



International
Energy Agency

World Energy Outlook

The World Energy Outlook after the Financial Crisis

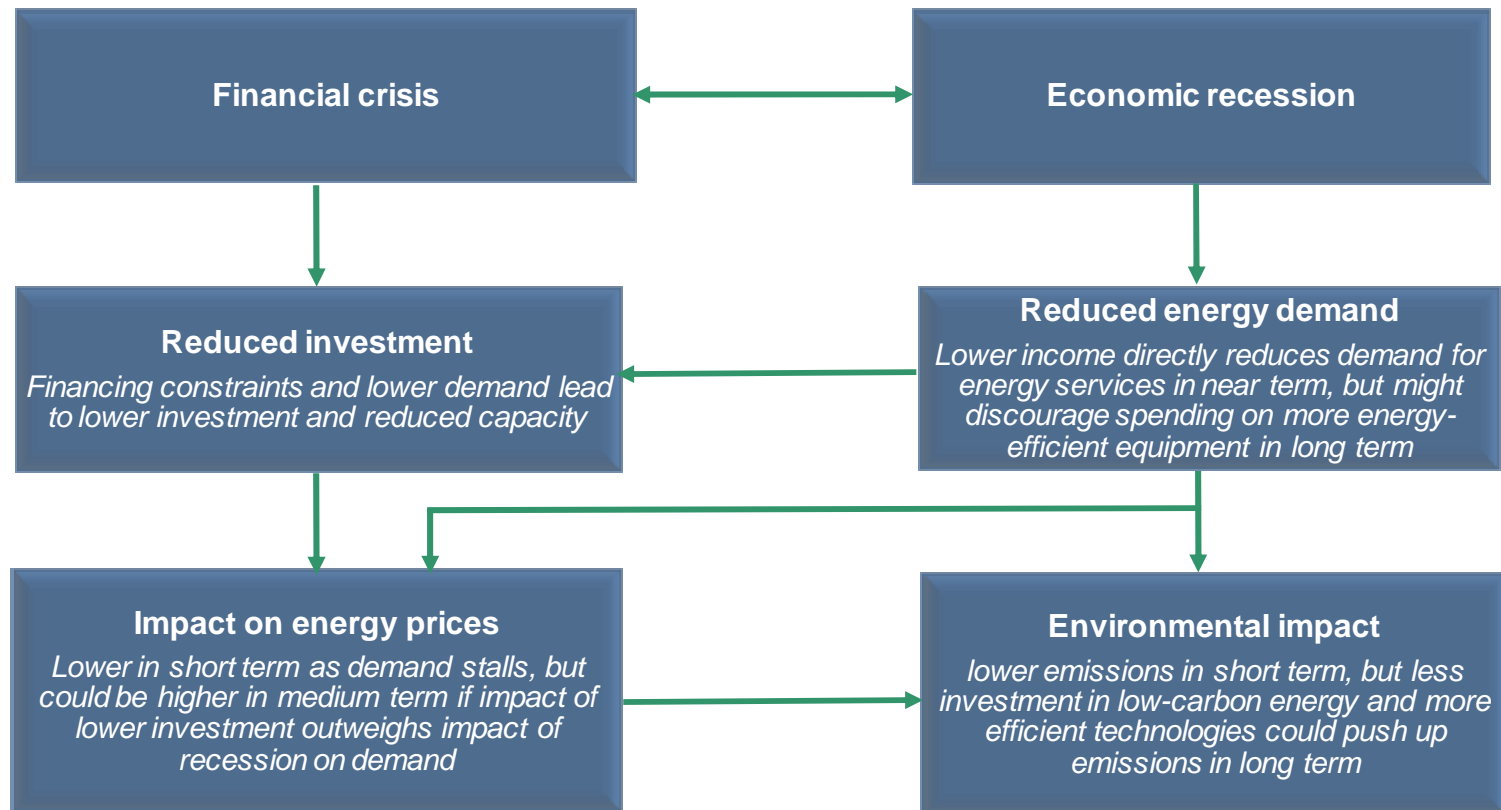
Presentation to the UNECE Committee on
Sustainable Energy
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International Energy Agency

The context

- The worst economic slump since the 2nd World War & signs of recovery – *but how fast?*
- An oil price collapse & then a rebound – *rising marginal costs point to higher prices in the longer term, but are current levels sustainable?*
- A slump in energy investment due to the financial & economic crisis – *will it bounce back quickly enough to avert a supply squeeze later?*
- Difficult negotiations on a post-2012 climate deal leading up to Copenhagen – *what is needed to avert catastrophic climate change?*

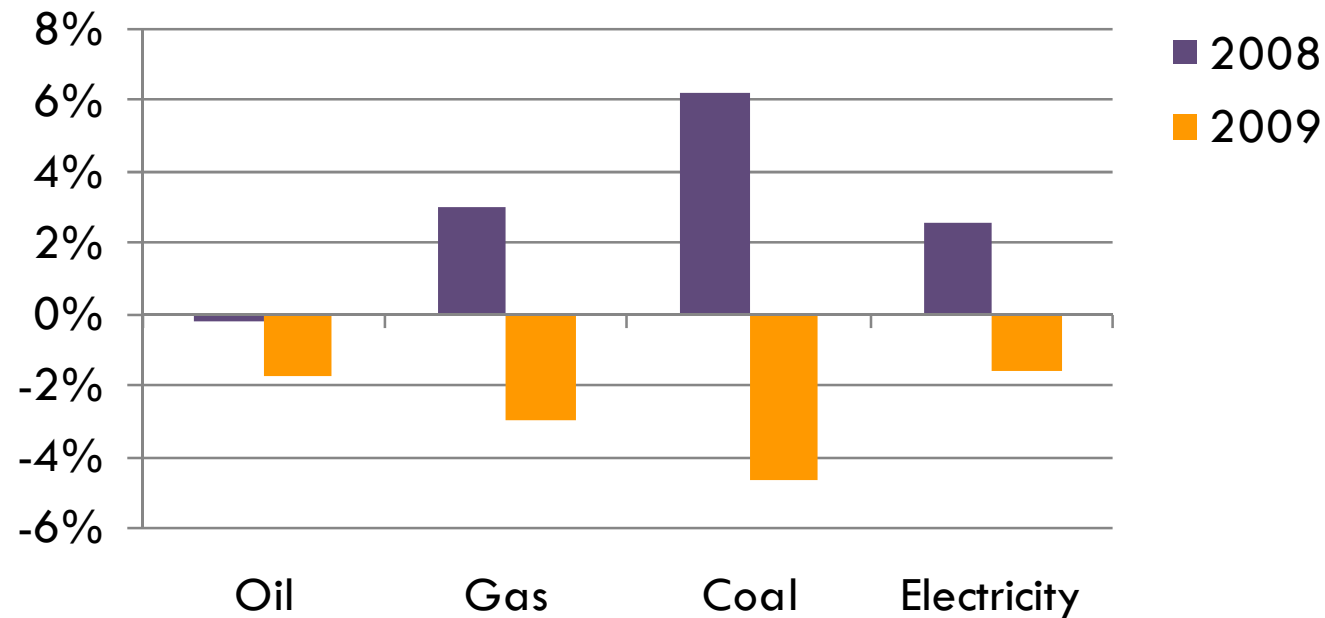
How the crisis is affecting the energy sector & the environment



The financial crisis has hit both energy demand & supply, with uncertain medium- to long-term consequences for energy prices & the environment

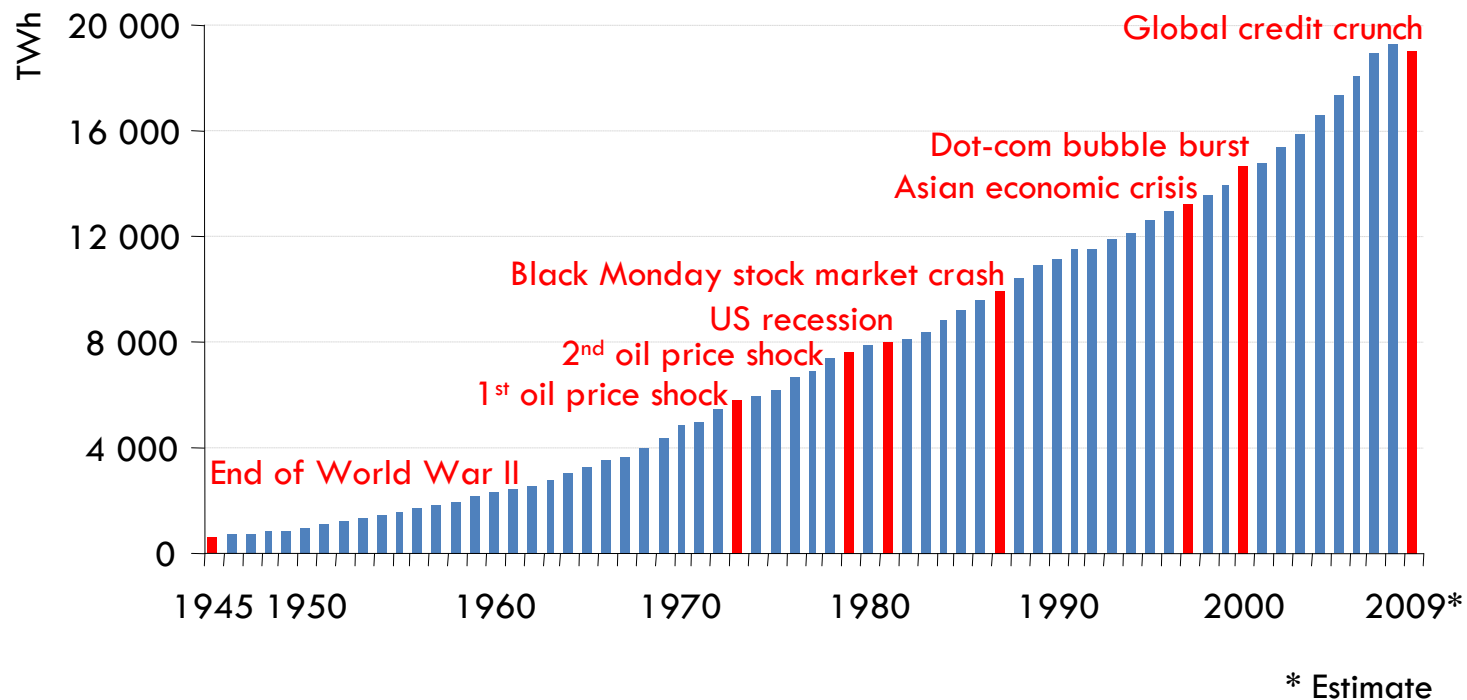
The impact of the crisis on energy demand so far

Change in primary demand
(preliminary data)



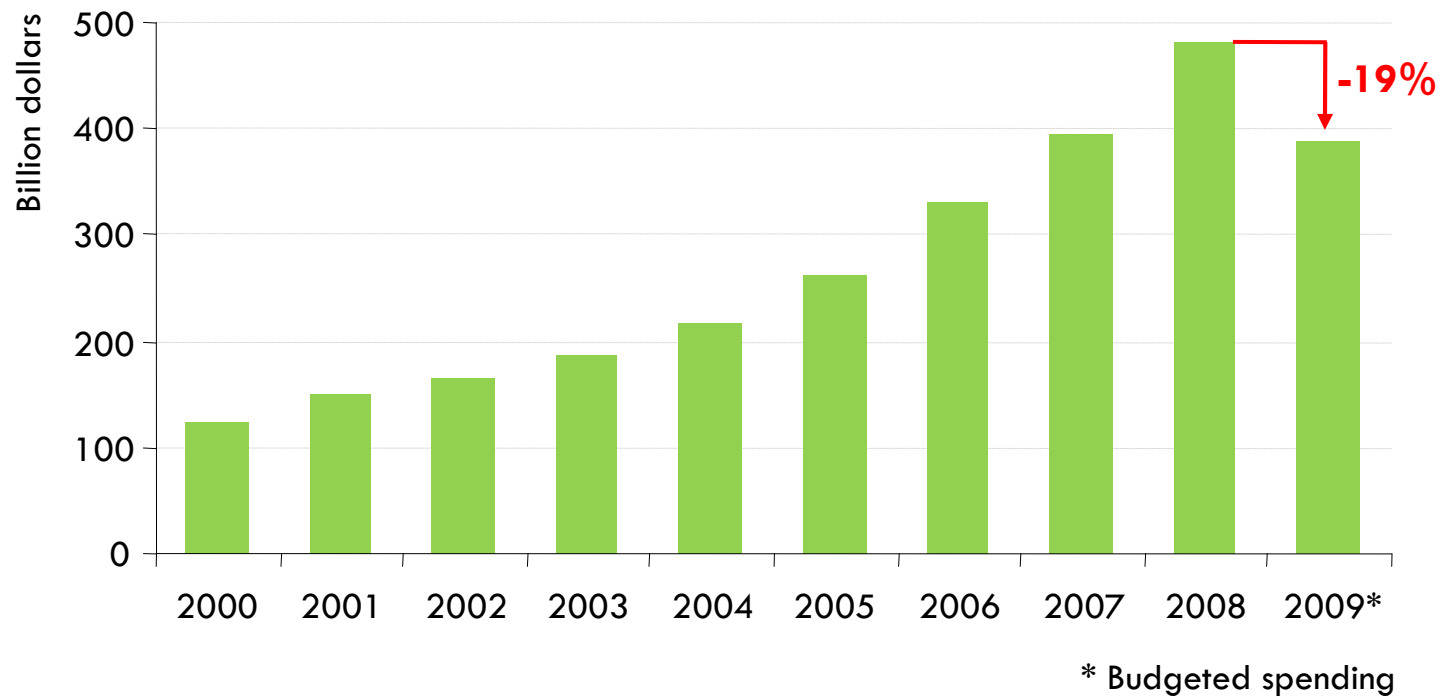
Globally, primary energy demand is set to drop by around 2% in 2009 – the first significant fall since 1981 – with most of the fall occurring in OECD countries

Historical world electricity consumption



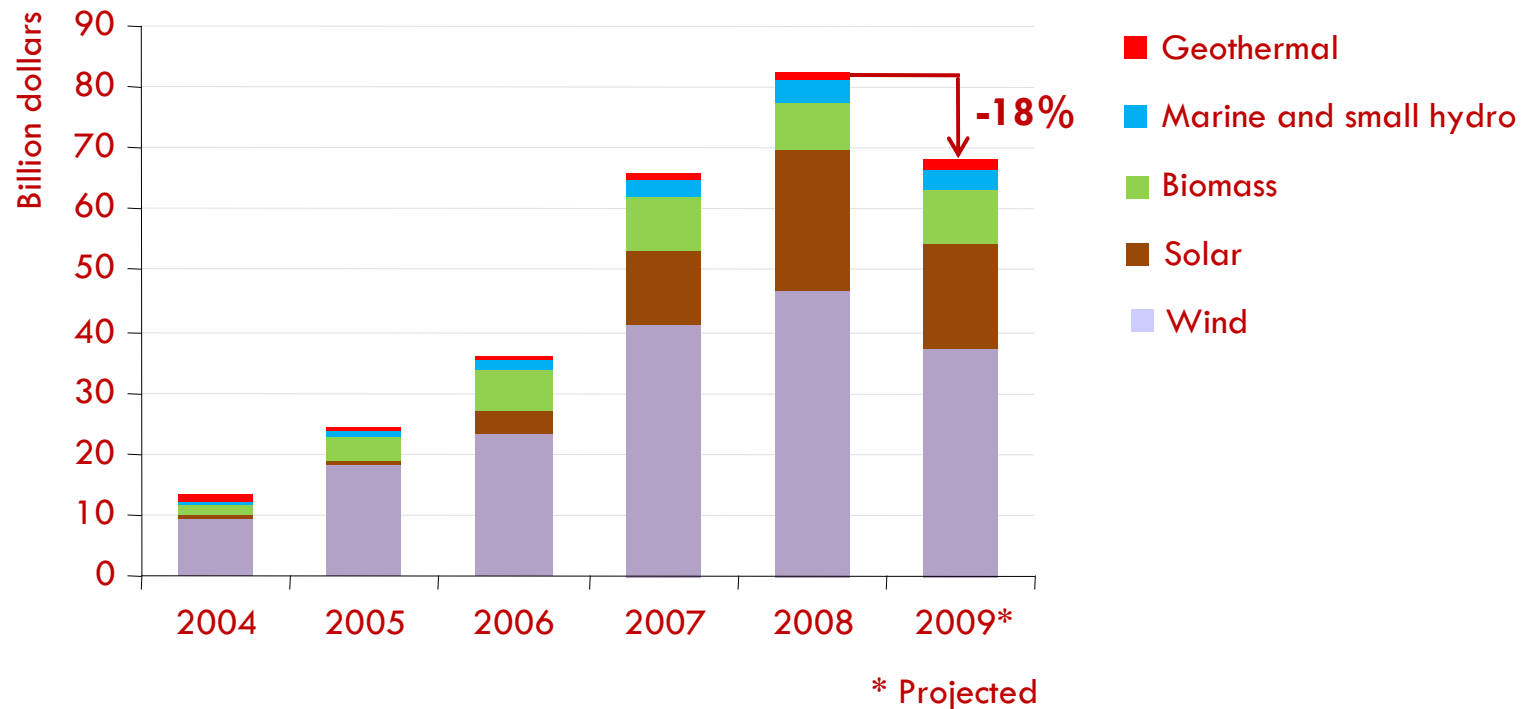
The financial & economic crisis is expected to result in a 1.6% drop in electricity demand in 2009 – the first fall of any kind since the end of the 2nd World War

Worldwide upstream oil & gas capital expenditures



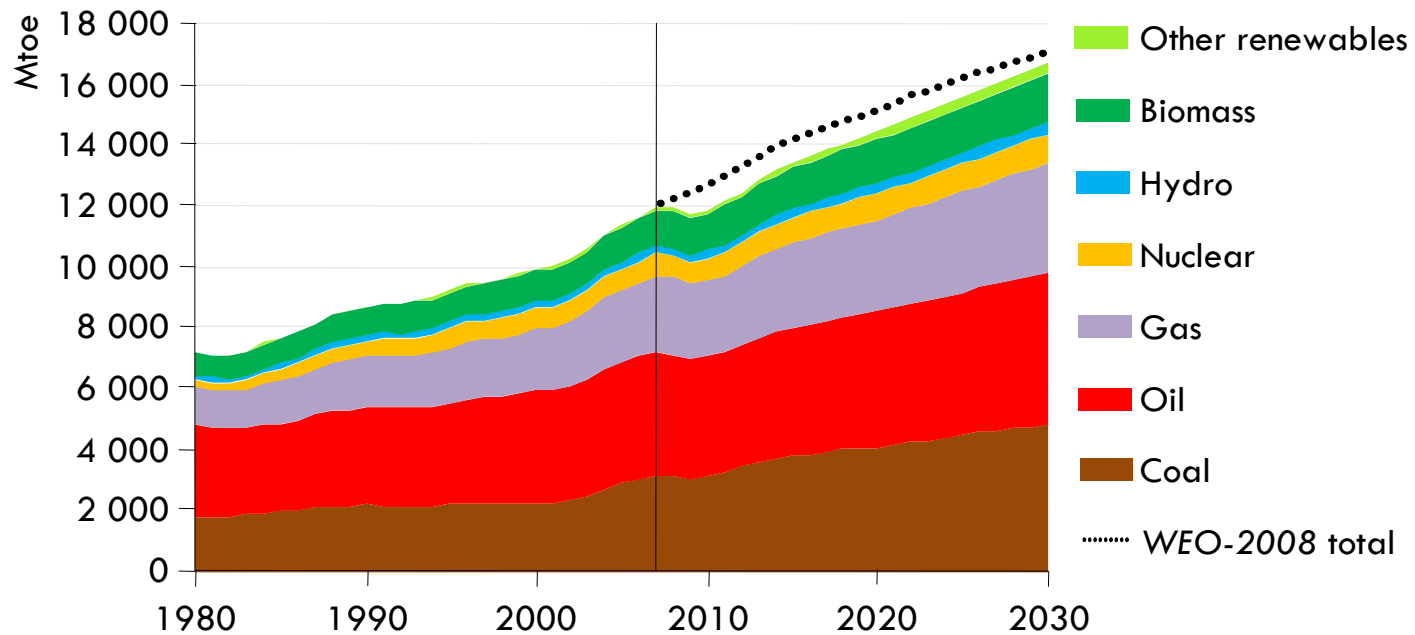
Global upstream spending (excluding acquisitions) is budgeted to fall by over \$90 billion, or 19%, in 2009 – the first fall in a decade

Global investment in new renewables-based power-generation assets



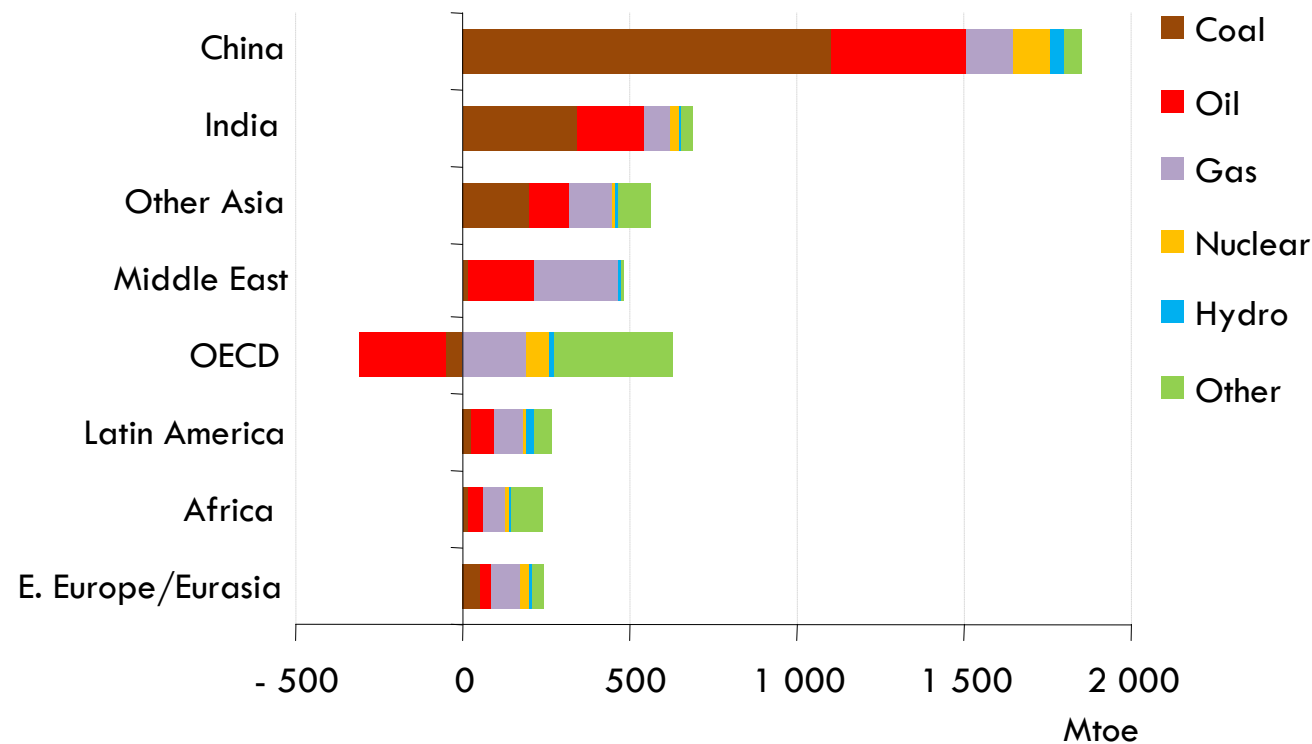
Renewables-based power investment is set to drop by almost one-fifth to under \$70 billion in 2009, though the fall would have been close to 30% without economic stimulus spending

World primary energy demand by fuel in the Reference Scenario



Global demand grows by 40% between 2007 and 2030, with 93% of the increase coming from non-OECD countries

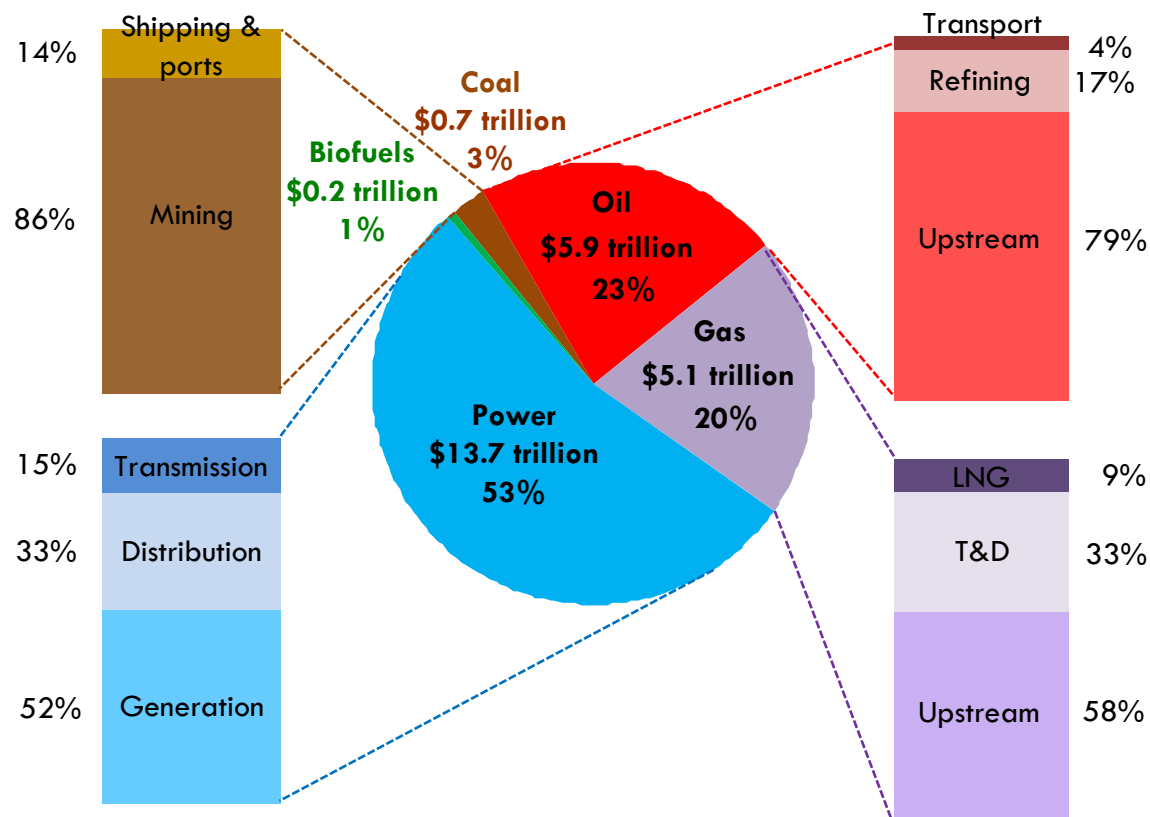
Change in primary energy demand by fuel in the Reference Scenario, 2007-2030



The increase in China's demand for energy – for coal in particular – dwarfs that of all other countries & regions

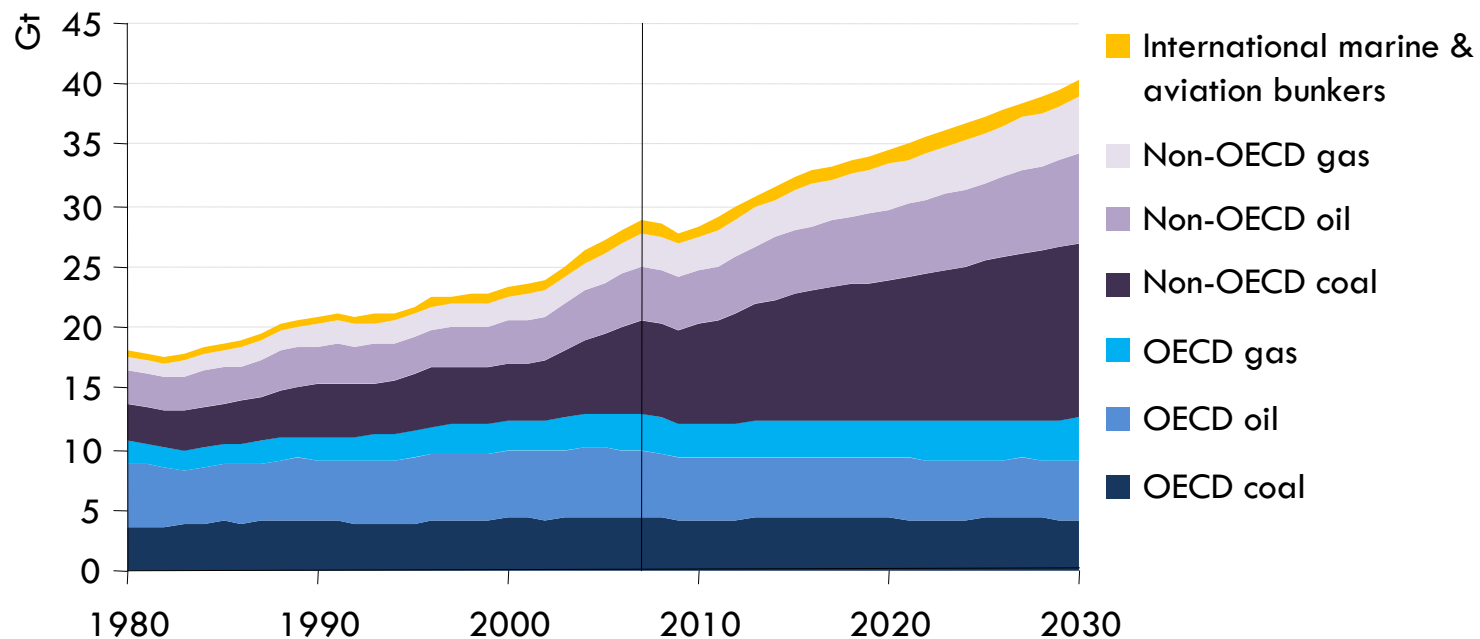
Cumulative investment in energy-supply infrastructure in the Reference Scenario, 2008-2030

Total investment = \$25.6 trillion (in year-2008 dollars)



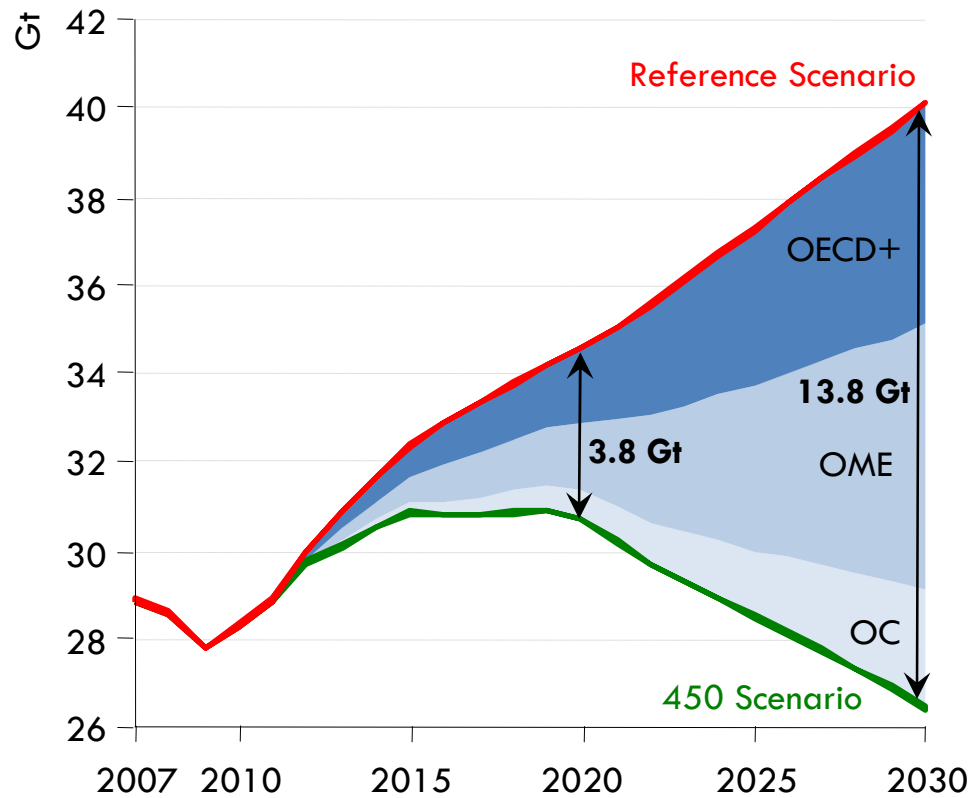
Just over half of all energy-investment needs to 2030 are needed in the power sector, mainly in non-OECD countries

Energy-related CO₂ emissions by fuel and region in the Reference Scenario

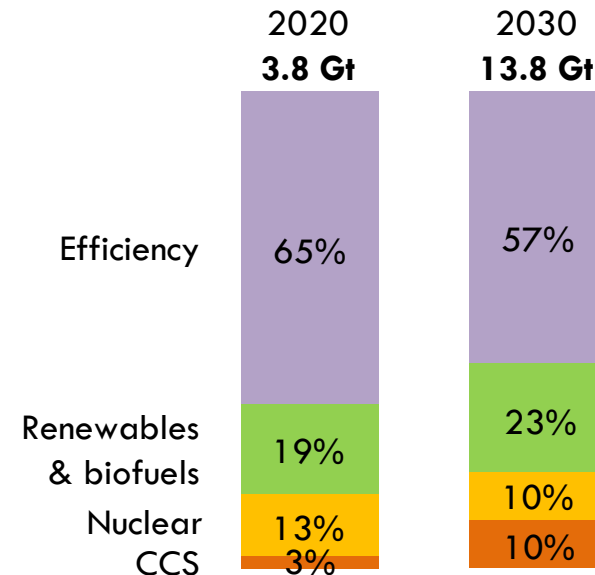


CO₂ emissions are expected to fall by 3% in 2009 to less than 28 Gt, but then rebound to 40 Gt in 2030 in the Reference Scenario

World abatement of energy-related CO₂ emissions in the 450 Scenario

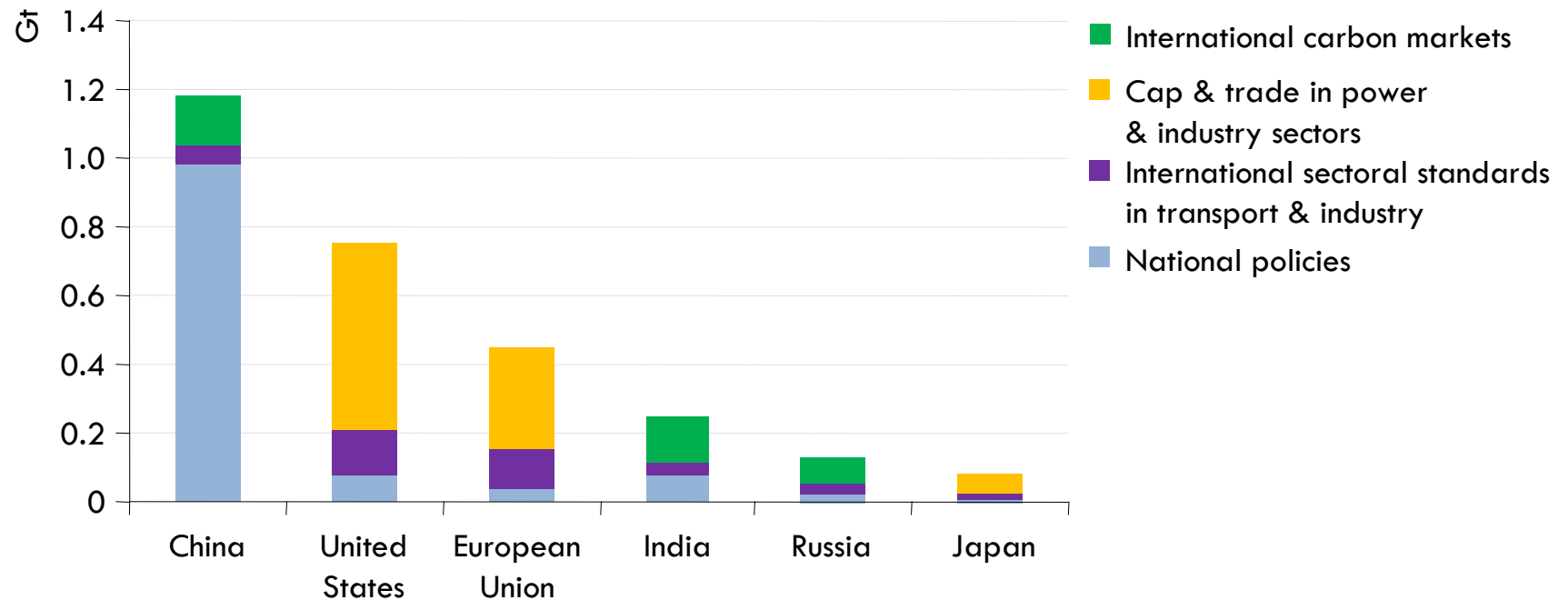


World abatement by technology



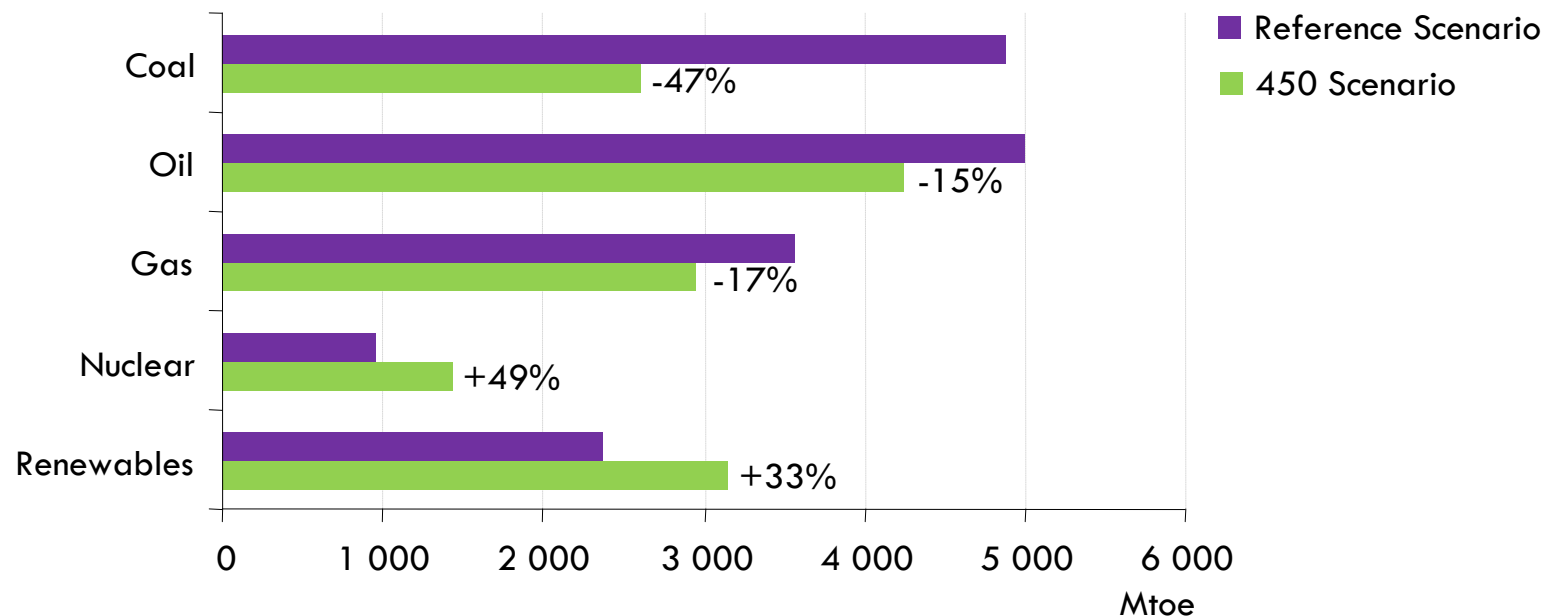
Measures to boost energy efficiency account for most of the reduction in emissions through to 2030, with renewables & CCS playing a growing role in the longer term

Abatement of energy-related CO₂ emissions in the 450 Scenario by key emitters, 2020



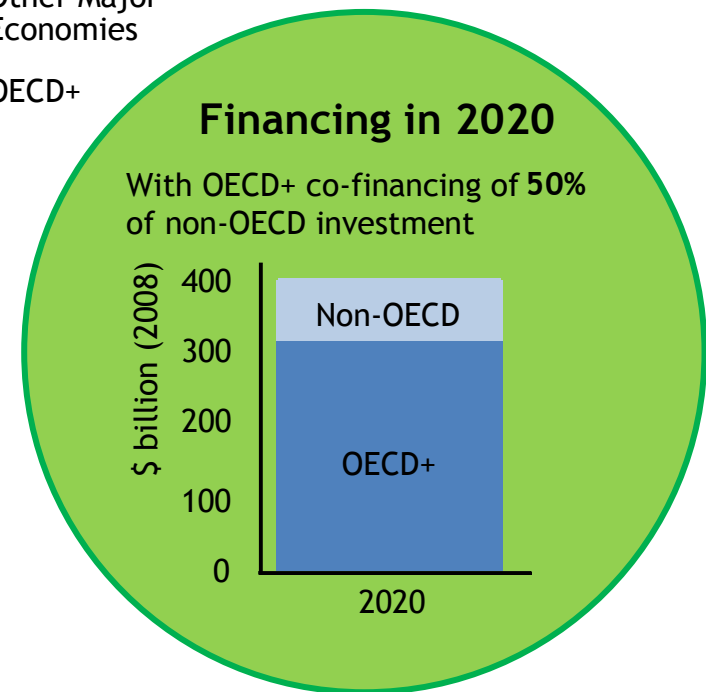
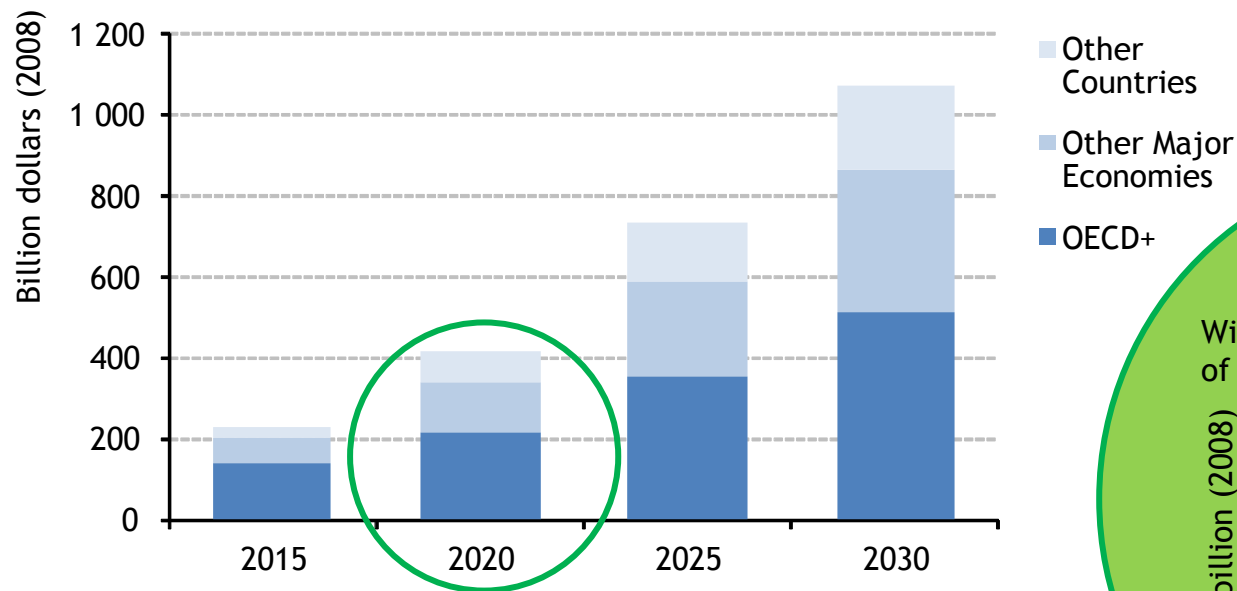
China, the United States, the European Union, India, Russia & Japan account for almost three-quarters of the 3.8 Gt reduction in the 450 Scenario

World primary energy demand by fuel & scenario in 2030



The share of fossil fuels in total primary energy demand in the 450 Scenario declines from 81% today to 68% in 2030, with gas remaining at close to today's levels of 20%

Additional investment in the 450 Scenario relative to the Reference Scenario



The 450 Scenario sees \$10.5 trillion of additional investment to the Reference Scenario, costing 0.5% of GDP in 2020 and 1.1% of GDP in 2030

Summary & conclusions

- The financial crisis has halted the rise in global fossil-energy use, but its long-term upward path will resume soon *on current policies*
- Energy investment has fallen sharply, threatening supply shortfalls & a renewed price shock in the medium term
- Tackling climate change & enhancing energy security require a massive decarbonisation of the energy system
- A 450 path towards 'green growth' would bring substantial benefits
- Natural gas can play a key role as a bridge to a cleaner energy future
- The challenge is enormous – *but it can and must be met*

WEO will be back in 2010...

- **In-depth analysis of prospects for renewables**
- **Analysis of the impact of fossil-energy subsidies (in support of G20)**
- **Special focus on the outlook for oil & gas in the Caspian region**



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Thank you

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