International Energy Agency

World Energy Outlook 2009

Development of European Energy markets in the context of long term technology and energy forecasts

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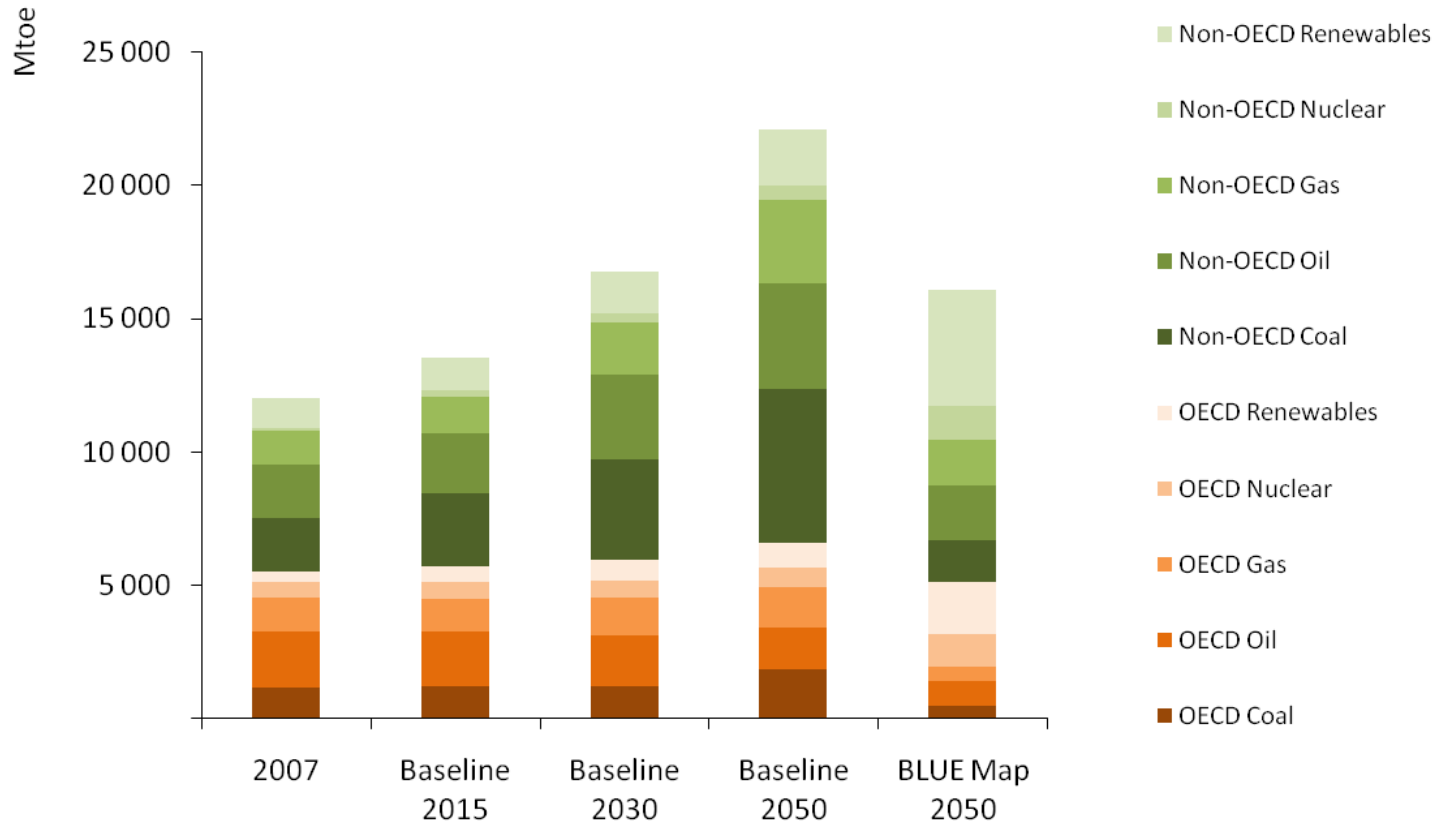
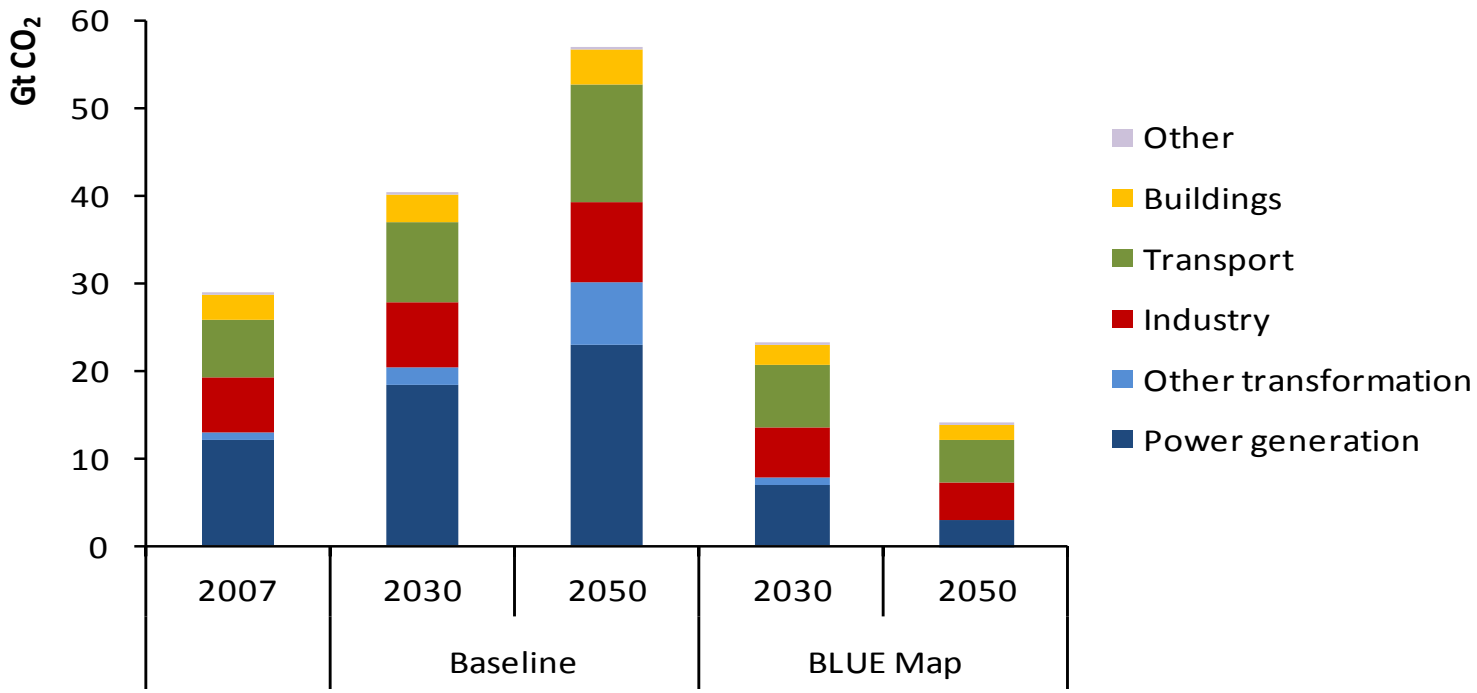
OECD and non-OECD primary energy demand in the Baseline scenario



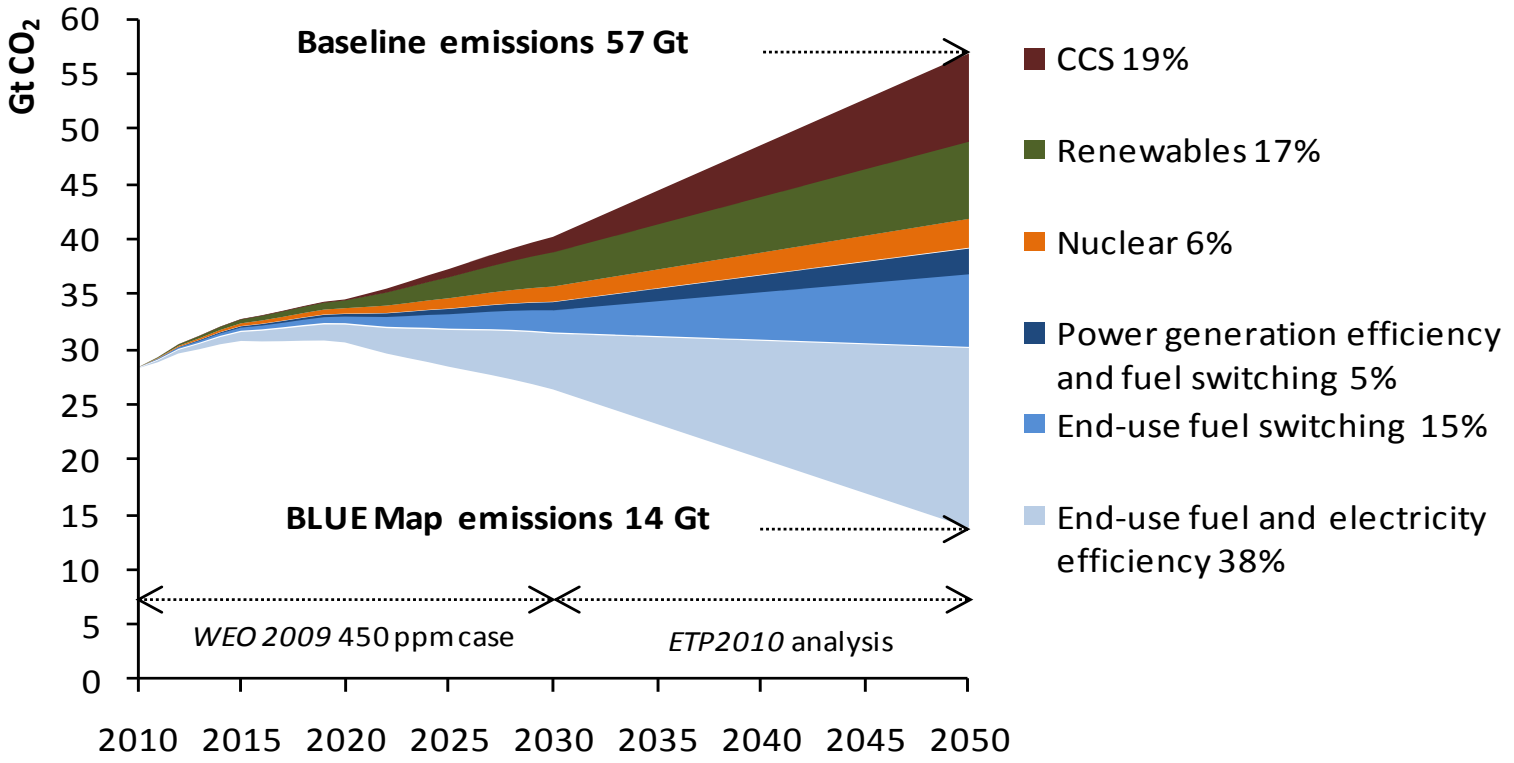
Primary energy demand in non-OECD countries is projected to increase much faster than in OECD countries in the Baseline scenario.

Global energy-related CO_2 emissions in the Baseline and BLUE Map scenarios



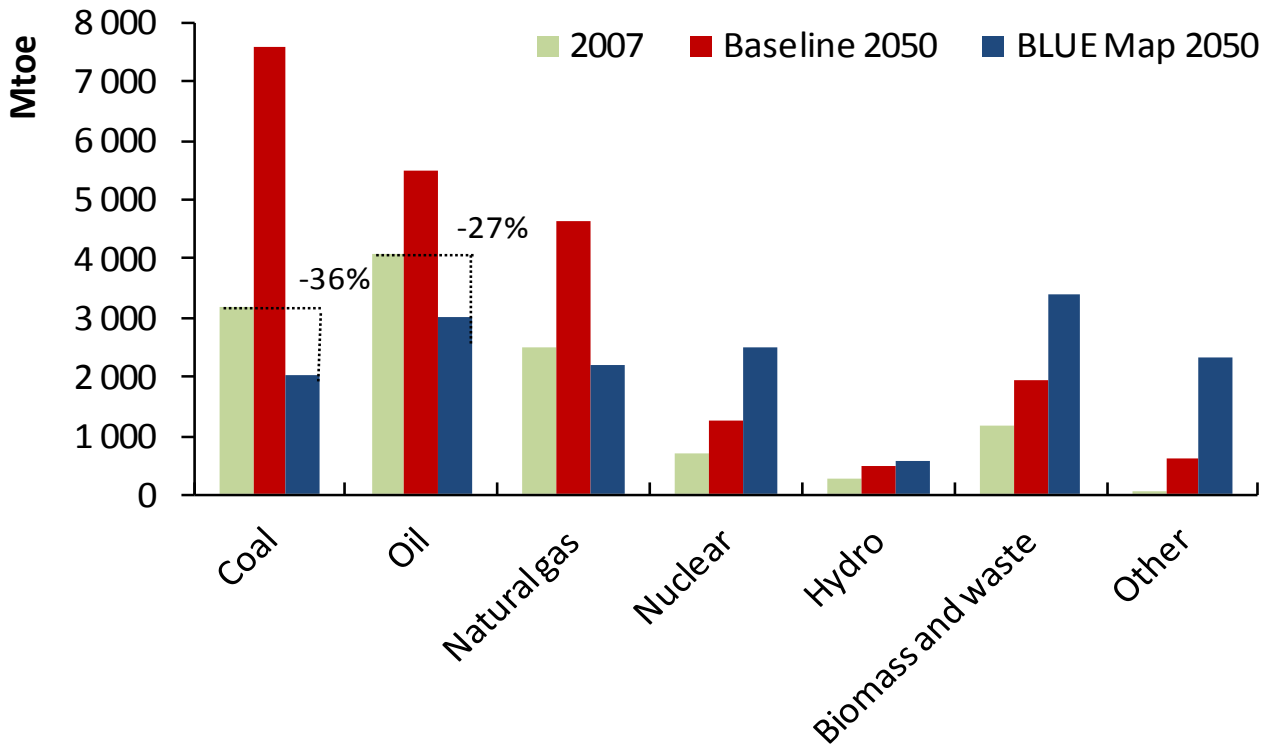
Global CO2 emissions double in the Baseline, but in the BLUE Map scenario abatement across all sectors reduces emissions to half 2005 levels by 2050.

Key technologies for reducing global CO_2 emissions



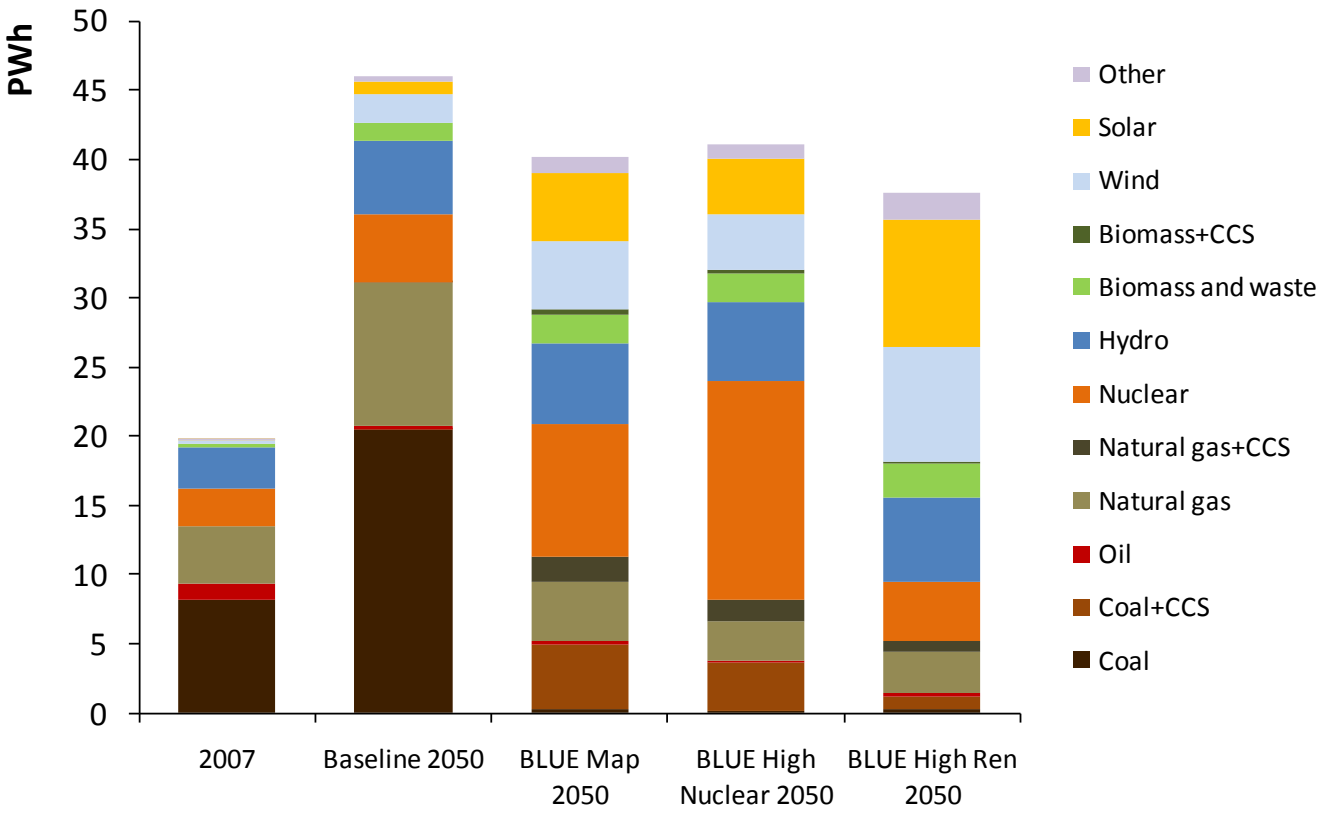
A wide range of technologies will be necessary to reduce energy-related CO_2 emissions substantially.

Primary energy demand by fuel and by scenario



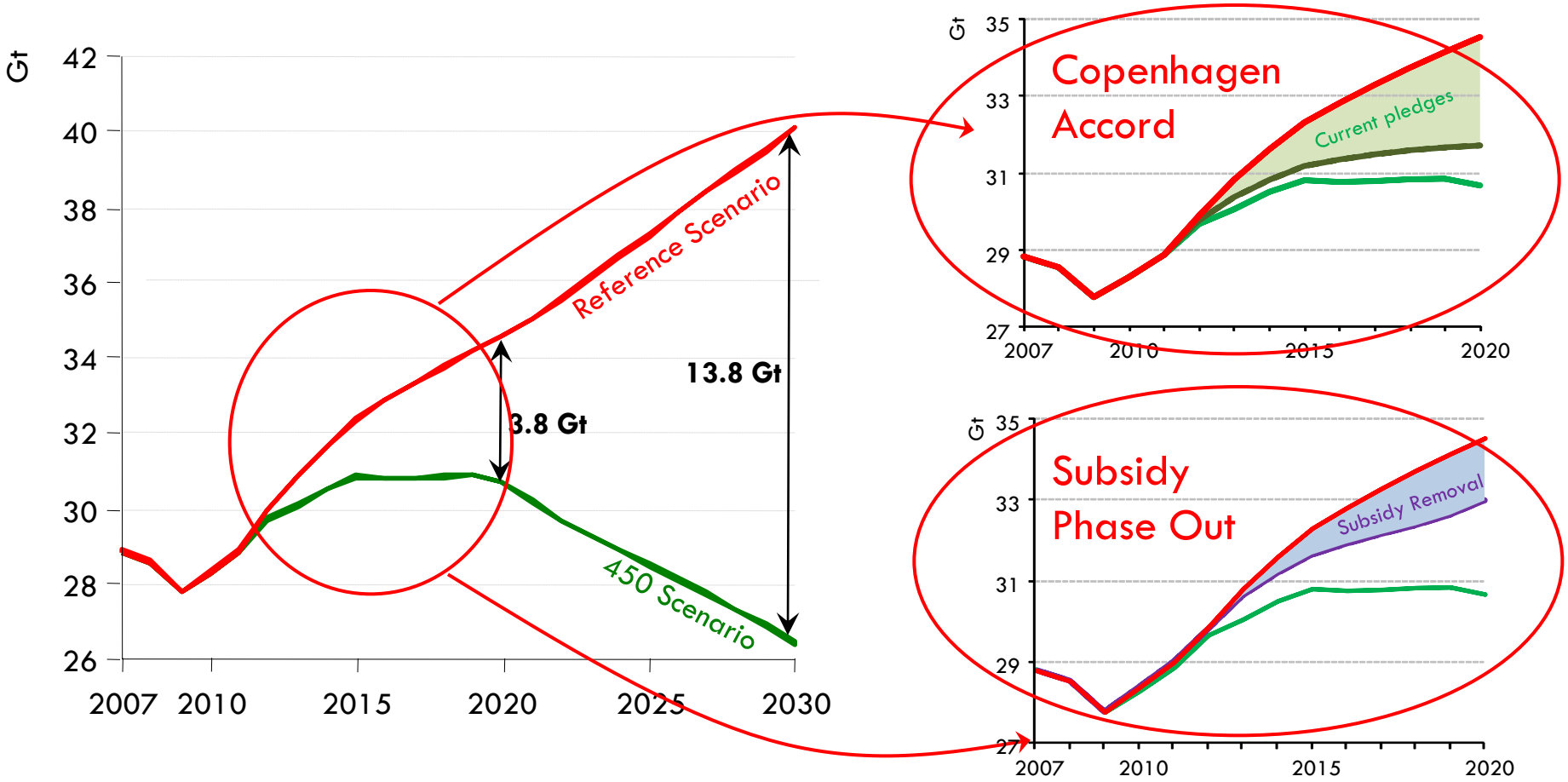
By 2050, coal, oil and gas demand are all lower than today under the BLUE Map scenario.

Decarbonising the power sector – a new age of electrification?



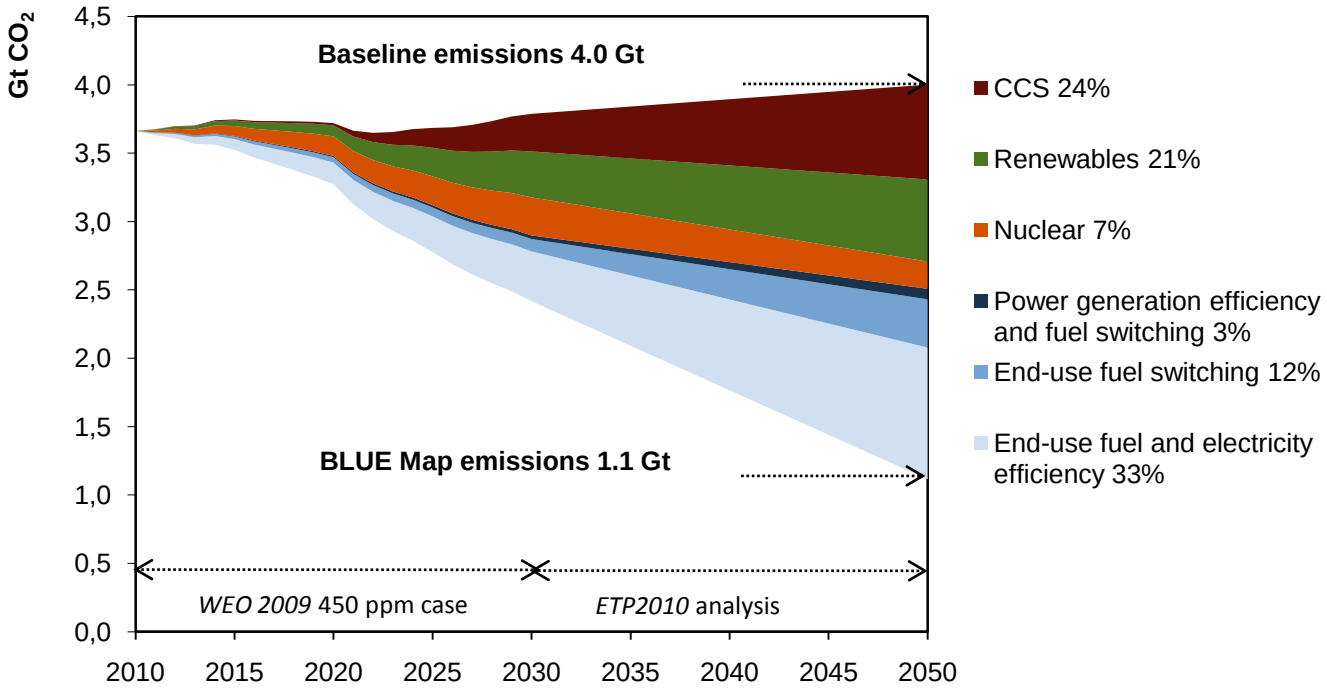
A mix of renewables, nuclear and fossil-fuels with CCS will be needed to decarbonise the electricity sector.

World abatement of energy-related CO_2 emissions



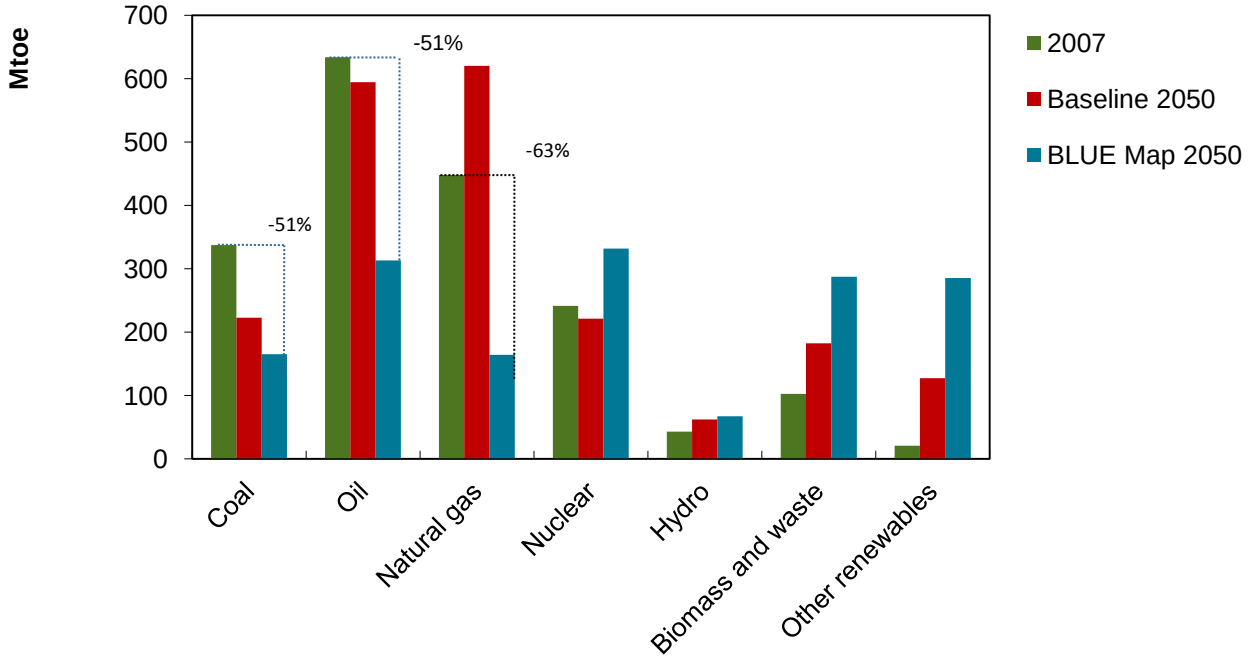
Although the savings are not strictly cumulative, the Copenhagen Accord and the G-20 commitment to phase out subsidies are complementary steps towards the 450 Scenario

Contributions to emissions reductions in OECD Europe



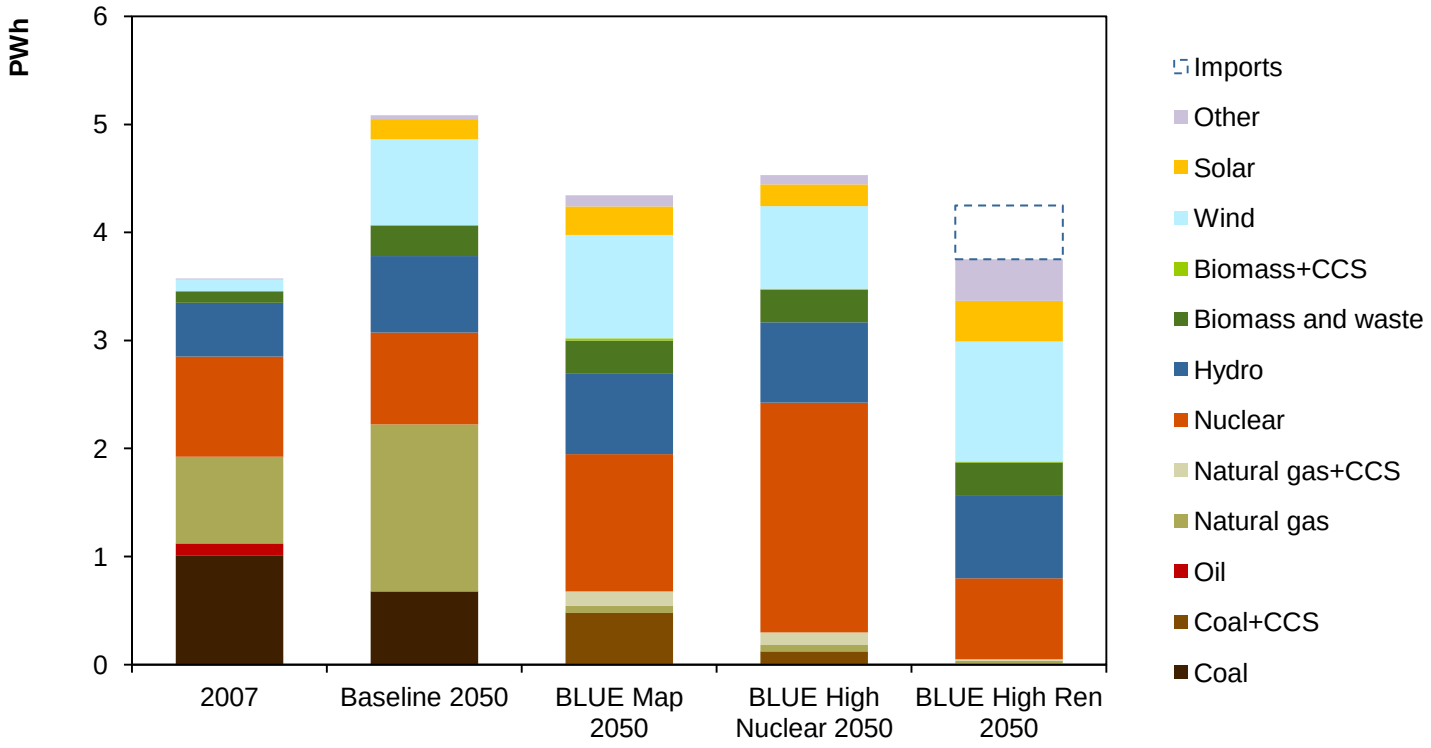
End-use sector measures contribute nearly two-thirds of the emissions reductions between the Baseline and BLUE scenarios in 2050.

Primary energy demand by fuel and by scenario in OECD Europe

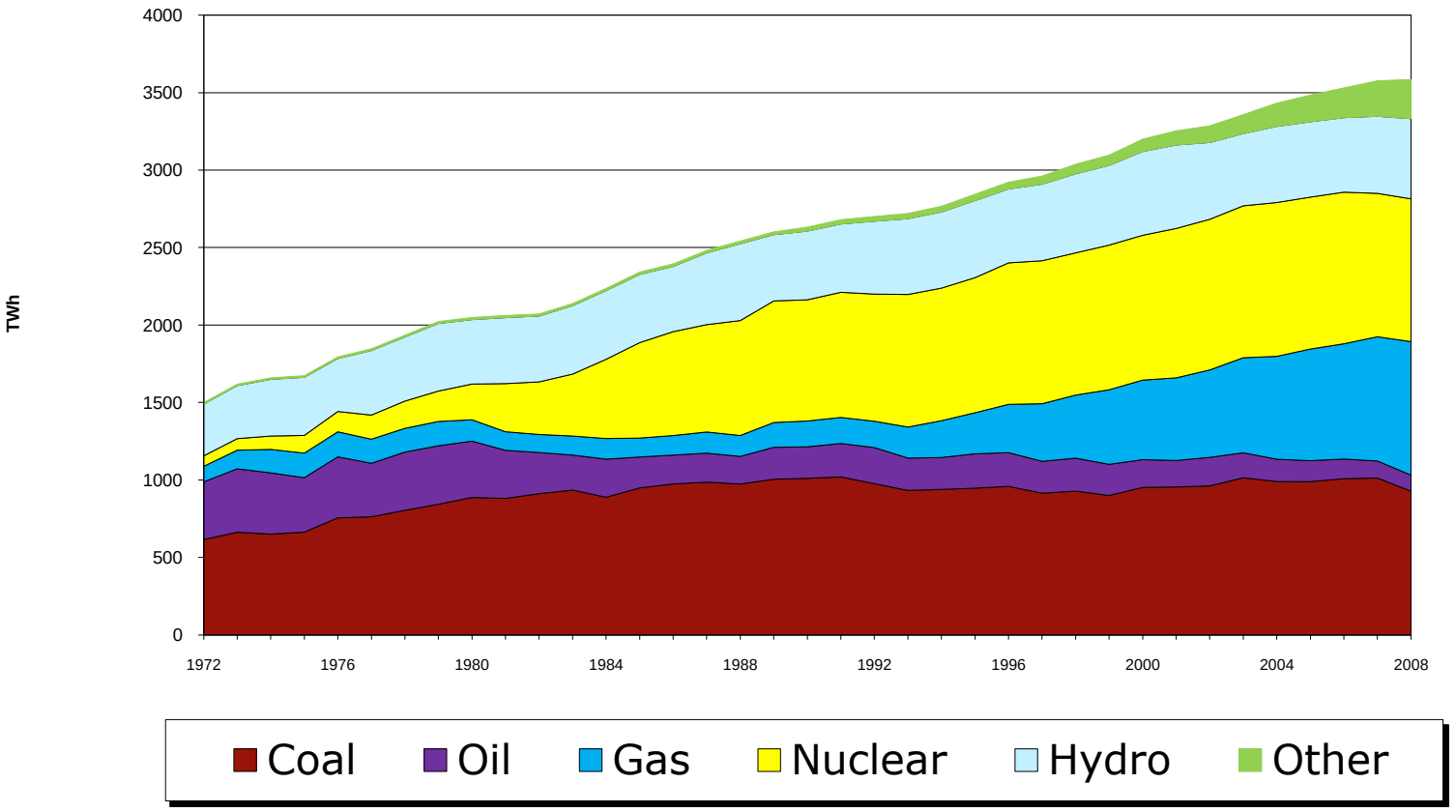


Fossil fuel demand is reduced to one half under the BLUE Map scenario

Decarbonisation of power generation in OECD Europe



OECD Europe electricity generation (1972-2008)

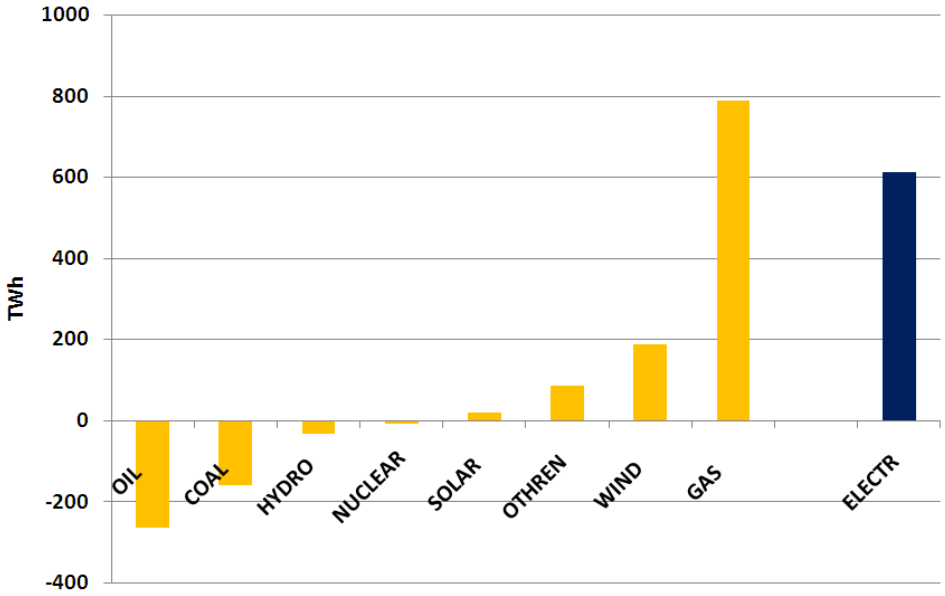


A Nuclear renaissance?

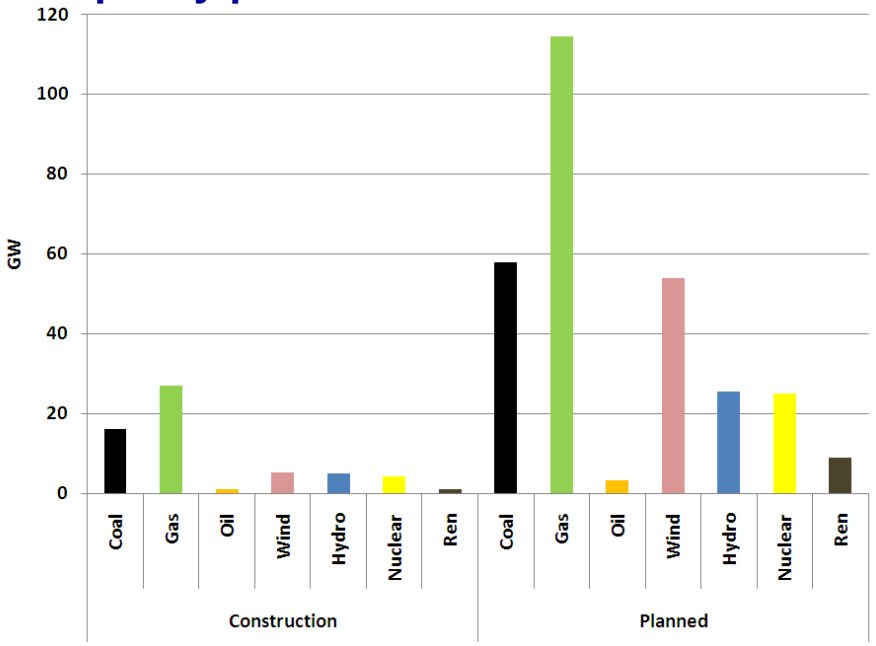
- 56 nuclear plants underway
-
- But in Europe and North America?
- US loan guarantees
- Many nations talking (UK, Italy)
- But when would new plants enter service?
- Extensions in Germany important-150 twh 2008

Gas remains the fuel of choice in Europe

OECD Incremental power generation by fuel 2000-09



Capacity planned and under construction



Source: IEA, based on Platts, company data.

- Most of incremental power in the OECD comes from gas
- Gas remains the fuel of choice
  - Most capacity under construction and planned is gas-fired

WHY GAS?—Many Good Reasons

- **Low Capex**
- **Short lead times**
- **Flexible, ideal with renewables**
- **Low carbon signature, and**
- **A natural hedge to power prices**

But How to Manage Variable Supply?

- **Coupled with flexible supply**
- **Strong transmission links enable power to be wheeled, and variable supply integrated over larger geographical area**
- **Storage technologies/smart grids**
- **Demand side management….**

Conclusions

- Gas is the fuel of Choice in OECD Countries
- It dominates plants under construction
- Nuclear and coal will struggle to compete in the near term
- Ambitious renewable goals may lower gas use, but
- Strong Policy Measures Needed
- Gas and Power Security are getting entangled