



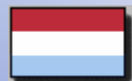
Carbon Sequestration Leadership Forum

Joint Meeting of the CSLF Policy and Technical Groups

**Delhi, India
4 April, 2006**

G8 and CSLF Activity

**Dr. Antonio Pflüger
Head, Energy Technology Collaboration Division
International Energy Agency**

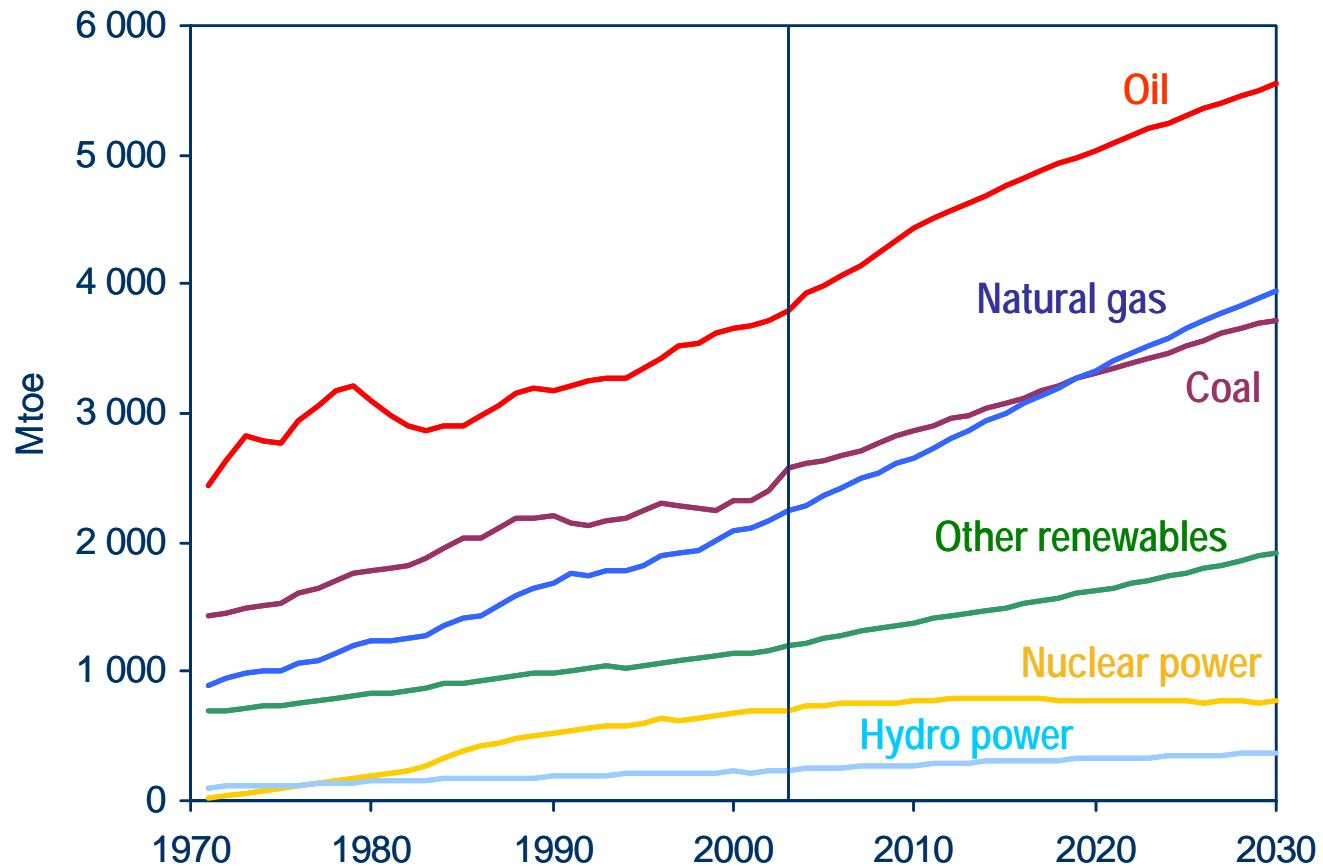


The IEA's role:

- Integral part of members' energy security
- Conducts policy analysis, compiles data
- Convenes expertise
- Publishes findings



World Primary Energy Demand



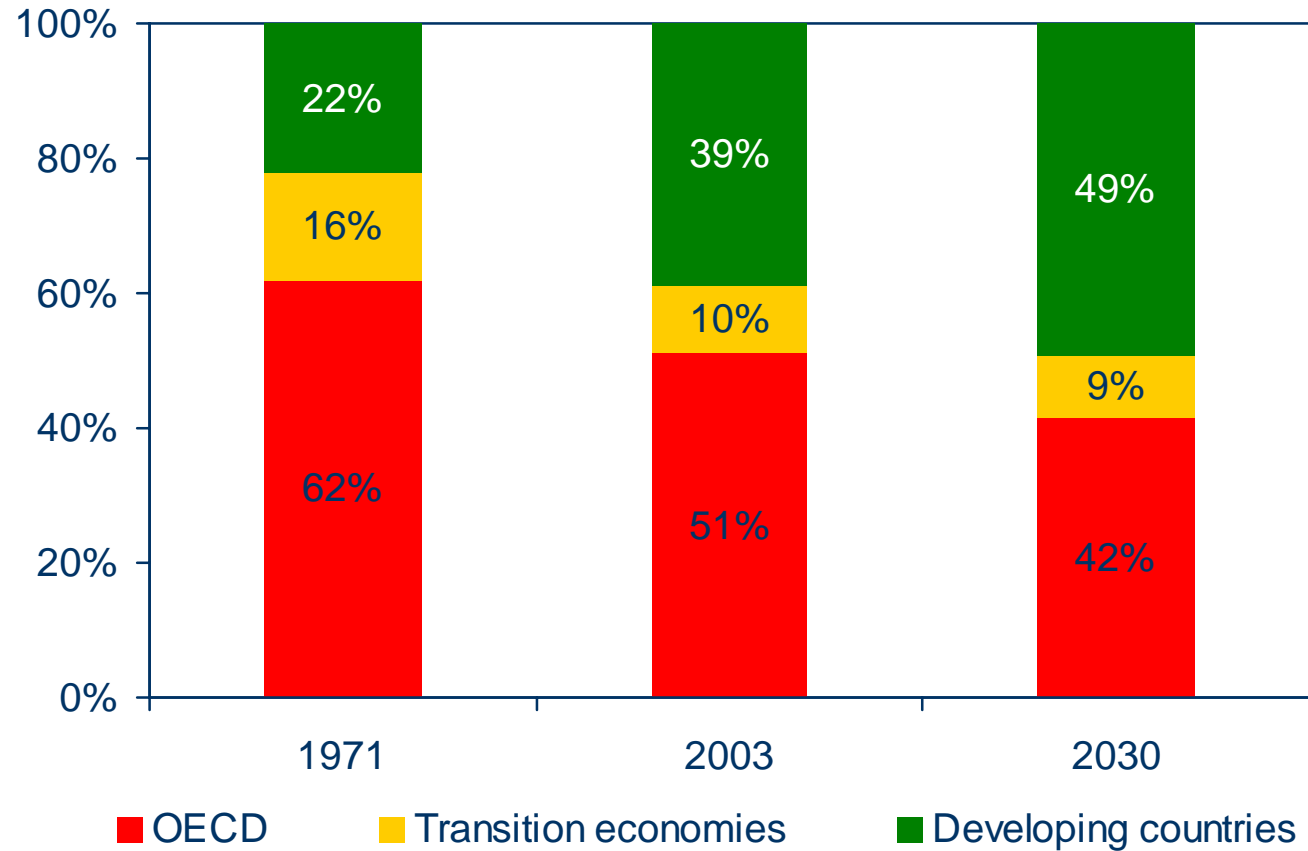
Oil, gas and coal together account for 83% of the growth in energy demand between now and 2030 in the Reference Scenario

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Regional Shares in World Primary Energy Demand



Two-thirds of the increase in world demand between 2003 and 2030 comes from developing countries, especially in Asia

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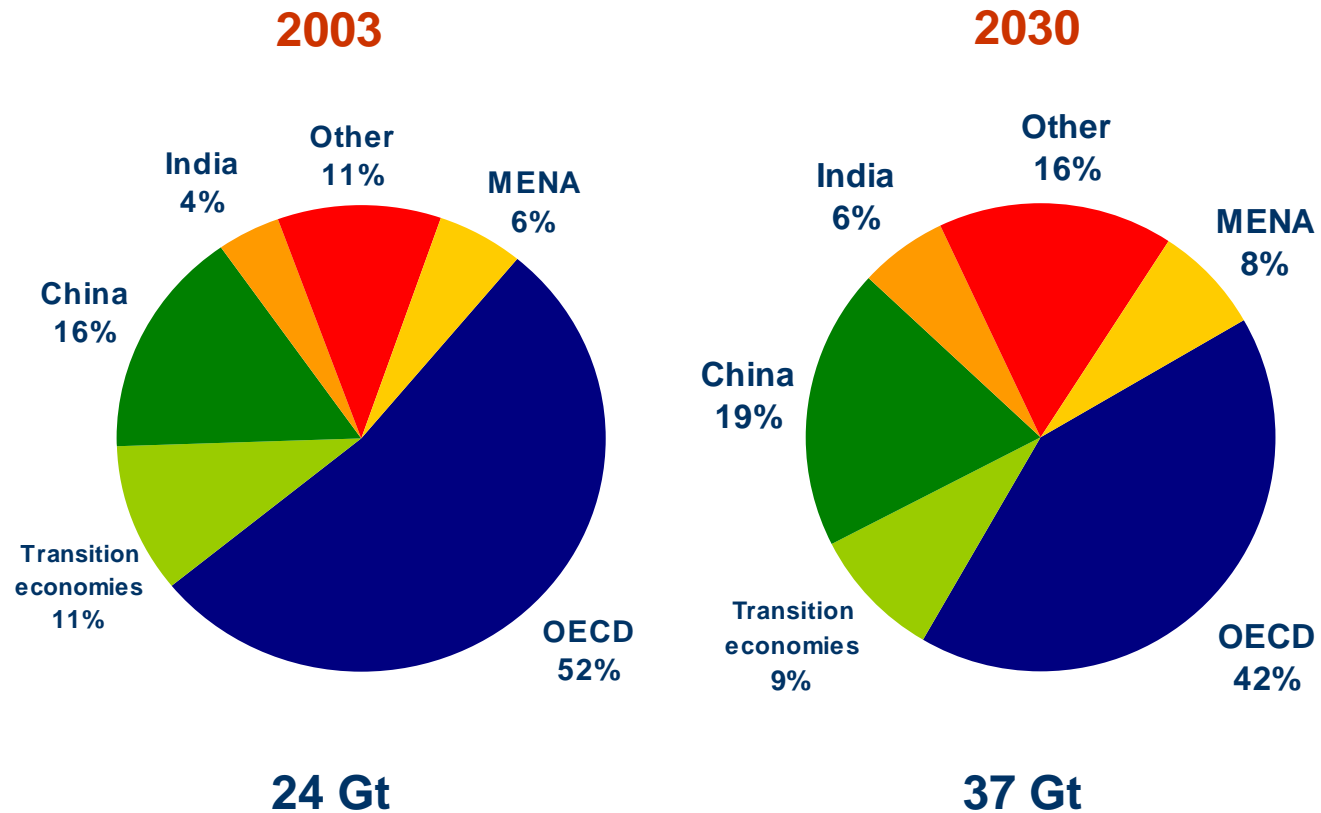
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Energy-Related CO₂ Emissions by Region

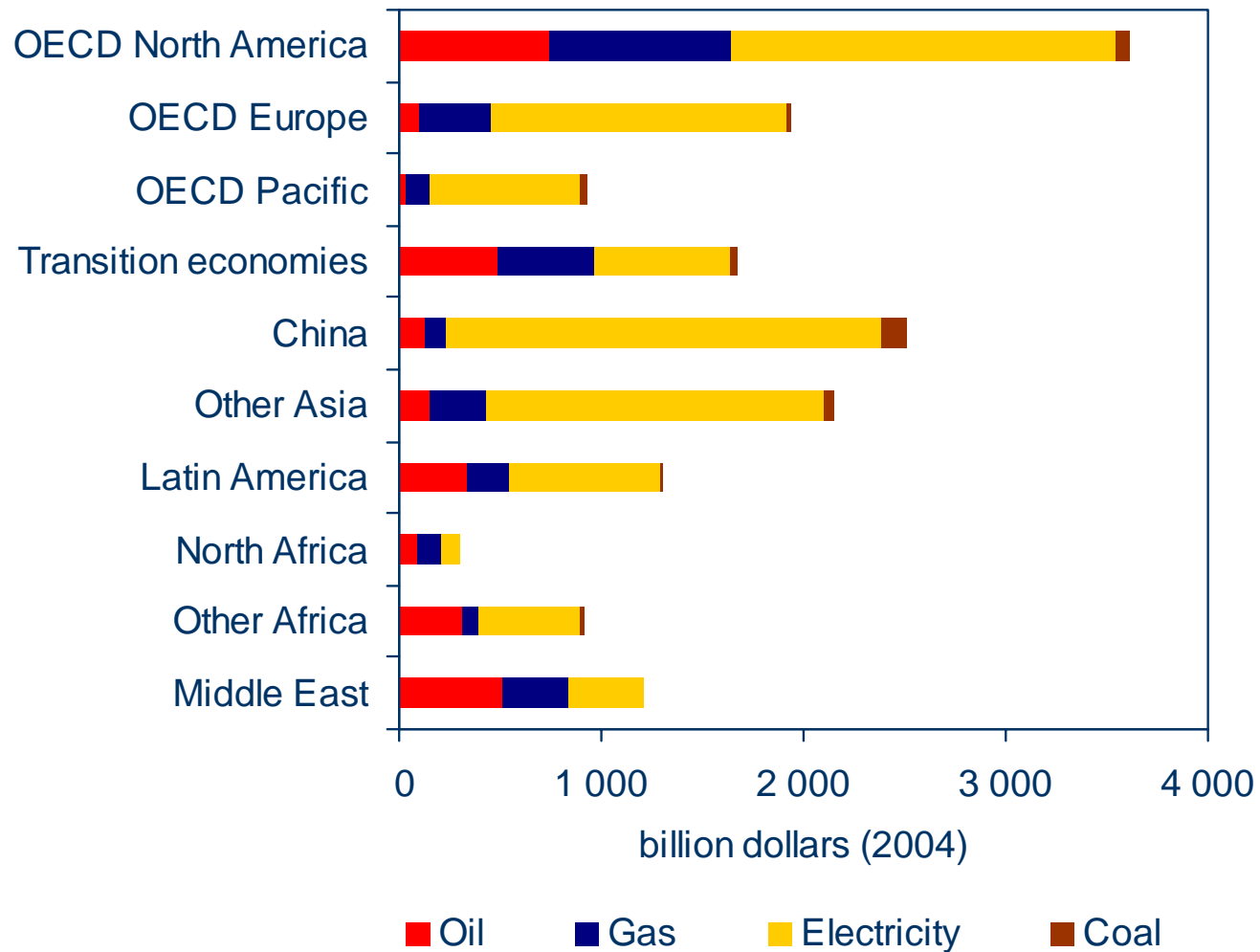
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Global emissions grow by just over half between 2003 & 2030, with the bulk of the increase coming from developing countries

Cumulative Energy Investment, 2004-2030



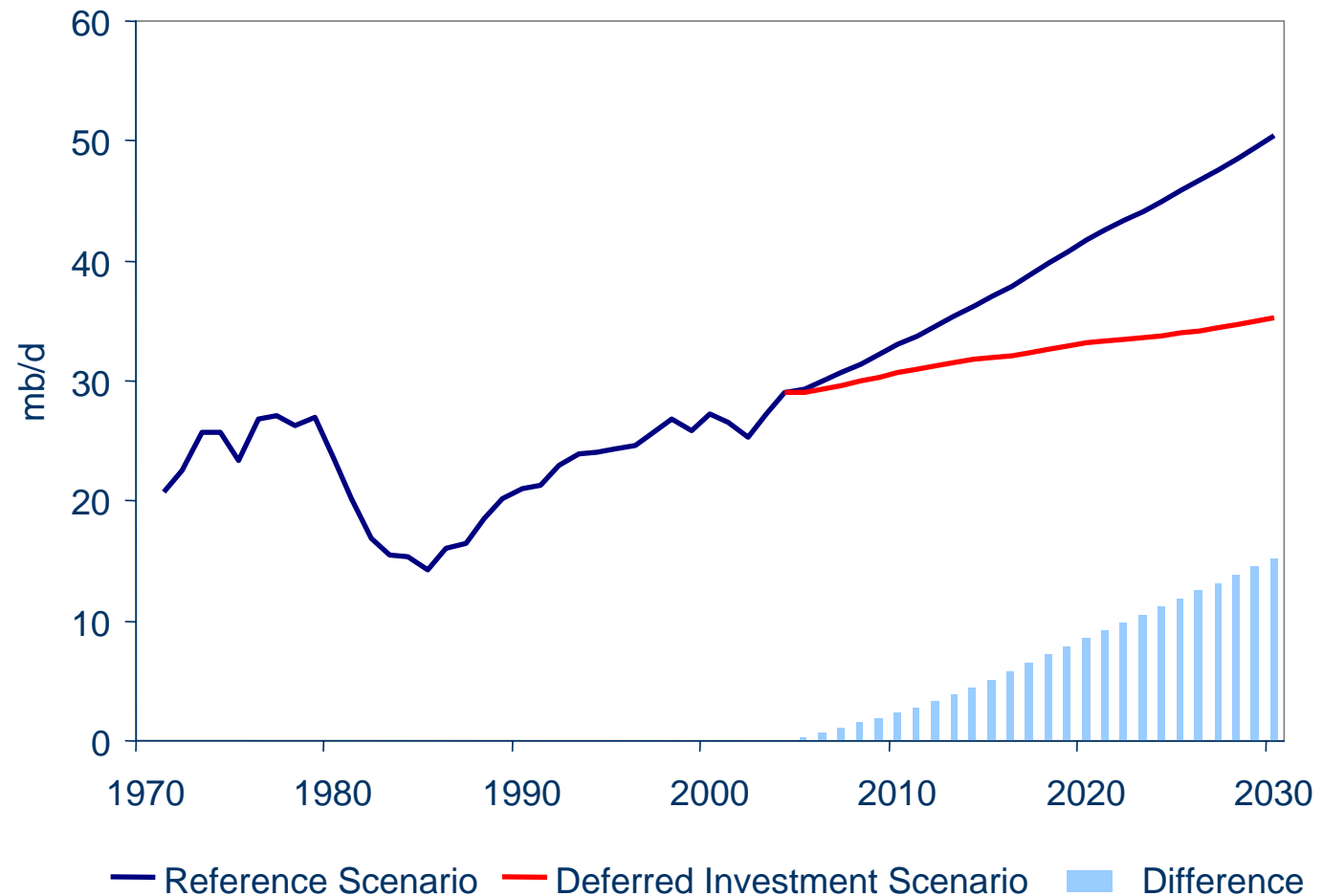
The power sector absorbs more than 60% investment needs

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MENA Crude Oil Production (including NGLs)



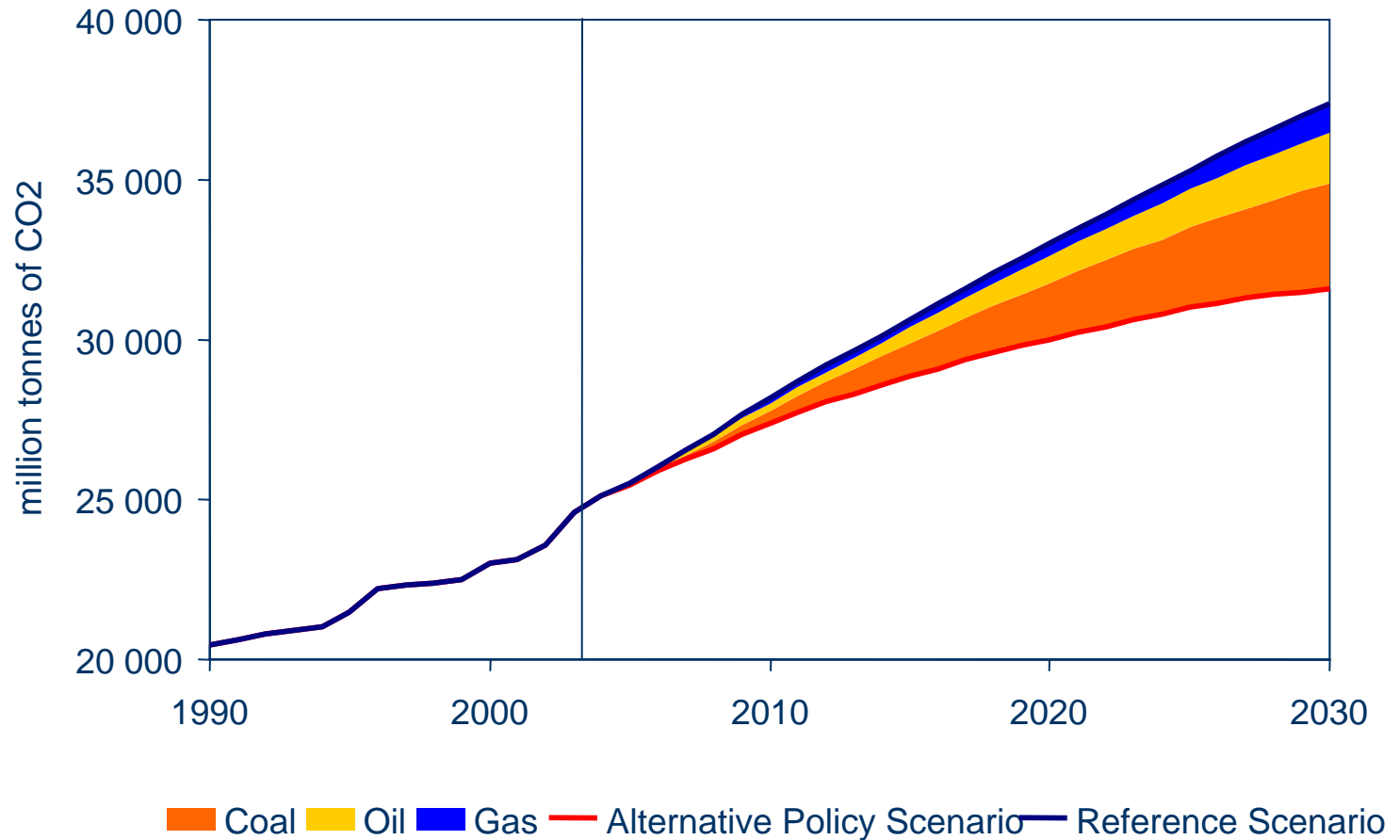
MENA's share of global oil production rises from 35% in 2004 to 44% in 2030 in the RS, but falls to 33% in the DIS

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Global Energy-Related CO₂ Emissions



In 2030, CO₂ emissions are 16% lower than in the Reference Scenario, but are still more than 50% higher than 1990

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G8 Communiqué 8 July 2005



- **2 Focuses**
 - ◆ “Climate Change, Energy and Sustainable Development”
 - ◆ “Africa”
- **Plan of Action assigned key role to IEA**



10 IEA Tasks

- **Partner in the Dialogue - advise on alternative energy scenarios & strategies**
- **Transforming the way we use energy**
 - ◆ Cross-cutting task: energy indicators
 - ◆ Buildings
 - ◆ Appliances
 - ◆ Surface transport
 - ◆ Industry
- **Powering a clean energy future**
 - ◆ Cleaner fossil fuels
 - ◆ CO₂ capture and storage
 - ◆ Renewable energy
 - ◆ Electricity grids
 - ◆ Promoting networks for Research and Development



Resources and Itinerary

- More than 20 man-years of work by the IEA Secretariat
- Finish 2008 (Japan G8-summmmit)
- Interim reporting to G8 summits 2006 (Russia) and 2007 (Germany)
- Input from IEA Standing Committees and IEA Implementing Agreements will be essential



IEA Energy Technology Collaboration in Implementing Agreements

- **More than 5000 participants from IEA member & non-member countries**
- **Energy research and technology development, demonstration and deployment**
 - ◆ **Fossil Fuels**
 - ◆ **Renewable energy**
 - ◆ **Efficient End-Use**
 - ◆ **Nuclear Fusion**
 - ◆ **Information Centres / cross-cutting**
- **Programmes and networks bring together**
 - ◆ **Scientists and engineers**
 - ◆ **Policy makers**
 - ◆ **Industry experts and decision-makers**



Promoting International Energy Technology Networks




- Missions to Brazil, China, India, Mexico, South Africa
- Based on existing work in IEA
Implementing Agreements to establish (closer) cooperation with
 - ◆ Industry
 - ◆ World Bank / IFIs
- IEA created **NEET initiative**



IEA NEET Initiative

(Networks of Expertise in Energy Technology)

- Launch at CSD, 3 May 2006, New York (part of G8 - Promoting Networks for R&D)
- Deliverables
 - ◆ 6 collaboration workshops
 - ◆ 7 – 10 international key events
 - ◆ Inventory of global collaborative energy efforts – IEA portal



IMPLEMENTING THE 2005 G8 GLENEAGLES PLAN OF ACTION

IEA'S NEET INITIATIVE

NETWORKS OF EXPERTISE IN ENERGY TECHNOLOGY

THROUGH

IEA'S INTERNATIONAL COLLABORATIVE PROGRAMME

A Call to Stakeholders

Developing and deploying clean, efficient energy technologies presents challenges for many nations around the world. In future years, meeting international obligations and serving potential export markets may become increasingly important. IEA's NEET Initiative stages events where energy technology experts and policy makers can share know-how and experience on technical issues, but also on institutional and market questions.

The IEA's NEET team plans a series of workshops in various countries during 2006, 2007 and 2008, as well as contributions to key international events. IEA's collaborative programmes will be presented, along with their technical and policy findings, on topics such as clean coal, carbon capture and storage, renewable energy and end-use technologies. Stakeholders from government, industry, the research community and academia will have the opportunity to explore possible co-operation through IEA's programmes. If you are interested in getting together with the NEET team, please get in touch now with: Antonio.Plueger@iea.org.

What benefits does international technology collaboration offer? Participants in IEA's international programmes for collaborative energy technology research, development and deployment point to many advantages.

- Links between the research, industrial and policy communities
- Information-sharing and networking
- Dialogues between countries with different economies
- Faster technology development and deployment
- Larger project scale and lower costs
- Harmonisation of technical standards

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.

To learn more about Implementing Agreements: <http://www.iea.org/textbase/technof/index.asp>.

IEA: a long history of energy technology collaboration

The International Energy Agency (IEA) was founded during the oil crisis of 1973-74. Its initial role was to co-ordinate measures in times of oil supply emergency. But energy technology collaborative R&D was also written into its mandate. More recently, climate concerns have further underlined the need for international co-operation. Today IEA has 26 member countries.

For more than 30 years, technology collaboration has been a major force for advancing progress with cleaner, more efficient energy technologies. To date more than 440 partners have signed up to around 40 programmes under IEA Implementing Agreements. They work on fossil fuels, on renewable energy, on end-use technologies including electricity, on fusion power and cross-cutting energy technology issues. Some 5 000 to 10 000 experts are involved world wide. An important focus is getting better technologies into the market-place.



Scenario Analysis and Modeling

- Energy Technology Perspectives (ETP)
Publication end of March 2006
- World Energy Outlook (WEO) 2006
Publication November 2006



Global Energy Technology Perspectives

- Bi-annual technology office publication
- 1st version issued May 2006
- Focus on technology RD&D and perspectives for investment
- Includes detailed technology assessment and scenario analysis
- Shows technology pathways for CO₂ emissions reduction

To be complemented by a new IEA product:
Energy Technology Handbook (ETH), test run 2007



Cleaner Fossil Fuels

Global database with complete information on efficiency of fossil-based electricity generation

Report on best practices in power plant operation

Series of case studies on recently constructed plants

Report on potential of upgrades and replacement

Report on potential of future developments

Global conference and three regional workshops

Joint effort of IEA and IEA Clean Coal Centre in collaboration with European Commission, World Energy Council, VGB

Focus on Russia and +Five Developing Countries

*Final Report to the G8 in mid-2008
WB: Review of deliverables*



Workshops on Short-term Opportunities for CCS (1)

Coordination with the CSLF

Involvement of developing countries

- **Goal: To accelerate the development and commercialisation of Carbon Dioxide Capture and Storage**
- **Policy, technical and commercial issues – report to the G8 with specific recommendations**
- **Governments, private sector, NGOs, R&D organisations**



Workshops on Short-term Opportunities for CCS (2)

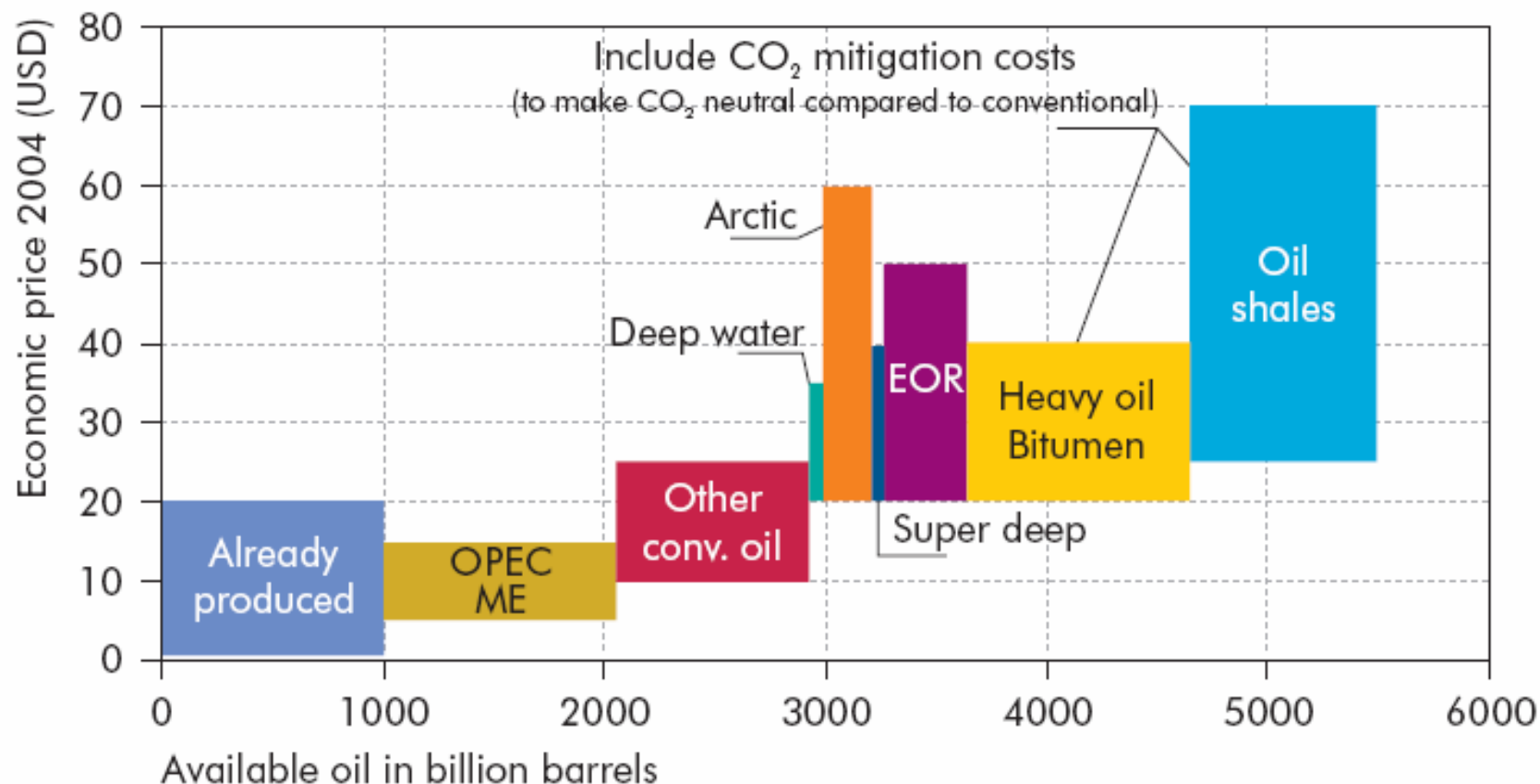
Three events to be held in

USA (2006), Norway (2007) and Canada (2007):

- **Issues Workshop (San Francisco, 22-23 August 2006)**
 - Technical
 - Commercial/Financial
 - Legal and Regulatory
 - Public Education and Outreach
 - International
- **Assessment Workshop (Norway)**
- **Recommendations Workshop (Canada)**



Most recoverable resources should become economical at oil prices significantly below current level



Source: IEA 2005, Resources to Reserves – Oil & Gas Technologies for the Energy Markets of the Future



Study on capture ready plant (1)

- Engineering and cost study on capture ready plant (IEA GHG R&D Programme);
- Report on policy instruments and incentives for capture ready plant (IEA Secretariat);
- Coordination with the CSLF
- Involvement of developing countries
- Dissemination efforts



Study on capture ready plant (2)

- Plant design to allow for CO₂ capture retrofit
- Scope of the “engineering” study
 - Power generation
 - NGCC (post combustion, pre-combustion)
 - PC steam cycles (post and oxy-combustion)
 - IGCC (pre-combustion)
 - H₂ plants
 - Fischer-Tropsch coal-to-liquids



Joint IEA/CSLF Activities

1st Workshop on Legal Aspects of Storing CO₂

Paris, 13 July 2004

2nd Workshop on Legal Aspects of Storing CO₂

Paris, 17 October 2006





For more information

www.iea.org

See: “Technology Agreements”