



# **Update on IEA Energy Technology G8 Activities**

**UNFCCC COP 12/MOP 2  
Nairobi**

**Dr. Robert K. Dixon**

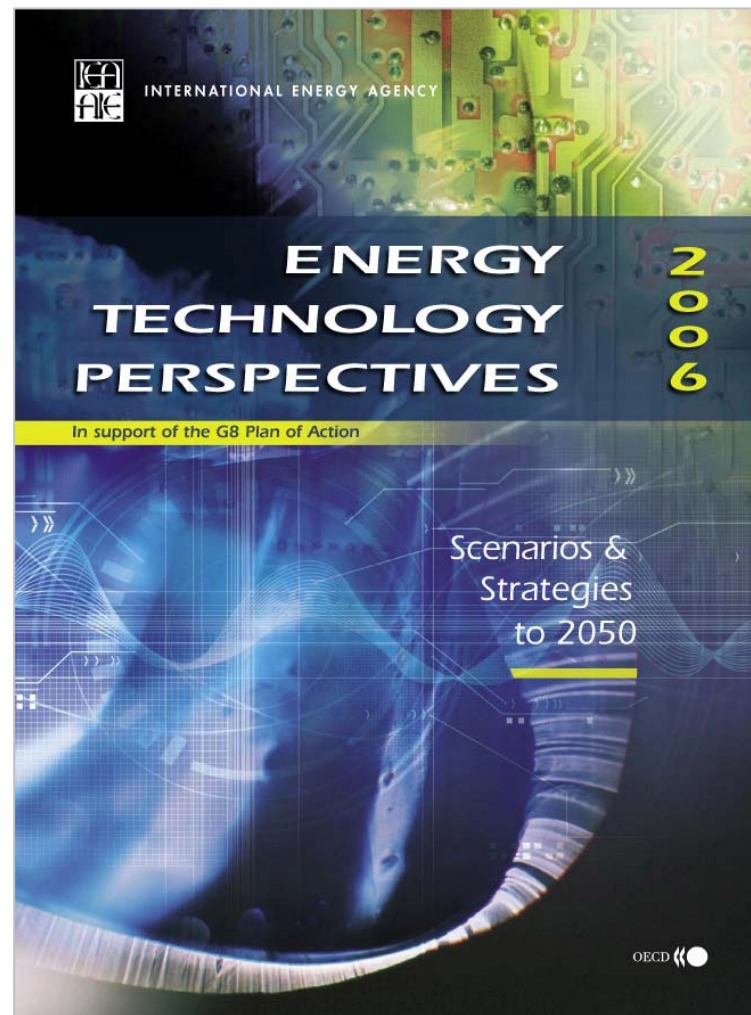
**Head, Energy Technology Policy Division  
International Energy Agency**

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# Energy Technology Perspectives 2006

ETP 2006 provides part of IEA's "advice on scenarios and strategies" to G8 leaders

ETP 2006 presents a groundbreaking review of technologies across all sectors and assesses how they can make a difference.



# Scenario Analysis

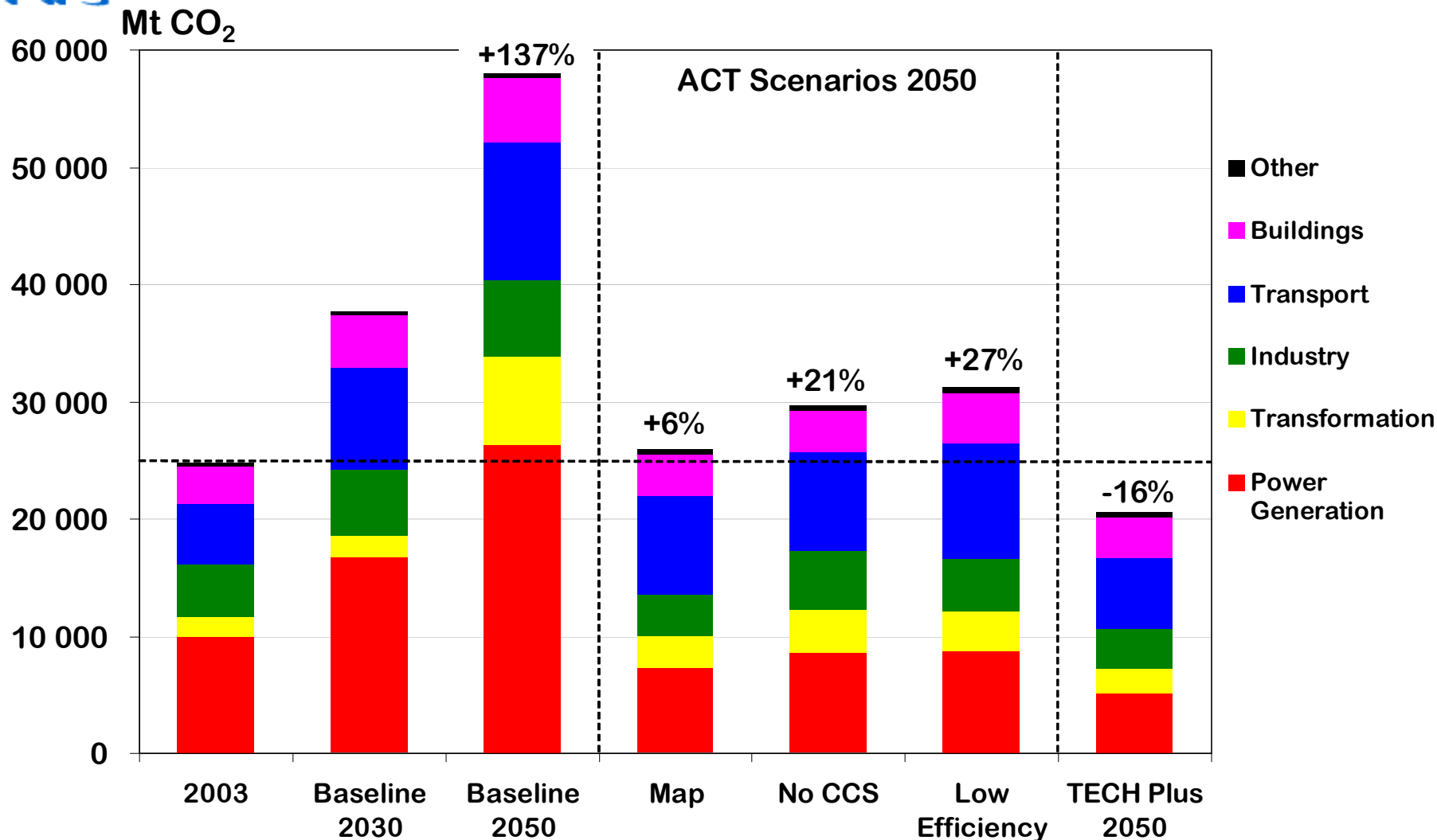
- **Scenarios analysed:**
  - **Baseline Scenario**
  - **Accelerated Technology Scenarios (ACT)**
  - **TECH Plus scenario**
- **ACT and TECH Plus scenarios:**
  - **Analyse the impact from R&D, Demonstration and Deployment measures**
  - **Incentives equivalent to 25 \$/tonne CO<sub>2</sub> for low-carbon technologies implemented worldwide from 2030**
  - **Individual scenarios differ in terms of assumptions for key technology areas**

# Technology Assumptions

Scenario	Renewables	Nuclear	CCS	H <sub>2</sub> fuel cells	Advanced biofuels	End-use efficiency
ACT Map	Relatively optimistic across all technology areas					2.0 % p.a. global improvement
ACT Low Renewables	Slower cost reductions					
ACT Low Nuclear		Lower public acceptance				
ACT No CCS			No CCS			
ACT Low Efficiency						1.7 % p.a. global improvement
TECH Plus	Stronger cost reductions	Stronger cost reductions & technology improvements		Break-through for FC	Stronger cost reductions & improved feedstock availability	

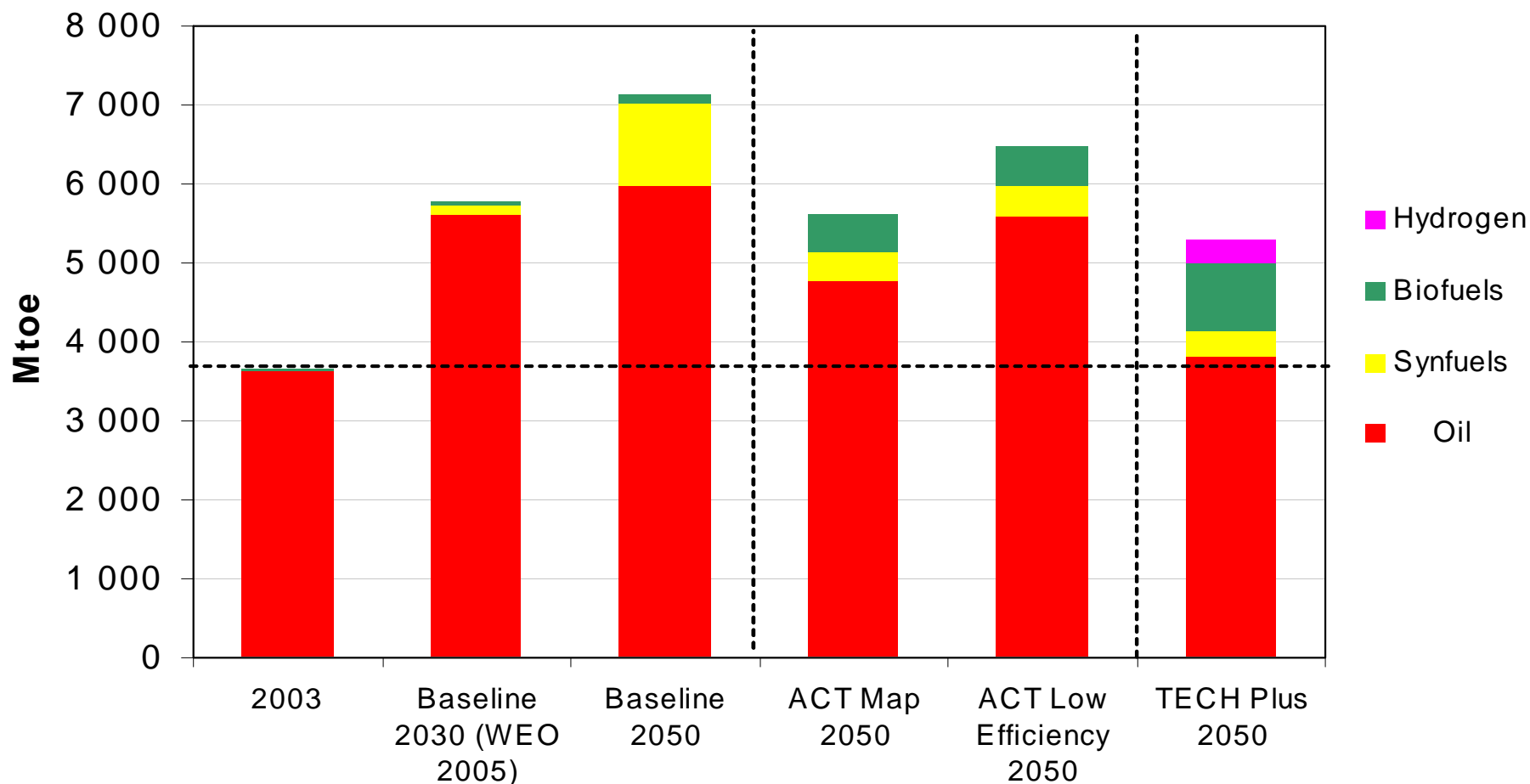
# Global CO<sub>2</sub> Emissions 2003-2050

## Baseline, ACT and TECH plus Scenarios



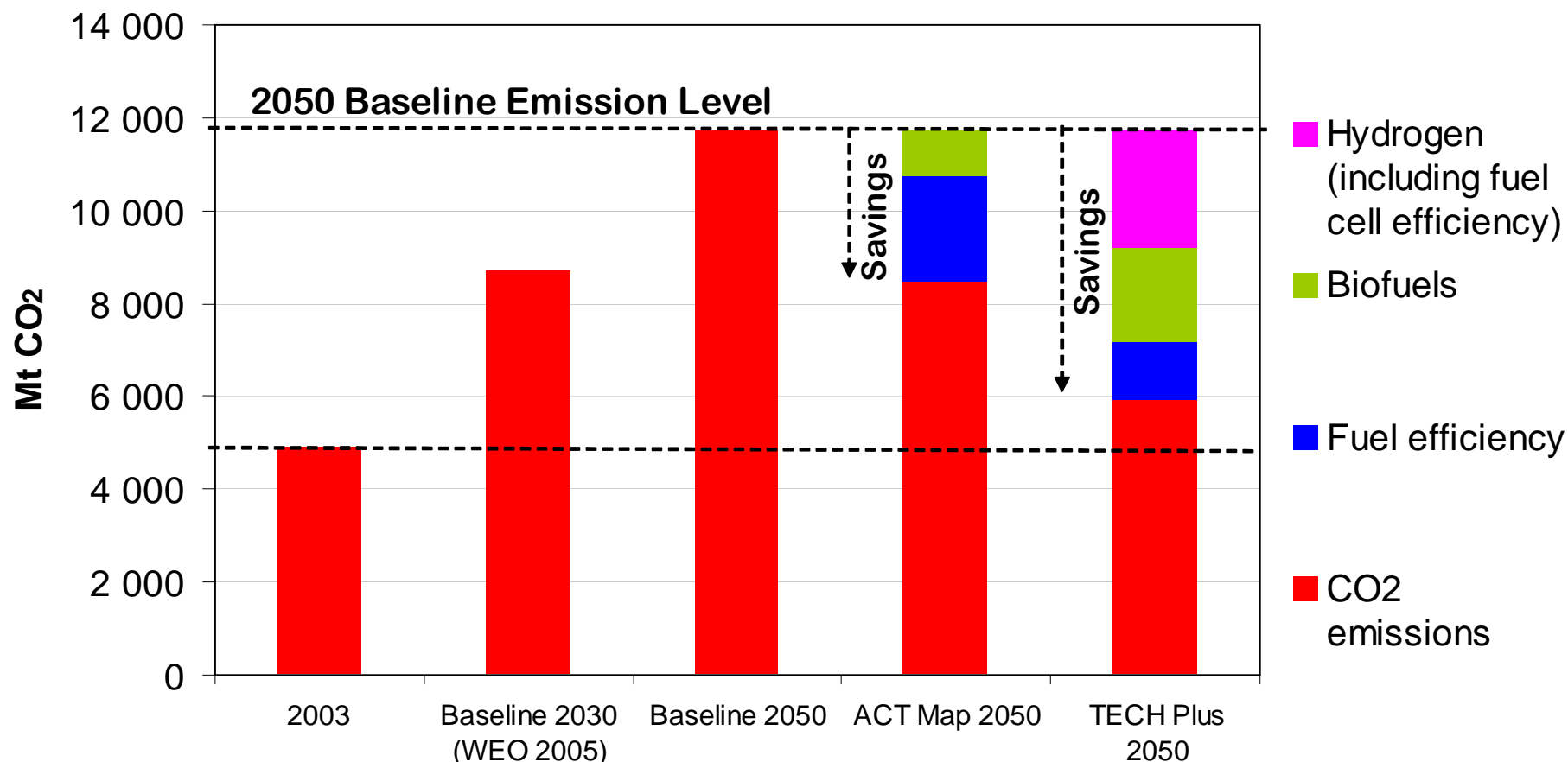
*TECH Plus: More optimistic on progress for certain key technologies*

# World Liquid Fuel Supply by Scenario 2003-2050



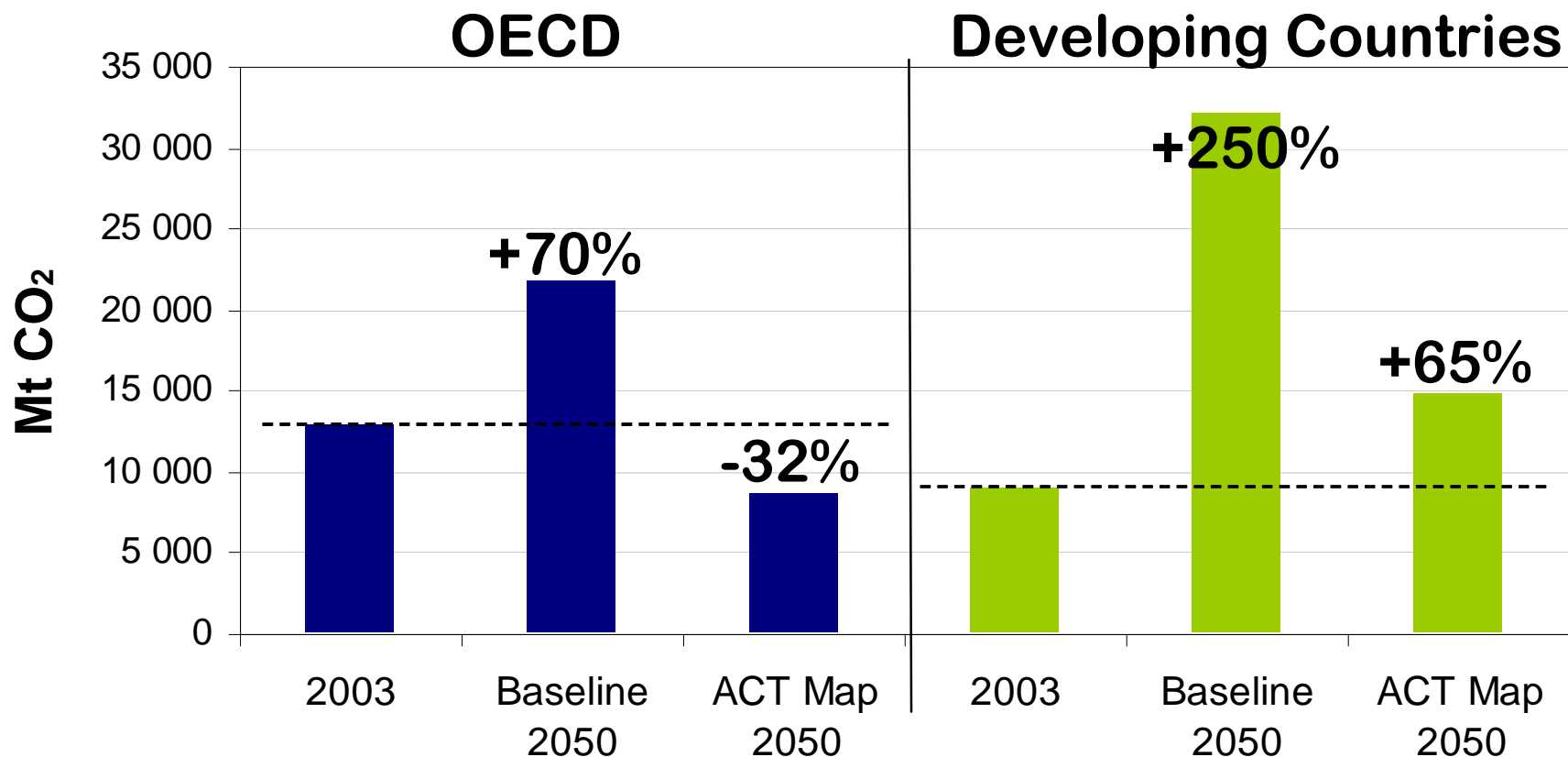
***Primary oil demand is below 2030 baseline level  
and is returned to about today's level in TECH Plus.***

# Transport CO<sub>2</sub> Emissions by Scenario



***Map Scenario: Two-thirds of CO<sub>2</sub> emissions reduction is from improved fuel efficiency and one-third from biofuels.***

# CO<sub>2</sub> Emissions Baseline and Map Scenarios



*Map: OECD Emissions 32% below 2003 level, while emissions in Developing Countries are 65% higher.*



# Scenario Analysis

## Key Findings

- Most energy still comes from fossil fuels in 2050
- CO<sub>2</sub> emissions can be returned towards today's level by 2050
- Growth in oil and electricity demand can be halved
- Power generation can be substantially de-carbonised by 2050
- De-carbonising transport will take longer but must be achieved in the second half of the century

# Technology Implications

- A technology portfolio will be needed
- Improving energy efficiency is top priority!
- CCS is key for a sustainable energy future
- Other important technologies:
  - Renewables, including biofuels
  - Nuclear
  - Efficient use of natural gas
  - In time and with effort, hydrogen and fuel cells

# Policy Implications

- A more sustainable energy future is possible with known technology
- The costs are not out of reach
- Urgent action is needed in public and private sectors:
  - Overcome barriers for adoption of energy efficient technologies
  - Enhance R&D
  - Accelerate demonstration and deployment
  - Provide clear and predictable incentives
- Collaboration between developed & developing countries is essential

# Energy Indicators

# "State-of-the art" data and analysis

- "30 years of energy use in IEA countries", published 2004
- Energy indicators *on a country level*
- So far energy use/value added
- Update of IEA's "30 Years" Indicator publication
- Development of more detailed indicators to address the G8 tasks on buildings, transport and industry



## Energy Indicators: Collaboration with non-OECD countries

- **Joint IEA/APEC workshop focused on non-OECD countries**
- **Planned project in the “Plus Five” countries together with the World Bank**
- **Expanded indicator database with key non-OECD countries**
- **Publication on trends in energy use and efficiency in OECD and key non-OECD countries**

# Networks of Expertise in Energy Technology (NEET)

**NEET – Networks of Expertise in Energy Technology**  
The IEA's answer to the 2005 G8 request to enhance technology  
collaboration with the “Plus-Five”

- **NEET Goals:**

- ◆ Enhance international collaboration with Brazil, China, Mexico, India, South Africa and Russia through the IEA technology network and other networks
- ◆ Inventory of global collaborative energy efforts





<http://www.iea.org/neet>  
or contact [Alexandra.Niez@iea.org](mailto:Alexandra.Niez@iea.org)

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### About the IEA

- Clean Fossil Fuels
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- CO<sub>2</sub> Emissions
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- Energy Efficiency
- Energy Market Reform
- Energy Policy
- Energy Projections
- Environment
- Fusion Power
- Natural Gas
- Non-OECD Countries
- Oil
- Renewable Energy
- Sustainable Development
- Technology
- Transport

### Statistics

## Networks of Expertise in Energy Technology

**NEET is part of the IEA's programme supporting the G8 Gleneagles Plan of Action. It works to foster broader, more effective international co-operation, in particular with non-IEA countries.**

### Mission Statement

As part of their July 2005 pledge of concerted action to secure a "clean, clever and competitive energy future", G8 leaders invited IEA to help activate dynamic worldwide networks for energy technology research and development. Building on its existing "Implementing Agreement" programmes, the IEA is linking with the international business community, with policy makers, researchers and other stakeholders in many countries. It is working to enhance awareness of existing research, development and deployment networks and to facilitate broader participation. As part of the dialogue, the NEET team is planning workshops and high-profile presence at major international events between mid-2006 and 2008. Read [\(more\)](#) about the NEET Initiative.

### NEET Events

- *Forthcoming Events*
  - [CSD15 - New York, US](#)
  - [COP/MOP2 - Nairobi, Kenya](#)
- *Past Events*
  - [Launch of the NEET Initiative - IEA Energy Technology Day](#)  
(3 May 2006, UN Millenium Plaza Hotel New York)

### IEA Technology Programmes

- [Advanced Fuel Cells](#)
- [Advanced Materials for Transportation](#)
- [Advanced Motor Fuels](#)
- [Assessing the Impacts of High-Temperature Superconductivity \(HTS\) on the Electric Power Sector](#)
- [Bioenergy](#)
- [Clean Coal Sciences](#)
- [Climate Technology Initiative \(CTI\)](#)
- [Demand-Side Management](#)
- [District Heating and Cooling](#)
- [Electricity Networks Analysis, Research & Development \(ENARD\)](#)
- [Energy and Environmental Technologies Information Centres \(EETIC\)](#)
- [Energy Conservation and Emissions Reduction in Combustion](#)
- [Energy Conservation in Buildings and Community Systems Programme \(ECBCS\)](#)
- [Energy Conservation Through Energy Storage](#)
- [Energy Technology Data Exchange \(ETDE\)](#)

### Relevant Documents and Events in the following Countries:

- India
- China
- Brazil
- South Africa
- Russian Federation

### International Networks and Collaboration

- [Asia Pacific Economic Cooperation \(APEC\)](#)
- [Carbon Sequestration Leadership Forum \(CSLF\)](#)
- [Annex I Expert Group on the UNFCCC \(AIG\)](#)
- [Global Network on Energy for Sustainable Development \(GNESD\)](#)
- [International Energy Agency \(IEA\)](#)
- [International Partnership for a Hydrogen Economy \(IPHE\)](#)
- [International Science Panel on Renewable Energy \(ISPREE\)](#)
- [Renewable Energy and Energy Efficiency Partnership \(REEEP\)](#)
- [Renewable Energy Policy Network for the 21st Century \(REN21\)](#)
- [World Business Council for Sustainable Development \(WBCSD\)](#)
- [World Bank](#)
- [World Energy Council \(WEC\)](#)

[http://www.iea.org/textbase/neet/Details.asp?ia=Energy and Environmental Technologies Information Centres \(EETIC\)](http://www.iea.org/textbase/neet/Details.asp?ia=Energy and Environmental Technologies Information Centres (EETIC))

Local intranet

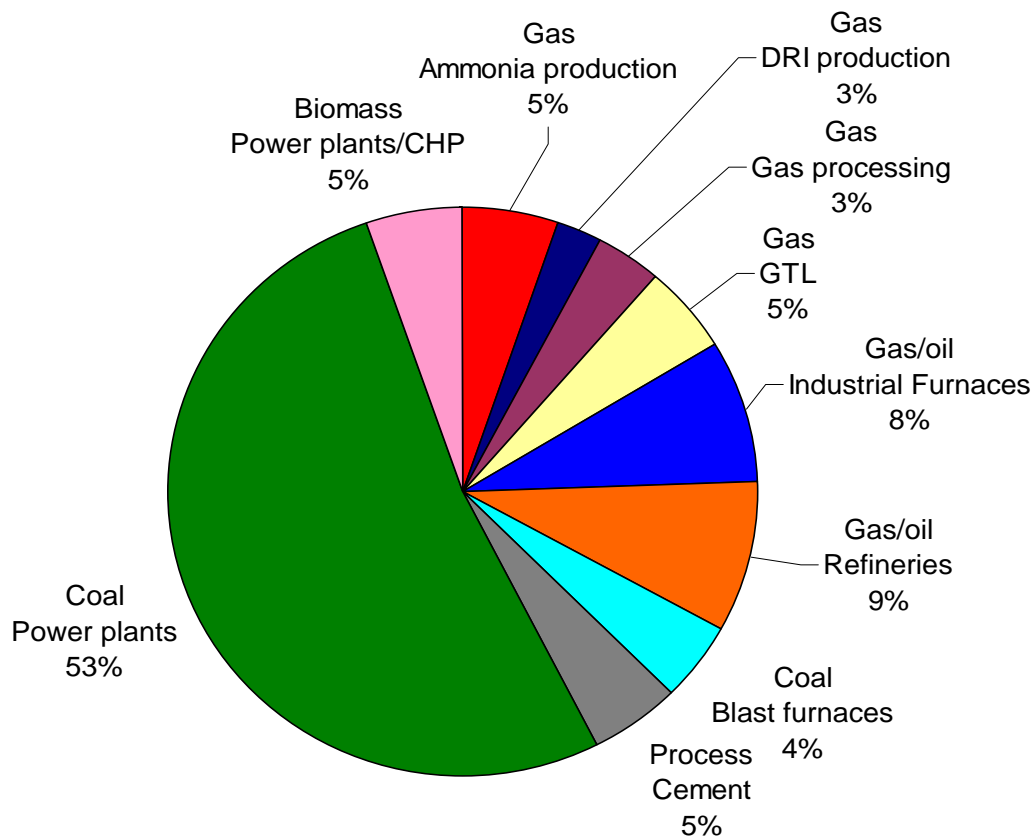
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# Carbon Capture and Storage: Technology and Policy

# Breakdown of the contribution of CCS



Total contribution from CCS under ACT Map 6,486 MtCO<sub>2</sub>

# Carbon Capture & Storage – Legal Issues

- IEA is leading international work to advance CCS legal frameworks
- Key areas of focus:
  - ◆ Establishment of national legal & regulatory frameworks
  - ◆ Develop models for contractual issues (including intellectual property rights)
  - ◆ Define CCS within international marine environment protection instruments
  - ◆ Compile CCS incentives and interactions with emissions trading schemes/CDM
- Report early 2007

**Thank you!**

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