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European University Institute

Efficiency, Competition and Long Term Contracts in Electricity Markets

Long term challenges and new coordination in electricity markets

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The context

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- Soaring energy prices to mid-2008, followed by a collapse
- Increasing prices of commodities and raw materials have placed significant upward pressure on investment costs
- Electricity sector to play a major role in meeting Climate Change objectives
- How will the financial crisis & economic slowdown affect energy demand & investment?
- Are we setting ourselves up for a supply-crunch once the economy is back on its feet?



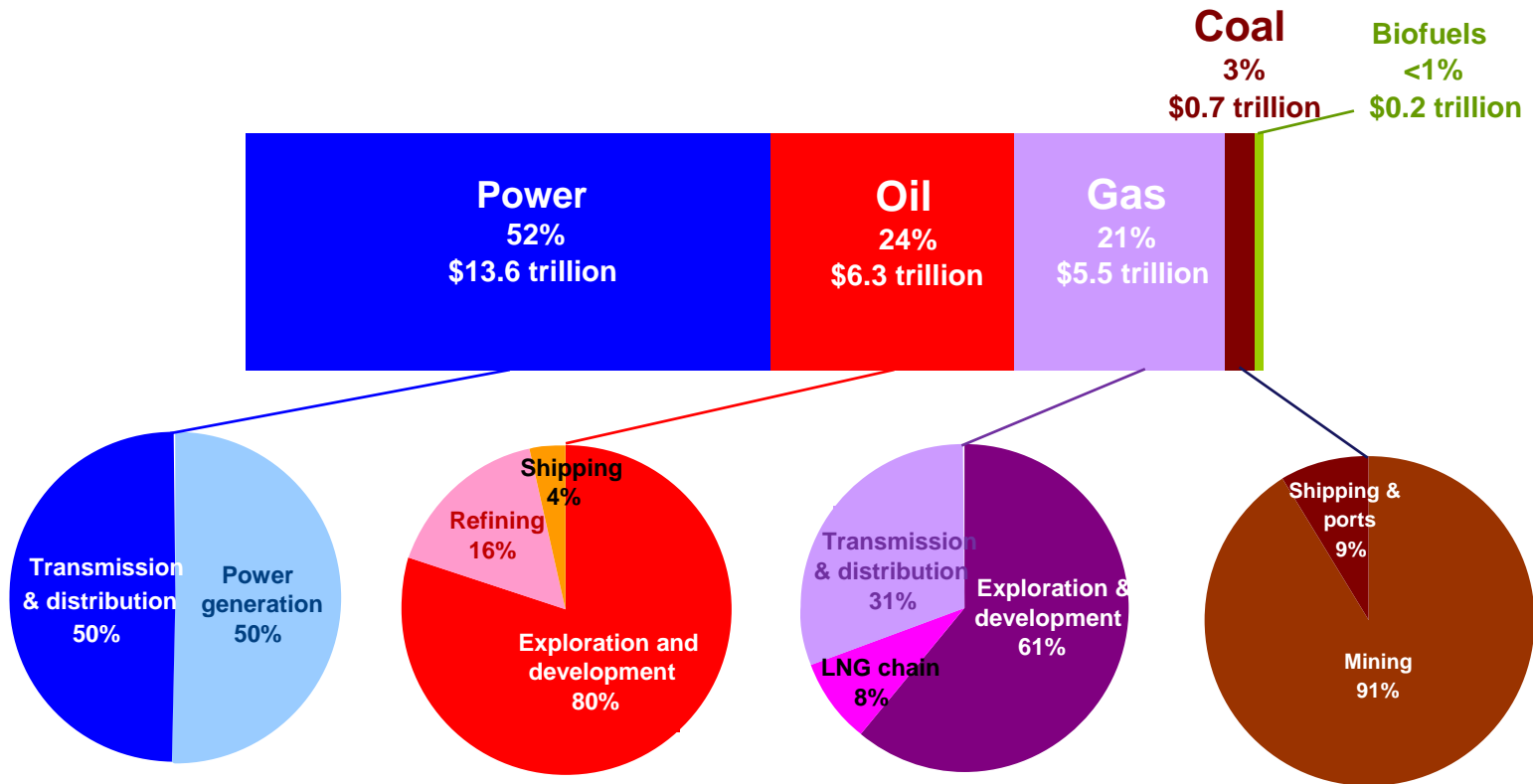
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World Energy Outlook 2008: The Reference Scenario



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

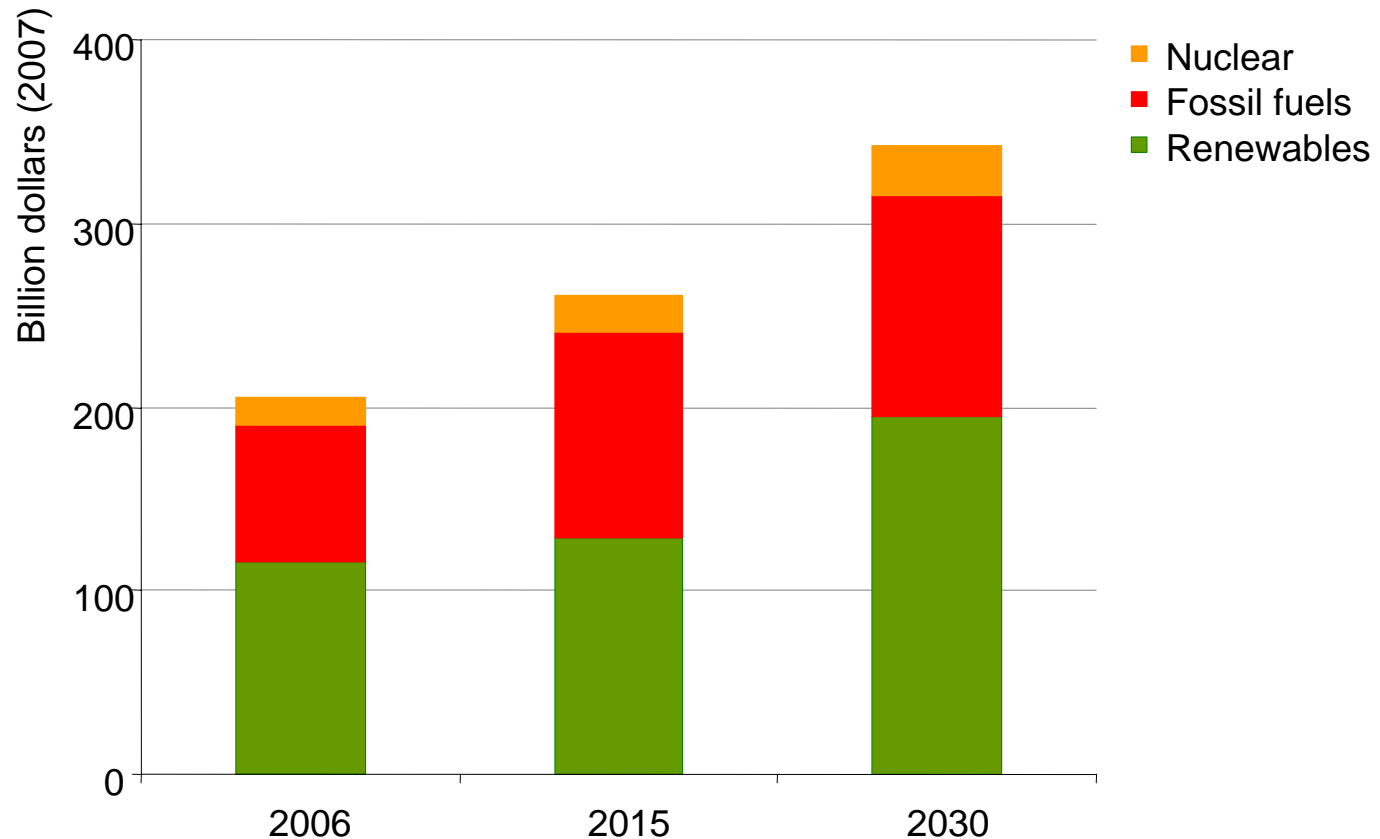


Investment of \$26 trillion, or over \$1 trillion/year, is needed, but the credit squeeze could delay spending, potentially setting up a supply-crunch once the economy recovers



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Average annual investment in new power plants, 2007-2030



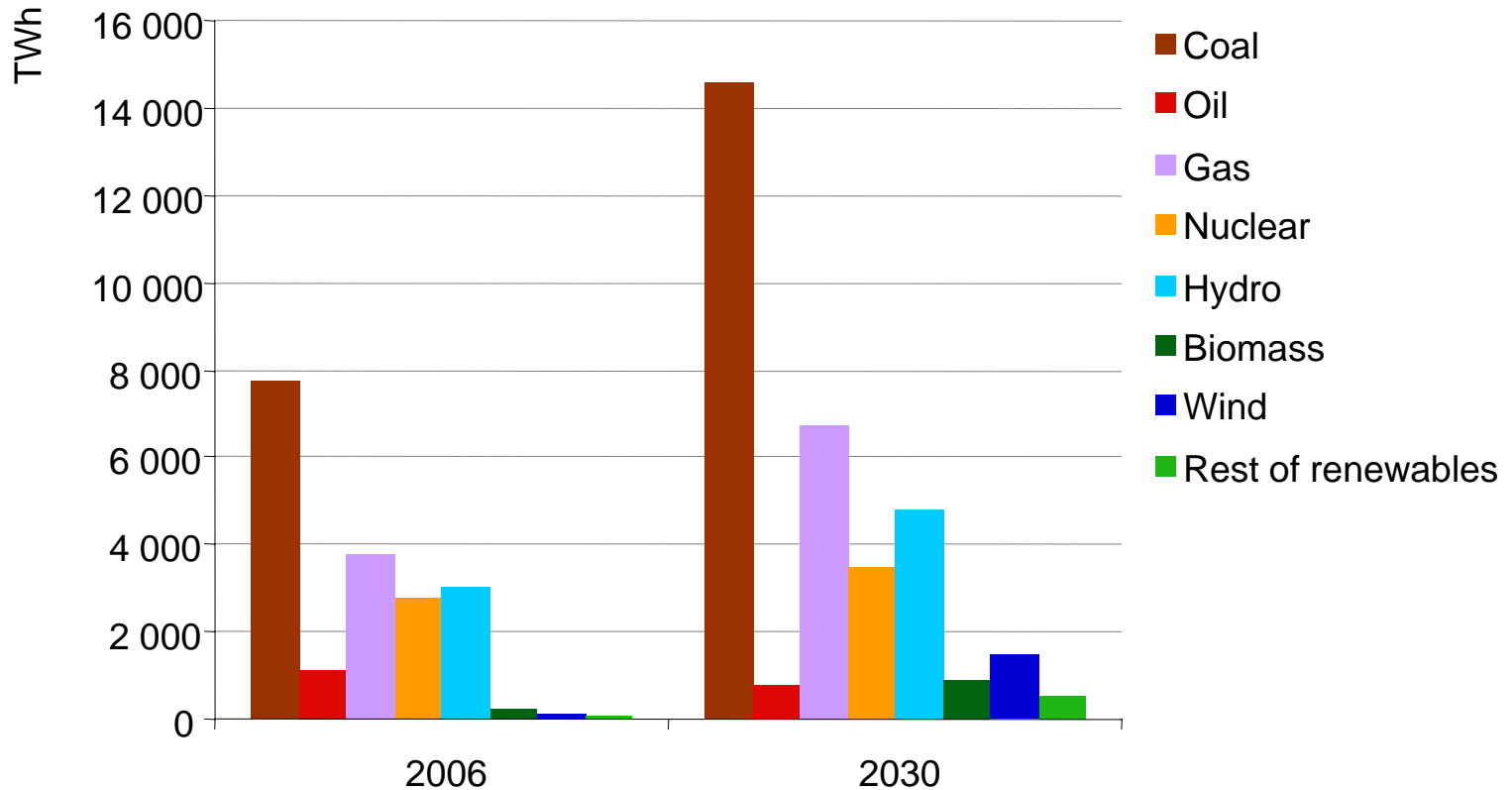
Total investment in new renewables-based electricity capacity worldwide totals

\$3.3 trillion – more than investment in fossil-fuel power plants



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World electricity generation in the RS



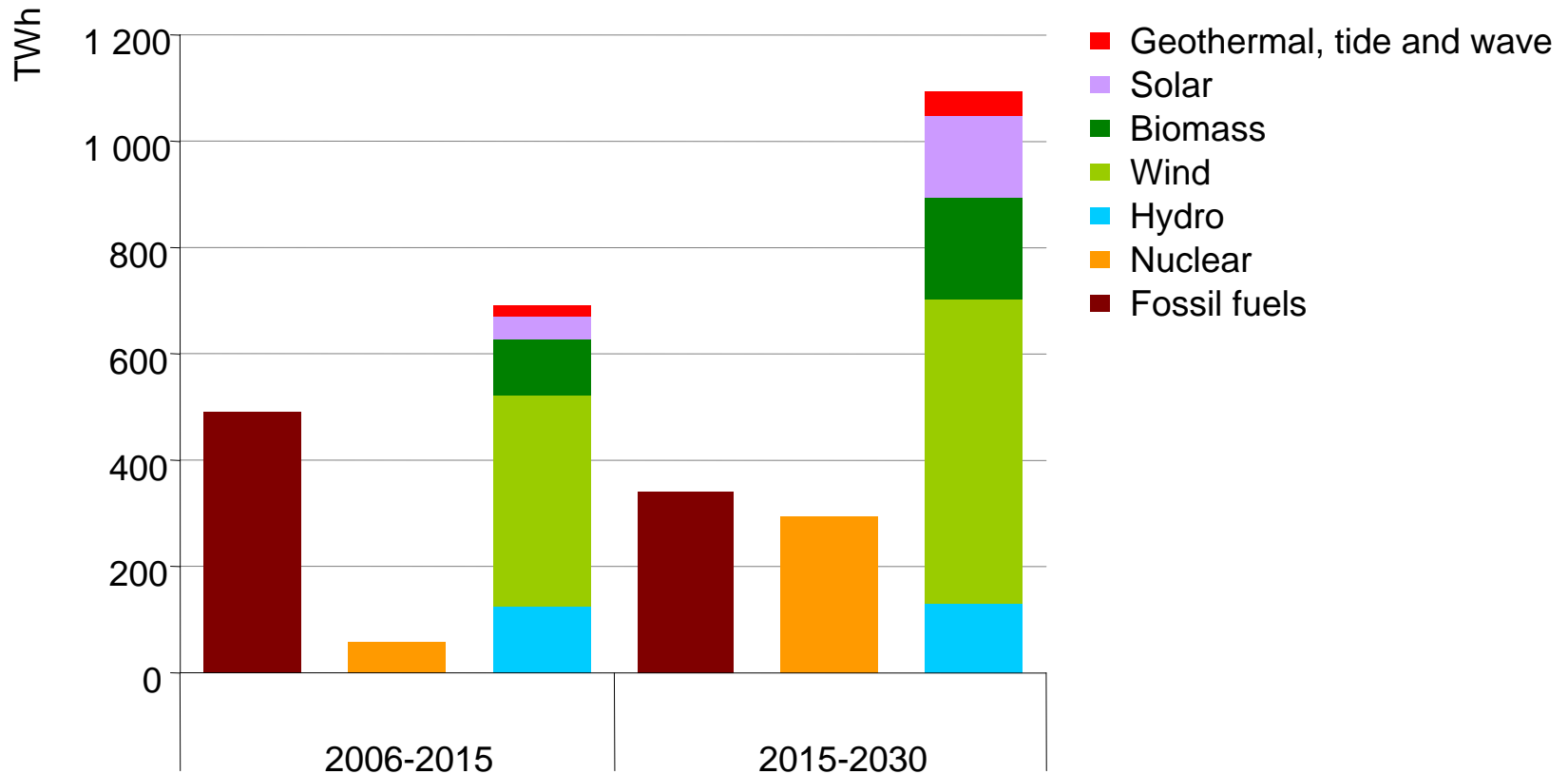
The shares of coal & renewables in the power-generation fuel mix increase to 2030

– mainly at the expense of natural gas & nuclear power



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Reference Scenario: Increase in OECD electricity generation

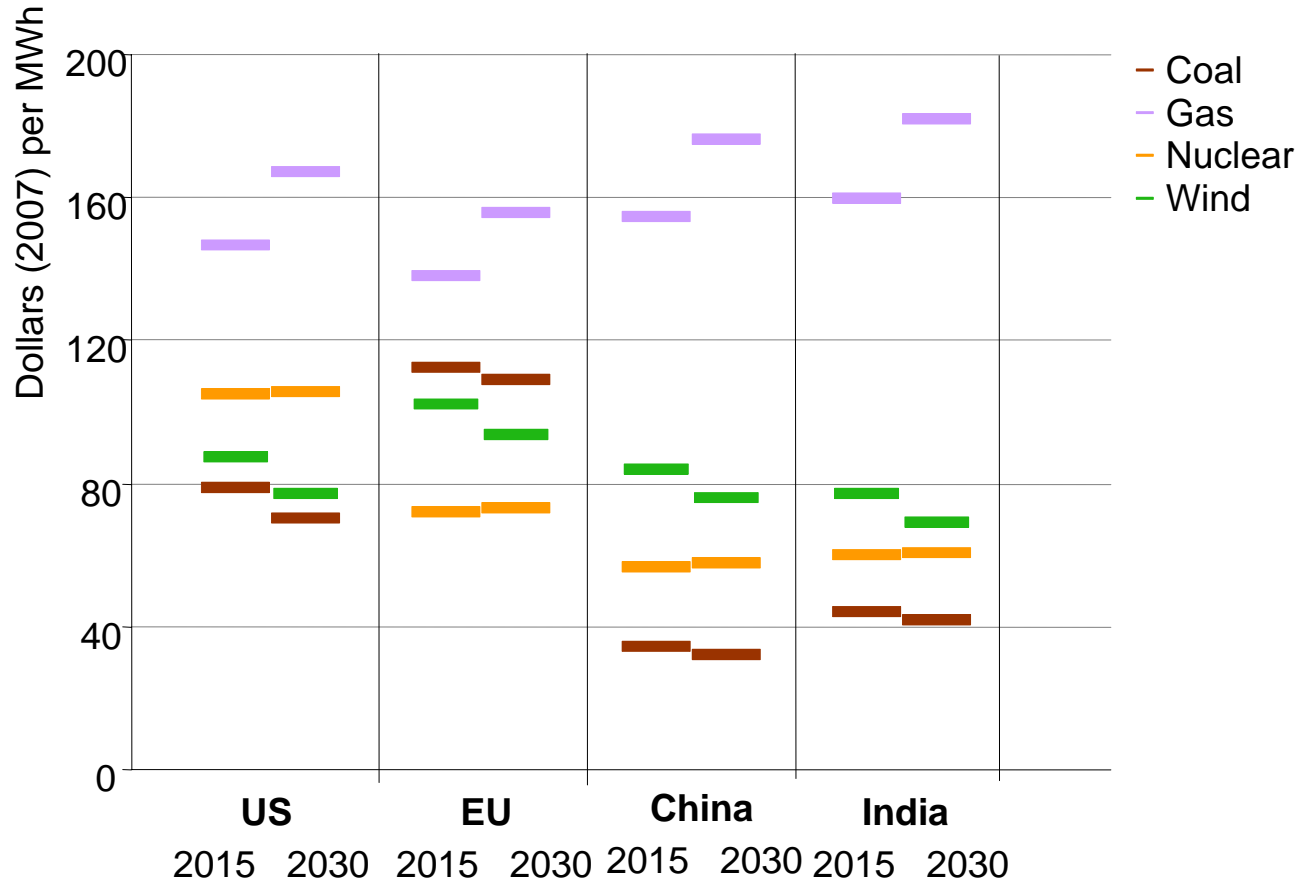


In the OECD, the total projected increase in renewable electricity generation is bigger than the combined increase in fossil fuel-based and nuclear power



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Electricity generating costs

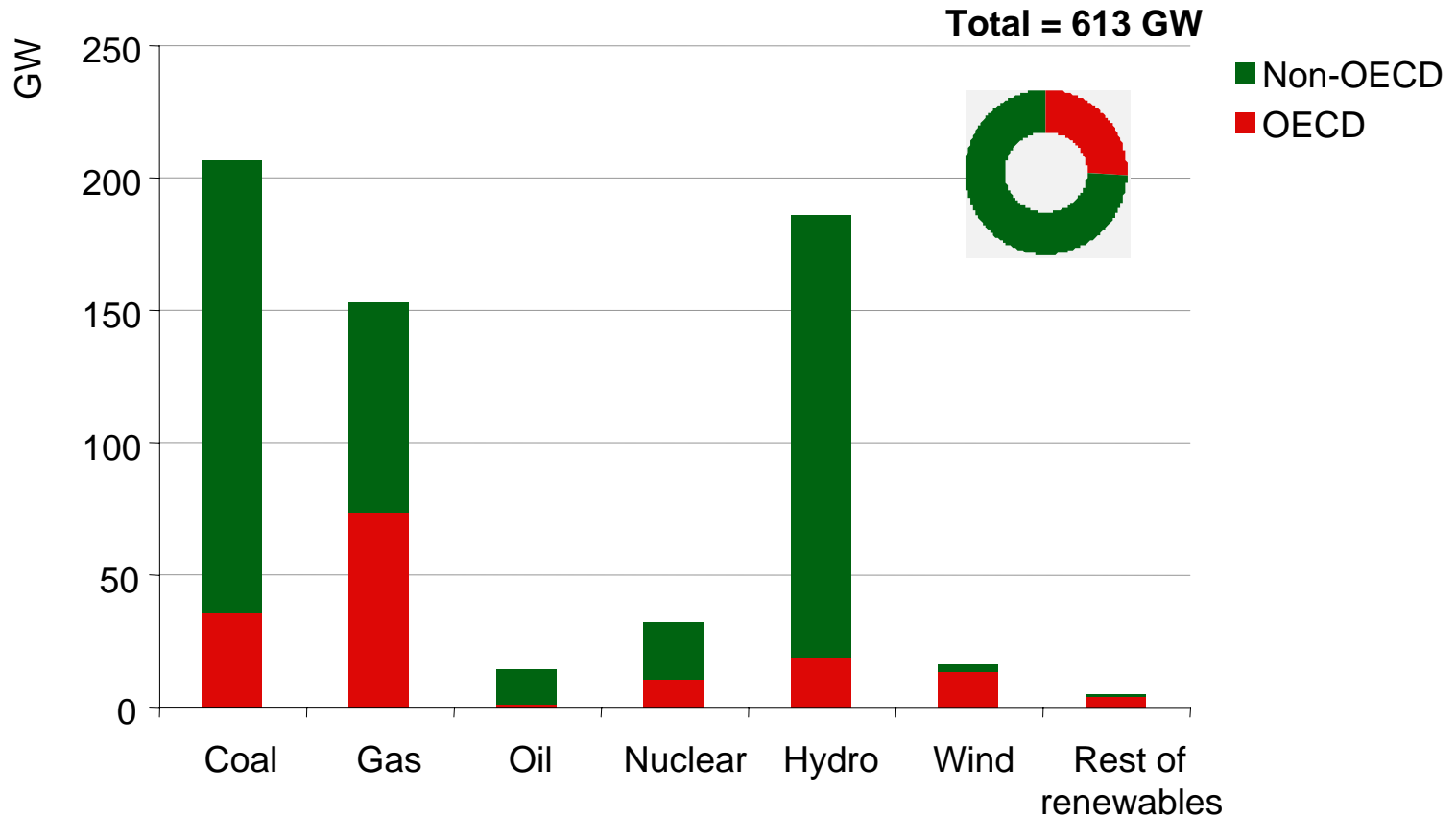


On current policies, gas-fired generation is set to remain more expensive than coal, nuclear or wind in most regions



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Power-generation capacity under construction worldwide

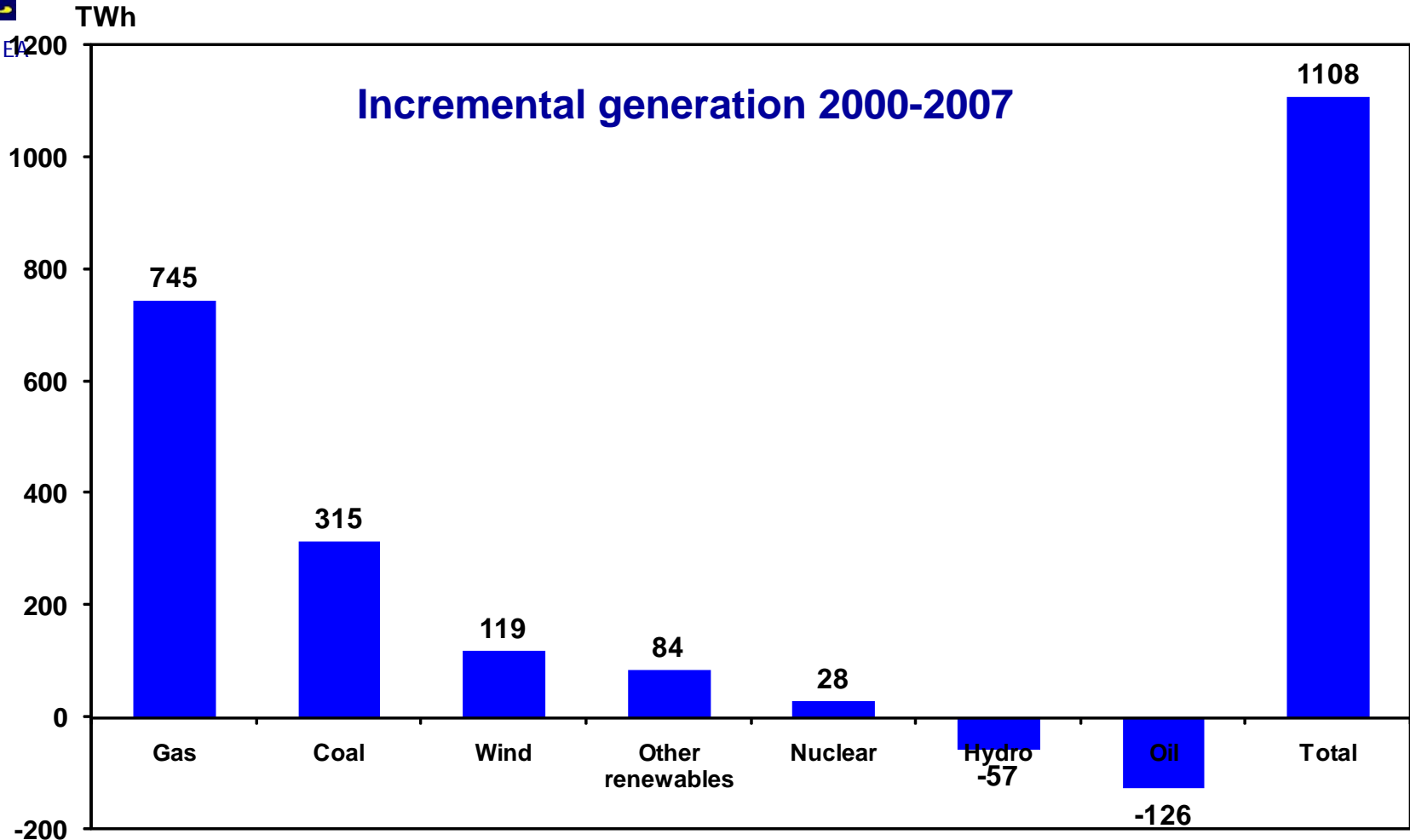


Over 600 GW of power-generation capacity is currently under construction worldwide & is expected to be operational before 2015, 3/4 of this is outside



Power generation growth in OECD

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There was little in the way of new coal outside the developing world in 2007 and less than a handful of announcements on new nuclear plant



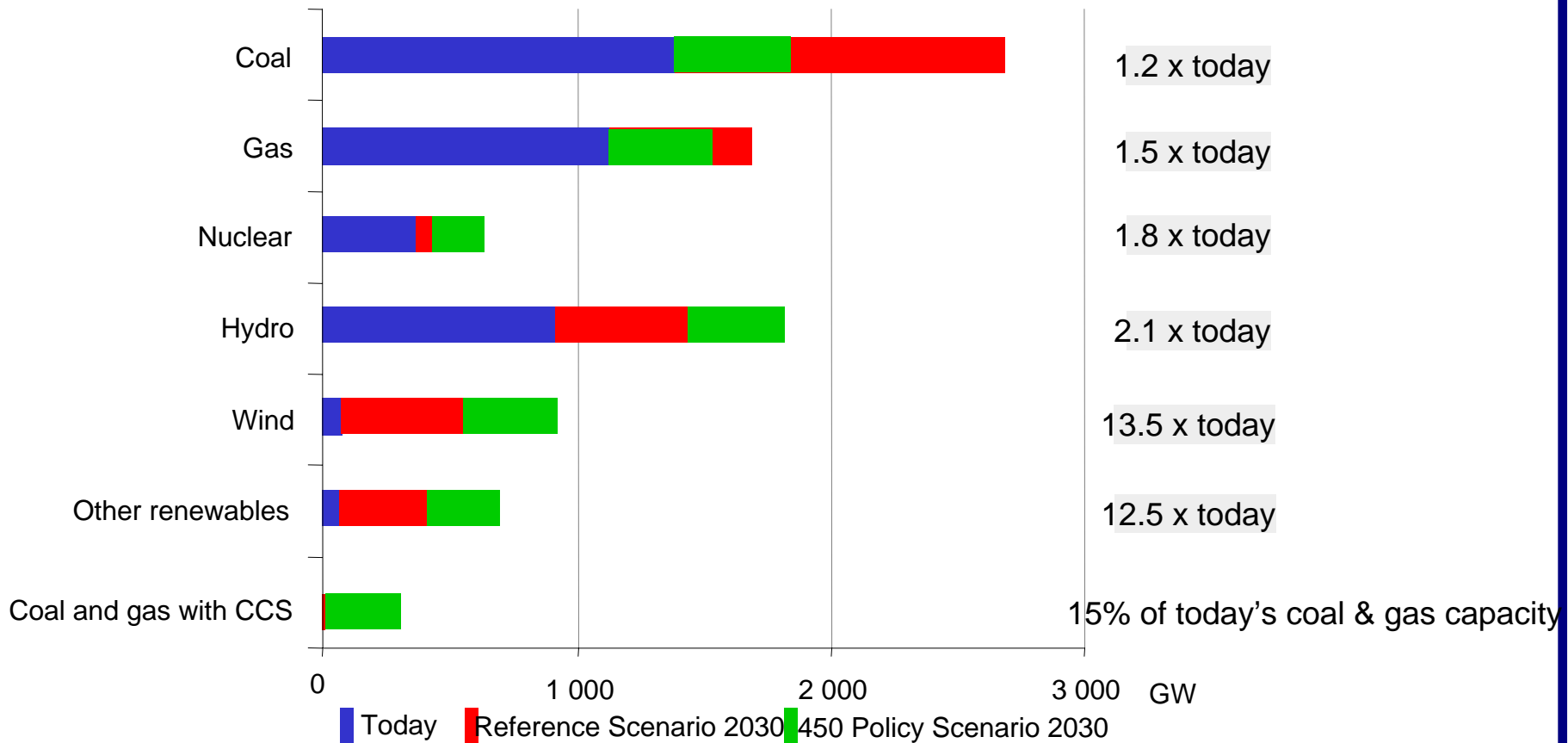
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Post-2012 Climate- Policy scenarios



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Total power generation capacity today and in 2030 by scenario

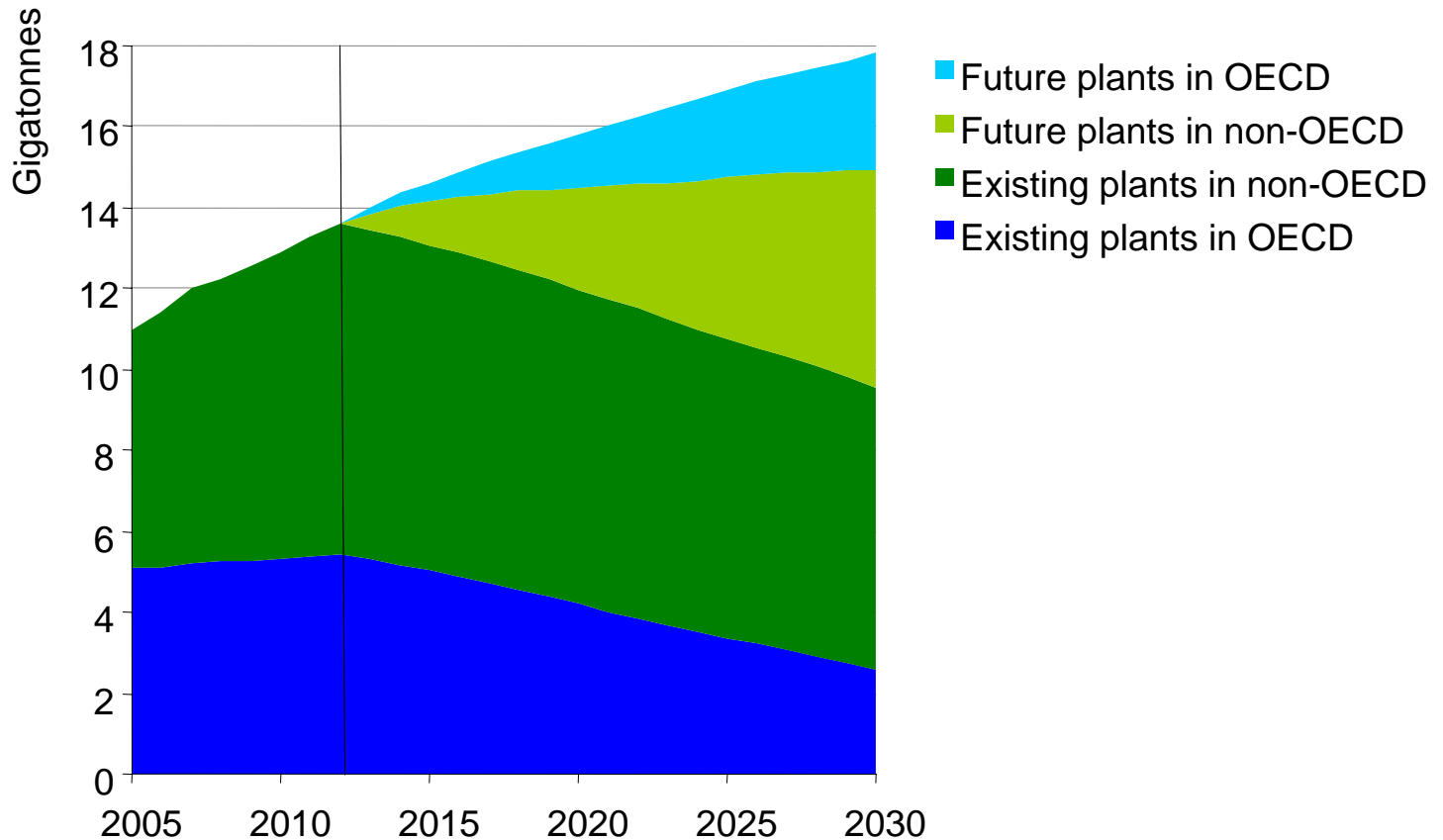


In the 450 Policy Scenario, the power sector undergoes a dramatic change – with CCS, renewables and nuclear each playing a crucial role



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Energy-related CO₂ emissions from existing & future power plants in the RS

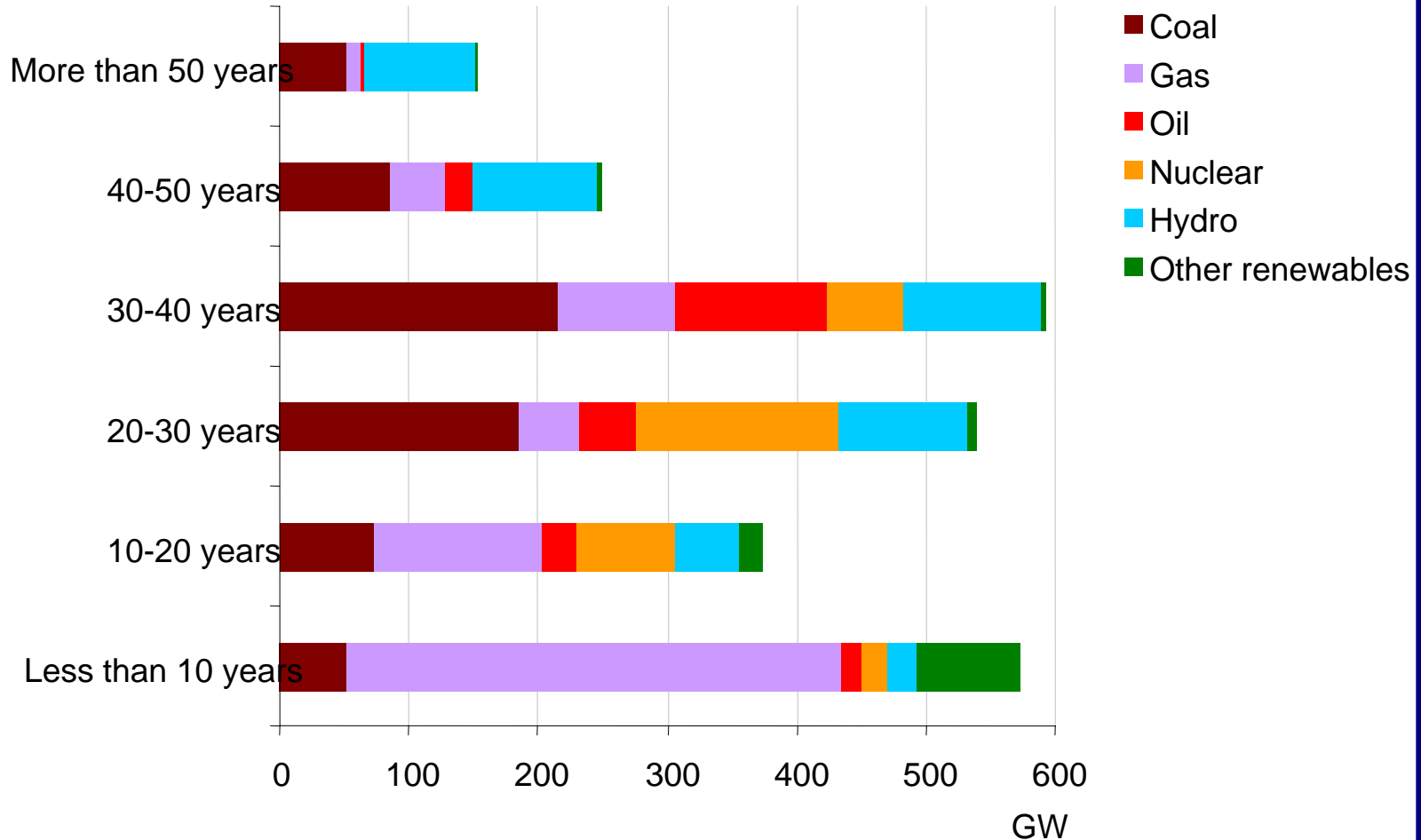


Although 75% of power sector CO₂ emissions in 2020 are already “locked-in”, investments in the next decade will be critical to a low-carbon future in the longer term



Age distribution of OECD power plants, 2006

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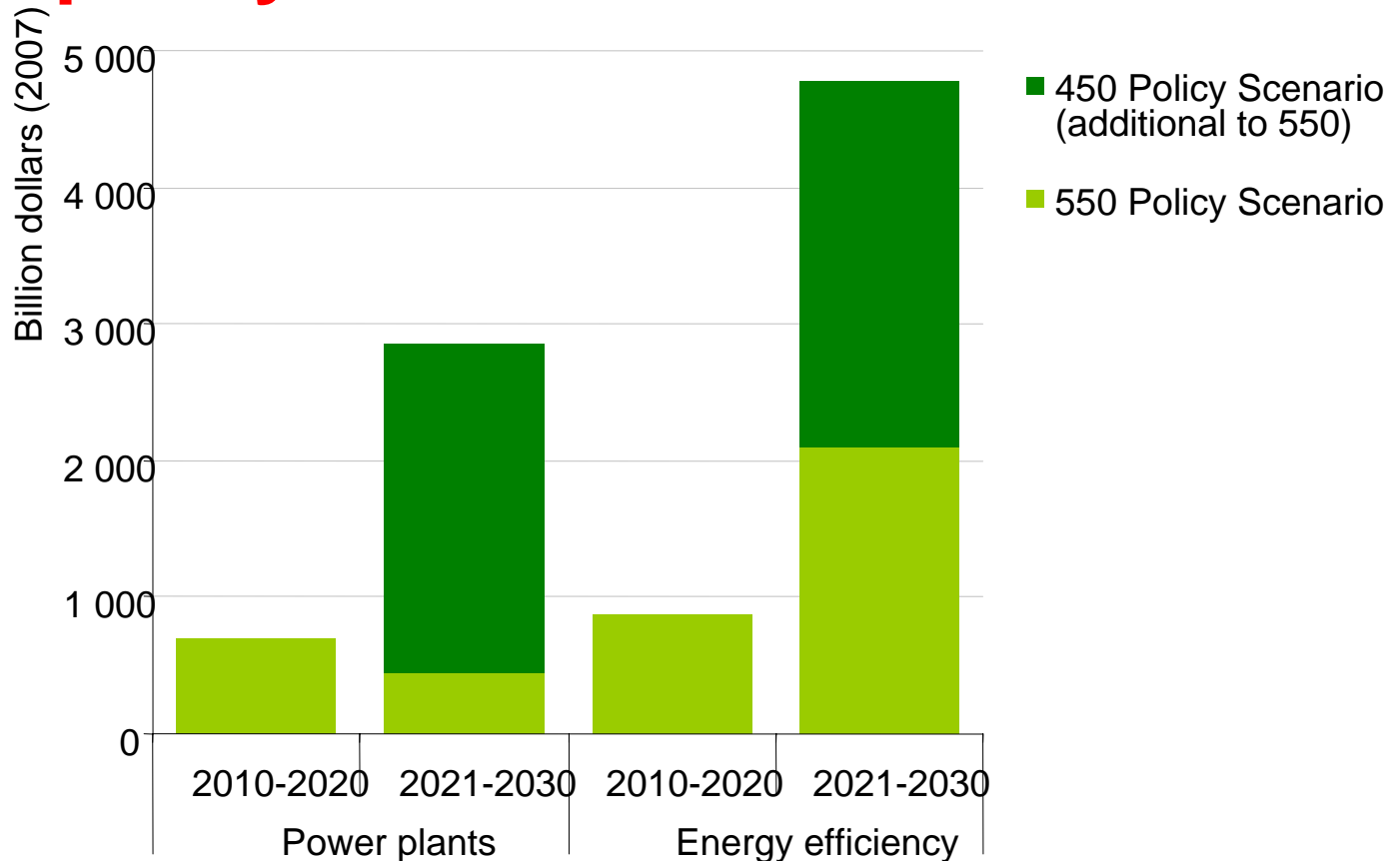


With over half of OECD coal capacity over 30 years old & non-OECD demand rising fast, investment decisions in the next decade will greatly affect emissions in the coming decades



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Additional investments in the climate-policy scenarios versus the RS



Power-sector investment in the last decade of the Outlook period in the 450 Policy Scenario is almost double that in the Reference Scenario



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The role of vertical arrangements



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Hedging risk in power generation investment

- Financial hedging instruments have shorter time horizon than the term of the investment
- Vertical integration and vertical control through long-term contracts can lead to efficiency gains and secure investments
- Can also create market power that can be abused to reduce competition – but this is the role of Competition Authorities
- Lack of liquidity and transparency in wholesale energy markets



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Summary & conclusions

- **Increasingly uncertain investment environment - rising costs**
- **Decarbonisation of the electricity sector further increases investment needs**
- **Role of potential competition vs. “actual” competition when assessing VI and LTC**
- **Economic stimulus packages to be directed to energy infrastructure**