



Update on new IEA publication:

# Energy Technology Perspectives Scenarios and Strategies to 2050

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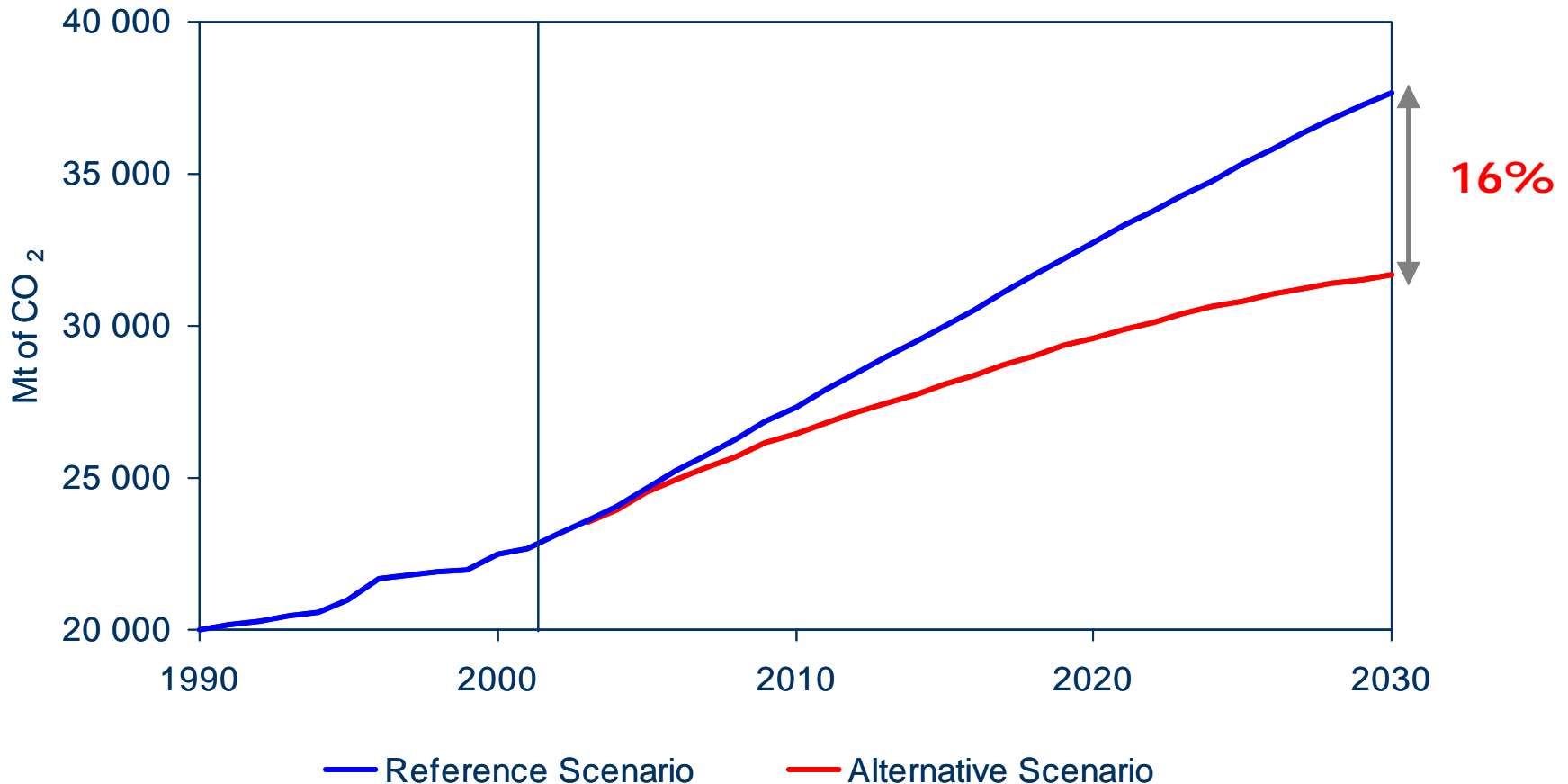


# Global Energy Technology Perspectives (GTP)

- Investigating the role energy technologies can play in long-term energy markets
- Contributes to the IEA response to the G8 Plan of Action (*“Advising on scenario strategies aimed at a clean, clever and competitive energy future”*)
- Provides input on energy technology trends to the Alternative Policy Scenario planned for the IEA *World Energy Outlook 2006*



# Global CO<sub>2</sub> Emissions in the WEO 2005 Reference & Alternative Scenarios



**CO<sub>2</sub> emissions are 16% less in the AS in 2030 but still up more than 50% from 1990-levels**



## More is Needed....

- ***Global Energy Technology Perspectives will look further and investigate how technologies can help changing the energy future***
- ***Covers both demand side;***
  - ◆ *transport*
  - ◆ *buildings*
  - ◆ *industry*
- ***and supply side;***
  - ◆ *renewables*
  - ◆ *Carbon Capture and Storage*
  - ◆ *nuclear*
  - ◆ *hydrogen*



# ETP 2006 Focus

- **Status and perspectives for key energy technologies in different sectors**
- **Global scenario analysis to illustrate how technologies can make a difference out to 2050**
- **Technology Strategies:**
  - ◆ **How much can different technologies deliver?**
  - ◆ **By when can they deliver?**
  - ◆ **What barriers have to be overcome to make them deliver both in the short term and over the next 3-5 decades?**
  - ◆ **Pathways to overcome barriers**



# Outline of Book

## **Part I Potential for Energy Technology to Impact the Global Energy Economy to 2050**

- 1. Introduction: Energy Security and Climate Change – The Technology Challenge**
- 2. Analytical Framework**
- 3. Scenarios to 2050: Energy Demand, Supply and CO2 Emissions**
- 4. Technology Strategies for a Clean, Clever and Competitive Energy Future**

## **Part II Energy Technology Status and Outlook**

- 5. Electricity Generation Technologies**
- 6. Building and Appliance Technologies**
- 7. Industry Technologies**
- 8. Road Transport Technologies and Fuels**



# Scenario Analysis

- **Scenarios analysed:**
  - ◆ **Baseline, building on WEO Reference Scenario**
  - ◆ **Accelerated Technology Scenarios (ACT)**
- **Analytical framework**
  - ◆ **ETO's ETP model (global multi-region energy technology model based on cost optimization)**
  - ◆ **Supplemented with new improved versions of demand side models developed in collaboration with EAD/LTO for WEO**
  - ◆ **Technology data collected and assessed in previous IEA projects on CCS, hydrogen and fuel cells, renewables and efficiency**



# Accelerated Technology Scenarios (ACT)

- A family of scenarios to demonstrate how technologies that are already commercial or under development can help towards a sustainable energy future
- All scenarios analyse the impact from measures to accelerated R&D, demontsration and deployment efforts as well as measures aimed at giving incentives for low-carbon technologies
- The scenarios differ in terms of assumptions for nuclear, CCS, renewables, advanced biofuels, hydrogen fuel cells and energy efficiency progress



# Draft Key Messages

- We can indeed depart from our current unsustainable energy path
- By using a portfolio of current and emerging technologies the world can enhance energy security, stimulate economic growth and avert the trend of increasing CO<sub>2</sub> emissions
- The most important technologies and practices are;
  - ◆ Improved energy efficiency;
  - ◆ Clean coal with CCS;
  - ◆ Renewables, including biofuels
  - ◆ Nuclear
  - ◆ Hydrogen and fuel cells
- A lot can be done even if certain key technologies would not deliver and more can be achieved if R&D efforts succeed with technologies such as hydrogen-fuel cells and advanced biofuels
- Urgent action is needed to unlock the potential of existing technologies and ensure that new are developed