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
China & India will contribute more than 40% of the increase in global energy demand to 2030 on current trends.
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
  \[\rightarrow 13.6 \text{ mb/d to meet demand & rest to replace decline in existing fields}\]
- 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
The current reserve replacement ratio of top 5 IOCs has fallen, and it's becoming more difficult to replace reserves despite rising oil prices.
China’s oil imports reach 13 mb/d in 2030 as car ownership jumps to 140 per 1 000 people from 20 today
China recently became a net coal importer like India, with both putting increasing pressure on international coal markets.
Around 60% of the global increase in emissions in 2005-2030 comes from China & India.
## World’s Top Five CO₂ Emitters

<table>
<thead>
<tr>
<th>Country</th>
<th>2005</th>
<th>2015</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gt</td>
<td>rank</td>
<td>Gt</td>
</tr>
<tr>
<td>US</td>
<td>5.8</td>
<td>1</td>
<td>6.4</td>
</tr>
<tr>
<td>China</td>
<td>5.1</td>
<td>2</td>
<td>8.6</td>
</tr>
<tr>
<td>Russia</td>
<td>1.5</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Japan</td>
<td>1.2</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td>India</td>
<td>1.1</td>
<td>5</td>
<td>1.8</td>
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</tbody>
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*China becomes the largest emitter in 2007 & India the 3rd largest by 2015*
**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.
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
New policies reduce global oil demand by 14 mb/d by 2030, cutting sharply the need for imports.
Global Energy-Related CO₂ Emissions

Global emissions will increase by 57% in the Reference Scenario, but they level off in the Alternative Policy Scenario.
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
By 2030, emissions are reduced to some 23 Gt, a reduction of 19 Gt compared with the Reference Scenario.
High Growth Scenario
Faster economic growth in China & India would have major implications for energy security & climate
Summary & Conclusions
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