The context

- Need a global energy technology revolution to meet climate change and energy security challenges.

- Some early signs of progress, but much more needs to be done.
  
  - Which technologies can play a role?
  
  - What are the costs and benefits?
  
  - What policies are needed?
Global energy-related CO₂ emissions in the Baseline and BLUE Map scenarios

Global CO₂ emissions double in the Baseline, but in the BLUE Map scenario abatement across all sectors reduces emissions to half 2005 levels by 2050.

Key technologies for reducing global CO₂ emissions

A wide range of technologies will be necessary to reduce energy-related CO₂ emissions substantially.
Primary energy demand by fuel and by scenario

By 2050, coal, oil and gas demand are all lower than today under the BLUE Map scenario.

Crude oil price

Impact of CO₂ price on costs for crude oil:
2020 50 USD/t CO₂ = 21 USD/bbl: 90+21 = 111 USD/bbl
2030 110 USD/t CO₂ = 43 USD/bbl: 90+43 = 133 USD/bbl
2050 175 USD/t CO₂ = 73 USD/bbl: 70+73 = 143 USD/bbl
Decarbonising the power sector – a new age of electrification?

A mix of renewables, nuclear and fossil-fuels with CCS will be needed to decarbonise the electricity sector.

Average annual electricity capacity additions to 2050, BLUE Map scenario

Annual rates of investment in many low-carbon technologies must be massively increased from today’s levels.
Projected electric and plug-in hybrid vehicle sales through 2020, based on national targets

Figure based on announced national sales and stock targets, with assumed 20% annual sales growth after target is met, if target is before 2020 (e.g. China’s target is for end of 2011).

EV / PHEV sales could reach nearly eight million by 2020
Smart grids allow better management of the grid and can facilitate the deployment of low-carbon technologies, such as renewables and electric vehicles.

Even using a 10% discount rate, fuel savings in the BLUE Map scenario more than offset the additional investment required.
Contributions to emissions reductions in OECD Europe

End-use sector measures contribute nearly two-thirds of the emissions reductions between the Baseline and BLUE scenarios in 2050.
Decarbonisation of power generation in OECD Europe

A mix of nuclear, renewables and fossil-fuels with CCS will be needed to decarbonise the electricity sector.

CO₂ emissions in the buildings sector in OECD Europe

Decarbonisation of the electricity sector contributes over half of emissions reduction in the buildings sector.
Key messages

- Some early signs of an energy technology revolution, but change is still fragile and fragmented
- Rapid, large-scale deployment of low carbon technologies is needed to halve CO₂ emissions by 2050
- This will also reduce fossil fuel use and improve energy security
- Fuel savings may outweigh additional investments
- Improved energy efficiency and decarbonising electricity are key; new technologies needed after 2030
- Urgent action required – emissions must peak by around 2020
- Non-OECD countries also need to cut emissions
- Governments must take lead to set the policy framework, but industry also has a role

Thank You

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