



Technology in a post 2012 climate regime

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Outline

1. Energy, Climate and technical change
 - Energy dynamics vs climate stabilisation
 - Are climate-friendly technologies ready?
2. Technology policy issues
3. International considerations
 - International technology collaboration
 - Technology Diffusion and transfer
 - Technology in the negotiations
4. Conclusions (1) and (2)



Energy Dynamics vs Climate Stabilisation

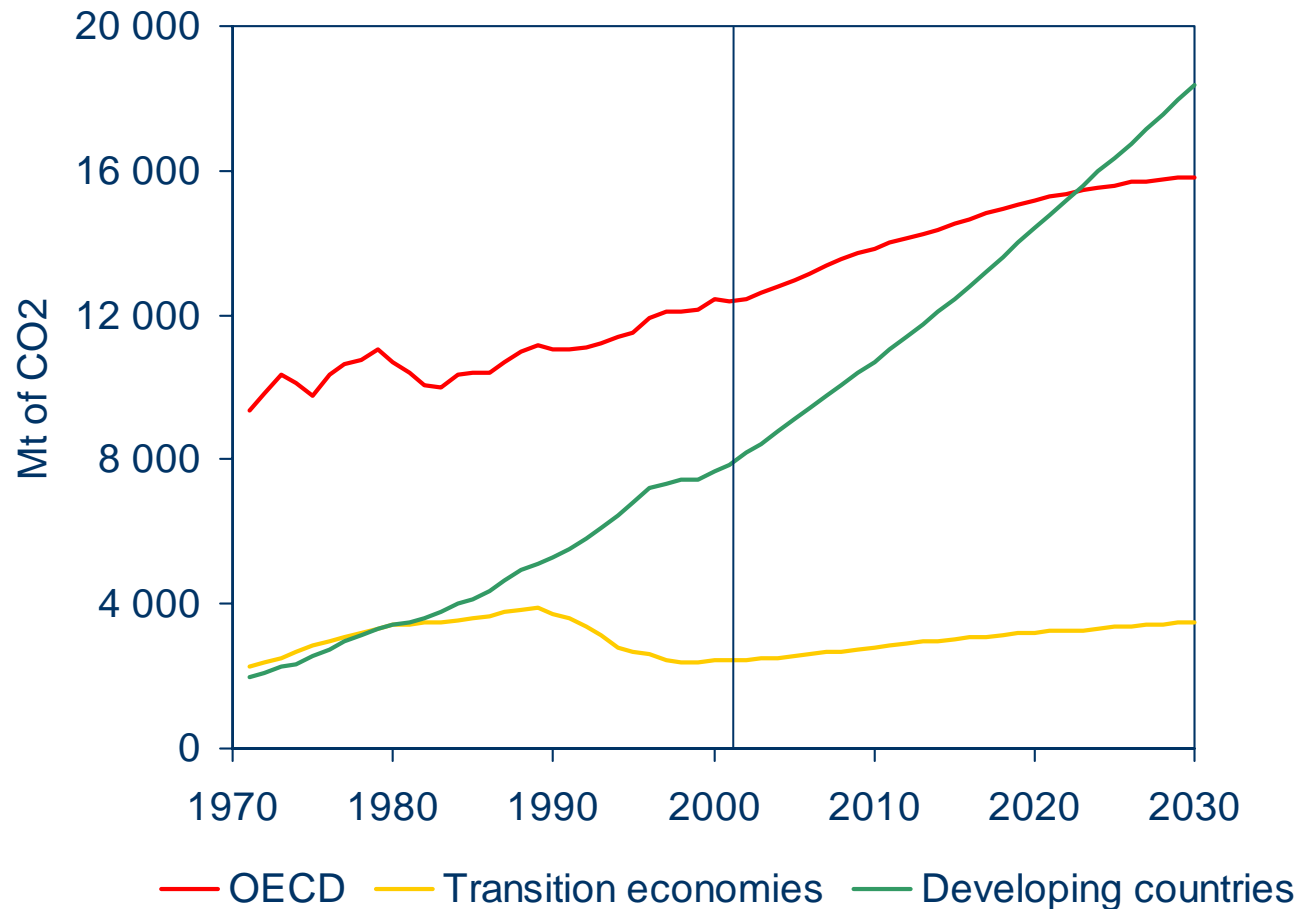
- World energy demand growing
- Share of fossil fuels not diminishing
- CO₂ stabilisation at any level requires ultimately near elimination of net emissions
- The agenda of emission cuts determines the concentration level
- Developing countries matter, industrialised countries matter even more!



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World Energy-Related CO₂ Emissions



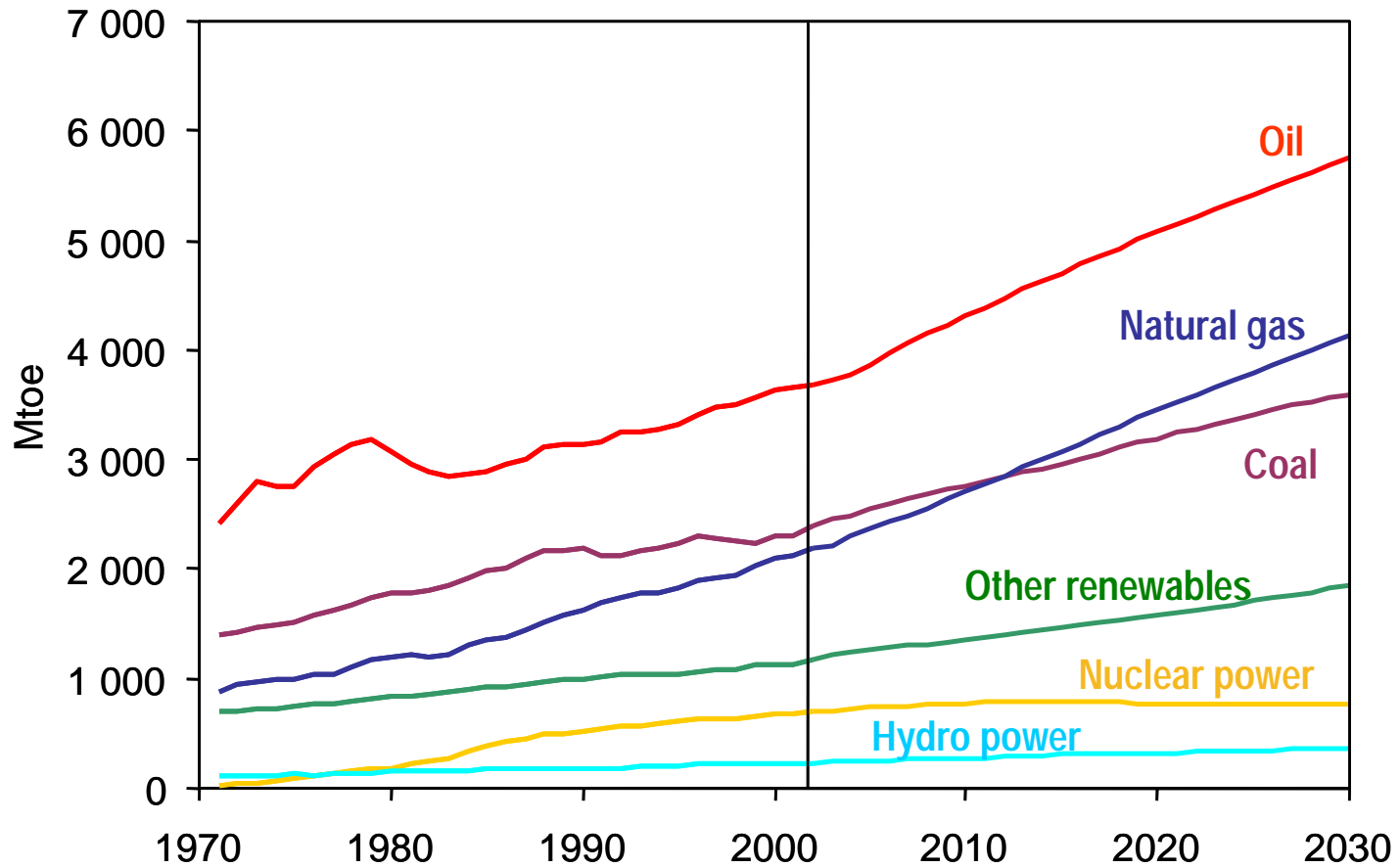
Global emissions grow 62% between now & 2030, with developing countries' emissions overtaking OECD's in the 2020s



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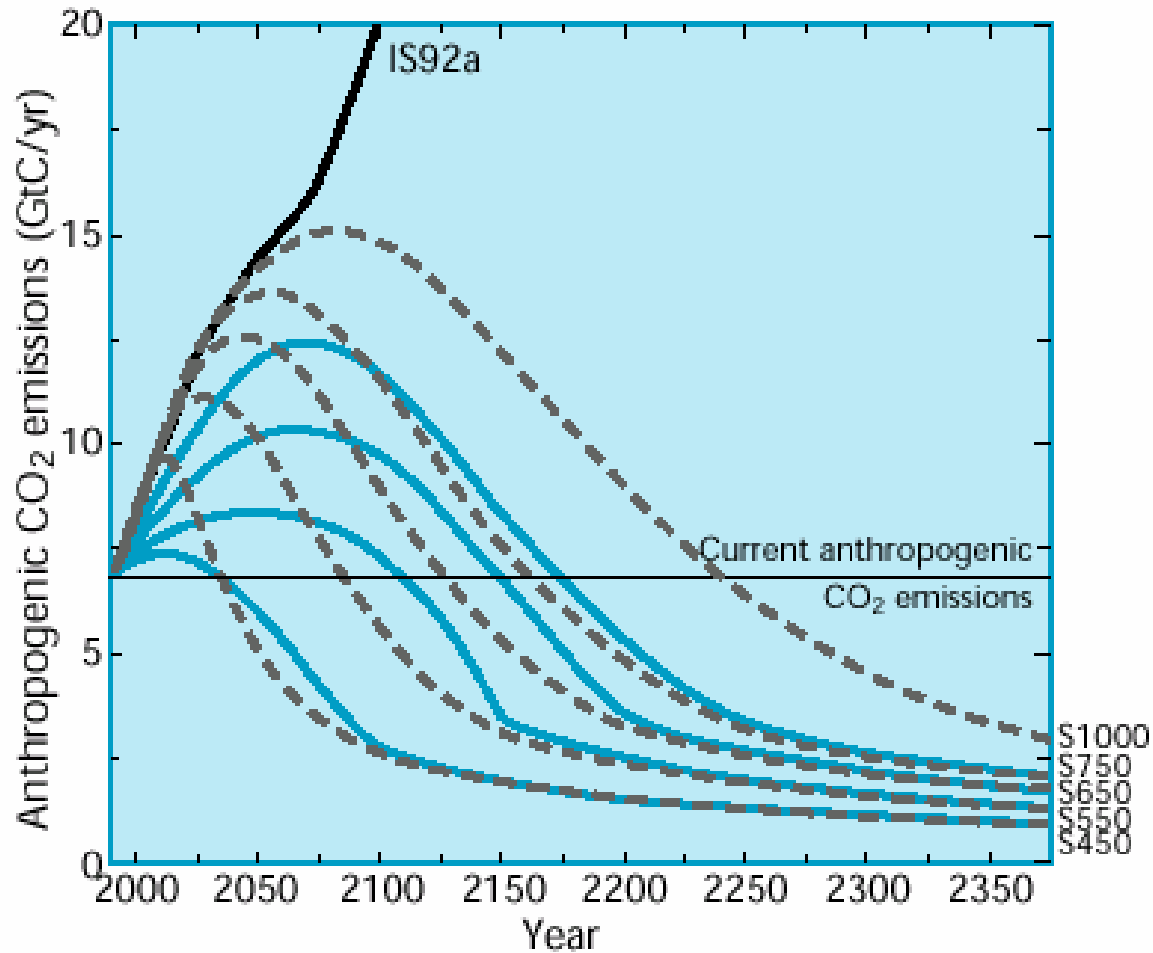
World Primary Energy Demand



Fossil fuels account for almost 90% of the growth in energy demand between now and 2030



Climate Stabilisation



Source: IPCC TAR



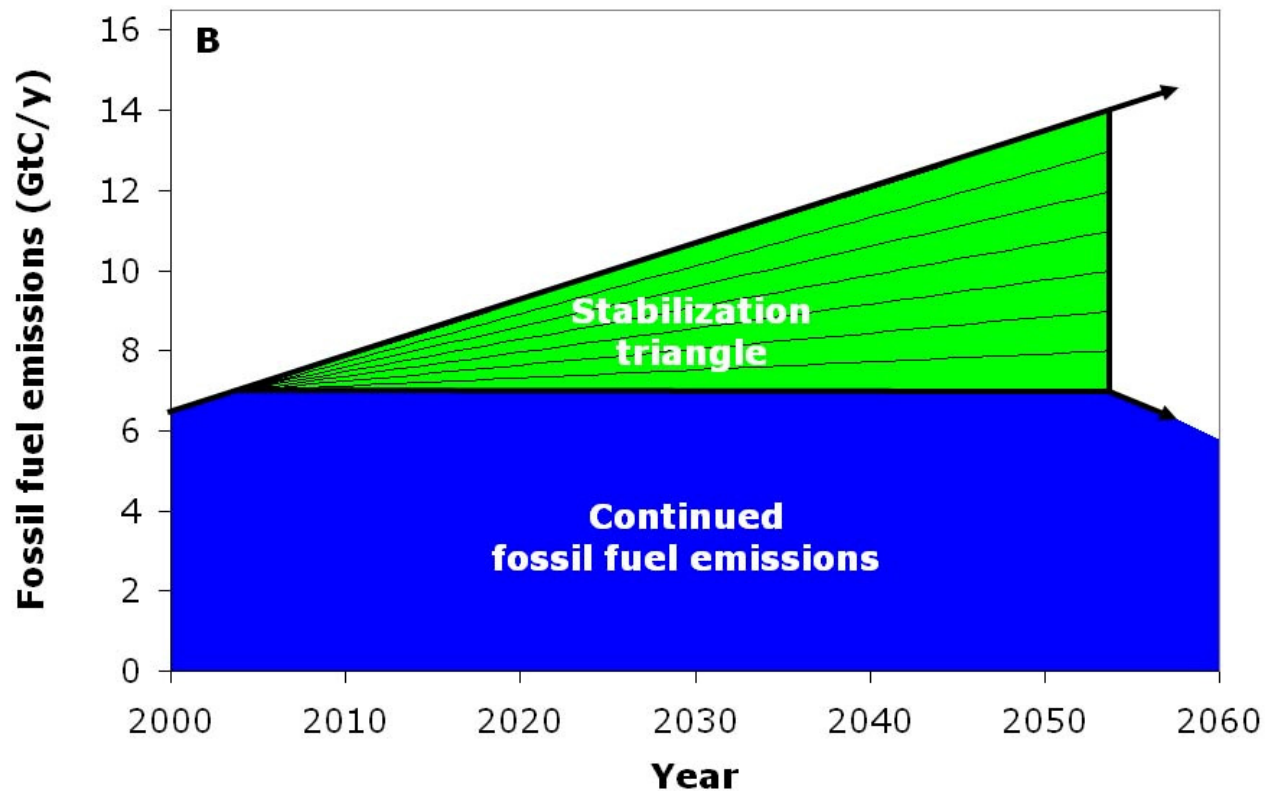
Are the technologies ready?

- Energy efficiency
- Fuel switching
- ‘Non carbon’ energies:
 - Renewable; Nuclear; CO₂ Capture and Storage
- *Excluding any of these options would drive higher costs/higher concentrations*
- A lot can be achieved with existing technologies, but improvements needed to cut costs and increase acceptability



The Stabilisation Triangle

(Pacala & Socolow 2004)





2. Technology policy issues

- Technical change, behaviour and price
 - Technical improvements alone may lead to rebound effect; price to play on both factors
- Competitiveness, scarcity and price
 - Fossil fuels (esp. Coal) still abound; not all clean technologies will become competitive (eg: CCS)
- Learning-by-doing implications
 - Market deployment and R&D efforts required
 - Static cost-effectiveness not the only criteria



Technology policy issues (2)

- Tools to promote technical change
 - R&D: public R&D funding is declining
 - Standards (EU & US approaches)
 - Subsidising dissemination;
 - taxes, emissions trading schemes
- The EU situation
 - *A case study: the coexistence of ETS and the renewable electricity directive*



3. International considerations

- International technology collaboration
 - The IEA experience
 - The many bilateral agreements
 - The recent US initiatives
- Technology diffusion and transfer
 - Globalisation
 - speeds development, emissions and capital stock turnover
 - Favorable context for transfers of good and bad technologies
 - Export Credit Agencies
 - Emission leakage vs technology spill-over
 - Intellectual property rights: theory, practice



Technology in the negotiations

- Technology agreements: can they deliver?
 - Proposals of zero emission power plants & fuels
 - Problems of credibility and costs
- Linking technology cooperation & targets
 - Might help for developing countries, not for the US
- Technology standards harmonisation
 - Might speed or slow the processes



Technology in the negotiations(2)

- Sharing the learning investments
 - An area for further negotiations?
- Moving into plain emissions trading
 - GEF, SFCC: governments' money only
 - CDM: transaction costs, emission leakage
 - Trading a possible vector for tech. transfers
 - Indexed targets and non-binding targets for developing countries (indexed targets and price cap for industrialised countries)



Conclusions (1)

- Technology « push » useful for the long term
- Technology « pull » necessary
 - To tap large short term potential
 - To allow new technologies to benefit from learning-by-doing
- The many advantages of emissions trading
 - Cost-effectiveness; environmental effectiveness; allows some free allocation; the rich pay for the poor
 - « Transforming Kyoto » with new options



Conclusions (2)

- Need to speed diffusion of clean technologies
- Governments not to pick ‘winning’ technologies
 - But only focussed policies will allow some technologies to enter the marketplace
- EU to work with US and Japan on technology development
- Move discussion from negative aspects of mitigation to business opportunities
- No new international organisation needed to share technologies