

World Energy Outlook 2007: China and India Insights

William C. Ramsay
Deputy Executive Director
International Energy Agency

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Approach

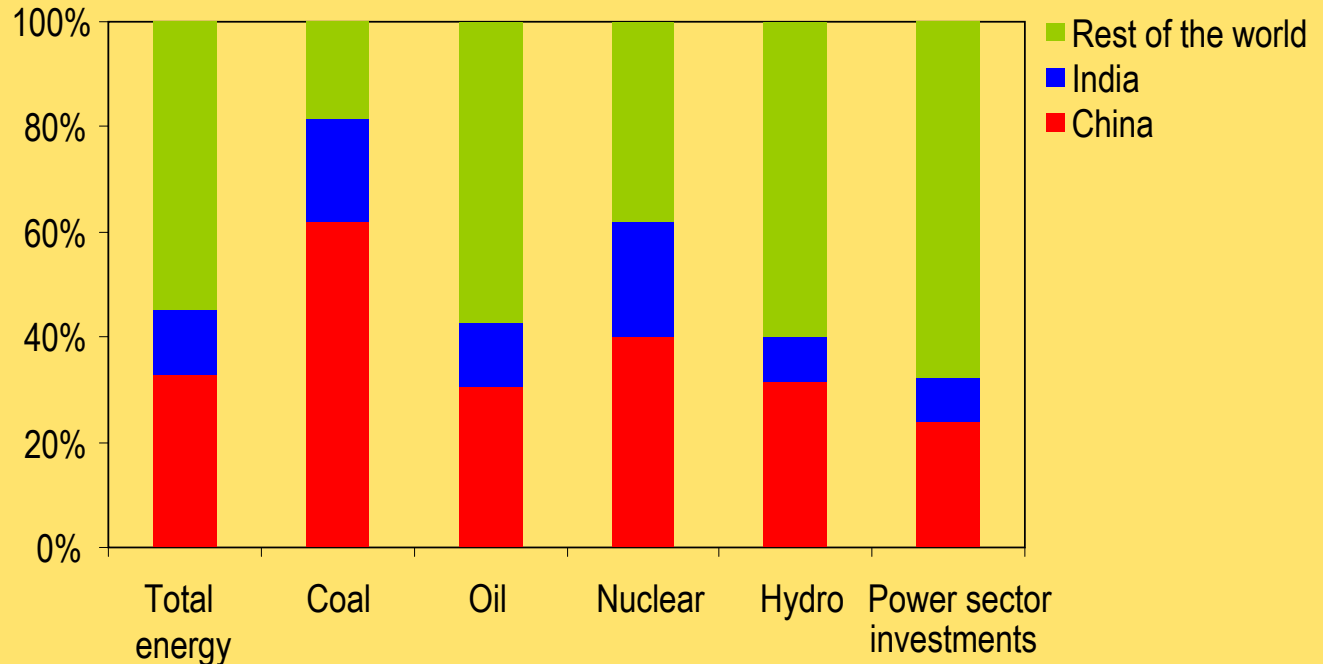
- Co-operation with China's NDRC & ERI, India's TERI
 - *Workshops / meetings in Beijing, Delhi*
 - *Chinese and Indian experts joined the IEA*
 - *More than 50 Chinese and Indian peer reviewers*
- Scenario approach
 - *Reference Scenario*
 - *Alternative Policy Scenario & 450 Stabilisation Case*
 - *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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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

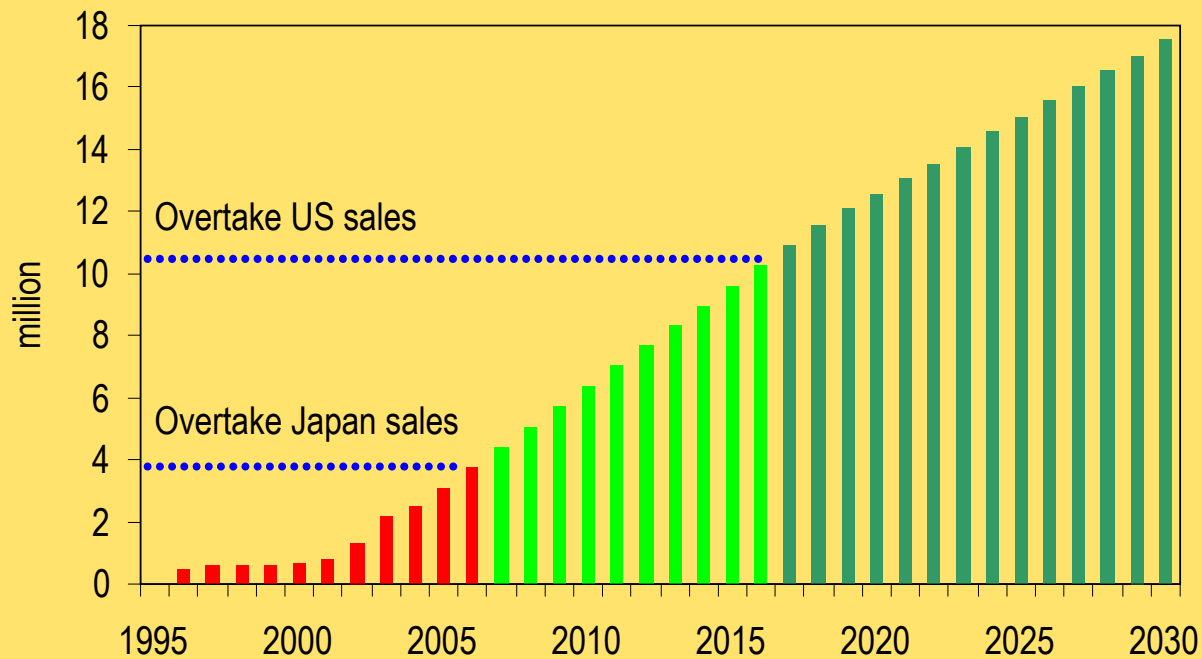


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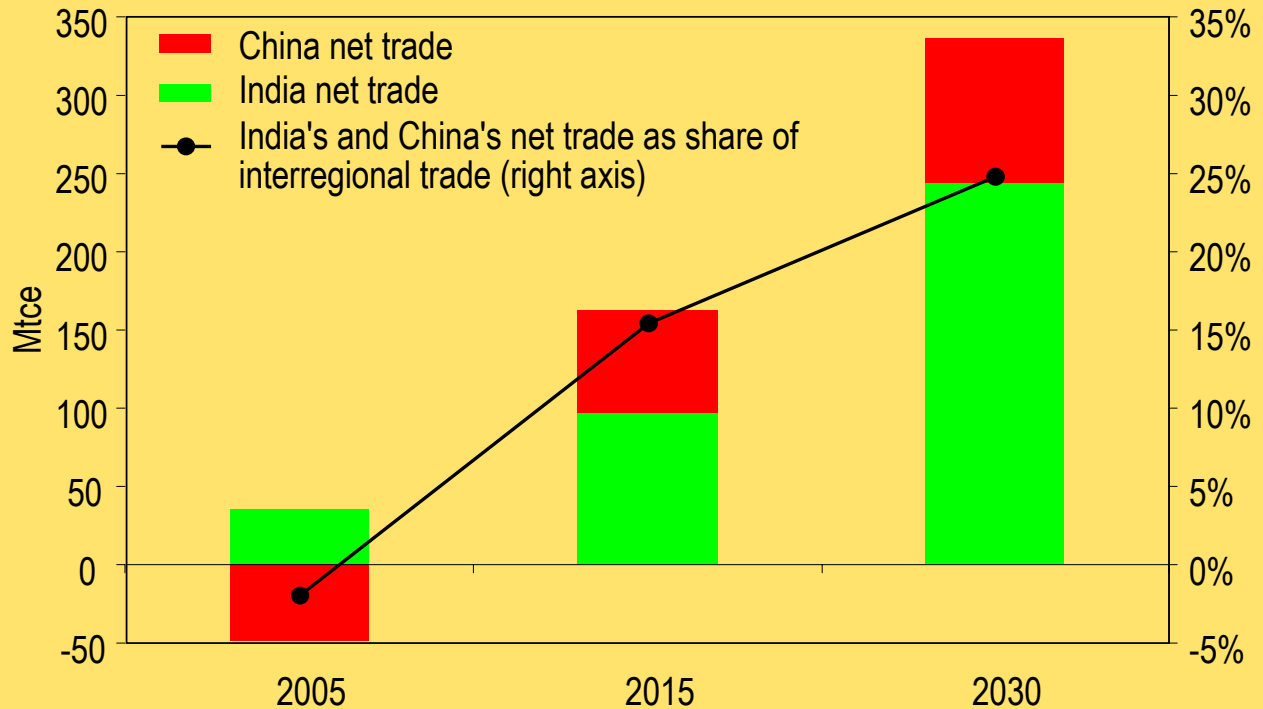
New Light-Duty Vehicle Sales in China



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

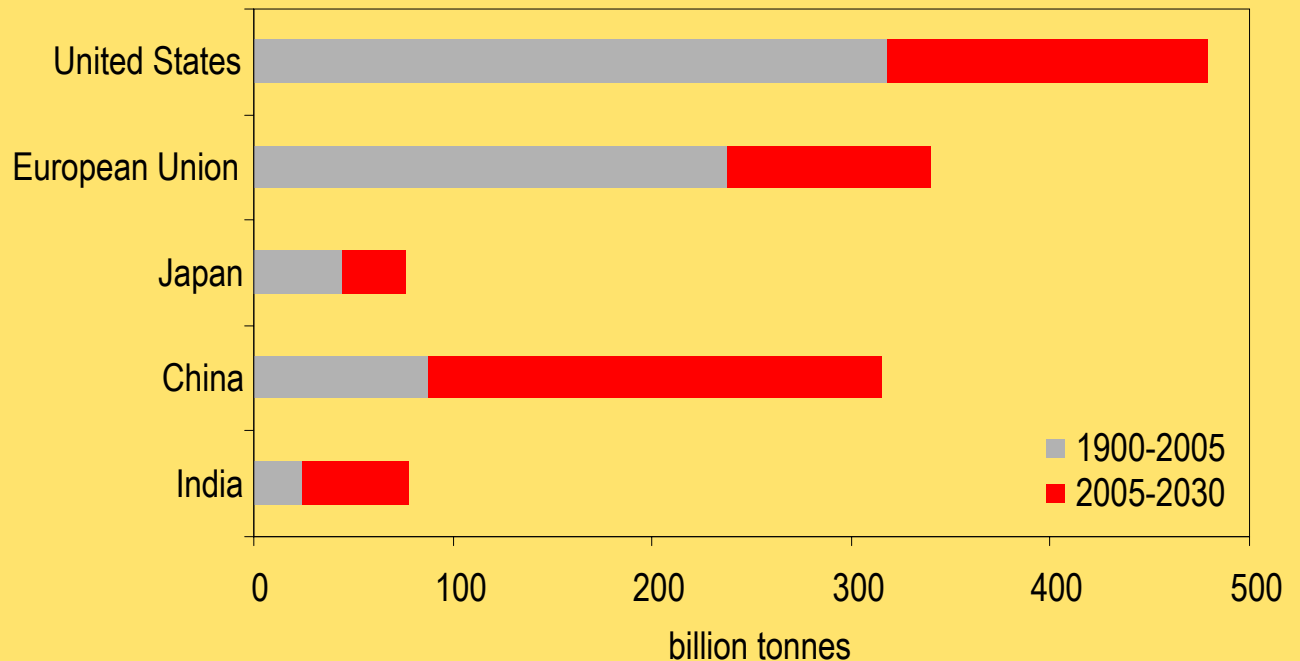


China recently became a net coal importer like India, with both putting increasing pressure on international coal markets

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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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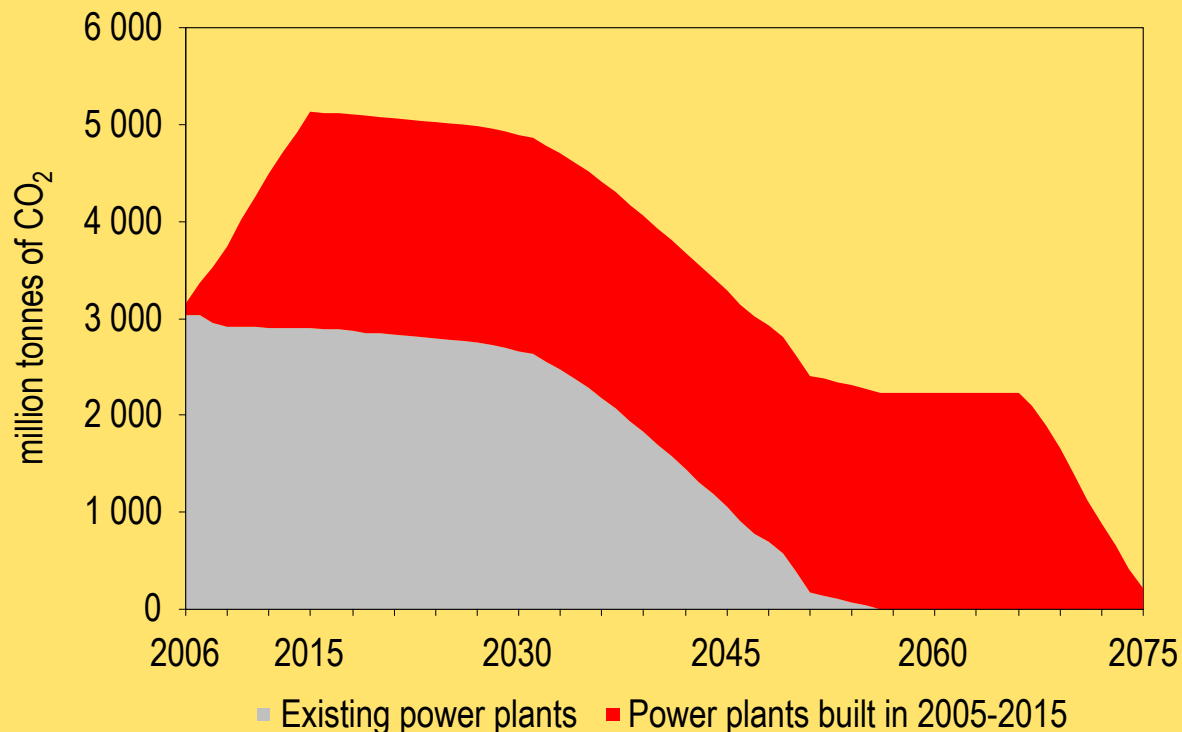
World's Top Five CO₂ Emitters

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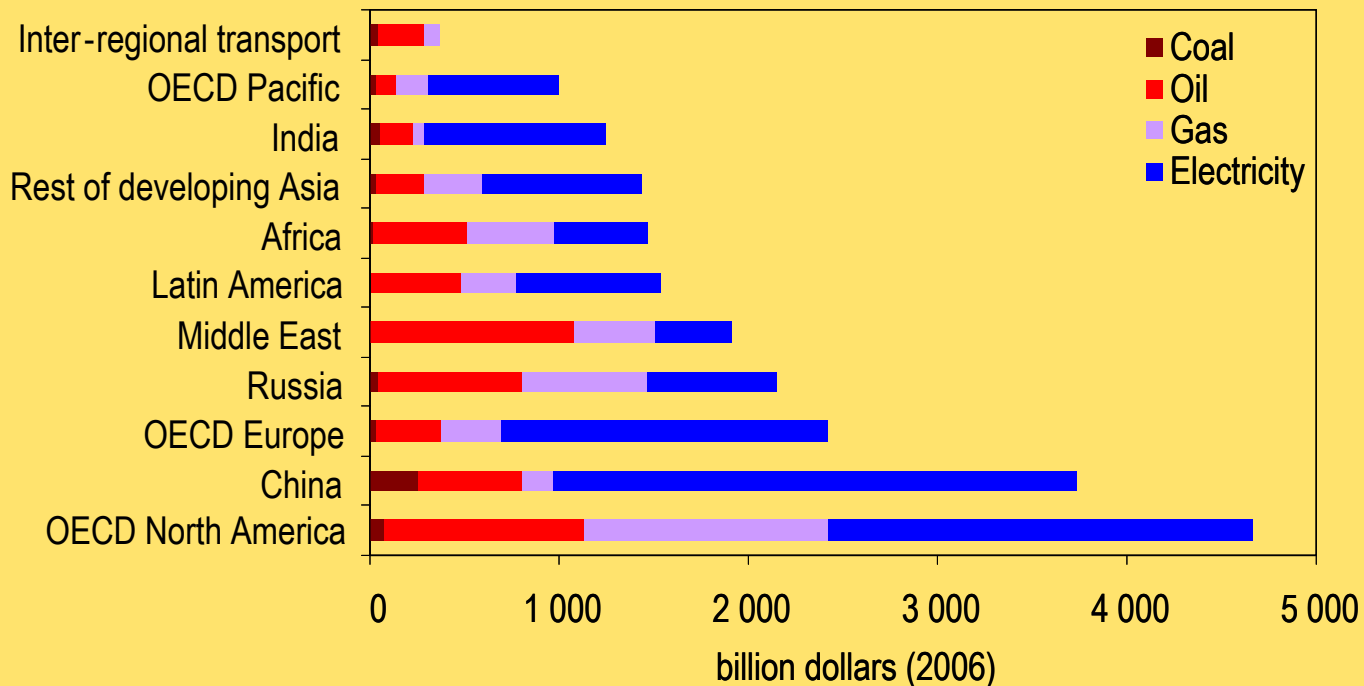
CO₂ Emissions from Coal-Fired Power Stations built prior to 2015 in China & India



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 5% in India alone

Alternative Policy Scenario

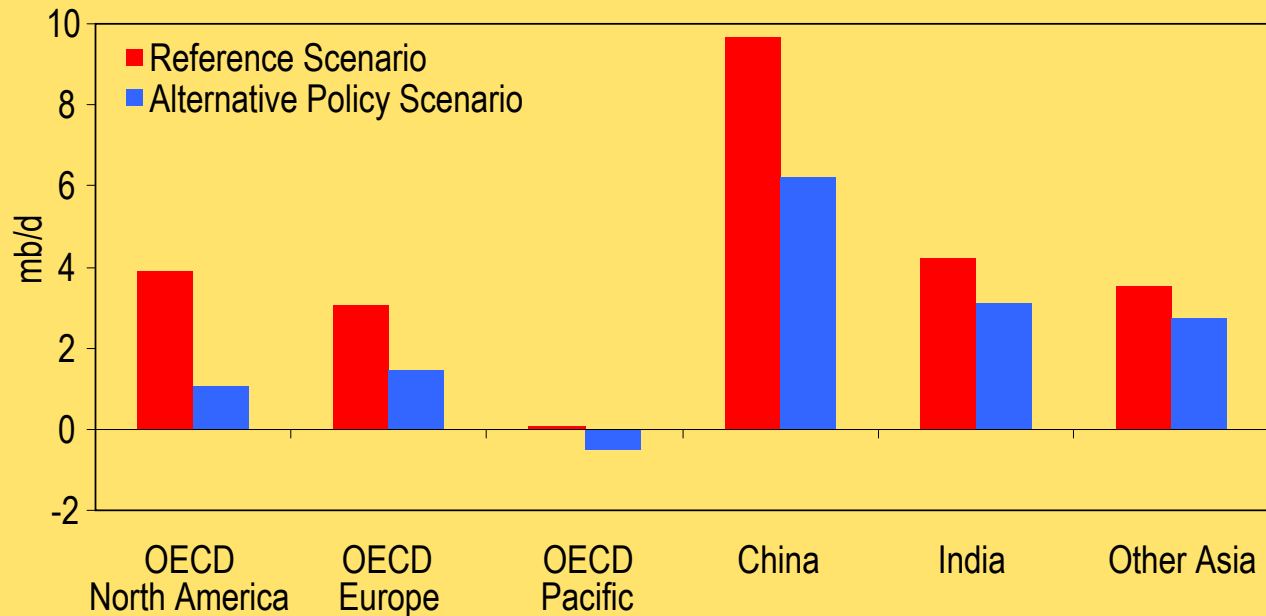


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Increase in Net Oil Imports, 2006-2030



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

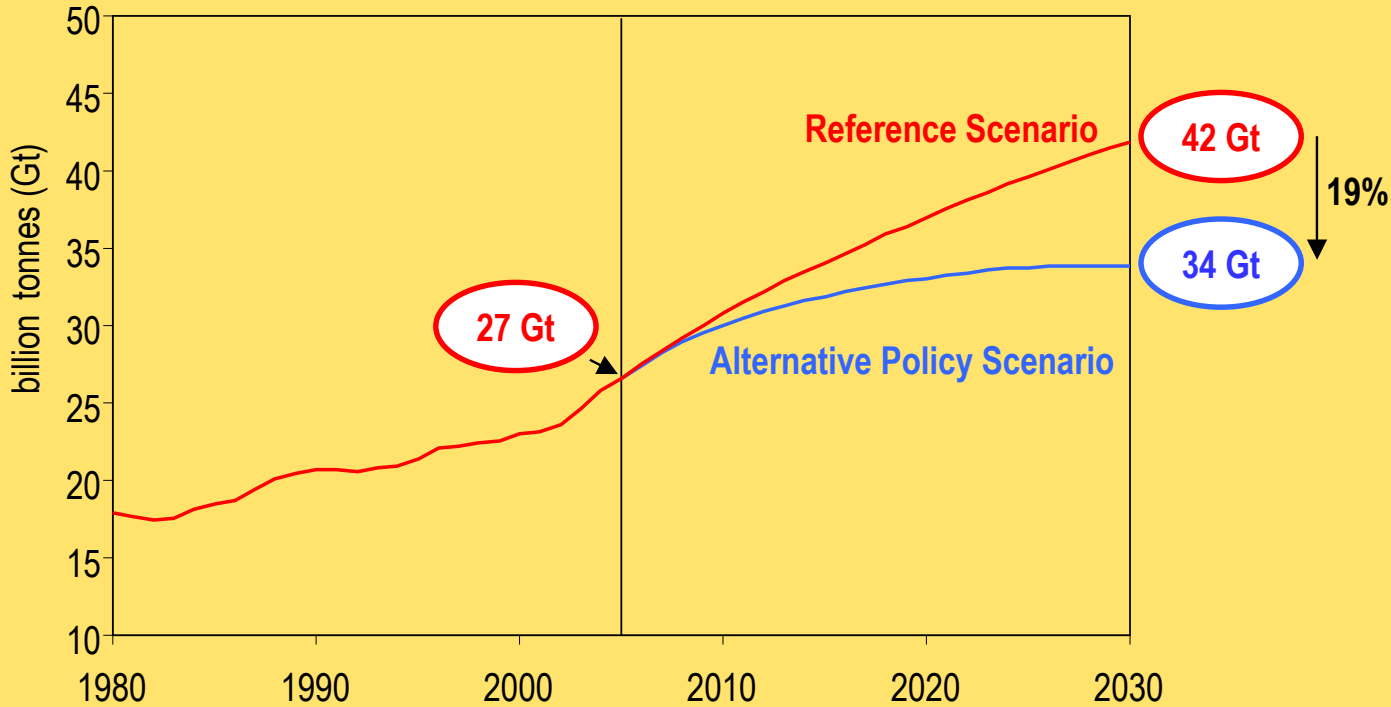


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Global Energy-Related CO₂ Emissions

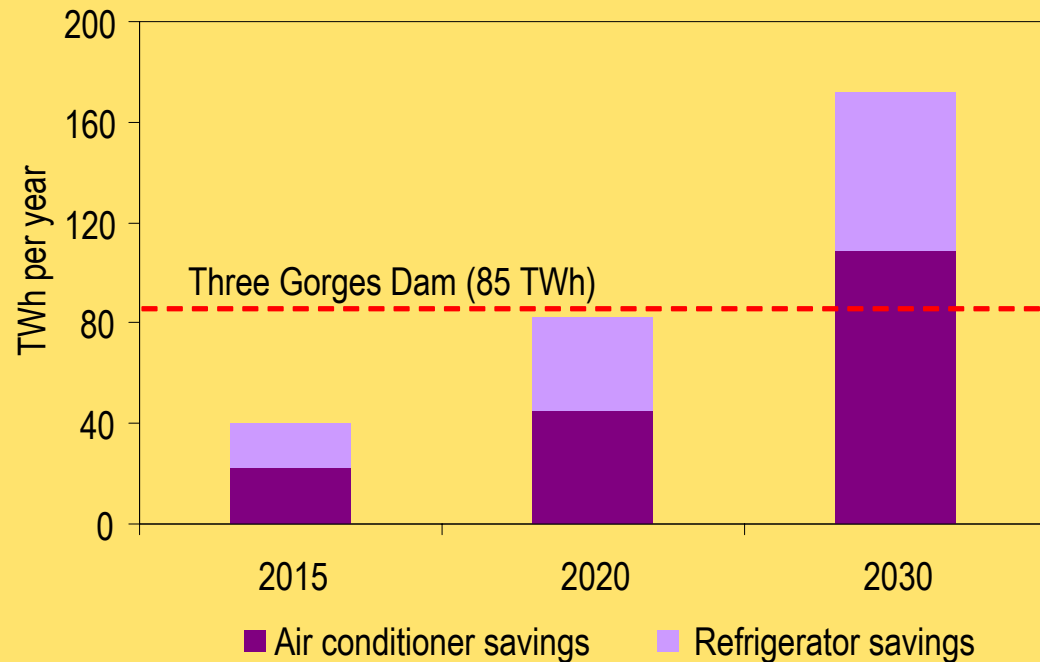


Global emissions will increase by 57% in the Reference Scenario, but they level off in the Alternative Policy Scenario

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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

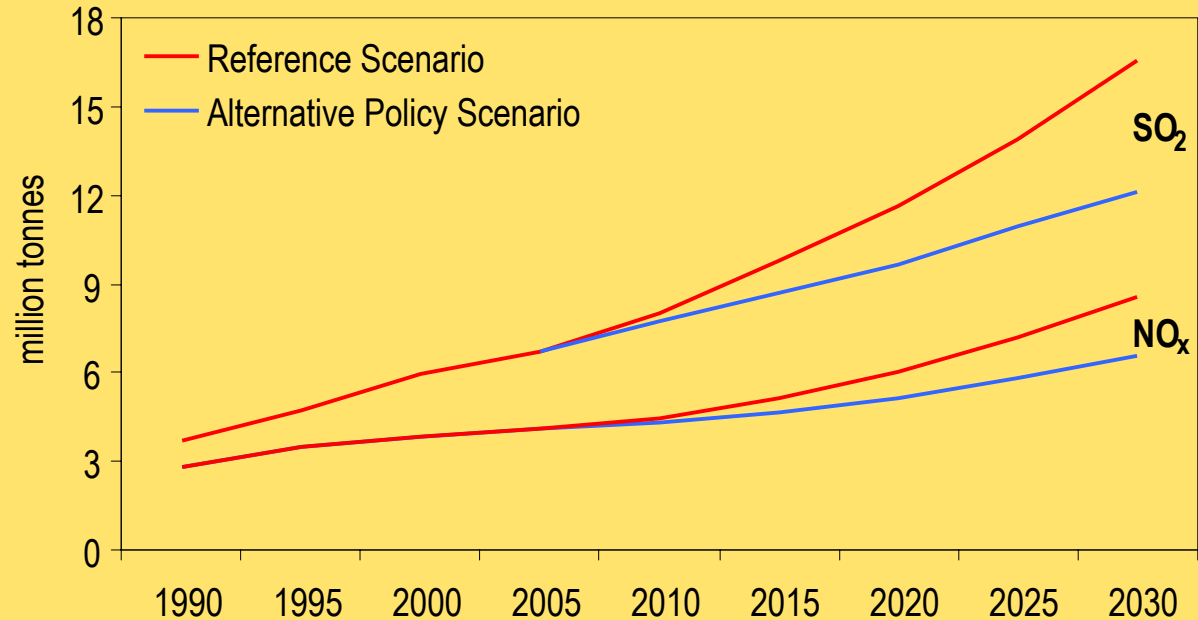


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India's Local Pollution



New policies reduce substantially emissions of SO₂ and NO_x – largely from coal-fired power plants, cars & trucks

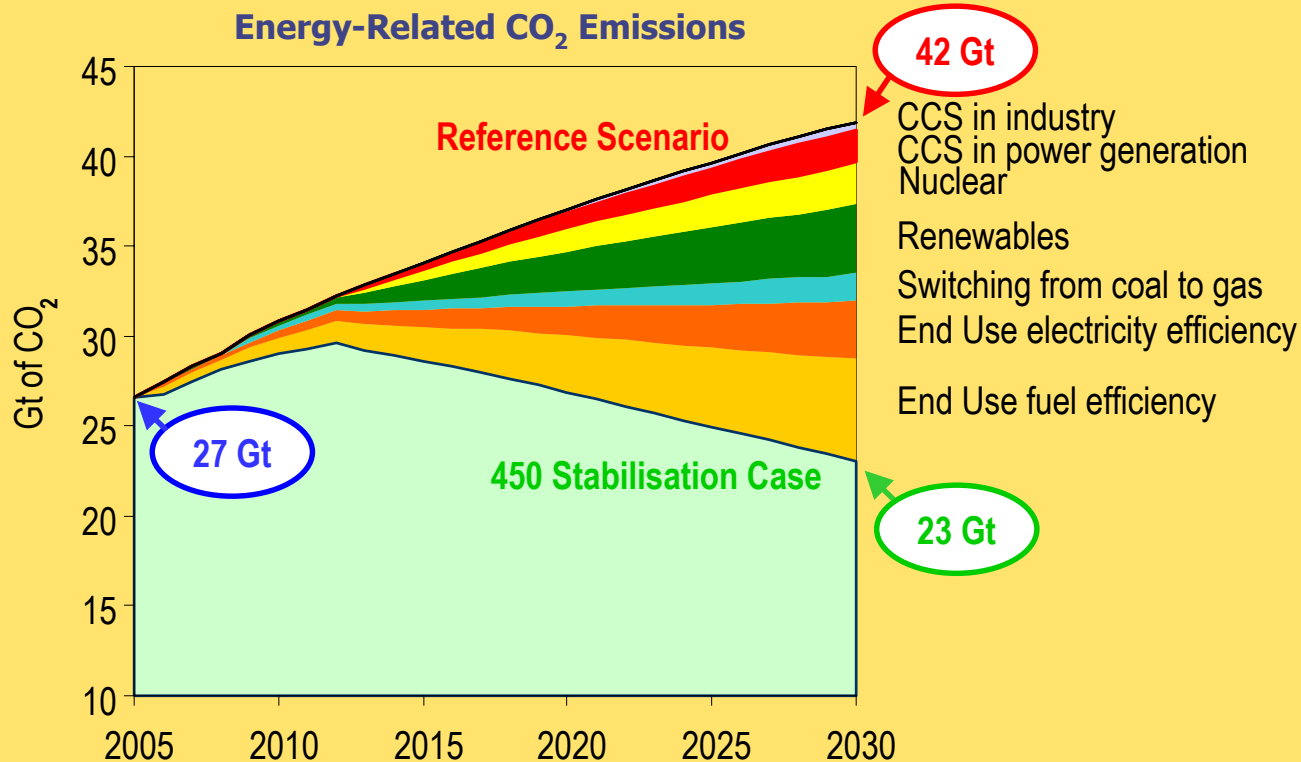


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CO₂ Emissions - 450 Stabilisation Case

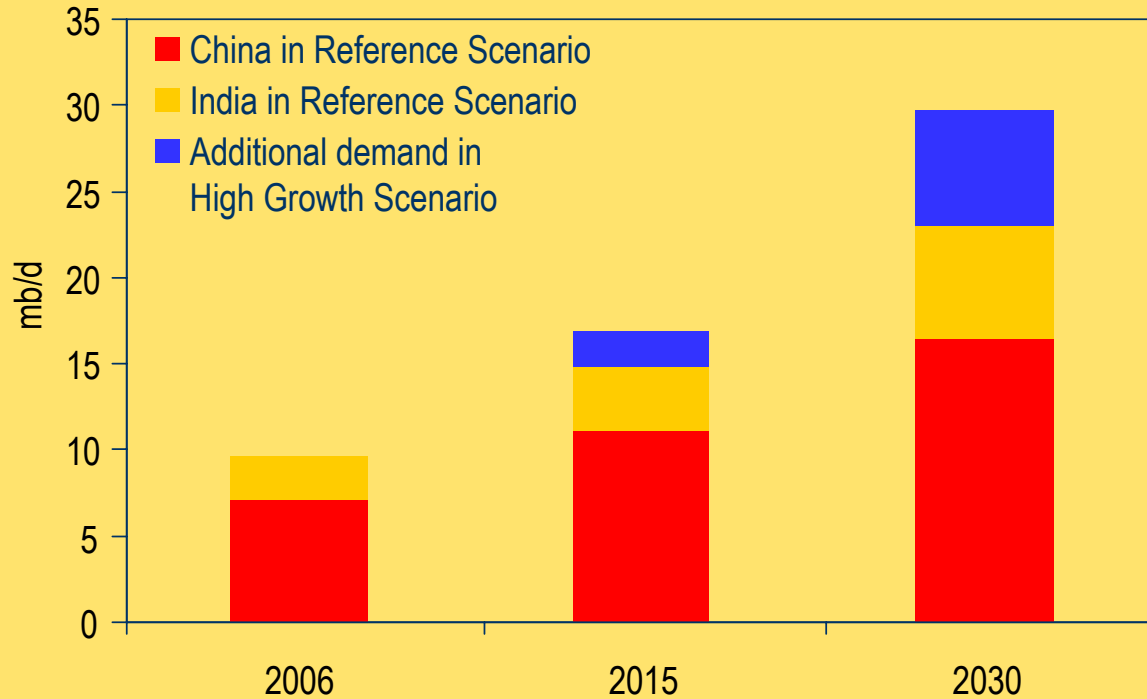


By 2030, emissions are reduced to some 23 Gt, a reduction of 19 Gt compared with the Reference Scenario

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