

## 9 Energy Scenario in India:

The Indian economy has experienced unprecedented economic growth over the last decade. Today, India is the ninth largest economy in the world, driven by a real GDP growth of 8.7% in the last 5 years (7.5% over the last 10 years). In 2010 itself, the real GDP growth of India was the 5th highest in the world. This high order of sustained economic growth is placing enormous demand on its energy resources. The demand and supply imbalance in energy is pervasive across all sources requiring serious efforts by Government of India to augment energy supplies as India faces possible severe energy supply constraints.

A projection in the Twelfth Plan document of the Planning Commission indicates that total domestic energy production of 669.6 million tons of oil equivalent (MTOE) will be reached by 2016-17 and 844 MTOE by 2021-22. This will meet around 71% and 69% of expected energy consumption, with the balance to be met from imports, projected to be about 267.8 MTOE by 2016-17 and 375.6 MTOE by 2021-22.

India's energy basket has a mix of all the resources available including renewable. The dominance of coal in the energy mix is likely to continue in foreseeable future. At present India's coal dependence is borne out from the fact that 54% of the total installed electricity generation capacity is coal based and 67% of the capacity planned to be added during the 11. Five year Plan period 2007-12, is coal based? Furthermore, over 70% of the electricity generated is from coal based power plants. Other renewable such as wind, geothermal, solar, and hydroelectricity represent a 2 percent share of the Indian fuel mix. Nuclear holds a one percent share.

The share of Coal and petroleum is expected to be about 66.8% in total commercial energy produced and about 56.9% in total commercial energy supply by 2021-22. The demand for coal is projected to reach 980 MT during the Twelfth Plan period, whereas domestic production is expected to touch 795 MT in the terminal year (2016-17). Even though the demand gap will have to be met through imports, domestic coal production will also need to grow at an average of 8% compared to about 4.6% in the Eleventh Five Year Plan. The share of crude oil in production and consumption is expected to be 6.7% and 23% respectively by 2021-22.

In 2011-12, India was the fourth largest consumer in the world of Crude Oil and Natural Gas, after the United States, China, and Russia. India's energy demand continued to rise despite the slowing of global economy. Petroleum demand in the transport sector is expected to grow rapidly in the coming years with rapid expansion of vehicle ownership. While India's domestic energy resource base is substantial, the country relies on imports for a considerable amount of its energy use, particularly for Crude Petroleum.

The state of preparedness of the country for generation of the energy it requires and the quality or efficiency of the technology used in the generation can be well analyzed by the indicators of installed capacity and capacity utilization, respectively. The power sector in India has an installed capacity of 236.38 Gigawatt (GW) as of March 2012 recording an increase over that of March 2011. Captive power plants generate an additional 36.5 GW. Thermal power plants constitute 66% of the installed capacity, hydroelectric about 19% and rest being a combination of wind, small hydro-plants, biomass, waste-to-electricity plants, and nuclear energy. India generated about 855 BU electricity during 2011-12 fiscal.

As of March 2012, the per capita total consumption in India was estimated to be 879 kWh. India's electricity sector is amongst the world's most active players in renewable energy utilization, especially wind energy. As of March 2012, India had an installed capacity of about 24.9 GW of new and renewable technologies-based electricity. During the Eleventh Five Year Plan, 55,000 MW of new generation capacity was created, yet there continued to be an overall deficit of 8.7% and peak shortage of 9.0%. Resources currently allocated to energy supply are sufficient for narrowing the gap between energy needs and energy availability.

### **1.10 Renewable Energy Scenario in India:**

India is committed towards increasing the share of renewable power in the electricity supply to 15 per cent by the year 2020. Indian energy sector is expected to be at par with the stipulations on carbon emissions and sustainability through various changes in the current scenario. The launch of Jawaharlal Nehru National Solar Mission, a joint initiative of the Ministry of New and Renewable Energy and Ministry of Power, is one of the most important environment friendly energy solutions available in India.

The National Solar Mission targeting 20,000 MW grid solar Power, 2,000 MW of off-grid capacity including 20 million solar lighting systems and 20 million square meters solar collector area by 2022 is under implementation. Last year witnessed a significant growth in the number of new initiatives in the renewable energy sector. The energy sector picked up momentum by adding over 2,800 MW capacities resulting in grid-connected renewable energy

capacity crossing the 22,000 MW milestones. During 2011, grid-connected solar power plants crossed the 100 MW milestones as well. Further, over 1000 remote villages were electrified through renewable energy systems during this year.

Wind power is the fastest growing renewable energy sectors in India. A total capacity of 880 MW of wind power has been installed in the country. A capacity of around 2827 MW has been installed during 2011. Following the Central Government's decision to enforce the Energy Conservation Building Code in new buildings to minimize the use of energy and recommendations by the state governments to follow the same with suitable amendments warranted by local circumstances and requirements, the state of Haryana has enforced the provisions of the code. The code is applicable to all buildings and complexes having a connected load of 500 KW and more, or requiring a contract demand of 600 KVA and more.

