Provisioning of Electricity

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India as a developing economy has made considerable progress in provisioning of electricity over the last few decades. India's total installed capacity stands at 2,29,251 MW (megawatt) as on 31st October 2013. The state public sector owns 39 percent of total installed capacity, while the private sector and the central public sector shares are 32 percent and 29 percent respectively. Total length of transmission lines (above 66 kv) to transport power from plants to different parts of the country is 1,02,540 ckm (circuit kilometer). There is a wide network of distribution lines (33 kv and less) to supply power at sub-transmission level to end consumers like households, firms and others.

Electricity falls under the Concurrent List of the Constitution of India on which both the central government and state governments have jurisdiction. In practice, this has meant that the Centre takes charge of all inter-state and international matters relating to provisioning of electricity, while the state government is responsible for matters within the state. The Electricity (Supply) Act, 1948 had mandated the formation of State Electricity Boards (SEBs) to discharge the duties of generation, transmission and distribution of power in the states. Under this Act, the Central Electricity Authority (CEA) was set up in 1951 as a statutory body to provide technical support in the provisioning of power supply. In the year 1947, the all India total installed capacity was 1362 MW and it was owned mostly by state governments. The central government came into the field of power generation in early 1980s with the Electricity (Supply) Amendment Act, 1976 followed by the entry of private sector through the post-1991 macro-economic reforms.

However, the SEBs had been in charge of power distribution until late 1990s. As the distribution function involves cash flows out of sale of electricity, it needed lot of efficiency to deal with the end users. However, it was argued that the SEBs had failed in this area, which led to reforms in terms of their vertical disintegration. SEBs were made into separate entities to discharge the duties of generation, transmission and distribution separately to perform more efficiently. Orissa State Electricity Board was the first in this series of reforms followed by Delhi. Private sector was allowed to operate in the field of distribution. The Electricity Act, 2003 made disintegration of SEBs compulsory in all the states. This Act also mandated the formation of Electricity Regulatory Commission at the central and state level to monitor the functioning of power supply from generator to end users at appropriate tariff rates. All these reforms in the Indian power sector were carried out with the objective to provide adequate and quality power supply to all.

India is one of the lowest energy consumers in the world. As of October 2013, the per-capita power consumption in India is 917.18 kwh (1 kwh = 1 unit). But it is very low compared to the per capita consumption in most developed and developing countries. Canada's per capita power consumption is 15145 kwh and USA's per capita consumption is 13361 kwh. In China, the per capita power consumption is 2945 kwh. Even within India, there is a lot of disparity in energy consumption across states. Some states have much lower levels of energy consumption compared to the national average. For instance, Bihar's per capita power consumption is only 133 kwh; however, Goa's per capita power consumption is 2025 kwh as of October 2013.

Energy deficit or power deficit, which is defined as the difference between power requirement and its availability, is quite high in India. In the year 2011-12, total power generation was 876 billion units and power deficit was 8.5 percent of the total requirement. High level of power deficit in the country could be detrimental to economic growth. Indian agriculture is getting mechanized and use of electricity in this sector is growing over the years. In the year 1947, power consumption in agriculture constituted only 3 percent of total power consumption in the country; by 2012-13, this share has reached 18 percent. Indian industry is highly dependent on power. However, with the rise in the share of other sectors in total power consumption, the share of industry in the same is going down; at present, the industrial share of power consumption stands at 45 percent.

The share of domestic power consumption follows a rising trend in total power consumption. In the year 1947, the share of power consumption by households was 10 percent and it went up to 22 percent in 2012-13. Despite a steady rise in domestic power consumption, many households in the country are still without access to electricity. According to the National Sample Survey Organisation's household consumption expenditure survey 2011-12, 27 percent of rural households and 4 percent of urban households are not using electricity for lighting purposes. Moreover, a large chunk of the households connected with power supply are complaining of poor quality of power. The central government launched *Rajiv Gandhi Grameen Vidyutikaran Yojana* in 2005 with an aim to provide electricity to every village. However, 13 percent of total villages in the country have not been electrified as yet. These statistics of poor power consumption at regional, sectoral and household level and lack of electricity connectivity shows that there is scope for higher power consumption in the country; but that would warrant a significant increase in power availability as well.

At present, the country is highly dependent on coal as the source of power generation; it constitutes 58 percent in total generation. Among other sources, hydro-power constitutes 18 percent followed by 12 percent from renewable energy sources, 9 percent from gas and 2 percent from nuclear energy as sources of power generation. Increasing requirements would put more pressure on the use of fossil fuels for power generation, which have adverse

consequences for the environment. Hence, there is a need to diversify the energy basket of the country and increase the shares of hydro, nuclear and renewables in total power generation. Secondly, the sources for generation of power need to be cost effective. At present, the average cost of power is Rs. 3.50. In order to revitalize the “Kutir Jyoti Yojana” launched in 1980s with an aim to provide free power to all BPL households, the generation of power must be cost effective. This would require more investment for bringing new technology in power generation from non-conventional sources, which would require much stronger policy efforts from the central government and states as well as appropriate contribution from the private sector.

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