

# CLIMATE CHANGE: The Challenges Ahead

## BBVA Global Energy Lecture

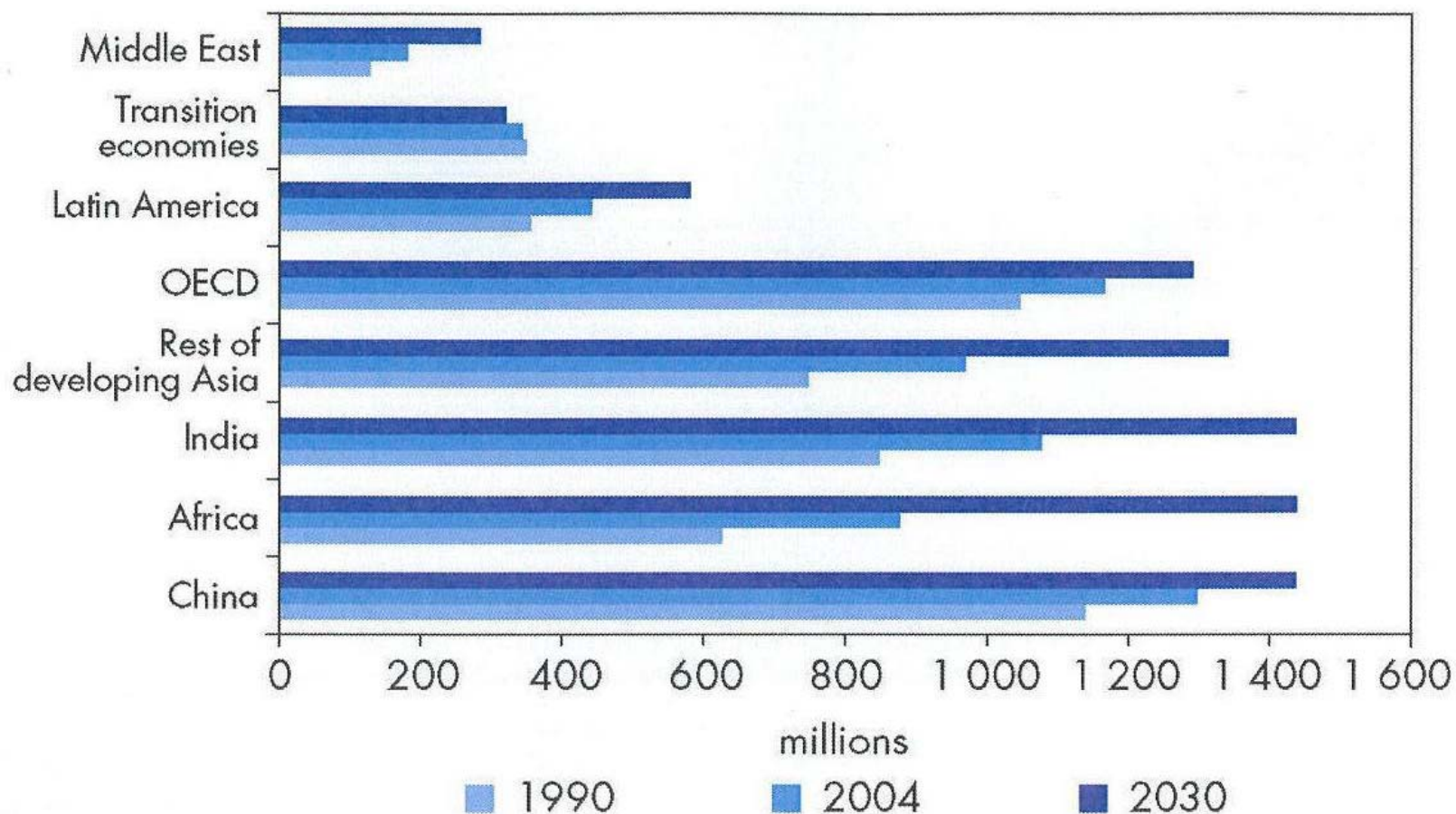
Dieter Helm  
Professor of Energy Policy  
University of Oxford

June 11th 2007

- the nature of the problem
- the economic calculation
  - why conventional calculations are misleading
- China's pivotal role
- creating a post-2012, post-Kyoto agreement
- policy instruments and emissions trading
  - the EU ETS and its prospects
- Europe's strategy
- what now needs to be done?

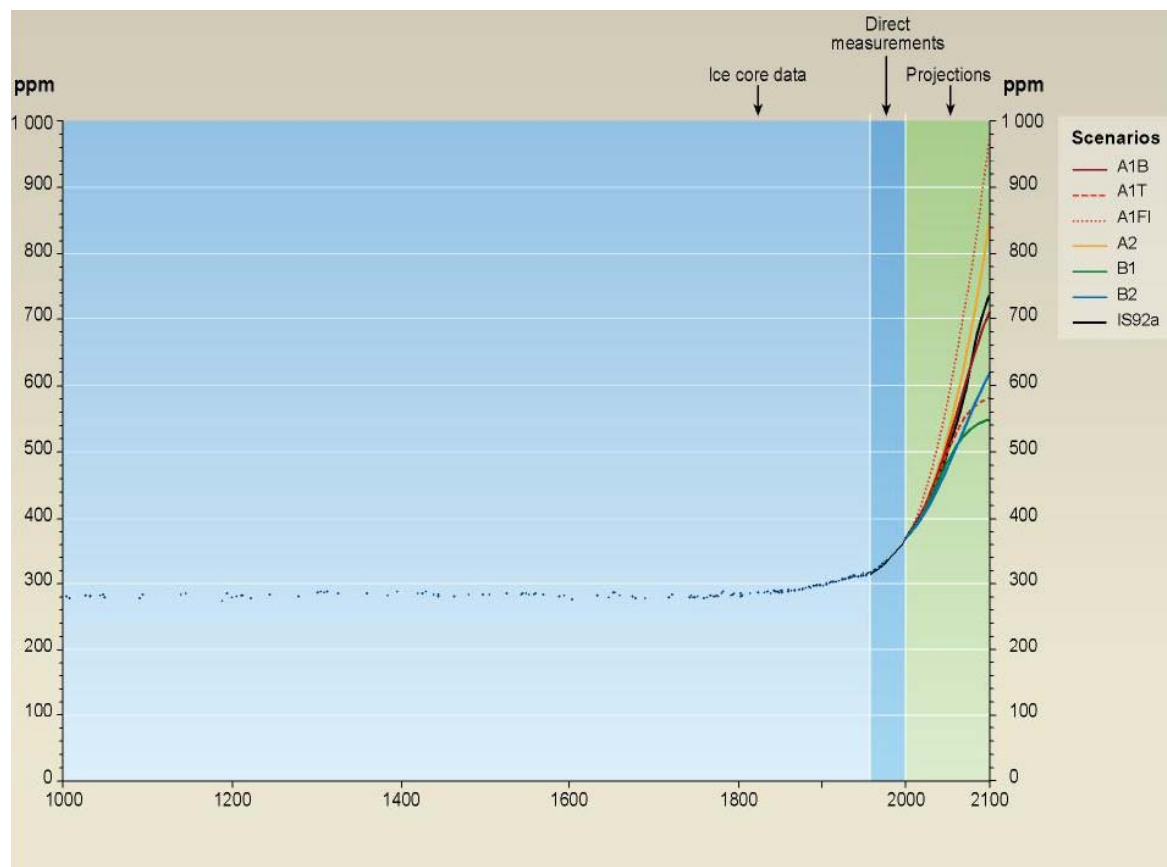
- the three key variables
- population growth
  - from 6 to 9 billion
- biodiversity
  - toward a 50% loss of species
- climate change
  - beyond 2°C warming

## World population by region to 2030



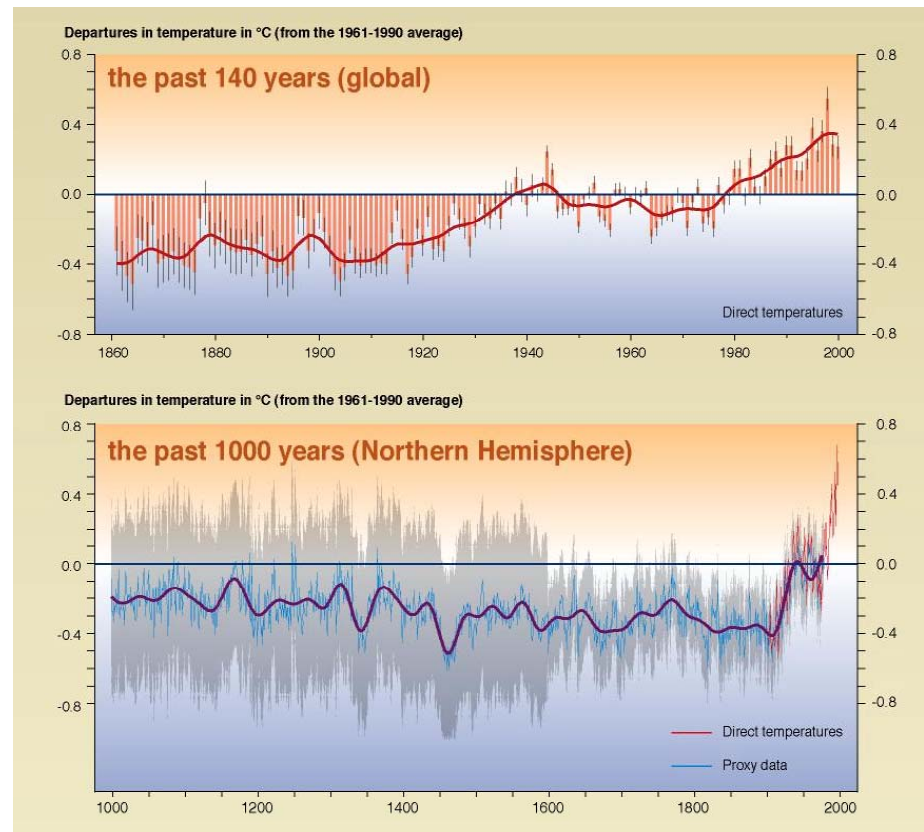
Source: IEA World Energy Outlook 2006.

## Past and future CO<sub>2</sub> atmospheric concentrations



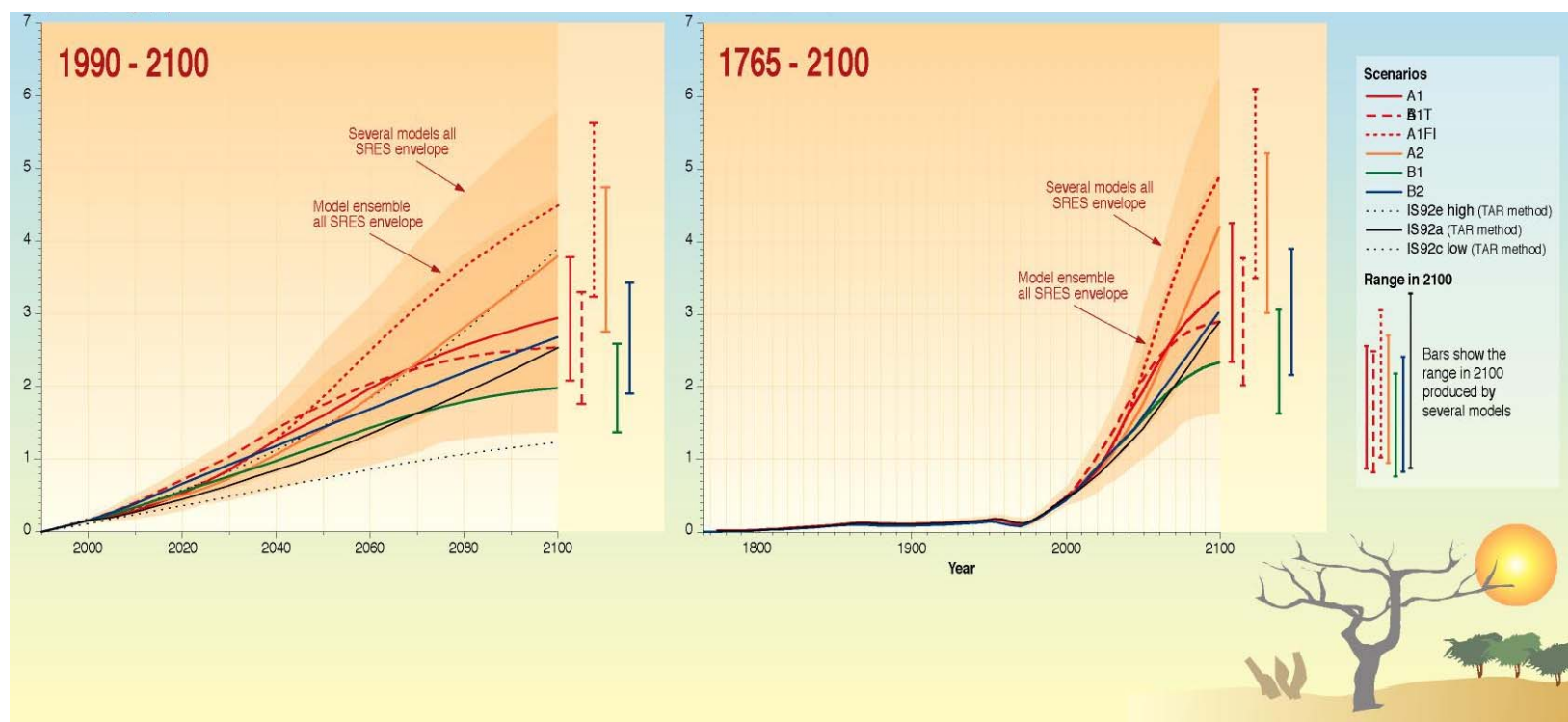
Source: Intergovernmental Panel on Climate Change.

## Variations of the Earth's surface temperature



Source: Intergovernmental Panel on Climate Change.

## Temperature change, 1760–2100



Source: Intergovernmental Panel on Climate Change.

- the costs of climate change (5–20% GDP)
- the costs of mitigation (–3% to +1% GDP)

But...

- the GDP growth rate (2%)
- the discount rate
- the real costs

⇒ Damage greater, mitigation costs higher

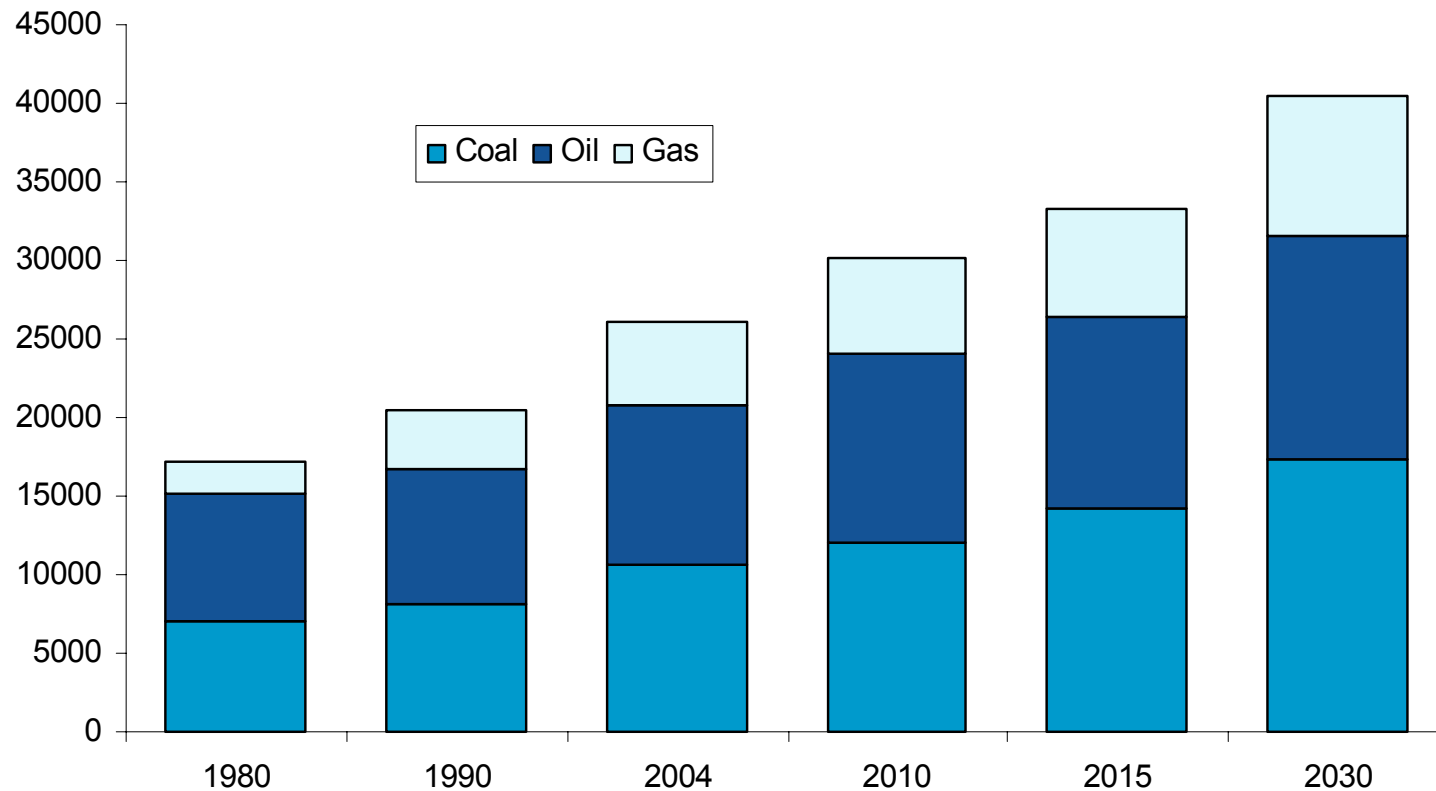
- x2 population by 2050
- 10% GDP growth p.a.  x2 economy by 2030

And

- 1,000 GW new power stations by 2030
- mostly coal

⇒ No solution to climate change without solution to China's emissions

## World energy-related CO<sub>2</sub> emissions by fuel



Source: IEA World Energy Outlook 2006.

- the core requirements:
  - paying China (and others) not to develop via fossil fuels
  - meeting the obligations of historical emissions in Europe and the US (and others)
- fixing quantities—a global cartel in carbon
- finding credible instruments to achieve targets
- creating credible institutions to oversee delivery

**Taxes**

versus

**Permits**

versus

**Command-and-control**

**The EU ETS**

**CDMs and JIs**

- the need for institutions
- why the UN is not appropriate
- the WTO model
- designing a new CTO

- the March Summit
- 20% CO<sub>2</sub> target (30% if US on board)
- 20% renewables
- technology and clean coal

- EU unilateral target as starting point
- bring in US
- EU–US engagement with China
- development of CDM/JI mechanisms
- creation of a CTO
- evolve emissions trading from Europe to US and globally

And, at the same time...

- take steps to adapt to failure

*The New Energy Paradigm* (2007) (ed), Oxford: Oxford University Press

*Energy, the State and the Market: British Energy Policy since 1979*, revised edition, 2004, Oxford: Oxford University Press

*Climate Change Policy* (edited), 2005, Oxford: Oxford University Press

'The New Paradigm', *Oxford Review of Economic Policy*, Spring 2005

'A New British Energy Policy', November 2005, London: Social Market Foundation, [www.dieterhelm.co.uk](http://www.dieterhelm.co.uk)

'Carbon Contracts and energy policy: An outline proposal', October 2005, [www.dieterhelm.co.uk](http://www.dieterhelm.co.uk) and in Helm (2007) (ed)

'European Energy Policy: Securing supplies and meeting the challenge of climate change', October 2005, [www.eu2005.gov.uk](http://www.eu2005.gov.uk), [www.dieterhelm.co.uk](http://www.dieterhelm.co.uk) and in Helm (2007) (ed)

[www.dieterhelm.co.uk](http://www.dieterhelm.co.uk)