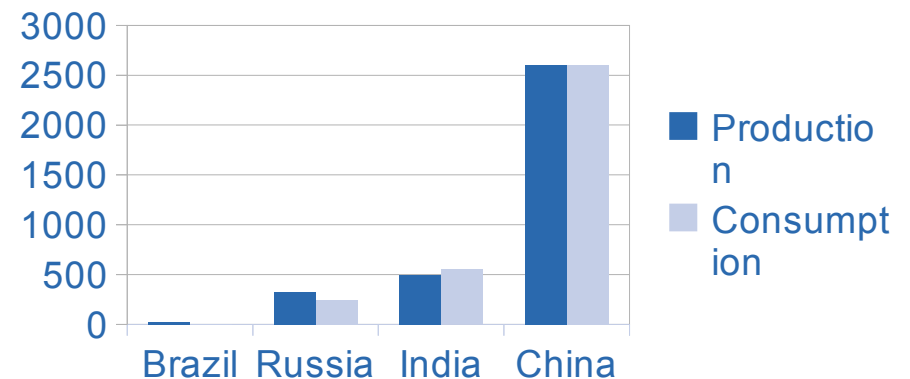
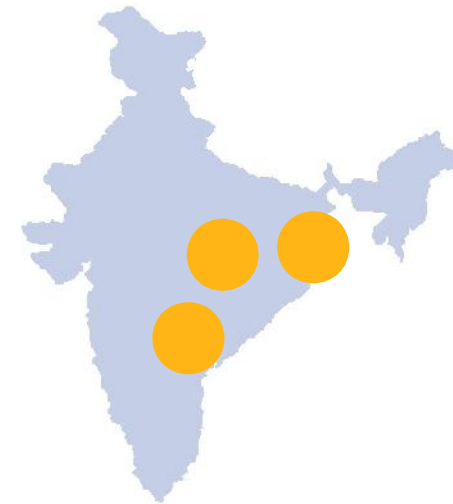


Coal, oil, water treatment, thermal power generation in India

18th November 2010

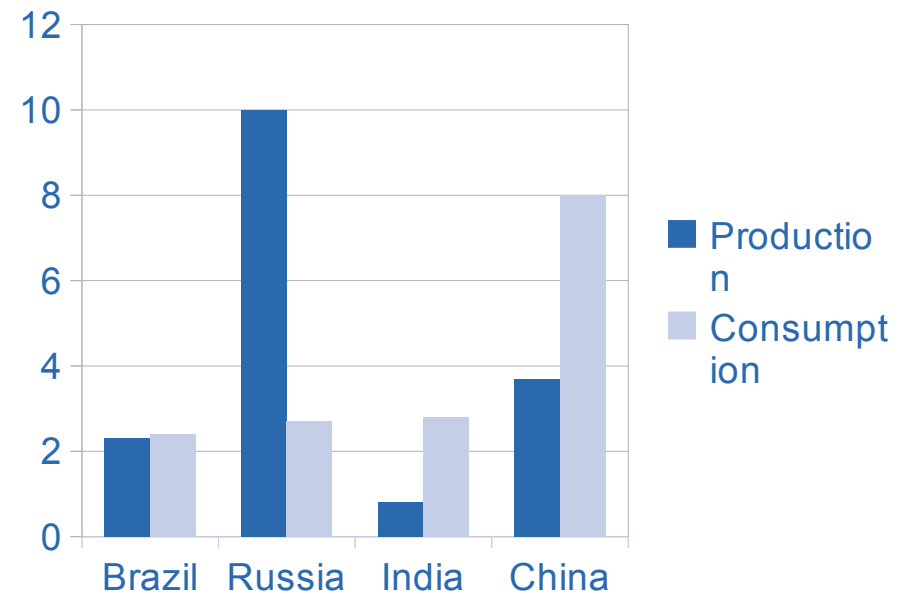
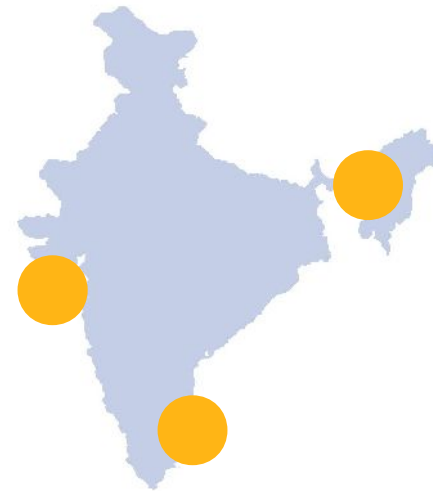


- 3rd largest producer of coal in the world
- 7% of world reserves
- Major players:
 - SCCL: 13 opencast, 42 underground mines
 - CIL: 163 opencast, 279 underground mines
- CIL plans to open 34 new underground mines in the next 2-5 years
- Smaller players follow the same trend, some also buy mines in Australia, Indonesia and South Africa



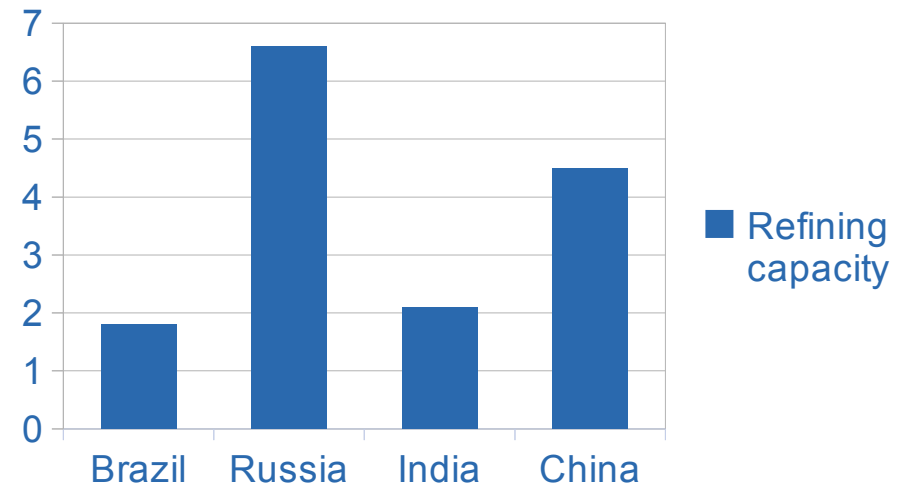
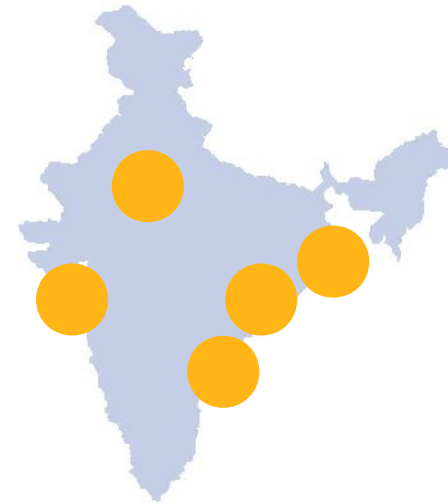
Unit: Million bbl/day
 Figures : IndexMundi, 2009

- India consumes 2.8M bbl/d
- ... produces 0.8M bbl/d
- 3600 oil wells in total
- Largest fields are offshore
- Largest field: Bombay High, off the west coast
- India is home to several engineering and EPC companies involved in designing, building, maintenance of on- and off-shore rigs



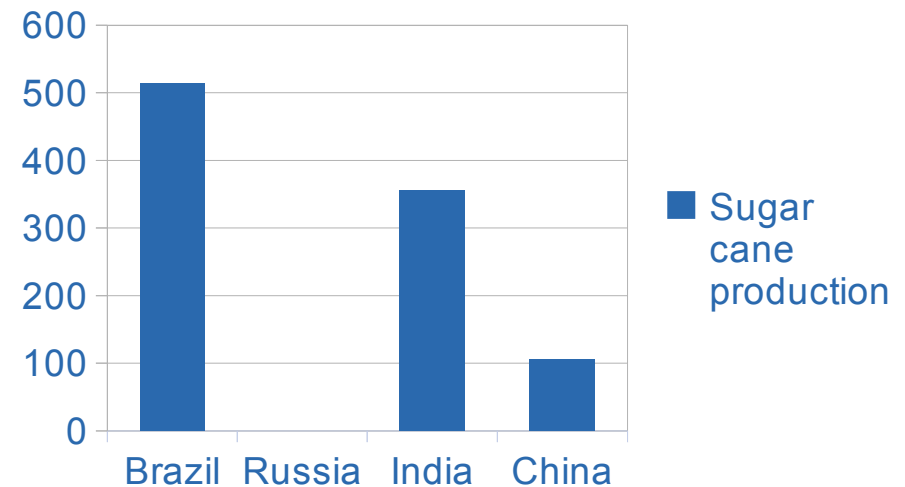
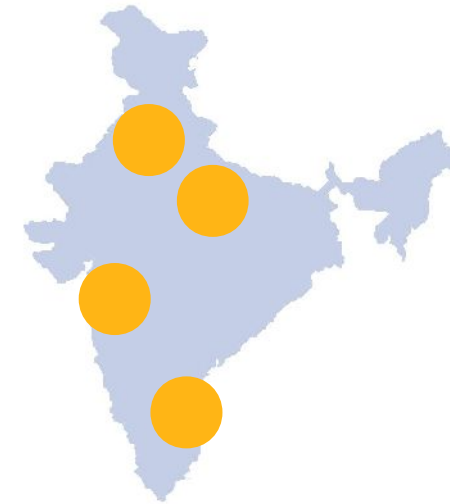
Unit: million Short Tons / year
 Figures : IndexMundi, 2009

- 5th refining capacity in the world
- 160 MTPA in 2009, 242 expected by 2012 (80 MTPA addition)
- 20 or so refineries today, 5 to 10 more planned in next 5 years
- Main players : Indian Oil (40%), Reliance, Essar, Bharat Petroleum, Hindustan Petroleum...
- Capacity being expanded at 20% per year or so to meet domestic demand, but also feed Europe and the US as refineries are not welcome there anymore
- Some players (Essar, Reliance) even dedicate some of their refineries solely to exports



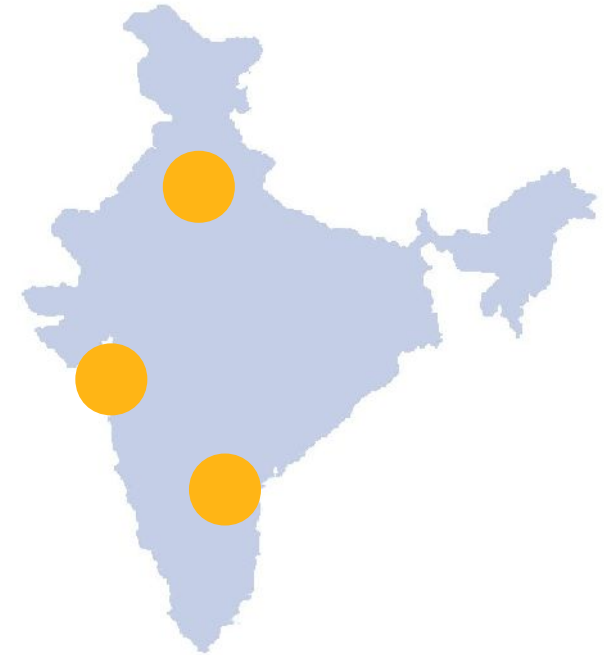
Unit: Million bbl/day
 Figures : UN, 2009

- India is the 2nd largest producer of sugar cane in the world, and the 4th largest of ethanol
- Anaerobic digestion is widely used in distilleries in India. 60% of biogas produced is methane
- Indian Government gives incentives for methane recovery in general, including in sugar processing plants / distilleries
- Most of the processing technologies, engineering, plant design, plant erection are 100% indigenous
- Many of those EPCs sell their plants outside India too



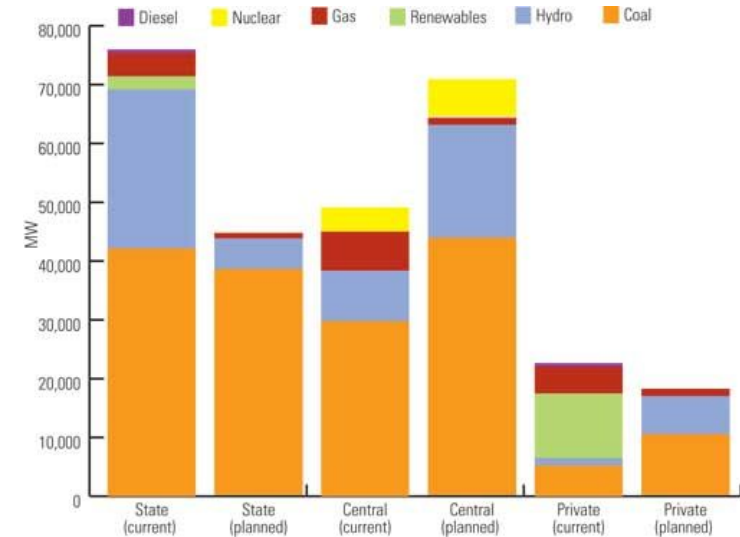
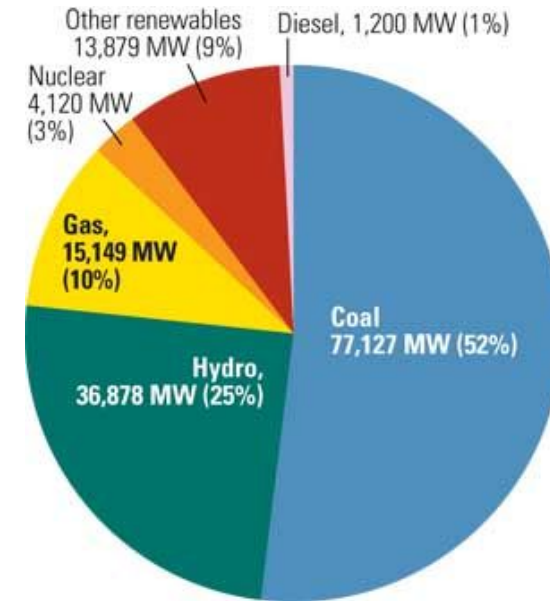
Unit: Million metric ton/year
Figures : Gvt of India, 2008

- Standards are evolving towards cleaner drinking water
- More than 150 cities of >100k inhabitants have allocated budget for either upgrading or building new sewerage water treatment plants
- Recent trend is towards public / private partnership in plant BOO
- Example of a recent project with methane recovery: Tirupur (TN), 185 million litres/day
- Major players : Degrémont (in India since 1986, JV with Anand Automotive), Hindustan Construction Company, Mahindra & Mahindra, Larsen & Toubro, etc...



Main players locations

- 12% deficit in electricity generation
- Demand to grow by 50% by 2025
- 100GW additional coal or gas powered electricity generation planned by 2017
- Operators: central, states, private, PPP
- New plants will mostly be under 800MW each
- Main local players : NTPC, BHEL, L&T-MHI, Tata Power, Rel, Torrent...
- BHEL manufactures turbines from 100 to 1000MW, sells in India but also abroad





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