Global energy politics

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HDI vs. PCEC

**PCEC (in kgoe)**
- World average: 1800
- OECD: 4280
- China: 1700
- Africa: 670
- India: 580 with 0.55 HDI

Countries with HDI of 0.7 or above have PCEC above 800 kgoe

No major advantage of using more than 2500 kgoe
• In 2010, nearly 1.3 billion people did not have access to electricity; two-thirds of which are in 10 countries.
Access to clean cooking fuel

- In 2010, around 2.6 billion people relied on traditional biomass for cooking.
- Nearly two-thirds of India’s and 80% Sun-Saharan Africa’s population remains without clean cooking facilities.
• Global energy demand grows by more than one-third by 2035 @ 1% pa. China (2% pa), India (3% pa) and the Middle East (2% pa) accounting for 60% of the increase.

• But demand increase in high consuming OECD countries as well at 0.1-0.2% pa.
Even in 2035 PCED of China and India will be half and one-sixth of the US.

PCED increase in India and China along with major improvements in energy efficiency.
Global Energy Mix

1990:
- Coal: 36.8%
- Oil: 25.4%
- Gas: 19.0%
- Nuclear: 10.3%
- Hydro: 6.0%
- Bioenergy: 2.1%
- Other renewables: 0.4%

2010:
- Coal: 27.3%
- Oil: 32.3%
- Gas: 21.5%
- Nuclear: 10.0%
- Hydro: 5.6%
- Bioenergy: 2.3%
- Other renewables: 0.9%

2035:
- Coal: 24.5%
- Oil: 27.1%
- Gas: 23.9%
- Nuclear: 6.6%
- Hydro: 10.9%
- Bioenergy: 2.8%
- Other renewables: 4.1%
Fossil fuels will meet about 60% of the overall increase in demand.

Other Renewables will grow @ 7-8% pa. But still will contribute only about 4% of total demand.
The unconventional gas age

- Unconventional gas (shale gas/ frack gas) surge in North America;
- Many countries are lining up to emulate this success; notably in China (highest potential), Australia, Europe & Latin America
- Highly water, land and pollution intensive
• Unconventional oil and gas production in the US is reshaping world’s energy landscape.
• US currently imports 20% of its energy demand; but rising production of oil and shale gas means it becomes self-sufficient by 2035.
US energy sector renaissance

- Shale gas is even cheaper than coal in the US.
- US has started exporting coal to Europe and Asia.
• US is phasing out coal and oil with Shale gas
• Shale gas has about half the carbon intensity of coal. So, a shift to shale gas means significant reduction in CO₂ emissions
• Other than the US, all major economies will import more and more oil and gas
• This will have major geopolitical implications on key strategic maritime routes.
• By 2035, almost 90% of Middle Eastern oil exports go to Asia
Maritime oil and gas routes

- Straits of Hormuz and Malacca will become more and more important and so will the importance of Indian Ocean.
Major gas trade flows, 2035
Impact on climate negotiations

• US now more confident of reducing emissions by phasing-out coal and shifting to Shale gas. This will reduce emissions as well as energy costs

• China has already built its energy infrastructure and is likely to move on shale gas quickly as well – can take emission reduction commitments

• EU, especially Germany, will go for renewable energy and imported gas – competitiveness vis-à-vis the US is likely to lower its emissions reduction ambitions

• In India, Coal is the only domestic option (till we find shale gas). Can reduce emissions only by more efficiency and more renewables. **Expensive.**
What the future looks like?

- Dawn of the gas age
- Cheaper gas means less interest in renewable energy (unless the world force shift to RE through anti-shale gas campaign)
- Less likely to meet $2^\circ$C target.
- Anti-coal campaign led by the US; pressure on India to reduce coal and emissions
- We must have a strategy that combines energy security, affordability with climate action