

World Energy Outlook 2008

Options for a Cleaner, Smarter Energy Future

UN Climate Change Conference, Poznan
8 December 2008

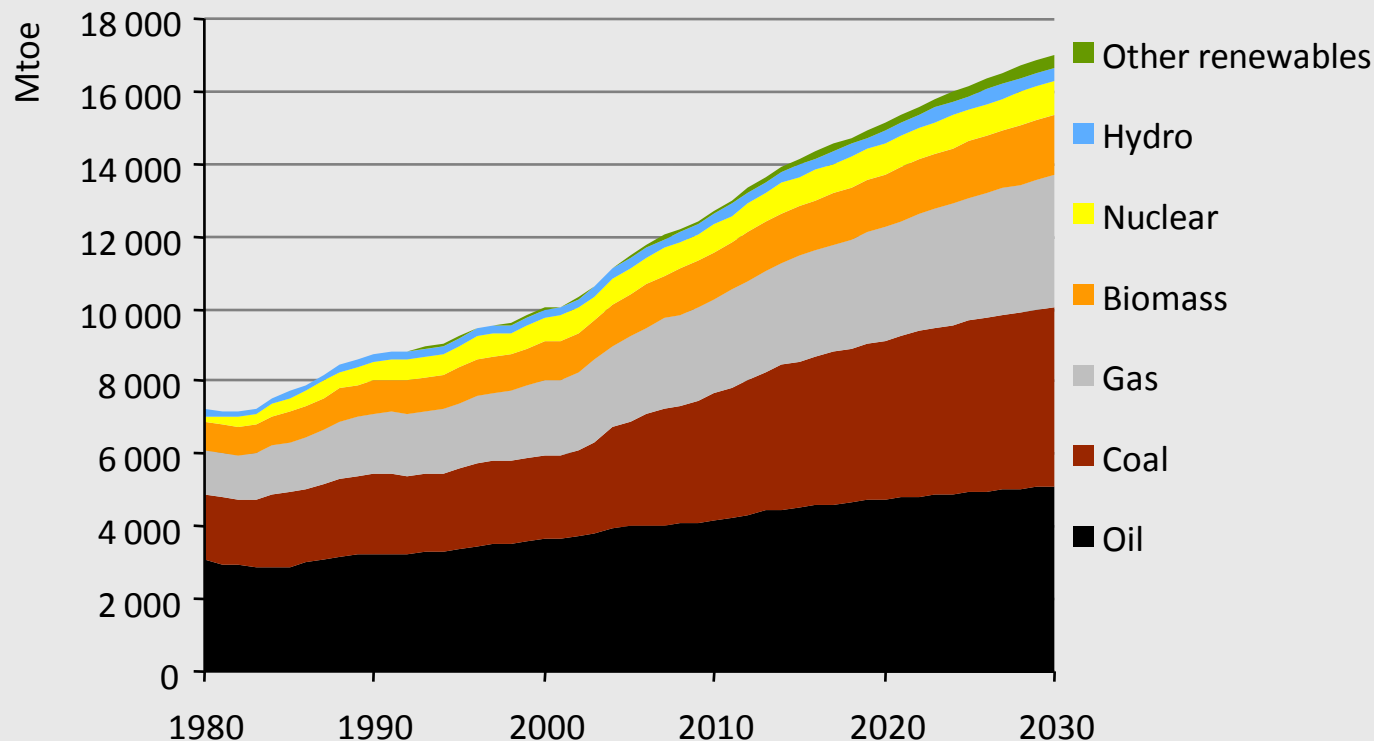
Nobuo Tanaka, Executive Director
International Energy Agency

- Soaring energy prices to mid-2008, followed by a collapse – what will it mean for demand?
- How will the financial crisis & economic slowdown affect energy demand & investment?
- Will economic worries divert attention from strategic energy security & environmental challenges?
- Will negotiators at COP-15 in Copenhagen in 2009 have the political support needed to succeed?

Global Energy Prospects to 2030 in the 'business as usual' scenario

World primary energy demand in the Reference Scenario: this is unsustainable!

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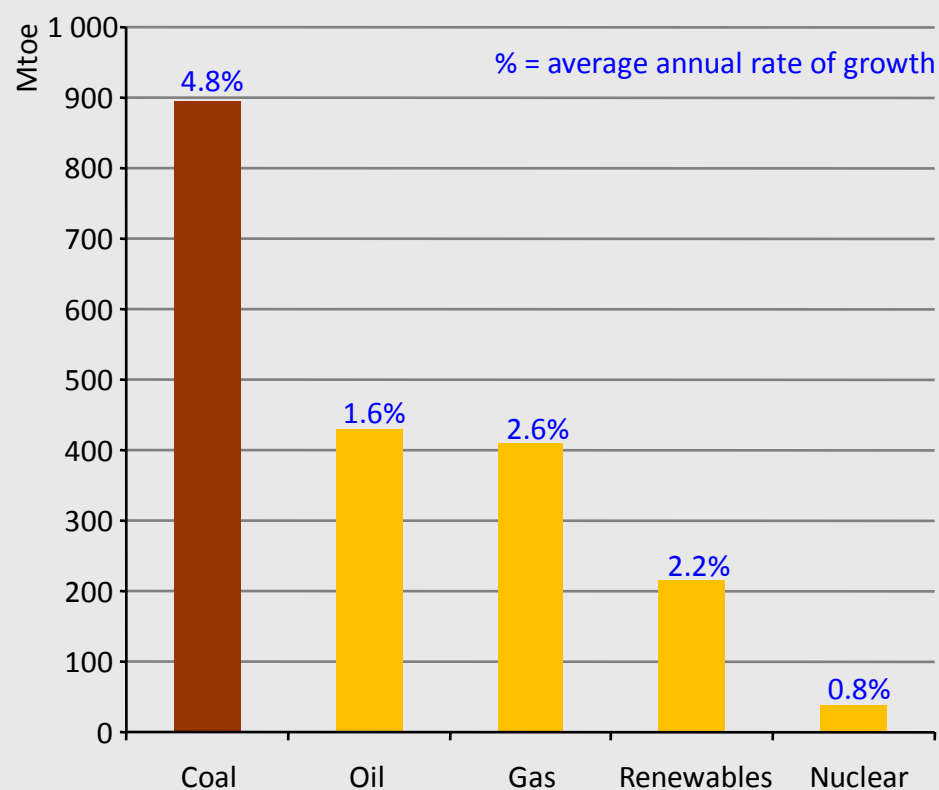


World energy demand expands by 45% between now and 2030 – an average rate of increase of 1.6% per year – with coal accounting for more than a third of the overall rise

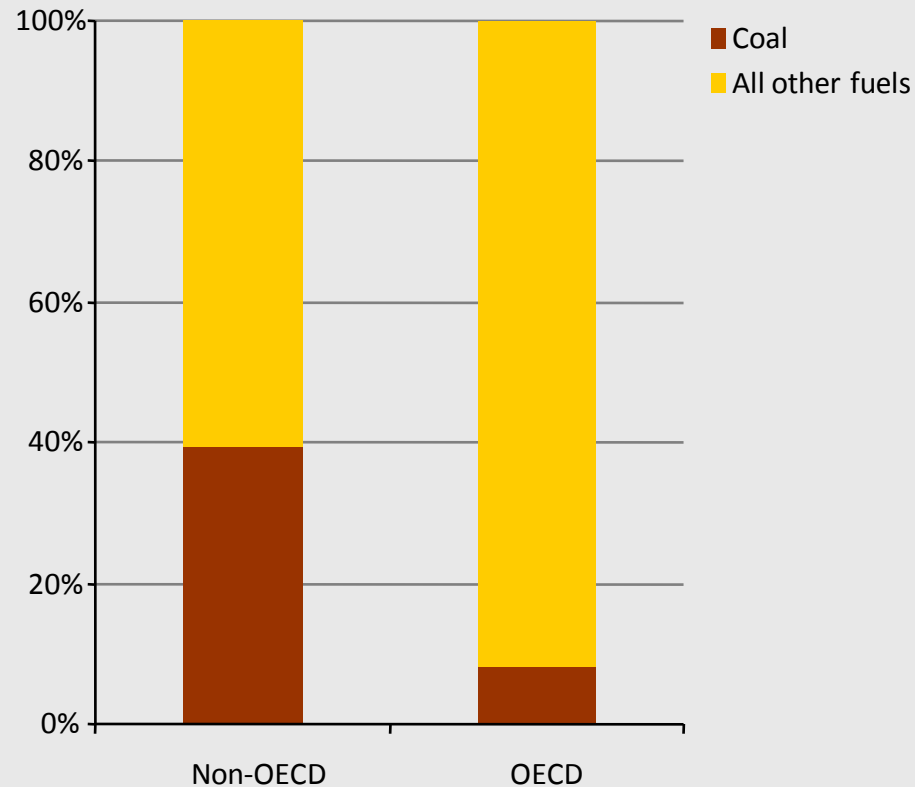
The continuing importance of coal in world primary energy demand

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Increase in primary demand, 2000 - 2007



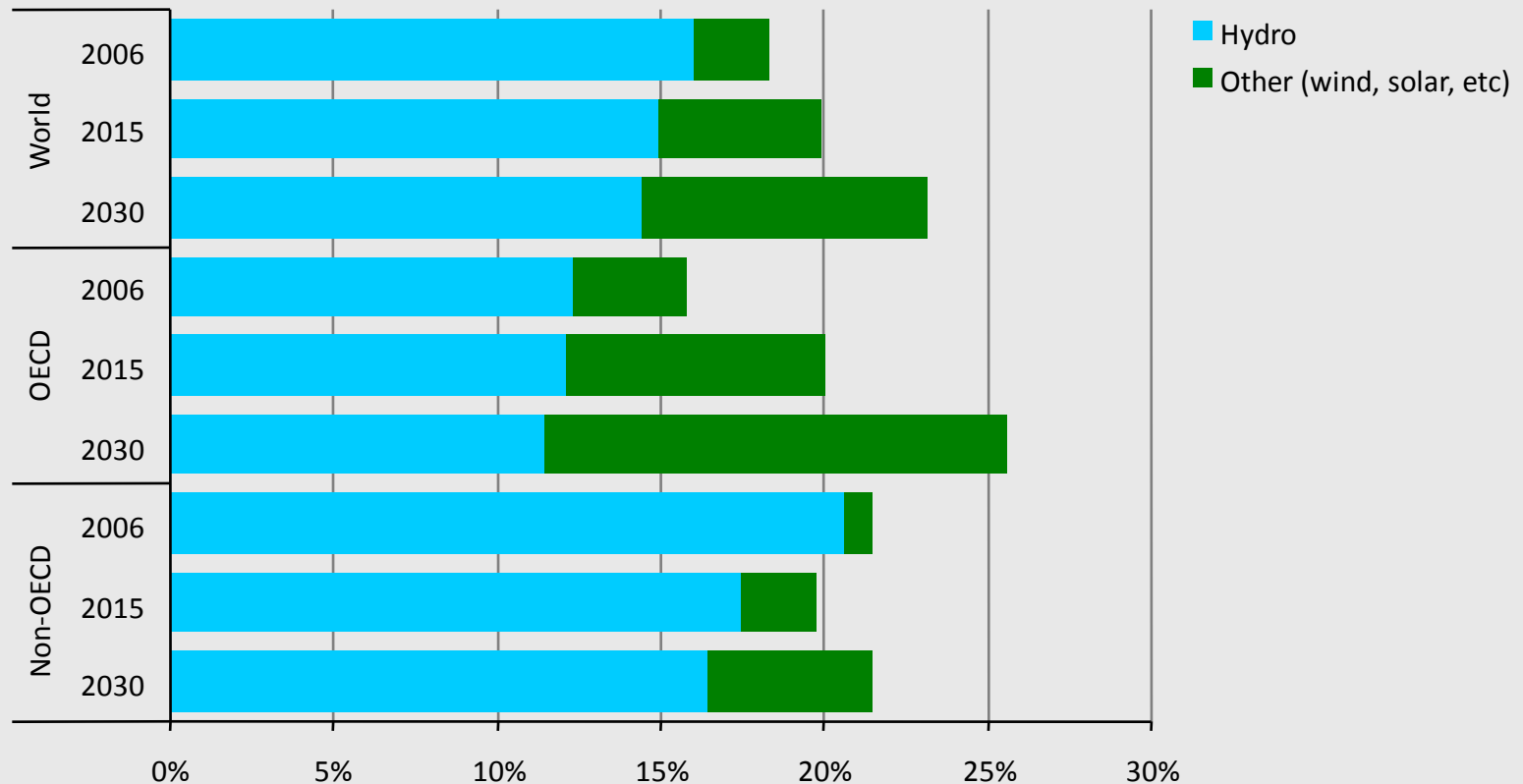
Shares of incremental energy demand
Reference Scenario, 2006 - 2030



Demand for coal has been growing faster than any other energy source & is projected to account for more than a third of incremental global energy demand to 2030

Share of renewables in electricity generation in the Reference Scenario

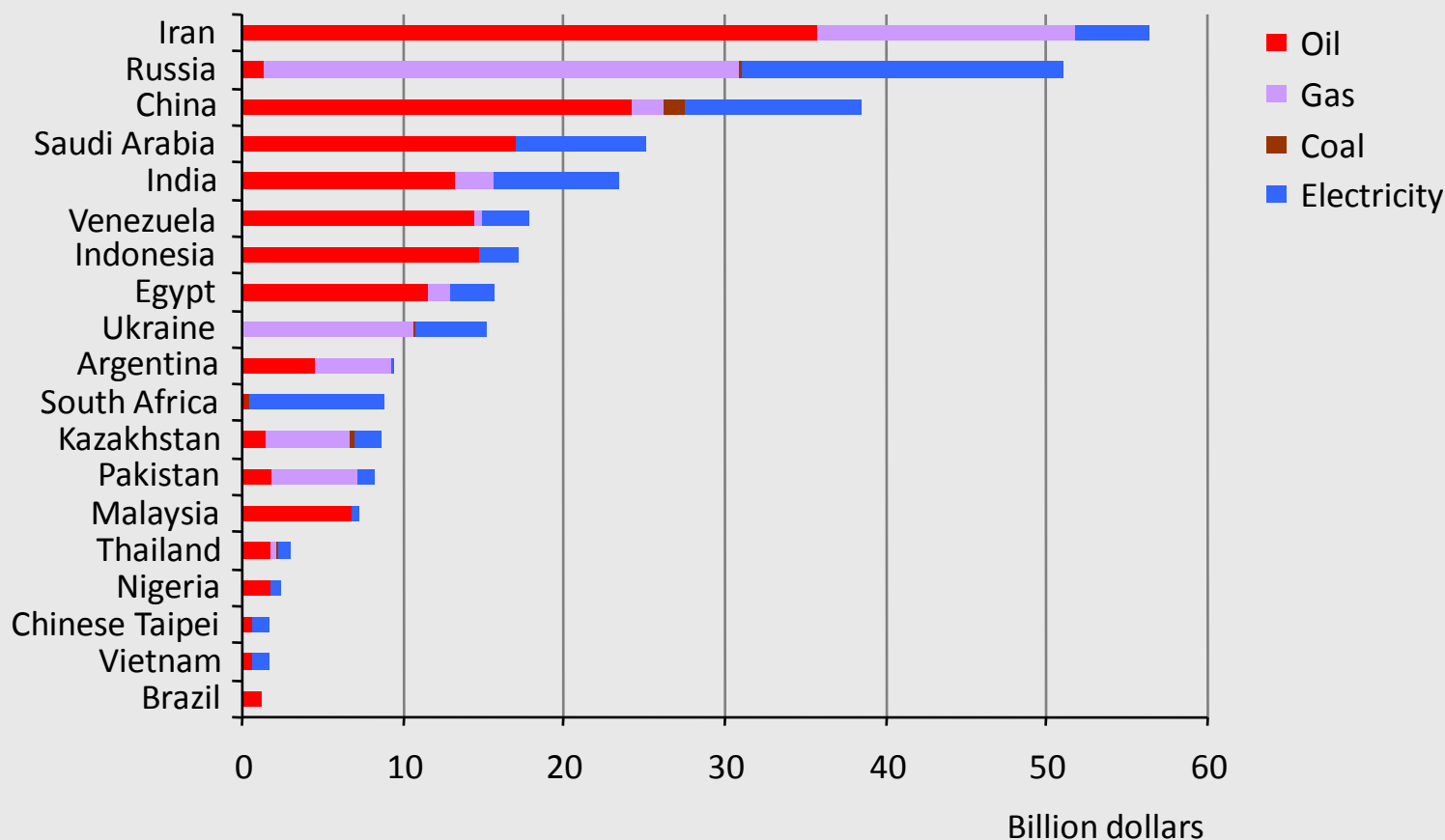
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Soon after 2010, renewables become the 2nd-largest source of electricity behind coal, thanks to government support, prospects for higher fossil-fuel prices & declining investment costs

Energy subsidies in non-OECD countries, 2007

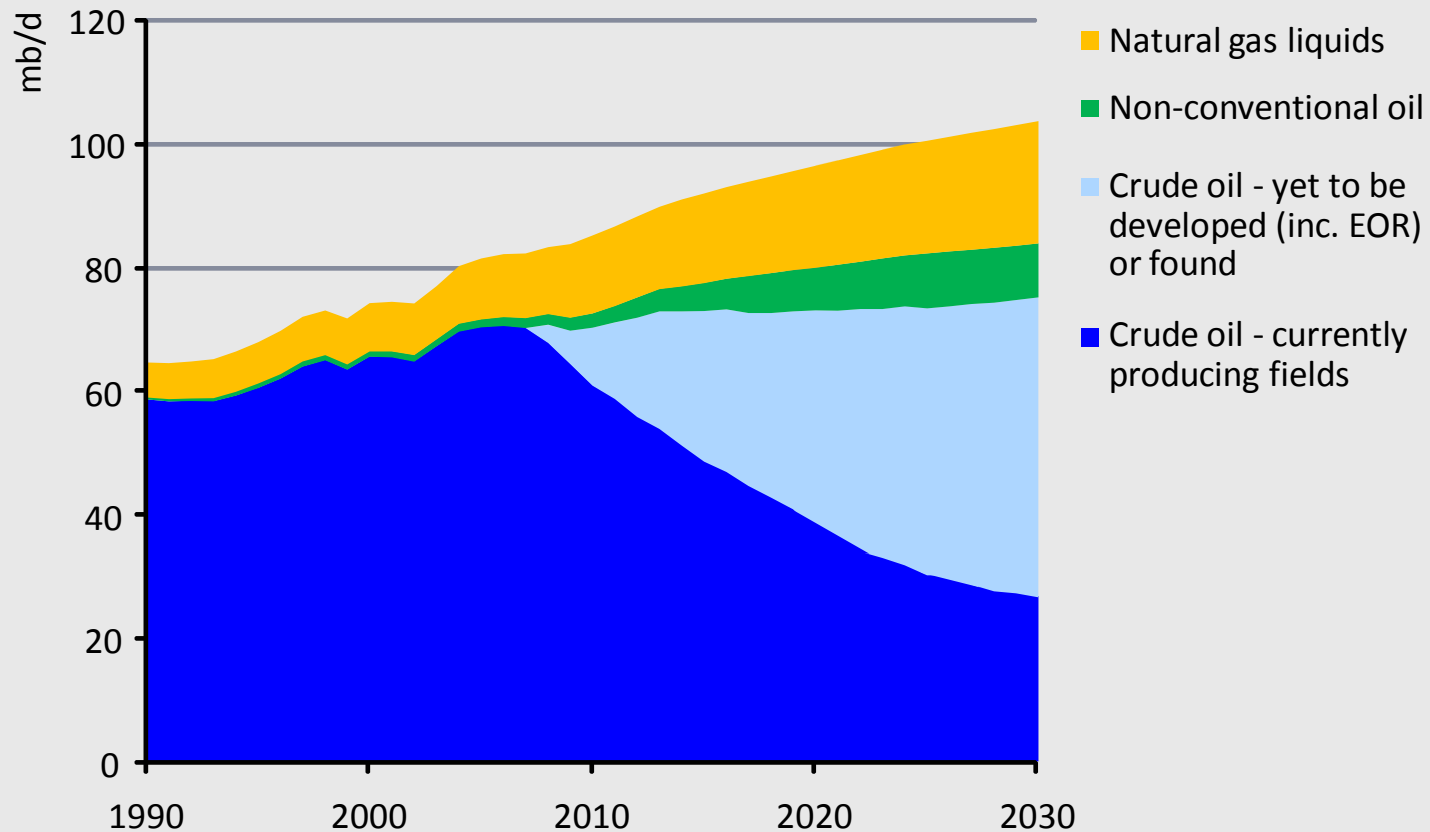
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Energy subsidies in the 20 largest non-OECD countries hit \$310 billion in 2007 – creating, in many cases, an unsustainable economic burden & exacerbating environmental effects

World oil production by source in the Reference Scenario

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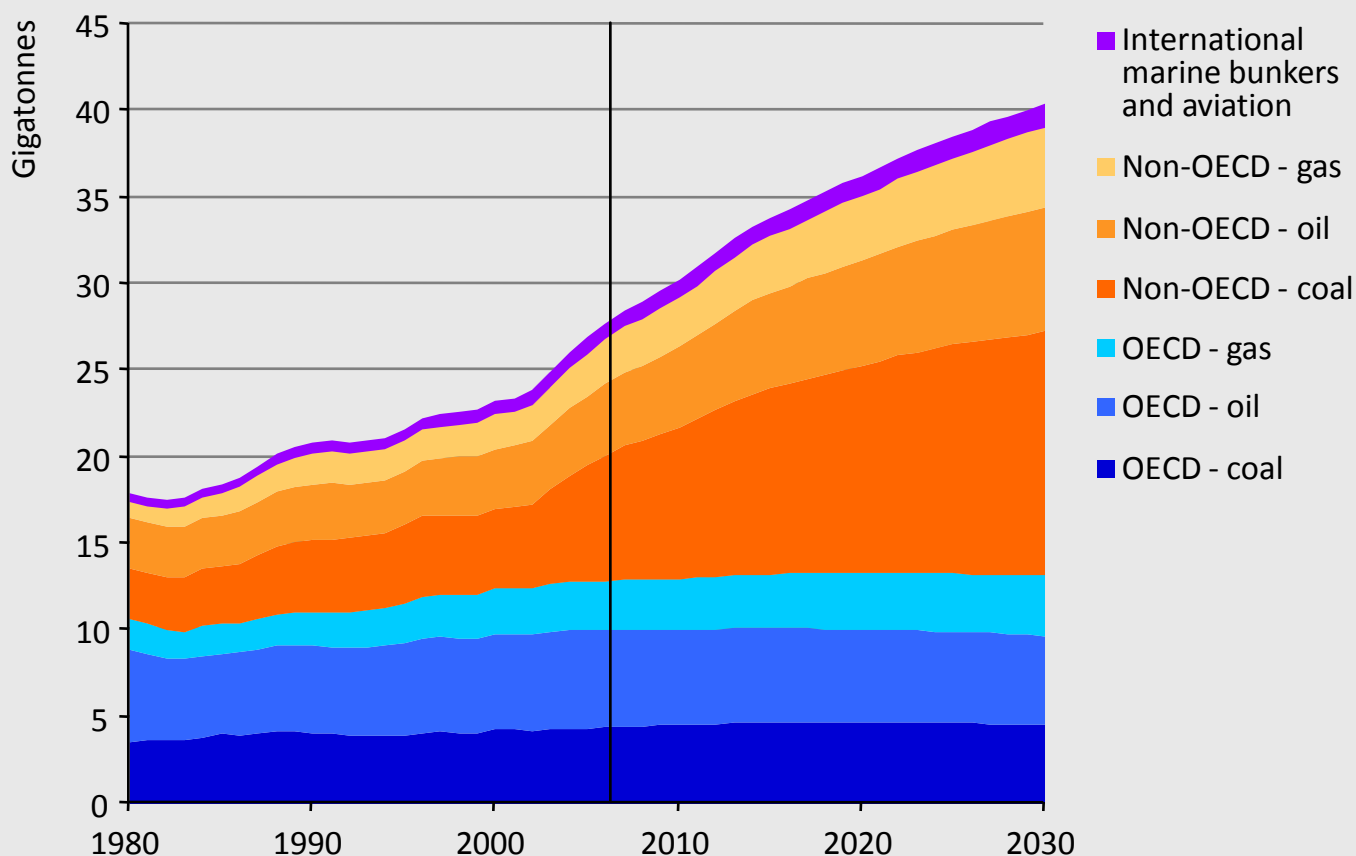
64 mb/d of gross capacity needs to be installed between 2007 & 2030 – six times the current capacity of Saudi Arabia – to meet demand growth & offset decline

The background of the slide features three globes, each showing a different view of the Earth (North America, Europe/Africa, and Asia). They are set against a vibrant red background with a complex network of white, intersecting lines that resemble a global communication or energy grid.

Post-2012 climate-policy scenarios

Energy-related CO₂ emissions in the Reference Scenario

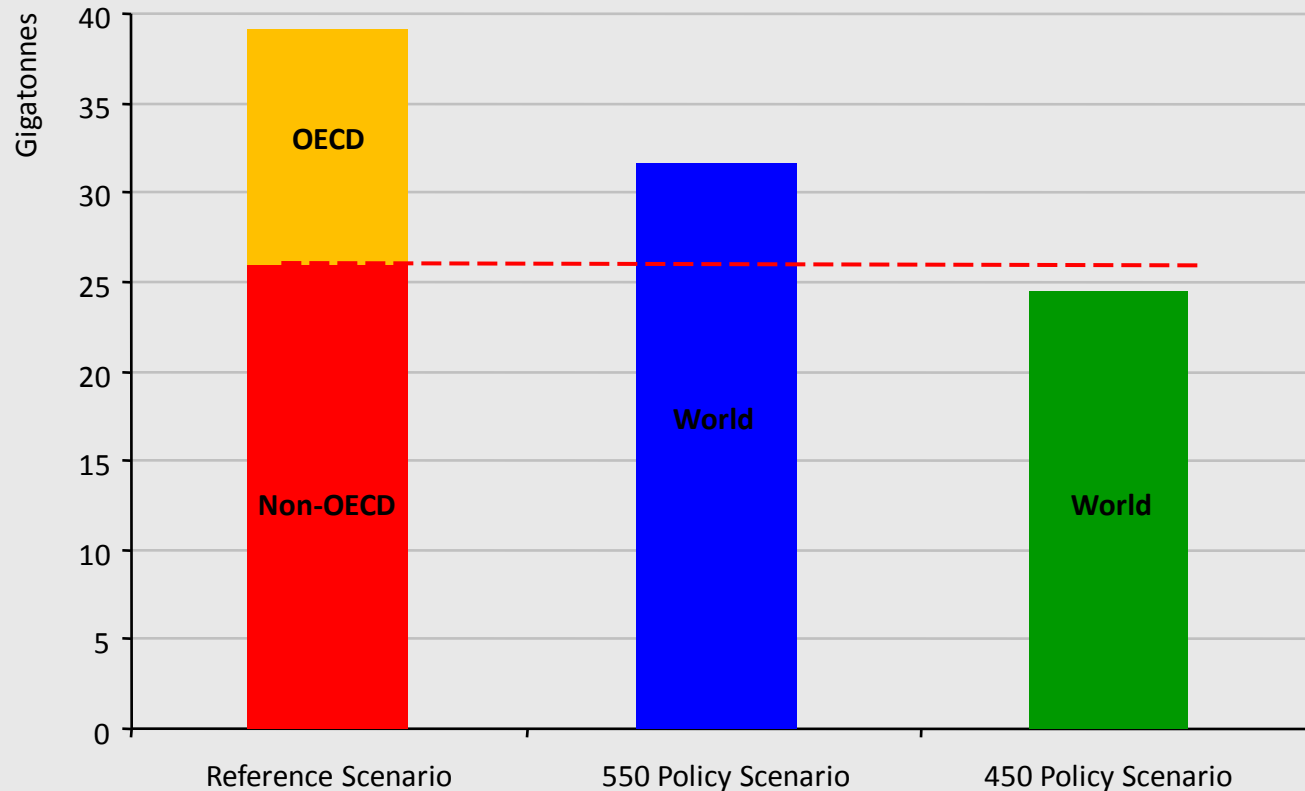
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97% of the projected increase in emissions between now & 2030 comes from non-OECD countries – three-quarters from China, India & the Middle East alone

World energy-related CO₂ emissions in 2030 by scenario

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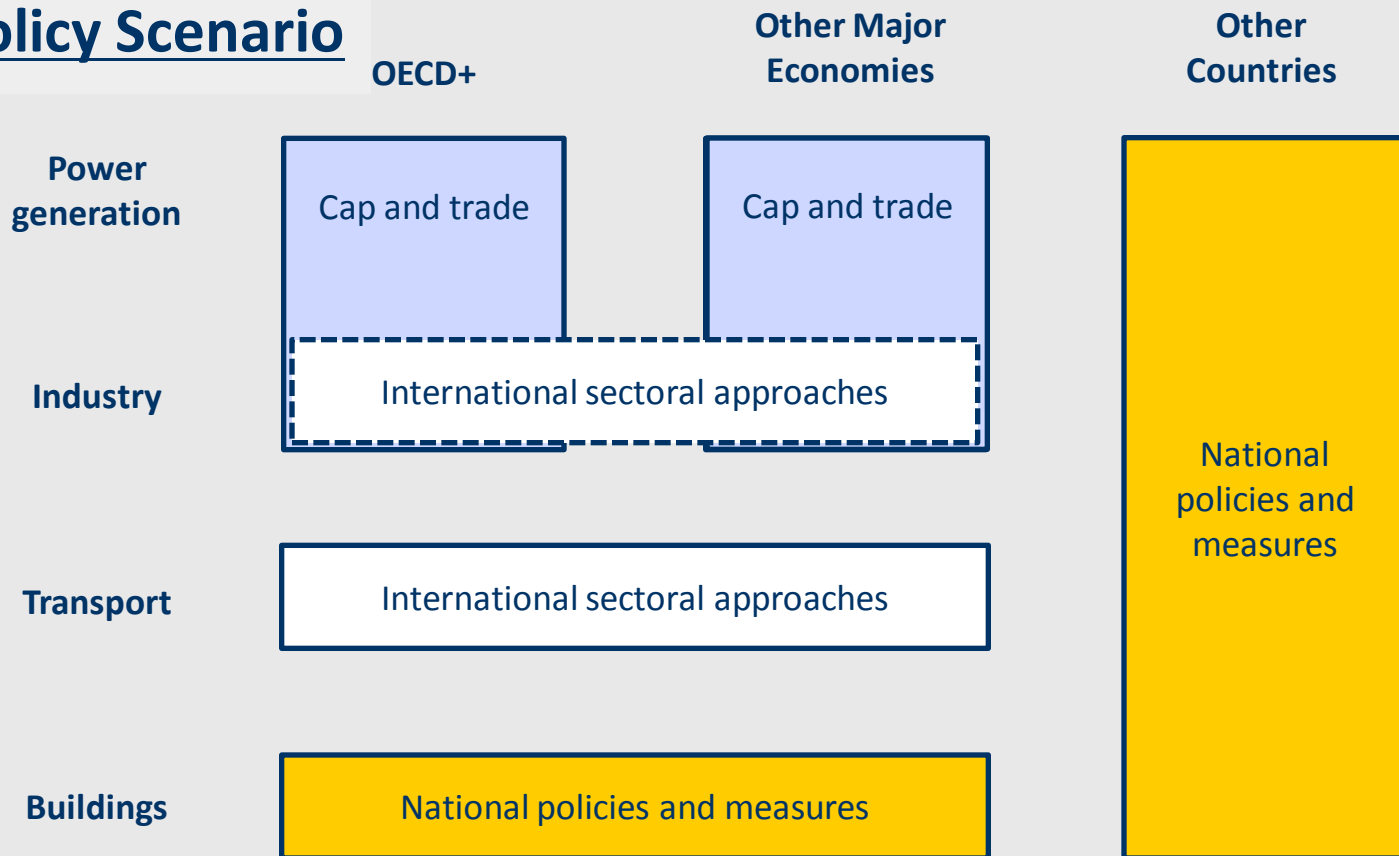


OECD countries alone cannot put the world onto a 450-ppm trajectory, even if they were to reduce their emissions to zero

Copenhagen: a plausible post-2012 global climate-change policy regime

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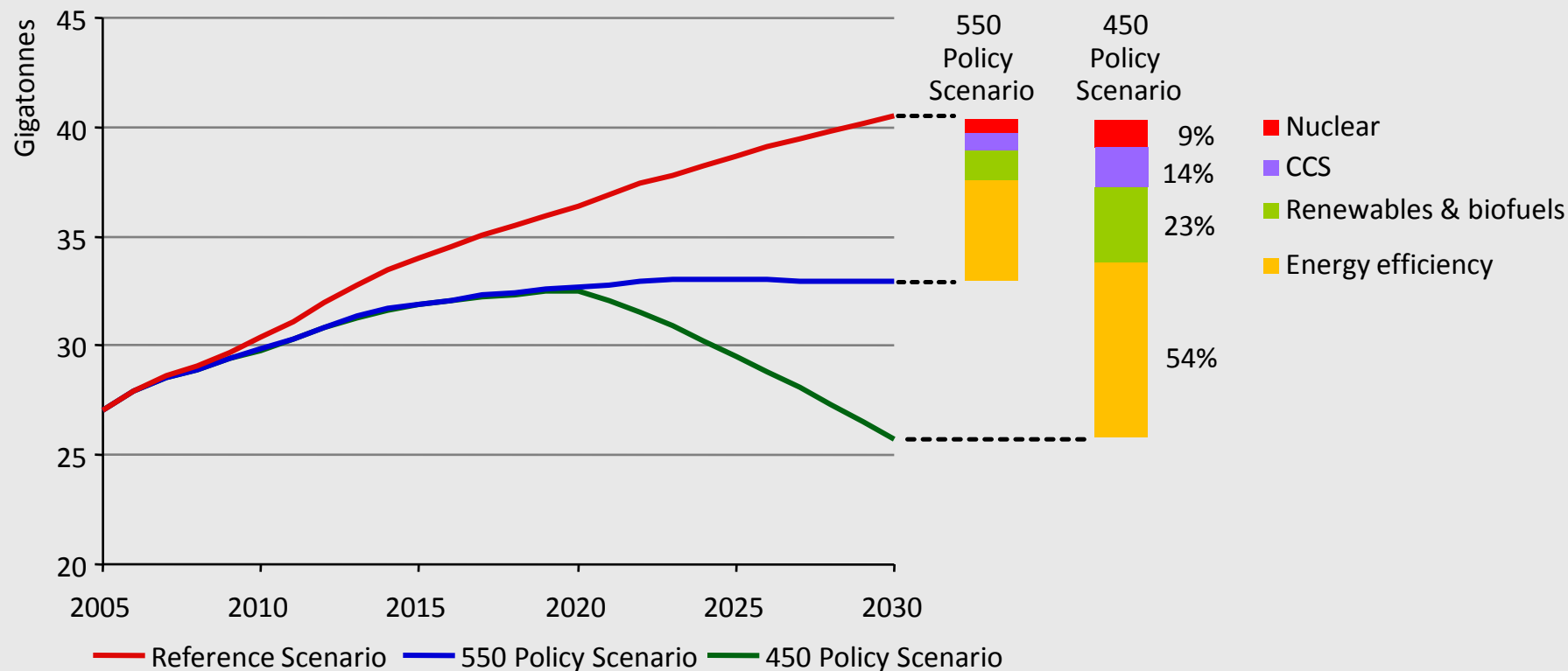
The 450 Policy Scenario



A combination of policy mechanisms – reflecting nations' varied circumstances & current negotiating positions – is a realistic outcome at the Copenhagen COP at end-2009

Reductions in energy-related CO₂ emissions in the climate-policy scenarios

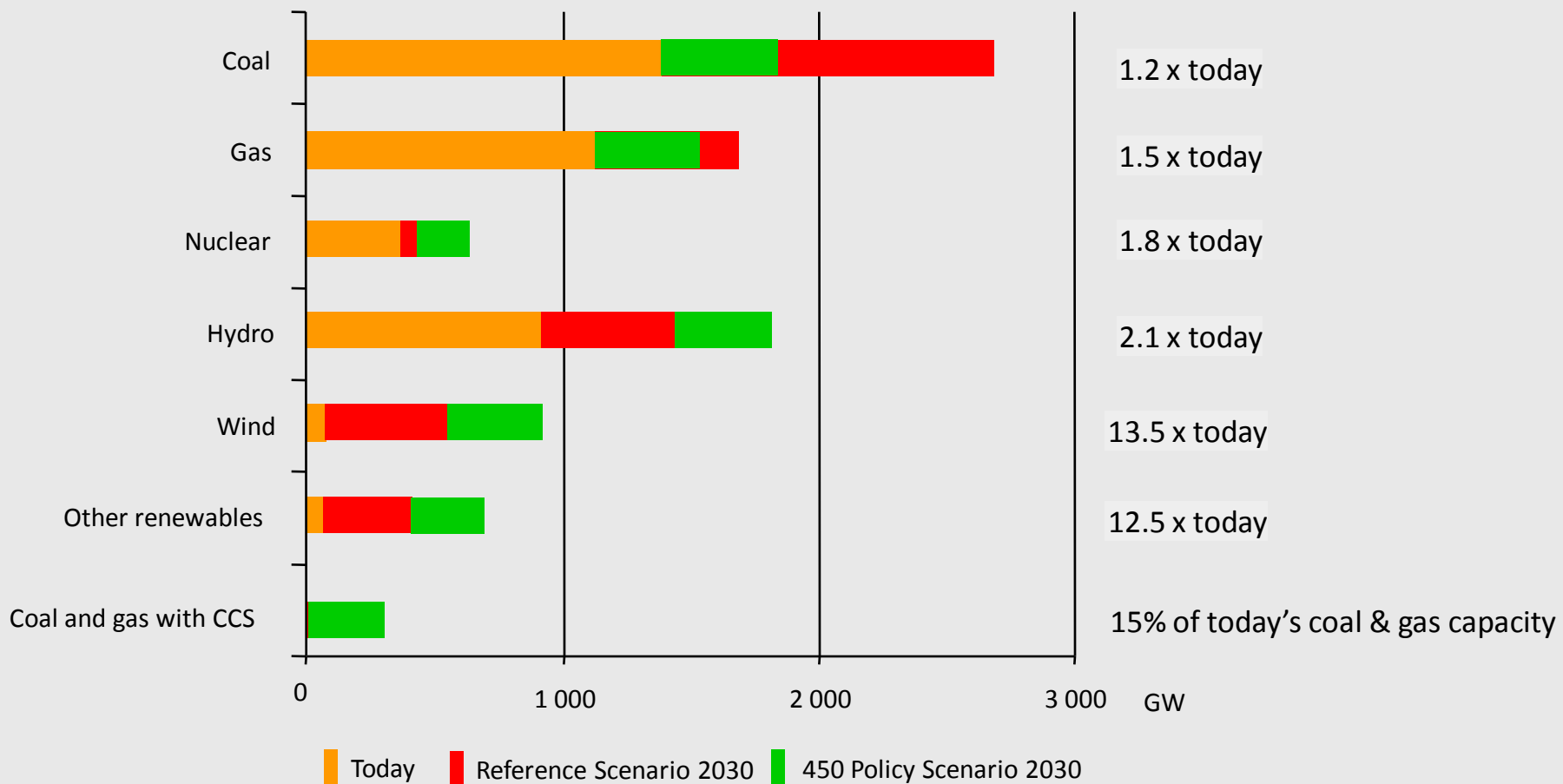
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While technological progress is needed to achieve some emissions reductions, efficiency gains and deployment of existing low-carbon energy accounts for most of the savings

Total power generation capacity today and in 2030 by scenario

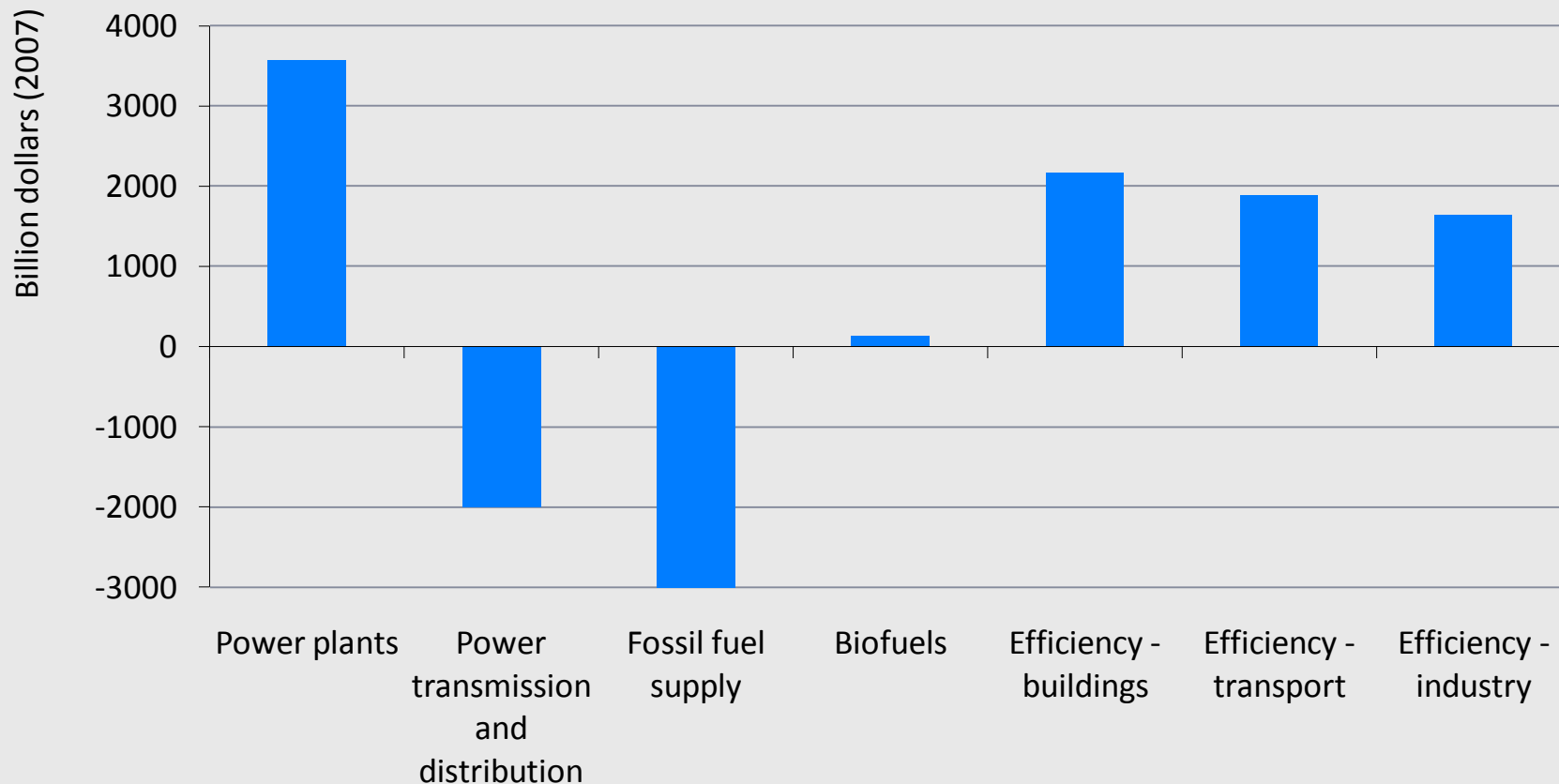
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In the 450 Policy Scenario, the power sector undergoes a dramatic change – with CCS, renewables and nuclear each playing a crucial role

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

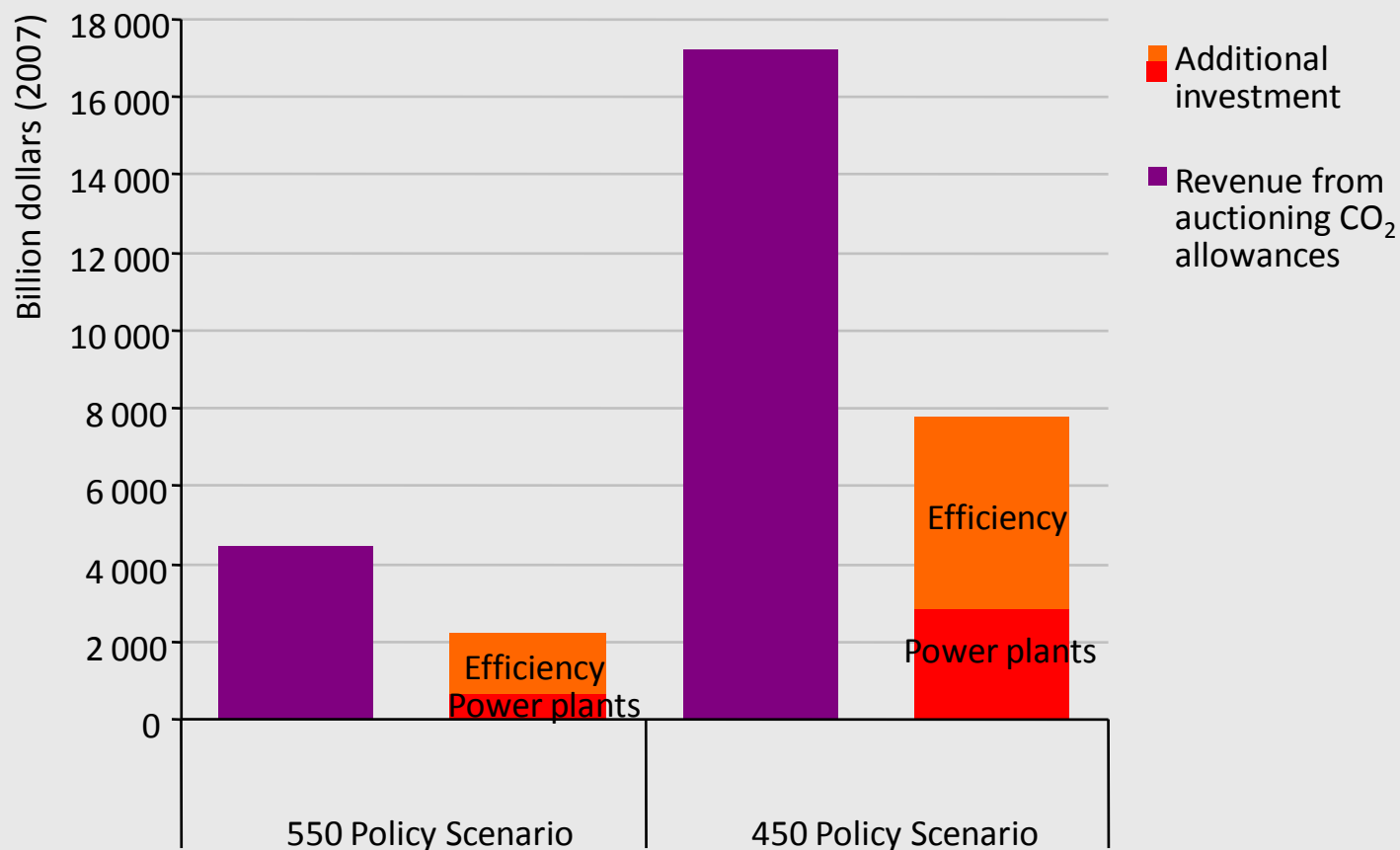
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Investment in power plants and energy efficiency in the 450 Policy Scenario is substantially higher than in the 550 Policy Scenario

Revenue from full auctioning of CO₂ allowances & additional investments in cap-and-trade regions, 2013-2030

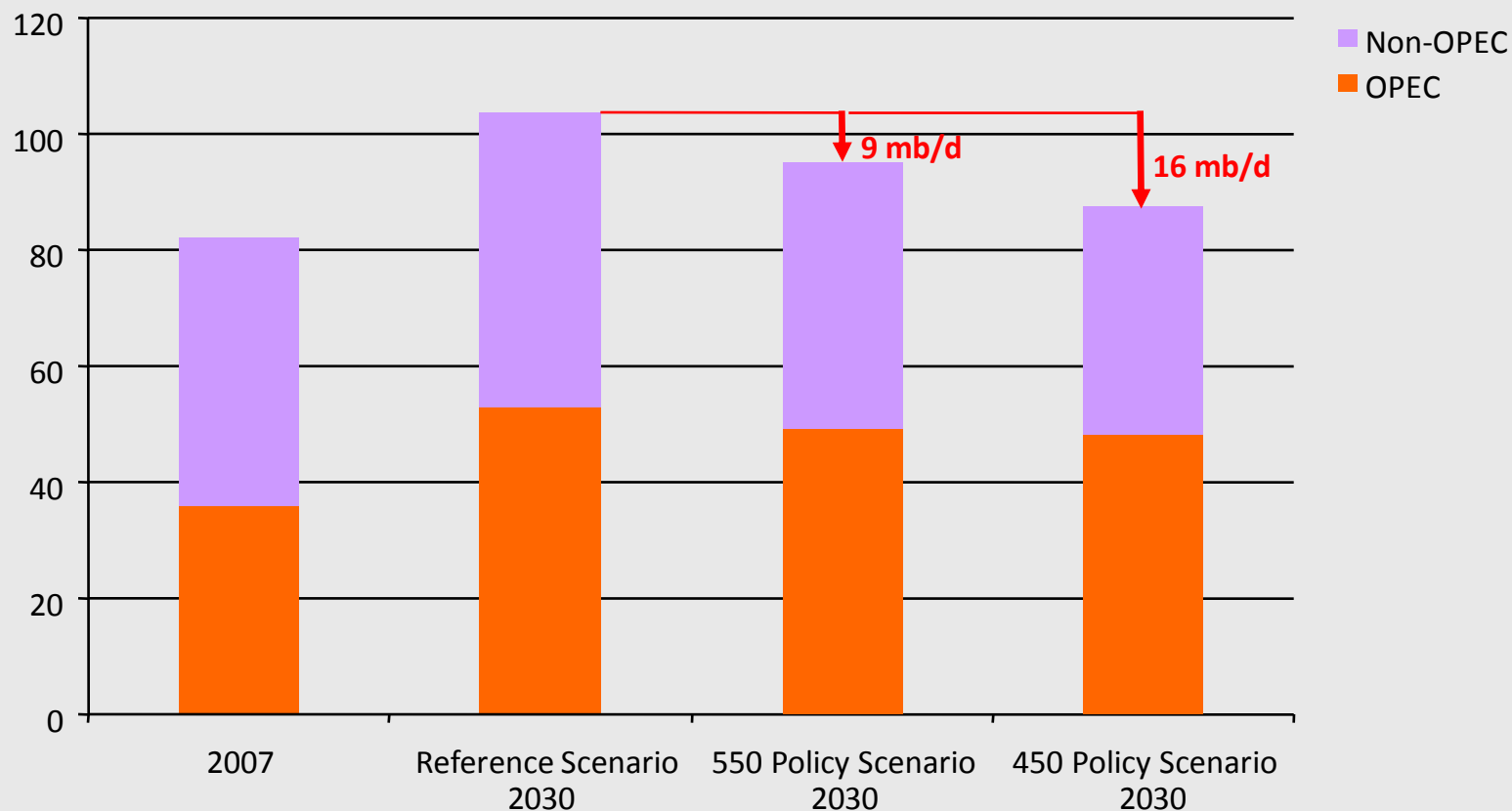
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Revenues from full auctioning exceed the total additional global energy investment needed

Total oil demand in 2030 by scenario

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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

Key results of the post-2012 climate-policy analysis

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550 Policy Scenario

- Corresponds to a c.3°C global temperature rise
- Energy demand continues to expand, but fuel mix is markedly different
- CO₂ price in OECD countries reaches \$90/tonne in 2030
- Additional investment equal to 0.25% of GDP

450 Policy Scenario

- Corresponds to a c.2°C global temperature rise
- Energy demand grows, but half as fast as in Reference Scenario
- Rapid deployment of low-carbon technologies – particularly CCS
- Big fall in non-OECD emissions
- CO₂ price in 2030 reaches \$180/tonne
- Additional investment equal to 0.6% of GDP

Summary & conclusions

Summary & conclusions

- Current energy trends are patently unsustainable
- Era of cheap oil is over
- To avoid "abrupt & irreversible" climate change we need a major decarbonisation of the world's energy system
- Present economic worries do not excuse back-tracking or delays in taking action to address energy & climate change challenges
- Economic stimulus packages provide an excellent opportunity to see greener, more sustainable growth in energy sector
- What can governments do? A "Clean Energy New Deal":
 1. *Upfront, low cost action: energy efficiency measures*
 2. *Support for cleaner energy infrastructure projects*
 3. *Ensure a price on carbon*
 4. *Additional expenditure and incentives for clean energy tech devt*

W.I.N. = Worldwide Implementation Now