INTERNATIONAL ENERGY AGENCY

Meeting the Investment Challenge

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The 4th OPEC International Seminar

Petroleum: Future Stability and Sustainability

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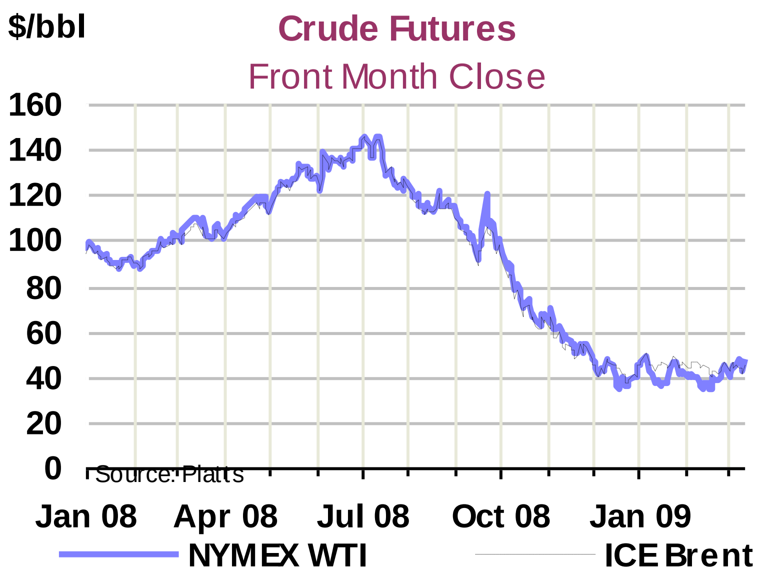
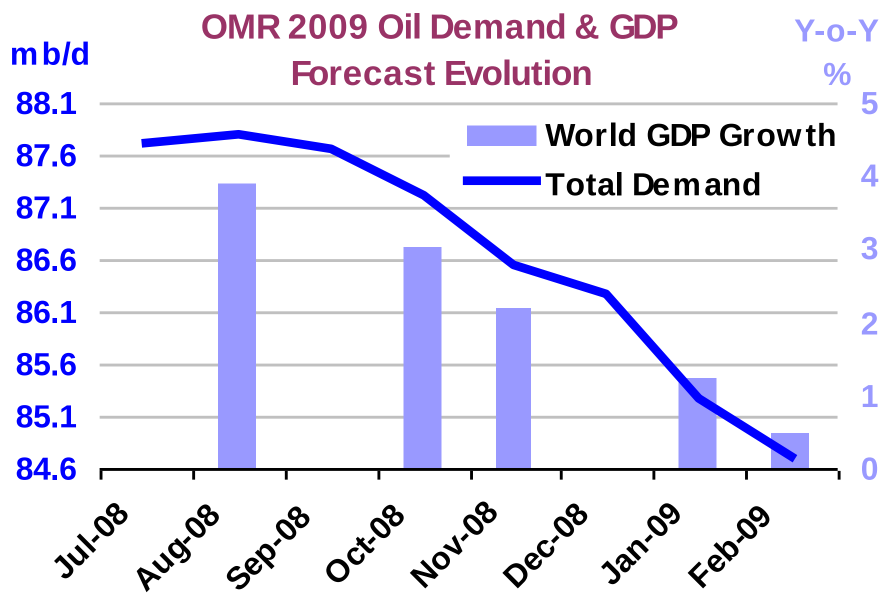
Worsening economic outlook underpins market weakening

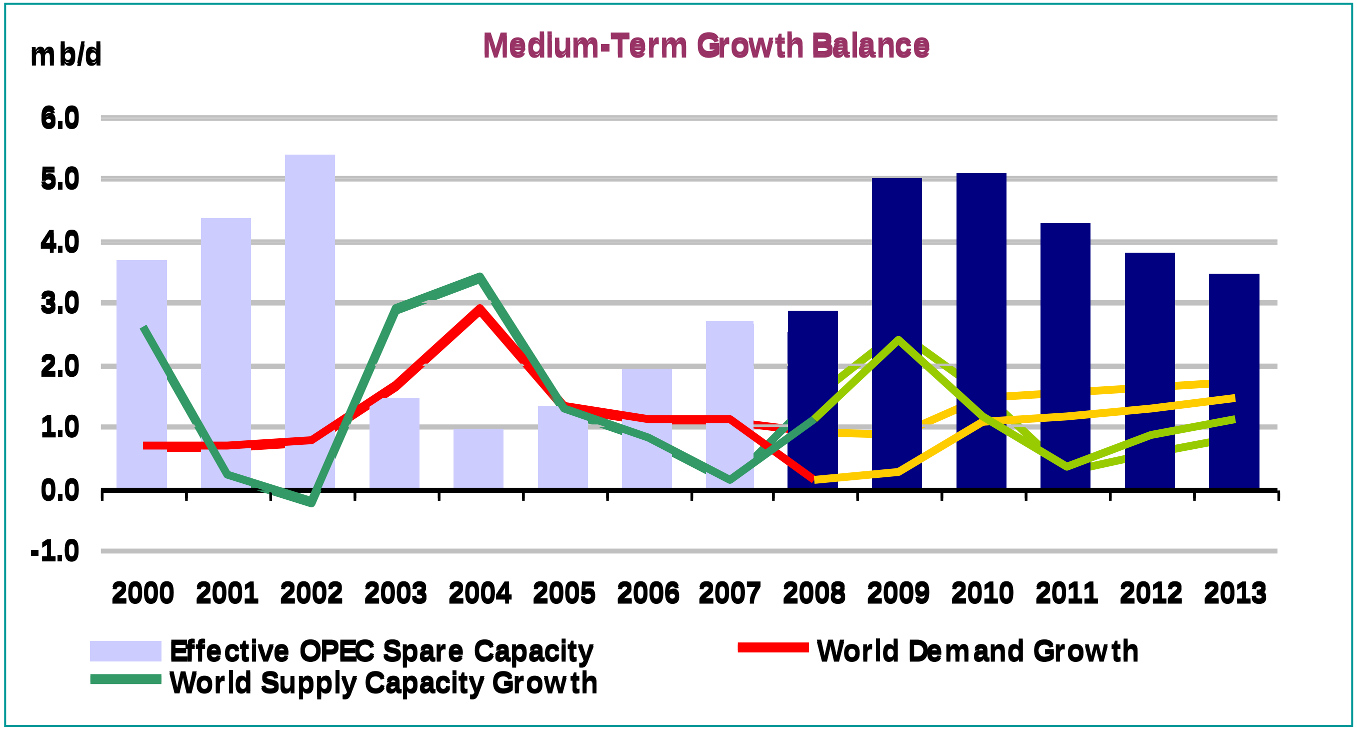




- *Two year demand contraction in 08/09 first since early-1980s*
- *OECD hit hard, but clear signs that non-OECD is slowing now too*

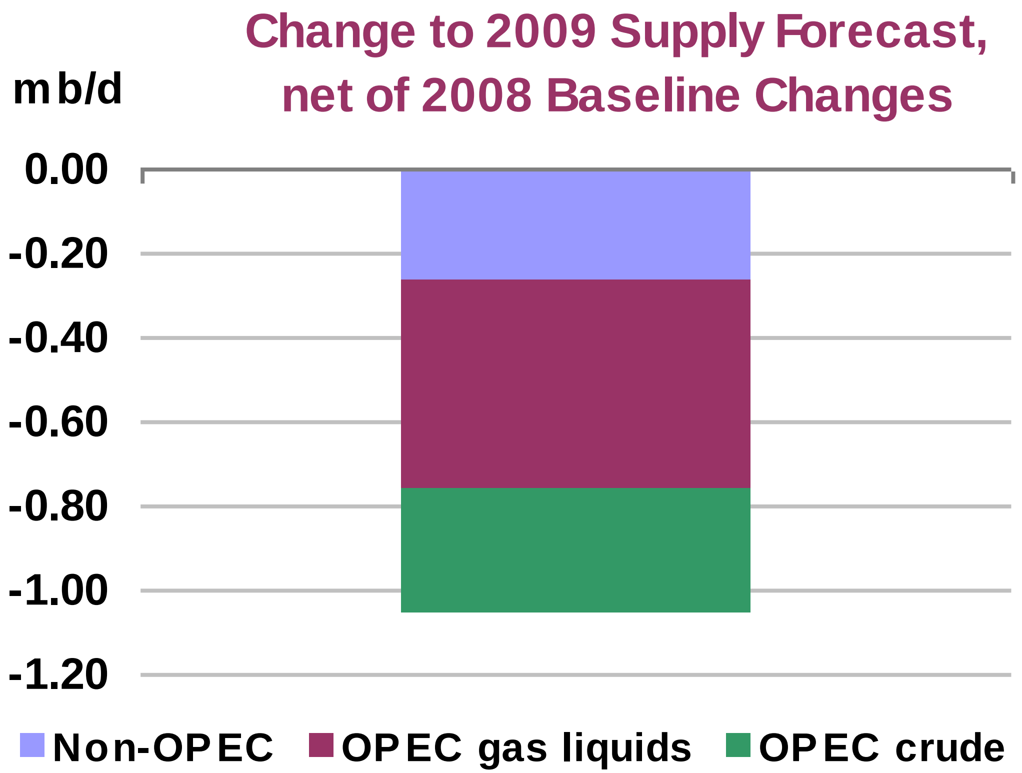
Supply and Demand Outlook Comparison 2008-2013

July 2008 Forecast   December 2008 Forecast



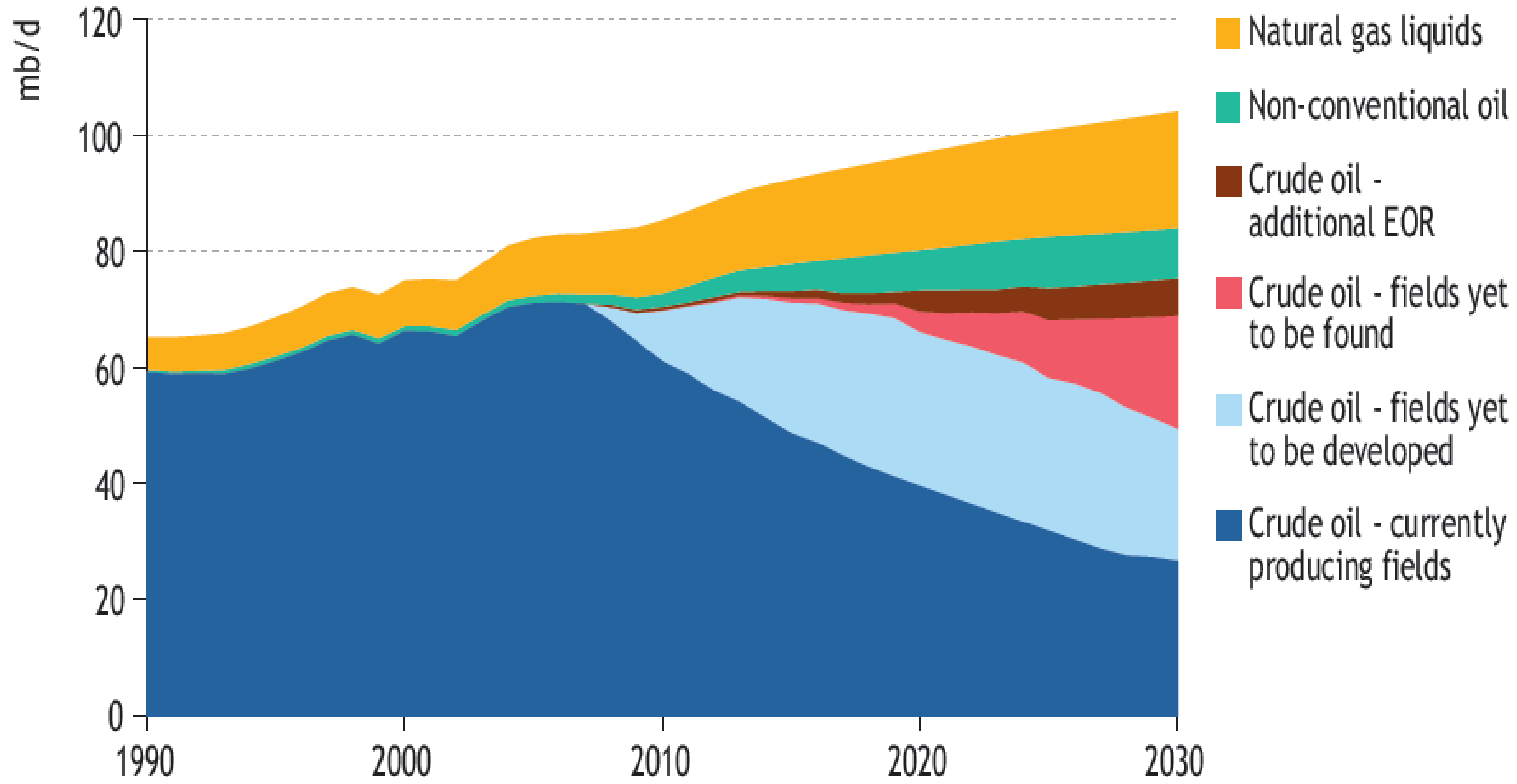
- *OPEC spare capacity now at 3.5 mb/d in 2013, vs. 1 mb/d forecast in July 2008*
- *But this number could be lower on evidence of widespread project deferrals*
- *And even 3% spare capacity is tight by any measure*

Supply – Financial/Economic crisis causing slippage



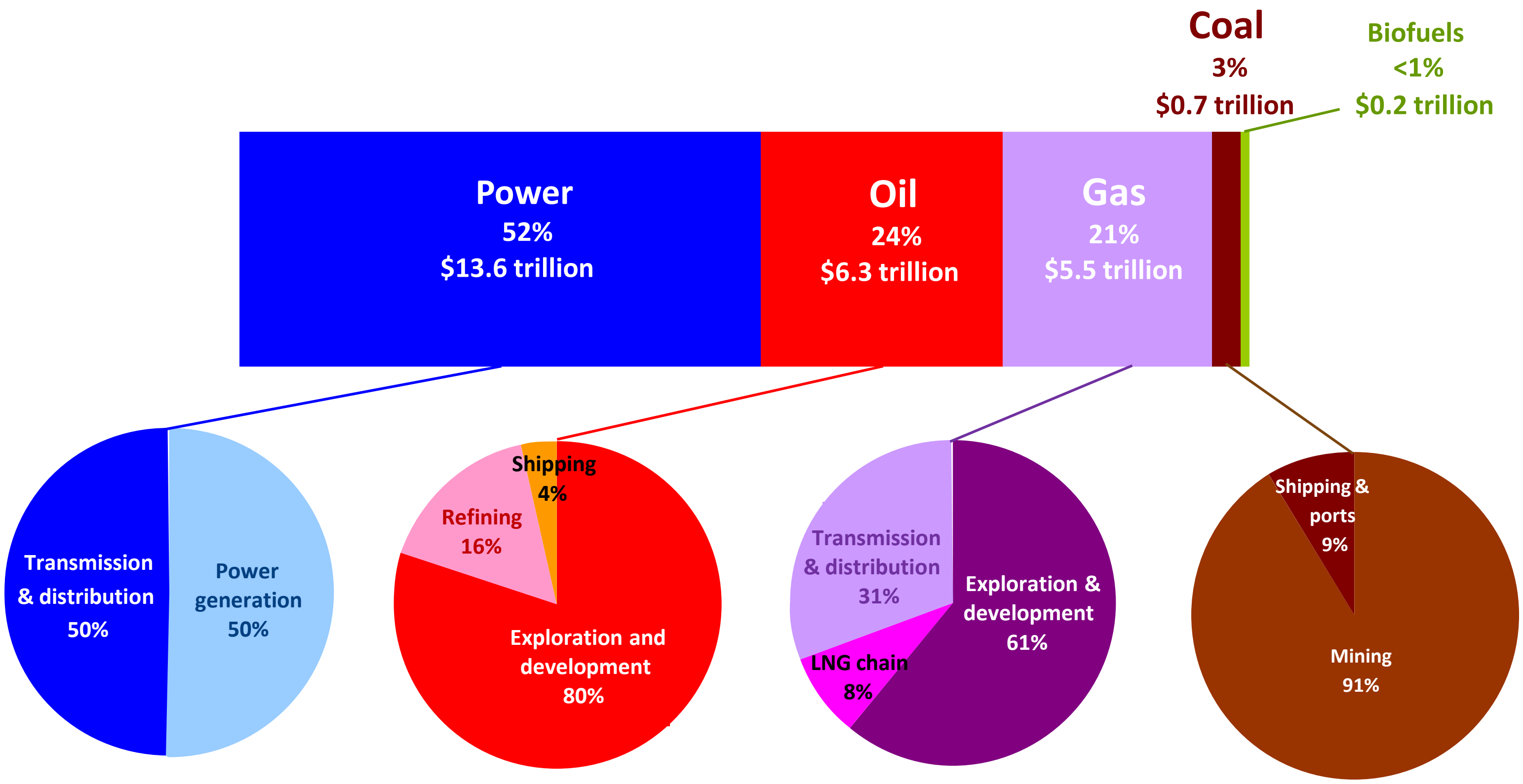
Total 2009 Supply capacity forecast has been revised down -1 mb/d since last July (taking into account 2008 baseline changes)

World oil production by source in the Reference Scenario



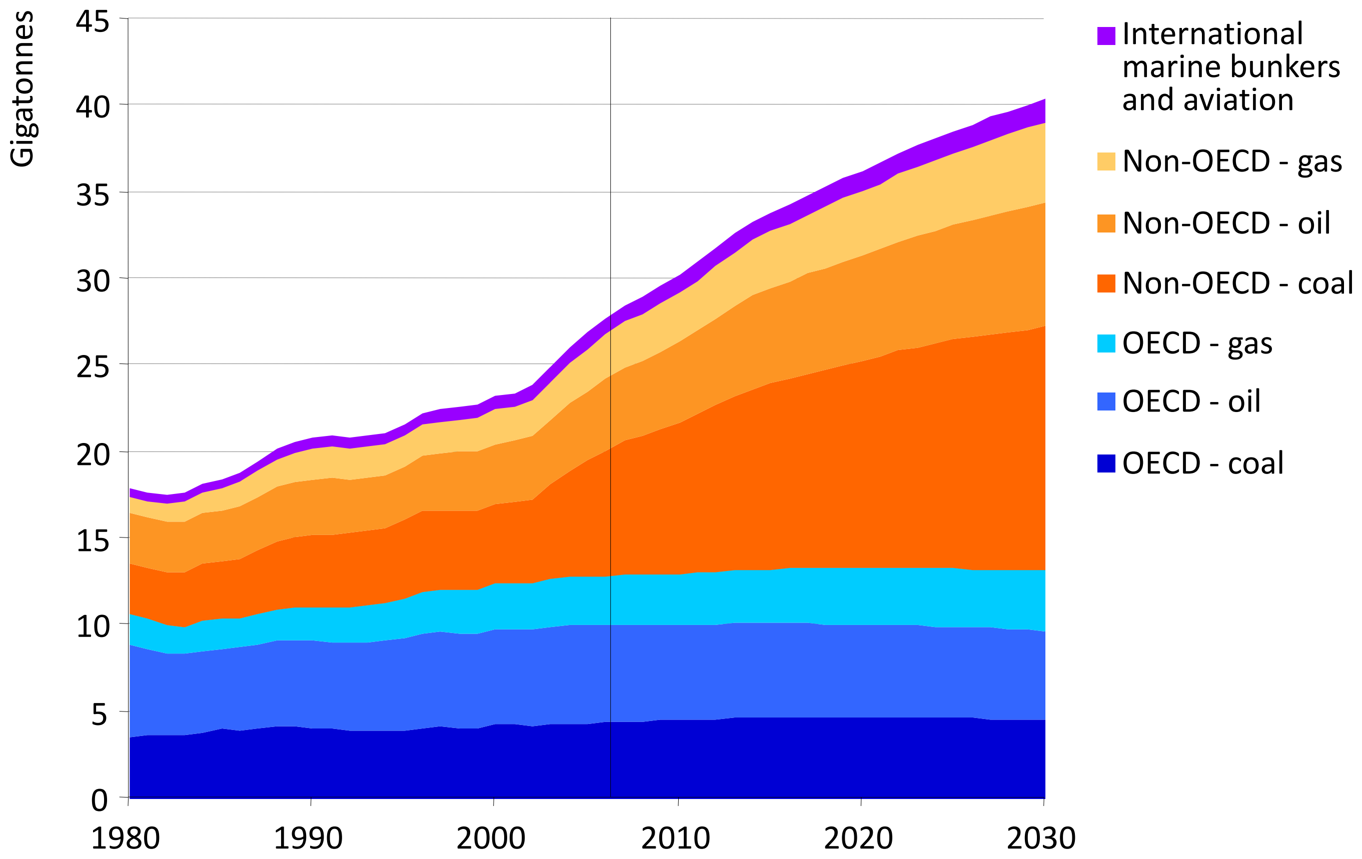
64 mb/d of gross capacity needs to be installed between 2007 & 2030 – six times the current capacity of Saudi Arabia – to meet demand growth & offset decline

Cumulative energy supply investment in the Reference Scenario, 2007-2030



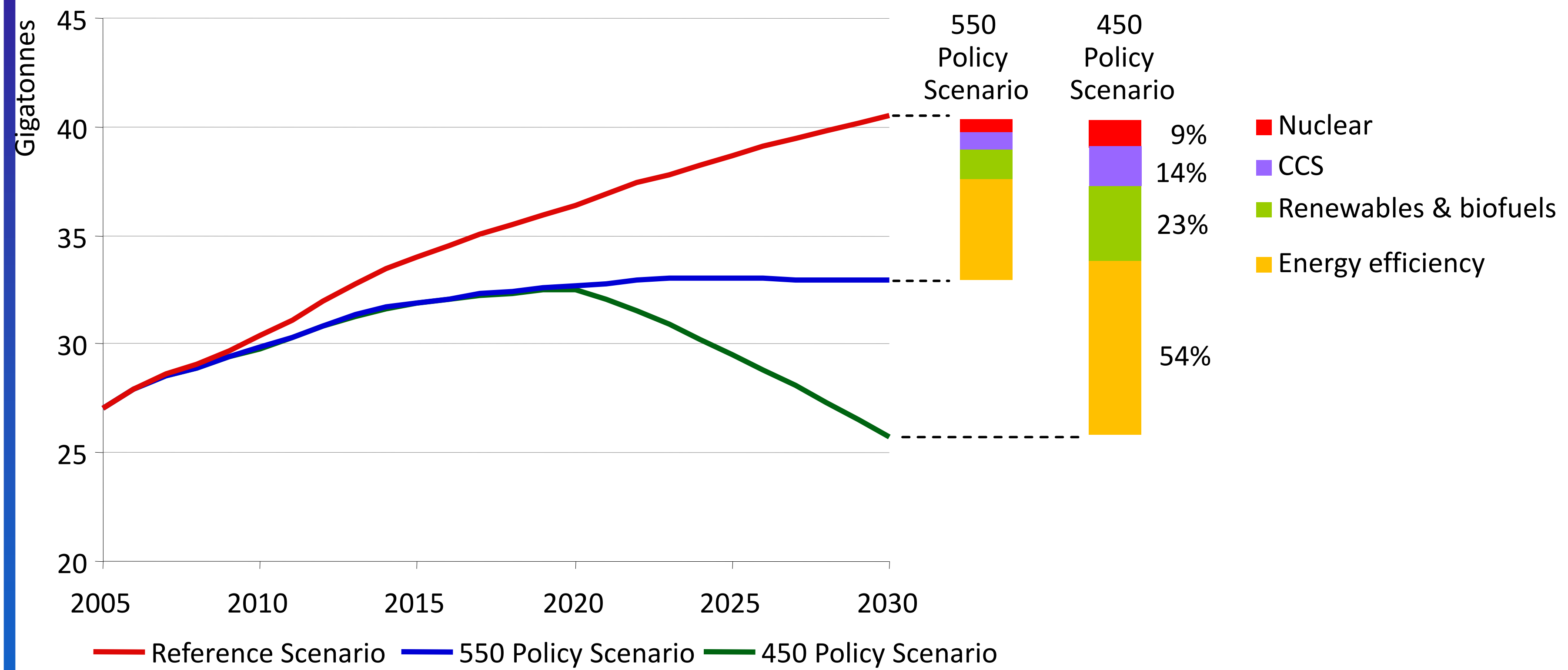
Investment of $26 trillion, or over $1 trillion/year, is needed, but the credit squeeze could delay spending, potentially setting up a supply-crunch once the economy recovers

Energy-related C02 emissions
World Energy Outlook 2008 - Reference Scenario



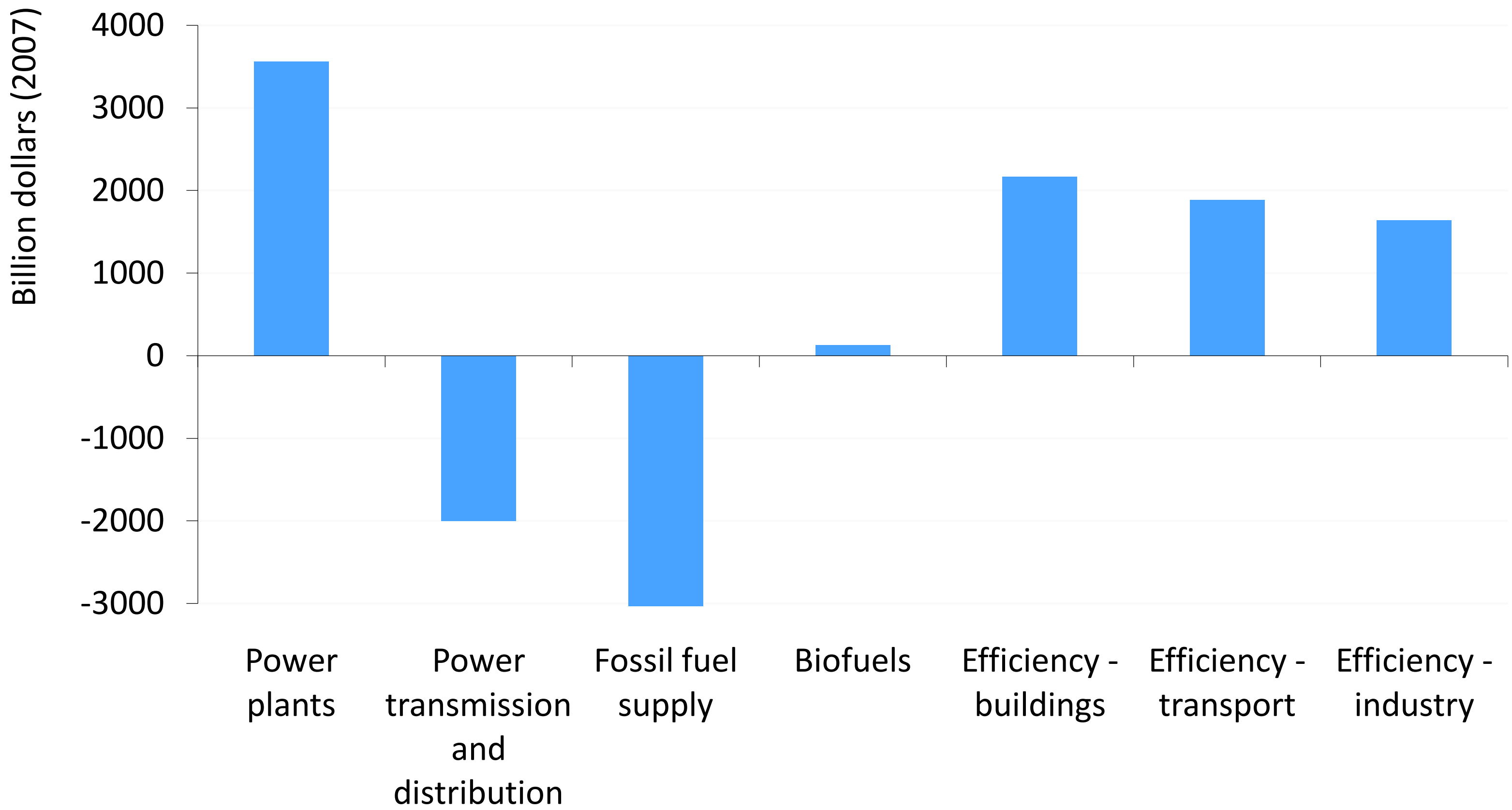
97% of the projected increase in emissions between now & 2030 comes from non-OECD countries – three-quarters from China, India & the Middle East alone

Reductions in energy-related CO_2 emissions in the climate-policy scenarios



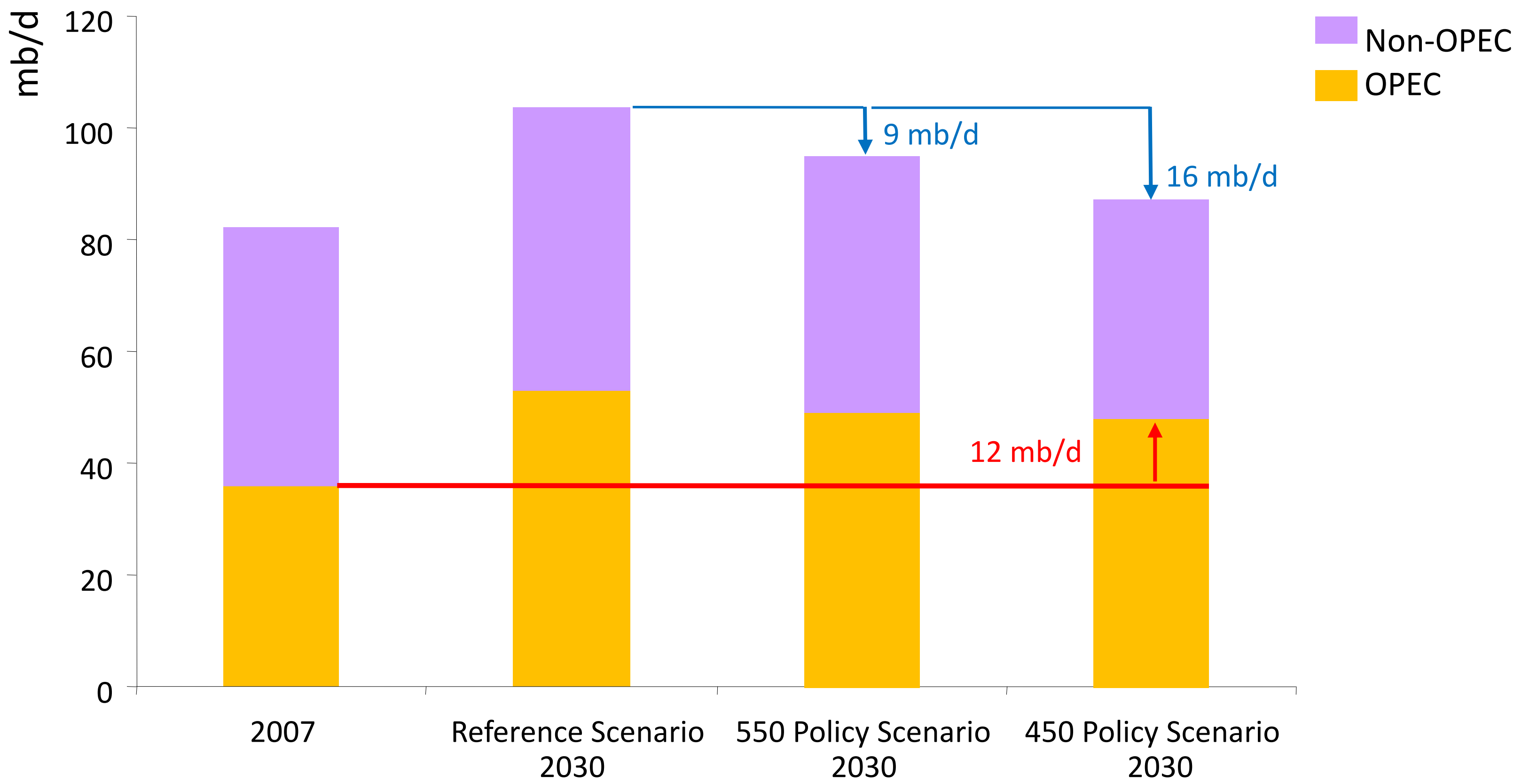
While technological progress is needed to achieve some emissions reductions, efficiency gains and deployment of existing low-carbon energy accounts for most of the savings.

Change in world energy investment in the 450 Policy relative to the Reference Scenario, 2010-2030



Huge investment in power plants and energy efficiency will be required if we are to shift the world onto a 450-ppm trajectory

Total oil production in 2030 by scenario



Curbing CO2 emissions would improve energy security by cutting demand for fossil fuels, but even in the 450 Policy Scenario, OPEC production increases by 12 mb/d from now to 2030

Summary & conclusions

- **Medium to long term projections highlight the need for continued investment on the supply side:**
  - **Both to meet demand, and , in the case of the oil sector, to address decline in production at existing fields**
  - **In the short term, weak demand, low prices and the credit squeeze could curb investment, but medium/longer term picture indicates more investment needed**

- **But also need investment on supply and demand side to ensure a sustainable energy future:**
  - **to address climate change we need a major decarbonisation of world's energy system**
  - **But even in a 450 ppm scenario, oil demand in 2030 will be higher than in 2007**

- **Economic crisis is an opportunity to place a Clean Energy New Deal at the heart of economic stimulus packages globally**