AN OVERVIEW OF INDIA’S ENERGY SECTOR

India is the world’s eleventh largest economy by nominal GDP and fourth largest by Purchasing Power Parity. The eleventh five-year plan of India’s Planning Commission set an ambitious target of 9 percent GDP growth for the plan period (2007-2012). Critical to the ability to sustain this growth going forward is the availability and affordability of energy. According to the report of the Expert Committee on Integrated Energy Policy, in order to maintain a sustained growth of 8 percent through 2031-32, India needs to increase its energy supply by a factor of three to four times and its electricity generation capacity/supply by a factor of five to six of their levels in 2003-04. At the same time, there is recognition of an imperative need to minimize spending on petroleum products, which are progressively becoming costlier, and to increasingly rely on renewable energy sources.

At present, India’s energy supply is skewed in favor of non-renewable energy sources. India is one of the largest buyers of crude oil in world, while it meets most of its demand for coal through its sizable domestic reserves. However, the country has actively begun to explore other avenues, such as nuclear power and solar power. Initiatives such as the Jawaharlal National Solar Mission, the objective of which is to establish India as a global leader in solar energy, have been launched. India also possesses the fifth largest wind power industry in the world and is currently adding a capacity of 1,800-2,000 megawatts (MW) every year. India has also been laying the groundwork for a major expansion of its nuclear power capacity. India is expected to have 20,000 MW of nuclear capacity by the year 2020. India also plans to supply 25 percent of electricity from nuclear power by the year 2050. India’s future nuclear power
ambitions are also fuelled by the fact that it controls 25 percent of all known thorium reserves and is actively pursuing research into the thorium fuel cycle in its quest for an indigenous alternative to uranium.

**POWER SECTOR- GENERATING CAPACITY**

*in megawatts*

![Power sector generating capacity chart](chart.png)

*Source: http://pib.nic.in (2010)*

*Note: R.E.S. stands for “Renewable Energy Sources” and includes small hydro projects, biomass gasifier, biomass power, urban and industrial waste power and wind power*  

While the power sector in India is predominantly controlled by public sector undertakings (PSUs) owned by central/state governments, private players have a significant presence in the areas of gas-fired power plants and power generated from renewable sources. That presence is bound to increase, given the increasing pace of development in the electricity sector in the country.

**Power Laws in India**

The energy sector in India is governed by various statutes, including the Electricity Act, 2003 and the Energy Conservation Act, 2001.

In India, the first Electricity Act was enacted in 1903. Meant as a tentative measure, it was speedily replaced by the Indian Electricity Act, 1910. This 1910 Act regulated the issue of granting licenses to the licensees, the according to sanction to persons for the generation, distribution and supply of electrical energy, the powers and obligations of such persons and the takeover of their undertakings by the central government, the state government and the local authority. Later, in 1948, the Electricity (Supply)
Act was enacted. It provided a basis for takeover of most undertakings by State Electricity Boards constituted under it. The Act mainly deals with constitution, powers and functions of various bodies including the Central Electricity Authority (CEA), state electricity boards, generating companies, consultative councils and local advisory committees. The National Electricity Policy and the tariff policy are prepared by the Central Government in consultation with the CEA and the state governments. These policies are meant to ensure the optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy. The CEA is also responsible for specifying technical standards and safety requirements for construction and operation of plants and transmission lines, advising the government and commissions on technical matters and other activities.

The Electricity (Supply) Act was followed by the Electricity Regulatory Commissions Act in 1998, which mandated the creation of the Central Electricity Regulatory Commission (CERC), to which was delegated the task of setting the tariff of centrally owned or controlled generation companies. The Commission aims to promote competition, efficiency and economy in bulk power markets, improve the quality of supply, promote investments and advise government on the removal of institutional barriers to bridge the demand supply gap and thus foster the interests of consumers. The Act also mandated the creation of state electricity regulatory commissions (SERC), which were also granted powers to set tariffs. The CERC is mainly a regulatory body, in contrast to CEA which is mainly an advisory body. However, both CERC and SERC have certain advisory functions to foster competition, efficiency and investment. Besides the setting up of a regulatory mechanism, the function of CERC also includes adjudication of disputes among generating companies or transmission licensees. An appeal from CERC or SERC will lie with the Appellate Tribunal for Electricity (APTEL). APTEL has been in operation from July 21, 2005.

The Electricity Regulatory Commissions Act was followed by the Energy Conservation Act in 2001. This Act mainly provided for the establishment of the Bureau of Energy Efficiency (BEE). BEE was constituted to reduce the ‘energy intensity’ of the Indian economy. One of the key functions of BEE is to provide policy framework and direction to national energy efficiency and conservation efforts and programs.

In 2003, the Electricity Act was enacted, which regulates generation, distribution, transmission and trading in power. It replaced the legislations that are mentioned above, such as the Indian Electricity Act, 1910, the Electricity (Supply) Act, 1948, and the Electricity Regulatory Commissions Act, 1998. CERC has been granted its quasi-judicial status under section 76 of the Electricity Act. From a regulatory point of view, CERC is a key player in the Electricity sector. CERC press releases and orders are the key to understand regulations in the Indian power sector. CERC and SERC formulate terms and conditions for the determination of tariff, explained below.

I. Tariff Determination
Under section 61 of the Electricity Act, 2003, the “appropriate commission” (the CERC or SERC as the case may be) shall specify the terms and conditions for the determination of tariff. In doing so, it shall be guided by the following, including, *inter alia*:
a) the principles and methodologies specified by the Central Commission for determination of the tariff applicable to generating companies and transmission licensees
b) the generation, transmission, distribution and supply of electricity are conducted on commercial principles
c) safeguarding of consumers' interest and at the same time, recovery of the cost of electricity in a reasonable manner
d) the principles rewarding efficiency in performance
e) the promotion of co-generation and generation of electricity from renewable sources of energy
f) the National Electricity Policy and tariff policy

II. Foreign Direct Investment Caps in the Energy Sector
Sector-wise Foreign Direct Investment (FDI) caps along with the entry routes are provided below. It must be noted that “government approval” means that approval of the Foreign Investment Promotion Board (FIPB) is required. In case the “automatic” route is used, there is no need for approval from FIPB or the Reserve Bank of India. Applications can also be forwarded to Indian missions abroad, which will forward them to the Department of Economic Affairs. It must also be noted that FDI is prohibited in the case of atomic energy.

1. FDI cap in electric generation, transmission, distribution and trading is 100 percent. Entry route is automatic and does not require prior FIPB approval.
2. FDI cap on exploration activities of oil and natural gas fields, infrastructure related to marketing of petroleum products, actual trading and marketing of petroleum products, petroleum product pipelines, natural gas/LNG pipelines, market study and formulation and Petroleum refining in the private sector is 100 percent. Petroleum refining by the PSUs, without any divestment or dilution of domestic equity in the existing PSUs is 100 percent. Entry route is automatic.
3. FDI cap on petroleum refining by the Public Sector Undertakings (PSU), without any divestment or dilution of domestic equity in the existing PSUs is 49 percent. Entry requires government approval.
4. FDI cap for coal and lignite mining for captive consumption by power projects, and iron and steel, cement production and other eligible activities permitted under the Coal Mines (Nationalisation) Act, 1973, is 100 percent. Entry route is automatic.

III. Business Opportunities
There is huge potential for international investment in India’s energy sector. In particular, there is a buzz of activity in the power sector. Major governmental initiatives are anticipated on an unprecedented level, and groundwork is expected to be laid in the twin areas of nuclear power and power from renewable sources. Energy majors such as Areva and Siemens have actively entered the market and more are anticipated to arrive.
IV. Major Players in the Energy Sector in India

a) Electricity: The National Thermal Power Corporation (NTPC), National Hydro Electric Power Corporation and the Power Grid Corporation of India are the major public sector players. The main private sector players include Tata Power, Calcutta Electricity Supply Corporation Limited, Reliance Infrastructure and Adani Enterprises.

b) Oil and gas: Oil production in India is dominated by the Oil and Natural Gas Corporation (ONGC) and Oil India, which control up to 85 percent of India’s total oil production. Other players include Bharat petroleum Corporation Limited (BPCL) and Hindustan Petroleum (HP). ONGC is also major player on the natural gas production front, while the Gas Authority of India Limited (GAIL) is the major player in the transmission and distribution of natural gas. Except for Reliance Industries Limited (RIL) and Cairn India Limited, no private players have carved out a key role in this sector.

c) Coal: India’s coal production is dominated by Coal India Limited and Singereni Collieries Company.

d) Renewables: The sector is dominated by private players like Suzlon Energy Limited, Tata BP Solar and Moser Baer Private Limited.

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