



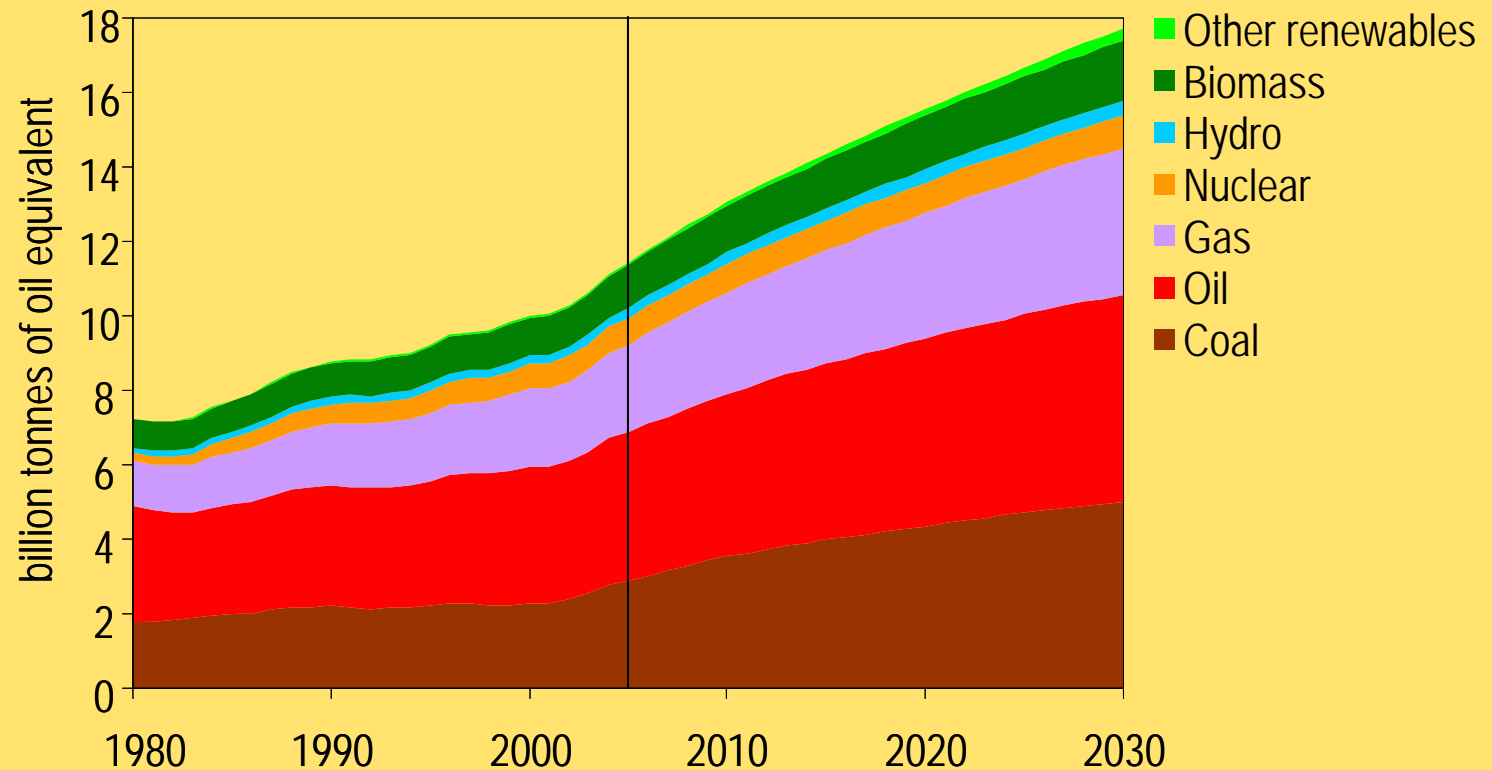
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## Reference Scenario: World Primary Energy Demand



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



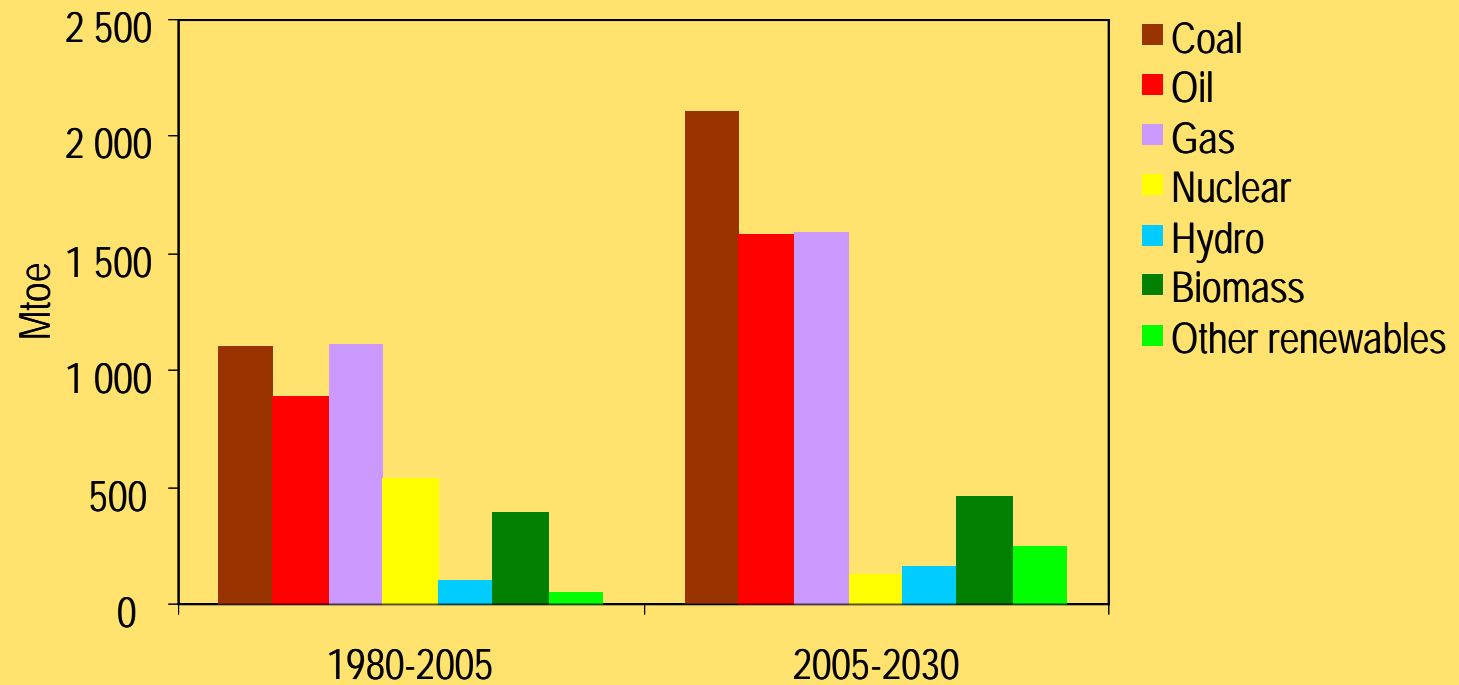
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## Reference Scenario: Increase in World Primary Energy Demand



***Fossil fuels account for most of the increase in global demand between now & 2030, though non-hydro renewables grow fastest***



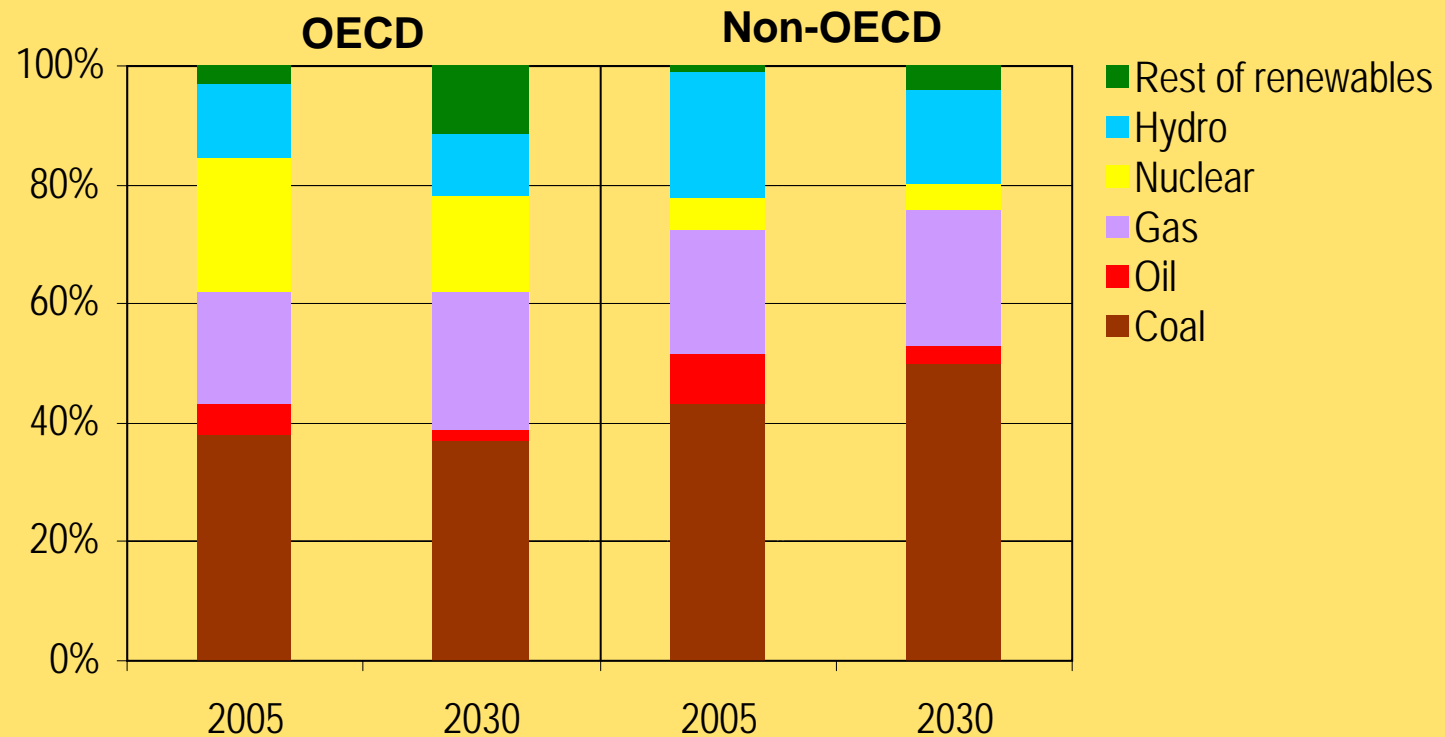
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## Reference Scenario: Fuel Mix in Power Generation



***Dependence on coal for power rises strongly in emerging economies, while it stagnates in the OECD***

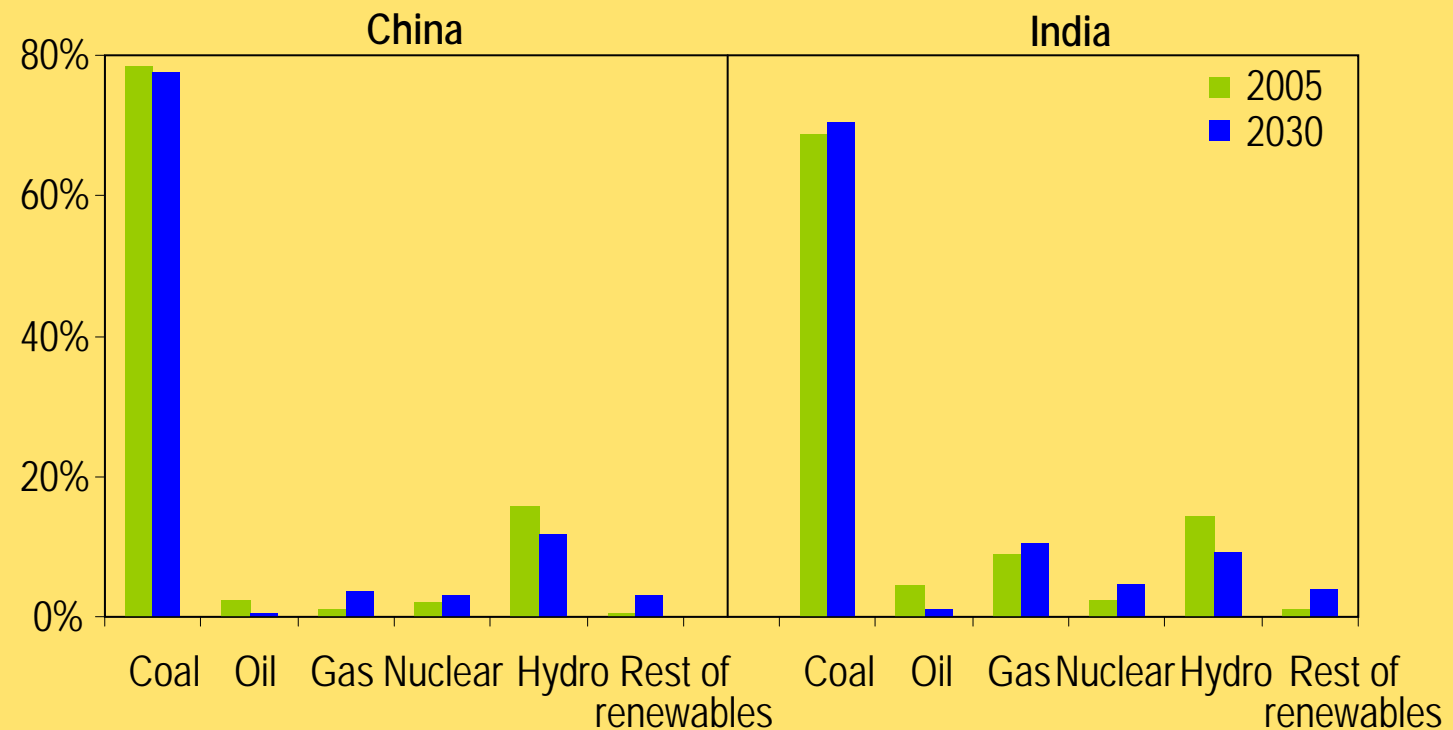


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## Reference Scenario: Fuel Mix in Power Generation in China & India



***Both China & India continue to rely heavily on coal for power generation***



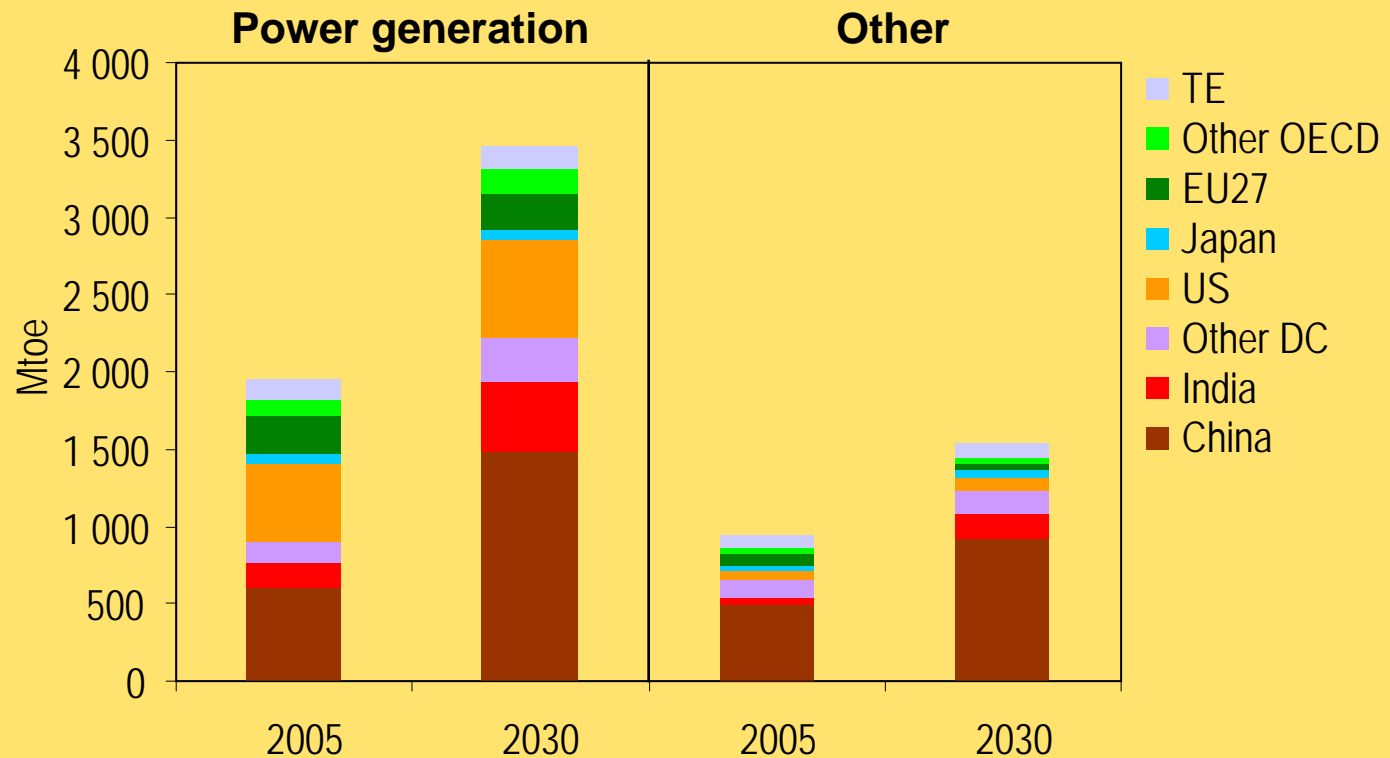
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## Reference Scenario: Primary Coal Demand by Region



**China & India account for 78% of the growth of coal use in power generation and 91% of the growth in other sectors**

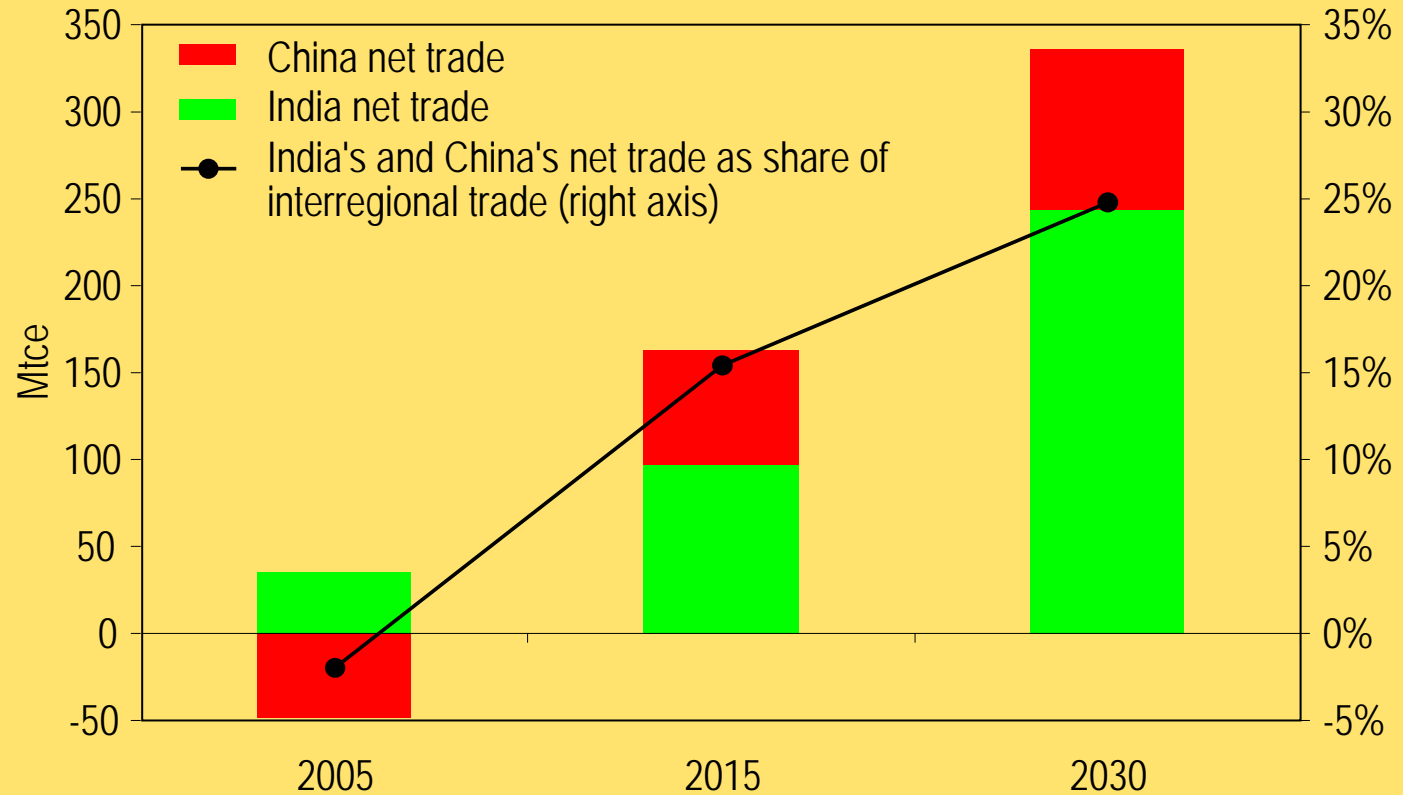


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## Reference Scenario: China & India Coal Imports



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



## Reference Scenario: World's Top Five CO<sub>2</sub> Emitters

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

**China overtook the US to become the largest emitter in 2007,  
while India becomes the third-largest by 2015**



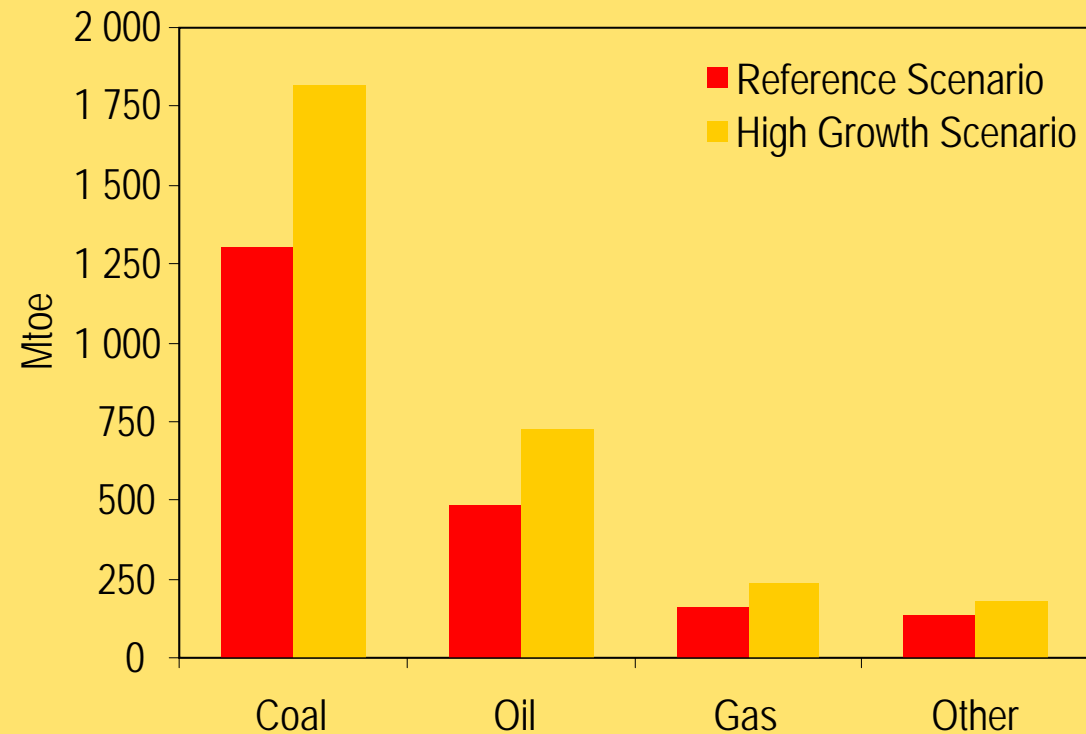
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## High Growth Scenario: Incremental Primary Energy Demand by Fuel in China, 2005-2030



***Faster economic growth pushes up energy demand by 23% in 2030, with coal use growing the most in volume terms***

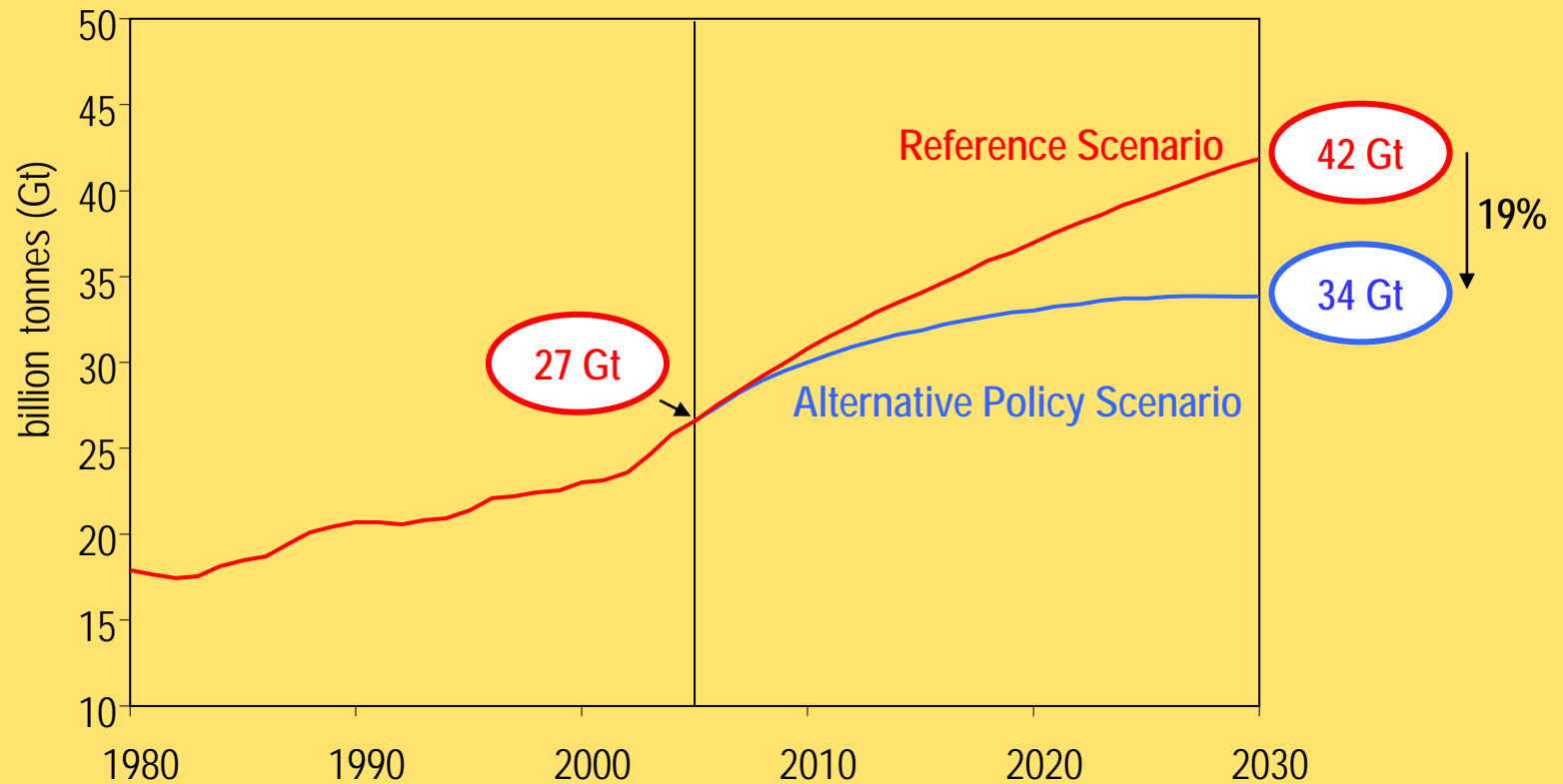


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## Alternative Policy Scenario: Global Energy-Related CO<sub>2</sub> Emissions



**Global emissions grow less than half as fast as in the Reference Scenario, stabilising in the 2020s**



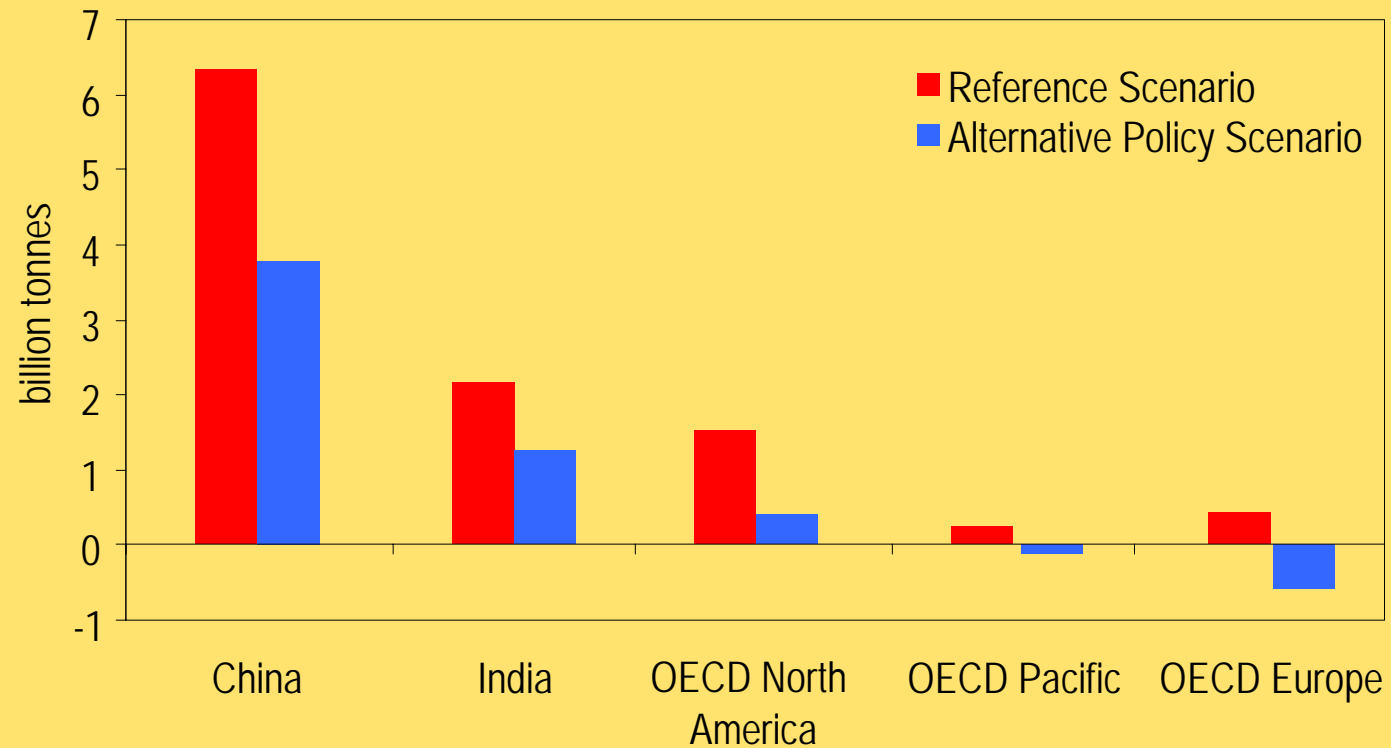
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## Incremental Energy-Related CO<sub>2</sub> Emissions, 2005-2030



***Most of the increase in emissions are projected to come from China & India in all scenarios***



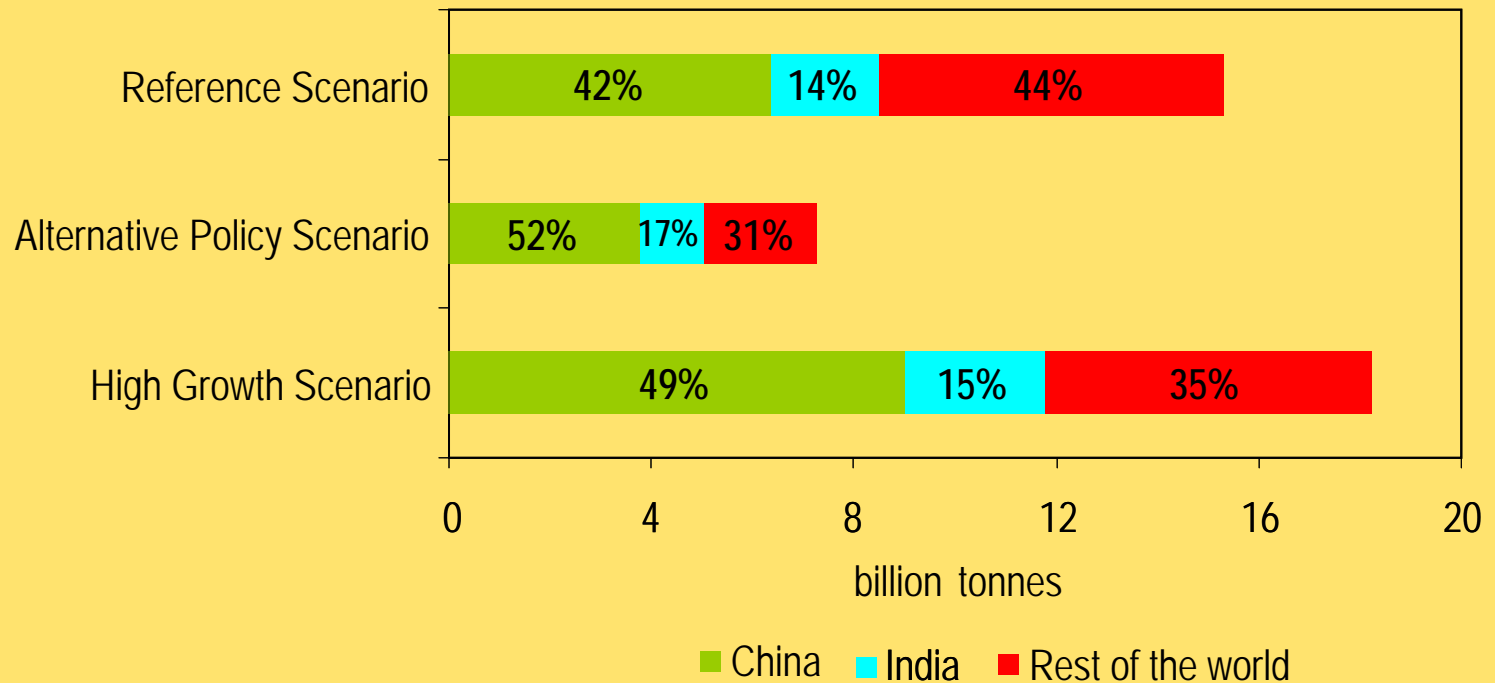
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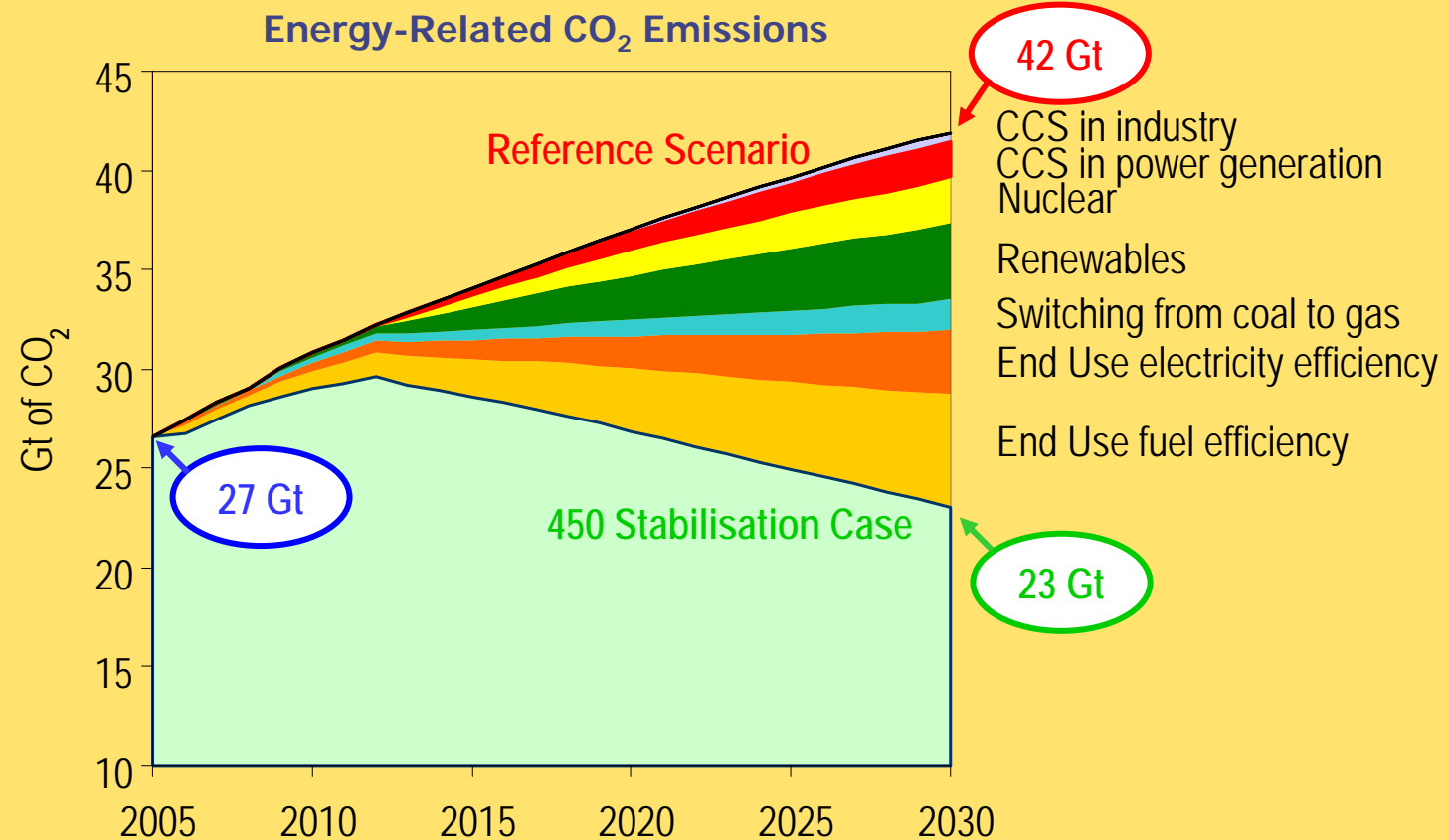
# Incremental Energy-Related CO<sub>2</sub> Emissions, 2005-2030



***Most of the increase in emissions will come from China & India, driven mainly by coal-fired power generation***



# CO<sub>2</sub> Emissions - 450 Stabilisation Case



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



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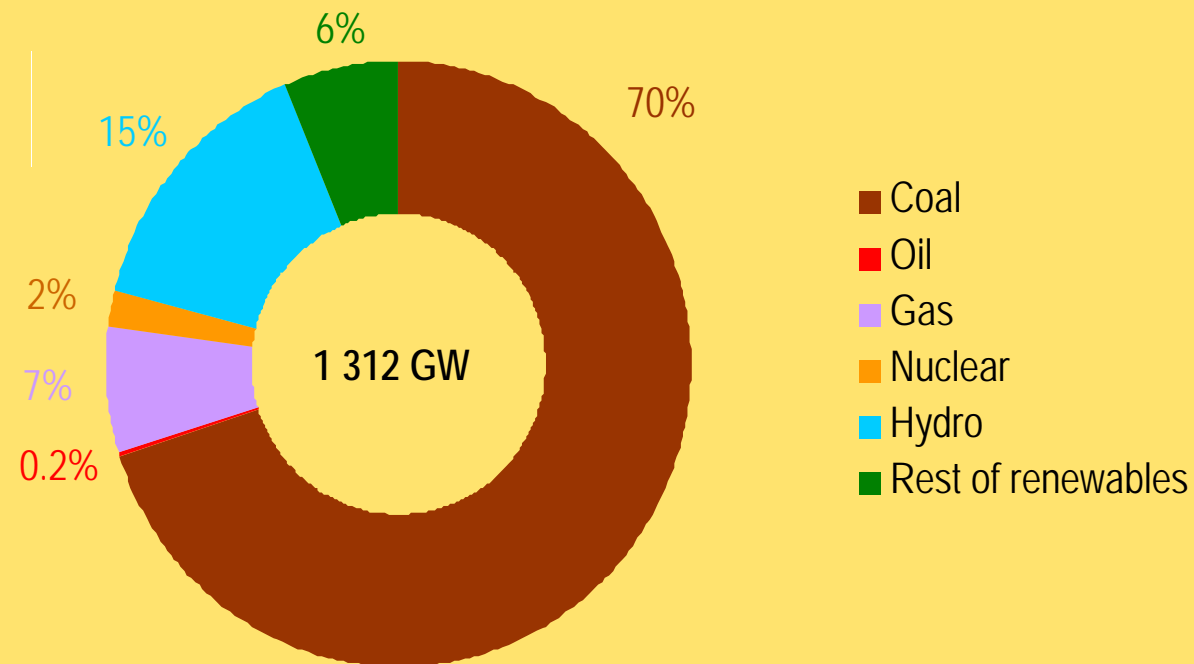
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Reference Scenario:

# Power Generation Capacity Additions in China, 2006-2030



*Most of the increase in coal demand comes from power generation*



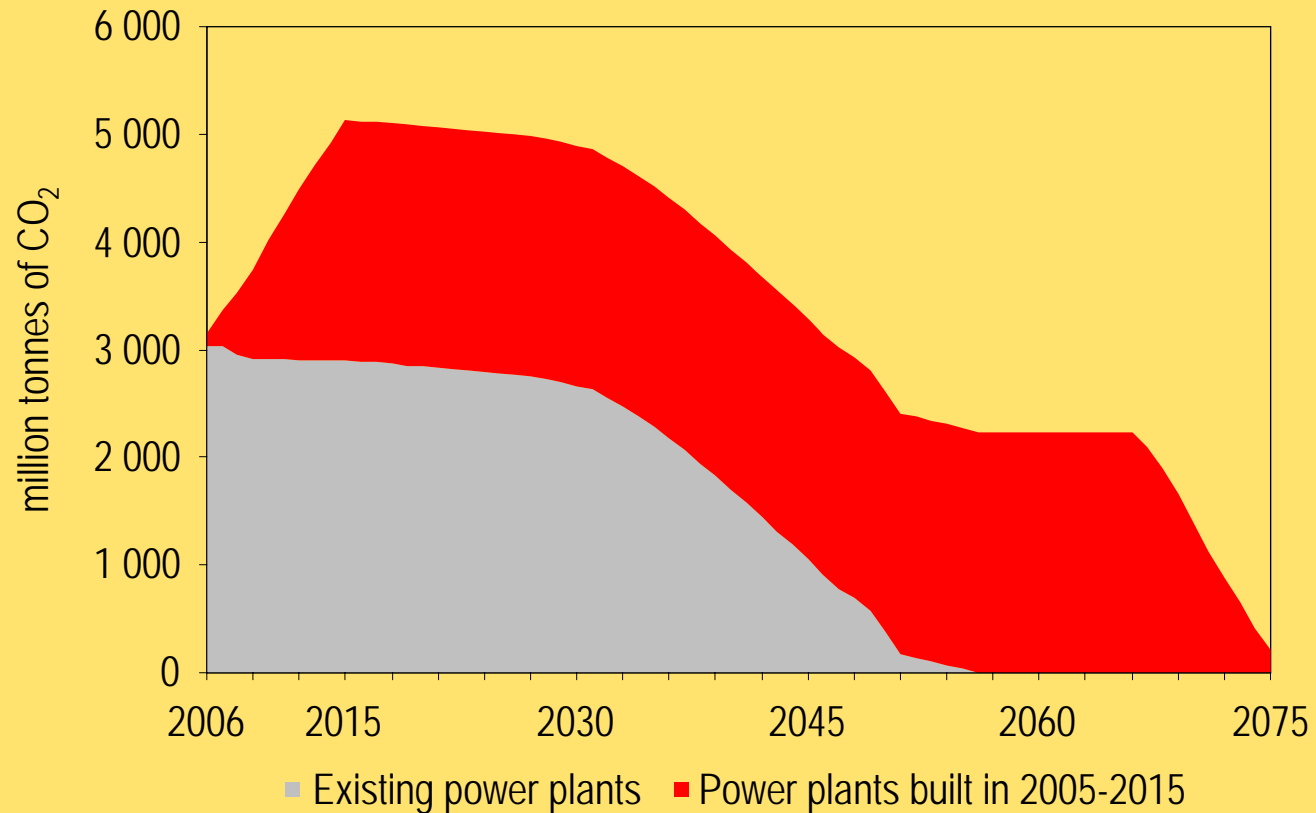
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## Reference Scenario: CO<sub>2</sub> Emissions from Coal-Fired Power Stations built prior to 2015 in China & India



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

# Comment réduire chaque année les émissions de CO<sub>2</sub> d'un milliard de tonnes par an? (300 centrales à charbon de 500 MW)

- *Ne pas consommer cette énergie.*  
Exemple: remplacer toutes les ampoules à incandescence par des ampoules à basse consommation (un an)
- *Remplacer ces centrales par des centrales nucléaires de 1000MW:*  
150 nouvelles unités par an
- *Les remplacer par du solaire ou de l'éolien:*  
je vous laisse faire le calcul...
- *Conserver ces centrales et séquestrer le CO<sub>2</sub> produit dans des pièges géologiques:*  
1000 Sleipner par an

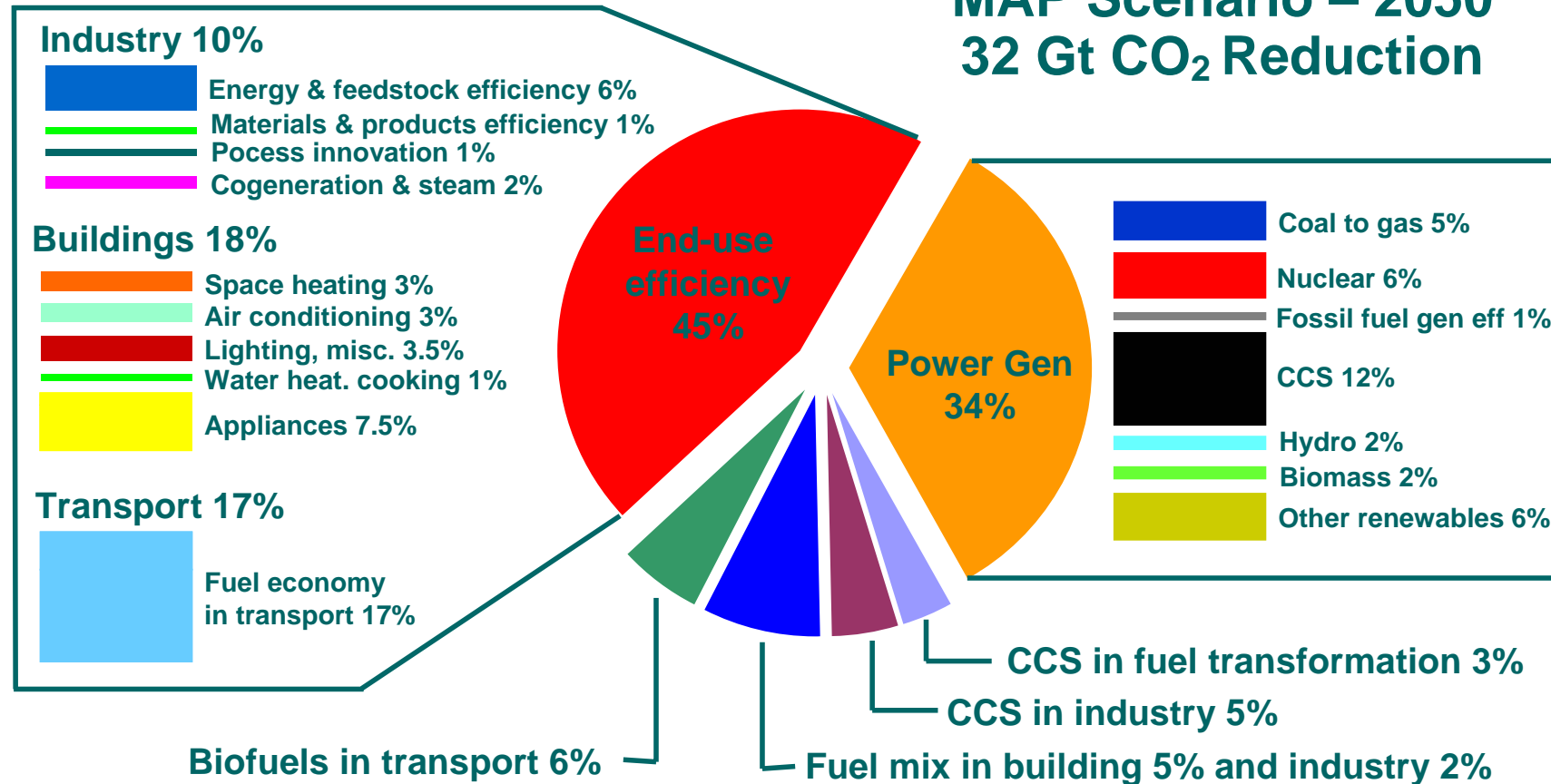
**IL N'Y A PAS DE SOLUTION MIRACLE**

**TOUT SERA NECESSAIRE**



# Emission Reduction by Technology Area ACT Map Scenario

MAP Scenario – 2050  
32 Gt CO<sub>2</sub> Reduction



***Improved energy efficiency  
is the most important contributor to reduced emissions!***



# ANNEXES

Inde

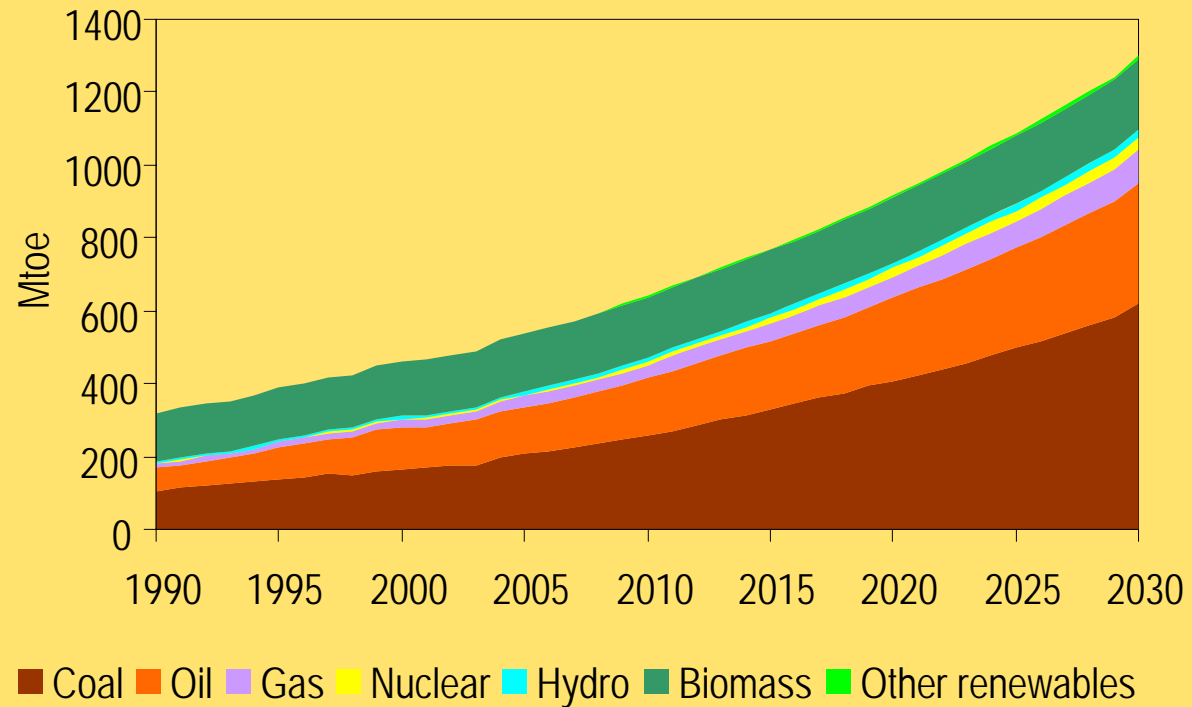


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## Reference Scenario: India's Primary Energy Demand by Fuel



***Large increase in coal demand***



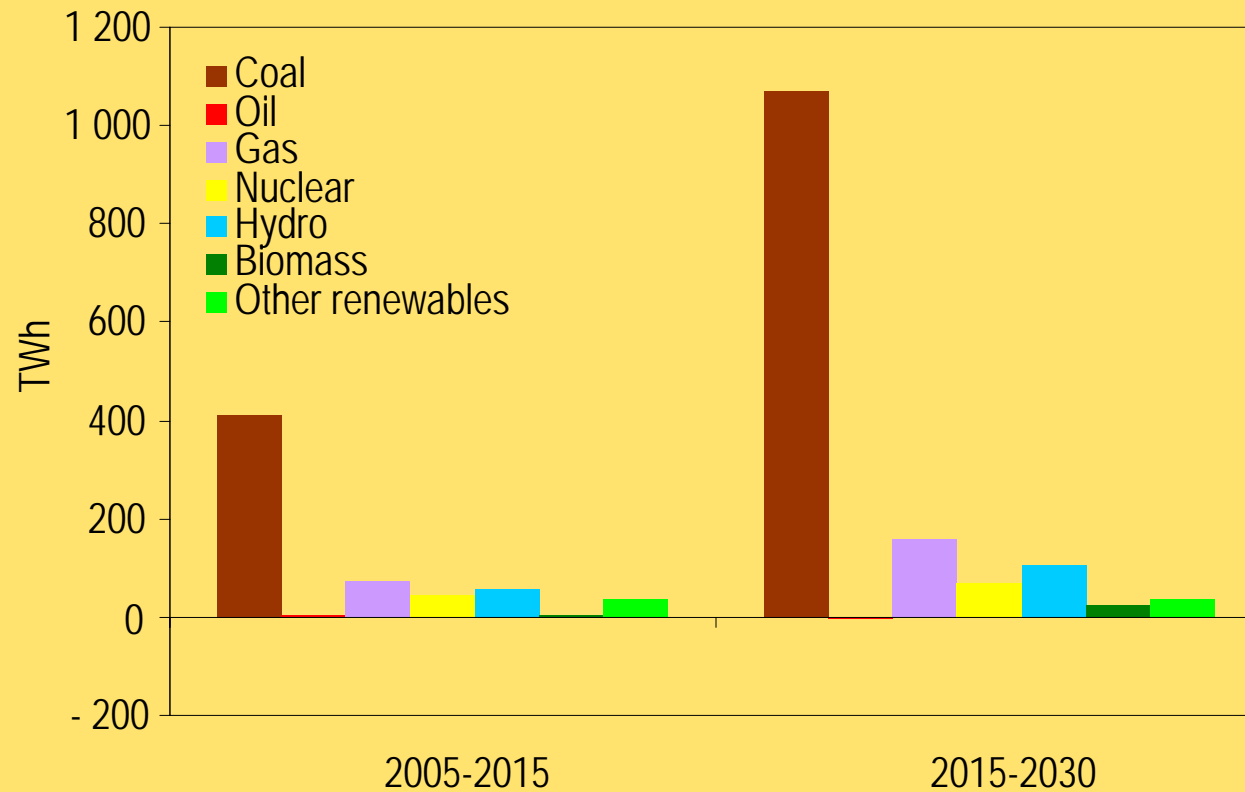
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## Reference Scenario: India's Electricity Generation Mix



***Coal remains the backbone of India's power sector***



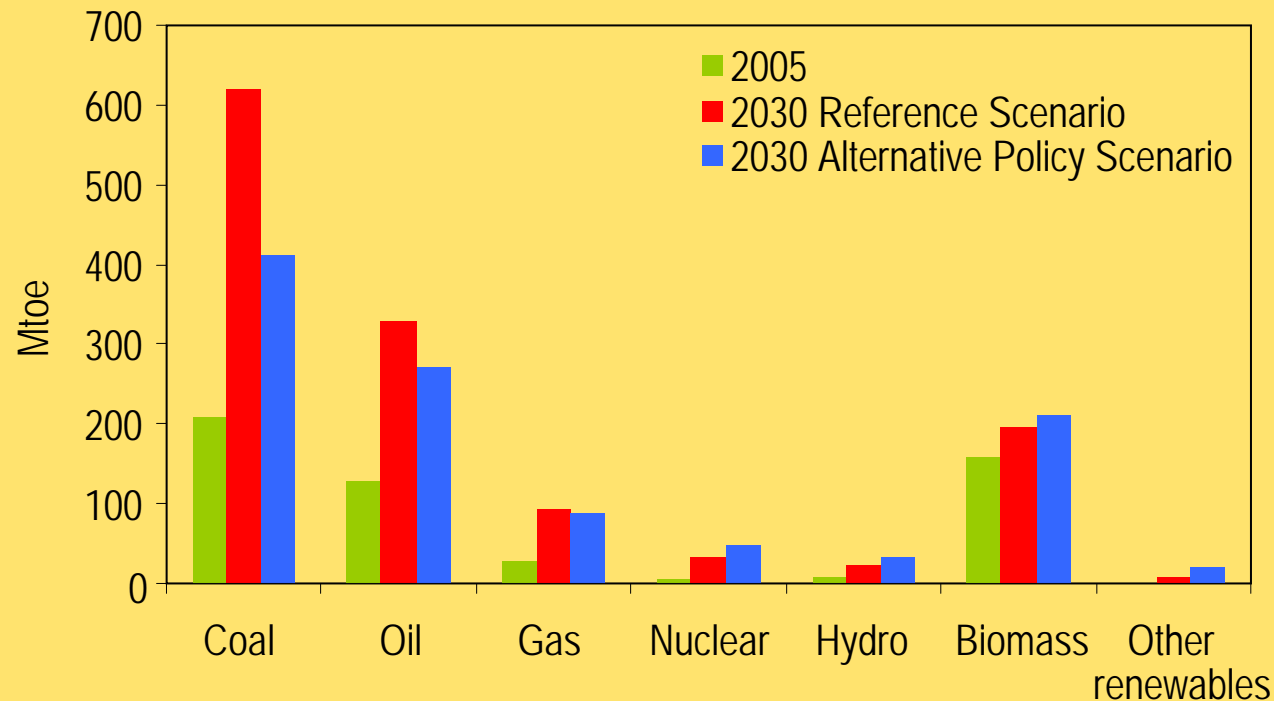
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## Alternative Policy Scenario: India's Primary Energy Demand Compared with the Reference Scenario



***New policies could cut energy demand by 17% in 2030 & boost the contribution of non-fossil fuels***



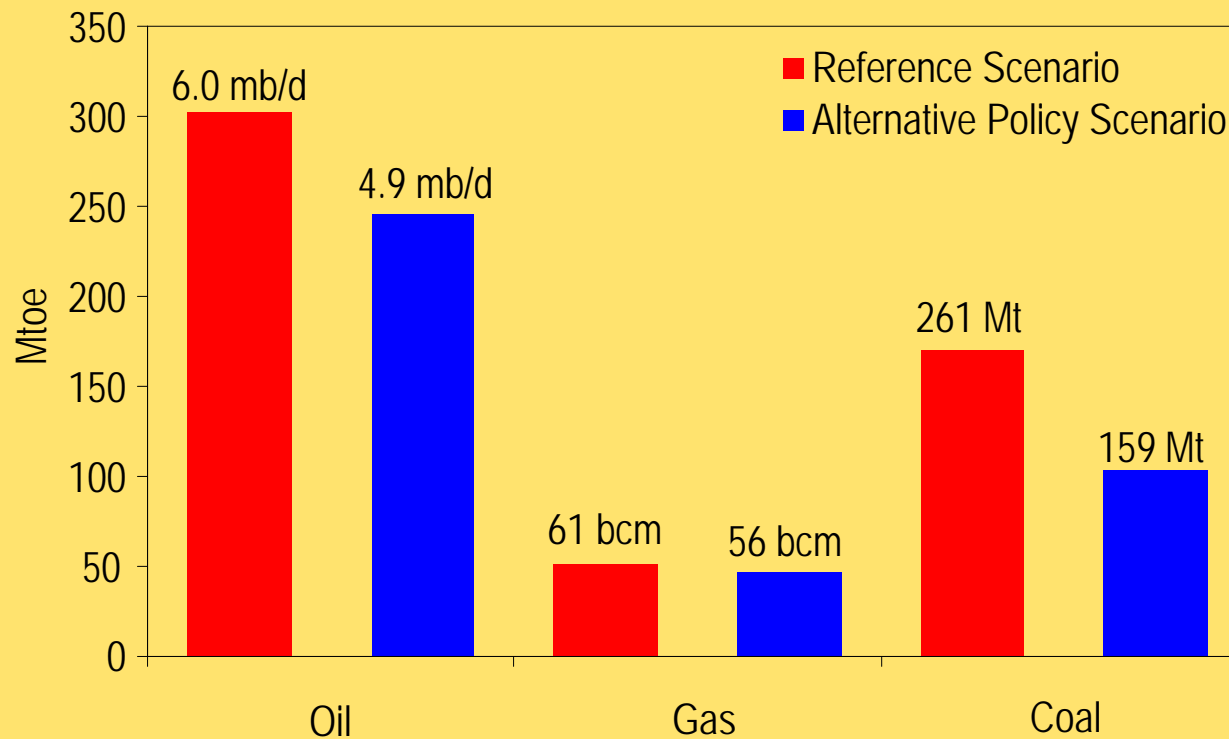
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## Alternative Policy Scenario: India's Fossil Fuel Imports Compared with the Reference Scenario



***Dependence on fossil fuels is markedly lower in the Alternative Policy Scenario, reducing import volumes & bills***



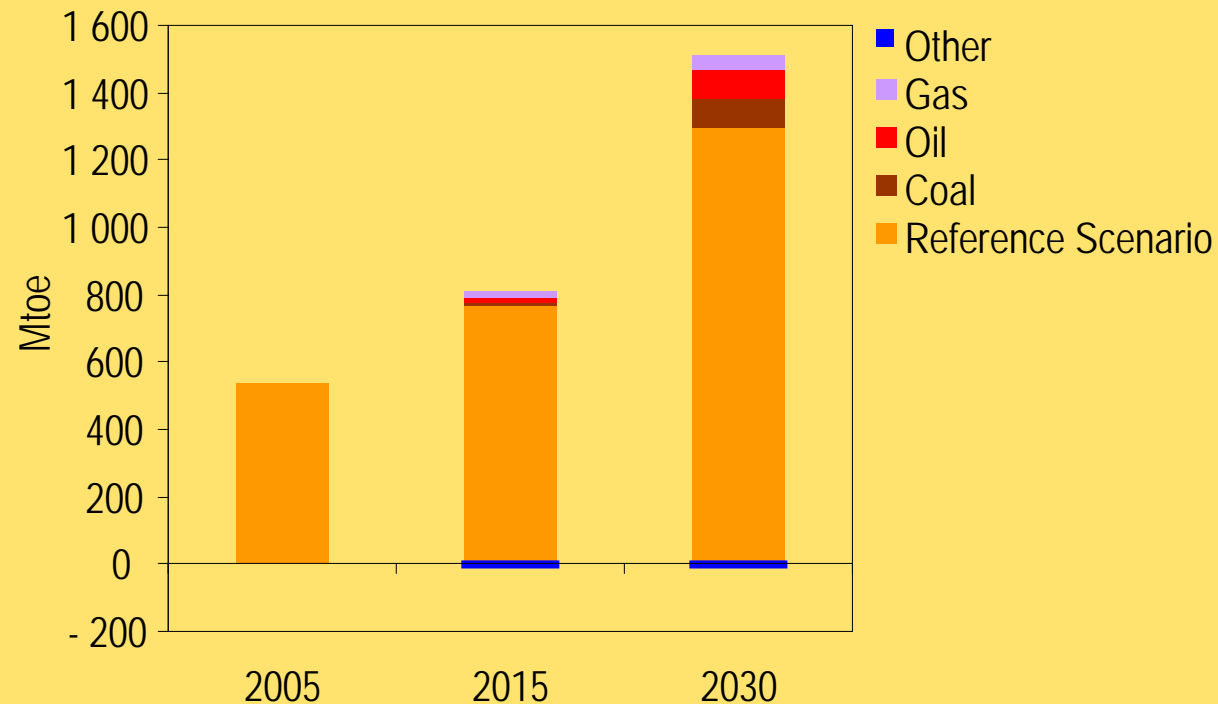
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## High Growth Scenario: India's Primary Energy Demand Compared with the Reference Scenario



***Faster GDP growth pushes energy demand up by 16% in 2030  
compared with the Reference Scenario***



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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