

Energy sector

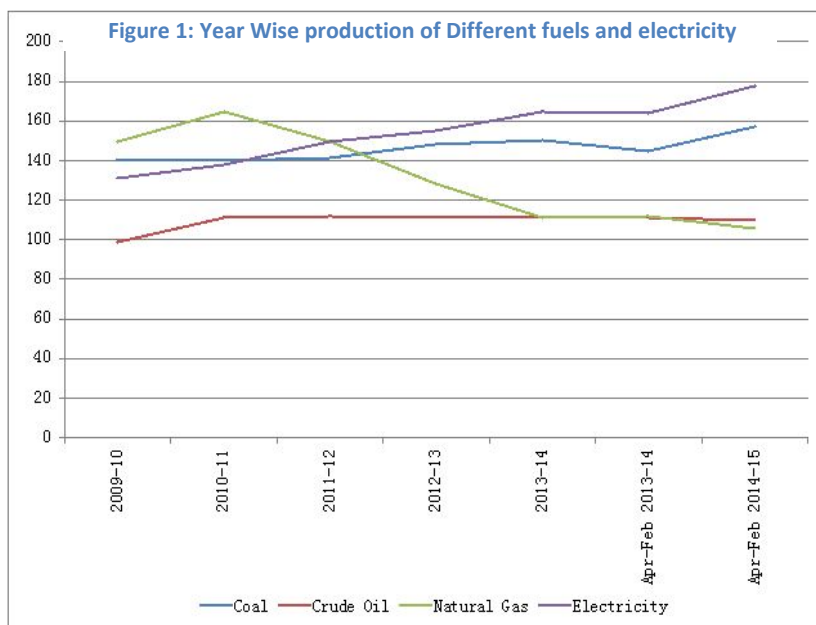
Background: The path to economic growth and development is industrialization and Industrialization is an energy intensive activity. Modern day agriculture and service sectors are also energy intensive. Since India is a developing country hence demand for the same is high in India. India is the fifth largest consumer of energy in the world. At present global consumption of petroleum is around 12000 million tones and India consumes (524.2 mtoe) 4.4% of the same. Most alarmingly the growth rate of consumption of energy is 6.8% in India while the compound annual growth rate (CAGR) of supply is only 1%. India's 78% consumption of petroleum is met by import. Similarly 25% of natural gas consumption is met by importing the same. Oil and gas constitutes around 45% of India's total energy basket. It is expected that in coming time the import dependency in crude oil alone would reach 90%. Though the sum total of energy consumption in India is quite high, but the per-capita consumption of energy of 500 Kgoe is far less than the global average of 1800 kgoe.

Current Scenario:Coal: Coal production in India has increased by 11.6% in February, 2015 over February, 2014. Cumulative coal index over the period April to February, 2014-15 has increased by 8.5% over April to February, 2013-14.

Crude Oil:Crude oil production declined by 1.9% in the month of February, 2015 over February, 2014. The cumulative index for crude oil has declined by 1.1% over the same period of previous year.

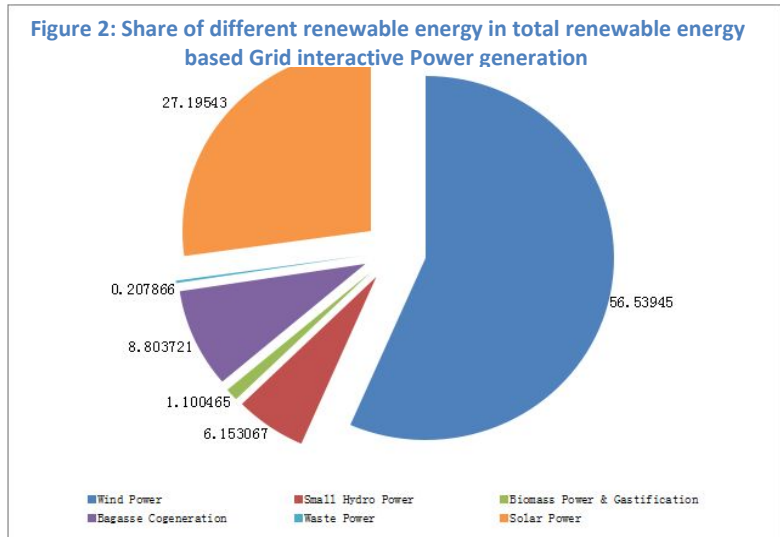
Natural Gas:Production of natural gas has declined by 8.1% in the month of February, 2015 and so as its cumulative index during April-February, 2014-15; by 5.5% over the same period of 2013-14.

Electricity:Electricity generation has increased by 5.2% in February 2015 over the same month previous year. The cumulative index for electricity generation during the period April-February, 2014-15 has witnessed a growth rate of 8.6% over the corresponding period of the previous year.



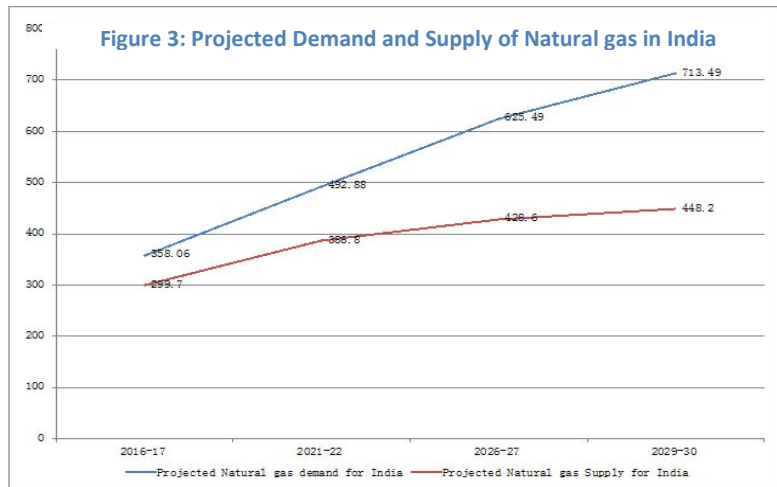
It is apparent from figure 1 that crude oil production has maintained more or less stable level from 2010-11. On the other hand natural gas production has declined sharply from 2010-11. However, electricity production in India has maintained steady growth over the years.

Renewable Energy: In the month of March 2015 India has produced 4089.18 MW of Grid Interactive power through the use of renewable energy sources. Wind power has contributed to the lion's share of such power followed by solar power as depicted in Figure 2.



Future Trend:Power generation in India is expected to grow by 8.4% in 2015-16. By the end of 2031-32 even if the contribution

of the renewable energy in India is increased by 40 folds and the same for nuclear energy is increased by 20 fold; fossil fuel will continue to occupy 74% to 85%. India's projected demand for power would be 335 GW by the end of 2017. It is estimated that to meet the energy demand of India the country needs to invest \$600 billion during the years 2011-30. To meet up the demand for coal by the end of 2017 India would have to import 185 million tons of coal. Crude oil demand of India has been estimated to be 188.83 million tons by the end of 2015-16. Figure 4 portrays the projected demand and supply for natural gas in India.



Policy news:India is undertaking exploration of essential sources for nuclear energy and has already set up a plant in Orissa to process the mineral. The concerned plant is capable of processing 10,000 tons Monazite annually. This will eventually help India to replace cheap imported Monazite from China; another important step towards make in India. France and Canada has already been approached regarding cooperation in nuclear energy by the Indian government these cooperation along with others might benefit India with 3968 tons of nuclear

fuel. Government also promises to get ready 4 nuclear reactors by 2019. Riding the nuclear wave Maharashtra government focuses added attention to the Jaitapur nuclear plant. The Appellate Tribunal of Electricity has revealed that there are no restrictions on buying power from multiple sources for industrial consumers. NTPC has refused to import coal mentioning ample supply of coal from state run mines. The



The proposed TAPI gas pipeline

The concerned organization has also announced to establish 3000 MW worth of solar projects in 2015-16. India will import 10% less CNG from Qatar. Numaligarh refinery signs MOU with Bangladesh Petroleum Corporation for exporting petroleum products. India sought to get right to develop Iranian oil field. Recent visit of government delegation to Iran finalizing oil deals might follow soon. Indian government may auction 69 oil fields owned by ONGC and IOC to private companies. Oil rich Venezuela plans to boost up oil supply to India and has expressed interest to get associated with RIL. Rise in diesel cess and tax cut on buses might be opted for green Delhi. Central government backs Assam's claim on crude oil royalty. Indian government plans to invest \$6 billion more to Rovuma oil field. Mumbai high and Vietnam oil fields to be drilled by Essar Energy to boost up oil supply. ONGC OIL and Bharat Petroleum to invest \$6 billion to giant Mozambique gas field. ONGC also focuses on Mexican oil and gas blocks and plans to invest 40000 crore in Krishna-Godavari basin. ONGC also gets approval on selling oil through bids from smaller fields. The oil ministry urges the finance ministry to pay a premium to the private owners leading explorations at difficult oil fields. Works on TAPI pipe line between India and Turkmenistan might begin this year. The 1800 KM long pipe line would serve 3.2 billion cubic foot of gas annually. Sembcorp of Singapore will invest \$1 billion in India to double clean energy portfolio. NTPC is all set to centralize vendor procurement system. Union railway minister sought for use of wind and solar energy. Electricity tariff is hiked by 10% in Madhya Pradesh. Power companies would be fined if they are found using high ash coal. NHPC receives government approval for land diversion in Dibang power project. The power ministry will allow states, opting for central generation utilities projects in their territory, to retain 85% of electricity from such units. Central government allots 10000 crores worth of power projects to North-Eastern states. The central government has also promised to provide cheap 24 hours power to all.