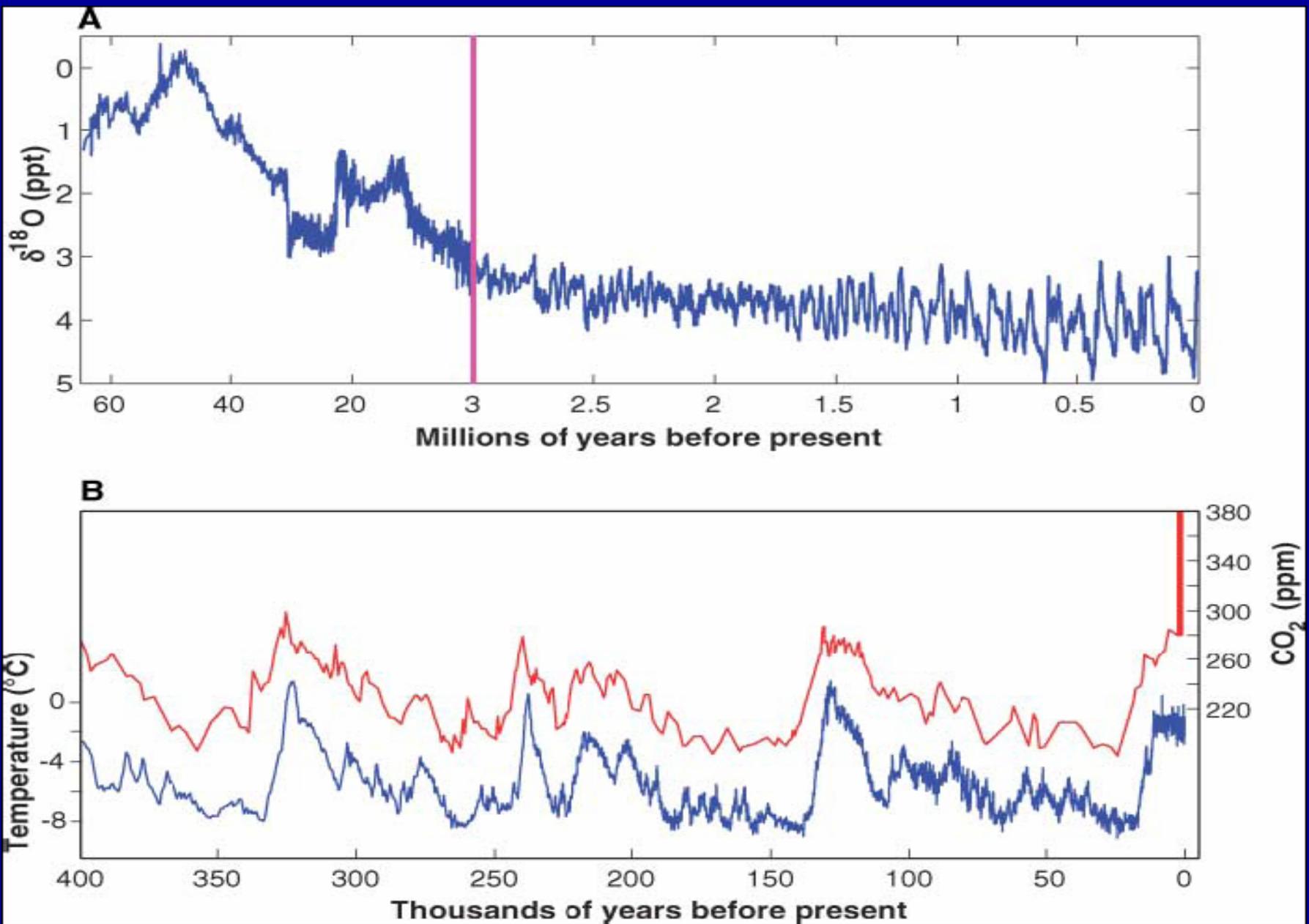
21st Century Challenges

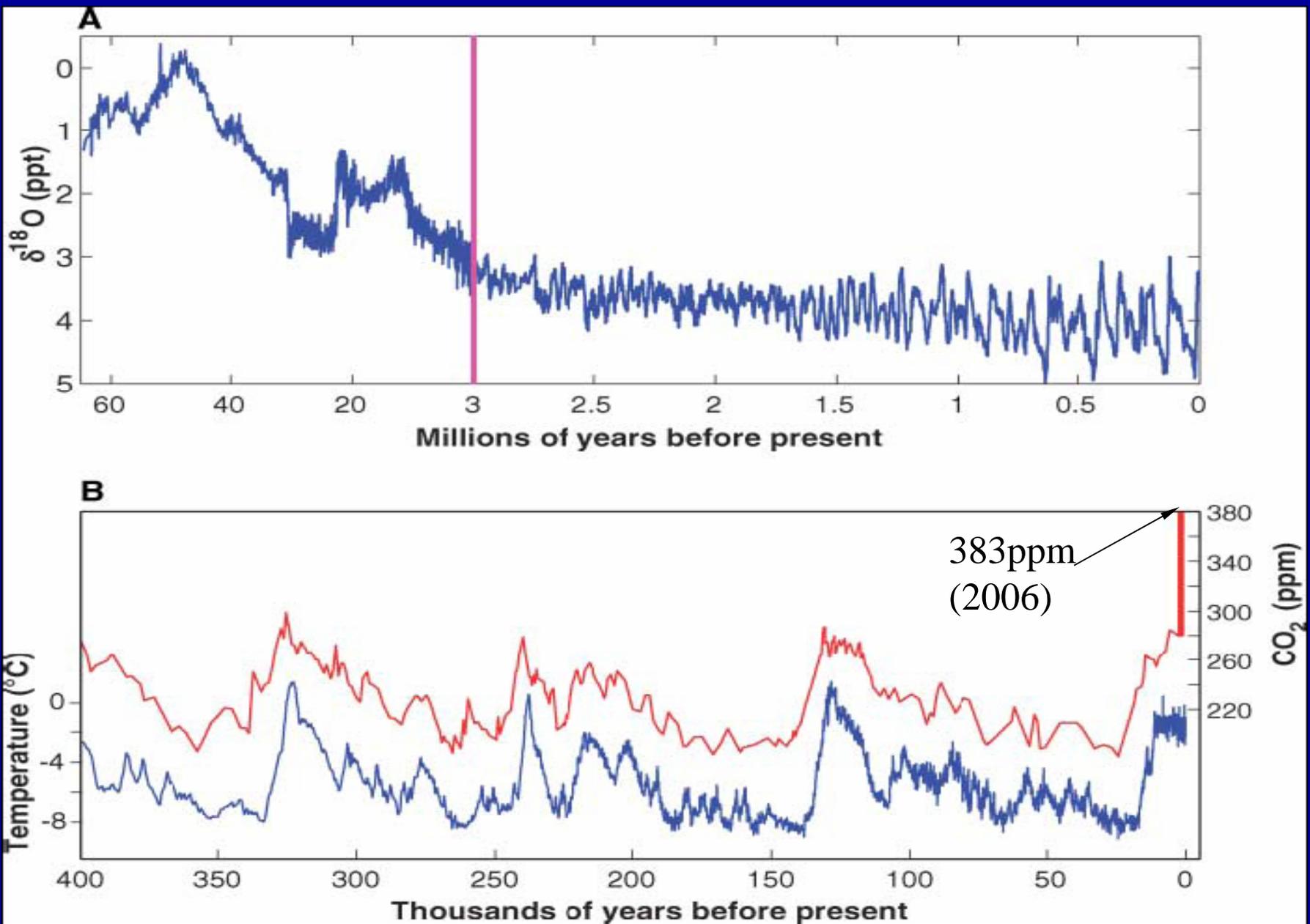
- Population growth
- Resources
- Environment
- Infectious diseases
- Climate Change



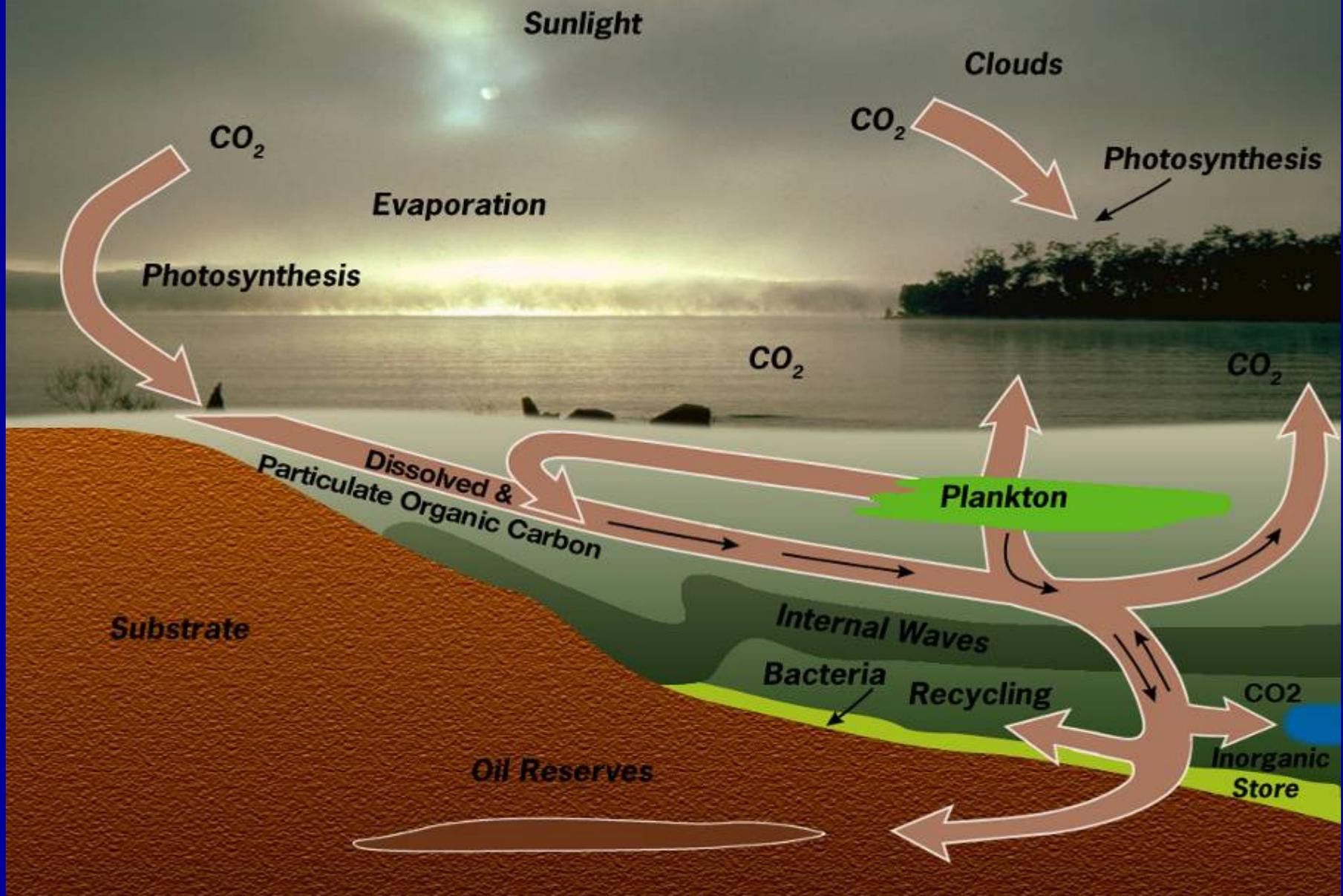
The earth's energy budget



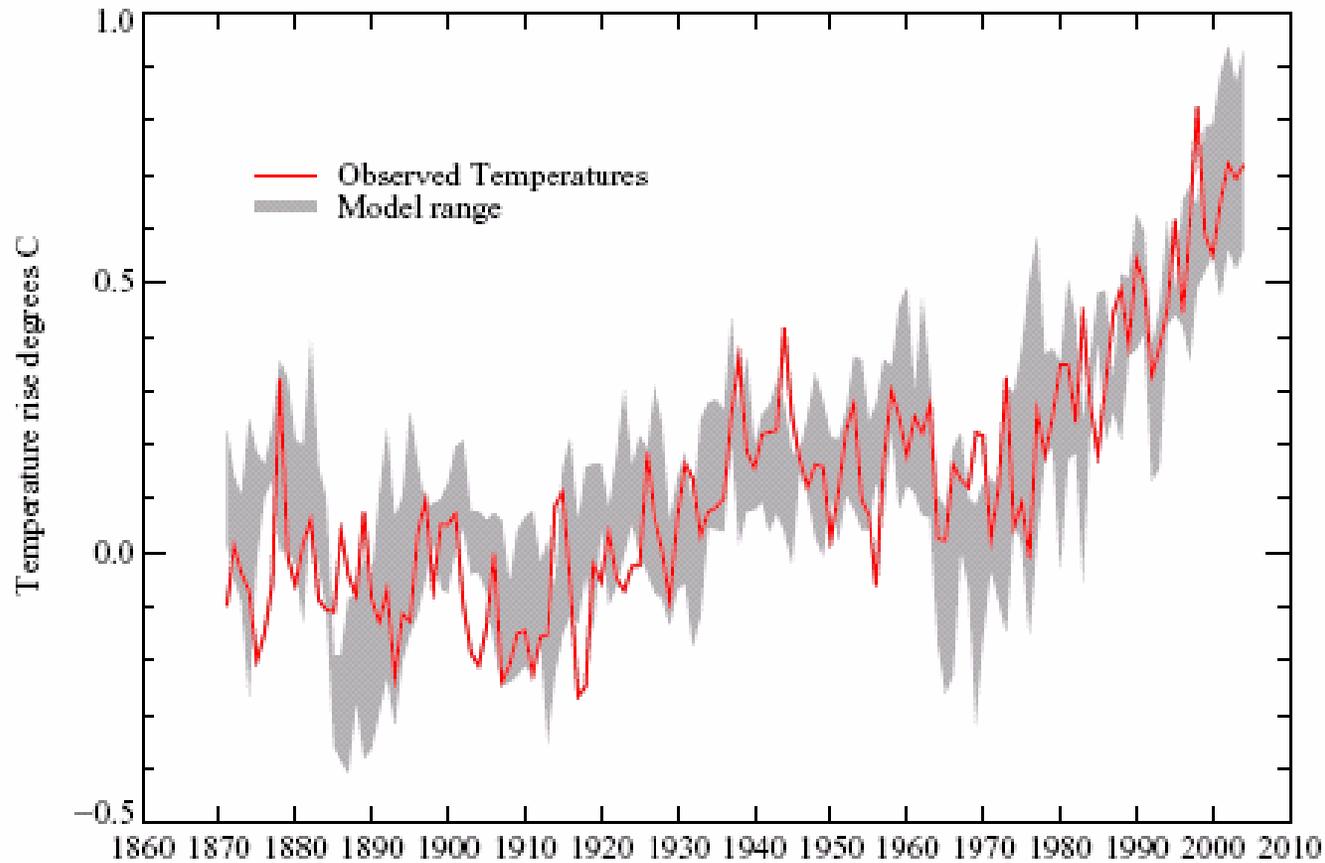




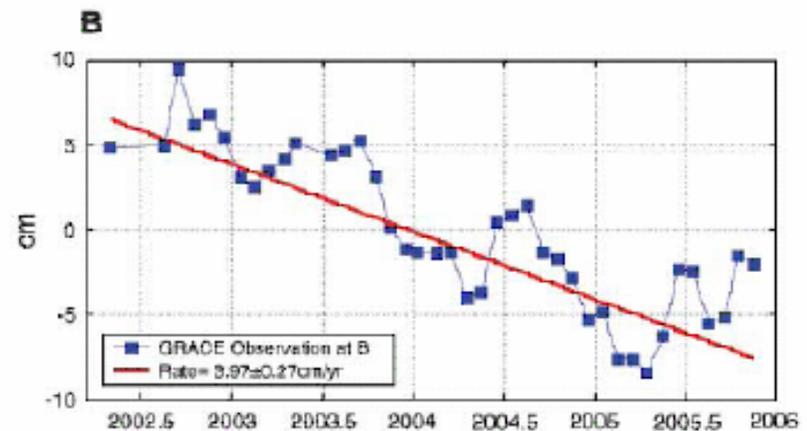
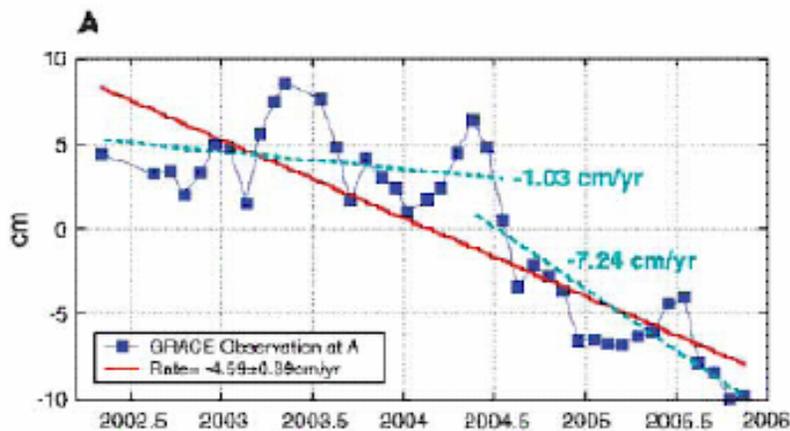
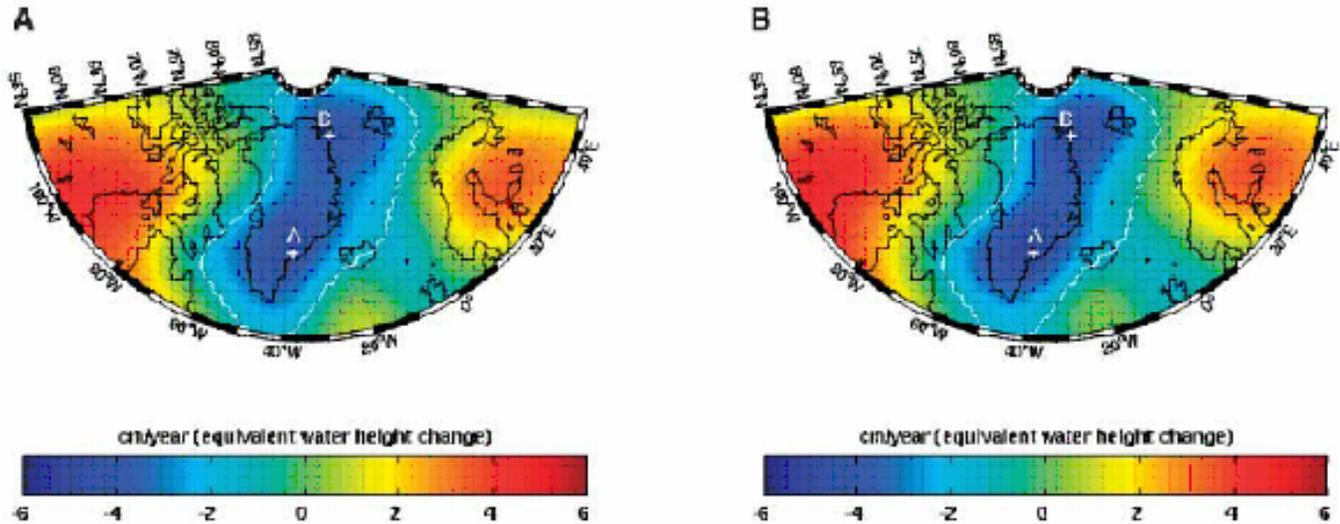
Carbon cycles



Simulated Global warming



Accelerated melting of Greenland ice sheet



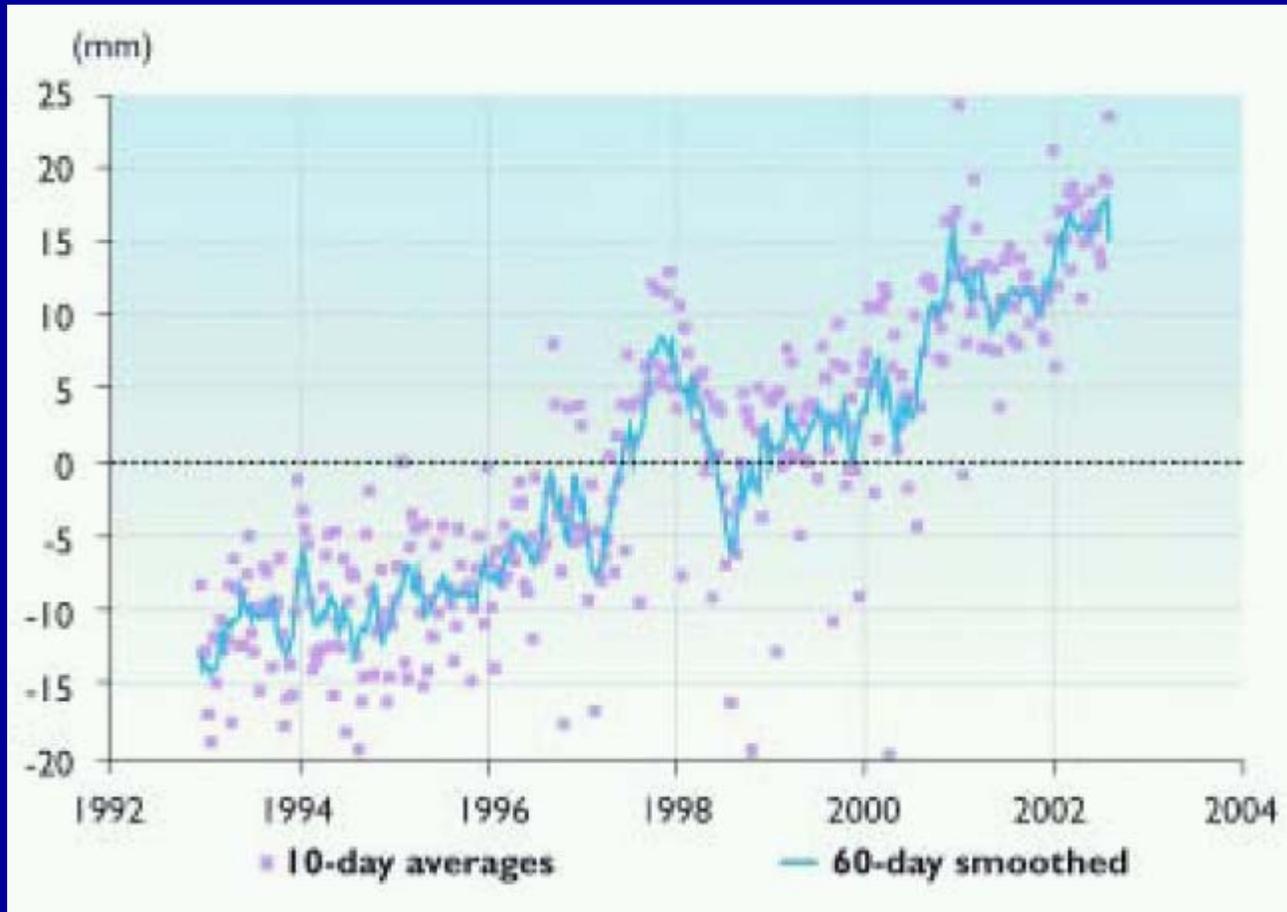
Surface Melt on Greenland

Melt descending into a moulin, a vertical shaft carrying water to ice sheet base



Source: Roger Braithwaite, University of Manchester

Observed Global Sea Level Rise

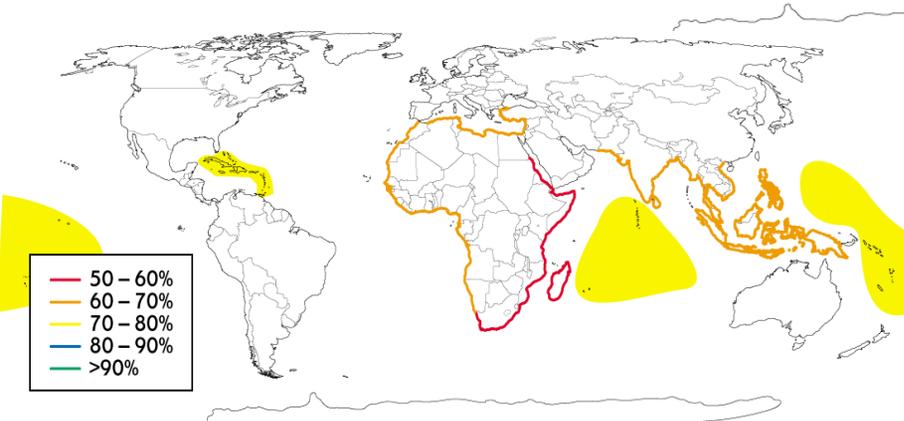


These data, from a satellite launched in 1992, show the rise in global average sea level over the last decade

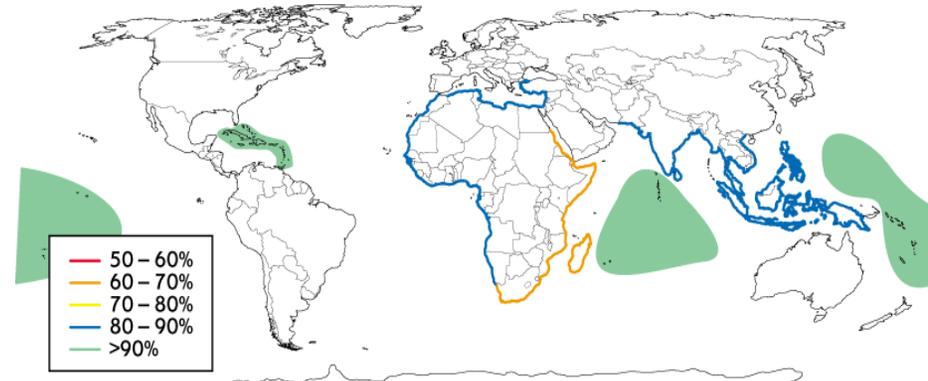
Impacts of Flooding



Change from the present day to the 2080s: unmitigated emissions



Stabilisation at 750 ppm



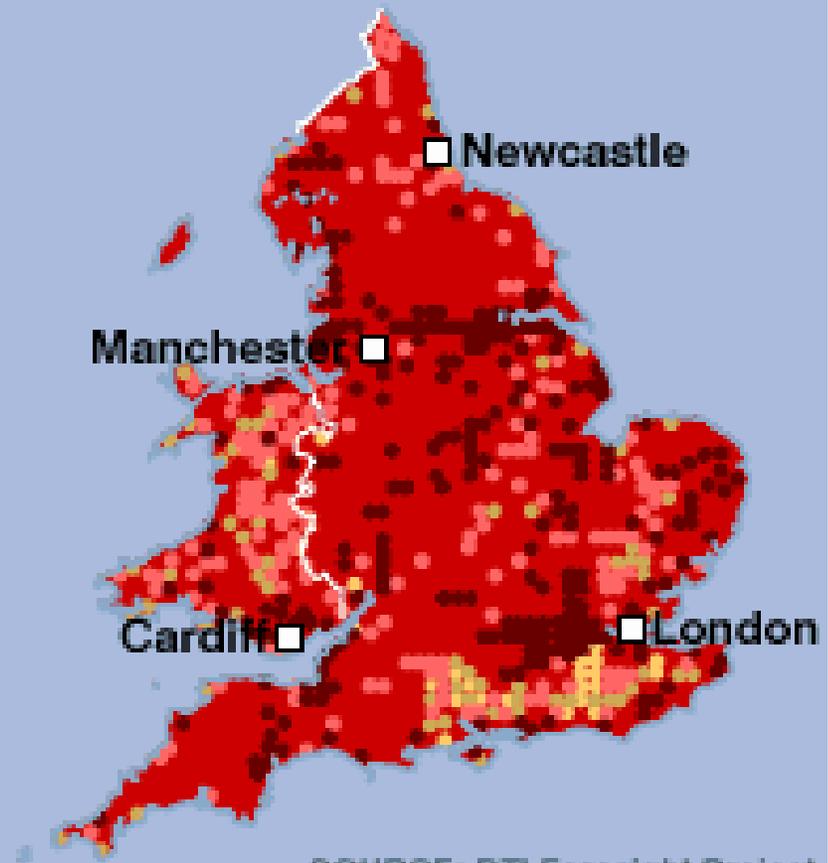
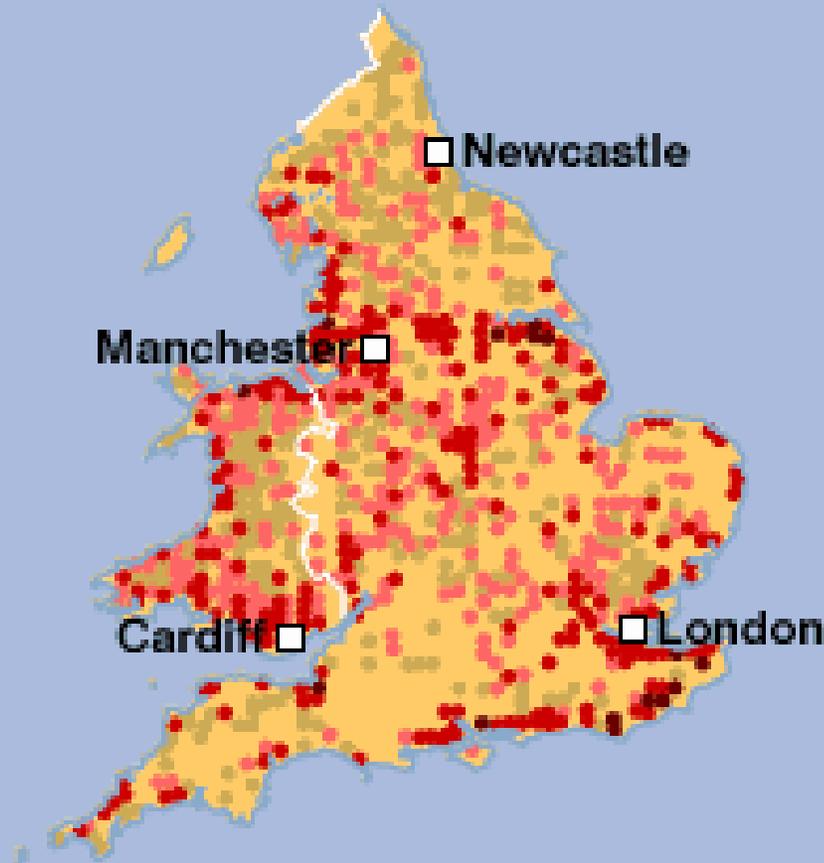
Stabilisation at 550 ppm

Reduction in change due to mitigated emissions scenarios

Possible flooding in the UK by 2080s

Best case scenario

Worst case scenario



SOURCE: DTI Foresight Project

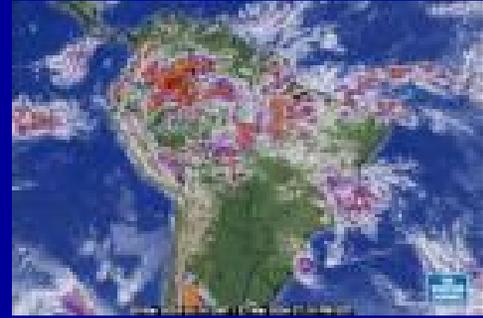
Change in risk of flooding damage (from 2004)



Adapt and Mitigate

- We must adapt in preparation for the significant changes ahead:
 - manage the risks country by country
 - increase and develop international co-operation
- We have to actively mitigate against the production of greenhouse gases by:
 - Switching to low carbon energy sources; and
 - Energy efficiency

Brazil – potential impacts



- Models suggest potential changes of 4 - 4.5°C in surface temperature.
- Increases of 10-15% in autumn rainfall in central & south-central Brazil.
- Climate change combined with land-use changes could accelerate the loss of rainforest.

Deforestation is increasing Brazil's vulnerability to climate variations



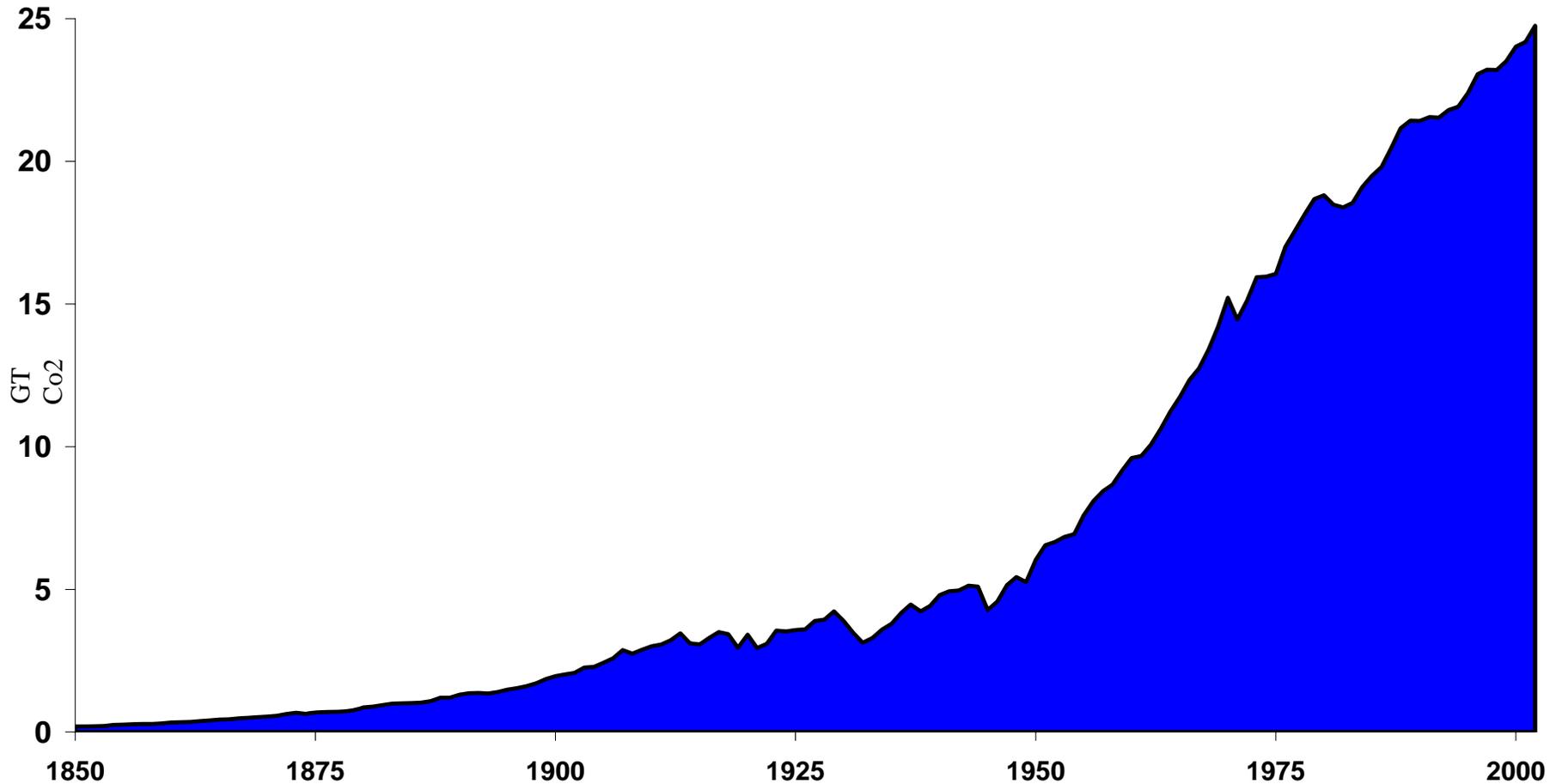
Brazil's role

- Brazil plays a prominent role in the discussions on climate change. Brazil took the initiative of introducing the idea of the Clean Development Mechanism (CDM)
- As a developing country Brazil is not required to take specific action to meet the targets established by the Kyoto Protocol.

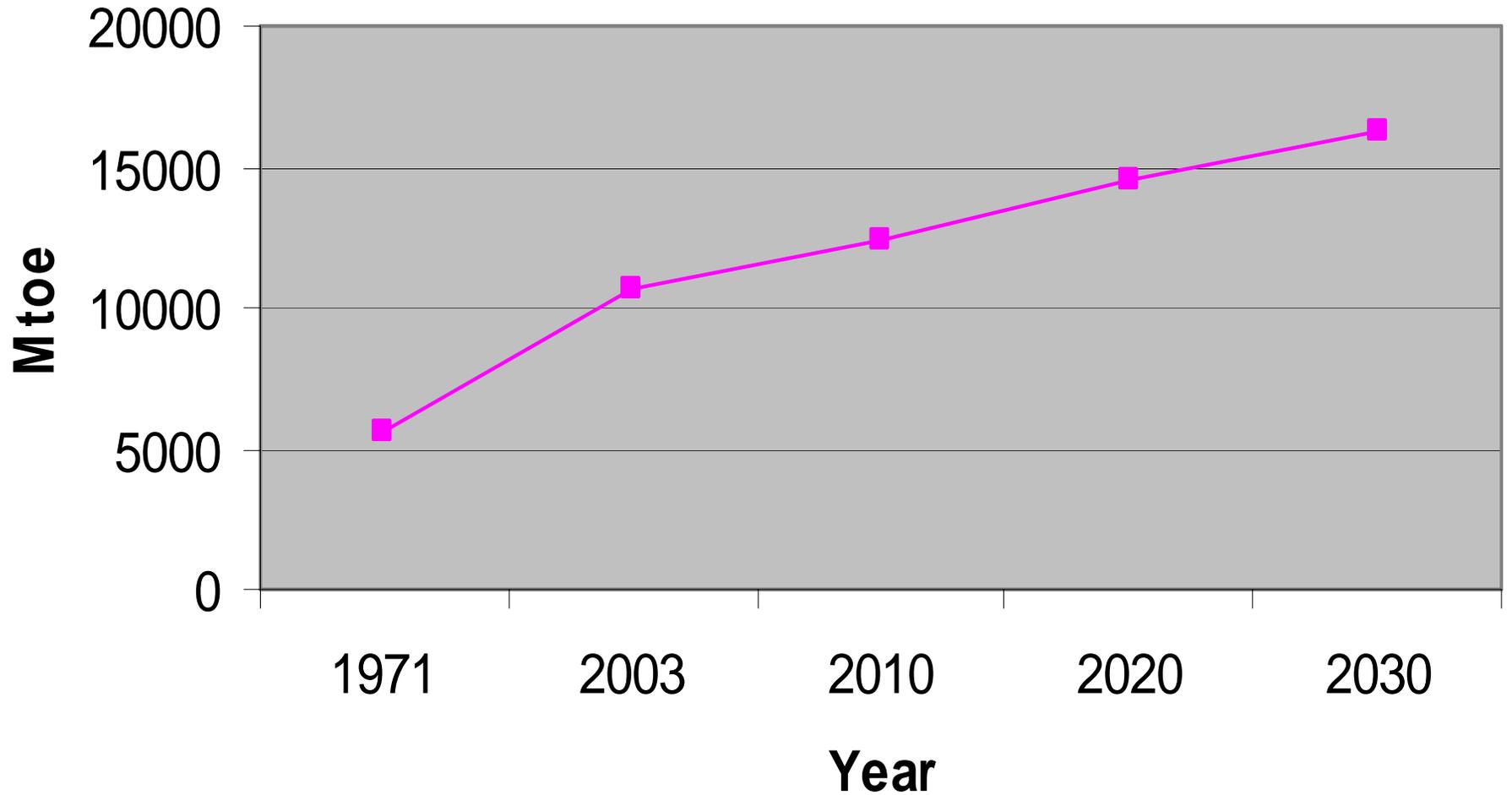
Taking global action

- 1988 - IPCC
- 1992 - United Nations Framework Convention on climate change
- 1997 - Kyoto
- 2003 - UK Government's 60% target
- 2005 - Emissions trading
- 2005 - G8+5 Dialogue
- 2007 - EU agree to cut CO₂ emissions by 20% by 2020

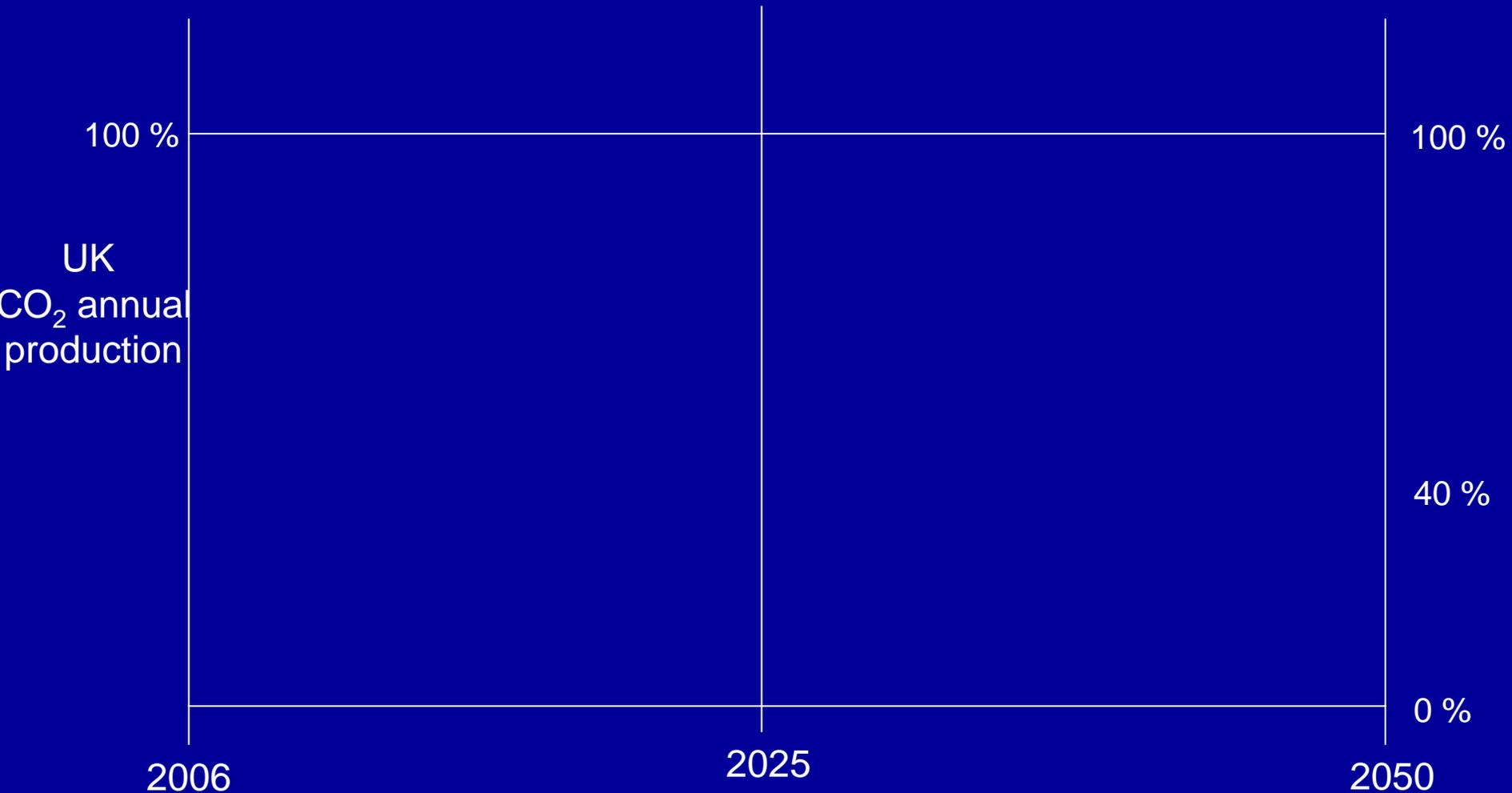
Emissions of CO₂ from burning fossil-fuels have risen rapidly since 1950



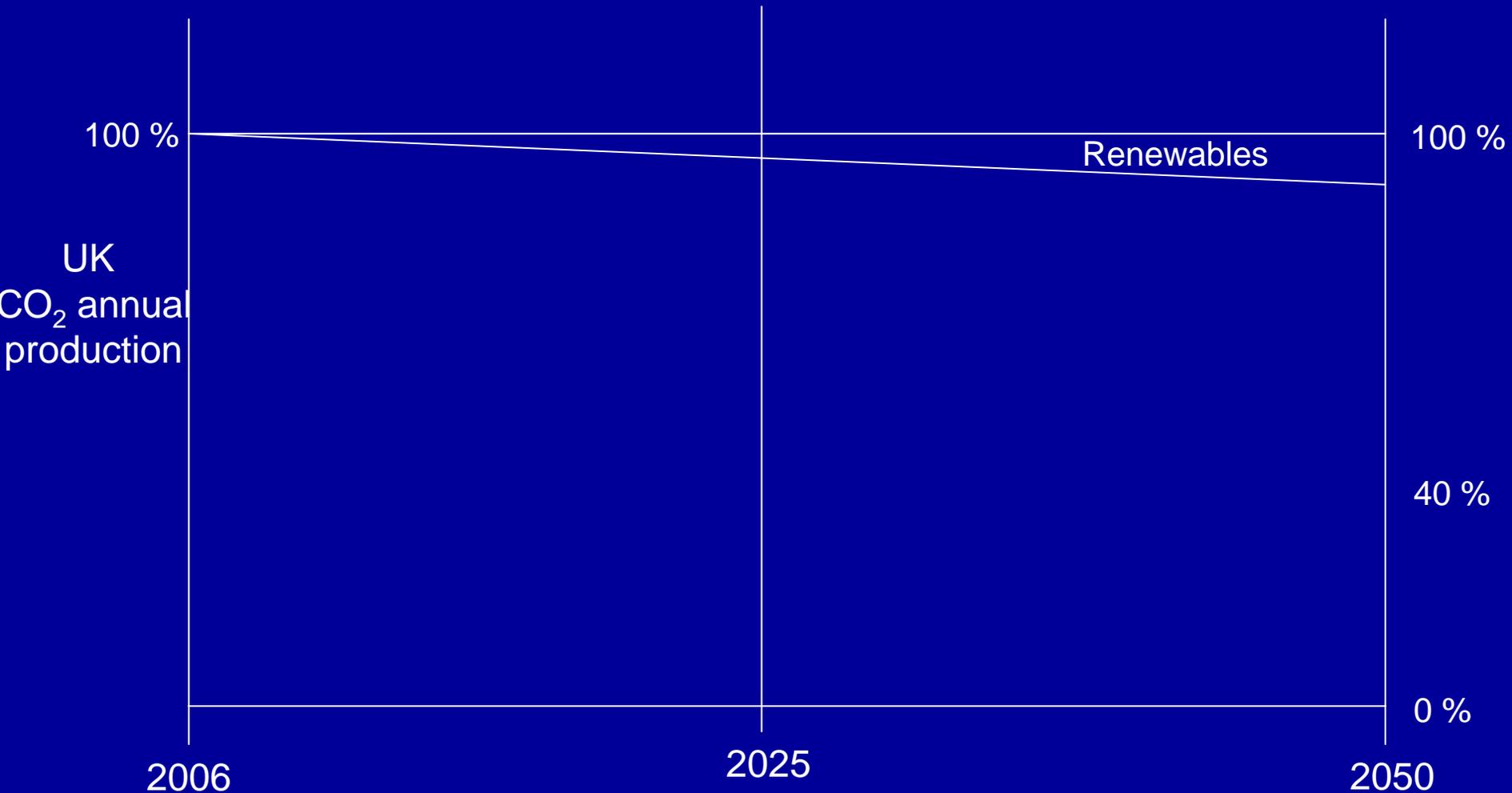
Future World Energy Demand



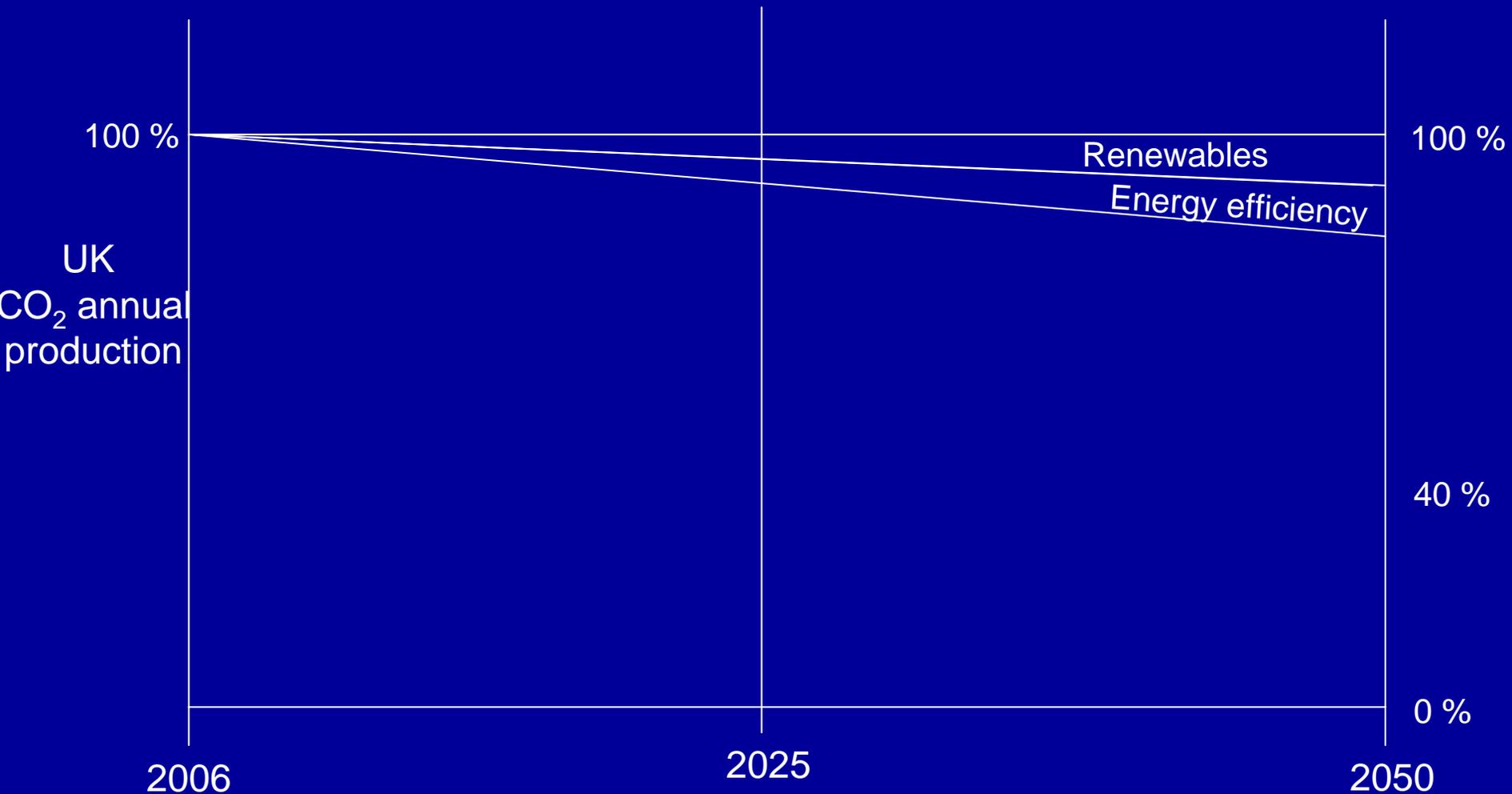
The wedges solution to UK Emissions – illustrative



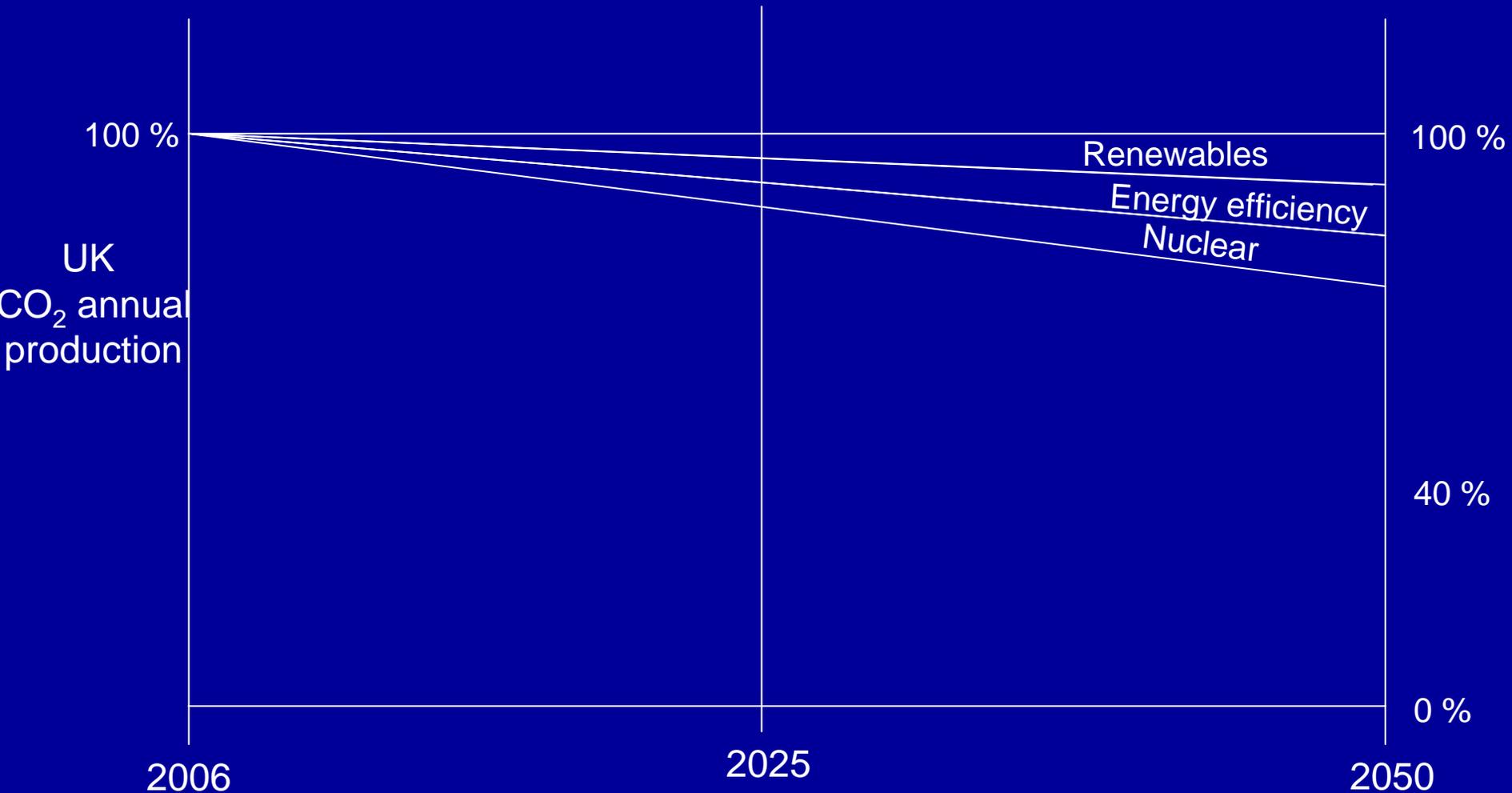
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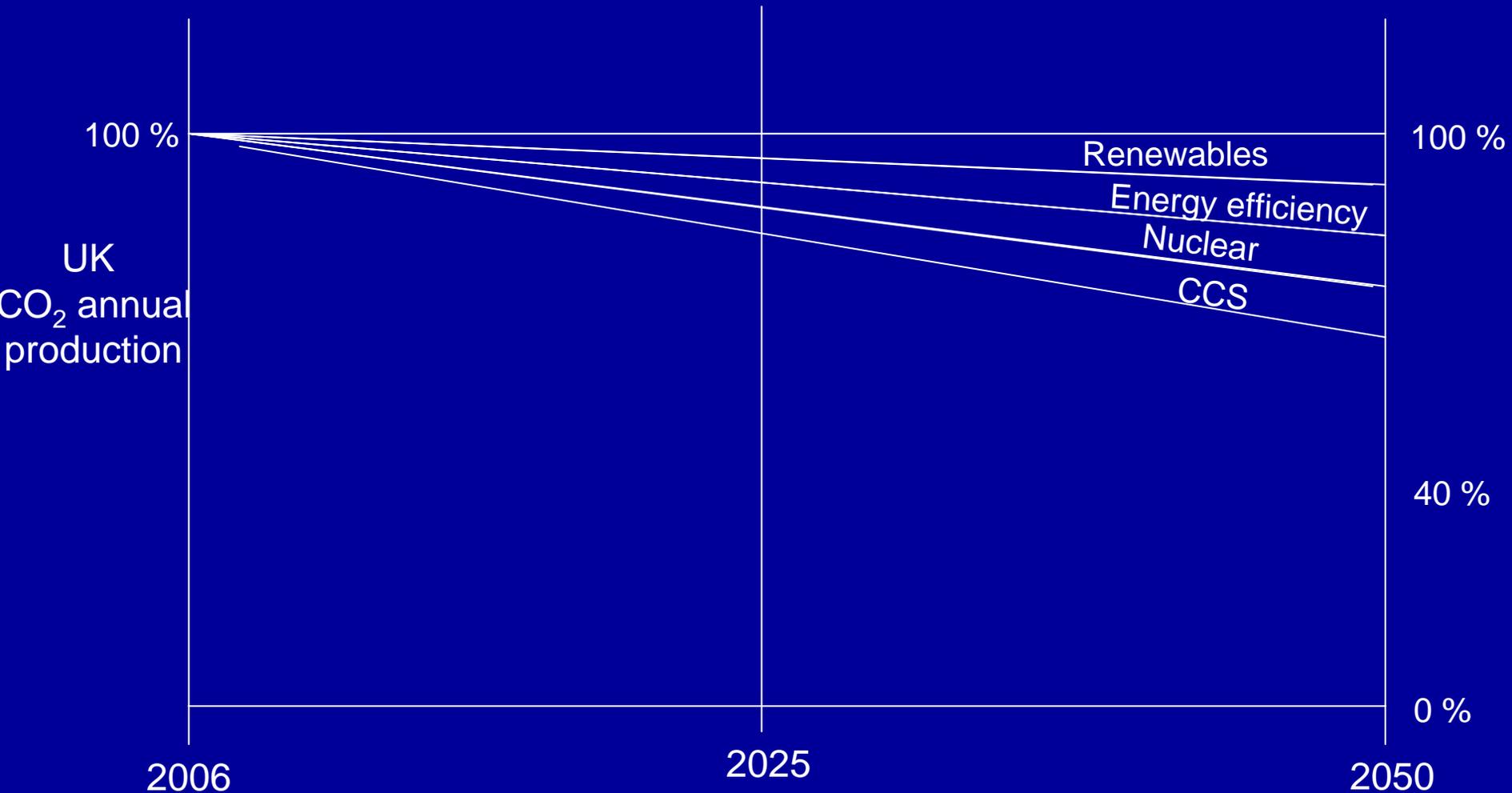
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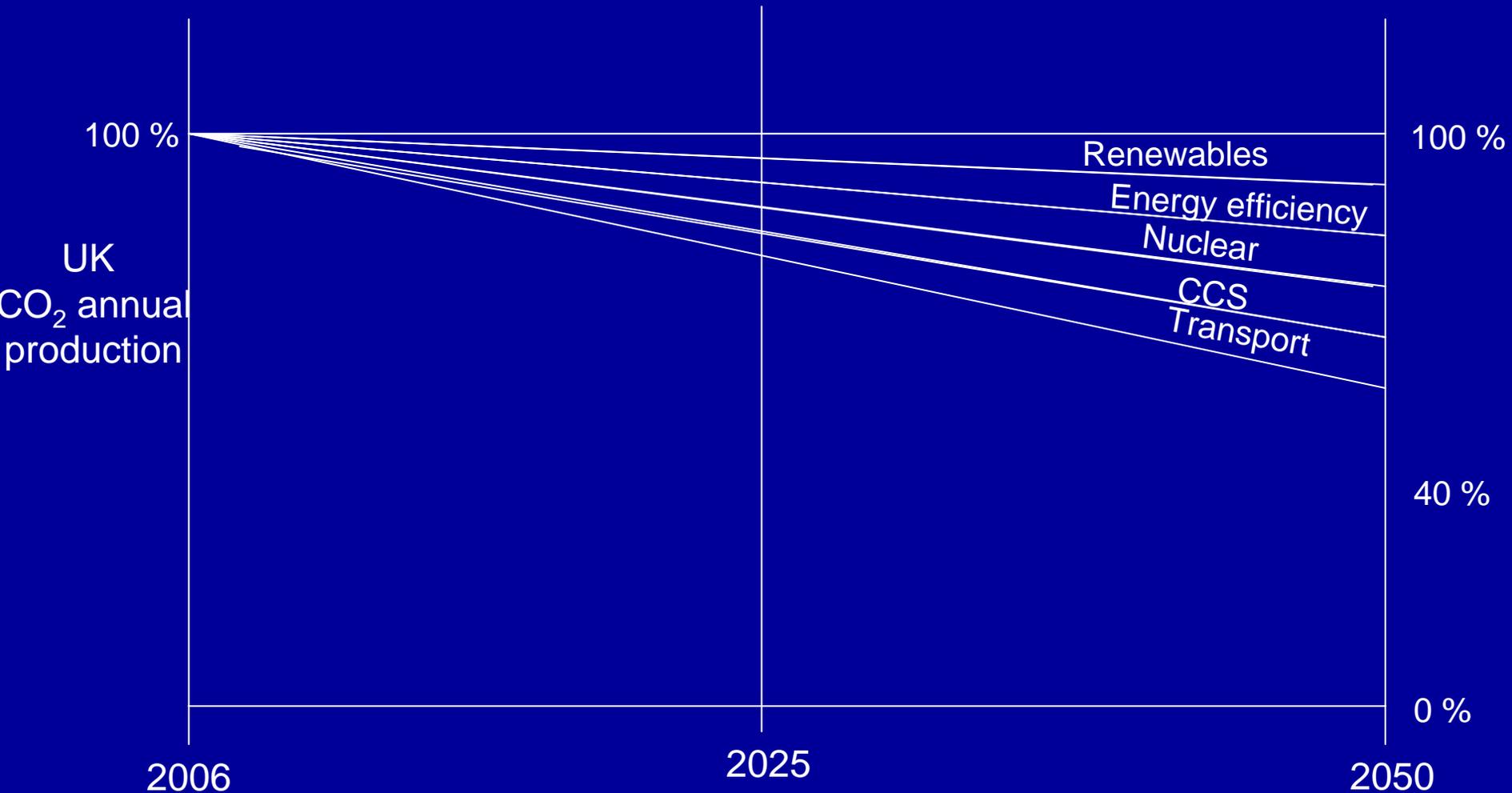
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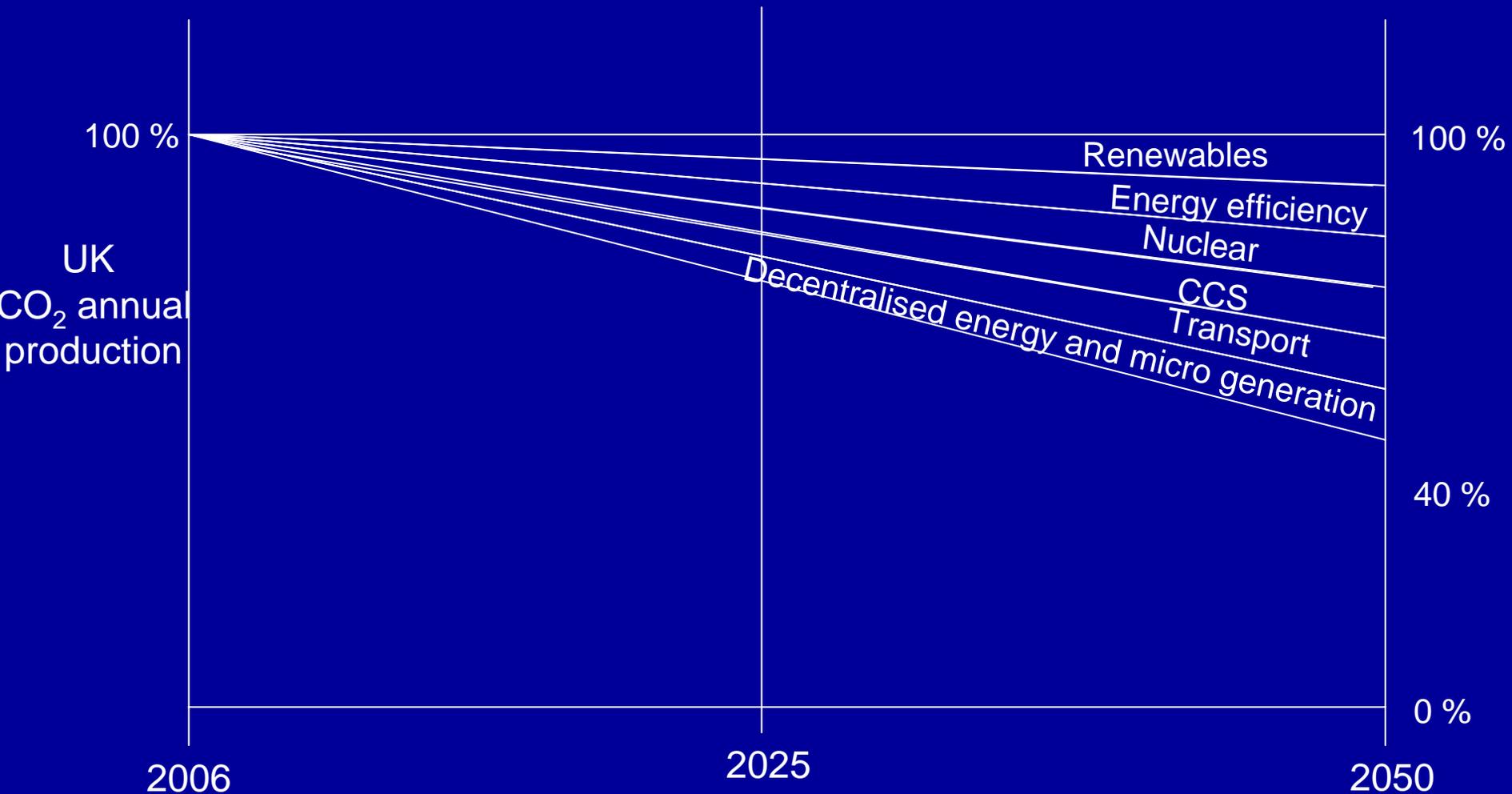
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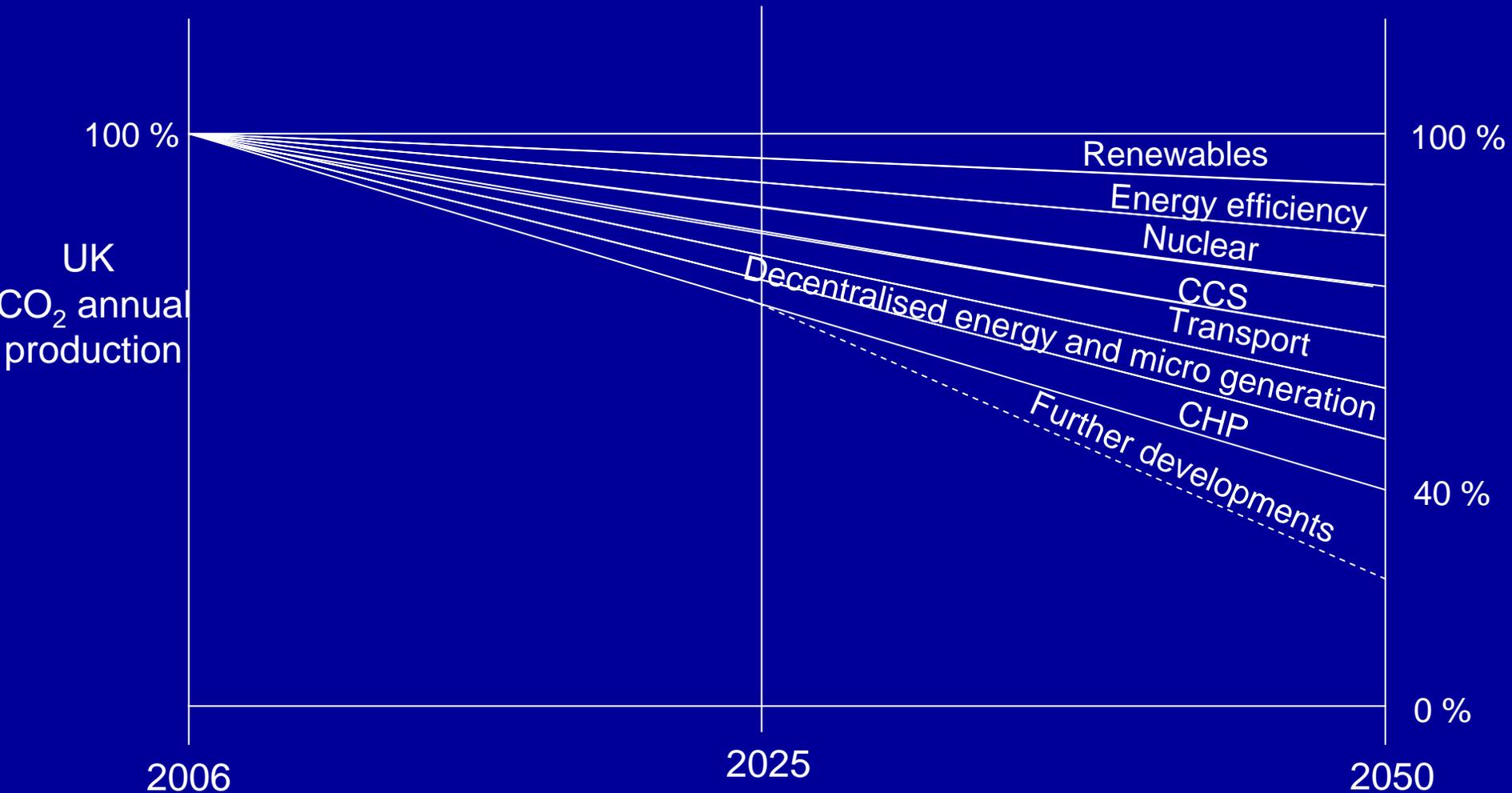
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The wedges solution to UK Emissions – illustrative



Improved energy
efficiency...



...and a diverse mix of
zero carbon sources



Energy Technologies Institute

dti

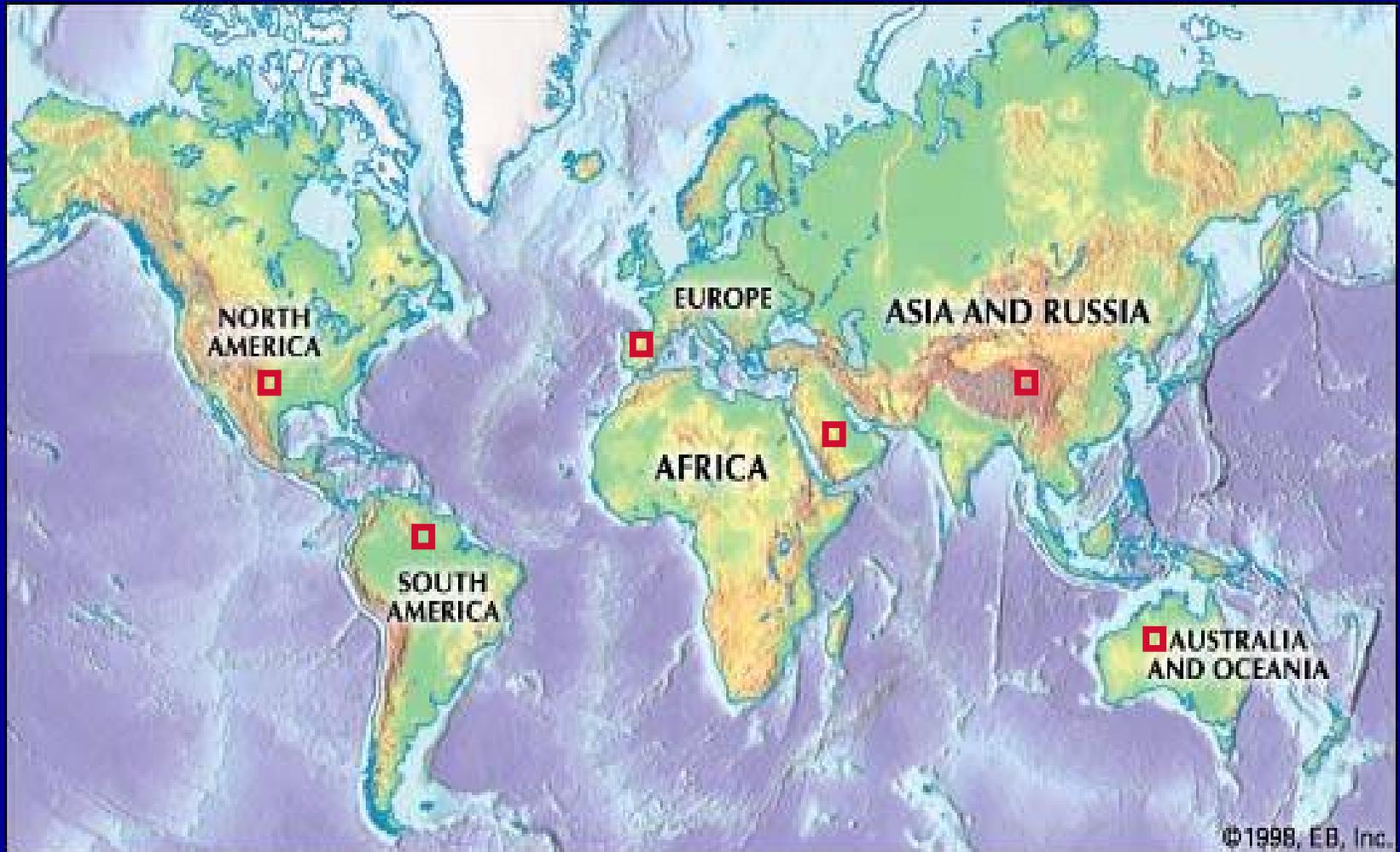
ENERGY TECHNOLOGIES
INSTITUTE

Prospectus

SEPTEMBER 2008

- Public-Private partnership between UK Government and industry
- BP, Shell, EDF, E:On, Rolls-Royce, Caterpillar and S&SE all core partners
- Will invest £1bn in energy research, design, demonstration and development over 10 years
- Looking to develop links with other countries

Solar Land Area Requirements



6 Boxes at 3.3 TW Each

Source: Nathan Lewis

Future Challenges

- Climate change requires both national and global solutions
- Developing a robust and coherent strategy is vital – working with key partners
- Action is affordable – Inaction is not!