



World Energy Outlook 2007: China and India Insights



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Approach

- Co-operation with China's NDRC & ERI, India's TERI
 - Workshops / meetings in Beijing, Delhi
 - Chinese and Indian experts joined the IEA
 - More than 50 Chinese and Indian peer reviewers
- Scenario approach
 - Reference Scenario
 - Alternative Policy Scenario & 450 Stabilisation Case
 - High Growth Scenario (China/India)
- Full global update of projections (all scenarios)
- Analysis of the impact of China & India on global economy, energy markets & environment



Reference Scenario



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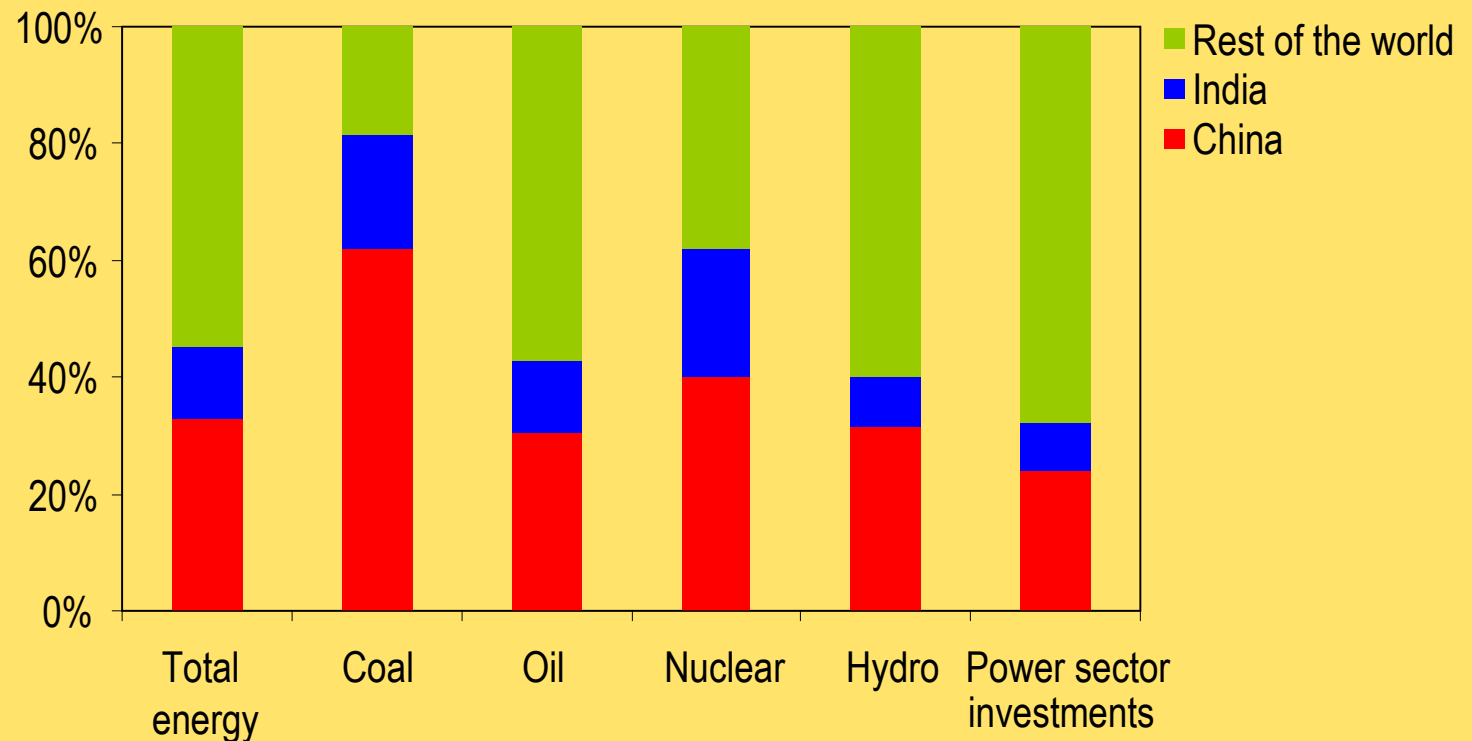
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The Emerging Giants of World Energy

Increase in Primary Energy Demand & Investment
Between 2005 & 2030 as Share of World Total



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



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Global Oil Supply Prospects to 2015

- Oil supply/demand balance is set to remain tight
- In total, 37.5 mb/d of gross capacity additions needed in 2006-2015
 - *13.6 mb/d to meet demand & rest to replace decline in existing fields*
- OPEC & non-OPEC producers have announced plans to add 25 mb/d through to 2015
- Thus, a further 12.5 mb/d of gross capacity would need to be added or demand growth curbed
- Otherwise, a supply crunch cannot be ruled out



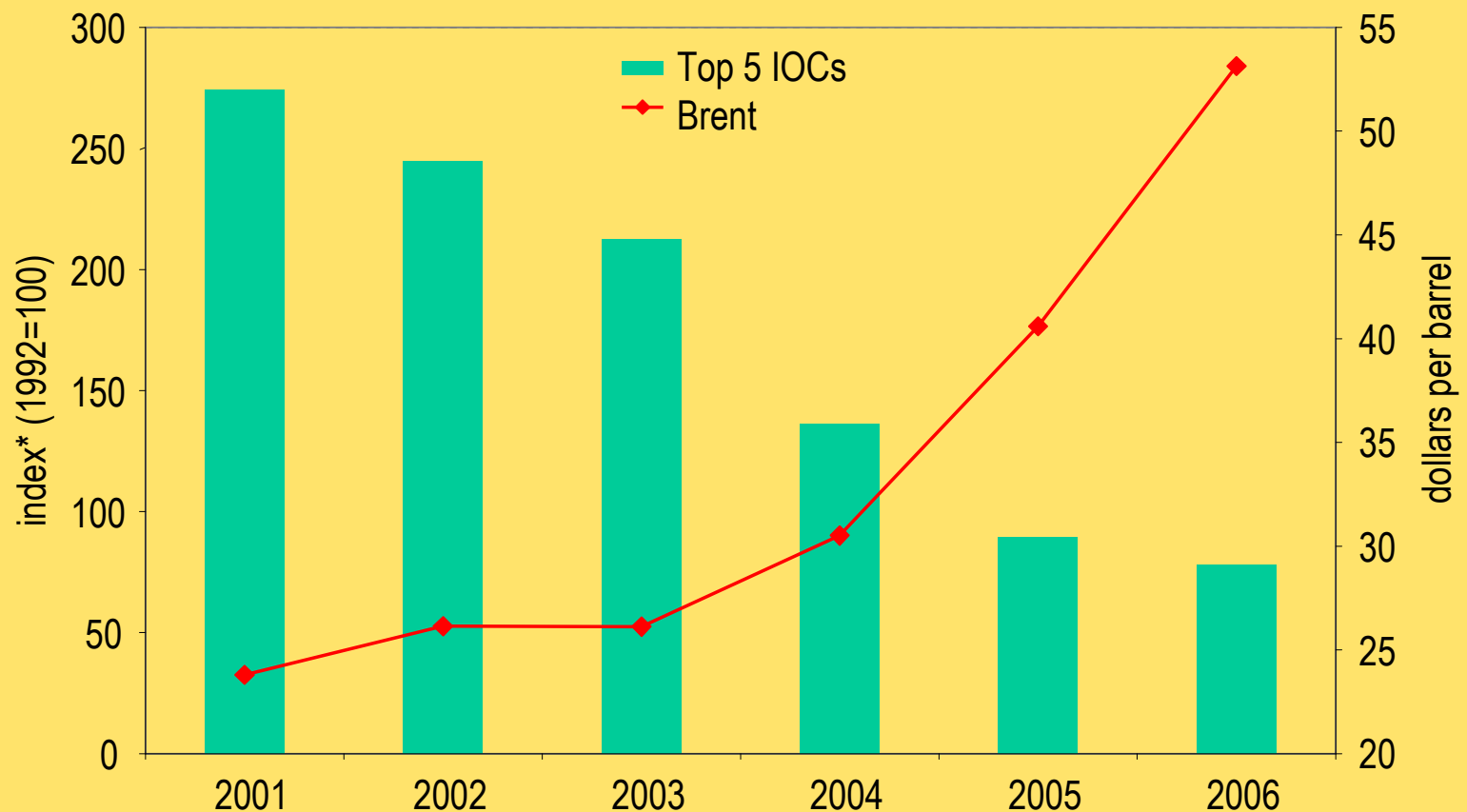
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Index of average of Top 5 IOCs' Reserves Replacement Ratio



The current reserve replacement ratio of top 5 IOCs has fallen, and its becoming more difficult to replace reserves despite rising oil prices

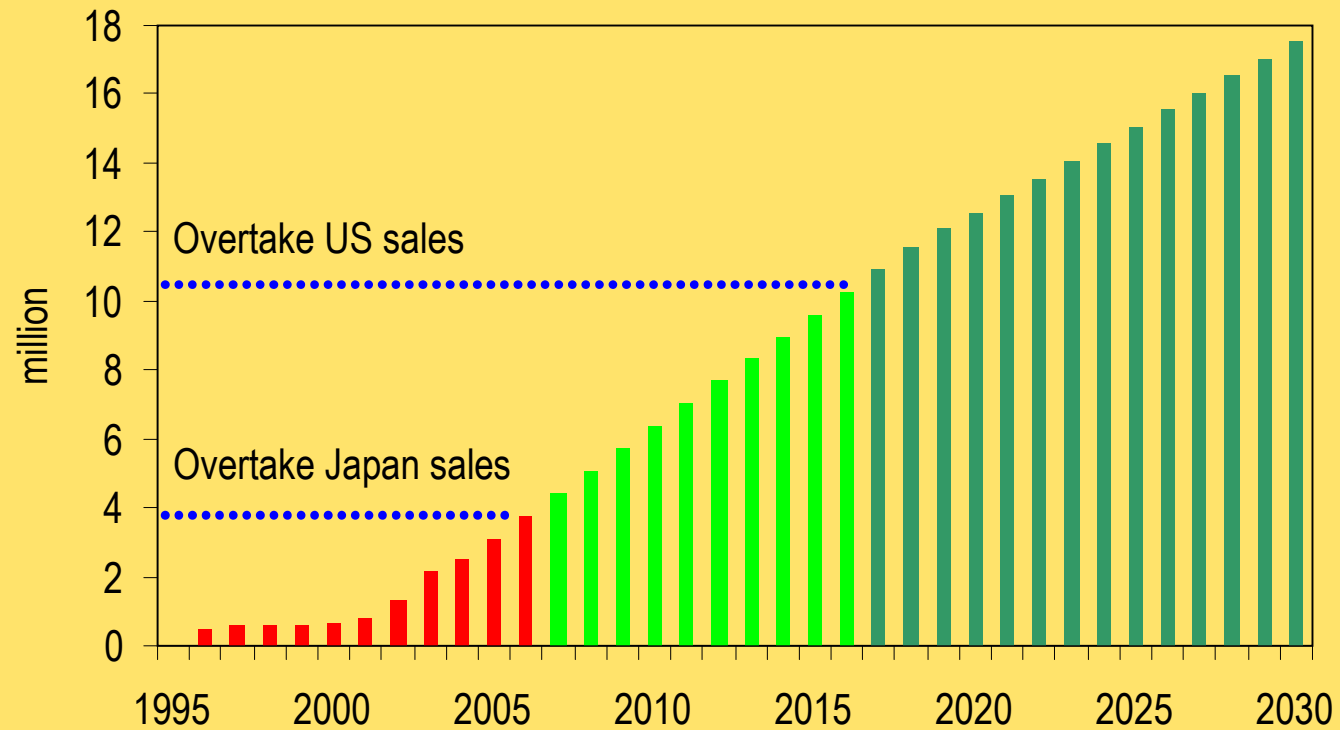


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New Light-Duty Vehicle Sales in China



China's oil imports reach 13 mb/d in 2030 as car ownership jumps to 140 per 1 000 people from 20 today

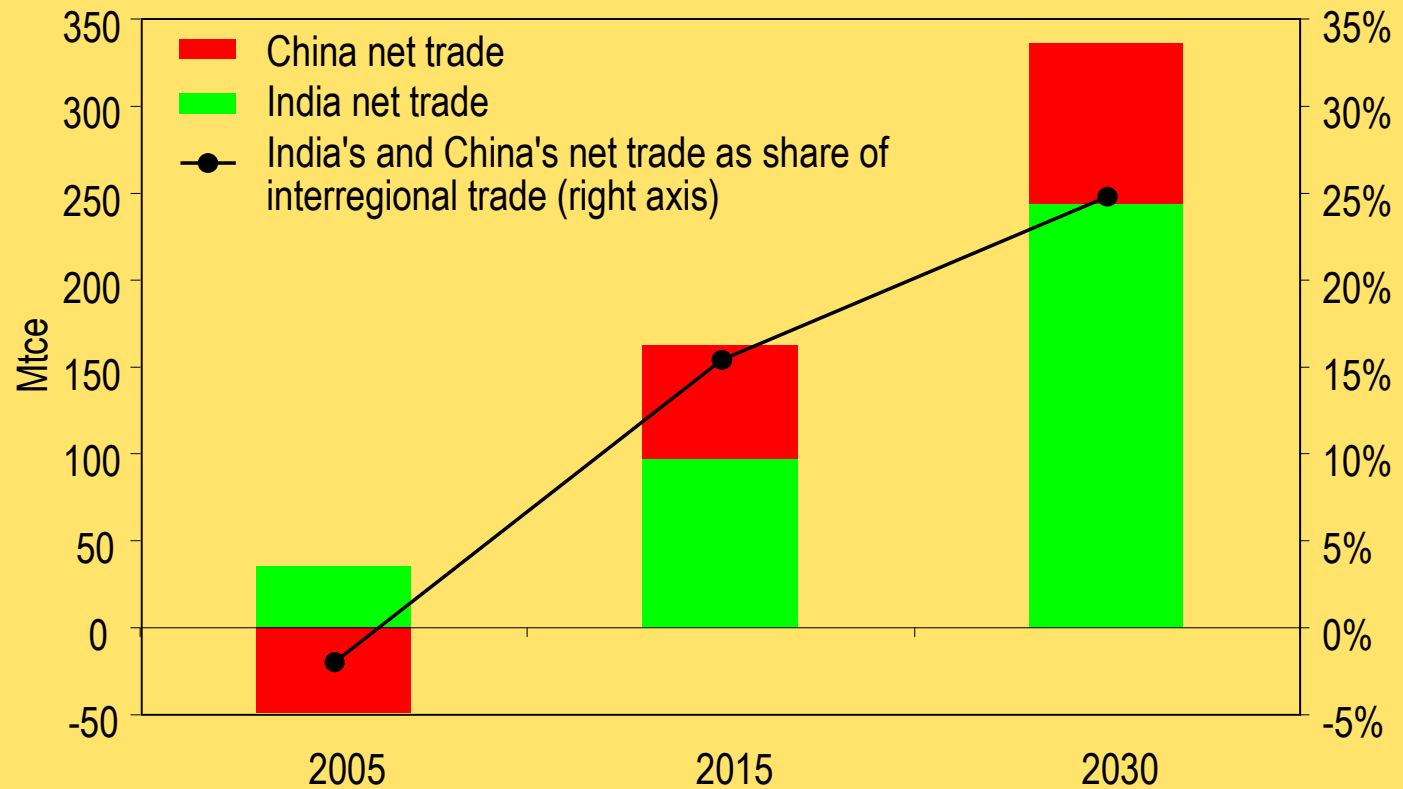


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China & India Coal Imports



China recently became a net coal importer like India, with both putting increasing pressure on international coal markets



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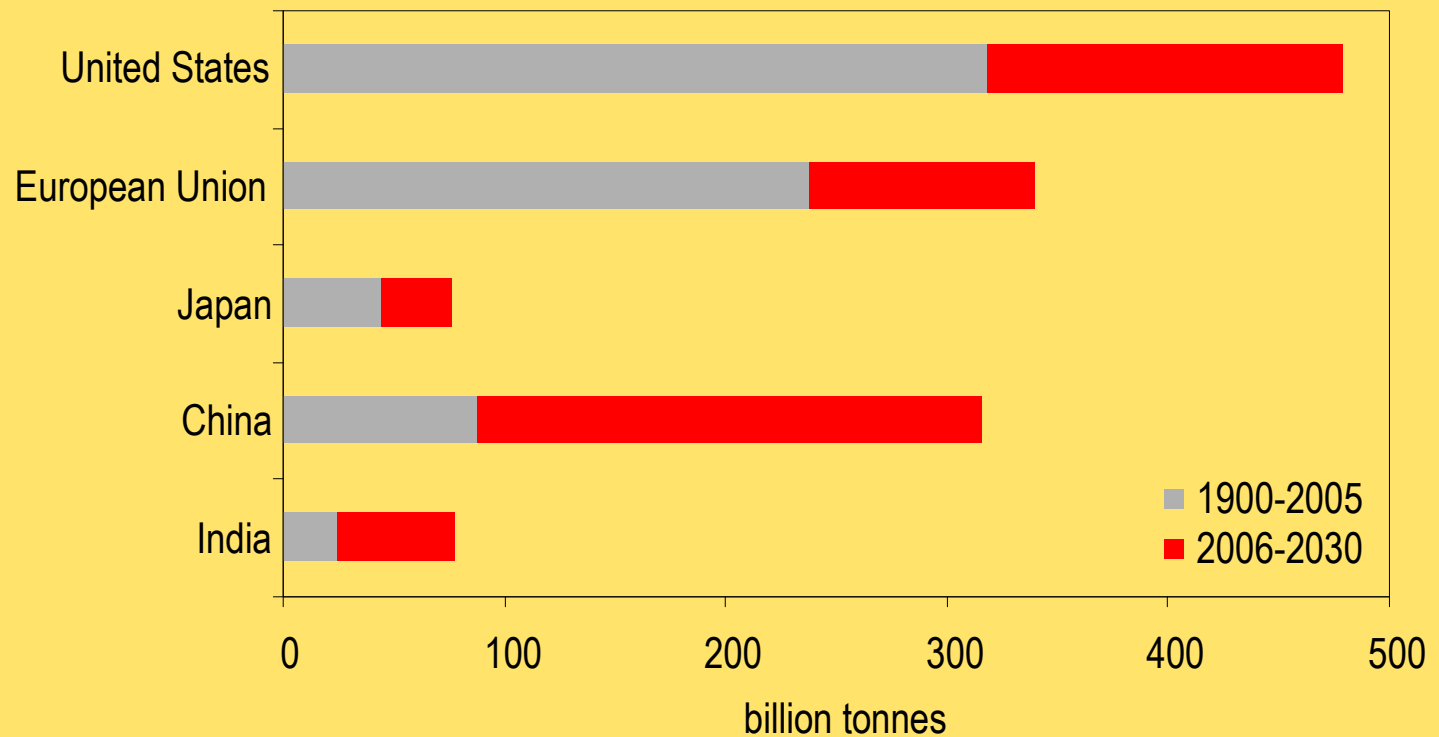
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China & India in Global CO₂ Emissions

Cumulative Energy-Related CO₂ Emissions



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



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World's Top Five CO₂ Emitters

	2005		2015		2030	
	Gt	rank	Gt	rank	Gt	rank
US	5.8	1	6.4	2	6.9	2
China	5.1	2	8.6	1	11.4	1
Russia	1.5	3	1.8	4	2.0	4
Japan	1.2	4	1.3	5	1.2	5
India	1.1	5	1.8	3	3.3	3

**China becomes the largest emitter in 2007 & India the
3rd largest by 2015**



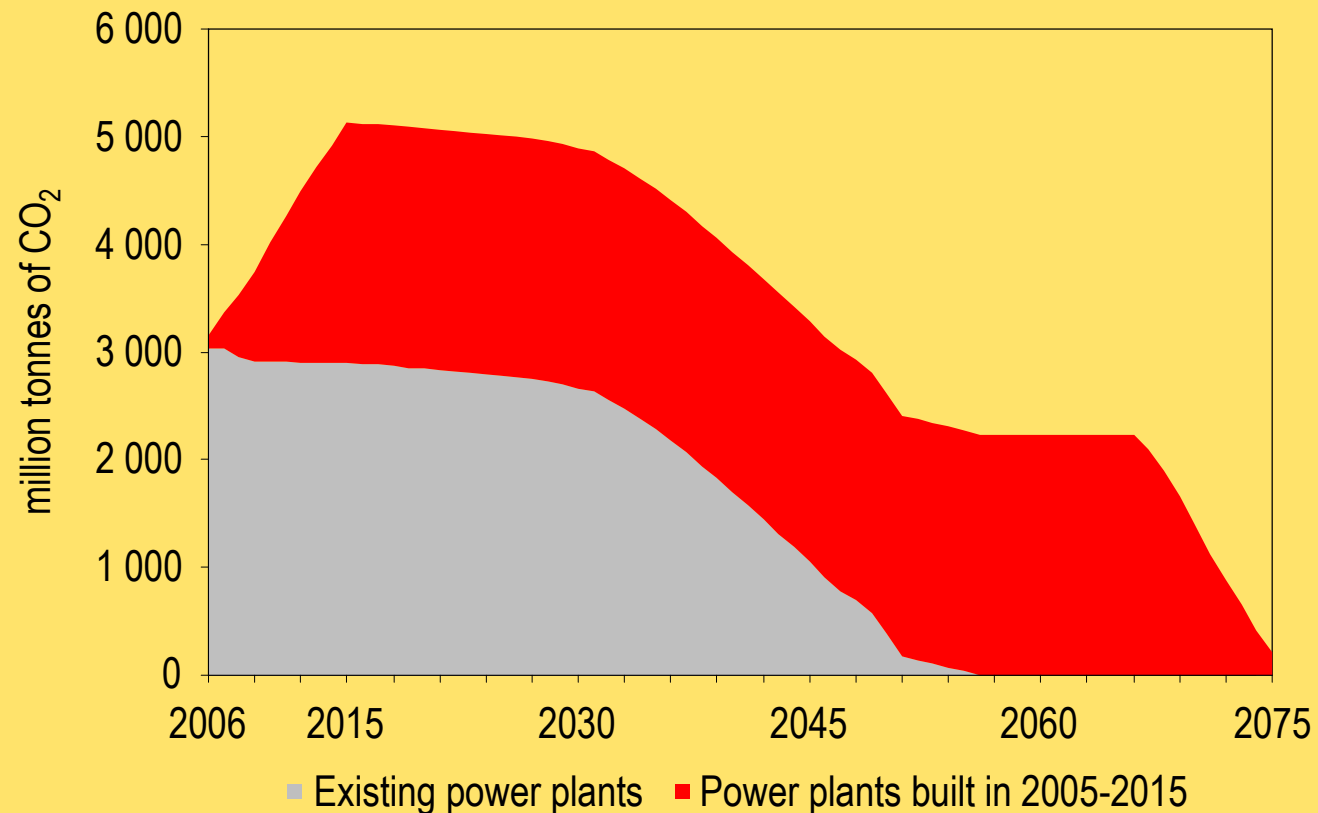
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CO₂ Emissions from Coal-Fired Power Stations built prior to 2015 in China & India



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



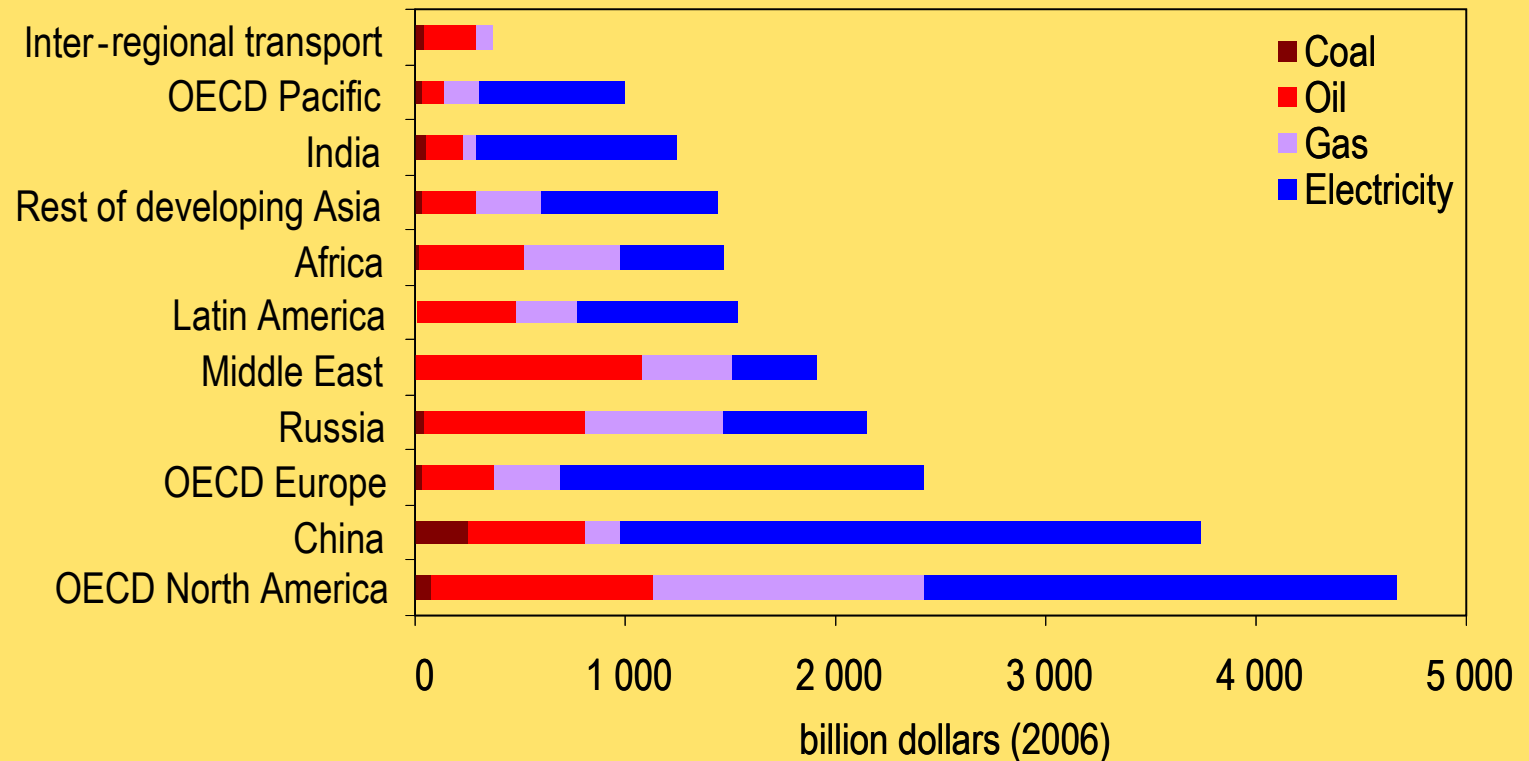
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Cumulative Investment in Energy-Supply Infrastructure, 2006-2030



Just over half of all investment needs to 2030 of \$22 trillion are in developing countries, 17% in China & another 6% in India alone



Alternative Policy Scenario



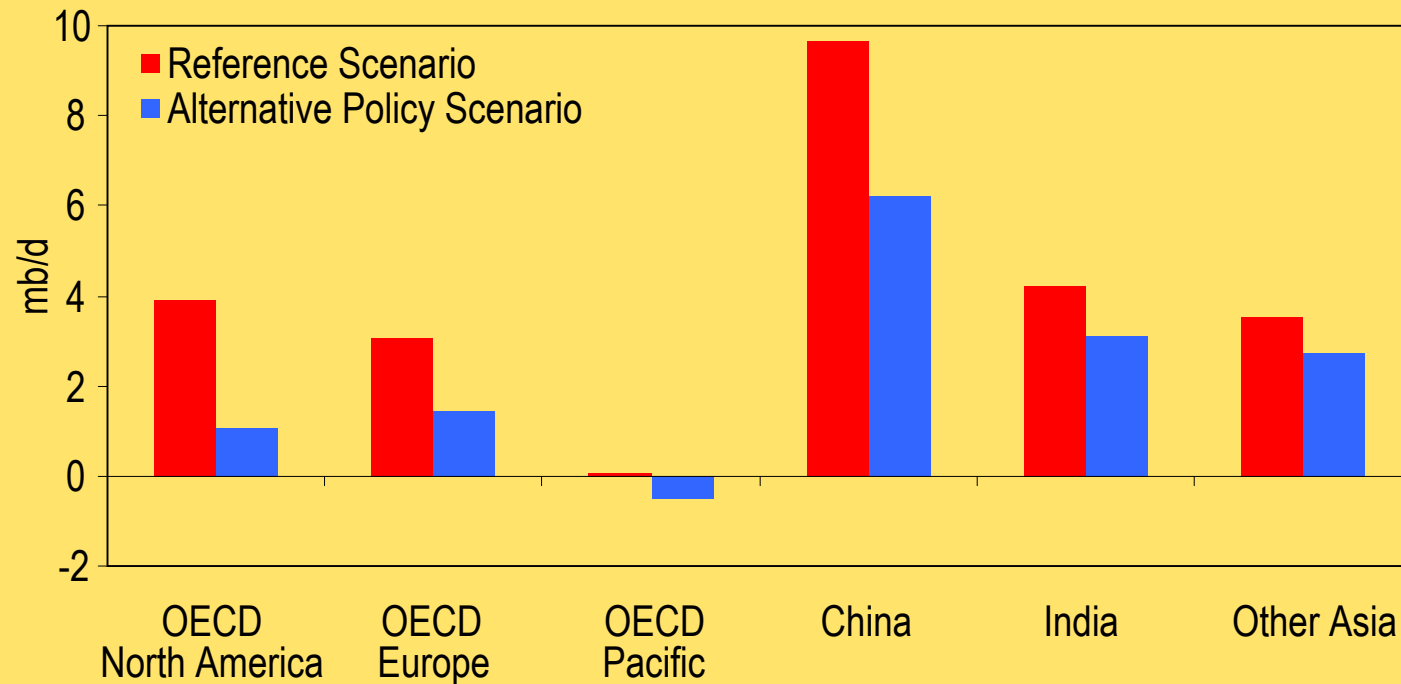
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Increase in Net Oil Imports, 2006-2030



New policies reduce global oil demand by 14 mb/d by 2030, cutting sharply the need for imports

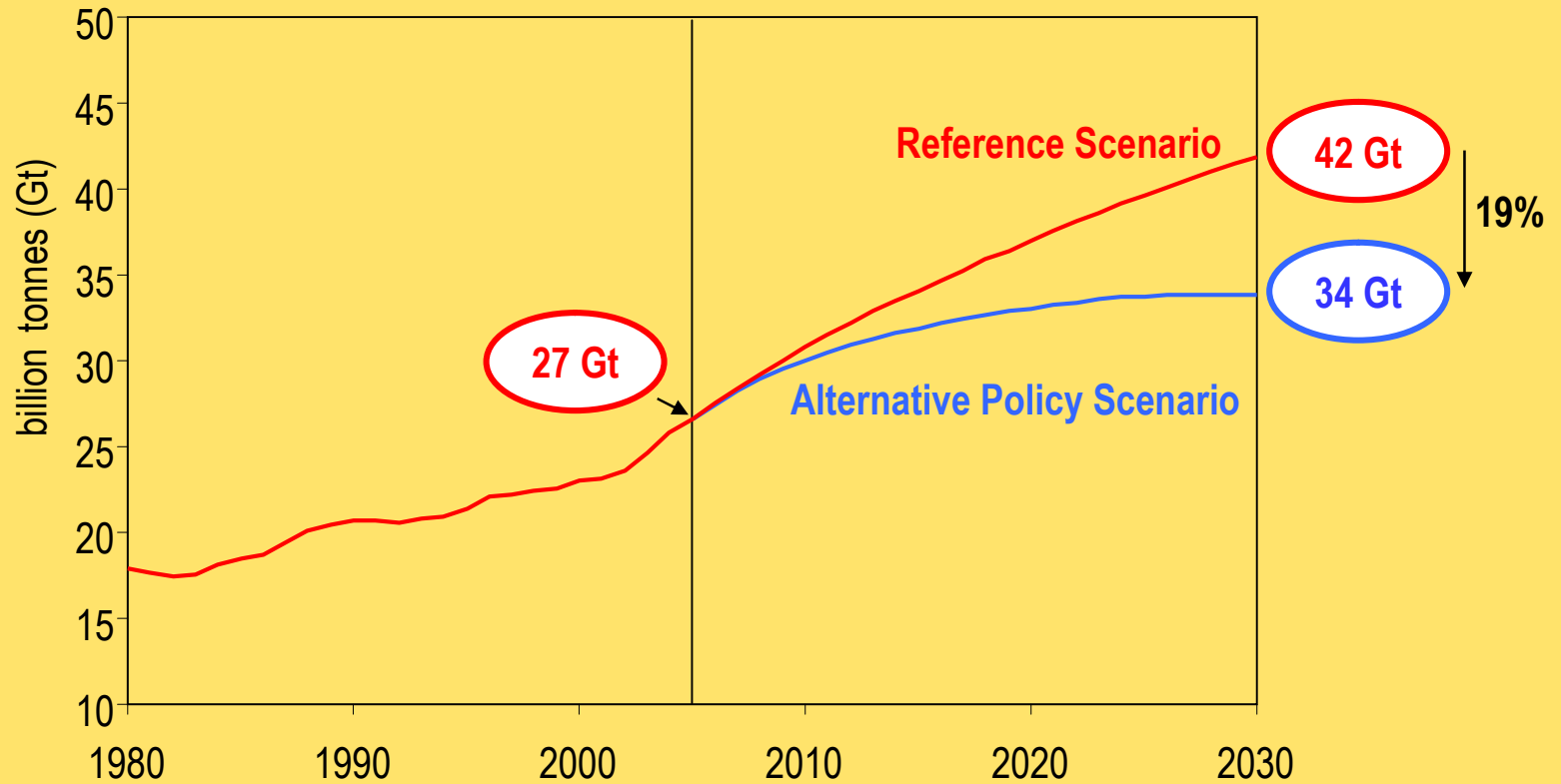


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Global Energy-Related CO₂ Emissions



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



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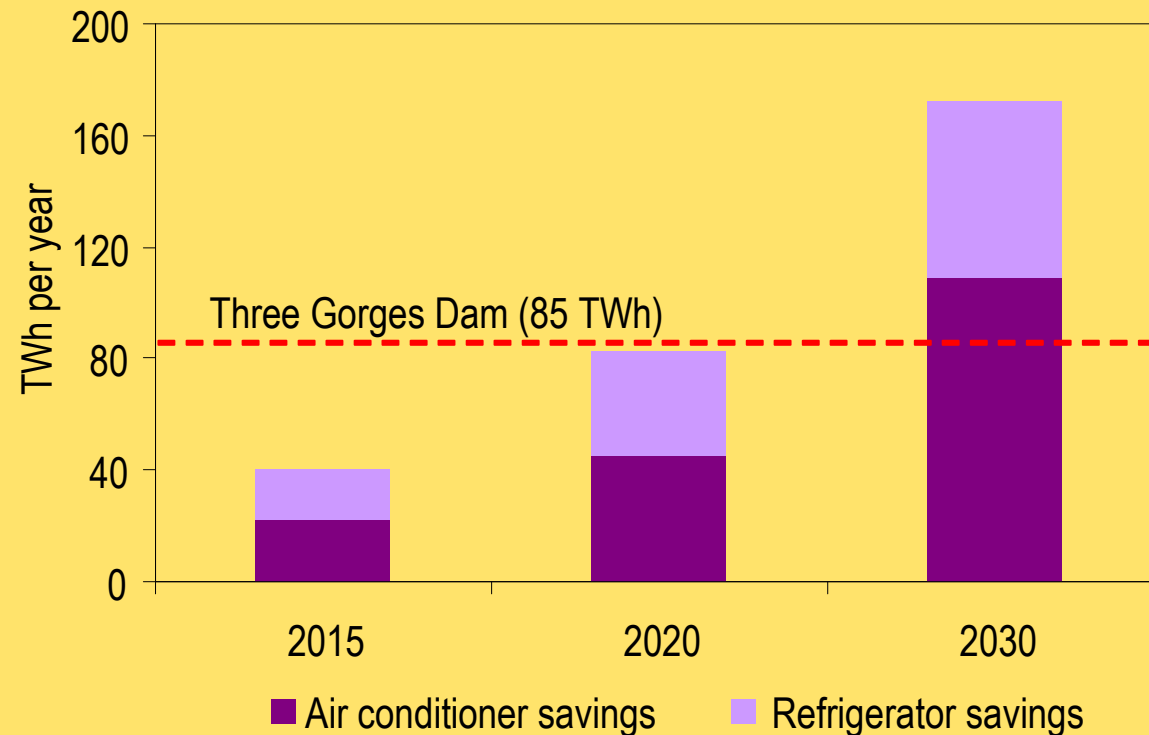
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Effectiveness of Policies to Promote Energy Efficiency in China

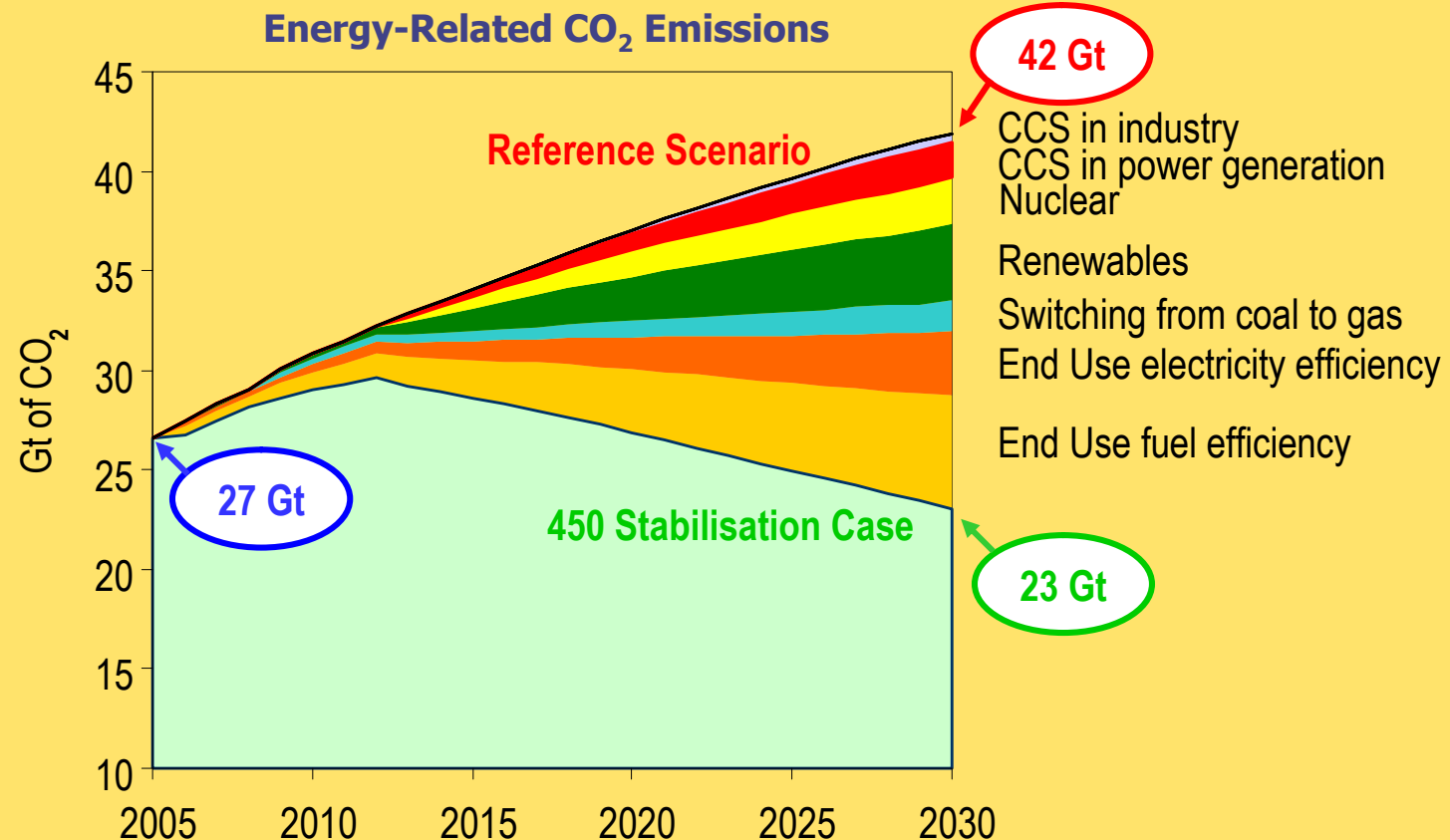
Electricity Savings from More Efficient Air Conditioners & Refrigerators in the Alternative Policy Scenario



Tougher efficiency standards for air conditioners & refrigerators alone would save the need to build a Three Gorges Dam by 2020



CO₂ 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

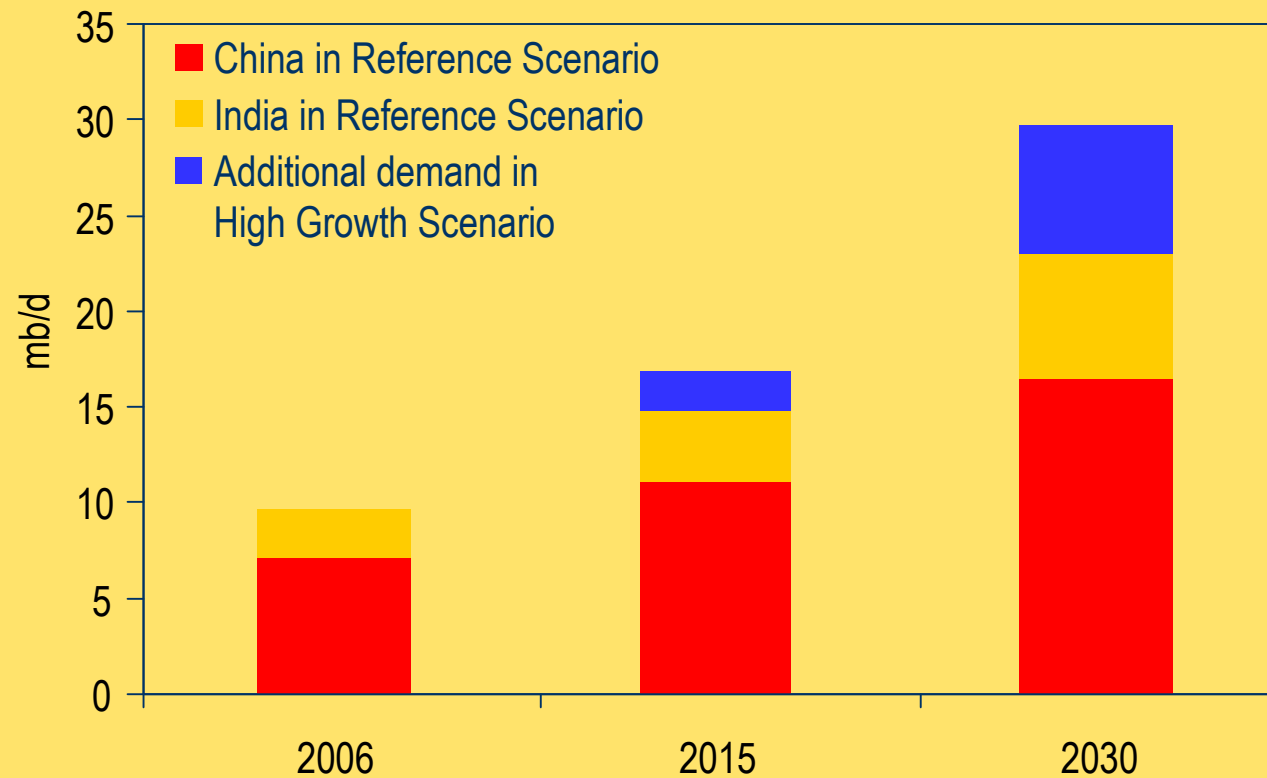


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China & India Oil Demand



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



Summary & Conclusions



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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