World Energy Outlook 2007: China and India Insights

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Reference Scenario

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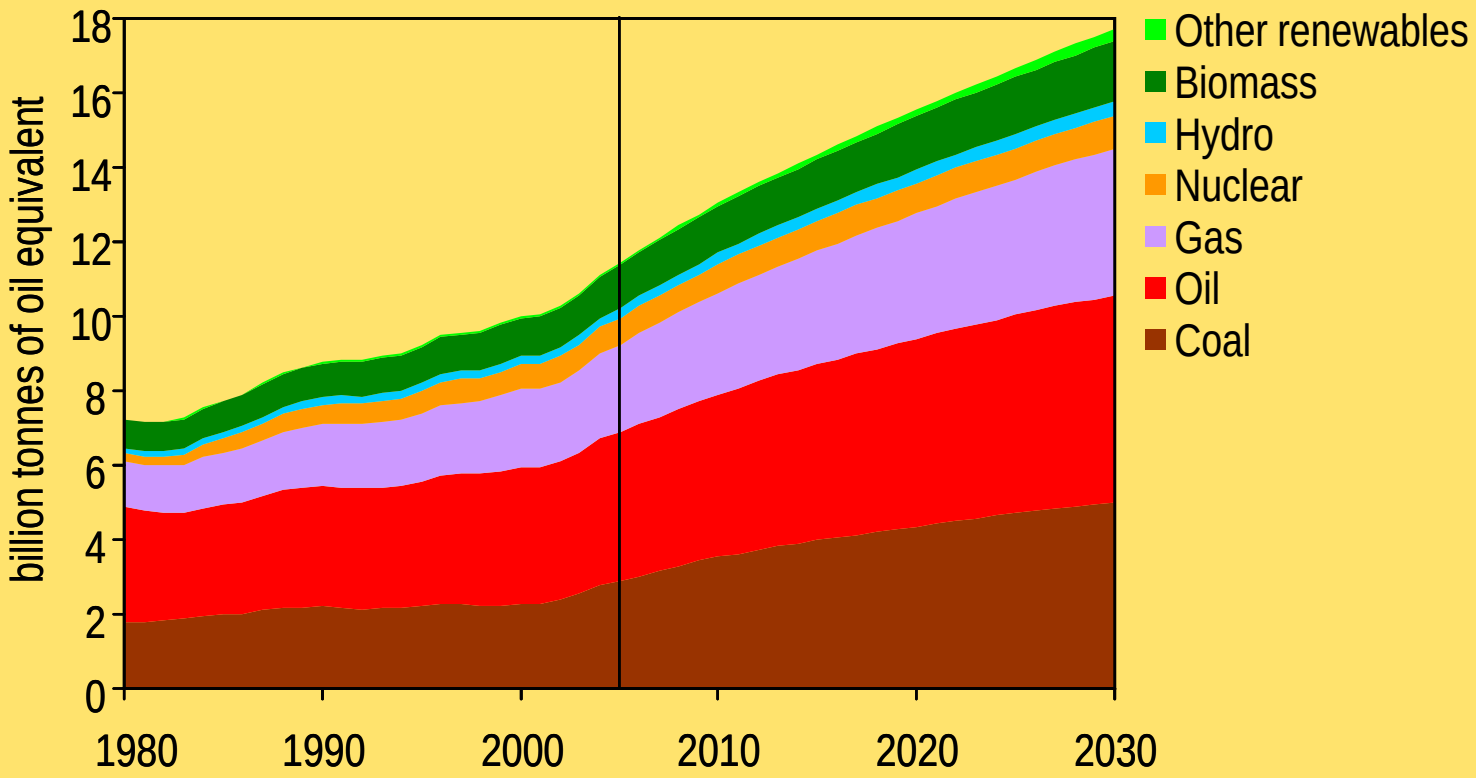
Reference Scenario:

World Primary Energy Demand



Global demand grows by more than half over the next quarter of a century, with coal use rising most in absolute terms

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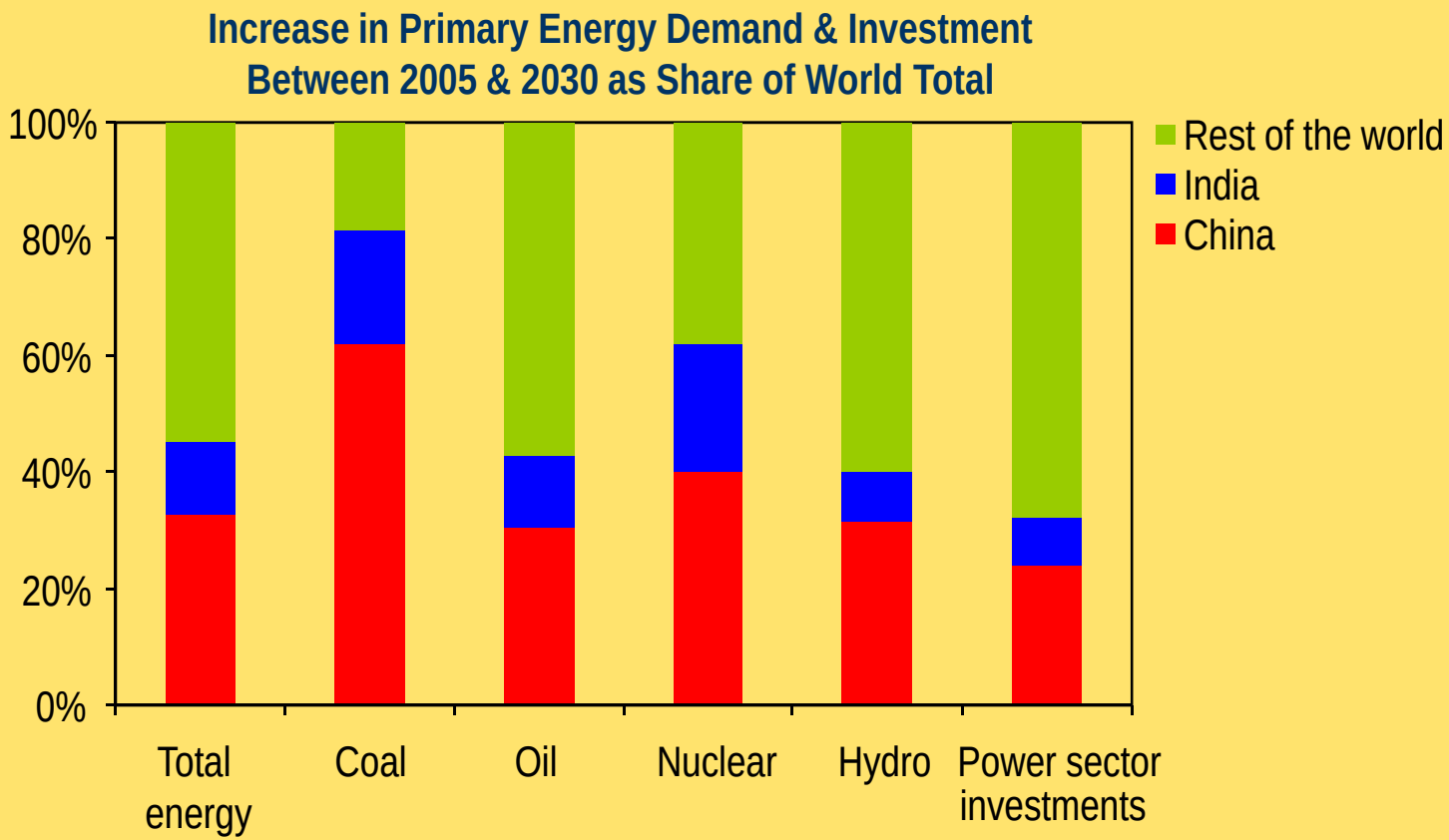
The Emerging Giants of World Energy



China & India will contribute more than 40% of the increase in global energy demand to 2030 on current trends

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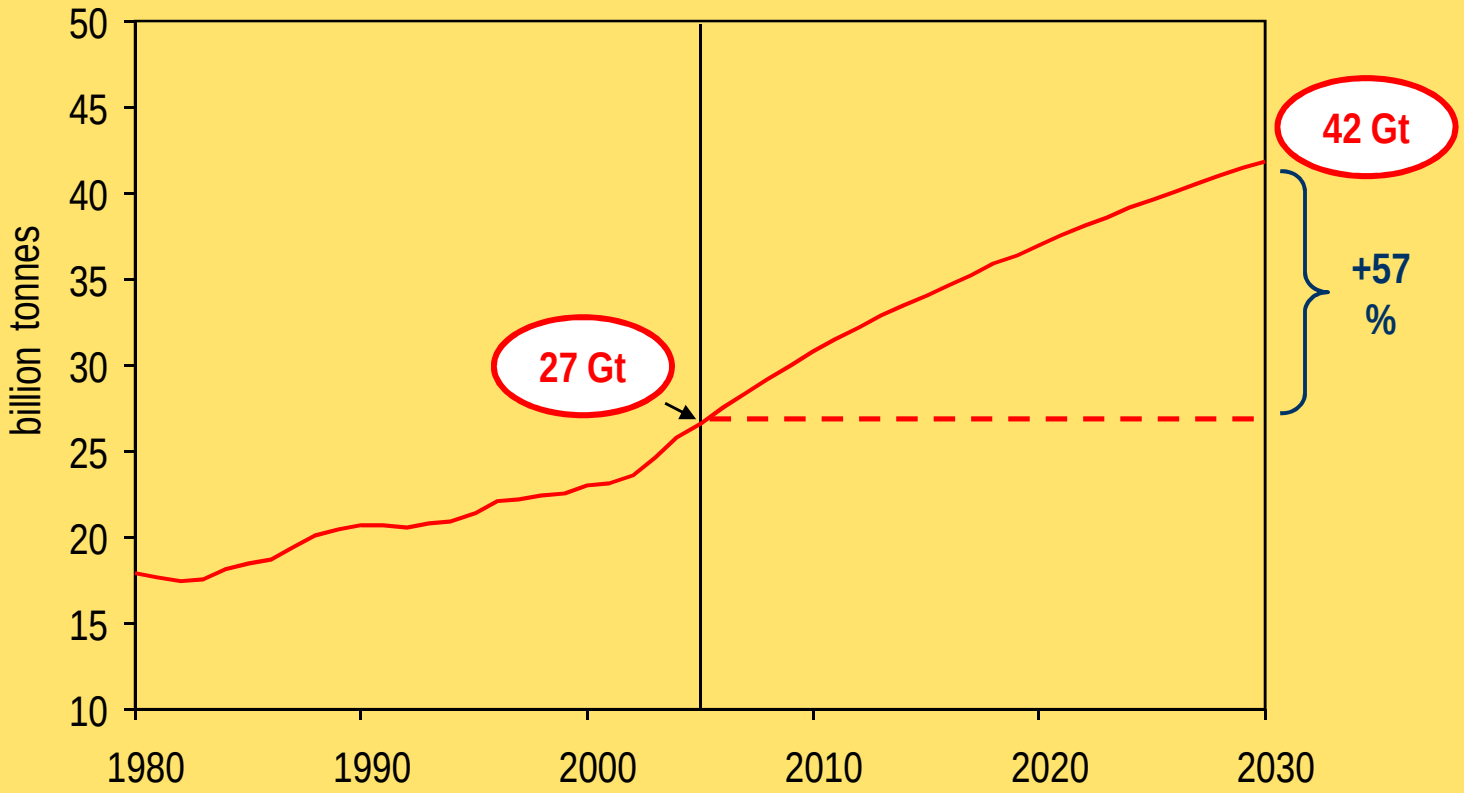
Reference Scenario:

Global Energy-Related CO_2 Emissions



Global emissions rise inexorably on current policies, driven mainly by China, India & other developing countries

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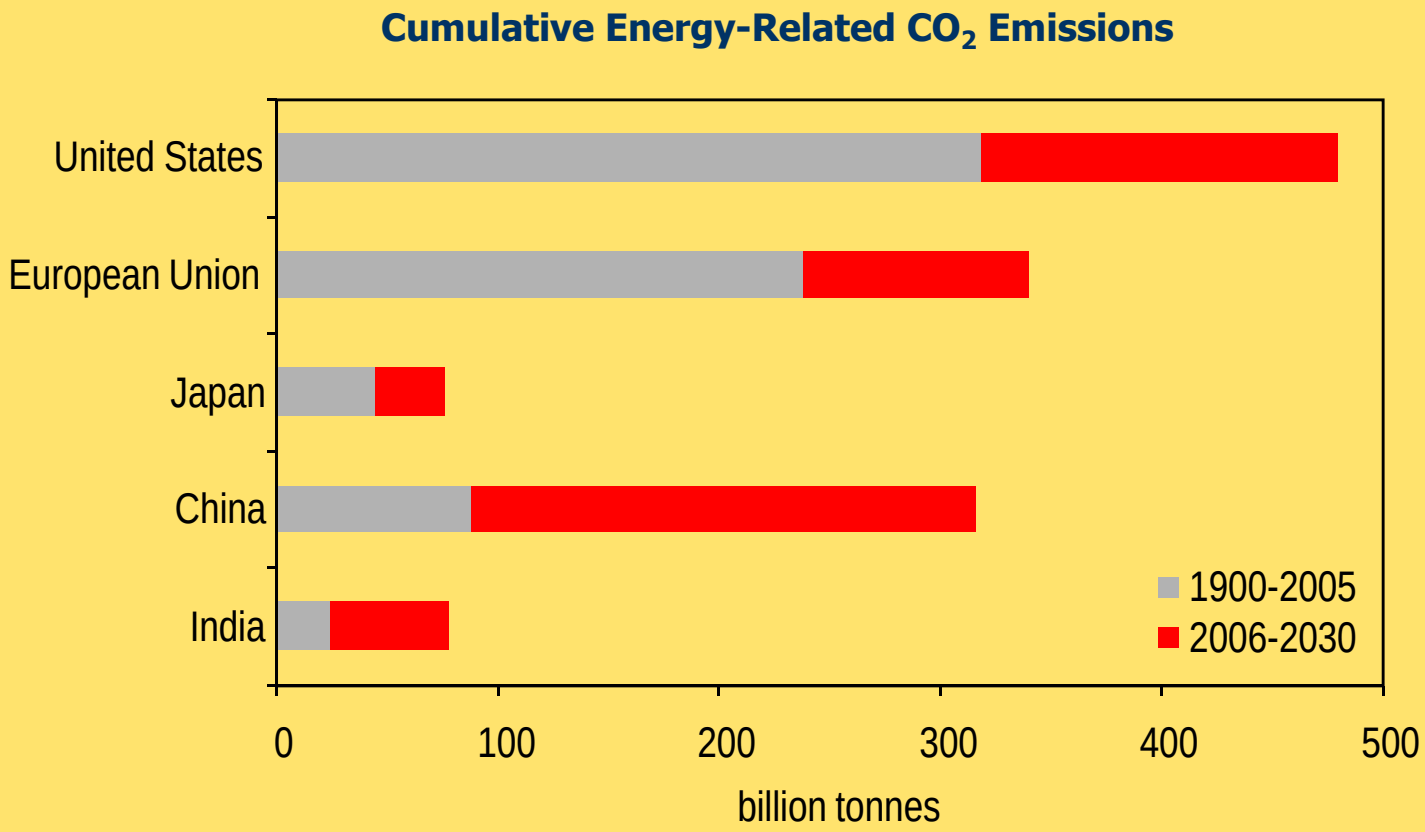
China & India in Global CO_2 Emissions



Around 60% of the global increase in emissions in 2005-2030 comes from China & India

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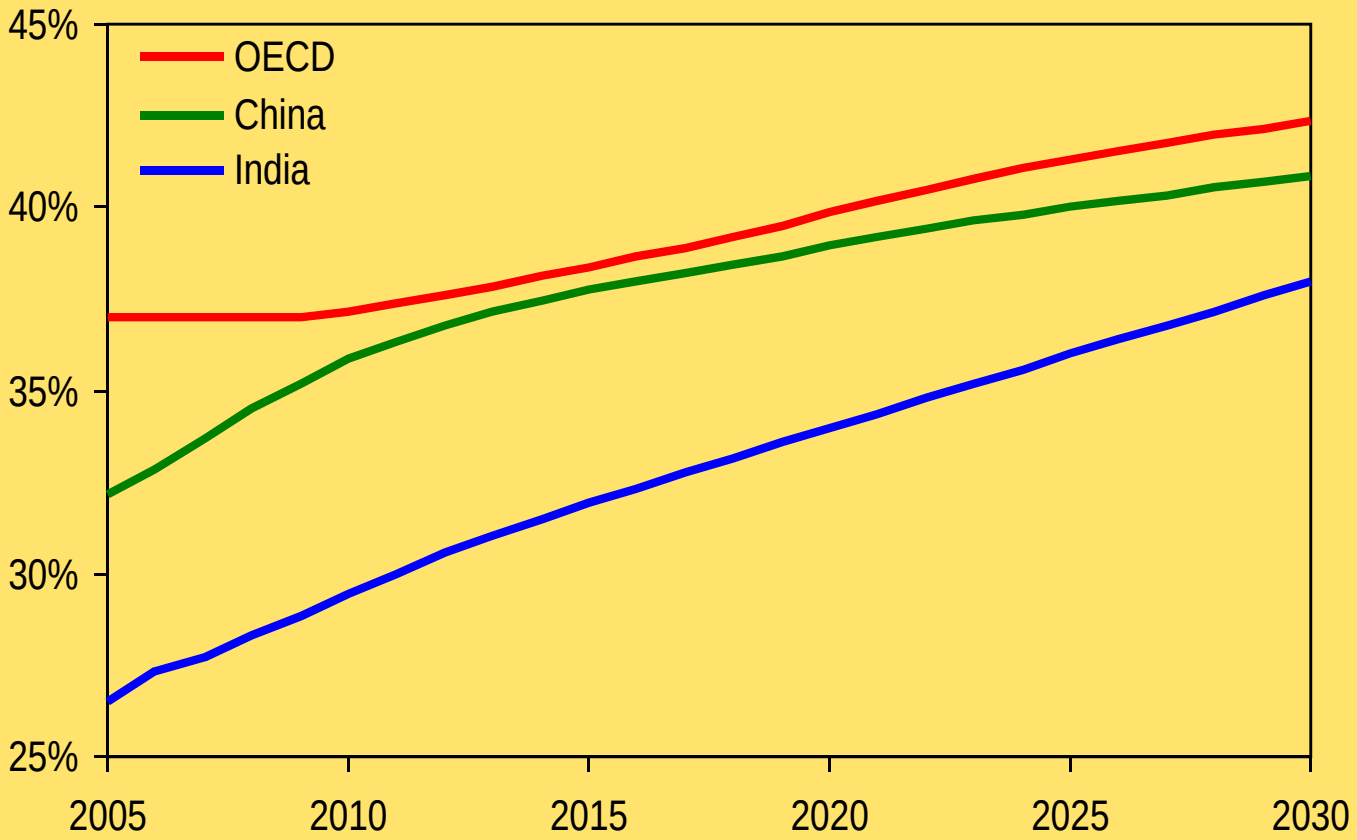
Reference Scenario:

Average Coal-Fired Power Plant Gross Efficiency



China's coal power plant fleet's gross efficiency is quickly narrowing the gap to the OECD average

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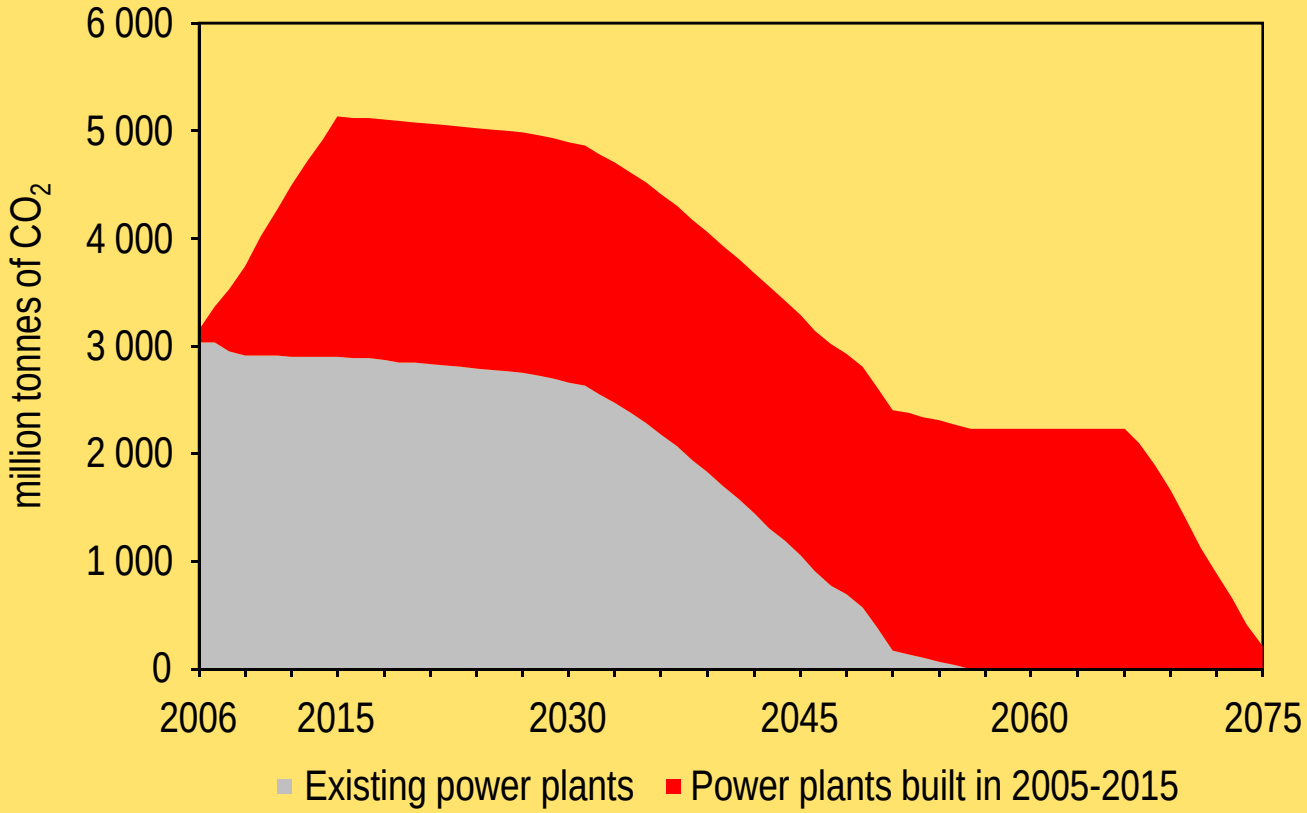
CO_2 Emissions from Coal-Fired Power Stations built prior to 2015 in China & India



Capacity additions in the next decade will lock-in technology & largely determine emissions through 2050 & beyond

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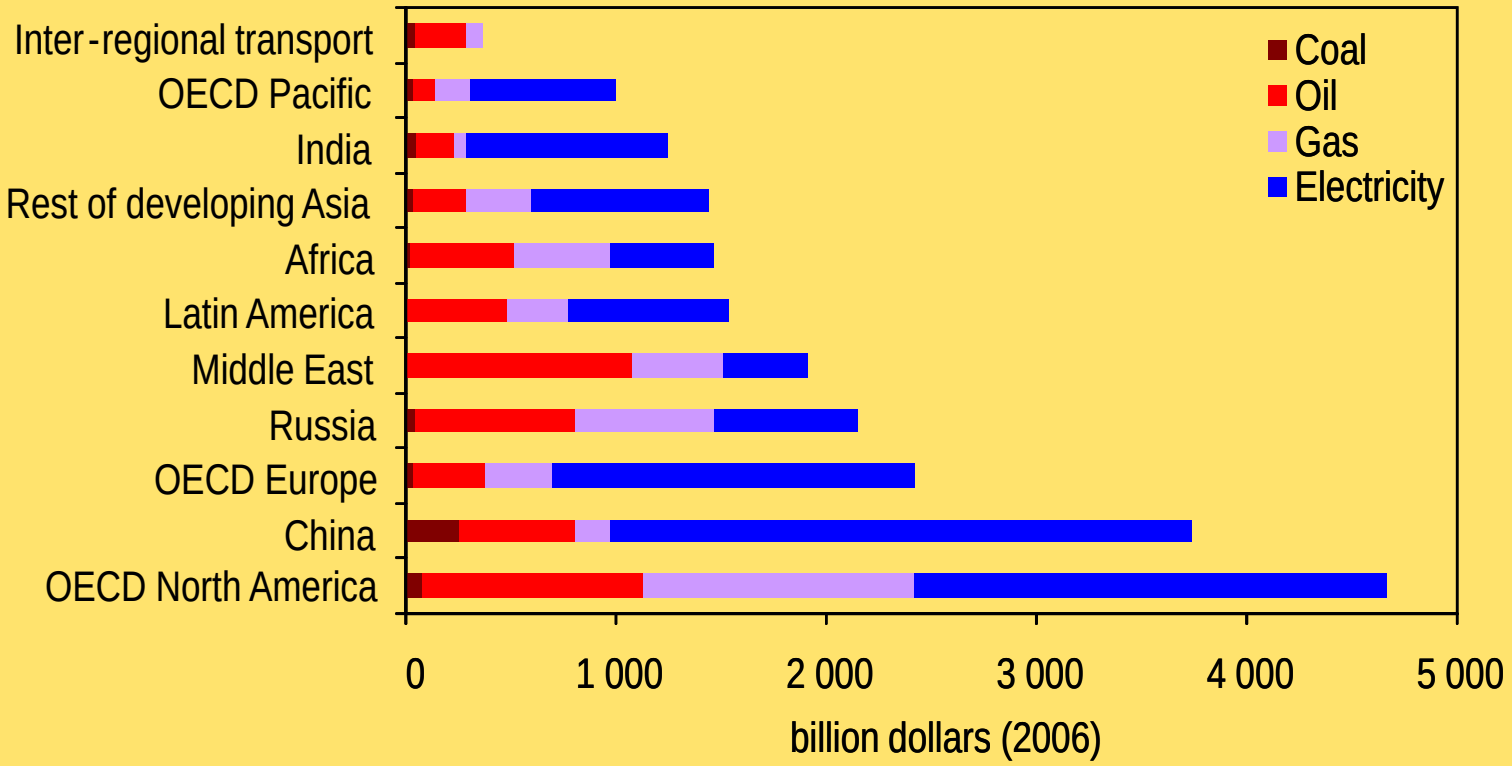
Cumulative Investment in Energy-Supply Infrastructure, 2006-2030



Just over half of all investment needs to 2030 of $22 trillion are in developing countries, 17% in China & another 5% in India alone

Alternative Policy Scenario

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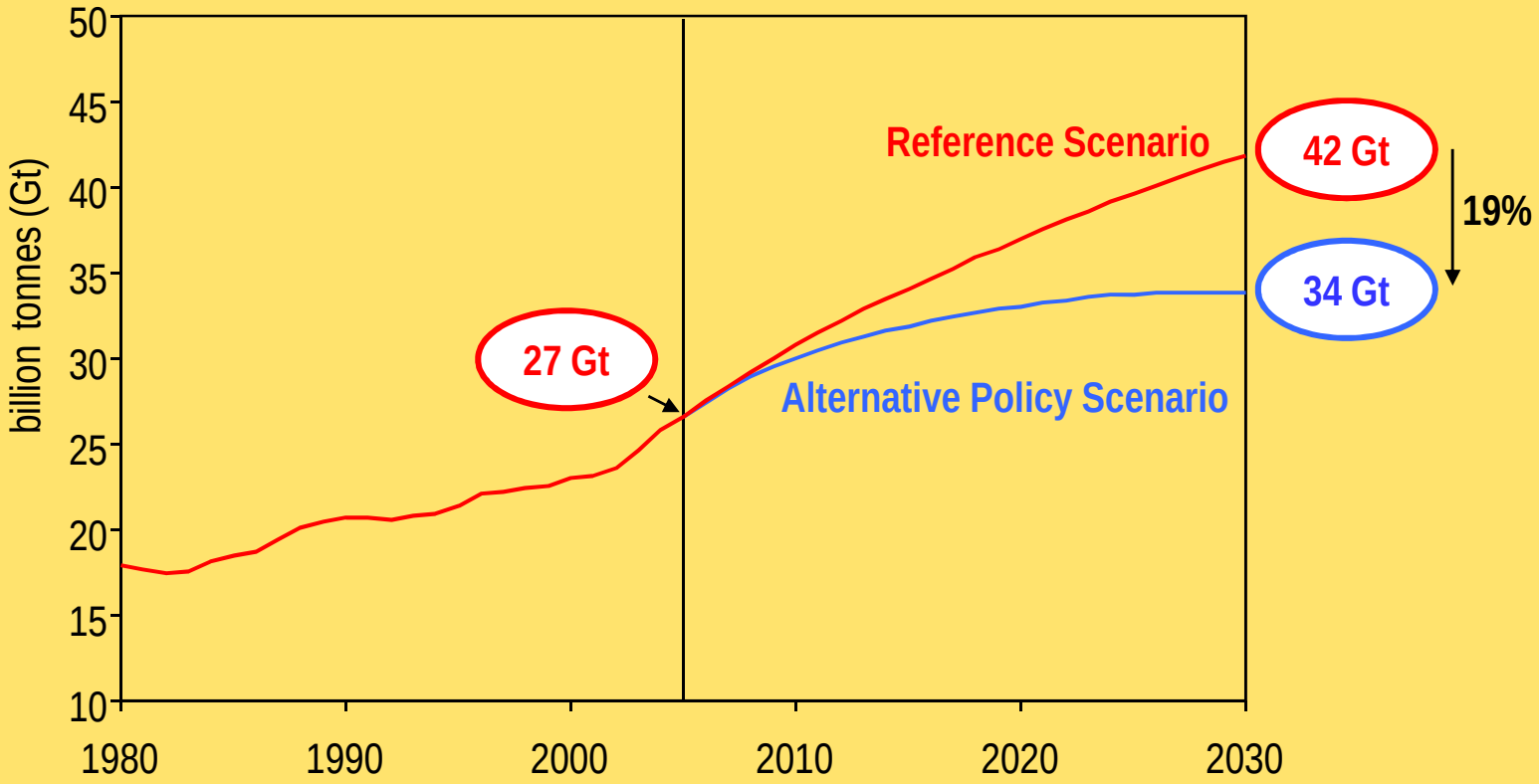
Global Energy-Related CO_2 Emissions



Global emissions will increase by 57% in the Reference Scenario, but they level off in the Alternative Policy Scenario

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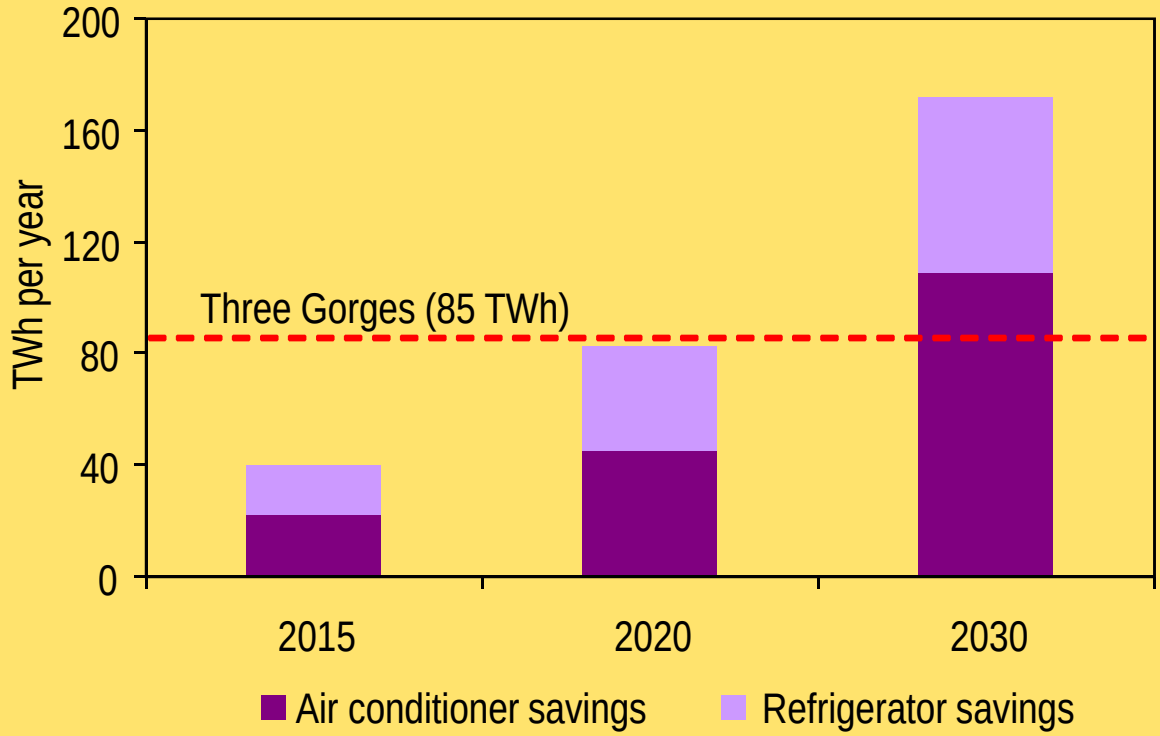
Alternative Policy Scenario:

Electricity Savings from More Efficient Appliances in China



Tougher efficiency standards for air conditioners & refrigerators alone would save the need to build 2 Three Gorges by 2030

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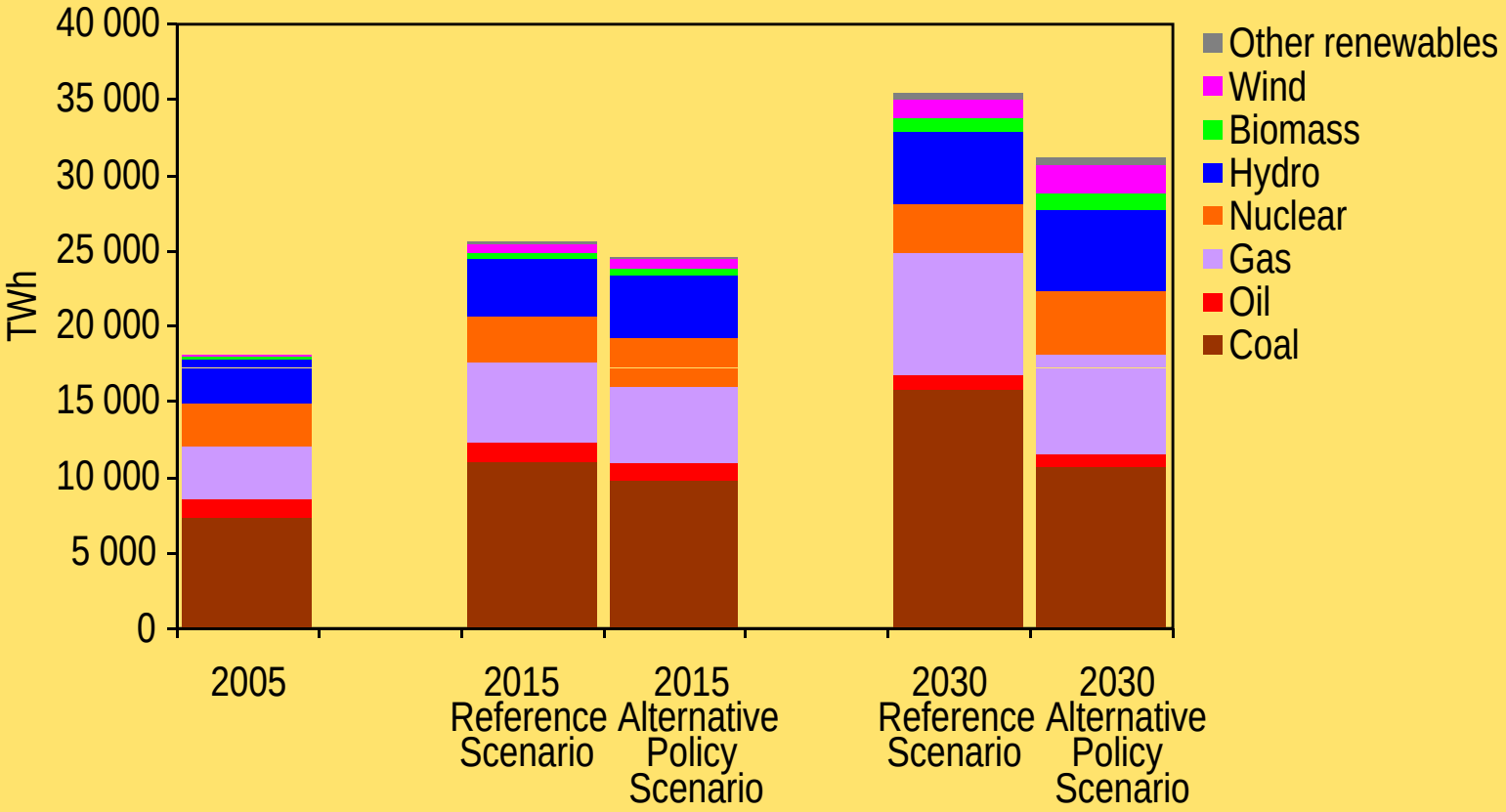
Alternative Policy Scenario:

World Electricity Generation Mix



New policies could reduce the need to generate electricity in 2030 by 12% & increase the share of low-carbon sources

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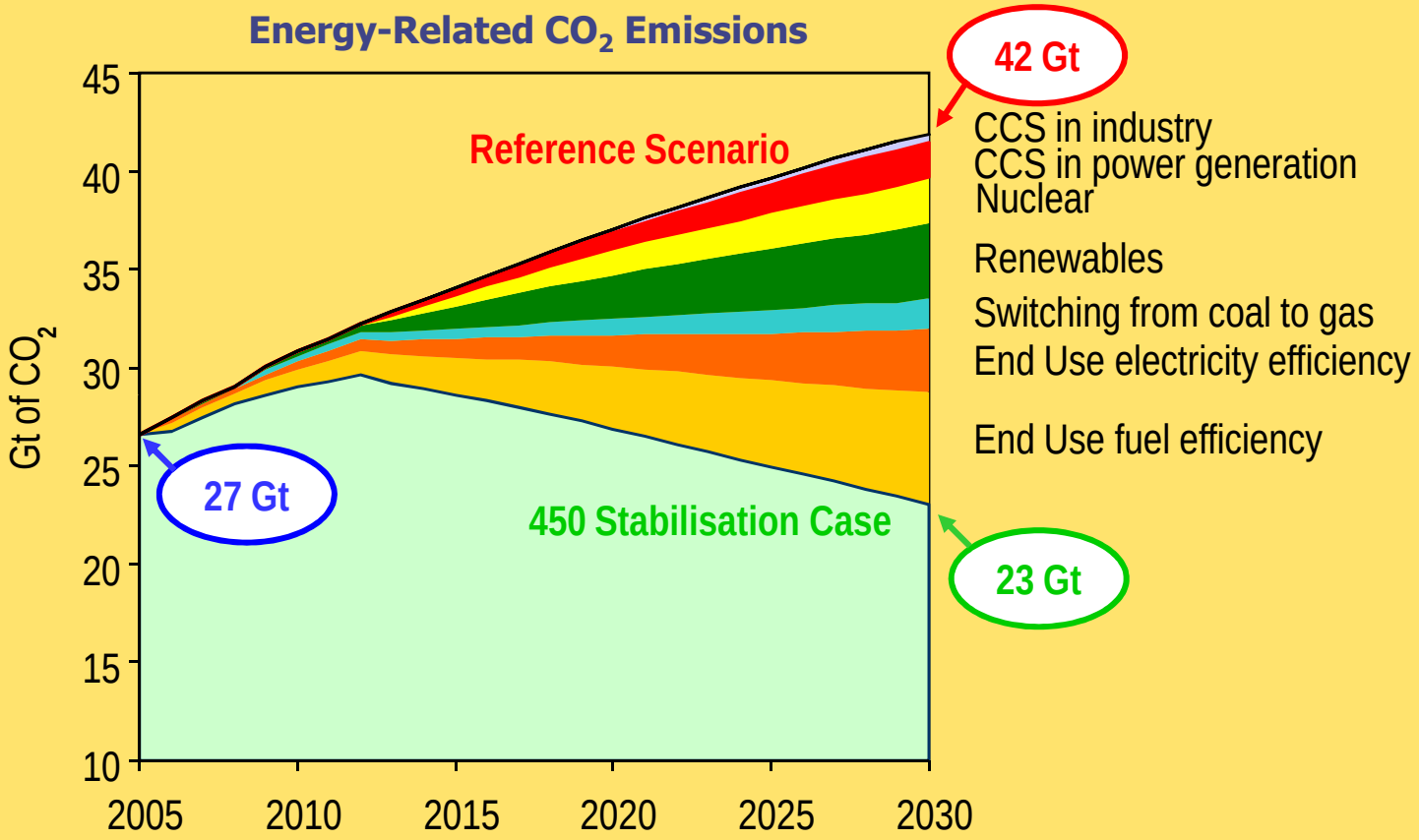
CO_2 Emissions - 450 Stabilisation Case



By 2030, emissions are reduced to some 23 Gt, a reduction of 19 Gt compared with the Reference Scenario

High Growth Scenario

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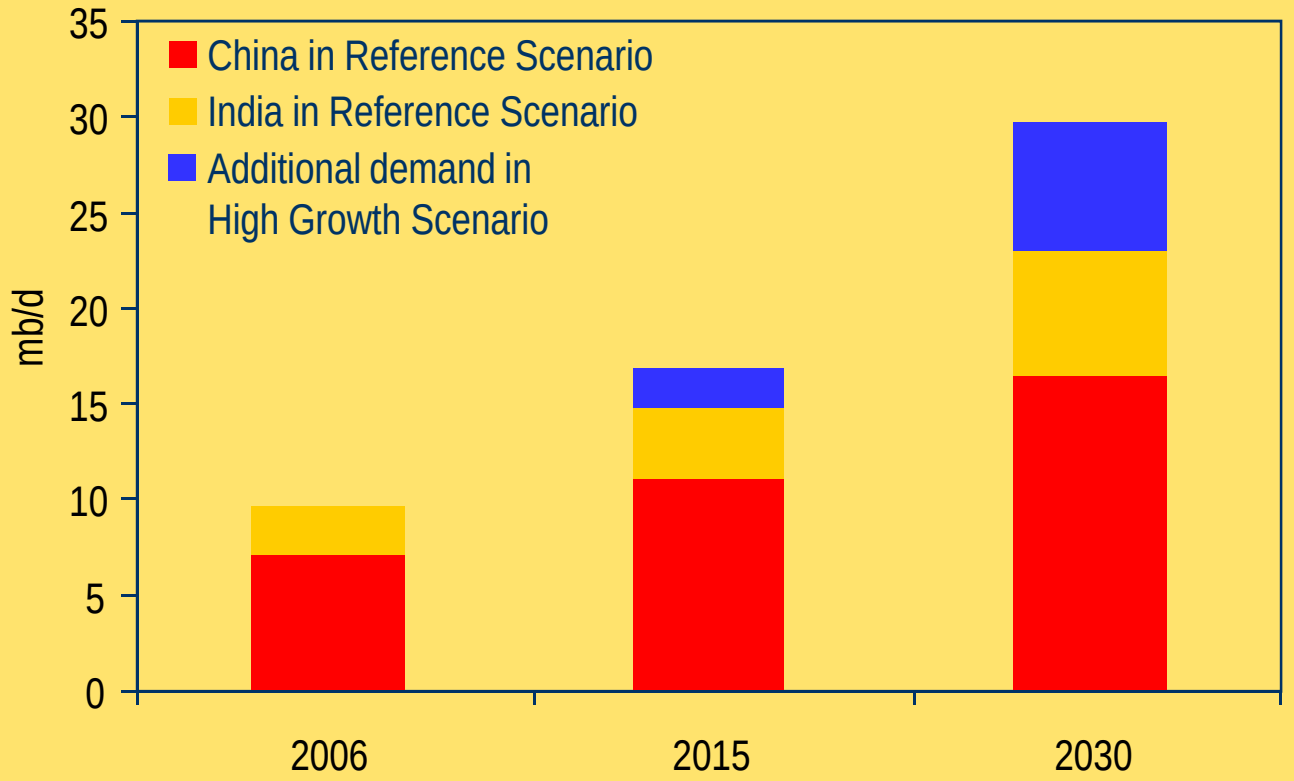
China & India Oil Demand



Faster economic growth in China & India would have major implications for energy security & climate

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Implications for Global Climate

- Reference & High Growth Scenarios trends are consistent with dramatic climate effects
  - → *Atmospheric concentration of greenhouse gases would rise to 850 - 1 130 ppm of CO2-equivalent*
  - → *Implies a rise in global average temperature of more than 4.9 - 6.1ºC above pre-industrial levels*
- Increase in concentration & temperature is much less marked in the Alternative Policy Scenario
- The 450 Stabilisation Case is very ambitious
  - → *Would require early retirement of energy-related capital on a large scale & at high cost*
  - → *Would hinge on much stronger policy action than currently envisaged*

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Conclusions

- Global energy system is on an *increasingly* unsustainable path
- China and India are transforming the global energy system by their sheer size
- Challenge for *all* countries is to achieve transition to a more secure, lower carbon energy system
- New policies now under consideration would make a major contribution
- Next 10 years are critical
  - → *The pace of capacity additions will be most rapid*
  - → *Technology will be "locked-in" for decades*
  - → *Growing tightness in oil & gas markets*
- Challenge is global so solutions must be global